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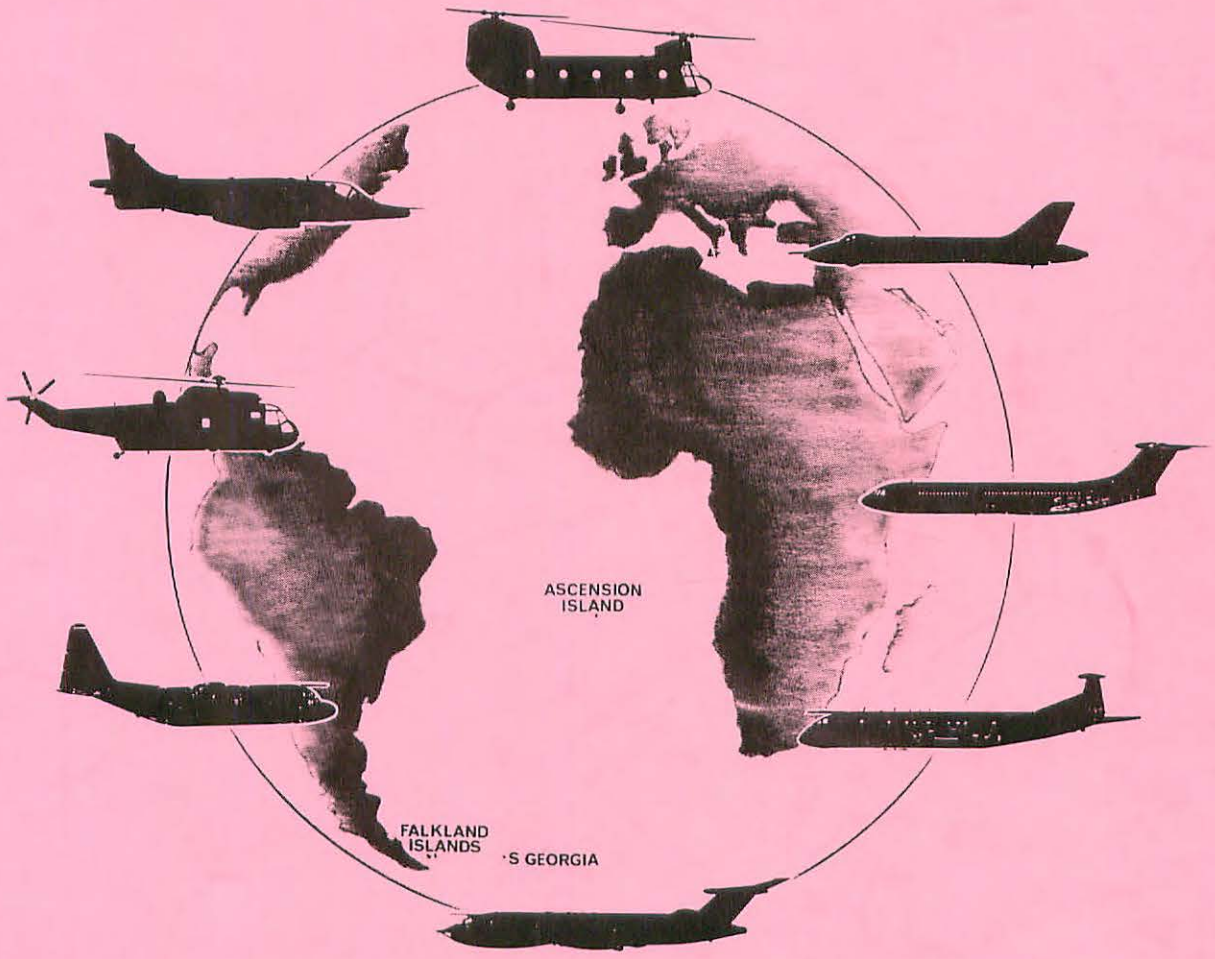
NARRATIVE OF RAF OPERATIONS DURING

THE FALKLANDS CONFLICT 1982



Ministry of Defence

AIR HISTORICAL BRANCH (RAF)

1988

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General Staff Map Section GSGS 11190 March 1987

RAF OPERATIONS DURING THE FALKLANDS CONFLICT 1982

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CONTENTS

"The most important thing is not to look back at the past but to look to the future from the past."

Lord Tedder

INTRODUCTION

1. It became clear within the first few weeks of the Argentine invasion of the Falkland Islands in 1982 that their recovery would entail a major military operation, one which would eventually need to be recorded in detail for the benefit of students of military history. To ensure that the RAF contribution would be properly represented the operations staffs in the Air Force Department and at Headquarters Strike Command were reminded towards the end of April of the need to preserve the necessary documents and on 10 May the Director of Air Staff Briefing was formally directed by the Chief of the Air Staff to gather the material, consulting closely with the Air Historical Branch.

2. Soon after the conflict ended the Head of AHB was instructed by the Deputy Under Secretary (Air) on behalf of the Air Force Board to commence the writing of an official RAF narrative. The purposes of this account were several. It was to provide a source of detailed reference for staff use; it was to be available for study in Service colleges and schools; it would form the basis for further historical research, possibly in the context of an official history of the campaign as a whole; and eventually it would be open to the world at large in the Public Record Office. The format would be broadly similar to the series of campaign narratives that had been written in AHB immediately after the Second World War, ie essentially factual and fully referenced, while including comment where appropriate. Since much of its value would lie in its detailed coverage of events and activities, it would - like the wartime narratives - have to be classified and it was decided from the beginning to include material up to and including Secret level. The end-product, therefore, is as comprehensive as it can be within those limits. It is, on the other hand, confined to the activities of the Royal Air Force; the narratives covering the roles of the Royal Navy and the Army are being written by their respective Historical Branches.

3. The work of assembling the source material began in August 1982, when most of the files from Air Force Operations were passed to AHB. By this time the Forms 540 (Operations Record Books) of the many units involved were also beginning to arrive and soon afterwards the private office files of CAS and VCAS were made available. These were later supplemented by many files from other branches of the Air Force Department and from Headquarters and lower formations of the RAF at large. In addition, partly as result of an appeal published in Air Clues and RAF News, numerous research reports, private diaries and collections of photographs were also received. Thus a comprehensive archive was built up and we are most grateful to the staff branches who identified and entrusted their records to us and also to the many individuals who responded to our appeal.

4. Before serious writing could begin it was essential to index the material and, not least because of the sheer quantity of documents received, this took far longer than was at first expected. The work was started by a researcher specially appointed for the job - Squadron Leader J Davies - and continued by several officers whom the Air Secretary was able to attach to us for specific periods, notably Squadron Leader J Holdway, Squadron Leader P D Penfold and Group Captain G G Thorburn.

5. It was clear at an early stage that, extensive though the written records were, there was much information and elucidation that could be obtained only by talking to the individuals who had taken part and as soon as possible a programme of taped interviews was started. Those with the more senior officers involved, including CAS, the Air Commander and ACAS(Ops), were carried out by the Head of AHB and the remainder mainly by the Branch historians. All were conducted under conditions of complete confidentiality and the tapes are retained in AHB under the appropriate security conditions. A list of the interviews is in the Note on Sources.

6. Since it was not possible to recruit extra full-time staff for the purpose, much of the actual writing of the narrative had to be undertaken by AHB's 2 historians, Group Captain T C Flanagan and Group Captain G G Thorburn, who had been appointed to the full-time staff after his spell as an indexer, and by the Head of AHB, all of whom had to combine the task with their normal day-to-day work. In addition further appeals to the Air Secretary yielded a number of officers who joined AHB on attachment for limited periods. Most of these were "role experts" who had taken part in the operation and whose expertise and experience were invaluable in the drafting of a number of the specialised chapters; the others gave great assistance in drafting, editing and checking. We are greatly indebted to Wing Commander D W Bramley, and Squadron Leaders M E Beer, M J Evans, J Gentleman, R D Iveson, I P G Loughborough and P H Singleton for their work in these areas. (Ranks at time of working in AHB(RAF)). Finally our thanks go to Pilot Officer N A Smith (WRAF) for her detailed and thorough work in constructing the index and to No 81 Typing Section, Adastral House, for its patient preparation of this narrative - the first AHB history produced from 'camera ready' copy.

7. The approach adopted has been to devote the first 2 chapters to the overall pattern of command and control and to the development of the forward base at Ascension, then to describe each of the main operational roles, next to cover the immense range of support activities and finally to outline the events of the post-surrender phase up to the arrival of the Phantoms in October 1982. In view of the many accounts of Operation CORPORATE that have already been published we have seen no need to include a general description of the campaign and we regard events since 1982 in the Falklands as outside the scope of this narrative.

8. Much effort has been made to ensure that the account is accurate and covers all significant aspects of RAF activities; moreover every chapter has been read in draft by at least 2 or 3 officers who were personally involved in the events described. Among those who have helped in this way are Sir Michael Beetham, Sir John Curtiss and Sir Kenneth Hayr and their comments and suggestions have been fully taken into account. We accept, however, that despite all our efforts some readers will identify shortcomings and AHB is well prepared to receive comments and even additional material that may be worth retaining in our records. We recognise too that there is scope for further research into specific aspects of the campaign; while AHB can do no more itself, we are willing to allow access to the archive for official purposes - subject of course to the normal security constraints.

9. The narrative is for the most part factual and every effort has been made to quote the sources of the information both in substantiation and to facilitate further research. The authors have, on occasion, felt constrained to record their own observations; these do not necessarily reflect the views of the officers whom we have consulted and we in AHB take full responsibility for them. In offering them we hope that they will at least stimulate thought, since part of the value of an account such as this is to enable its readers to appreciate where the planning, organisation and conduct of operations might have been better and hopefully to enable lessons to be learnt for the future.

September 1988

Air Commodore H A Probert
Head of AHB(RAF)

NOTE ON SOURCES

INTRODUCTION

1. This narrative is based on a largely classified archive comprising documents, photographs and audio tapes currently (1988) held by AHB(RAF). A small collection of video material is also held. Access to the documentary archive is possible for official, or bona fide historical purposes, at the discretion of the Head of AHB(RAF), to whom application should be made in writing.

2. To assist potential researchers a broad outline of the archive's contents appears in the following paragraphs:

FILES/FOLDERS

3. a. Air Force Ops Room (MOD Air) files are identified in this narrative by prefix TF.

b. Chief and Vice Chief of the Air Staff papers - CAS or VCAS.

c. Commander Task Force 317 - CTF317 (a small selection only).

d. Air Member for Supply and Organisation - AMSO.

e. Chief Engineer (RAF) - CE(RAF).

f. Director General of Supply (RAF) - DGS and D of S Pol (RAF).

g. D Admin Plans (RAF) - DAP.

h. Director of Quartering (RAF) - D of Q (RAF).

j. Director of Public Relations (RAF) - DPR(RAF).

k. Director General of Organisation (RAF) - DGO(RAF).

l. Commandant General and Director General of Security (RAF) - D/CG&DG Sy(RAF).

m. Director of Catering - D Cat(RAF).

n. Director General of Medical Services (RAF) - DGMS(RAF).

o. Headquarters Strike Command - HQSTC.

p. Headquarters RAF Support Command - RAFSC.

q. Headquarters RAF Germany - RAFG.

r. RAF Group Headquarters - Group number followed by G; for example HQ 1 Gp appears as 1G.

s. Some documents and all Operations Record Books of RAF units participating in Operation CORPORATE are also available.

M/1/10/M/DFT
9A/27/7

PHOTOGRAPHS

4. In addition to those reproduced in this narrative, a further collection of several hundred photographs and slides is held. Many of these are drawn from official sources, but AHB is grateful to the following who allowed their own collections to be copied:

Gp Capt J S B Price

Wg Cdr D M Niven

Wg Cdr I P G Loughborough

Wg Cdr P T Squire

Sqn Ldr D S Davenhall

Sqn Ldr A L Gordon

Sqn Ldr M F C James

FS P Warrener

Sgt M R Lockey

AUDIO TAPES

5. Tape recorded interviews with the personalities listed below are held within the AHB archive. Most of these were carried out by Head of AHB(RAF) and his staff in the period 1982-87 and are not open for research.

1982 Rank/Name	**Appointment in Apr-Jun 82**
ACM Sir Michael Beetham	CAS
AM Sir John Curtiss	AOC No 18 Gp and Air Cdr to CTF317 during CORPORATE.
AVM K W Hayr	ACAS(Ops) MOD(Air)
AVM G A Chesworth	COS to Air Cdr
Gp Capt J S B Price	SRAFO Ascension
Gp Capt F E N Allen	Dof Ops EW & Recce(RAF) MOD(Air)
Gp Capt W J Wratten	Stn Cdr RAF Stanley Jun-Nov 82
Wg Cdr F Trowern	ALO to CBFFI
Wg Cdr P T Squire	OC No 1 Squadron - Harrier GR3s
Wg Cdr F Mason	DASB
Sqn Ldr S Morris	OC FOB Port San Carlos - Falklands
Sqn Ldr A L Gordon	ALO to OC 5 Bde

Flt Lt J W Glover	RAF POW in Argentina
Flt Lt A Melville-Jackson	Nimrod Captain

VIDEO TAPES

6. A small collection of VHS video tapes totalling less than 4 hours is held in the archive showing mainly a variety of air operations.

OTHER SOURCES

7. The following published books are referred to in the narrative:

Author	**Title/Publisher**
R Burden et al	Falklands - The Air War - British Aviation Research Gp 1986
J Godden	Harrier Ski-Jump to Victory, Brasseys 1983
M Middlebrook	Operation CORPORATE - Viking Press 1985
J Ethell and A Price	Air War South Atlantic - Sidgwick and Jackson 1983
J Briasco & S Huertas	Falklands Witness of Battles 1986
V Adams	The Media and the Falklands Campaign - MacMillan 1986.

8. A comprehensive booklist dealing with the Falklands campaign is issued periodically by the MOD Main Library. AHB(RAF) also holds copies of many articles dealing mainly with RAF aspects of Operation CORPORATE.

9. The archive also contains a complete list of the officers and airmen who received the South Atlantic Medal.

10. The March-June 1982 MOD Office Directory has been retained in the archive to assist future researchers.

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CHAPTER 1

COMMAND AND CONTROL

SUMMARY OF CONTENTS

1.1 The story of RAF command and control for Operation CORPORATE is essentially one of improvisation. As explained in para 109 of the Falkland Islands Review (Cmdn 8787 - The Franks Report) there existed a broad appreciation of the action that would be needed to counter various forms of military action by Argentina, but there were no contingency plans in the accepted military sense. Consequently, the possibility of carrying out offensive air operations in the South Atlantic had never been envisaged, so it is not surprising that nobody had thought about how such operations might be directed. Moreover, while the RN Task Force (TF) was very quickly constituted and despatched southwards few of the roles which the RAF would play in its support were immediately apparent. Thus, it was necessary to start out with the existing command structure, which had not been designed for major operations in remote theatres, and gradually adapt parts of it to cope with the specific needs of CORPORATE as they developed.

1.2 The RAF command structure in early 1982 was geared in the main to its NATO commitments, with the United Kingdom Regional Air Operations Centre (UKRAOC) at HQ Strike Command (HQSTC) in the key position. In the event of war in the NATO area AOC in C STC in his capacity as CINCUKAIR, answering immediately to Supreme Allied Commander Europe (SACEUR), would through UK RAOC control most RAF operational aircraft based in the United Kingdom. For CORPORATE, however, there was no question of UKRAOC having the main role; the need for very close political control in an 'out-of-area conflict' meant that the key operational decisions had to be taken in the Ministry of Defence (MOD), and Assistant Chief of the Air Staff (Operations) (ACAS((Ops)) became the focus of these as far as the RAF was concerned. Moreover, since the RN was clearly in the lead during the mounting of the operation, its chain of command would be a major factor, and that chain led directly from the MOD to Northwood, from where CINCFLEET would command the TF (1). While the senior RAF officer at Northwood was, as AOC No 18 Gp, primarily answerable to CinC STC and thus only indirectly responsible to the MOD, he and his staff were fully accustomed to working with their RN colleagues, and it made good sense for his HQ to direct the RAF operations in their support. It was in any event only the Nimrod Maritime Patrol (MP) aircraft of 18 Gp that were initially envisaged as having an

(1) Details of the command of control arrangements for CORPORATE were announced by the Secretary of State for Defence to the House of Commons on 7 April, although no specific mention was made of the RAF chain of command.

operational task - apart from, of course, the strategic transport aircraft which would be required to supply the forward base at Ascension Island and would remain under the control of HQ 38 Gp.

1.3 The pattern thus emerged very early on whereby the command of the RAF aircraft (other than transport aircraft) allotted to CORPORATE rested with AOC 18 Gp, who was directly responsible as Air Commander to the Commander Task Force (CTF), CINCFLEET, and who dealt on purely RAF matters immediately with the Air Staff in the Ministry of Defence (MOD). One link in the normal RAF chain of command was thus frequently by-passed, although CinC STC was always kept informed. This chapter will consider how the system worked at the various levels.

MINISTRY OF DEFENCE

1.4 For the first few days of the Falklands crisis, with Sir Terence Lewin, CDS, out of the country, the major measures to set up the TF were carried out primarily by Chief of the Naval Staff (CNS) and CINCFLEET (consulting as necessary with the Secretary of State), since this was seen essentially as a naval operation for which assistance from the other Services could be enlisted by normal staff action. Sir Michael Beetham, Chief of the Air Staff (CAS), who was Acting CDS in Lewin's absence and present when major decisions were made about the TF, realised the need for all to be kept informed and decided to institute daily Chiefs of Staff (COS) meetings; these continued throughout the crisis. Above the COS and the Secretary of State for Defence was a special Ministerial Sub-Committee, chaired by the Prime Minister, known as the Defence and Overseas Policy Committee, Sub-Committee on the South Atlantic and Falkland Islands (OD(SA)). Set up by the Secretary to the Cabinet on 6 April, this included the Home, Defence and Foreign and Commonwealth Secretaries and the Paymaster General, with one or more of the COS attending as necessary.

Beetham Interview

Cabinet Office Minute A08065

1.5 With CAS closely involved in the higher decision-making through his membership of the COS committee and on occasion as Acting CDS, the detailed work in the Air Staff was the responsibility of AVM K W Hayr, ACAS(Ops). (2) Even before the Argentine invasion he and his RN and Army opposite numbers had met to exchange ideas, and on 31 March he reinforced the 24-hour manning of the Air Force Operations Room which then became the focal point. So as to run a three-shift system, a third Air Cdre occasionally joined the two already on his staff, but otherwise - apart from a number of specialists brought in to cover some of the support roles - the Operations Room was staffed throughout almost entirely by existing members of his division, all of whom still had their own offices to run as well - though admittedly much of their normal work related in some way or other to CORPORATE. ACAS(Ops) did not work shifts himself; as the continuity man responsible for virtually all the decisions in a constantly developing situation, he simply worked all

Hayr Interview

062030Z Apr
1Gp/SASO/7.1 E5

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(2) VCAS (AM Sir David Craig) also became involved as necessary, both as deputy to CAS and in giving support to ACAS(Ops).

the hours he possibly could. (3) Reflecting afterwards, he believed he should have had an 'alter ego', an Air Cdre who was not working shifts and could have been fully read into his mind.

1.6 Near at hand in the Main Building in Whitehall were ACAS(Ops)' opposite numbers in the Central Staffs and the other Services, with whom relations were always good, reflecting in his view "a very live sense of jointery". There was very close cooperation, too, with the secretariat branches, especially Defence Secretariat 8 (DS8). A considerable amount of the work of the Ops Room was concerned with procurement and planning, normally preserves of ACAS Operational Requirements (OR) and ACAS Policy (Pol), neither of whom was closely involved with CORPORATE. The urgency of the situation demanded that the procurement procedures be greatly simplified; and since nobody took much persuading of the need the normal financial restraints were considerably eased. However, while the simplified procedures worked in practice, given the great fund of goodwill, inevitably problems did arise; the engineering staffs, for example, felt that the need to purchase new equipments and to incorporate modifications into aircraft at very short notice caused much confusion in the delegated engineering authorities and believed that there should have been firmer central control.

D/D Eng Pol/18/26
12 Jul
CE(RAF)2/1/167.8
E21

1.7 Another serious difficulty, not only for ACAS(Ops) but for all the other staffs involved in CORPORATE, was the initial absence of any really useful intelligence both on the Argentine forces and on the situation in the South Atlantic. As far as the Defence Intelligence Staff (DIS) was concerned, because of successive cuts in staff and other economies over the years only minimal staff effort had been devoted to Argentina as an intelligence target and there was virtually no data-bank of material. Even the most basic 'staff officers' handbook' information was lacking, not to mention details of the Argentine's most recent arms acquisitions.

1.8 Most of the DIS effort, even when reinforced by up to 85 augmentees, was therefore at first devoted to assembling and collating raw data. Little else could be done until this process was under way, yet there were naturally many urgent demands for assessments and for analyses as soon as the crisis broke. The DIS response began with a paper on Argentine Capabilities dated as early as 7 April, but perhaps not surprisingly, this paper contained several errors and misleading statements. Further papers on the same subject dated 14 and 15 April were little better, and in particular the likely effectiveness of Argentine air attacks on ships was seriously underestimated. One result of these and other initial underestimations of the threat was that some of the intelligence work was reactive rather than anticipatory. (4) On 7 May a further and

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(3) The working day would begin with a pre-Chiefs' meeting; after the Chiefs had met there would be a debrief and the reactions would be staffed. Then CAS would want further reactions. The "Falklands Day" would end in the early evening with a final interview with CAS, whereupon ACAS(Ops) would retire to the in-tray of his own office.

(4) DIS Historical Report - Falkland Islands Campaign 1982 D/DIS(CS)21-52-1-7.

more accurate DIS paper on Argentine Air Power was issued, but this too underestimated Argentine capabilities, particularly in the Air Defence (AD), air reconnaissance and attack roles. By 14 May, with a much more comprehensive collection effort under way, almost entirely from Government Communications HQ (GCHQ) sources, the intelligence picture had greatly improved and the DIS assessment on that day of the Argentine garrison on the Falklands was close to the facts, while another assessment 4 days later gave a very accurate picture of the Argentine deployments.

1.9 One continuing and very serious intelligence handicap was, however, the lack of cover of Argentine mainland bases, with the result that many assessments and briefings had to reflect the uncertainty about Argentine movements, especially those of the fleet, in particular the aircraft carrier and the submarines, and above all the Argentine air assets. As early as 2 April, the air and Exocet threat was identified in a COS briefing by Deputy Chief of the Defence Staff (DCDS) as "the biggest worry", but the Argentine Air Order of Battle (AOB) could never be given with confidence and because of difficulties in intelligence collection, details of the basing and subsequent redeployment of the Argentine air assets on the mainland bases were simply not available. On the other hand, however, the assessments made of Argentine strategic and tactical options and the likely courses of action that they might adopt were throughout the campaign perceptive and accurate, as were the timely warnings of the threats that might be posed to the TF. Thus despite the standing start that had to be made by the DIS, by the time the TF reached the Falklands area of operations a very full picture of Argentine threats, capabilities and strengths was available even if many important air deployments remained unknown.(5)

1.10 Inevitably, security was a constant anxiety. Few of those working in the MOD - or anywhere else for that matter - had experienced an actual war situation with the risks entailed in planning and mounting 'live' military operations, and ACAS(Ops) decided to be extremely strict in applying the 'need to know' principle. Some - including representatives of the Foreign and Commonwealth Office (FCO) - felt he was being too secretive and witholding information that they thought was essential to enable them to do their own jobs, but he remained adamant. There were dangers too in the signals distribution system; it was not easy to prevent copies of signals on sensitive matters, even when marked "Exclusive For", being seen by others who, though entirely trustworthy, could

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(5) The quality of intelligence briefing was criticised in some quarters. On 13 May, for example, the Air Commander expressed his dissatisfaction to COS(Fleet); he felt there was little attempt to assess the quality of the information or to tie it up with previous intelligence information. In his view, the splendid support from GCHQ was not being effectively used. COS(Fleet), while stressing that the Joint Maritime Intelligence Centre was overworked and grossly overcrowded, hoped to secure some improvement. CAS, too, believed that intelligence was a serious weakness - little attention had been paid to South America, some of the intelligence officers were of low calibre, and their briefings consisted largely of reports rather than analysis.

18G/335/4/6/4 E30 & E34

Beetham Interview

have their curiosity aroused and might start asking questions. (6) At the transmission end also there could be problems with copies of such signals. From his experience in CORPORATE ACAS(Ops) felt that too little thought had been given to such matters in the development of the modern signals system.

1.11 The focal position of ACAS(Ops) meant that he and the Ops Room were in constant touch with lower formations throughout the RAF. While he was at pains to keep Senior Air Staff Officer (SASO) at HQ STC in the picture, the need for speed often entailed direct dealing with the Groups and at times even lower formations. Sometimes there were complaints at staff level about being by-passed: on 19 April, for example, AOC 38 Gp expressed his concern at the amount of direct contact between higher HQs and station commanders, especially in the planning for the use of Harriers and support helicopters. In his view this was causing uncertainty if not confusion; while appreciating the need for flexibility he hoped all questions about the use of 38 Gp assets would be directed to his HQ. Wg Cdr Squire, OC No 1 Sqn, not only commented forcibly in his Operations Record Book (ORB) on the frustrations caused by the disjointed command and control arrangements, but also reflected later on this confusion during the build-up period; he was getting plenty of information straight from MOD and 18 Gp but little from STC or 38 Gp, his own superior formations, and for the details of loading his aircraft aboard ATLANTIC CONVEYOR his best source of up-to-date information was the RN. At Ascension, too, detachments often dealt direct with their parent stations.

191740Z Apr
18G/335/4/Ops.1
E109

No 1 Sqn ORB

Squire
Interview

Emmerson
Interview

1.12 SASO 1 Gp, as well, reflected on the complications caused by the introduction of a chain of command running parallel to but separate from the normal well-understood route, stressing that his specialist staff had to be highly flexible in responding to unusual requests for extra capabilities. Moreover, as pointed out in the HQ 1 Gp report on CORPORATE, difficulties were caused by the separation of the controlling authority at Northwood responsible for operational planning from the personnel involved in preparing and training the forces required. These problems occurred mainly where aircraft were to be used in unfamiliar roles: in particular HQ 18 Gp did not fully appreciate the limitations of the Victors and their crews in their new Photographic Reconnaissance (PR) and Maritime Radar Reconnaissance (MRR) roles or of the Vulcans in medium-level conventional bombing, since their staff had not been involved in the development or training process. The 1 Gp report also drew attention to confusion when trials work ordered directly on stations by MOD entailed the allocation of aircraft which the Air Staff were using for other urgent training or operational tasks. Further factors, as OC Waddington pointed out in relation to the preparations for BLACK BUCK (Vulcan attacks on Port Stanley Airfield), were short time scales and the sensitivity of the operation, which meant that only those with a part to play were called into the team and even then given only the information they needed. ACAS(Ops), however, would argue that SASO STC was always approached first to approve direct liaison - apart from two occasions when the staff were too quick off

Interview with
DASB 28 May

1G/17/1/AIR.1
12 Aug
Annex A, App 1

Interview with
DASB 28 May

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(6) This was particularly so at Ascension where heavy signals traffic and the virtual absence of adequate means of storing and safeguarding it caused handling and security problems. Chapter 9 includes further comment on the signals system.

Wg Cdr Emmerson
Interview

the mark. The AOCs in turn also applied the 'need to know' principle to members of their own staffs. (7) Obviously there had to be regular contact with the Air Commander and his staff, for whom ACAS(Ops) was in effect putting together the hardware that 18 Gp would control, but even there SASO STC was normally kept informed.

Curtiss Interview

HQ 18 GP NORTHWOOD

1.13 Once the decision had been made to place the TF under the command of Adm Fieldhouse, CINCFLEET, at Northwood, it was inevitable that the role of Air Commander would devolve upon AM Sir John Curtiss, AOC 18 Gp. Their respective HQs were co-located, in their normal mainly NATO roles they were accustomed to working together, and they were good friends; indeed Fieldhouse wanted Curtiss and was already treating him as his air deputy before the appointment of Air Commander was formally announced on 12 April. His directive from CAS made him responsible to CINCFLEET for operational command and control of all aircraft, air operations, equipment and personnel of the RAF placed under his authority by the AOCinC STC for CORPORATE; in this capacity he was allowed to liaise direct with the Air Force Department (AFD) and with other RN, Army and Air Commanders, while keeping MOD(Air) and CinC STC fully informed. The only area to which his authority did not extend was the operations of the Air Transport Force (ATF), which remained answerable to AOC 38 Gp, but on 5 May he was given operational control over all Hercules that would operate south of Ascension to drop supplies to the TF, and aircraft being deployed on Special Forces (SF) operations were also placed under his control once they reached the forward mounting base.

Beetham interview

Curtiss interview
VCAS 90836
12 Apr
TF19.2 E19

051530Z May
18G/335/4/4/1.1
E20

192056Z Apr
IG/SASO/7.2 E28

1.14 As Curtiss himself pointed out afterwards, he was lucky to have had particularly wide operational experience (8) which gave him a better feel for the many air power roles that became his responsibility than if his background had been largely maritime. Moreover, as a full Air Marshal he was senior to the other group commanders, some of whose resources would be at his disposal. On the other hand, his permanent staff were small in number and their expertise was largely limited to the maritime role; in the early stages they had to cope as best they could as further roles were added, but the need for experts was soon appreciated and suitable reinforcements were brought in from elsewhere as quickly as possible, though in retrospect his COS felt they struggled on their own too long and should have taken corrective action earlier. A further

Curtiss Interview

Chesworth Interview

(7) The dissimilar combat training programme with the French Air Force, for example, was not staffed in detail through 38 Gp.

(8) Trained as a Navigator, Curtiss served first with Bomber Command on Halifaxes in the later stages of the war and then on Stirlings and Yorks in the transport role, including the Berlin Airlift. After a period in Fighter Control duties he served with 29 Sqn (Meteor night fighters) and 5 Sqn (Javelins), and then became Wg Cdr Operations at Wittering, a Victor Medium Bomber station. He commanded Bruggen, a strike/attack Phantom station, spent some time at HQ STC as Gp Capt Ops, was SASO at 11 Gp, and served at Bracknell as DS and later Commandant. He also served at MOD as Director General of Organisation. A wider range of experience it would be hard to imagine.

problem was shortage of accommodation, since the normal NATO facilities were not available for a purely national, out-of-area campaign. The RN operated from the CinC Fleet Operations Room where all main briefings were conducted twice per day. A small conference room had to be converted into an RAF operations room which despite much effort provided only cramped and sub-standard facilities. Curtiss Interview

1.15 Once the Gp staff had received its extra personnel, including experts in the various non-maritime roles, the structure became as shown in Annex A. Immediately answerable to the Air Commander was the COS, AVM George Chesworth, who saw not the least of his tasks as the protection of his master from the staff and vice versa. Curtiss, who had to devote much of his time to the higher commanders and was the deputy to Fieldhouse for all joint-Service matters, was thus spared many of the detailed problems, and Chesworth was also able to undertake most of the liaison with SASO, HQSTC and the other Gp Cdrs, who rarely had the full picture and so usually did whatever was requested. (9) Prior to CORPORATE there had been 4 group captains on the staff: Magor (Operations/Training); Donovan (Plans/Exercises); Dalston (SOA) and Smith (SO Eng). The last 3 continued essentially with their normal range of responsibilities throughout CORPORATE, with Donovan covering intelligence, but the pressure on Magor was such that Gp Capt Phillips was brought in to share the load of directing current operations, while Gp Capt Tinley (after spending a few days on Ascension) dealt with future planning. Special operations were the concern of Wg Cdr Peaker, brought in from the Central Trials and Tactics Organisation (CTTO) cell at Northwood, and to complete the structure there were Gp Capt Price, Senior RAF Officer (SRAFO) on Ascension, and - in the later stages - Wg Cdr Trowern, the RAF representative with 5 Bde. Annex C to HQ 18 Gp F540 Apr

1.16 The normal daily routine consisted of a main briefing at 0840 in the Fleet Operations Room, followed by a get-together between the Air Commander, COS and the group captains, after which the Air Commander would attend the Flag, Air and General Officers' Meeting (FLAIRGO). (10) A further main briefing would take place at 1700. Inevitably many of the decisions were taken either in conference or by telephone, (11) and while every effort was made to enter these in an official log there was always a risk of some going unrecorded. Periodically, however, the Air Commander would circulate a signal stating his intentions, thus ensuring that all concerned had a general understanding of what was afoot. Signals distribution also caused problems. The quantity of paper - mainly signals - was overwhelming, and it was very difficult to ensure that nothing Chesworth Interview 141940Z May 1GP/SASO/7/8.2 E14

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(9) In the early stages the Vulcan activities were managed by AOC 1 Gp.

(10) The meetings consisted of Fieldhouse, his COS Adm Hallifax, Flag Officer Submarines (FOSM) Adm Herbert, AM Curtiss and later Gen Moore who was replaced by Gen Trant when he proceeded South to command the land forces.

(11) The Defence Secure Speech System (DSSS) was invaluable but access was limited. The introduction of the Air Staff Management Aid (ASMA) to the RAF Operations Room and to key locations provided an important planning tool and an essential link to Ascension.

important was ever missed; the RN and RAF distribution systems differed and after one embarrassing incident when an important signal never reached the AOC it was decided to employ an officer full time to check everything that came in. With a small staff working under heavy pressure there were difficulties too in the level of decision-making; on 25 May for example, the AOC had to remind all staff officers of the importance of consulting him or the COS on important decisions needing to be taken out of working hours. (12) It was probably as well the operation ended when it did, for the staff had been working under very difficult conditions and were, in Chesworth's words, "pretty tired". Nevertheless, as Curtiss remarked, Northwood worked because the personalities were right - and here he was referring to his RN colleagues just as much as to his RAF staff. (13)

18G/335/4/6/4
Ops.1
25 May E39

RAF REPRESENTATION WITH THE TF

1.17 As the Air Commander, Sir John Curtiss was the senior air adviser to Sir John Fieldhouse and thus able to represent the RAF view fully at Northwood. He was, however, given no senior subordinate actually with the TF, and consequently Adm Woodward, a submariner, had to depend for local air advice at senior level entirely on the captains of HERMES and INVINCIBLE, together with their Cdrs (Air). Their expertise was essentially in AD (the role of the Sea Harrier) and helicopter operations, and for the purposes of this operation they had insufficient understanding of other air power roles such as PR, MRR, bomber operations, air-to-air refuelling (AAR), air supply, and - particularly important - offensive air support (OAS). It was for this reason that CAS would ideally have liked an experienced Air Cdre to have been with the TF, thus ensuring that expert advice was readily available to Adm Woodward at the right level. On the other hand, as he, Curtiss, Chesworth and Hayr all pointed out afterwards, it would have been totally unacceptable to the RN to have even a Group Captain aboard a ship commanded by a Captain, especially when that Captain was himself a naval airman. (14)

Beetham Interview

Relevant Interviews

1.18. It must be borne in mind that it was far from clear in the planning stages what the air side would be able or required to do in the South Atlantic. As Chesworth pointed out, land support operations were not seriously envisaged by the RN or by the RAF until early May (15) though as early as 27 April Adm Woodward was

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(12) Key personnel at Ascension felt that the decision-making process at Northwood was not always rapid enough when they needed urgent answers.

Emmerson Interview

(13) Curtiss later pointed out that until Adm Anson replaced Adm Hallifax as COS to CINCFLEET in the normal course of posting there was no naval aviator above Commander rank in CINCFLEET's HQ, although Adm Fieldhouse, a submariner, had commanded a fixed-wing carrier some years before.

(14) Other considerations apart, accommodation on the ships was at a premium.

(15) A number of options entailing the use of bases on the South American mainland had been considered in the very early stages and quickly discarded.

indicating that Sea Harriers might be needed for land PR and Close Air Support during the landing operations; the essential task of the Sea Harriers would be to defend the TF, and their small numbers in relation to the size of the Argentine air forces suggested that they would have their work cut out. Losses could well be heavy, and the RAF reinforcements that were organized were initially intended as replacements in the same role. Since the two carriers had all the necessary expertise in that role, it was therefore arguable that there was no call for a senior RAF presence.

271700Z Apr
18G/335/4/22/
Ops.1 E47

1.19 By the beginning of May, however, it was clear that an invasion would have to be launched; moreover, the early air fighting showed that the Harriers could more than hold their own and that some of their effort would be available for air support. It was accordingly decided to send Wg Cdr Trowern, a joint-warfare expert, as the air adviser to Gen Moore, the land force commander. On his way south aboard QE2 he got to know Gen Moore very well and, as his acknowledged expert on all forms of RAF operations, Trowern found that he would be expected to combine with his other duties the tasking of OAS. The intention was to set up ashore as soon as possible a full Harrier forward operating base (FOB) capable of supporting 12 aircraft with fuel, weapons and standard turn-round facilities; owing in large part to the loss of the metal planking and Harrier spares aboard ATLANTIC CONVEYOR, the FOB that was eventually built could cope with only 4 aircraft at a time and merely provide refuelling. (16) These limitations precluded the Harriers of No 1 Sqn being based ashore under the full command and control of Gen Moore, as had been hoped. Instead they remained based on the carriers under Adm Woodward.

Trowern
Interview

1.20 Trowern, however, was required to stay alongside Gen Moore aboard his command ship, FEARLESS, to which they had transferred on 29 May, and from where he attempted to carry out the tasking of OAS, while fitting in visits to the FOB and surveying other possible Harrier sites. Working on his own and seriously hampered by poor communications he was unable to operate efficiently; only on 11 June, when Lt Cdr Gedge was sent from INVINCIBLE to help him aboard FEARLESS, was he able to move ashore to a hilltop site from where he could communicate properly and at last provide effective Forward Air Control (FAC). Even then the fundamental weakness remained, namely that the Harriers being used in this role were not based and controlled on the spot but back on the carriers, to which all requests for air support had to be sent. While the one other wing commander with the TF - Squire - was aboard HERMES, he was as CO of No 1 Sqn quite unable to act as a staff officer at the same time as leading his squadron operationally, (17) and with hindsight there is no doubt that there should have been a third wing commander with the TF or, failing that, that Trowern himself should have been on Hermes. In the event there was an inadequate organization either for the GR3s or for the Sea Harriers when flying in close support of the land forces, and indeed, as CAS observed, no properly coordinated air offensive plan. The two wing commanders were not, in his view,

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(16) Trowern arranged for Sqn Ldr Morris, who had been aboard HERMES and was an ex-Harrier man, to go ashore to command the FOB.

(17) Squire nevertheless certainly offered advice, but this was often overruled.

Squire
Interview

senior enough to influence the Commander Task Group (CTG) and the carrier captains, and - as Hayr put it - the RN showed insufficient appreciation of tactical air power roles. (18) Among these was reconnaissance, whose importance the Air Commander frequently urged but to little effect; not only was too little reconnaissance undertaken but the results were not properly co-ordinated and passed to Northwood. The RAF view at all levels from CAS to the two wing commanders most closely involved was that the air war in the Falklands area, other than AD, was not properly organized.

Beetham Interview

ASCENSION ISLAND

1.21 The key to most of the operations for which the Air Commander was responsible was the airfield on Ascension, and here too there were problems of command and control. Unfortunately, in the early stages of the operation Ascension was not seen as having any major role beyond assisting the assembly of the TF; while the RAF would obviously help through the operations of the ATF and with its Nimrods, the island's essential function would be to provide logistic support for the RN. Consequently the command of the initial parties to be sent to the island was given to a Capt RN - Capt R McQueen - and his directive, issued on 7 April, made him answerable to the VCDS(P and L) in the MOD. This directive made it quite clear that the role of Ascension was forward logistic support, at first primarily for the RN and later for all three Services as operational plans developed; McQueen would command all British forces stationed there in logistic and administrative support roles. Not surprisingly, at that stage there was no indication that the island was likely to become a base for large-scale air operations, but what does seem strange is the decision to make Commander British Forces Support Unit (CBFSU) responsible primarily to VCDS(P & L) rather than CINCFLEET, whose operations he would be required to support. Reflecting afterwards, the Air Commander thought this was because Adm Fieldhouse preferred to let MOD organise the logistics chain, and Curtiss certainly considered it a major mistake, as did his COS.

COS 8/82
TF19 E4

Interviews with Curtiss and Chesworth

1.22 The consequences became quickly apparent when Ascension started to be built up as the major base for RAF operations, and the directive issued on 14 April to Gp Capt M F J Tinley, who took over from Wg Cdr D L Baugh (19) SRAFO on 16 April, makes clear that he was expected to serve two masters. In forwarding it CINCFLEET informed CBFSU that a marked increase in RAF aircraft and activity was imminent; hence the directive made Tinley responsible to the Air Commander for all RAF aircraft, equipment and personnel and for the conduct of all RAF air operations from Ascension (other than those of the ATF). At the same time, however, he was made answerable

151343Z Apr
18G/335/4/Ops.1
E85

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(18) That Adm Woodward was aware of the problem may be inferred from such signals as the one he sent to the Air Cdr on 28 April: "View Vulcan as force asset to be applied in coordination with all other assets - to avoid nugatory exchanges of plans it might be helpful if I had more information on Vulcan capabilities and limitations."

281750Z Apr
18G/335/4/22/
Ops.1 E62

(19) Wg Cdr Baugh, OC No 42 Sqn, based at St Mawgan, had been appointed RAF Detachment Commander for all RAF units and personnel deployed at Ascension on 7 April.

HQ STC 071825Z Apr
IG/SASO/7.1 E20

to CBFSU (and thus through him to VCDS(P & L)) for the administration of those forces. (20) TF19.1 E6

1.23 Gp Capt Price (21) found himself in the same position when he succeeded Tinley on 20 April, and two days later, prompted by the Air Commander, CINCFLEET showed some awareness of the developing problems when in a signal to MOD, HQ STC and Ascension he referred to the increasing number of operational roles being planned for an airfield whose use depended on American goodwill. Urging a re-examination of the lease arrangements, he also recommended changing the command and control so that the SRAFO would be the airfield commander, responsible to him through the Air Commander for the operation of the airfield; CBFSU would still be the overall commander of the island base, responsible to VCDS(P & L) for its administration. A note circulated by ACDS(Ops)(Adm Brown) on 3 May went even further, pointing out the major changes that had taken place in the roles of the forces deployed to Ascension, and stressing its significance as a target for the Argentines, he proposed making CBFSU responsible to CTF 317 for all purposes. In the event, however, no change was made until 18 June when the command of all British forces on the island was centralized and placed in RAF hands.(22)

221808Z Apr 18G/335/4/Ops.1 E125

TF13.3 E83

121924Z Jun 18G/335/4/Ops.2 E127

1.24 The practical effect of the failure to put Ascension entirely under Northwood's control was, in the Air Commander's view, to slow the decision-making process at the critical time when the island was being built up as the major base for RAF operations; VCDS(P & L) and his staff did not properly appreciate such practical problems as parking space, accommodation and numbers of personnel, nor could they be kept up-to-date with the quickly moving operational plans - though, as Chesworth pointed out, direct contacts between 18 Gp and sections of AMSO's staff did alleviate some of the difficulties. Price, as the man on the spot, also had no doubts about the unsatisfactory situation: in his official report to the Air Commander he said that the system of providing administrative and logistic support through the Central Staffs was "cumbersome, inefficient, and complicated the problems of coping with a rapidly developing situation". As far as he could see, the function of the TF was not properly appreciated by many of the formations which normally controlled the deployed forces, with the result that the staff on Ascension were bombarded with information demands from all quarters and the communications overloaded. (23) There should have been a single point of contact in the UK, a central clearing house that could have shielded him and his staff from much of the

Curtiss Interview

Chesworth Interview

SRAFO Report

Price Interview

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(20) Gp Capt Tinley, who had come from HQ 18 Gp, had a maritime air background, reflecting the view that the main operations to be mounted from Ascension would be by Nimrod aircraft patrolling within their normal range.

(21) Gp Capt Price was OC Marham; his appointment was prompted by the realisation that the RAF's role would now centre on the tanker force.

(22) By early May 586 of the 851 Servicemen at Ascension were from the RAF. D Admin Plans (RAF)152/4 5 May

(23) Price thought that 'MINIMIZE' had had little effect. S Pol/38/2/1.4 E58

questioning and allowed them to get on with their primary tasks. While one is bound to sympathize with these views, it is important to remember that this point of contact, to be effective, would have had to be at Northwood, where the facilities (including communications) were already inadequate for the extra staff imported to handle the operational aspects. While the case for command and control of Ascension to be centralised at Northwood was certainly very strong, it would have been very difficult to organize, particularly in the earlier stages.

1.25 One further factor must be mentioned that did not make the situation at Ascension any easier. As the Air Commander felt obliged to mention, Capt McQueen, who as CBFSU was in overall command of the base and responsible for providing the RAF with many of the facilities it needed, was out of sympathy with some of its activities. While he fully appreciated the efforts of the ATF in direct support of the TF, he had his doubts about the value of the Vulcan and Nimrod operations which, with their associated Victor tankers, caused so many extra demands to be made upon the island's limited resources. Gp Capt Price, who worked closely alongside him throughout the critical period and got on well with him personally, felt he showed little appreciation of what the RAF were trying to do; since the administrative and logistic support for the operations had to be obtained through McQueen, there were inevitable tensions. McQueen himself, writing afterwards in Naval War College Review, was openly critical of RAF manning levels: "at no stage did economy of effort, either with people or other resources, appear to feature in the light blue staff manual." He went on to accuse the RAF management of failing to delegate authority, of dividing control among many authorities, and of having no clear-cut decision-taking machinery. That such charges could be levelled publicly at the sister Service so soon afterwards supports the conclusion that at the command level the relations between the RN and the RAF on Ascension were less than ideal.

Curtiss Interview

Price Interview

October 1982 Edition

1.26 One can of course have some sympathy with McQueen, who had been sent to organize logistic support for the ships of the TF on an island with desperately few facilities, where the principal RAF role would be to support him with air transport. As he said in his "haul down report", this task had been clearly defined in his original Directive, whereas the additional RAF tasks imposed upon his resources were never properly laid down. While the airmen on the spot did their best to explain to him the importance of their radar reconnaissance, maritime surveillance and long-distance bombing roles, it must have seemed to him that the effort needed to mount these AAR-supported operations was out of all proportion to the results likely to be achieved. Maybe his RN superiors should have done more to keep him briefed - after all, the decisions to use Wideawake as a base for these operations were being taken jointly by both Services at Northwood under the overall direction of the COS - but he himself was directly responsible not to Northwood but to VCDS(P & L), whose staff were not properly in the picture either. Clearly, therefore, there was a failure of communication, which was occasioned partly by the faulty chain of command. And if McQueen was inclined to be inflexible in his views and to criticise the RAF's control system and its apparent disregard of economy of effort, this too probably stemmed from failure to understand the extreme lengths to which it had gone to improvise a series of operations that were well outside its normal training and experience. When all is said

S Pol/35/2/13 E21

and done, however, it remains unfortunate that the CBFSU did not understand the importance of what the RAF units deployed to Ascension had been ordered to do; there were strains and stresses enough without misunderstandings at the top.

EVALUATION OF THE COMMAND AND CONTROL ARRANGEMENTS

1.27 It must be apparent from the foregoing that the normal RAF pattern of command and control was not fitted to the highly unusual requirements of CORPORATE; instead a system had to be improvised as the operation unfolded and further roles were added. That it worked is a tribute to the ability of individuals to adapt themselves to a special situation and accept that a great many corners had to be cut. The extended role of ACAS(Ops) and his staff, together with the major responsibilities entrusted to HQ 18 Gp, had never been envisaged, and as a result HQ STC was not where it might have expected to be - at the centre of the action. Consequently many of the normal channels of command were by-passed and unexpected ones used instead. 18 Gp, suddenly required to control air operations in a range of roles reaching far outside its normal competence, found itself with inadequate staff and facilities, and one is bound to reflect that - should a Gp HQ ever be required to function in such a way again - there should be plans for immediate reinforcement.

1.28 Down the line, while one accepts all the practical constraints, there certainly was a need for greater air expertise with the TF in the South Atlantic, both to ensure that its limited air assets were used to the best advantage when employed other than in AD, and also to provide a proper appreciation of the capabilities of the aircraft operating from Ascension. Trowern could probably have done the job had he been with the TF earlier on and been properly used as RAF adviser. The other major mistake was to place the command of the Ascension base under VCDS(P & L), or at least not to make a switch once it became clear that the island's main role was changing. As one of the major assets of the TF, Ascension should have been under its command for all purposes.

Annex:
A. RAF Chain of Command

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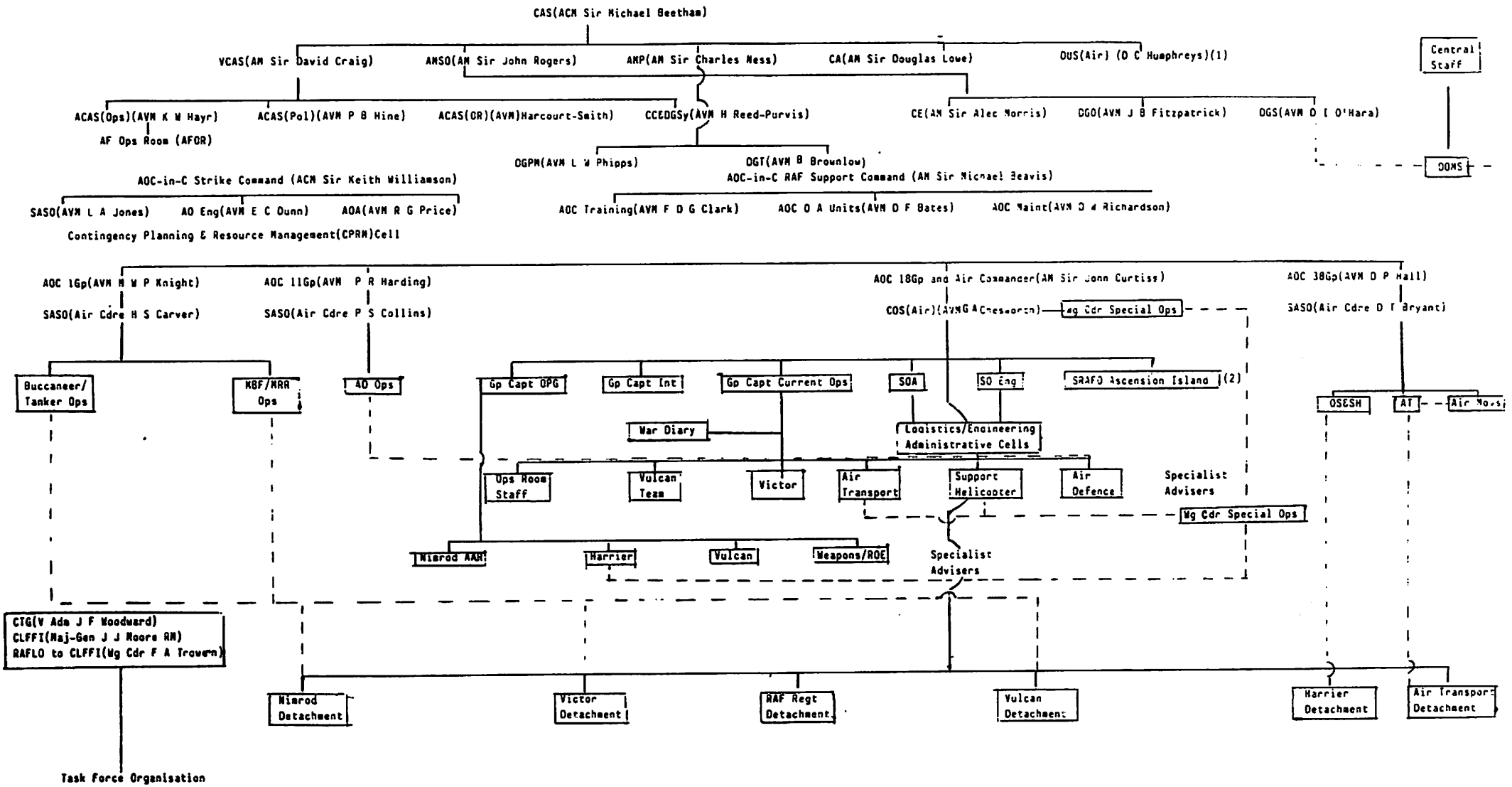
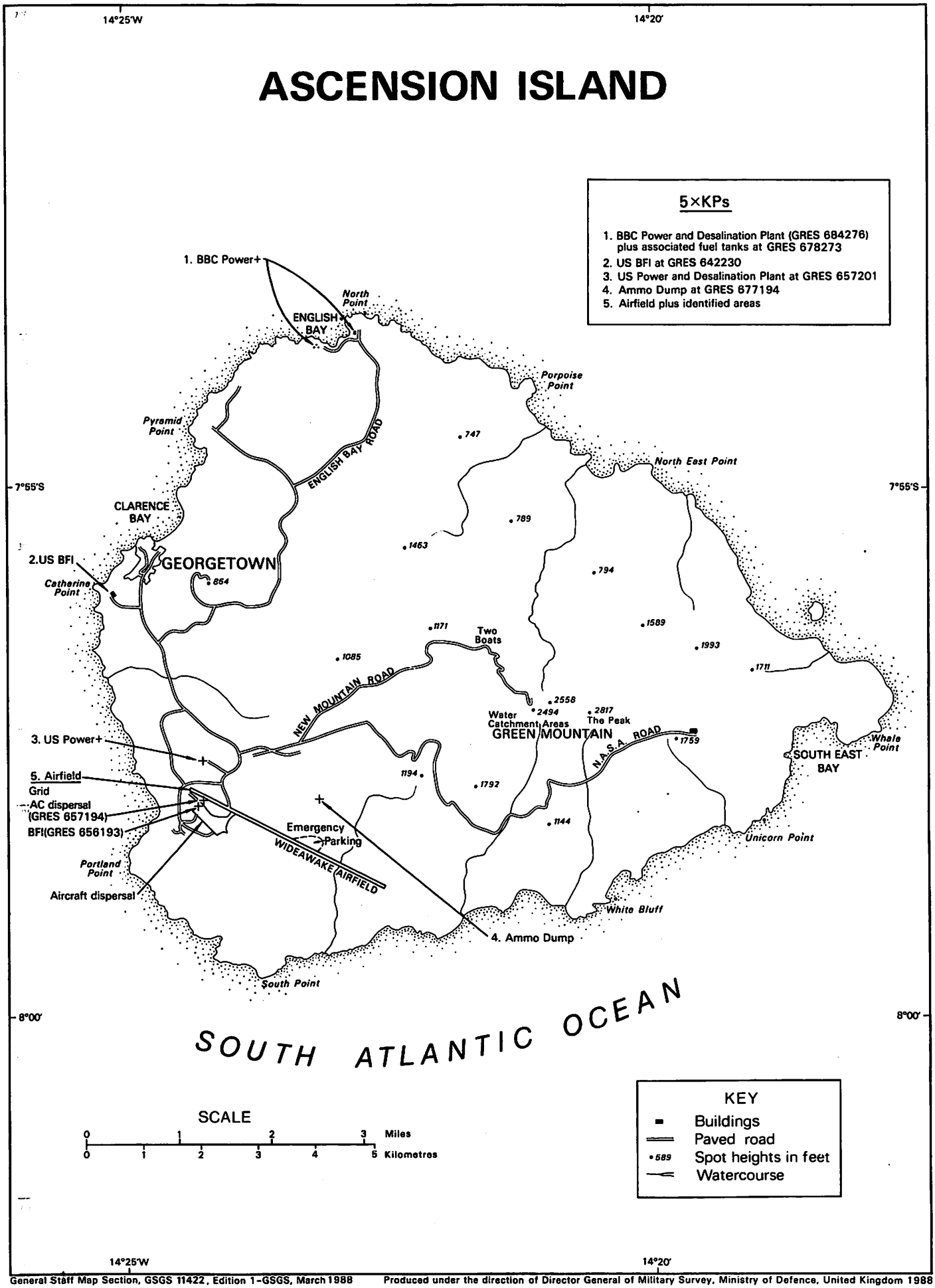
RAF CHAIN OF COMMAND

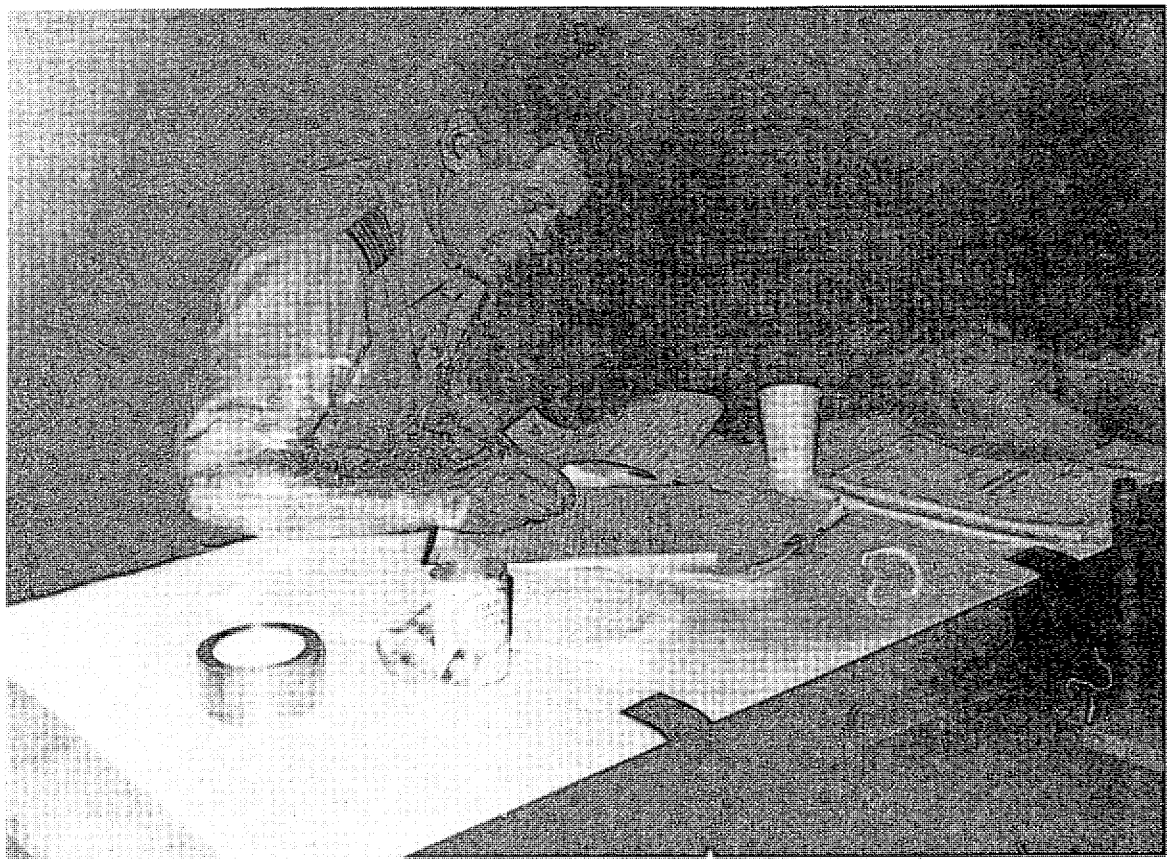


Note:
1. Of DUS(Air)'s staff, AUS(AS) (Mr John Peters) and Head of DS8 (Mr R J Harding) were most heavily involved in advising the Air Force Board.
2. SRAFO Ascension Island advised CBFSU on air matters. CBFSU was answerable to VCOS(P&L) on all matters relating to activities at the forward mounting base.

ASCENSION ISLAND



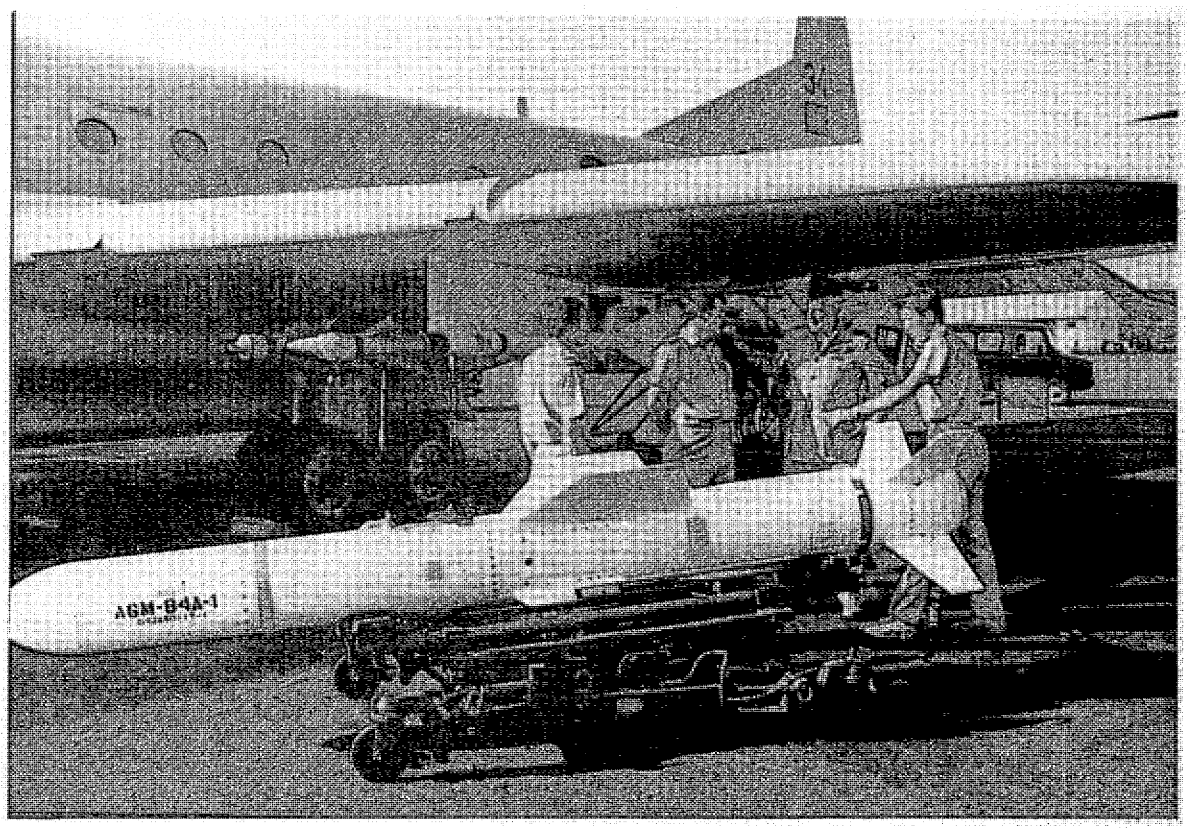
General Staff Map Section, GSGS 11422, Edition 1-GSGS, March 1988 Produced under the direction of Director General of Military Survey, Ministry of Defence, United Kingdom 1988



1.1. Gp Capt Jeremy Price, SRAFO Ascension Island, preparing yet another signal.

1.2. AVM George Chesworth and Gp Capt Jeremy Price congratulating Flt Lt Martin Withers, the Vulcan captain, after the successful BLACK BUCK 1 attack.

1.3. Wg Cdr Fred Trowern, air adviser to Gen Moore, at his corner of the Amphibious Operations Room desk aboard HMS FEARLESS.



1.4. The Air Cdr, AM Sir John Curtiss, during a post-conflict visit to Wideawake Airfield together with ground crew and well armed Nimrod.

1.5. CAS, ACM Sir Michael Beetham, visits Ascension Island 28/29 June. His PSO, Gp Capt David Cousins, is behind Gp Capt Jeremy Price together with engineering personnel.

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CHAPTER 2

THE ASCENSION ISLAND BASE

SUMMARY OF CONTENTS

ORIGINS OF WIDEAWAKE AIRFIELD

2.1 Before World War II Ascension Island had been used solely as a cable station, but on 6 February 1942 the British Government agreed to a United States request to build a trans-Atlantic staging airfield with a 6,000 ft runway. Local defence would be an American responsibility but the UK would be afforded full facilities for its use. The runway was opened on 10 July 1942 and the final UK-US agreement was signed on 13 November. Until the end of the war the airfield was used as a staging post on the route to West Africa and the Middle East, and an RAF signals unit - No 90 Signals Post - provided the necessary RAF support. After the war the American government arranged, with British consent, for Pan American Airways to operate the airfield, and on 25 June 1956 a new Anglo-American agreement was signed allowing the inclusion of Ascension and its adjacent waters in the Bahamas Long Range Proving Ground for guided missiles testing. On 29 August 1962 this agreement was revised to allow its use at 24 hours' notice for one aircraft, and 72 hours' for two or more. In 1965 the Americans extended the runway to 10,000 ft, by which time the airfield featured as a staging point on the Cable Route, a strategic transport route from the UK to the Far East that might be activated in emergency but in practice was never required.

2.2 Some 34 square miles in size, the island consisted largely of volcanic rubble dominated by one mountain of 2800 feet, its capping of grass and shrubs giving it the name Green Mountain. In

1982 the island was the home of a National Aeronautics and Space Administration (NASA) tracking station, a BBC transmitter for Africa and South America and a centre for Cable and Wireless communication links. The population of 1100 comprised the technical staffs and a labour force recruited from St Helena. The island had no significant water resources and 2 desalination plants produced a maximum of 35,000 gallons of fresh water daily, a quantity which was to restrict the number of people the island could support (1).

USE OF THE AIRFIELD DURING OPERATION CORPORATE

2.3 As soon as the possibility of despatching a Task Force (TF) to the Falkland Islands was broached, the significance of Ascension as a naval logistics base was appreciated. Roughly half-way between the UK and the Falklands (2), its airfield, equipped with a 10,000 ft runway and virtually nothing else (3), was the furthest point which British aircraft could reach in support, assuming that facilities could not be negotiated in South America. Since the Anglo-American agreement governing the airfield allowed for increased British use in emergency, negotiations for this were quickly put in train, and on 1 April the Cabinet ordered certain advance elements to be flown to Ascension for transfer to shipping for the remainder of the journey to the Falklands area. The Air Transport Force (ATF) of No 38 Gp began its airlift from Lyneham via Gibraltar on 2 April, and by dusk on 4 April the first eight Hercules had arrived, their loads including elements of the Tactical Supply Wing (TSW) and Tactical Communications Wing (TCW), and three Lynx helicopters. To assist the transfer of men and equipment from shore to ship, it was decided to fly several RN Wessex helicopters to the island, for which purpose Belfast aircraft (formerly RAF, but at that time in civil ownership) were chartered; the first two Belfast sorties took place on 4 and 5 April.

2.4 Thus began an airlift operation between the UK and Ascension that was to continue throughout CORPORATE and afterwards. By 14 June, the date of the Argentine surrender, 376 Hercules, 121 VC10, 14 Belfast and 2 Boeing 707 sorties had been flown, conveying 5102 passengers, 5716 tons of freight and 23 helicopters. On average, therefore, 7 transport aircraft arrived each day, with peak traffic considerably higher at periods of particular activity, such as when the Victor tanker force was deploying and the local defences were being strengthened. Their

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(1) An article by Capt McQueen RN in Naval Review (Oct 82) contains useful general information about the island.

(2) Ascension is 3491 nm (4020 sm) from Ushant which traditionally marks the departure point for ships leaving British waters on passage to the South Atlantic: the Falklands lie 3415 nm (3932 sm) from Ascension. Aircraft flying direct to Ascension from Lyneham, avoiding any contact with land en route, had to cover some 3888 nm (4474 sm).

(3) There was no parallel taxiway, all the surfaces were tarmac (which caused problems with fuel leaks), and there was no engine-running facility or bay support.

TF41 E73

role to begin with was to help establish Ascension as the forward mounting base for the TF; here the ships would call for replenishment, to tranship equipment, and to land their embarked troops for training, and the air link from the UK enabled personnel, munitions, mail and urgent supplies to be flown out to join them. This supportive role for the TF continued throughout the operation, but a second role - not foreseen initially - was soon added, which increased greatly the load upon the ATF and the island's facilities (4). This was the use of the airfield as a base for land-based aircraft providing direct assistance to the TF.

2.5 The first aircraft to operate from Ascension, two Nimrods, arrived on 6 April; from then on up to four Nimrods were based there throughout the operation, initially providing local maritime surveillance and search and rescue, later also carrying out long-range missions. Very soon it was realised that more large aircraft would be needed and that one of the main constraints upon their operations would be parking space. A survey carried out at MOD's request on 15 April reported that up to 12 four-jet aircraft or their equivalents could be accommodated on the available ramps, but on 23 April the Senior RAF Officer (SRAFO) reported that the capacity was 20 and later he increased the estimate to 24; in the event some 23 such aircraft were based there on 20 May and 24 on 31 May. The next arrivals were 9 Victor K2s on 18 and 19 April, initially to support the Victor Maritime Radar Reconnaissance (MRR) sorties in the area round South Georgia. Thereafter the Victor tanker force was built up to a peak of 14 by 29 April, partly to provide Air to Air Refuelling (AAR) for the RN and RAF Harriers deploying from the UK to join ATLANTIC CONVEYOR, partly to support the first Vulcan attacks on the runway at Port Stanley (Operation BLACK BUCK). To limit the pressure on space at Ascension, the Vulcans themselves were based there only briefly before and after their bombing sorties, and at times one of the Nimrods was held back in reserve at Gibraltar. Then, to make things even more difficult, on 9 May the first AAR Hercules arrived, soon to be followed by another. From then on, with the tanker force increased to a maximum of 16 aircraft, Nimrods, Hercules and occasionally Vulcans all needed AAR for their operations from Ascension. Harriers deploying to the TF were a further commitment. The scale of effort entailed can be judged from the fact that between 20 April and 18 June 65 Victor-supported operations were mounted entailing over 400 Victor sorties. As the Air Commander commented on 17 May, options and rates of effort for long-range operations were mainly being conditioned by the availability of air assets, with pan loading at Ascension dictating the total mix of aircraft.

14160Z Apr TF13.1
E103 15 April

D/AF Ops/TF14
E69

231050Z Apr
18G/335/4/Ops.1
E128

Interview with SRAFO

Victor Detachment
Report, Annexes A, B

171337Z May TF13.5
E14

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(4) Even though Ascension had been used occasionally by the RAF for many years (a Nimrod detachment had, for example, taken place in 1979/80), little information was available on its facilities; since no on-site survey had been carried out before the main RAF units arrived their planning was that much more difficult. Surprisingly, a report prepared by the Royal Engineers (RE) in early April came to light later; had this been widely distributed many problems could have been averted.

Victor Detachment
Report/Interview
with SRAFO

Report by SRAFO
para 7

AIRCRAFT PARKING SPACE

2.6 Thus the first constraint at Ascension was parking and manoeuvring space for the large aircraft, a problem made greater by the three Air Defence (AD) Harriers (later Phantoms) that were also based there from the end of April, and by the considerable number of RN helicopters, most there temporarily but usually four permanently. According to Commander British Forces Support Unit (CBFSU), Capt McQueen, the normal complement was 2 Wessex, 1 Sea King and 1 Chinook - particularly useful when heavy lift was required over a long distance. The very large number of helicopter movements (5), many of them with underslung loads which presented a hazard to the parked aircraft, made it necessary to try to keep rotary and fixed-wing operations as separate as possible; however, the presence of deep volcanic rubble everywhere other than the runway and aircraft dispersal prevented their operation from other locations.

191405Z TF13.2 E27
262230Z TF13.3 E19

2.7 To enable the maximum use to be made of the one parking area, a special planning cell was set up, both to organize the parking of the operational aircraft so that they were available when needed, and to arrange for the handling of the RAF transport aircraft and the USAF C141s and occasional C5s which continued to make their usual supply runs to Wideawake. The pan had to be managed like a carrier flight deck, and while the Americans generally accepted the manoeuvring it was essential to tell them first. As illustrations of the difficulties may be cited HQ 18 Gp's request on 23 April to minimize the time that the Harriers would need to be on the ground prior to loading on ATLANTIC CONVEYOR, the Air Commander's request on 17 May for the twice-weekly USAF C141s to reduce their time on the ground to the absolute minimum, and his plea a week before for some of their test-range missions to be cancelled. The American Base Commander had told Gp Capt Price that the USAF would shortly be deploying three of its own aircraft to Ascension in connection with a missile launch from Cape Canaveral. Price and the RAF detachment commanders were appalled at the prospects for their already grossly overloaded parking area and an urgent request had to be made to the Air Commander and MOD for representations on the diplomatic net. Fortunately these were successful.

171755Z May TF13.5 E18
TF13.4 E28 8 May

2.8 Given the ever-increasing pressure on parking space and the constraints it imposed on all the planning, it is hardly surprising that on 25 May the Air Commander submitted an urgent request for an extension of the parking area. Since the only quick solution, according to Director of Quartering (D of Q(RAF)), would be to use matting and all available American aluminium matting was already committed to the Falklands, Class 60 matting would have to be withdrawn from UK operational airfields, and by 6 June a feasibility study had been conducted to see how suitable this might be. Clearly, however, it was impracticable to take any effective action in the timescale of the actual Falklands operation and the plan for a matting membrane was shelved.

252017Z May TF13.5 E47
271035Z May TF13.5 E52
TF13.6 E25 15 Jun
SRAFO Interview

(5) It was largely these movements that led to the claim made on 18 April that Wideawake had become the busiest airfield in the world.

SUPPLY OF AVIATION FUEL

2.9 Aviation fuel, which is discussed in more detail in Ch 9, was another major anxiety. As the Chiefs of Staff (COS) were told on 5 April when their attention was first drawn to this problem, supply of bulk fuel to the American-owned airfield was the responsibility of the USA, so RAF operations would depend totally on their goodwill and their ability to make sufficient available. Assistant Chief of the Air Staff (Operations) (ACAS (Ops)) had already asked what stocks there were and been told that, while sufficient fuel must be retained for the USAF's minimum requirements, some could be provided and a replenishment tanker was due on 8 April with 1,300,000 US gallons, 600,000 of which could be used by the RAF. Fortunately at this stage the main requirement was limited to 2 Nimrods and the transport aircraft, and by topping up at the staging airfields the amount of fuel needed at Ascension could be limited. Indeed throughout the operation it was usually arranged that the VC10s and UK-based Hercules would not need to refuel on the island.

042302Z Apr TF13.1 E7

052100Z Apr TF 13.1 E15

2.10 Once planning began for the deployment of Victor tankers, however, it was clear that much more fuel would be needed; the briefing given to ACAS(Ops) on 10 April showed that, whereas the existing stocks would permit 3 Nimrod and 1 Hercules sorties per day for 43 days, the addition of 8 Victor sorties per day would exhaust them in 6 or 7 days. Since the next bulk fuel shipment was not due until 10 May the situation was clearly critical, and the British Embassy in Washington was asked to make urgent representations with the State Department. Fortunately it was quickly arranged for the shipment's arrival date to be advanced to 24 April, but even this was bound to leave the situation very tight and on 12 April the Embassy was asked to try to persuade the Americans to release more fuel from their own reserve on the island. This too was agreed, and when Chief of the Air Staff (CAS) was briefed on the situation on 14 April he was told that 830,000 gallons were available, enough to last until 16 May unless the Victors were brought in. If, however, projected Victor tasks were included from 21 April, supplies could run out on the 27th, only three days after re-supply of 1,500,000 gallons was due.

TF13.1 E80

111330Z Apr TF13.1 E79

120226Z Apr TF13.1 E87

150150Z Apr TF13.1 E106

2.11 Anxious watch was kept on the dwindling supplies over the next few days, and particularly after the arrival of the Victors on 18/19 April; on 19 April stocks were reported as 700,000 gallons, on 21 April as 530,000, and on 25 April - when the re-supply tanker began to unload - as 120,000. Meanwhile on 19 April CBFSU had warned that even when the tanker began to unload it would take three more days before the fuel settled, was tested and could be supplied from the bulk fuel installation. A further problem was the shortage of tanks and refuellers, and MOD had urgently to supply additional equipment and provide precise instructions on how to organize the refuelling. The very tight situation was relieved somewhat when on 24 April the Americans agreed to make all fuel on Ascension, including their own reserve, available if necessary, but it had been touch and go.

191500Z Apr TF13.2 E35

201120Z Apr TF13.2 E33

2.12 On 26 April the planners believed that at least this particular problem was behind them, for the 1,490,000 gallons now available would suffice on present plans until 10 May, 4 days after a 4 million gallon delivery (notified on 21 April) was due.

212142Z Apr TF13.2 E41

On 27 April, however, this particular tanker lost a boiler and had to turn back and it was predicted that its replacement would not arrive until 8 May; careful management would therefore remain essential. In the event the replacement tanker arrived on 7 May, after which the quantity of aviation fuel ceased to be a major constraint - even though the next tanker was also delayed, this time owing to a diversion in order to collect urgently required Motor Transport (MT) fuel.

271627Z Apr TF13.3 E23

111928Z May TF13.4 E62

2.13 Fuel handling and storage, however, still presented difficulty. The main fuel farm, with a capacity of 2¼ million US gallons, was at Georgetown, 3 miles from the airfield, and while there was a small storage depot at the airhead this was firmly reserved by the Americans for their own use. Consequently all fuel needed at Wideawake had to be moved in bowsers, of which the Americans had 5 and the RAF provided 10. Only one bowser could be filled at a time (and not when fuel was being pumped ashore from the tankers) and since the round trip to the airhead sometimes took 60 minutes along a road that was steadily breaking up and it took three bowsers to refuel one Victor there was obviously a major planning constraint, especially for operations such as BLACK BUCK. To ease the situation 6 pillow tanks arrived for the airhead on 30 April and 51 Field Sqn, RE installed a 6-inch pipeline in the remarkably short space of 10 days; this was in use by 11 May and enabled up to 300,000 gallons per day to be pumped through. Even then, simultaneous pumping in and out of the main fuel farm was impossible until the Americans divided it into two, and much of the fuel had to remain aboard the tankers to be pumped ashore as required. Moreover, once ashore, the fuel still needed time to settle - 24 hours if the tanks were full.

SRAFO interview

PERSONNEL

2.14 A further major problem was the shortage of accommodation and other facilities for the increasing number of men required on the island. The seriousness of the situation was recognized as early as 8 April, when CINCFLEET advised Ministry of Defence (MOD) that it was essential to exert central and positive control over all movements of service personnel and material into and out of Ascension; there was increasing concern on the island over the number of arrivals and the strain on local resources. Consequently an Ascension Support Cell had been set up at his HQ and MOD was asked to direct that bids for all service movements be processed through it. The RAF contingent by this time comprised 113 personnel: in addition to the Nimrod air and ground crew there was a Mobile Air Movements Squadron (MAMS) detachment from 38 Gp to unload the transport aircraft (6 personnel had arrived on the first Hercules and two additional teams came later, making possible a 3-shift system - 12 hours on/24 hours off), a TSW party of 7 to provide a refuelling facility, a 30-strong TCW detachment, a Mobile Meteorological Unit (MMU), and a 3-man contingent from the Mobile Catering Support Unit (MCSU). Details of the work of these units are contained in Chapters 9 to 11. With reinforcement, especially of the TCW in order to develop the air traffic control facilities, numbers rose to 184 by 16 April, at which point the arrival of the Victor tanker crews and their ground support raised the size of the RAF contingent to 436 on 19 April. Hardly surprisingly a widely distributed MOD signal on

082201Z Apr TF13.1 E66

that date urged that only essential personnel be sent to Ascension; to make the point it observed that a just-arrived padre had recently been returned straight away to the UK. 191650Z Apr TF13.2 E31

2.15 The numbers of personnel continued to rise as better communication facilities were provided (6) and more types of aircraft including the Vulcan deployed, and on 2 May - when CBFSU agreed that a defensive force was needed - he felt obliged to express his concern at the further increase in numbers it would entail. In this he was fully supported by SRAFO. Nevertheless, the necessity of defending the island resulted in the number of RAF personnel rising to 822 by 7 May, bringing the total number of Service personnel to 1017, and CBFSU stressed to Northwood that all accommodation was taken and he must be consulted before any proposals for further deployments were implemented: nobody must come unless they had a job to do. In the event some reductions now proved possible and by 20 May the RAF contingent had reduced to 767. 021800Z May TF13.3 E82 070930Z May 18G/335/4/5/3 E27

ACCOMMODATION

2.16 While every effort was being made to limit the numbers of men on the island, much work was done to alleviate the accommodation shortage. To begin with, as Assistant Under Secretary (Defence Staff) AUS (DS) was briefed on 3 April, the facilities were listed as: D Ops Staff 7 Oct TF13.1 E5

a. The USAF base where 2 huts, normally reserved for RAF aircrew, could house 27 men.

b. English Bay, with 2 SECO-type huts for 70 men altogether and space for 450 in tents.

c. Donkey Plain, where a tented camp site could possibly take 600.

d. Two Boats, with 2 barrack blocks for a total of 96.

Invitably, therefore, most people had to live in tents; the initial Nimrod detachment started off at English Bay, 7 miles from the airfield, where the first field kitchen was set up by the MCSU on 8 April. A week later they moved to Two Boats, in the centre of the island and 5 miles from the airfield, which became the main RAF encampment. With the arrival of the RE on 25 April work began on a wide range of measures to improve such things as the

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(6) Alternative communication channels, which were either installed at the start of CORPORATE or introduced as the operation progressed, were Defence Secure Speech System (DSSS), Air Staff Management Aid (ASMA) and the Supply Computer Link. The supply link significantly reduced the signal traffic generated and while DSSS and ASMA should have provided similar benefit both systems were unreliable, suffering from frequent and extended down times. Nevertheless without these systems communications between users in the UK and Ascension and particularly those connected with aircraft operations would have been severely restricted. TF41/1.2 E57 151325Z May E68

plumbing, the electricity supply, the roads and of course the technical facilities, but only for the aircrew was it possible to provide anything better than tents.

2.17 Some of them, as CBFSU pointed out, were flying sorties of over 24 hours and needed undisturbed rest, so United States Transit Aircrew Quarters were pressed into service; despite strong disapproval by the Americans, to whom these facilities were sub-standard, three and at times four aircrew were allotted to each twin-bedded room. This overcrowding was slightly relieved when three rented bungalows were acquired, and in early June the leasing of temporary Portakabins brought more substantial improvement; for most of the time during the CORPORATE operations, however, the aircrews were unable to sleep properly owing to constant disturbance and the lack of air-conditioning, and it is remarkable tribute to them that no incidents occurred as a direct result of crew fatigue.

McQueen article

Victor Detachment Report

2.18 The problems of accommodation, not to mention communication, were well illustrated in a strongly worded exchange of signals in the middle of May; this started with the Air Commander complaining to Vice Chief of the Defence Staff (Personnel and Logistics) (VCDS (P&L)) that he was unable to deploy 10 more aircrew because there was no more accommodation suitable for those undertaking long-range sorties. Despite repeated assurances that the accommodation, water and feeding problems had been overcome, the fact was that his operational flexibility was being constrained. Replying two days later VCDS (P&L) disagreed; had the Air Commander's staff checked with him they would have been told that the situation had been eased by the acquisition of 6 Portakabins and also the rented bungalows. The Air Commander quickly pointed out that his complaint had stemmed from SRAFO's request to defer the deployment of 2 further Victor crews, and that the Portakabins were still not ready; while the bungalows were now enabling him to send the extra aircrew, he remained most concerned about the wider problems: "Throughout CORPORATE the constraints on accommodation in general, not just aircrew, have been continuously and repeatedly voiced by CBFSU coupled with resistance, deferral, reduction and return of many intended for key use on Ascension, and this has been a constraint on my ability to meet all the possible options." It followed that he strongly supported a proposal now being mooted to acquire a 500-man accommodation module.

1522072 May TF13.5 E10

170920Z May TF13.5 E12

182057Z May TF13.5 E25

2.19 This proposal had been under discussion between London and Washington since 14 May, when the British Defence Staff (BDS) in Washington had told MOD that a 750-man module could be moved in immediately and be ready for use within 7-10 days, and in support of his plea the Air Commander stressed that the module would relieve the current aircrew congestion, permit short-notice reinforcements if needed, cover the American needs, provide for some of the groundcrew, and meet the inevitable longer-term requirements of the intermediate base. The formal request for a 500-man self-contained and air-conditioned module was sent to the American authorities on 20 May, together with a promise to pay the costs of the 14 x C141 loads and the setting-up. At the same time the Air Commander reminded MOD to ensure that the C141 sorties did not interfere with the air operations. After further negotiations

141933Z May TF47.1 E79

201930Z May TF13.5 E34

201545Z May TF47.2 E27

201429Z May TF47.2 E28

the Americans agreed on 24 May to supply a module for 250 personnel, entailing 11 x C141 sorties. The resultant complex quickly became known as Concertina City.

241920Z May TF47.2 E52

OTHER CONSTRAINTS

2.20 While there were many other constraints affecting the personnel based on Ascension, most of these are described in some detail elsewhere in this narrative (Chapters 9 to 11), and need be mentioned only briefly here.

a. **Water Supply.** Perhaps the greatest such constraint was that all fresh water had to be obtained by distillation; two desalination plants existed, one British and one American, but their capacity was far too small for the greatly increased demand and rationing - though attempted - did not work. Moreover, failure of one of these plants would have been a severe setback. A request for the installation of an additional plant was therefore made on 23 April, and it was functioning by 11 May. Yet another plant was brought in later.

Article in "Royal Engineers in the Falklands"

231429Z Apr TF13.2 E65

b. **Medical.** The only permanent medical facilities existing on the island were the Georgetown cottage hospital and a dispensary run by Pan American; while they offered all cooperation they could not possibly cope with the needs of the large influx of Servicemen, all suddenly transported to a dusty volcanic island and expected to work extremely long hours in temperatures up to 85°F. Surprisingly, the first proper Services medical facility to arrive came out with the Victor detachment in mid-April, and its leader, Sqn Ldr R F Dorling, the Senior Medical Officer (SMO) at Marham, found himself having to deal with everybody's health problems. One of his main concerns, of course, was the fitness of the aircrew, and this aspect was emphasized in a report by the Command Flight Medical Officer (CFMO) to the Principal Medical Officer (PMO) at HQ Strike Command (HQSTC) towards the end of May. The long hours and many other stresses were in his view seriously affecting the crews of the Nimrods, Victors and special Hercules, and the PMO reacted by urging an increase in the manning levels; in his view the extra accommodation could easily be provided and the water supply was not critical. No such action was however taken, and the local medical officer continued to do his best on the spot, not least by plentiful issues of sleeping tablets. On the whole the aircrew coped remarkably well, though a Nimrod air engineer did have to be repatriated following a nervous breakdown. (Medical aspects are discussed more fully in Chapter 11.)

CFMO report to PMO STC 18G/335/4/6/4 E44

Comment by Wg Cdr Emmerson

c. **Motor Transport.** Shortage of motor transport, especially in the early stages, was a major hindrance. The Kinloss detachment, one of the first to arrive, had to hire transport from Pan American, and Wg Cdr Emmerson used a co-pilot's imprest to buy a mini for $400. The Vulcan detachment took a lightweight bus on its first C130, only to discover later that it had been instructed

Report entitled "Kinloss and Corporate"

not to; the bus turned out to be indispensable. Similar difficulties faced the other units and to overcome them was a major challenge to individual initiative. Waddington Diary

d. **Working Accommodation.** As with living accommodation, working facilities were generally very basic. The Nimrod detachment managed to find a small air-conditioned unit for its Operations Room at the US administrative site nearly 5 miles away, but the Victor detachment had to be satisfied with a tented complex adjacent to the aircraft parking area. The 'station' Operations Room on the airfield was initially one room in a small hangar and was later transferred to tents when they became available - later still it moved into one of 3 newly-arrived Portakabins. The distances between the various sites did not make for ease of coordination. Comments by Wg Cdr Emmerson

e. **Weapons Storage.** Another facility lacking at Wideawake was an ammunition dump, and to begin with weapons were parked literally anywhere; a signal from Ascension on 12 April reported the concern of the US Base Commander about weapons storage and said that a site was being sought. The problem was aggravated when the Vulcans arrived with 1000 lb bombs. When it was stated that 42 of these were held, it was then proposed that a total stockpile of 155 be created, together with 55 x BL 755 for the Harriers. 122256Z Apr TF13.1 E104 TF41/1.2 E35

RELATIONS WITH THE AMERICANS

2.21 Underlying all these problems were the practical difficulties of operating from an American base. Though commanded by a Lt Col USAF (Bob Bryden) answerable to Patrick Air Force Base (AFB) and thence the Pentagon, responsibility for its day-to-day running rested with Pan American, and the Americans made it clear from the start that all British activities on the airfield would require their prior approval; it was, after all, manned to provide up to a maximum of only 285 aircraft movements per year. The rapid build-up and intensity of operations took them very much by surprise, and it was often impossible - partly on security grounds, partly because of rapidly changing priorities - to provide the statutory 72 hours' notice. As a civilian organization that was not at war they were, moreover, reluctant to accept certain of the necessary procedures (7). In efforts to ease the situation there was a steady flow of signals between MOD and the BDS who not only handled many of the bids for American assistance but also tried to keep them in the picture and explain the purposes of the RAF's various activities. On 11 April, for example, when passing on an urgent request for assistance with aviation fuel, MOD also asked the Embassy to try to set the State Department's minds at rest on the RAF's use of Ascension, commenting that at local level satisfactory arrangements were being made. Report by SRAFO McQueen article 111330Z Apr TF13.1 E79

(7) For example, hot refuelling had to be used for helicopters operating from ship to shore; this was anathema to the Americans who had to be persuaded it was not an unsafe procedure. Interview with SRAFO

2.22 Once the American government had come down firmly on the British side the position improved, but the local officials always needed careful handling and SRAFO had at times to ask the Air Commander to intercede at high level. The most striking example of this arose from the decision to use the Vulcan. As explained in more detail in Chapter 5, the arrival of the Victors on 18/19 April prompted the Base Commander to ask SRAFO if plans existed to deploy Vulcans, since in his view such action would be outside the terms of the UK/US agreement. His concern was promptly relayed to HQ 18 Gp. A further signal to CINCFLEET reiterated these anxieties, pointing out the possible implications for the civilian employees of Pan American, but already the Foreign and Commonweath Office (FCO) had asked the Embassy to obtain confirmation from the State Department that the use of the Vulcan would not contravene the 1962 Agreement. Three days later CINCFLEET was told that the Americans saw no reason for any problem in this respect and the Base Commander's fears were set at rest.

212200Z Apr TF13.2 E47

221629Z Apr TF13.2 E64

251029Z Apr TF13.2 E74

2.23 Overall, however, it has to be said that considering all the circumstances the Americans were very helpful, with an enormous amount of administrative support of all kinds being willingly and cheerfully given. Certainly the Air Commander had no complaint; indeed both he and his COS thought Col Bryden did a superb job in a very difficult situation.

Interviews with Curtiss and Chesworth

RELATIONS WITH THE ISLANDERS

2.24 The local island community, none of them indigenous, were also affected by the influx of military personnel. Initially there was a warm and generous welcome, but gradually, as more and more demands were made on the island's limited resources, some friction developed and SRAFO felt more attention should have been given to alleviating the pressure on the local population.

Report by SRAFO

CONTROL OF INFORMATION

2.25 Right at the start of the operation it was decided that the press would not be allowed ashore on Ascension and with the cooperation of the FCO the normal lines of communication with the outside world were closed. One of the reasons for this, as a signal from the FCO to the MOD on 6 April indicated, was to provide the maximum degree of security so as to ensure continuing American co-operation. While stating that private charter flights had been banned it went on however to observe that the Administrator could not stop amateur photographers and some information was bound to leak out through radio hams and private telephone calls (8). In practice very little did emerge and, as the operation got underway amid much publicity from the reporters embarked in the TF, there was understandable disappointment in some RAF circles that their increasing contribution at the Ascension base was virtually unrecognized in the world at large. Nevertheless, as Vice Chief of the Air Staff (VCAS) stressed on 21 April, the success of the air operations was more important

061130Z Apr TF13.1 E36

211245Z Apr TF13.2 E46

(8) Civil links to the island were in fact suspended after interception of a telephone call to St Helena which suggested that sensitive information might have been compromised.

Comment by Wg Cdr Emmerson

than media coverage and the embargo on the official release of information about air activities at Ascension must continue; the media editors had therefore been reminded of their sensitivity. TF13.2 E46

2.26 The transfer of Argentine prisoners-of-war on the night of 13/14 May also had to be carefully controlled. These prisoners, taken during the capture of South Georgia, had to be moved by helicopter from TIDESPRING and ANTELOPE to the Martinair DC10 that was to return them to South America. While they were being moved across the airfield by coach a number of suitably positioned vehicles with headlights on provided a light screen to conceal from their gaze all the military aircraft other than the helicopters and a Hercules. Before emplaning the prisoners were checked, identified and photographed under the auspices of the International Committee of the Red Cross. 13/14 May 18G/335/4/5/3 E102

SECURITY OF THE BASE

2.27 As more and more British assets were concentrated on the island and its significance for the support of the total operation increased there was growing concern about its security. As early as 8 April CINCFLEET requested extra maritime patrol cover to deal with the possible threat to shipping from Argentine submarines operating off the island, and on 17 April the local commander expressed concern that the concentration of operational forces provided Argentina with an attractive, if remote target and requested an assessment of the threat; 'negligible' was the MOD response on the next day. It was not, however, until 26 April, when a Nimrod spotted the Argentine merchant ship RIO DE LA PLATA loitering in the vicinity of Ascension, that the possibility of operations by Argentine Special Forces (SF) against land installations was first considered. HQ 38 Gp temporarily suspended movements to the island, but MOD soon decided that such operations were extremely unlikely. SRAFO, too, thought an attack most improbable: he could hardly see the Argentines bombing an American facility, particularly since they were looking to the Americans to moderate British policy. The Air Commander, on the other hand, was very concerned - had he been an Argentine he says he would have had a go - and on 28 April the COS discussed the possible threat in the light of a report from BDS Washington, and instructed Deputy Chief of the Defence Staff (Intelligence) (DCDS(I)) to prepare an assessment and ACDS(Ops) to recommend defensive measures. 172002Z Apr 18G/335/4.1 E99 Interview with SRAFO Curtiss Interview BDS Signal 272100Z

2.28 The threat assessment mentioned two indications, the sighting of the RIO DE LA PLATA and a possible covert attack using a Boeing 707 aircraft. It judged that Argentine attacks on the airfield, parked aircraft, water or power supplies, or fuel could have serious consequences, would not be unduly damaging to them politically, and could have propaganda value. Such attacks could be mounted by sea - using either SF or submarine - or by air. Seaborne attack was thought unlikely, as was air attack by combat aircraft, since unless staging rights could be negotiated none were in range. The most likely form of attack would be by using civil or military airliners either to drop paratroops or to land a commando-type force. DCDS(I)26 28 Apr 18G/335/4/5/3 E3

2.29 This assessment was considered by the COS on 29 April; agreeing that the possibility of attack must be recognized, they indicated that Early-Warning (EW) radar and troops for ground defence would probably be needed, and that the responsibility for local defence must lie with CBFSU (9). The next day ACDS (Ops) informed them that a small team was being sent to assess the defence requirements; meanwhile small arms for 400 servicemen were being despatched, AD would remain available from HM Ships until 5 May, and an early warning radar detachment was at 48 hours' readiness. The survey was completed on 2 May and the detailed report signalled on 3 May. This identified the key points as the BBC and US power and desalination plants, the fuel installations, the ammunition dump, and the airfield and aircraft. To defend them it recommended an Air Defence Centre (ADC) provided by a Wing HQ of the RAF Regiment with its communications, daily maritime surveillance, a guard ship, an early warning radar and a stand-by Harrier. Summarizing this report to the COS on 4 May, ACDS(Ops) drew attention to the fact that the 3 Harriers now on the island were reserves for the TF, and should they be needed there were no plans to replace them. The COS nevertheless agreed to retain them for AD, and also that a Wg HQ and one flt of 15 Sqn RAF (Regt) should be despatched as soon as possible. The Regt personnel were flown to the island between 5 and 7 May, and a week later the full defence plan drawn up by Wg Cdr T T Wallis, the Local Defence Commander (LDC), was issued. (The RAF Regiment aspects are described in more detail in Ch 8.)

TF13.3 E44
30 Apr
TF13.3 E56
30 Apr
031800Z May
18G/335/4/5/3 E7
TF53.1 E10
TF53.1 E24
Operation Order 1/82
18G/335/4/5/3 E120

2.30 The COS also agreed to send one S259 air defence radar (10), whose deployment was ordered on 4 May, and CBFSU was advised to site it on top of Green Mountain, delivering it there by helicopter. There was some concern about the detection ranges it would provide; on 5 May the COS were told by ACDS(Ops) that it would provide high cover up to 150 nm radius and low cover to 75 nm, but that surface targets would not be detectable within 15 nm of the radar head. A suggestion to deploy a Type 17 Army radar to fill this gap was not accepted, since such radars were unreliable and the threat was not sufficiently serious.

041217Z
TF53.1 E15
COS 41st Mtg/82
TF53.1 E24

2.31 Much more worrying were the limitations of the Harriers for AD (11). Not only were there only two pilots available (at least three more were needed to guarantee one aircraft at five-minute readiness all the time), but they lacked training in this role, especially for night operations. (See Chapter 7 para 28.) On 7 May, UK Regional Air Operations Centre (UKRAOC) signalled to Commander Task Force (CTF) their concern about the use of Harriers for night defence: their pilots were being required to fly single-seat aircraft in an unfamiliar role, and consideration ought to be given to replacing them with specialist AD aircraft

071155Z May
TF53.1 E34

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(9) CBFSU's directive concerning the defence of the island was signalled to him on 4 May.

041520Z May
TF53.1 E22

(10) The 15-strong detachment was commanded by Sqn Ldr R K Bowler, and the radar was reported operational on 11 May.

110745Z May
335/4/5/3 E13 & 53

(11) The outline plan for the AD of Ascension was set out in a paper signed by the Air Commander on 9 May.

bearing in mind proposals to ship further Harriers south. The shortage of Harrier pilots was soon remedied, and a local AD commander (Wg Cdr J B Thornton) was appointed with effect from 8 May. (His directive (E31 on 18G/335/4/5/3/Ops) is at Appendix 1.)

071700Z May 18G/335/4/5/3 E26

2.32 Not until 12 May, however, did UKRAOC report that other means of mounting AD operations were being examined, bearing in mind the plan to despatch six more Harriers to the Falklands area aboard CONTENDER BEZANT, and on 15 May, when the Air Commander was briefed by his staff on the effectiveness of the overall AD arrangements, the main weakness was identified as the shortcomings of the Harrier, in particular its inability to intercept at night. When CBFSU, however, heard that its replacement by the Phantom was being considered, he protested that too many resources were being put into the defence of Ascension at the expense of supporting the real war down south; the Argentines were hardly likely to risk damaging their relations with the USA by such an attack. The Air Commander on the other hand believed the threat could not safely be ignored, and on 18 May he sent a strongly worded signal to ACAS(Ops) expressing concern about the AD arrangements in view of the Argentine capability to carry out night clandestine operations using C-130 aircraft at low level to land troops on the runway or to drop incendiary devices on congested parking areas. If the current rules of engagement (12) calling for positive identification were to be observed, specialist AD fighters were essential; while Rapier Surface to Air Missiles (SAM) could kill they could not identify. The ideal aircraft, the Lightning, would present serious airfield operating problems, but the Phantom should be able to react effectively and three of these were requested.

121441Z May TF53.1 83
18G/335/4/5/3 E86
171836Z May 18G/335/4/5/3 E101
181412Z May TF53.1 E96

2.33 Three Phantoms of 29 Squadron were accordingly placed at 12 hours' readiness at Coningsby on 19 May, but when the COS paper proposing their deployment was circulated on 20 May ACDS(Ops) (R Adm Brown) expressed reservations; pointing out that the threat assessment was unchanged, he considered that the defence measures already taken were sufficient and recommended that CTF be consulted personally before a decision was made. The signal that Adm Fieldhouse sent the following day firmly reinforced his Air Commander's views, stressing the damage that could be caused in a low level attack by a KC-130 dropping incendiary devices amid the aircraft parked at Wideawake. The COS then agreed the proposal. On 24 May the first two aircraft flew direct to Ascension, 4004 nms in 9½ hours, followed by the third aircraft on

191445Z TF53.2 E7
COS/55th Mtg 82
18G/335/4/5/3 E113
TF53.2 E4/5
201131Z TF53.2 E8
No 29 Sqn ORB

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(12) The Rules of Engagement (ROE), approved in May, were designed to achieve (a) identification of all aircraft approaching by day or night, (b) destruction of aircraft committing a hostile act, (c) destruction of Argentine combat aircraft operating within 100 nms, of the island, and (d) destruction of any Argentine non-combat aircraft which failed to comply with internationally recognized warning signals and ignored warning shots. They were signalled to CTF 317 and CBFSU on 10 May.

COS S6(14) 9 May TF8.3 E31
100410Z May 18G/335/4/5/3 E38(i)

26 May. The air threat (13) to the island remained very much in mind for the rest of the operation, as exemplified in the military contingencies paper circulated on CDS's instructions on 5 June; this paper stressed, inter alia, the need to retain the three Phantoms for the near future. COS (Misc) 255/742/1 TF8.5 E27

2.34 Another problem which arose during this period was generated by the very large number of air movements and the assessed needs of AD. On 6 May the Air Commander drew attention to the need either for an exclusion zone or at least a Notice to Airmen (NOTAM) giving notice of an Air Defence Identification Zone (ADIZ) requiring all aircraft to report their movements through the area; as a result a NOTAM was issued on 9 May - albeit without proper consultation with the various international authorities involved. This declared a Terminal Control Area (TCA) within 100 nm of Wideawake with effect from 100500 May, though this was not received - according to SRAFO - either at Ascension or at Patrick AFB. On 12 May, however, CBFSU reported to CTF317 that it was impracticable to implement the TCA owing to lack of the necessary Air Traffic Control (ATC) facilities, and requested its replacement by a Prohibited Area similar to that existing around Guantanamo base in Cuba (14). Urgent discussions followed, with the practical difficulties being endorsed and the legal implications being aired, and an initial decision to replace the TCA with a Restricted Area was opposed by the National Air Traffic Service (NATS), who proposed the retention of the TCA under the control of the Duty Air Defence Controller (DADC). The USA, however, was unwilling to accept this system for its aircraft using Wideawake and the original TCA was left in existence, despite protests from certain countries, in particular Brazil (15), which asked for an HF control link to be established between Ascension and Recife and also made representations through the International Civil Aviation Organization. Fortunately it was possible to play for time and despite a certain amount of political embarrassment the TCA was not cancelled until the end of June (16). It had, however, been an unsatisfactory story, since it had never been practical to organize the TCA properly.

061600Z TF53.1 E32
091730Z TF53.1 E61
AUS(AS) Minute TF13.4 E42
121430Z May 18G/335/4/5/3 E72
TF53.1 E84 E87
152202Z May 18G/335/4/5/3 E93
See TF53 Pt I E102 for texts of the notes exchanged
AUS(AS)59/5658 10 & 30 Jun TF13.6 E15 & 70

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(13) The appearance of Soviet Bear D aircraft in the Ascension area from time to time had to be borne in mind, and the AD aircraft were encouraged to demonstrate their capability by intercepting them. It was considered that the intelligence being gathered by these aircraft might be made available to the Argentine. 131906Z May 18G/335/4/5/3 E96

(14) A prohibited area is - as the name suggests - airspace of defined dimensions within which the flight of an aircraft is prohibited: in a restricted area flights are restricted in accordance with specific conditions. A TCA is usually defined as a portion of a controlled area situated at the confluence of airways in the vicinity of one or more major airfields.

(15) Ascension lay in the Recife Flight Information Region (FIR) and the Brazilian Search and Rescue (SAR) Region.

(16) There was discussion about replacing it with an ADIZ. TF13.6 E61

THE AFTERMATH

2.35 For the forces on Ascension the Argentine surrender in the Falklands had little immediate effect. As CINCFLEET observed to CBFSU the day afterwards, there was no likelihood of a reduction in the air operations from the island, since the forces in the south would require full support in terms of re-supply, casualty evacuation and possibly the repatriation of prisoners of war. Since Hercules air drops would therefore continue at maximum rate, the tankers would remain heavily committed, and daily surveillance sorties by the Nimrods would also be needed. Nor would the local defence of the island be any less important. The scale of activity that thus continued may be measured by the fact that when CAS visited Ascension on 28 June there were still 28 RAF aircraft in residence: 5 Hercules (all fitted for AAR), 4 Nimrods, 14 Victor tankers, 3 Phantoms, 1 Chinook and 1 Sea King. The brief he was given indicated that at least 18 aircraft were likely to remain for the foreseeable future.

151915Z Jun TF13.6 E27

23 Jun TF13.6 E48

2.36 What had, however, changed were the command and control arrangements. A week before the end of the fighting it had been proposed to MOD by CINCFLEET that SRAFO (Gp Capt Price) should take over from Capt McQueen as CBFSU with effect from 18 June, and four days later it was also suggested that on the same date overall command be centralised at one level by delegating administration and logistics from VCDS(P&L) to CINCFLEET, in close association with HQ STC. These changes were agreed and implemented on 18 June, with the local command structure continuing much as it had been before, with a Wg Cdr Air Ops, a Cdr Naval Ops, a Wg Cdr Eng and a Cdr Logistics/Admin.

081016Z Jun TF13.6 E2

121924Z Jun TF13.6 E17

BFSU Structure & Composition

2.37 The gradual reduction in the tasks of Ascension that took place over the following months is not the concern of this narrative; suffice it to say that when the first Operations Record Book (F540) was compiled in November 1982, it noted the departure of the Phantoms for the Falklands, the return of the Nimrods and some of the Victors to the UK and the de-commissioning of the S259 radar. From then on the role of the RAF in Ascension was to be confined essentially to AT.

RAF Ascension Island F540

Appendix:
Directive to Air Defence Commander

**DIRECTIVE TO AIR DEFENCE COMMANDER
ASCENSION ISLAND OPERATION CORPORATE
WING COMMANDER J B THORNTON RAF**

1. You are to be responsible for the coordination of all air defence assets deployed to Ascension. Operationally, you will report to CTF 317 through the SRAFO and Air Commander. You will act, on behalf of SRAFO, as the Air Defence Adviser to CBFSU integrating your resources into his overall plan for the defence of Ascension.

2. You are to issue to all elements of your air defence organisation:

a. Standard operating procedures which ensure timely and positive reaction for the identification of unfriendly aircraft, and the engagement of such aircraft within the rules of engagement operating at the time.

b. A coordinated plan which makes the best use of the resources available to you, including the arrangements agreed with the Navy guard ship, making use as appropriate, of any air defence capability it has.

3. You are to report to the CTF Air Commander (through SRAFO) the arrangements made at Ascension Island for air defence and to draw to his attention any problems with recommendations which should overcome them.

4. You are to be responsible to SRAFO for the administration and logistics of the RAF air defence assets.

J B CURTISS
Air Mshl
Air Commander

7 May 1982

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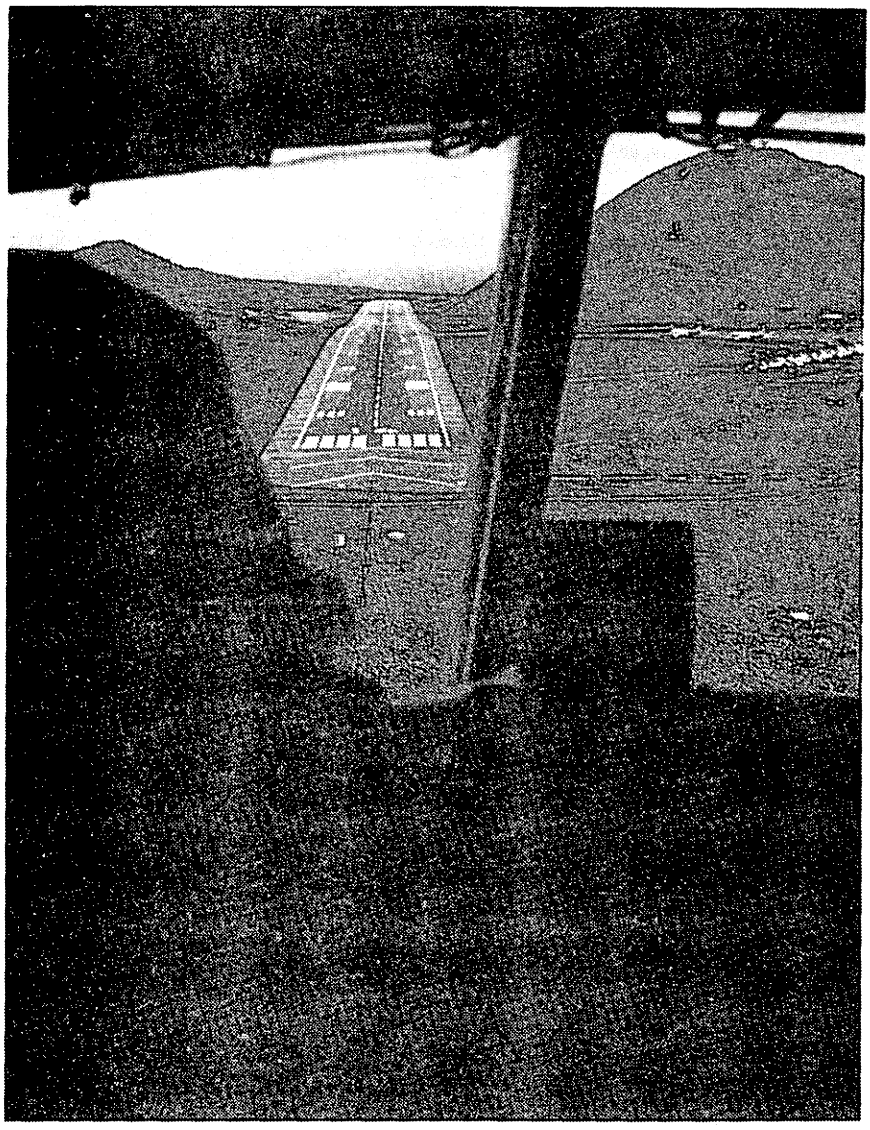
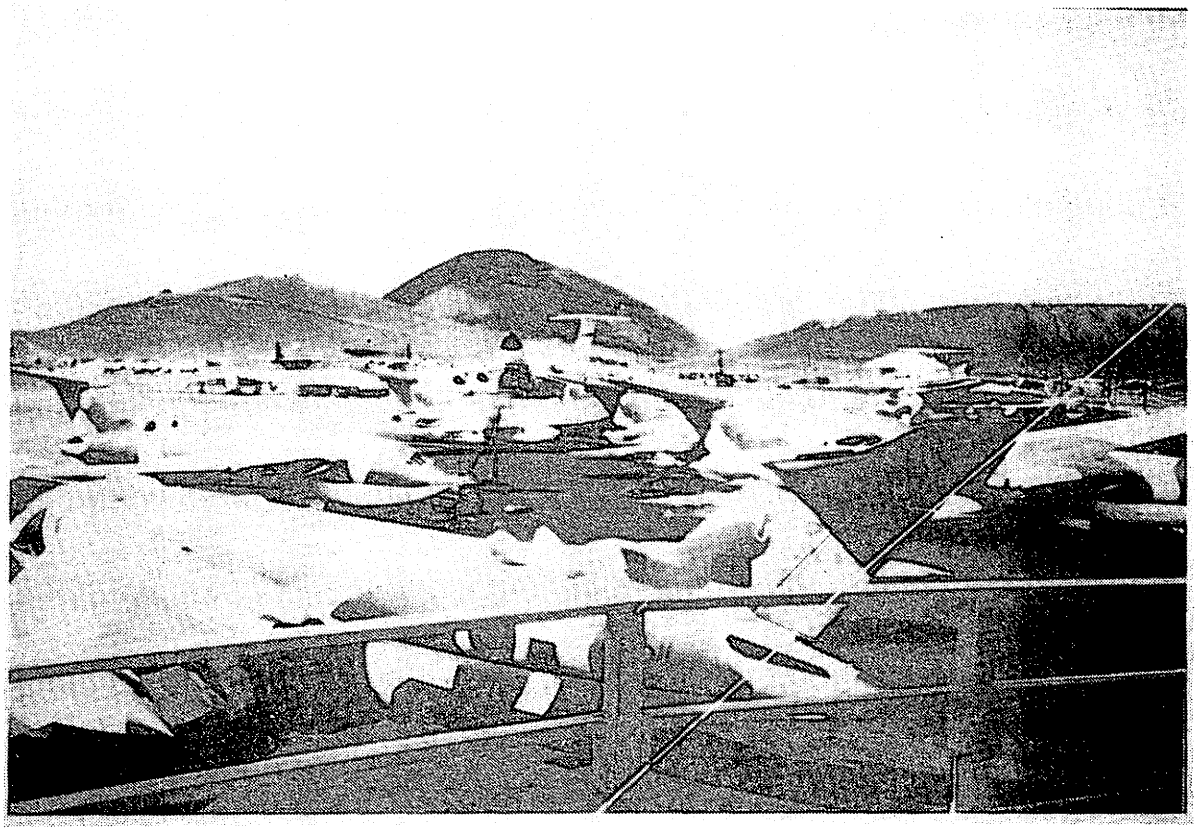
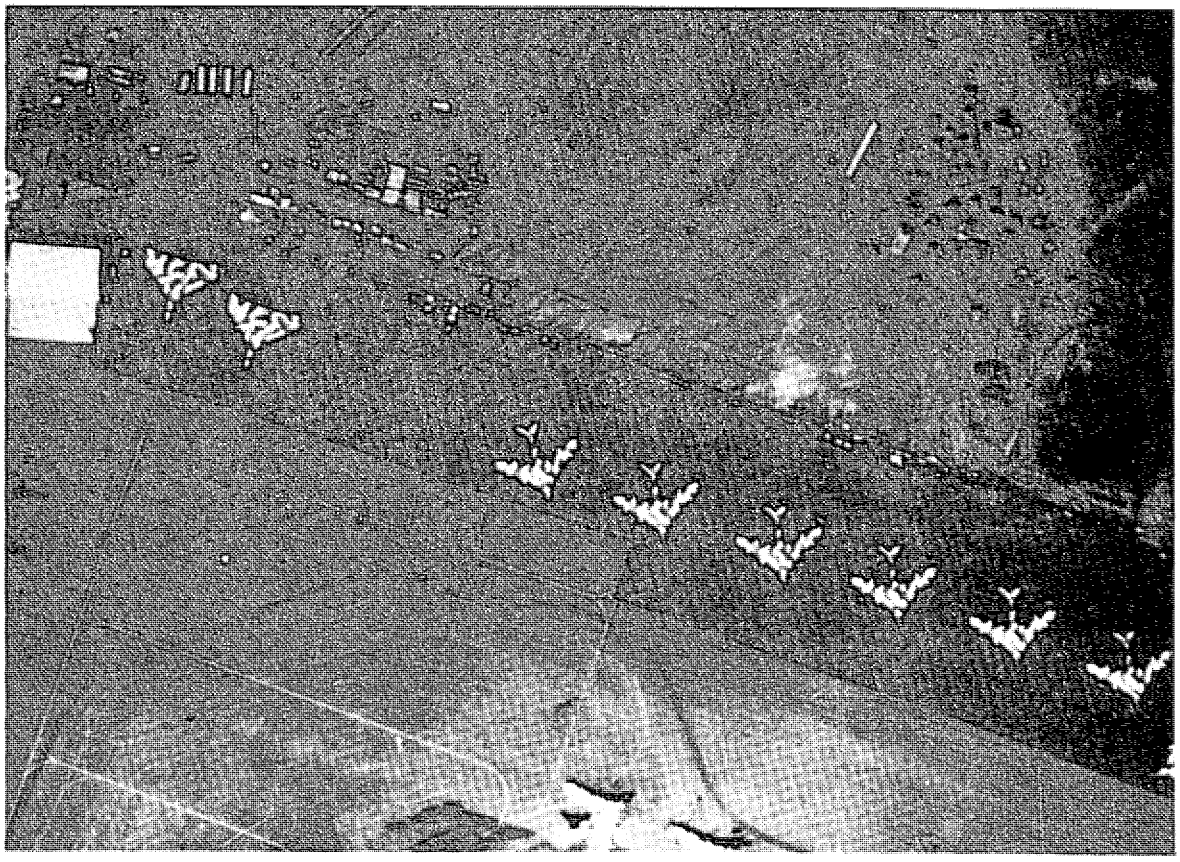


2.1. Approaching the runway at Wideawake Airfield.

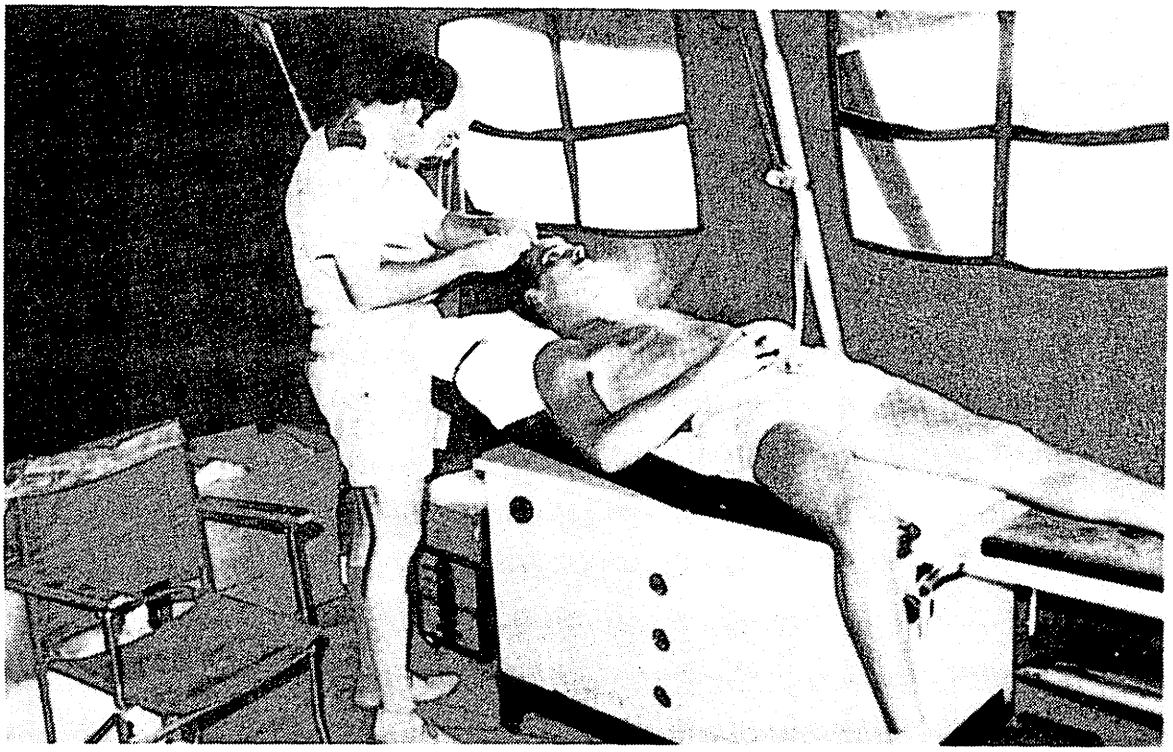


2.2. Premium on parking space — Dispersal at Wideawake airfield.



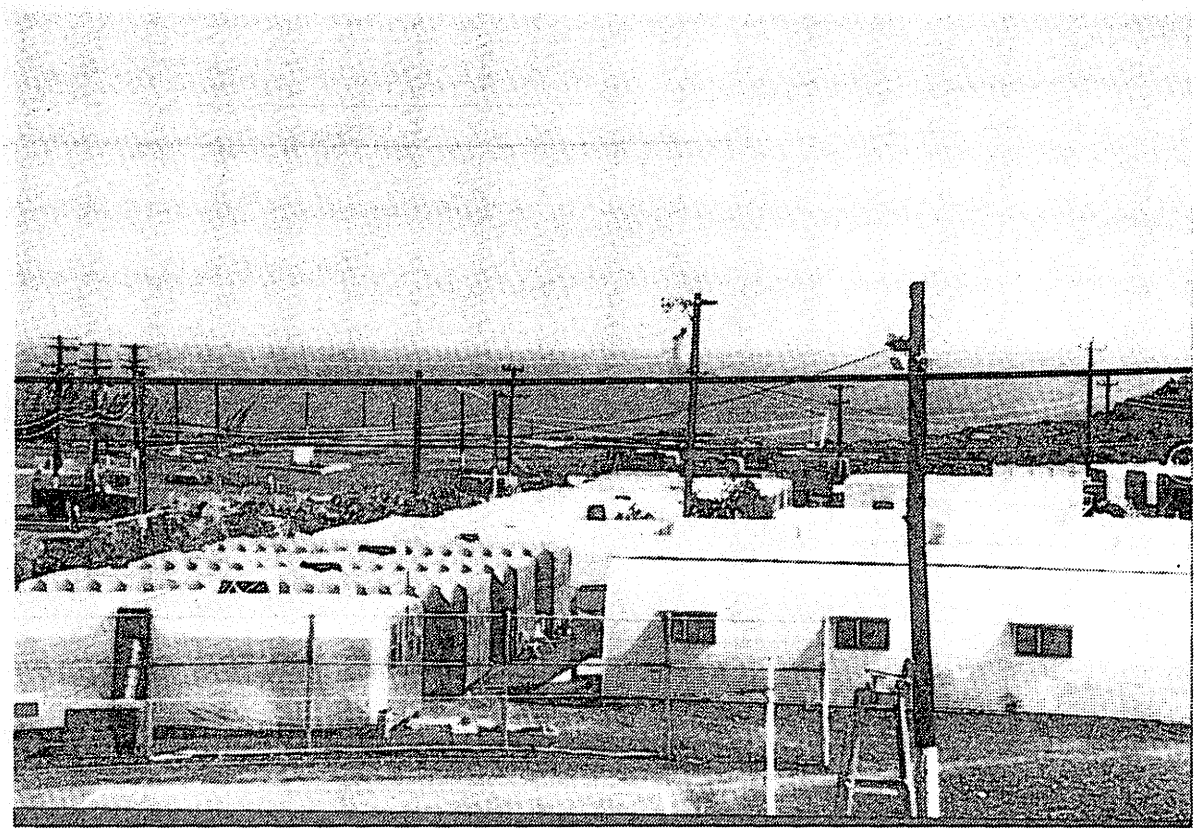
2.3. Vulcan and Victor aircraft on dispersal at Wideawake airfield.

2.4. The huge USAF C5 Galaxy heavy-lift transport aircraft creates a dust storm on take off.

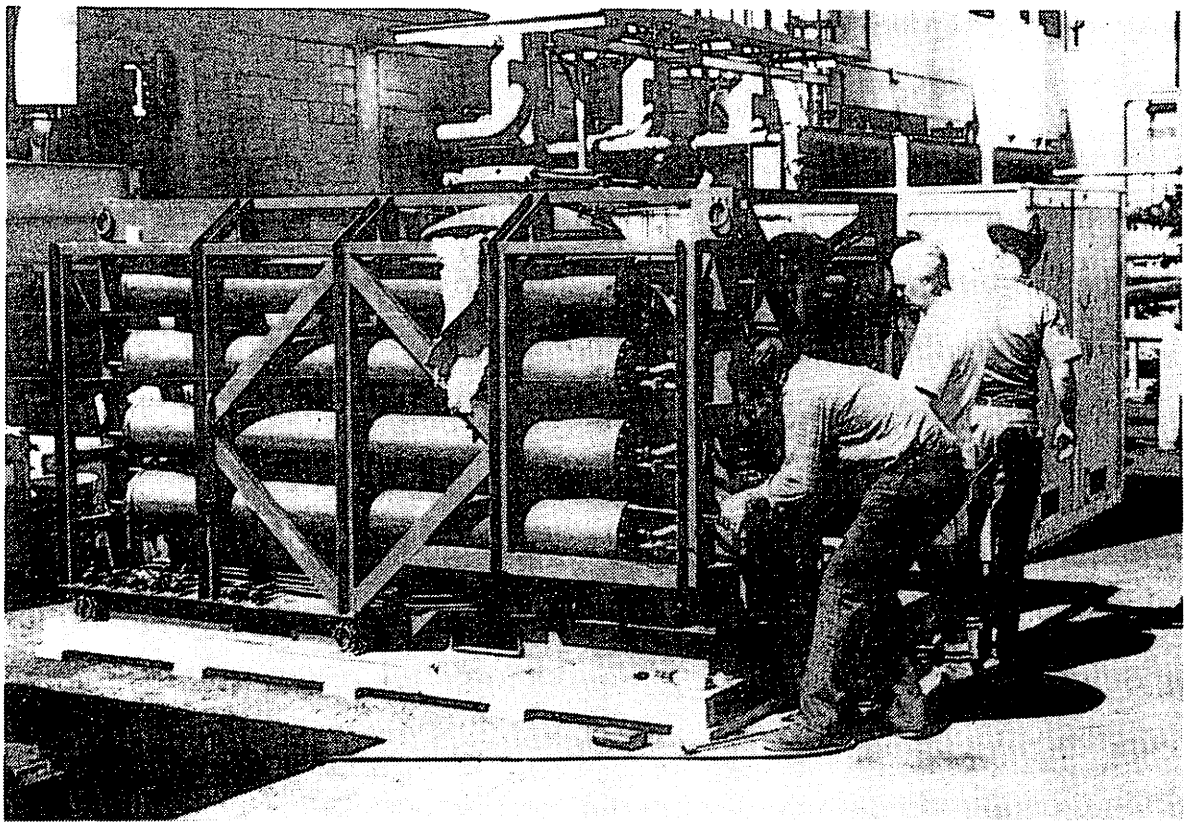


2.5. The SMO, Sqn Ldr Dorling, carrying out running repairs on Cpl A Humm.

2.6. Flt Lt P Cartwright, Ops Off, performs a poor Groucho Marx impression, flanked by Sgt P Wise (Ops) and Sqn Ldr E Guy (EWO) in Victor Ops early May.

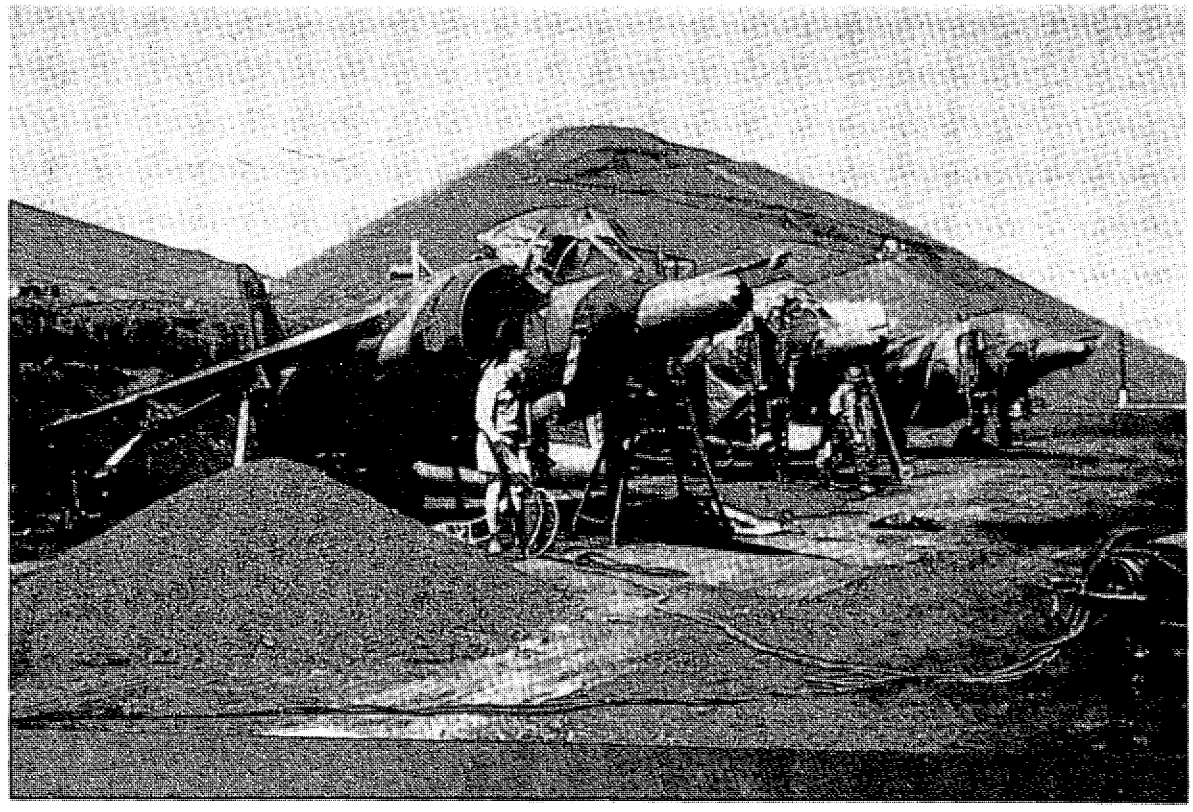


2.7. Concertina City accommodation complex.



2.8. Additional water distillation units.

2.9. RAF Regt gunners on guard.



2.10. 'Minor' FOD problem on the No 1 (F) Sqn Harrier dispersal!

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CHAPTER 3

AIR TRANSPORT OPERATIONS

SUMMARY OF CONTENTS

PART 1 - FIXED WING OPERATIONS

PART 2 - ROTARY WING OPERATIONS

3.1. The Air Transport Force (ATF) was involved in Operation CORPORATE from the very beginning; in fact it was involved before the official beginning, for at 1737Z hrs on 31 March, some hours before the Argentine invasion of the Falkland Islands, MOD Ops Air Transport (AT)(RAF) ordered HQ 38 Gp to and mount covertly 2 Hercules C Mk 1 flights to Gibraltar. Each flight was to carry equipment from the UK for transhipment to RFA APPLELEAF which was planned to sail from Gibraltar at 1800 on 2 April. The first aircraft, flight number Ascot 4742, was to depart from RAF Lyneham at

311737Z Mar
TF 4.1 E4

0001Z that day and was tasked to carry mobile Tactical Air Navigation (TACAN) equipment, radio communications equipment and 2 servicemen, whilst the second flight, Ascot 4743, was to carry Tactical Supply Wing (TSW)'s personnel, pillow tanks and associated equipment. The flight itineraries, loads and ultimate destinations were to be kept on the 'need to know' principle and the use of Exercise SPRING TRAIN (1) was authorized as the cover story if necessary. Some 90 mins after the initial tasking message was issued, the plan changed and the 2 aircraft were instead to nightstop Gibraltar and proceed with their loads to Ascension Island where the equipment and passengers would be offloaded for transhipment to the Falkland Is. The ship to which the equipment would be loaded was the Royal Fleet Auxiliary (RFA) FORT AUSTIN, and the equipment was being moved as a contingency measure in case a decision was made to upgrade the facilities at Port Stanley Airfield on the Falklands to permit military operations. However, it was recognized that any military operations would still be severely limited by the distance from Ascension Island, the known poor and unpredictable weather conditions around the Falklands and the lack of a diversion airfield in the South Atlantic.

011905Z Apr
TF4.1 E7

D/Ops Staff 7/10/2
1 Apr
CAS 73/2/1.1 E2

3.2. From these initial tasks stemmed the beginnings of an air transport operation that for the RAF was to prove, in size of payload carried, second only to the Berlin Airlift. The operation was to involve the ATF in mounting over 600 sorties in which its aircraft engaged in a wide range of activities in addition to that of the strategic movement of freight and passengers. Over the next 3 months ATF aircraft and crews were involved in aeromedical flights, air-to-air refuelling (AAR) sorties, long range supply drops, Search and Rescue (SAR) missions and surface surveillance tasks, in addition to developing capabilities to lay mines and refuel other aircraft.

THE OPTIONS

3.3. The question of air reinforcement of the Falklands had been examined frequently between 1966-1982. One aspect addressed was the provision of air transport to carry troops and equipment to reinforce the garrison. Whilst the Hercules had the range to reach the Islands the results of each assessment were generally the same: air reinforcement was impracticable, imposing high risks for very little return. The following factors were almost invariably identified as being significant: the distance of the Falklands from available airfields, the weather, the lack of diversion airfields, the poor facilities at Port Stanley Airfield, the runway, and the capabilities of the available aircraft.

D/D58/24/81 27 Sep
VCAS 7/11 3 E14

Note

(1) Ex SPRING TRAIN - a NATO exercise in progress and based on Gibraltar.

3.4. With South American airfields ruled out, the countries involved being assumed to be more sympathetic to the Argentine case than the British, any rapid reinforcement would need to be flown directly to the Falklands from Ascension, some 3500 miles away. Another fundamental factor was the weather, which could be such that an aircraft having left Ascension several hours before might arrive off the Falklands only to find it could not land. Short of landing in Argentina itself - which would be absurd - no suitable diversion airfields existed. The persistent high winds were an additional factor which could result in the payload, already reduced by the distance, being lowered even further (2).

3.5. Even if these conditions proved to be more favourable, Port Stanley Airfield itself was unsuitable. It had no landing aids, limited communications, no bulk fuel storage (3) and limited parking areas (4). The runway had a Load Classification Number (LCN) was roughly half that strictly required for Hercules operations. However, operating at Military Operating Standards (MOS) (5), Hercules could use the runway but with the risk that successive landings could damage the surface.

3.6. The only RAF transport aircraft capable of flying to and landing at Port Stanley Airfield from Ascension was the Hercules. The distance involved meant that the aircraft could carry only a limited payload which equated to 30 lightly equipped men. If only 3 aircraft could park there and only one return, air reinforcement would be limited to 90 men which would be militarily insignificant. Thus when in the last few days prior to the invasion the question of air reinforcement from Ascension was re-examined the same disabilities were identified and the same conclusion drawn.

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(2) Hercules Sector Fuel Payload Tables May 82 showed that the 70% wind component on the Sector Ascension-Port Stanley was 31 Kts Head ie. on 7 flights out of 10 the headwind would be less than 31 Kts. This provided a C MK 1 payload figure of 8,500 lbs for normal fuel reserves and 14,000 lb for military fuel reserves. For C MK 3 flights the payload had to be reduced by 4000 lbs. The Flight Time was 13 hrs 05 mins.

(3) Fuel had to be brought from a fuel farm owned by an Argentine nationalized company. In 1982 stocks were considered sufficient for one Hercules to refuel and return to Ascension.

(4) For 3 Hercules only and likely to collapse if they had stayed there for any period of time.

(5) Normally the ATF operated to civilian safety standards for take-offs and landings. Operating to MOS reduced the safety margins and allowed a higher All Up Weight (AUW) for take-offs and landings.

The possibility of staging through South America was briefly considered for the first time since 1966 but soon abandoned as politically unrealistic.

3.7. The Argentine invasion of the Falklands on 2 April made the establishment of a Forward Mounting Base (FMB) essential and a matter of considerable urgency. Meanwhile, the Air Force Department (AFD) considered what military options were available for the RAF around the South American continent and in the South Atlantic, provided suitable mounting bases were available and overflying/staging rights could be obtained. The planning staff at HQ 38 Gp worked on routeings, payloads and timings for both VC10 and Hercules operating from the UK across the USA and onto Santiago (6). The VC10 flights would involve staging through Gander, March Air Force Base (AFB) and Easter Island to Santiago, each flight taking approximately 30 hrs from the UK and carrying 30,000 lbs of freight (MOS being required for the March to Easter Island leg). The Hercules flights would route via Gander, Offutt AFB, McClellan AFB Hickam AFB, Tahiti and Easter Island to Santiago and the total flight time would be 62 hours with 30,000 lbs of payload carried. Overweight (7) take-offs would be required at Lyneham, McClellan and Hickam. However, any air operations that might have been mounted from Chile would clearly have taken up a very large proportion of the ATF's effort, and in the event, political factors precluded further consideration of the use of a Forward Operating Base (FOB) in South America, all efforts turning to Wideawake Auxiliary AFB on Ascension.

D/AF/OPS/TF9 4 Apr
D4.1 E8
041546Z
38G/55606/65 Mov.1
E36

3.8. The ATF was well prepared for operating from the UK to Ascension. Over a number of years a fair proportion of both Hercules and VC10 crews had operated to the Island, whilst either on training flights to West African airfields featured in Joint Theatre Plans (JTPs) or on flights positioning the Tactical Communications Wing (TCW) on exercise to Ascension. Thus a large pool of experience existed within the ATF which had operated over the route and had updated knowledge on intermediate airfields such as Gibraltar, Lajes, Dakar, Banjul and Freetown which might be used as staging posts or diversions.

3.9. In his directive to the AOC 18 Gp appointing him as Air Commander to Commander Task Force (CTF) 317, CAS specifically excluded the ATF from the Air Commander's command and control. It was to continue to be tasked and

VCAS 90836-12 Apr
CAS/73/2/1.1 E77

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(6) The Chilean and Argentine governments had for some time been in dispute about the Beagle Channel and, because of aggressive noises being made by the Argentine Junta, it was felt that Chile might be disposed towards supporting the British cause.

(7) Normal AUW Take Off 155,000 lbs; Maximum Authorised AUW Take Off 175,000 lbs.

controlled under normal arrangements (8). This was modified when the Air Commander was given operational control of all Hercules operating south of Ascension and of aircraft being deployed on special forces operations once they reached the FMB (9).

202015Z May
38G/1800/172/Cont 4
E60

ESTABLISHING THE ROUTE

3.10. As we have seen the first Hercules left Lyneham for Ascension at 0001Z on 2 April; later that day came news of the Argentine invasion of the Falklands and the MOD modified their plans so that by 1645Z HQ 38 Gp had issued tasking instructions (transops) for 13 flights to Ascension and one flight to Gibraltar (to position slip crews). It was also decided to send an AT Det Cdr and he reported to HQ 38 Gp for briefing at 1500 hrs local the same day. He was briefed that the plan was to send a total of 13 Hercules to Ascension which would lift 3 Lynx helicopters and supporting personnel, satellite communications (SATCOM) equipment, Special Boat Squadron (SBS) detachments and a RM Blowpipe detachment, plus RAF support personnel to assist in the unloading and turn-round of the aircraft. In addition, a Belfast of Heavy Lift Cargo Airlines Ltd had been chartered to carry 2 x Wessex 5 helicopters. The helicopters, when assembled, would transfer the freight to RFA FORT AUSTIN as she passed the Island (10) and would then remain on board ship as she continued to the Falklands. The aircraft were scheduled to flow through Ascension from the morning of 3 April. All would spend 14 hours on the ground at Ascension and the last aircraft would recover the AT detachment personnel back to the UK. However, events turned out differently and to quote the first AT Det Cdr, "In the event the scale of operations grew beyond all recognition". In fact from the beginning the detachment was hampered in its primary task by being asked questions by authorities in the UK about possible future operations at Ascension; for example they were asked whether or not VC10 could be handled, without being given any indications of the

D Ops Staff 7/10/2
dated 3 Apr
TF 13.1 E5

021645Z May
TF 6.1 E8
38G/1800/172/16.1
E60

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(8) The ATF was a Tri-Service asset and tasked by the Air Transport Allocation Committee (ATAC). Even during the height of Operation CORPORATE airlift over 30% of the ATF flying was on non-CORPORATE tasks. It continued to provide support for operations in Northern Ireland and Belize, fly schedules to Germany, Cyprus, Gibraltar, Sardinia, Hong Kong, and the USA, and provide support for training exercises to units of the services not involved in CORPORATE.

(9) This aspect is covered in fuller detail in Chapter 1.

(10) Normally, significant swell and the lack of alongside facilities limit boat/lighter operations at Ascension. If it was to be used as a non-weather limited staging head, then there was a requirement for helicopters to carry out Vertical Resupply/Replenishment (VERTREP).

frequency of flights and types of loads. The AT Det Cdr was not alone in wondering about the future, for Director of Operations (RAF) (D/Ops) Staff stated that "the future requirements became increasingly harder to define after the completion of the initial airlift on 6 April" and it became obvious that a detailed reconnaissance of the island was urgently needed to establish its capacity to support a FOB.

D Ops Staff 7/10/2
3 Apr
TF13.1 E5

3.11. Whilst the Hercules were being tasked to carry passengers and freight to Ascension, the first VC10 tasking for CORPORATE was issued early on 3 April. Brize Norton was to provide 2 crews and one VC10 to fly via Ascension to Montevideo in Uruguay to recover Mr Rex Hunt, the Governor, island administrators and the RM party expelled from the Falklands.

3.12. The distance from the main ATF mounting bases in the UK, Lyneham and Brize Norton, to Ascension is 3885 nms; the only RAF transport aircraft capable of operating efficiently over such a distance were the VC10 and the Hercules. Inevitably, the routes chosen for these aircraft to fly to Ascension were less than ideal, since they were affected by such factors as the actual payloads to be carried, the limitations on range, the runway criteria and support facilities at staging posts, and diplomatic clearance being granted to use staging posts and to overfly foreign territory.

3.13. Existing JTPs for operating in West Africa made use of airfields in the Azores, Senegal, the Gambia and Sierra Leone. However, the timescale involved and the need to operate covertly in the early days of CORPORATE meant that airfields and stage lengths had to be chosen that required no diplomatic clearance. Thus Gibraltar was the only en route airfield initially available for use as a staging post, but unfortunately its 6000 ft runway was too short for a VC10 to take-off with a full load. This restriction meant that the first VC10 flights to Ascension were routed direct from Brize Norton with a limited payload of 18,000 lbs compared with a maximum possible of 45,000 lbs. The flight time was 8 hrs 55 mins. The Hercules C Mk 1, on the other hand, were routed to Ascension via Gibraltar where slip crews had been positioned to fly on after a 2 hrs turn round for refuelling. This routeing meant that after the initial 2 Hercules flights, which nightstopped at Gibraltar, Hercules took 18 hr 25 mins to reach Ascension from the UK and carried up to 20,000 lbs of freight compared with a maximum possible of 38,000 lbs.(11) In order to achieve a 20,000 lbs payload, HQ 38 Gp authorized Hercules captains operating from Gibraltar to Ascension to make either an overweight take-off or a MOS

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(11) The maximum payload carried assumed that fuel was not a limiting factor. The max take-off wt (TOW) of a VC10 was 235,000 lbs and of the Hercules C Mk 1, 155,000 lbs. If large fuel loads were required the amount of payload carried had to be balanced to remain within the max authorized TOW.

take-off. Further, to attain such a payload, captains were authorized to carry less contingency fuel (12), ie only sufficient to provide for that section of the route from the last point to divert (LPD) (13) to Ascension.

3.14. The Det Cdrs and their deputies for both Gibraltar and Ascension left Lyneham on 2 and 3 April respectively. At Ascension, the aircraft were serviced by 5 Ground Engineers (GEs) (14) from Lyneham. These GEs travelled individually on the first 5 aircraft to leave Lyneham; they were available to carry out any rectification required at Gibraltar and then travelled on to Ascension where they remained to handle subsequent flights. Members of the Mobile Servicing Squadron (MSS) travelled on the third aircraft to leave Lyneham and positioned at Gibraltar to provide engineering support for the detachment. Lyneham loaded Ranger Packs onto the first 2 aircraft, Ascot 4742 and 4743, to provide engineering spares for Ascension and Gibraltar respectively. In addition a Hercules Staging Pack plus one Mobile Supply Flight (MSF) tradesman were despatched to Ascension on the third flight to leave Lyneham, Ascot 4744. The UK Mobile Air Movements Squadron (UKMAMS) provided a 6 man Mobile Air Movements Flight to unload the aircraft at Ascension. The first 2 VC10s to operate on CORPORATE carried their own GEs and spares for the round flights from Brize Norton. By the early hours of 4 April the detachments at Gibraltar and Ascension were fully staffed and operating and six Hercules slip crews were in position at Gibraltar.

021645Z Apr
TF6.1 E8

3.15. As the size of the airlift grew so the need to maximize payload became paramount and additional staging posts were required. HQ 38 Gp therefore contacted the British Embassy in Senegal on 5 April about ATF aircraft using Dakar and by midday the Embassy had obtained from the Senegalese authorities verbal clearance for 10 Hercules flights through Dakar. The handling agents there would be Air Afrique and the Embassy anticipated no problems at that stage. The first scheduled Hercules flight through Dakar, Ascot 4747, arrived at 2020Z that evening and, after a 1½ hr turnround, the crew continued to Gibraltar. This initial re- routeing of Hercules northbound from Ascension was made to minimize the fuel uplift by Hercules from the Island. The first Hercules flights to route southbound to Ascension were Ascot 4759 and 4760, which were also the first Hercules

051245Z Apr
TF6.1 E42

30Sqn F540 Apr

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(12) Contingency Fuel was carried to allow for the unexpected ie, increased fuel flow because of engine malfunction or increased flight time because of stronger than forecast headwinds.

(13) LPD was the last point along a track to a destination from which it was possible to divert to a suitable en route airfield.

(14) GEs were multi-role trained tradesmen who accompanied transport aircraft on flights to destinations where either no or minimal engineering support was available.

C Mk 3 to be tasked on CORPORATE. These flights passed through Dakar in the early hours of 6 April. Each aircraft carried a 10 ton truck fuel bowser to Ascension where they were urgently required to augment the ground services available on the airfield, the weight of the payloads making it impossible for the aircraft to fly direct from Gibraltar to Ascension.

050250ZApr TF6.1 E36

3.16. The first Hercules C Mk 1 to stage through Dakar both southbound and northbound, Ascot 4772, arrived on 10 April and delivered 2 flight lieutenants who were to be the 38 Gp Detachment Staff. HQ 38 Gp now intended that, with effect from Flt 4772, all flights would route outbound to and inbound from Ascension via Dakar. This would enable the Hercules C Mk1 payload to be raised to 30,000 lbs, an increase of 50% over that carried direct to Ascension from Gibraltar. The exception to this plan was to be those tasks carrying warlike materials such as ammunition; these flights would not route via Dakar outbound and would be restricted to 20,000 lbs of payload. However,by the evening of 10 April permission had been obtained for all Hercules and VC10 tasks to operate both outbound and inbound through Dakar. The aircraft captains operating into Dakar were to nominate Banjul's airfield on their flight plans as the terminal diversion airfield and the amount of fuel uplifted from Ascension should reflect this planned diversion.

071740Z Apr TF6.1 E83

102140Z Apr TF6.2 E90

081115Z Apr TF 6.2 E12

3.17. With permission being given to route all ATF aircraft through Dakar regardless of their loads and with the airlift requirement for Ascension still growing, HQ 38 Gp revised the aircraft slip pattern to increase airframe utilization by decreasing the time spent by each aircraft en route. This was achieved by 12 April and resulted in the Hercules slip-crews being re-positioned at Dakar from Gibraltar. A total of 6 Hercules crews were positioned at Dakar and one crew was kept at Gibraltar for contingency purposes. The revised slip system meant that Hercules were completing the UK to Ascension round trip in approximately 42 hours as opposed to the previous 56 hrs. Similarly, the decision to position VC10 slip crews at Ascension and to route inbound and outbound via Dakar increased the VC10's capabilities. The payload now offered from the UK to Ascension was 45,000 lbs, an increase of 25,000 lbs.

111137Z Apr TF6.2 E95

3.18. On 11 April, MODUK Air instructed all VC10 and Hercules captains staging through Dakar for Ascension to carry the maximum fuel possible from Dakar in order to minimize the uplift from Ascension. If fuel stocks at Ascension proved insufficient to meet the overall RAF demand, the VC10 and Hercules would refuel at Dakar with round trip fuel in which case MOS would be required. However, captains were initially authorized only to bring aircraft up to normal take-off weight from Dakar.

110300Z Apr 38G/1800/172/Cont.3 E14

110350Z Apr Ibid

3.19. With increasing accommodation problems at Ascension the Commander British Forces Support Unit (CBFSU) suggested that HQ 38 Gp also consider slipping VC10 crews at Dakar. This would free accommodation being used by crews on long slips.

122215Z Apr 38G/1800/172/Cont.3 E46

This request was immediately agreed and from 13 April VC10 slip crews on standard resupply flights to Ascension stopped at Dakar. — 111920Z Apr 38G/1800/172/Cont.3 E30

NEED FOR SHORT-TERM ADJUSTMENTS

3.20. By mid April the airlift to Ascension had built up to a regular flow averaging 6 Hercules and 3 VC10 flights per day, and the slip patterns of both VC10 and Hercules had become well established. However, the composition of the detachments at Gibraltar, Dakar and Ascension had continually to be modified in the light of experience with fuel availability and the need to conserve flying hours. — HQ 38 Gp F540 Apr

3.21. An effort by HQ 38 Gp to reduce the flow of Hercules through Gibraltar and to conserve flying hours resulted in all Hercules recovering to the UK direct from Dakar. This decision took effect from 14 April, reducing the round trip time by 2 hrs 10 mins and easing the pressure on the detachment at Gibraltar. However, it also entailed aircraft picking up more fuel in Dakar. — 131705Z Apr TF6.3 E73

3.22. The British Embassy in Dakar commented on the fact that RAF aircraft movements through Dakar had doubled in the 7-day period ending 18 April compared with the number in the previous 7 days. The local Shell representative had informed the Embassy that the RAF were at the ceiling in terms of guaranteed supplies of fuel. Fuel was proving to be a real constraint and there was a danger that the local airport authority would limit the number of RAf flights if they felt international scheduled services were being adversely affected. The Embassy, therefore, invited MOD to consider whether flight frequencies could be held at the present levels. The Embassy later informed HQ 38 Gp that following further discussions with the Shell Representative at Dakar, Shell could allocate to ATF tasks a maximum of 500 cubic metres of fuel per 24 hours until the end of April, the limit on supply being caused by an impending 2/3 day shutdown for maintenance of the Dakar Refinery and the need to satisfy a variety of other customers. This allocation equated to either 20 Hercules or 5 VC10 movements a day. — 191450Z Apr 38G/1800/172/Cont.3 E25; 201825Z Apr 38G/1800/172/Cont.4 E54

3.23. Meanwhile, CBFSU affirmed that the staging of VC10 and Hercules movements through Dakar for refuelling continued to be essential, although VC10 were still averaging a 10,000 lbs fuel uplift from Ascension. (15) He requested that authority be given to increase the VC10 Maximum TOW from Dakar and its landing weight at Ascension in order to reduce or eliminate fuel uplift from the Island. — 192030Z Apr 38G/1800/172/Cont.4 E37

3.24. HQ 38 Gp responded to CBFSU's request and in an effort to minimize fuel uplifts in Dakar authorized 38 Gp ATF aircraft to operate to the following MOS criteria: — 230340Z Apr 38G/1800/172/Cont.4 E79

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(15) Max Fuel Load of a VC10 is 151,000 lbs; 10,000 lbs of fuel equates to one hour's flight.

a. VC10 Max Ldg Wt 245,000 lbs

b. Hercules Mk 1 and Mk 3 Max TOW 165,000 lbs.

c. Hercules Mk 1 and Mk 3 Max Landing Wt 145,000 lbs.

The clearance assumed that all applicable performance criteria other than the Maximum Certificated Landing Weight could still be met. HQ 38 Gp stressed that the authority was given to enable crews to uplift fuel so that subsequent uplifts at Dakar and Ascension could be minimized and was not to be utilized to increase payload beyond the limits set by Sector Fuel Payload Tables.

3.25. Meanwhile in a further effort to resolve the refuelling problems MODUK Air had contacted the British Embassy in the Gambia about using Banjul Airport for ATF flights. The Embassy swiftly replied stating that the airfield was open 24 hours a day and that fuel stocks were sufficient for the suggested level of movements. The Gambia Government could be expected to approve the movements but the Embassy would want to seek their agreement in principle first, once MOD had confirmed its intentions.

191700Z Apr
38G/1800/172/Cont.4
E29

3.26. A few days later the British Embassy obtained the necessary permission for the RAF VC10 detachment to operate from Yundum Airport, Banjul, and the detachment of 32 aircrew and 12 MSS travelled to Banjul by Hercules on 24 April. HQ 38 Gp saw the need for up to 6 movements per day. Operations were to start with the arrival of VC10 Flight 2700, arriving at Banjul with the RAF AT Det Cdr at 2210Z on 24 April. As with Dakar, VC10 captains were to endeavour to carry round trip fuel from Banjul; however the maximum take-off weight was to be within normal performance criteria.

231825Z Apr
38G/1800/172/Cont.4
E91 and 100
232350Z Apr
TF6.5 E67

241254Z Apr
TF6.5 E79

3.27. Another measure introduced to conserve fuel stocks at Dakar was to reinstate Gibraltar as a stop for Hercules operating northbound from Dakar. MODUK Air instructed that this was to commence as from Flight 4895 at on 28 April. To safeguard against an aircraft being held at Gibraltar because its crew had exceeded its duty day (16) an additional contingency crew was positioned there.

280933Z Apr
TF6.6 E21

281000Z Apr
TF6.6 E25

3.28. Fortunately the fuel problem at Dakar was short-lived. By 30 April, the VC10 detachment was back at Dakar (17) and VC10 flights were operating inbound and outbound through there en-route for Ascension. This was followed by HQ 38 Gp authorizing Hercules to route direct to the UK from Dakar as from 3 May.

291420Z Apr
TF6.6 E48
021535Z May
TF6.6 E82

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(16) The Crew Duty Day for ATF crews was normally 16 hrs. This allowed for 2 hrs pre-flight brief and 14 hrs flying.

(17) The 10 Sqn F540 records that Dakar was quickly restored as the staging post when it became possible that the military coup and curfew at Banjul could hamper operations.

UK BASE OPERATIONS

3.29. By the beginning of May the strategic airlift was operating very much as a scheduled service; VC10 flights were planned to leave Brize Norton every 8 hrs and Hercules to leave Lyneham every 4 hrs. Slip crews were positioned at Dakar to cope with this flow of aircraft. Should there be insufficient freight to warrant a flight, MOD Defence Operations Movements Staff (DOMS) would cancel it. Similarly if there was a requirement for extra flights these would be integrated within the overall pattern.

3.30. As previously stated, the ATF operating in the strategic role in support of CORPORATE continued to be tasked and controlled under normal arrangements (18). Bids for CORPORATE airlift were passed to DOMS who allocated the payloads to specific flights. HQ 38 Gp issued the transop for each flight and maintained operational control whilst the flights were in progress. HQ Strike Command (STC) continued to maintain operational command.

3.31. The majority of the flights to Ascension were mounted from either Lyneham or Brize Norton, it being easier to transfer payloads by road to these airfields than to move specialized loading and servicing equipment to the user's airfield. At times, however, when the loads were concentrated at specific airfields or at a long distance from the mounting bases the transport aircraft would transit to these airfields for loading, UKMAMS teams and MSS personnel also travelling there to provide support. Such occasions were the moves of Sea Harriers and helicopters from RNAS Yeovilton, Nimrods from Kinloss, Harriers from Wittering and Victors from Marham.

3.32. The increased flying rates for both Hercules and VC10s caused much extra work for the engineering staff at both bases, and Lyneham had the additional burden of providing engineering support staff for the AT Detachments at Gibraltar, Dakar and Ascension. To meet the increased workload in engineering, supply, and accounting, reinforcement personnel had to be asked for; the requests were met speedily and P Man 7 at the RAF Personnel Management Centre (PMC) endeavoured to exclude Lyneham from Emergency Reinforcement Scheme commitments in the early stages of the operations. The reinforcements in all areas were of good calibre and worked well, though Lyneham would have appreciated greater flexibility in their employment had PMC not excluded them from overseas detachments.

LYN/5111/63/2/Air
30 Jul
1G/1800/172/32/
CONT.1 E26

3.33. The support personnel at both Lyneham and Brize Norton worked long hours over this period and the operational routine

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(18) In peacetime the ATF was tasked by the Air Transport Allocation Committee (ATAC), formed with members of the 3 Services Movements and Exercise Planning Staffs and the Staff of Ops (AT)(RAF). The Committee met monthly to allocate airlift in accordance with the COS Committee's priorities.

became well established. The Stn Cdr, Lyneham, stated that "in itself Operation CORPORATE presents few problems because of the smooth and regular flow of aircraft en route. Any problem likely to arise in the future would stem from non-CORPORATE tasking by MOD and a variety of assorted local and other activities such as the Royal Review of the RAF Regiment, Air to Air Refuelling (AAR) and Strip Landing Training and the detachment of aircrew on detachment commander duties at staging posts".

271230Z May
38G/1800/172/19/
CONT.1 E13

STAGING POST OPERATIONS

3.34. The operations staff at the staging posts comprised staff officers from HQ 38 Gp or aircrew from the ATF stations, and the first AT detachment was formed at Gibraltar on 2 April. Gibraltar had been reinforced for Exercise SPRINGTRAIN, and so by retaining the exercise reinforcements it was able to support 24 hours operations. The station could operate continuously for about a week on its peacetime establishment, but would normally be reinforced for any extended period of continuous operations. However, even with the SPRINGTRAIN staff, Gibraltar was still overstretched in some areas and foreseeing a potential problem on 5 April it requested additional reinforcements which arrived on 17 April.

38G/1800/172/16/
Cont.1 E1
RAF Gibraltar F540
Apr

3.35 Initially, Hercules staged through Gibraltar in both directions with the crews slipping and taking their crew rest time. Ten crews were based at Gibraltar from 3 April until the slip pattern was changed and the slip crews were moved to Dakar. Most crews were accommodated in the Messes and the surplus went to hotels.

3.36. By mid-April the detachment consisted of 20 personnel. The flight lieutenant commander and his deputy were from HQ 38 Gp and the warrant officer Eng Co-ord and 16 servicing personnel were provided by Lyneham; an SAC supplier completed the detachment. The Det Cdr operated from the main station operations room whilst the engineering/stores personnel operated from the Visiting Aircraft Servicing Flight. The arrangements worked very well, the detachment personnel being organized into a 3 shift system of 12 hours on and 24 hours off. When it was necessary to rectify unserviceable aircraft, appropriate tradesmen were called in from rest to supplement the duty shift.

3.37. From 14 April Hercules were routed through Gibraltar only on their southbound flights, though from 28 April to 3 May they had to stage there in both directions in order to conserve the limited fuel stocks at Dakar. The exception allowed by HQ 38 Gp was when it was possible to go direct to Dakar provided payload was not reduced. The situation was obviously fluid but the Gibraltar Detachment was able to cope with aircraft staging north and southbound at 4 hourly intervals in either direction. The number of Hercules staging through Gibraltar daily varied between zero (one day only!) to 17, its largest number of Hercules ever in one day. Altogether during the months of April, May and June 325 Hercules sorties staged through Gibraltar.

3.38. The detachment at Dakar was formed on 5 April and once clearance had been obtained from the Senegalese authorities for all transport aircraft to stage through Dakar the size of the detachment grew until by the beginning of May it numbered 38 persons. It was commanded by a squadron leader and consisted of 5 operations and 2 administrative staff and 30 engineering staff (16 Hercules and 14 VC10 tradesmen). There were also up to 10 Hercules and 4 VC10 slip crews in residence at Dakar at any one time.

3.39. The airlift through Dakar effectively doubled the number of movements at the airport and was to create a fuel supply problem. Besides the limited availability already dealt with, there were also problems with the quality of the fuel received, and on 2 unrelated occasions aircraft diverted to en route airfields with suspected fuel contamination. The first of these incidents happened on 12 April when a Hercules flown by a 70 Sqn crew diverted to Faro having suffered power loss and symptoms of fuel system icing whilst flying from Dakar to Gibraltar. The second incident occurred on 21 April when a 47 Sqn crew was forced to make an emergency landing at Porto Santo following a multiple engine failure due to fuel icing. Because of these incidents a 3 man TSW detachment plus blending trolley and a stock of fuel inhibitor were despatched to Dakar on 24 April. The inhibitor was to be added in the appropriate amount (19) to each uplift of fuel from Dakar.

3.40. Air Afrique was the contracted handling agent for RAF aircraft staging through Dakar. They provided a somewhat erratic service that was sometimes very slow; also at times there was a shortage of Ground Power Units (GPU) and it became essential for all transiting aircraft to arrive with a serviceable auxiliary power unit (APU) or Gas Turbine Compressor (GTC). On several occasions aircraft were refuelled using their GTC (20), in an effort to maintain the flow of aircraft south. HQ 38 Gp inquired informally of the detachment whether RAF equipment should be positioned at Dakar to assist in the refuelling. However, the British Embassy advised the detachment that for diplomatic reasons they should use the local agent's equipment even though it was not always available, often unserviceable and frequently unreliable. However, as the Det Cdr pointed out, there had been no refuelling delays to date.

061100Z Jun
38G/1800/172/Cont.8
E26

3.41. The detachment also experienced problems in obtaining catering for en-route aircraft and metereological forecasts for crews. In the early days aircraft were delayed awaiting the delivery of catering for passengers. This was a constant

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(19) Fuel Inhibitor prevents the water, which is always present in aviation fuel, from freezing.

(20) The Hercules GTC was situated near the port wing which contains fuel tanks and vents. Fumes from the fuel near the hot air from the GTC could be hazardous.

problem but in spite of repeated requests from the Det Cdr it was not until 17 May that the decision was taken for Lyneham to ration for the complete round trip. The meterological problem was a little unreal for, whilst it was true that it was difficult to obtain official written forecasts, with aircraft arriving at Dakar from both directions at frequent intervals, there was a lot of first hand knowledge to be tapped. Generally the Air Afrique services provided were reasonably effective.

202038Z Apr 38G/1800/172/Cont.4 E56
171026Z May 38G/1800/172/Cont.7 E11
221345Z 38G/1800/172/Cont.4 E82

3.42. Throughout the operation it was important that aircraft adhered to planned timings and did not arrive early. Early arrivals frequently experienced delays in the provision of aircraft services and crew transport. On the evening of 20 April there were 7 RAF aircraft on the ground at Dakar, and the AT Det Cdr advised that the local resources were beginning to crumble. It was essential that HQ 38 Gp knew of possible conflicts as soon as possible if it was to avoid such incidents recurring, but unfortunately, communications between the UK and Dakar were difficult. Whilst the SITA (21) was adequate for unclassified signals, all other traffic had to be routed via the Embassy, which had no on-line facilities and used a manual decoding system. Only one communications officer was established and the sudden increased workload posed problems. All signals had to be collected from the Embassy which was some 30 minutes by road from the airport, and the unreliable Dakar telephone system added to the problem of their notification/collection. Thus, though there was an understandable reluctance to use SITA, it became the only means of sending signals speedily.

38G/1800/172/16/Cont 4 May E28(1)9-C

202038Z Apr 38G/1800/172/Cont.4 E56

38G/1800/172/16/Cont 4 May 82

3.43. Accommodation at the airport was cramped and inadequate. Air Afrique allowed the detachment to share its small and rudimentary Operations Room to the extent of one desk but the office was very crowded, especially at Air Afrique shift change times, and security was non-existent. However, the location of the SITA terminal and company VHF made the sharing of the limited Operations Room inevitable.

3.44. The engineering and accounts staff were no better off though the engineering detachment encountered very few problems. Issue of spares to replace those used was quickly actioned by the appropriate UK airfield. Because of the perfect weather conditions in April and May working conditions on the apron were good. However, with the arrival of the humid rainy season in June they became more difficult particularly with no hangar accommodation available. Engineering spares and equipment, whilst under cover, were stored in less than ideal conditions.

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(21) SITA was an international Civilian air traffic communications network. HQ 38 Gp, HQ STC and MOD (Ops)(AT)(RAF) were connected to the network which assisted in communicating with ATF aircraft at civilian airfields.

3.45. In April and May, Dakar was at the height of its holiday season and the Det Cdr experienced considerable problems in retaining dedicated hotel accommodation for crews 'slipping' through Dakar. The situation improved at the end of the holiday season in late May, and overall, a good standard of accommodation was provided. The 47 Sqn Operations Record Book (ORB) records that "morale on the Sqn continued to be high, boosted no doubt by the stopovers in Dakar, where much time and effort was spent learning to windsurf, or lying on the beach improving sun tans". 47 Sqn F540 May 82

3.46. HQ 38 Gp were concerned about security at Dakar where, since it was an international airport, concealment of RAF operations was not possible. A low profile approach was adopted and all crews changed into civilian clothes before leaving the aircraft. Detachment personnel whilst on duty at the airport wore uniform; this helped identification and allowed them to move freely about the airport confines where the RAF uniform was regarded by many Senegalese as airline company dress. The Russian Embassy detached observers to the airfield to record the RAF operations. There was nothing to be done about this although HM Ambassador was successful in preventing a Russian Embassy car being parked at the edge of the pan. A 38 Gp suggestion that unarmed RAF Police be positioned at the airport was rejected by HM Ambassador. He was confident that his relations with the Senegalese authorities were such that any change to the then current low threat assessment would be brought quickly to his notice. 141530Z Apr 38G/1800/172/Cont.3 E65

3.47. Relations between the British and the Senegalese authorities were very good. Both countries co-operated covertly and when the Senegalese requested changes to the slip pattern the RAF responded immediately. For example, the pattern of operations was revised over the period 24 to 26 May whilst President Mitterand of France paid an official visit to Senegal. 131029Z May 38G/1800/172/Cont.6 E84

3.48. The VC10 detachment had to operate from Banjul Airport during the period 28 April to 4 May. The handling agent at Banjul was British Caledonian and the crews and detachment were accommodated in hotels. The detachment moved back to Dakar on 4 May in order that the fuel and facilities at Banjul could be used by Victors involved in the ferrying of Harriers to Ascension. During this period VC10 flights staged through Ascension.

FORWARD MOUNTING BASE OPERATIONS

3.49. The AT Det Cdr arrived at Ascension Island at 0130Z on 4 April, the main detachment party having already arrived. As a squadron leader he was the senior RAF officer (SRAFO) on the Island until the arrival of the Nimrod detachment. The general story of Ascension's expansion and problems is told in Chapter 2; this section recounts the specific problems that affected the ATF strategic airlift. 38G/1800/172/16.1 7 May E60

3.50. The early flight itineraries put the aircraft on the ground at Ascension for 14 hours, the crews being accommodated in an air conditioned block which belonged to

the USAF. The 14 hours gave ample time for unloading, loading and rectification. Once the decision was made to slip Hercules crews at Dakar, the itineraries put the aircraft on the ground for a 2 hrs turn round. The handling was done by a single MAMS team, with little unloading equipment, and 2 ground engineers, but even with these demanding time limits the aircraft could be processed successfully. But at times extra aircraft were injected into the pattern at very short notice; for example, the detachment had 30 minutes notice of the arrival of a freight VC10 and the first civilian Belfast and Boeing-707 arrived with no notice. After unloading, the passengers and freight were handed to Naval Party (NP) 1222 at the edge of the ramp. Problems which were common to both agencies were tackled with a good spirit of co-operation, the RAF giving its local experience and the RN its extra manpower.

3.51. During the first 3 weeks the detachment handled 114 x Hercules, 31 x VC10, 5 X Belfast, 2 x 707 and 1 x C141, and a grand total of 1500 passengers and over 3¼ million pounds of cargo. By now, the operation was becoming a routine, albeit taxing one. Eventually the detachment was provided with Landrovers, 2 Condecs and 2 Henley fork lift trucks to assist with the off-loading, although it was a rare day indeed when all were fully serviceable. UKMAMS F540 Jul

3.52. The number of ground engineers settled at 6 and a 3-shift system was instituted. This entailed 8 hours on duty, 8 hours on standby and 8 hours off, the 8 hours on standby being necessary to provide extra effort if needed to perform rectification and servicing in the 2 hour turn round period. 38G/1800/172/16-E60 7 May

3.53. Eventually Ascension became packed with men, material and aircraft. Parking space was at such a premium that VC10s had to be towed into position for restart lest their jet efflux damaged other aircraft or piles of stores. CBFSU Ascension informed 38 Gp that the Island could accept only 2 Hercules and one VC10 or Belfast on the ramp at the same time. It now became necessary for the flow of aircraft into Ascension to be coordinated and MODUK Air authorized HQ 38 Gp to coordinate the flow of aircraft through Ascension with any conflictions being referred to MODUK Air. At times of heavy activity such as the mounting of Victor Maritime Radar Reconnaissance (MRR) sorties or Vulcan attacks on Port Stanley Airfield, the flow of ATF aircraft was adjusted to avoid clashes.

052145Z May 38G/1800/172/Cont.6 E10

211005Z Apr TF6.5 E44

280505Z Apr TF6.6 E19

3.54. By mid May the handling of strategic flights through Ascension posed few problems, and as long as the aircraft were flowed through at sensible intervals, flights normally departed on time. Details of individual flights and of loads are held by the Air Historical Branch (RAF).

RATES OF EFFORT

3.55. During this period the VC10 aircraft flew to 1.5 times its SD 98 rate (22) and the Hercules to nearly twice the SD 98 figures. It was necessary for the Alert Measures Committee (AMC) to authorize intensive flying rates (23) for both aircraft types for 3 consecutive months. These rates of effort caused some problems in the servicing and supply of aircraft but it was aircrew shortage which was to prove more serious.

HQ 38 Gp F540
Apr/Jun
D/AF Ops/TF 22.2 E4

3.56. Despite recording in May the highest number of hours in one month since its introduction into service, the VC10 caused engineering staffs no significant problems, though there were occasionally insufficient aircraft available to fulfil all the approved tasks and civilian aircraft had to be chartered. The Hercules force, however, was being tasked at a pace which caused the AMC to make the recovery of Hercules aircraft from servicing a high priority, the Chairman emphasising that all possible must be done to maximize their availability. Assistant Director of Engineering Policy (A/D Eng Pol) had also approached MOD(PE) about the availability of one of its aircraft and, once the Aeroplane and Armament Experimental Establishment (A and AEE) realised the priority being placed on Hercules availability, the Director of Flying promised 2 Hercules with MOD(PE) crews as soon as possible. Three additional Hercules were made available from Marshall of Cambridge (24) whilst MOD(PE) offered its Britannia to DOMS for 2 lifts to Calgary to pick up cold weather clothing required for the Army, thus relieving Hercules for other tasks.

Brize Norton F540
May/Jun

D/AFOPS/TF22.1 E27

3.57. By 12 May, HQ 38 Gp was concerned that the Hercules C MK 3 was being undertasked compared with the C MK 1 aircraft, a concern shared by the Chief Engineer (CE)(RAF). On the prevailing rate of flying some C Mk 1 would have reached the flying hours limits before their planned feed in date for minor and major servicing and would have in time required Command approval for any extensions. It was then apparent that long-term engineering considerations demanded a better balance in C Mk 1 and C Mk 3 tasking, and AOC 38 Gp decided that Hercules tasking on the UK to Ascension route should be planned on a C Mk 3 to C Mk 1 ratio of 1 to 2 flights. With an overweight take-off from Dakar, an overweight landing of up to 140,000 lbs at Ascension and a routeing outbound via Gibraltar, the C Mk 3 offered a payload of 22,500 lbs compared with the C Mk 1's payload of 27,000 lbs. It was

CE(RAF)2/1/167.5
E1 28 May

AMSO/19/8/1.3 E13

121510Z May
38G/1800/172/Cont.6
E71

(22) The SD 98 rate is a published figure of flying for aircraft types on which establishment figures, spares supply and engineering cycles are based.

(23) Intensive rates should normally only be authorized for one month in anyone year.

(24) Marshall of Cambridge held the contract for the servicing of Hercules aircraft.

necessary at times to adjust some loads within the AOC'S given ratio but records showed that a significant proportion of payloads on all Hercules were below 22,500 lbs (25). Scheduled servicing including majors continued to be done, however, by extending the aircraft to their servicing backstops, and by providing extra manpower the situation was contained.

3.58. The demands made on aircrew at AT stations, particularly Lyneham, for flying and detachment duties remained high throughout CORPORATE and, as has been seen, the flying rates achieved were well in excess of the normal peacetime SD 98 rate. In fact, up to the beginning of CORPORATE the flying task had been much lower than the SD 98 rate, the reduction being caused by financial restrictions which placed a maximum of 2,500 hours/month on the Hercules force and 950 hours on the VC10 fleet. The consequence of these cuts was that the numbers of crews for both types had been reduced, the hours available being deemed insufficient to support the established number of crews. As a result, in April 82, there was a situation where the hours being flown were well in excess of the SD 98 rate whereas the number of crews available was considerably below the establishment figure. As an added complication a number of experienced tactical support crews were held back against certain contingencies and this resulted in the route crews bearing a disproportionate amount of the flying. By the last week of April, Lyneham requested of HQ 38 Gp a 30 hr flying extension for 8 crews who were approaching the maximum number of flying allowed by Group Air Staff Orders (GASOs). HQ 38 Gp replied that whilst appreciating the problems of balancing the conflicting requirements of CORPORATE every effort had to be made to share equitably the load amongst all available aircrew. However, to provide some flexibility for the duration of CORPORATE the GASOs were amended to allow aircrew to fly up to 360 hours in 3 consecutive months but to fly no more than 140 hours in a 28 day consecutive period.

30 Sqn F540 Apr

271345Z Apr
38G/1800/172/19/
Cont.1 E2

3.59. In an effort to release more crews for AT Tasking, HQ 38 Gp stopped periodic refresher training, extended operating categories and the instrument rating validity. This had the effect of releasing some staff of 241 and 242 OCUs and 38 Gp Examining Unit for operational tasking, although the training of new crew members continued throughout the operation.

24 Sqn F540 May
271100Z May
38G/1800/172/19
Cont.1 E12

3.60. By the end of May, HQ 38 Gp had taken all possible measures to generate sufficient Hercules and VC10 crews to meet its operational tasks. However, the AT staff advised that another 10 additional Hercules crews were required to

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(25) With the Hercules it was normal for freight to 'bulk-out' as opposed to 'weight-out'.

meet known current and future commitments (26). MOD PMC had already promptly met requests for adjustments to individual officer postings and exits, and HQ 38 Gp now thought that the situation demanded a broader approach to ensure the right manning and experience levels on the Hercules and therefore presented PMC with a list of suggested postings. This list involved the return of ex-Hercules aircrew from other units such as 6 Flying Training School (FTS). PMC met the vast majority of the requests and many aircrew returned to Lyneham. The number of VC10 crews available was 29 which was sufficient for all tasks, but only just.

27 1420 May
1G/57600/4/P2.1 E12
031415Z Jun
1G/57600/4/P2.1 E21

BZN/262/123/Ops
6 Aug
38G/1800/172/32/
Cont.1 E34

ANCILLARY OPERATIONS

3.61. Most of the ATF flights in support of CORPORATE were naturally to Ascension. However, both VC10 and Hercules flew missions to other locations in support of the operation; these flights were to collect vital equipment and spares and also essential military personnel required for the operation from overseas exercises. The actual airfields visited and loads carried are shown in Annex A.

Lyneham and Brize Norton F540 Apr-Jun

3.62. At various times during the airlift it was necessary for DOMS to charter civilian aircraft. This was on those occasions when either loads were too big for the Hercules or the ATF was heavily tasked and additional airlift capacity was needed. The only suitable cargo aircraft available with the required handling aids were the Belfast and the Boeing-707 freighters. Unfortunately, only 3 Belfasts and a limited number of Boeing-707s were available and not all at any one time. Belfast aircraft of Heavy Lift Cargo Airlines were chartered to carry very large helicopters such as the Wessex or Sea King (27), a Tugmaster, a crane and a mobile laundry trailer, whilst 2 Boeing 707 aircraft from Tradewinds and British Air Cargo were chartered to assist in the movement of the main Victor Detachment from Marham on 16 April. DOMS chartered other aircraft to relieve VC10s from the commitments to scheduled flights to Belize, Cyprus and Dulles thereby releasing them for either CORPORATE tasks or to replace the over committed Hercules on routine tasks within Europe. Details of the Civilian Charter flights in direct support of CORPORATE are at Annex B.

AMSO 19/8/1.1 E47/3
23 Apr

131145Z May
TF6.8 E19

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(26) These tasks included tanking and AAR commitments which will be dealt with later in the chapter. The Hercules force was tasked to provide between 64 and 83 crews each day which, when leave and one day off per crew per week were accounted for, equated to a daily tasking rate of between 88 and 107 crews. Some of the overtasking was accomplished by reducing leave and stand down. As at the 26 May 82 the 91 aircrews available comprised 75 squadron and 11 OCU crews, 2 from 38 Gp Examining Unit and one each from Air Test, JATE and MOD(PE) Farnborough.

(27) Ironically the Belfast aircraft used were former RAF aircraft of 53 Sqn which had operated with Belfasts from 1966 until disbanded in the mid 1970s.

3.63. Mention must be made of the Communications Squadrons based at Northolt, for throughout the period of CORPORATE aircraft of 32 Sqn and 207 Sqn ferried Ministers and Service Chiefs engaged on related matters around both the UK and Europe. A HS 125 was on constant standby to ferry the Secretary of State for Defence, Mr John Nott, between his constituency home in Cornwall and London and 32 Sqn crews spent many weekends on 2 hours' standby in the Mess at either RNAS Culdrose or St Mawgan. The Foreign Secretary, Mr Francis Pym, was another of the regular VIPs transported, as was AM Sir John Curtiss, the Air Commander. Whilst most of the flying task concerned the ferrying of VIPs between various meetings, some tasks consisted of ferrying personnel and kit between the UK military bases and the ATF airfields. In addition to the Northolt aircraft, 115 Sqn based at Brize Norton provided an aircraft and crew at 2 hours' standby from the beginning of April to the middle of June to fly within NW Europe in support of CORPORATE. It was tasked on 12 occasions.

32 Sqn F540 Apr-Jun
207 Sqn F540 Apr-Jun
115 Sqn F540 Apr-Jun

3.64. Dominie and Jetstream of 6 FTS Finningley also flew missions in support of the operation. Initially, UK Regional Air Operations Centre (UK RAOC) tasked the unit on a one-off basis until 28 May when, as a result of a request from UK RAOC, HQ RAF Support Command authorized a twice daily shuttle service. Each day aircraft positioned at Kinloss, departing at 0500Z and 1700Z to fly via Coningsby and Marham to Brize Norton, picking up aircraft spares and essential personnel for onward movement to Ascension by VC10 or Hercules. The schedules were frequently changed, invariably whilst en route, and involved some flights to NW Europe. No 60 Sqn provided a Pembroke to fly Harrier spares from Germany to the UK.

RAF Finningley F540 Apr-Jun
251757Z May 38G/1800/172/Cont.7 E61
60 Sqn F540 May

3.65. In addition to carrying personnel and freight to Ascension for onward ferry to the area of operations, VC10s of No 10 Sqn flew some 55 sorties of a humanitarian nature. Some of these flights were dedicated solely to aeromedical evacuation whilst others were flights recovering to the UK but providing opportunity carriage for sick and injured personnel.

AEROMEDICAL FLIGHTS

3.66. The first evacuation flight, Ascot 2800, was hastily arranged to depart Brize Norton at 1100 on 3 April for Montevideo. There was no time to position slip crews at Ascension so the task was double-crewed. The first crew operated direct to the Island whilst the second crew rested, and then operated the aircraft from Ascension to Montevideo. The flight time on this leg was approximately 7 hours. HQ 38 Gp granted a crew duty day extension for the second crew in order for them to reach Montevideo in the required time scale. Once the crew had reached Montevideo they had a 12 hour rest before operating back to Ascension with their passengers, Mr Rex Hunt, members of the Falkland Islands administration and RMs, all of whom had been expelled from the Islands following the Argentine invasion. An aeromedical escort team of 3 was positioned in Ascension by Hercules to

030800Z Apr 38G/55606/65/MOV.1 E9

operate on the VC10's homeward flight. A similar flight, Ascot 2819, operated to Montevideo on 18 April and returned to the UK with RMs and British scientists expelled from South Georgia, and those RMs who had evaded initial capture by escaping into the Falklands countryside. Again, an aeromedical team accompanied the passengers on the homeward bound leg. Both these flights operated through Montevideo without incident, the Uruguayans placing no restrictions on the aircraft; in fact, the crew operated as if on a normal flight.

10 Sqn F540 Apr

3.67. During the first two months of CORPORATE, VC10s completed 22 sorties in the aeromedical role. On 27 May, two of the flights, Ascot 2716 and 2717, were utilized to recover to the UK survivors of HMS SHEFFIELD from Ascension where they had disembarked from a ship. Similar flights were mounted to return survivors from other ships sunk by enemy action. Another flight was diverted to Freetown, Sierra Leone, to recover a patient, the Captain of the SS UGANDA, to the UK. In addition to VC10s, Hercules were sometimes used to recover the injured. For each of the flights, an Aeromedical Escort Team operated as crew to provide medical aid and comfort to the patients on their flight back to the UK. Patients on arrival in the UK were normally transferred to Princess Alexandra's RAF Hospital Wroughton. (See Chapter 11 for further details of aeromedical facilities.)

10 Sqn F540 May

280822Z Apr
TF34.1 E32

3.68. In early April, MOD requisitioned the SS UGANDA as a hospital ship and intended to employ HMS HECLA, HYDRA and HERALD as hospital ships (casualty ferries) in accordance with the Geneva Convention (Article 7). In mid-April, the RN contacted HM Ambassador in Uruguay about the possibilities of the hospital ships delivering casualties to Montevideo where they would be collected by RAF VC10s operating in the aeromedical role. The Ambassador was not hopeful and suggested that evacuation to the UK by civilian charter flights rather than RAF aircraft might stand a better chance of acceptance by Uruguay. Nevertheless, over a month later on the 23 May HM Ambassador reported that the Uruguay authorities had agreed to the use of Montevideo for the evacuation of casualties, with the caveat that they would prefer the arrangements to be made through the International Red Cross Committee (IRCC). The Ambassador made it clear that while for the present time the Uruguayan authorities would continue to perform an invaluable humanitarian role the British must not take them for granted. They expected to be asked permission on each occasion. The Ambassador added that for practical reasons she wished to be given as full details as possible in advance.

151451Z Apr
TF 34.1 E6

151545Z Apr
TF34.1E7

231700 May
TF34.2

3.69. Once Argentina agreed to the RN hospital ships using Montevideo plans were made to mount the first flight, Ascot 2633, in June. MODUK Air signalled details of the flight, freight and passengers to Montevideo. Unfortunately, this signal contained many service abbreviations which were obscure to HM Ambassador and she lost no time in making the point that she did not have a Defence Attache on her staff. Nevertheless, the problem was soon rectified and HQ 38 Gp issued the transop on the 31 May. The aircraft routed via Dakar and Ascension and was due to arrive at Montevideo at

291027Z May
291635Z May
TF34.2 E24 and 26

301535Z May
TF34.2 E32
311415Z May

1200Z on 2 June where the crew would take 14 hours' rest and depart at 0200Z on 3 June (28). The aeromedical team supporting the flight consisted of one wing commander doctor, 2 flight lieutenant nursing sisters and 2 NCOs. HMS HECLA was expected to enter Montevideo at 1100 on 2 June with British casualties and Argentine survivors of the NARWAL. MOD advised that the aircraft was to be marked in accordance with the Geneva Convention with a Swiss Red Cross on a white background; these were to be displayed next to the RAF roundels on the upper and lower sides of the wings and on the sides of the aircraft. The red crosses and RAF roundels were to be of the same size. MOD further advised that all route details and timings should be passed to the Argentines, Brazilians and Uruguayans, that radio contact should be maintained at all times and that in accordance with the Geneva Convention any summons to land should be obeyed. In the event of such a landing the aircraft and occupants would be able to continue the flight after examination.

TF6.10 E64

301900Z May
TF34.2 E31

3.70. The flight and change-over of passengers and patients seemed at first to have proceeded smoothly, the VC10 departing at 030130Z. However, a signal was then received from HM Ambassador Montevideo complaining about the time taken to hand-over the British casualties. The Argentines had got their prisoners of war away from Montevideo within an hour of HECLA docking around 9am local, whereas the British casualties did not depart until 10.30 pm local. The Ambassador had been informed by an "unimpeachable source" that the Argentine Ambassador was telling members of the Uruguayan Government that the British dilatoriness in getting away the casualties was because of nefarious activities between arrival and departure times of those to be evacuated. The Argentine Ambassador alleged that the British were trying to 'fiddle things' on board ship and using the aircraft crews for improper purposes. This line had some apparent effect on the foreign minister and resulted in the Uruguayans' paying scrupulous attention to the inspection of whatever the hospital ships took on board. The Uruguayan authorities did not understand why the RAF could not fly out 2 crews or ensure that the VC10 arrived the evening before - a fair point! The Ambassador added that it was a strain for the Uruguayan authorities to have to control access to ships and aircraft for what seemed to them to be an inordinate period. She stressed that if the British wished to continue to use Montevideo this problem had to be solved.

031915Z Jun
TF34.2 E73

3.71. The coordination of timing between hospital ships' arrival at Montevideo and VC10 departures should have been quite straightforward. The next planned event was the arrival of HMS HYDRA with an ETA Montevideo at 1300 on 6 June; the corresponding VC10 Task 2645 was planned to arrive at 0300Z and depart for the UK via Ascension at 1700Z. This provided a 4 hour period for transfer of casualties from ship to aircraft, and the overall 14 hours' ground time allowed for normal crew rest and the transfer of

5 Jun 82
TF34.2 E84

(28) The timings were agreed by the Defence Secretariat staff and DOMS.

urgent southbound medical supplies. ACDS Personnel and Logistics (P&L) was to co-ordinate the future arrangements for survivors and other casualties of CORPORATE in consultation with DOMS and the Defence Secretariat branches concerned. A Defence Adviser was also appointed to assist the Ambassador in Montevideo. It was hoped that his presence would relieve the burdens imposed on the Ambassador and her staff and also ease the RAF operations through this important Uruguayan staging post.

3.72. On 4 June the Uruguayan authorities cleared Flight Ascot 2645 to operate into Montevideo. For reasons that are unclear, HM Ambassador stressed that for presentational reasons and regardless of any other considerations the Uruguayans would like the aircraft to carry Red Cross markings. The Uruguayans were ready to paint the markings on in Montevideo if it was not possible prior to departure from the UK. 042355Z Jun TF34.2 E83

3.73. Unfortunately, VC10 Flt No Ascot 2645 developed a technical fault at Brize Norton which delayed its departure for Montevideo by 3 hours; its new ETA Montevideo was now 060600Z Jun, and HQ 38 Gp informed the British Embassy in Montevideo that the original ETD Montevideo would be met by reducing the crew rest time. The aircraft left Brize Norton without red cross markings, but it had the facility to add them at Montevideo. 051130Z Jun TF/34.2 E90

3.74. There were other troubles in store for Ascot 2645 when it arrived in Montevideo. In the 24 hours preceding its UK departure, movements staffs had tasked Ascot 2644, in error, to carry the medical stores for Montevideo. Additionally, some 14 passengers and a small amount of freight were included in Ascot 2644's load for Ascension. The passengers and freight included a specialist party from Wittering, with Shrike ARM equipment, bound for Ascension to carry out modifications to No 1 Sqn Harriers. The equipment was packed in 6 packages, only 2 of which were manifested correctly. 071800Z Jun TF23/1.9 E201

3.75. When it was subsequently realized that Flight 2645 and not 2644 was destined for Montevideo the medical stores were re-allocated to Flight 2645, and the 14 passengers and small amount of freight remaining were considered to be too small a load to justify the continued tasking of 2644. Moreover, since the planned arrival time of the Wittering party in Ascension could be met by Flight 2645, DOMS cancelled Flight 2644 and allocated the passengers and freight to Flight 2645. (29)

3.76. On the arrival of the aircraft at Ascension, the ALM briefed the detachment personnel on the whereabouts of the freight and baggage for offloading at that point and indicated that the freight for Montevideo was in the rear hold. Unloading commenced and the detachment personnel were happy that everything destined for Ascension had been 38G/1800/172/28/ Cont.1 E24

(29) The aircraft had not been marked with Red Crosses so the carrying of non-medical freight was legal.

removed. Shortly after this, the leader of the Wittering party reported that 4 items of personal baggage and one item of freight were missing. A search of the freight bay revealed nothing and the aircraft was cleared to leave for Montevideo on the assumption that the items were not on board. A flurry of ASMA messages was exchanged between Ascension and HQ 38 Gp and the aircraft was held during taxying. The AT Det Cdr was then caught between the MOD's pressure to make up for lost time so as to arrive at Montevideo within the agreed window and the need to find the missing items and after some discussion with the VC10 crew he decided to release the aircraft for Montevideo (30).

082215Z Jun
38G/1800/172/28/
Cont.1 E15

3.77. Nearing the Uruguayan coast, the crew of Ascot 2645 were advised that the Canasco International Airport at Montevideo was closed due to fog and that they were being diverted to Santa Bernadina airport at Durazmo. The aircraft duly landed there and was met by various officials. Eventually the crew were allowed to proceed to a hotel for rest, leaving one ground engineer and one medical corporal behind to guard the aircraft. The crew were escorted by armed guards who remained on watch during the crew rest period. During this rest period, the ground engineer was called to the telephone to receive a message from the British Embassy in Montevideo about the possibility of 4 pieces of cargo having been overshipped from Ascension, the Embassy having been advised by HQ 38 Gp and Ascension that the packages could well be on board. The Ground Engineer and later the ALM entered the rear hold to make another search for the missing items, but were unable to identify them amongst the many cartons of medical supplies.

38G/1800/172/
28/Cont.1 E24

061029Z Jun
38G/1800/172/28/
Cont.1 E4

3.78. The aircraft then left for Montevideo to be met upon arrival by a large party of military personnel, customs, Red Cross officials and a British Embassy official. The British Embassy official advised the captain of the aircraft of the missing freight. The crew were alerted and watched as the rear hold was unloaded. On seeing a different type of container, the ALM realized that the missing cargo had come to light. The captain was prevented by a Uruguayan Air Force Officer from separating them for retention on the aircraft and they were included in medical supplies for inspection by the Red Cross representatives who duly discovered the spares. The cartons and boxes were immediately impounded by the Uruguayan authorities and the Embassy informed that they would be returned to the UK by the first available civilian flight.(31)

070343Z Jun
TF23/1.9 E175

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(30) On the evidence available at the time to the AT Det Cdr AOC 38 Gp supported this decision.

(31) Later the Embassy were informed that the spares would probably be kept impounded until the end of hostilities.

3.79. The Ambassador advised MOD that Britain faced damage to her position in Uruguay from the fact that military supplies were on the aircraft and potentially more serious damage from the fact that the incident could have been interpreted as an attempt to get military supplies onto HYDRA. Fortunately, the local press and radio reports on the incident gave prominence to an MOD statement that the incident was a mistake; there was no suggestion by the Uruguayan media that the incident was anything other. 0814502 Jun TF23/1.10 E4

3.80. Happily, the incident did not result in Uruguay stopping the VC10 aeromed flights to Montevideo. However, it did result in a tightening of the aeromedical flights operating procedures by MOD. MOD informed HQSTC and HQ 38 Gp that the best legal advice available stated that RAF aircraft entering Uruguayan airspace from Ascension to uplift aeromed passengers from Montevideo must be marked with red crosses in accordance with Article 36 of the Geneva Convention. If the aircraft was marked on departure from Brize Norton then only medical stores and medical team members could be carried to Ascension. MOD saw two options available, either permanently to mark a VC10 and reserve this aircraft for CORPORATE aeromed tasks or to apply temporary markings at Ascension en route to Montevideo. HQ 38 Gp, with HQ STC's support, favoured the latter option. 081630Z Jun TF34.3 E12 091345Z Jun TF 34.3 E18

3.81. On 9 June, MODUK Air issued a policy statement for aeromed flights transiting Ascension to airfields in South America. In summary, this said: 091720Z Jun TF34.3 E25

a. Flights would depart the UK to allow a 14 hrs turnround at the host airfield.

b. The ETA at the host airfield would be governed by the ETA of the hospital ship and the number and condition of the patients on board for transfer to the VC10.

c. The aircraft would transit from Brize Norton to Ascension in RAF livery and during a 6 hour turnround red crosses would be added which were to remain on the aircraft until its return to Brize Norton.

d. No other personnel other than the aircrew, support crew and medical teams were to be carried when the aircraft was marked with red crosses.

e. No freight other than medical stores and equipment was to be carried when the aircraft was marked with red crosses.

In addition HQ 38 Gp made the AT Det Cdr at Ascension personally responsible for the sanitization of all VC10 loads staging through to Montevideo.

3.82. A further ten VC10 aeromed flights routed through Montevideo, without hindrance from the Uruguayan authorities, though the rate of activity did cause problems for the Embassy staff. HM Ambassador advised that whilst she appreciated that

operational requirements must prevail, MOD should be aware that all amendments and additions to flight notifications details caused many problems to her staff. Each one had to be translated into Spanish, incorporated into a diplomatic note and delivered to 5 different places. 161200Z Jun TF 34.3 E88

3.83. Details of the total aeromedical lift are as follows:

	Flights	Stretcher	Walking
April	8	9	11
May	14	21	27
June	22	152	326
July	11	55	84
Total	55	237	448

SUPPORT, SAVE, SUPPLY

3.84. The RAF Lyneham motto, "Support, Save and Supply" seems to be an appropriate heading for this section which details the Hercules' support operations south of Ascension. In the early phase of the operation, Hercules of Nos 24, 30, 47 and 70 Sqns had been able to follow the well-established routines used for other operations or during military exercises, albeit at a faster pace than was customary. It soon became apparent, however, that the TF was going to need support from the air in its passage beyond Ascension. Once they had left, the TF ships would soon sail out of airdrop range of Hercules C Mk 1 or C Mk 3 aircraft, which had radii of action (RA) of only 1200 nms with a full payload while maintaining normal fuel reserves.

3.85. The first request to MODUK for an airdrop sortie to the TF came from CTF 317 on 9 April. It requested a drop to RFA FORT AUSTIN, on her passage south, before she was out of normal Hercules range from Ascension. It was estimated that this would be on 13 April. Although this request was subsequently withdrawn it does illustrate one of the first problems that had to be faced when planning an airdrop to a ship en route. The day for the drop had to be carefully chosen to ensure that the maximum payload possible was carried, thereby ensuring economy of effort, whilst at the same time allowing sufficient time, should a postponement occur, to re-schedule the drop before the ship was out of range. 091823Z Apr 38G/1800/172/9/ Cont.1 E5

100910Z Apr 38G/1800/172/9/ Cont.1 E12

3.86. The next request, on 19 April, which led to the first airdrop sortie being mounted, was from CTF 317 for a Hercules to drop a power supply unit weighing some 1600 lbs to HMS INVINCIBLE, the drop being planned for 21 April. In the next 2 days the amount of freight increased. Urgent freight needed to be delivered to HMS HERMES and HMS ALACRITY and this was added to the payload by CTF 317, a payload which included Special Air Service (SAS) equipment and an SAS soldier who was to be parachuted into the sea. 191714Z Apr 38G/1800/172/9/ Cont.1 E30

3.87. In the early days of the airdrop sorties, MOD Ops (AT)(RAF) would allocate a Hercules C MK 1 for a particular sortie from the airlift being operated between Ascension and the UK. For the first flight they instructed HQ 38 Gp to amend Ascot 4841's itinerary to allow it to complete the drop before returning to the UK. This was a more efficient way to operate the aircraft; it ensured maximum utilization of the airframe and also eased the parking problem at Ascension. In the initial stages the requests for air drop occurred at irregular intervals which did not justify maintaining a dedicated aircraft at Ascension. HQ 38 Gp positioned at Ascension a Transport Support (TS) crew (32) together with 2 Air Despatchers from No 47 Air Despatch (AD) Sqn, Royal Corps of Transport (RCT) (33) to operate on the airdrop sorties. The GEs already at Ascension re-roled the aircraft for airdrop, while the drop loads together with parachutes were prepared in the UK by 47 AD Sqn and delivered by the ATF. The loads were packed in special waterproof boxes which gave a certain amount of buoyancy when dropped into the water. Initially, until the command and control directive was clarified, the AOC 38 Gp exercised operational control of the forces involved and HQ 38 Gp issued the transops.

192330Z Apr TF6.5 E23

192156Z Apr TF6.5 E21

47 Sqn F540 May

201912Z Apr 38G/1800/172/9/ Cont.1 E47

3.88. The proposed schedule for task Ascot 4841 allowed the crew operating inbound to Ascension a 12 hour rest period there whilst the aircraft was used for the airdrop to HERMES and INVINCIBLE. This led CBFSU to signal HQ 38 Gp informing them that there was no accommodation for the crew at Ascension and suggesting that the task be mounted from Dakar with a double crew. This was one of many obstacles encountered in mounting TS operations from Ascension and the accommodation problem for the crew of Ascot 4841 was only resolved following a telephone call between HQ 18 Gp and SRAFO Ascension.

191040Z Apr 82 38G/1800/172/9/ Cont.1 E36

200200Z Apr 38G/1800/172/9/ Cont.1 E38

3.89. Eventually, a crew from No 70 Sqn carried out the task, and on arriving in the drop area were advised by INVINCIBLE that because of bad weather in the area of HERMES all the loads were to be dropped to INVINCIBLE, whose helicopters would deliver the loads to HERMES and ALACRITY. The crew returned to Ascension having flown for 7½ hours. Thus the first air-drop sortie of CORPORATE had been completed. It was to be the first of 40 TS sorties which involved the Hercules force delivering over 180,000 lbs of freight to the TF and flying some flights in excess of 24 hours. After the first drop INVINCIBLE signalled CINCFLEET to say that she had received her power supply unit and that the speed and efficiency of the delivery were most impressive and much appreciated. It was a further example of the excellent support which was doing much to sustain high morale and confidence on board the ships.

21435Z Apr 38G/1800/172/9/ Cont.1 E58

212005Z Apr 38G/1800/172/9/ Cont.1 E69

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(32) Not all Hercules crews at RAF Lyneham were TS qualified. There were 22 qualified crews on No 47 and 70 Sqn.

(33) 47 AD Sqn RCT was based at Lyneham and its role was to prepare loads for air drop by either fixed-winged or rotary-winged aircraft.

3.90. Between 21 April and 6 May, Hercules crews flew 7 airdrop sorties to 6 ships of the Task Force: HERMES, INVINCIBLE, ANTELOPE, RFA FORT AUSTIN, RFA BLUE ROVER and SS STENA SEASPREAD. A variety of equipment was delivered including SATCOM equipment, Sidewinder Air Interception Missile (AIM) accummulators, charts, cold weather clothing, arms and ammunition and mail. On 24 April Task 4872 dropped the CTF 317 Operation Orders to RFA FORT AUSTIN for onward delivery to HERMES. In fact this procedure was quite common, freight for a number of ships would be airdropped to one nominated receiver ship which would then arrange for its distribution to other ships in the group. The most distant sortie flown during the period was of 10 hrs 25 mins duration when the crew again dropped supplies to RFA FORT AUSTIN which was then at the maximum range from Ascension for a standard Hercules drop.

38G/1800/172/9/ Cont13 E23

262000ZApr 38G/1800/172/9/ Cont.2 E2

3.91. During this first fortnight many lessons were learnt and procedures changed or refined. The Fleet Movements Staff at Northwood would identify the freight for air movement and make a request to DOMS for airdrop. Once this request was approved HQ 38 Gp signalled Lyneham where the load was prepared by 47 AD Sqn. When the load was prepared it was handed over to the movements staff who then arranged its despatch to Ascension. Unfortunately, the early loads were despatched as 'free-flow' freight which meant that there was no way of determining the whereabouts of the load whilst in transit. This resulted in some airdrop-packed equipment either being loaded on the wrong aircraft, arriving unidentified at Ascension and not being loaded to the airdrop Hercules, or missing the departure from the UK and thus resulting in the cancellation of the sortie. A system was therefore devised whereby 47 AD Sqn would pass equipment to the station's movements staff only when the HQ 38 Gp movements staff had confirmed a specific flight from the UK. The consignments were to be tracked at every stage of their movement and the aircraft's ALM briefed that the item was to be handed over at Ascension as urgent freight for air despatch.

271355Z Apr 38G/1800/172/9/ Cont.2 E4

3.92. The system of preparing airdrop loads at Lyneham did not allow for the speedy passage of those items of freight that arrived within a few hours of a flight's departure, and the need to prepare loads at Ascension was soon identified; in fact, the need for more 47 AD Sqn personnel at Ascension was suggested by OC 47 AD Sqn within days of the drops commencing. He considered it essential that the team was increased to 4 men. Unfortunately, the RAF Det Cdr could not see the requirement for additional men provided that air-drop loads continued to arrive pre-packed and bids were held at the existing level. However, after it was pointed out that 38 Gp Standard Operating Procedures (SOPs) required a team of 4 ADs for certain loads and that if a crew of only 2 handled and despatched 1 Ton containers there was a risk of premature or faulty drop, CBFSU agreed to the 2 additional men being positioned at Ascension for those drops requiring a team of 4. Attitudes changed quickly and by 4 May Det Cdr Ascension asked for more equipment to be sent to expedite the packing of airdrop loads originating there and the loading of airdrop

260800Z Apr 38G/1800/172/9/ Cont.1 E112

261650Z Apr 38G/1800/172/9/ Cont.2 E1

271630Z Apr 38G/1800/172/9/ Cont.2 E9

stores; without any formal decision being taken loads were now being prepared at Ascension. By 5 May the AT Det Cdr was concerned that if the task for air-drop sorties was to increase further the four 47 AD Sqn personnel would prove insufficient to meet the requirements and he asked that 4 additional despatchers be placed on standby at Lyneham in case they were needed. OC 47 Sqn sent the requested reinforcements on 6 May.

050400Z May 38G/1800/172/9/ Cont.2 E95

3.93. The sortie to ANTELOPE on 4 May highlighted a problem that had not been previously considered - that of the ability of the receiver ship to recover the load. ANTELOPE was able to accept only 11 out of the 13 loads carried to her because of the excessive weights of 2 of the loads. In fact, these 2 loads were not notified in the transop and the Type 21 frigate ANTELOPE was not prepared to receive them. Type 21s did not have the capability to lift bulky one ton wet loads unless their special jury rig was prepared in advance. The heavy swell of 6 to 8 feet at the time of the drop, prevented the ship's Lynx helicopter from using its 8 feet strop to facilitate its full 1300 Kg lift capability, and the aircrew spent 2 hours dropping their loads. Afterwards they expressed great admiration for the crew of the ship's Gemini (a powered inflatable boat) who, in addition to combating the heavy sea, were befriended by a killer whale whilst recovering the loads. Clearly, if more notice of the heavy loads had been given the drop could have been completely successful, and ANTELOPE requested that future loads allocated to her be limited to 1200 lbs. Consequently all future transops stated a maximum weight for individual loads, depending on the mode of recovery which could be a ship's helicopter, boat, inflatable or grappling hook.

052215Z May 38G/1800/172/9/ Cont.3 E32

041805Z May 38G/1800/172/9/ Cont.2 E83

042230Z May 38G/1800/172/9/ Cont.2 E90

3.94. On the sortie to HERMES on 22 April, the crew after dropping the loads were asked by the ship to carry out a surface sweep for shipping covering an area 50 nms wide and 100 nms downtrack of the fleet. Nothing was seen visually or on radar. The crew supposed that they had been seeking a RFA but were told that it was an Argentine ship that had been expected. The Air Commander commenting on this search said that although nothing had been seen, such negative intelligence was valuable and he requested all ATF crews to be watchful at all times and to report all sightings. Such recommendations was particularly important when flying south of Ascension on freight drops to the fleet. After this, crews were ordered to maintain a plot of all contacts seen either on radar or with the Mark 1 Eyeball.

222225Z Apr 38G/1800/172/9/ Cont.1 E74

230900Z Apr 38G/1800/172/ Cont.4 E84

3.95. From the end of April, most of the TF's battle group of ships were out of range of a Hercules C Mk 1, but fortunately, as a result of preparations for a planned Special Forces (SF) operation, Hercules C Mk 1s were being modified to increase their range. Engineering Wing at Lyneham devised and fitted in the space of only five days, starting on 16 April, an auxiliary tank installation in the freight bay. The speed with which the installation was completed was helped by the fact that the RAF still had in store a number of auxiliary

fuel tanks that had been produced for the Andover C Mk 1. These cylindrical tanks each had a capacity of 825 imp gal and they could be fitted to the Hercules in pairs. The first aircraft so modified had a 4 tank installation which enabled it to carry an additional 28,000 lbs of fuel, sufficient for an extra 7 to 8 hours' endurance.

CE(RAF)/2/1/167 PT2
7 May E90
AMSO 19/8/1.2 E21

3.96. Though some difficulties were experienced with auxiliary tank venting ingenious work by engineering staffs solved the problem and by 25 April, the modification had been incorporated in 2 Hercules aircraft, XV 196 and XV 296. These aircraft had also been given an enhanced capability by the incorporation of the following additional modifications which included navigation equipment, RWR, instrument panel lighting to facilitate the use of passive night goggles and a second radar altimeter. Modifications were also to involve its preparation for the tanker role and preparatory work on its possible use as a minelayer; these modifications and activities are described in Annex C.

38G/1800/172/9/
Cont.2 E97

3.97. When it appeared unlikely that political clearance would be given to use these aircraft on SF operations, SASO 38 Gp signalled the Air Commander, suggesting that these aircraft could be usefully directed towards long range fleet re-supply. As a guide he offered the following options:

301245Z Apr
38G/1800/172/9/
Cont.2 E104

a. With all 4 fuselage tanks fitted, the Hercules could carry either 7,000lb of small stores or 2 large one ton containers. The aircraft's radius of action would be approximately 2750 nms.

b. With only 2 tanks fitted, the aircraft's capability would be 8 one ton containers and the radius of action approximately 2150 nms.

SASO added that the aircraft were currently fitted with 4 tanks and if the Air Commander proposed taking option b, it should be taken before the aircraft left Lyneham to obviate engineering modifications at Ascension.

3.98. The Air Commander signalled ACAS(Ops) on 4 May stating that there was a requirement for the earliest deployment of the long-range Hercules with a 4 tank fit to Ascension. Its primary role would be to airdrop vital equipment to deployed surface forces and its secondary role long-range search and rescue (SAR). He stated that he required to have operational control of this asset, which ACAS(Ops), with HQSTC agreement, approved once the aircraft had reached Ascension.

041159Z May
38G/1800/172/9/
Cont.2 E98

051530Z May
38G/1800/172/9/
Cont.3 E16

3.99. The first-long range Hercules, known initially as the C Mk 4, deployed to Ascension as task Ascot 4277 on 4 May. It carried 2 crews from 47 Sqn SF Flt who were authorized to make an overweight take-off of up to 175,000lbs from Lyneham to assure them of a direct flight to Ascension. This was achieved in a flight time of 13½ hrs.

041548Z May
TF6.6 E98

47Sqn F540-May

3.100. The first planned sortie for the C Mk 4 was to be a drop to HMS PLYMOUTH on 7 May. Initial planning showed that

the figures passed by HQ 38 Gp about the C Mk 4 radius of action were optimistic, and HQ 38 Gp refined these figures to 2550 nm and 1900 nm for the 4 and 2 tank cases respectively. SASO 38 Gp signalled CTF 317 saying that the introduction of the C Mk 4 constituted a venture, albeit a very welcome one, into new flight profile territory. 052047Z May 38G/1800/172/9/ Cont.3 E24

3.101. In the space of a few days much had changed - a new long-range aircraft was available and the Air Commander had operational control of Hercules operating south of Ascension. However, there were still difficulties with the despatch and receipt of stores for airdrop, and a meeting was held at Northwood on 6 May to discuss and formalize tasking procedures for long-range Hercules sorties. This meeting was attended by representatives from the DOMS, HQ 38 Gp, HQ 18 Gp, C in C Fleet, Lyneham, UKMAMS and 47 AD Sqn RCT. Positive decisions were made at the meeting to improve the quality of load handling. The essence of these decisions was that: 18G/335/4/21/1/Ops E 2

a. The AOC 18 Gp as Air Commander had operational control of all Hercules and crews flying south of Ascension.

b. TS staff were detached to Northwood to provide specialist advice and assist in task planning; all transops were henceforth to be issued by CTF 317.

c. Procedures for the despatch of loads and load documentation ex-UK were streamlined and measures were taken to ensure easy airdrop load identification and its separation from other freight.

d. All airdrop loads were to be prepared by 47 AD Sqn at Ascension and not at Lyneham.

3.102. CTF issued the transop for the first long-range Hercules C MK 4 sortie planned for 7 May to PLYMOUTH. Meanwhile the various staffs in the UK took action to implement the decisions of the Northwood meeting. HQ UK Land Forces (UKLF) authorized OC 47 AD Sqn RCT to visit Ascension to supervise the establishment of a full load preparation facility. It also agreed to retain the two 4-man teams on the Island and to place an additional 4-man team on standby at Lyneham for extra short notice tasking by HQ 38 Gp. Additional loading and packing materials were despatched to Ascension by Lyneham. The air staff at CTF 317 issued a signal detailing the tasking and control arrangements for all Hercules missions mounted from Ascension which, it was envisaged, would include SAR and surface surveillance tasks in addition to supply drops to the fleet. 061255Z May 38G/1800/172/9/ Cont.3 E49 072100Z May 38G/1800/172/9/ Cont.3 E78 070930Z May 38G/1800/172/9/ Cont.3 E64 38G/1800/172/9/ Cont.3 E87

3.103. CTF 317's controlling and tasking Hercules' operations south of Ascension streamlined the tasking procedures. Face-to-face contact was possible between the Air Staff, Fleet Movements and Navy operations staff. HQ 38 Gp continued to supply the aircrew, aircraft and air despatchers, and to advise and make recommendations on all aspects of the task. Two squadron leaders were detached from HQ 38 Gp to act as the

link between CTF 317 and HQ 38 Gp and to issue the transops on behalf of the Air Commander.

3.104. The decision to detach the C Mk 4 to Ascension with 2 crews placed additional strains on Ascension where suitable accommodation for the aircrew of the long-range aircraft was in short supply. The accommodation allocated at Ascension was not suitable for aircrew who had to sleep by day and the AT Det Cdr could see no solution to this problem. He signalled that if crews were tasked for long overnight transits then their ability to perform efficiently would be hazarded and they could be placed at risk. He suggested scheduling 'P' hrs (Air drop time) late in the afternoon, but this would have been an inflexible system. All drops to ships had to take place in daylight and with a late 'P' hr there would have been no scope for delays to the aircraft schedules caused by unserviceability, and sorties would have been lost. However, the problem was shortlived for the AT Det Cdr obtained a bungalow for the exclusive use of the 2 crews of the long-range aircraft. It was well situated in a married quarters area and ideal for the crews' requirements.

071635Z May 38G/1800/172/9/ Cont.3 E70

071555Z May 38G/1800/172/9/ Cont.3 E71

3.105. The first long-range sortie left Ascension at 0055Z on 7 May for a 9 hours' flight to rendezvous with HMS PLYMOUTH at position 43S 03830W, at time 071000Z. PLYMOUTH signalled CTF 317 at 1000Z to report that she was at the rendezvous position and talking to the aircraft but that the conditions were bad, with visibility 200 yards and the cloud base 150 feet. The aircraft remained on station for a time in the hope of conditions improving but there were no breaks in the cloud and the base lowered to 100 feet. The crew eventually returned to Ascension and landed after a flight of 18 hours. The crew reported that the predicated fuel flow had proved accurate and considered that the flight had been a valuable experience for future operations. The first successful airdrop using a Hercules C Mk4 took place the following day when a double drop was made to the tug MV YORKSHIREMAN and HMS PLYMOUTH. PLYMOUTH had positioned some 200 nms north of the RV chosen for 7 May to enable the drop to take place in an area of suitable weather. The captain of the Hercules reported a successful flight and encountered no difficulties.

070645Z May 38G/1800/172/9/ Cont.3 E60
071000Z May 18G/335/4/21/1/Ops.1 E4
071105Z May 18G/335/4/21/1/Ops.1 E6
080500Z May TF6.7 E44

082330Z May 38G/1800/172/9/ Cont.3 E89

3.106. The experience of 7 May had shown that airdrops of essential stores could not be effectively conducted to ships operating in areas of low cloud and poor visibility, the limiting factor being the ability of the ship to recover the load. Since postponement through bad weather could have had major delaying effects on ships. CINCFLEET's staff suggested that the problem could be overcome by fitting locater beacons to drop loads. As a result JATE was asked to arrange a trial at the earliest possible time to drop a dummy load, with a beacon fitted, to ARETHUSA operating with a helicopter in the Portland area.

091901Z May 38G/1800/172/9/ Cont.3 E102
101620Z May 38G/1800/172/9/ Cont.4 E6

3.107. By 12 May, JATE had identified a means of marking airdrop loads which enabled the loads to be located in the water, even though the drop itself had not been seen by the

121500Z May 38G/1800/172/9/ Cont.4 E57

ship because of cloud or poor visibility. The system involved the use of a Mk 3 SARBE beacon and a strobe light, both of which could be attached to a load whilst an aircraft was en route to a drop and when it became apparent that the drop was likely to take place in either Instrument Meteorological Conditions (IMC) or at night. Each Mk 3 SARBE beacon transmitted on one of 4 frequencies and each frequency was colour coded. The colour code identification of the appropriate frequency was to be broadcast to the receiver ship by the airdrop aircraft prior to each dropping run.

3.108. HQ 38 Gp accepted JATE's advice and issued SOPs for the use of SARBE beacons in the South Atlantic. Aircraft vectoring for such drops were to do so by means of a ship's radar or their own radar so as to position on the ship's starboard side. A maximum of 4 separate containers could be despatched on each run so long as each had a SARBE beacon on a different frequency. Thereafter, a further drop was not to take place until the ship had confirmed that all loads with SARBE beacons had been recovered. The decision to use the equipment was to be made by the aircraft captain in consultation with the ship. CTF 317 informed the TF of the agreed procedures and HQ 38 Gp amended 38 Gp MOTS to allow crews to carry out airdrops to ships at sea in IMC conditions. Whilst no IMC drops as such were made during CORPORATE, the equipment proved to be invaluable in ensuring the recovery of loads in less than ideal conditions.

141050Z
18G/335/4/21/1/Ops.2
E9

022355Z June
18G/335/4/21/1/Ops.3
E190

3.109. This trial was the first of many carried out by JATE during the period of the operation. The trials included the clearance of the Hercules C MK 3 for airdrop and SAR tasks, the packing of Paveway bombs, 3" RE N4 rockets, Shrike missiles and Harrier drop tanks for airdrop and the dispatch of air sea rescue apparatus (ASRA) equipment from the Hercules Mk 4.

3.110. The third long-range sortie was arranged for 10 May to the MV STENA SEASPREAD. The main component of the drop was an electrical generator urgently required for the repair of the SSN, HMS SPLENDID. As from this drop sortie, the RAF planning staffs and the Fleet Movements section at Northwood decided to allocate nicknames to airdrop tasks as an identification aid; the drop to MV STENA SEASPREAD was to be airdrop ANYA which unfortunately, was unsuccessful. The crew observed the parachute to open slowly and not deploy fully before impact on the water. The ship's crew reported that the load appeared to break up on hitting the surface and sank. The ADUX parachute had had almost no effect on the rate of descent until 100 ft Above Sea Level (ASL). OC 47 AD Sqn RCT asked JATE to comment on the malfunction. They replied that the absolute minimum drop height using ADUX parachutes was 500 ft AMSL and that, bearing in mind possible altimeter error and the fact that the drops were over the sea, consideration should be given to using a drop height of 600 ft AMSL for future drops using ADUX parachutes. OC 47 AD Sqn had stated an intention to use 60 ft parachutes in future drops but JATE stressed that the ADUX gave a lower rate of descent and reduced oscillations of the load. HQ 38 Gp ruled that because of a shortage of 60 ft parachutes ADUX parachutes should be used for airdrops

100500Z May
38G/1800/172/9/
Cont.4 E1
102200Z May
38G/1800/172/9/
Cont.4 E18
101615Z May
18G/335/4/21/1/Op.1
E82
111325Z May
38G/1800/172/9/
Cont.4 E28

121340Z May
38G/1800/72/9/Cont.4
E40

whenever possible and recommended that captains dropping loads equipped with the ADUX were to use a minimum drop height of 700 ft. 141310Z May 18G/335/4/21/1/Ops.2 E10

3.111. Throughout the period whilst long-range Hercules were available for tasking at Ascension the air staff at CTF 317 still continued to bid to DOMS for the use of Hercules C Mk 1 aircraft for airdrops should the receiver ship still be in range. This was because of the need to conserve airframe hours on the long-range aircraft. From 21 April to 16 May, Hercules crews flew 14 sorties in support of TF ships, 5 of these being long-range sorties averaging approximately 17 hours in endurance. Throughout, both the aircrews and the load preparation teams had opportunities to display initiative. On one occasion, when the waterproof box containers, which provided some measure of buoyancy to the loads in the water, were in short supply, 47 AD Sqn used passenger lifejackets to support the load. On another occasion, they had to improvise to pack cargo which was too large to fit into the standard boxes. The crew on airdrop FIONA had difficulties making radio contact with HMS CORDELLA. (34) At the planned rendezvous point the aircrew spotted 5 vessels but still had no radio communication with CORDELLA and were unable to identify the vessels positively because their names had been painted out. However, since the vessels were flying the white ensign, a gemini recovery boat had been launched and the crew claimed to have seen the vessel before the captain decided to drop the stores - they were the right group.

121447Z May 18G/335/4/21/1/Ops.1 E117

161735Z May 18G/335/4/21/1/Ops.2 E42

3.112. In view of the duration of the long-range Hercules re-supply flights and the prospect of an even longer one with the arrival of a Hercules C Mk 1 AAR, HQ 38 Gp consulted the Principal Medical Officer (PMO) at HQ STC about crew duty time. The PMO's staff did not consider long sorties in isolation to be a particular hazard, provided that the crews had adequate pre-flight rest. The problem could be minimized by scheduling tasks so that the pre-flight rest was taken at normal sleep time. However, the medical staffs did advise that for flights over 15 hours use of an augmented crew should be considered and that the navigator was the most likely crew member to be at risk. The hazards to the crews become more serious after a succession of long flights due to accumulated fatigue which could be insidious.

101710Z May 38G/1800/172/19/ Cont.1 E4

111650Z May 38G/1800/172/19/ Cont.1 E5

3.113. HQ 38 Gp suggested to CTF 317 that crew duty time should be limited to 84 flying hours in a 16 day period and then followed by 3 days/night of complete rest. They added that consideration should be given to providing a third long-range crew at Ascension to ease the work load on the aircrew. Medical advice opposed the use of stimulant drugs but stated that hypnotic drugs were available to assist crew members with pre-flight rest.

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(34) HMS CORDELLA was a trawler and one of the ships taken up from trade (STUFT)and commissioned. She did not have a full communications fit.

3.114. The SMO Ascension debriefed the Hercules crews after each 18 hour sortie and reported no particular problems. The sortie rate had been such as to provide adequate time for pre- and post-flight crew rest. Sleep in the daylight hours had been successfully assisted by the drug TEMAZEPAM and no side effects had been described. The augmentation of the crews was felt by the aircrew to be unnecessary as rest was possible en-route and the additional navigation equipment eased the navigator's workload. Later in the operation Hercules aircrew flew many sorties in excess of 24 hrs and for these sorties the basic crew was augmented by an additional pilot and navigator. On 2 occasions a Hercules crew were presented to the medical officer complaining that they were too fatigued to maintain their sortie rate. On the first occasion the crew were uncertain about what they were expected to do on a possible SF sortie, which caused undue anxiety and led to abnormal fatigue. The second occasion was a straight-forward one in that 24 hour sorties every 3 days were causing excessive fatigue among a crew who were unhappy to continue. It must be borne in mind that extensive debriefing took place the day after a sortie, and the day before the next sortie included briefings and load preparation. After the Medical Officer's intervention this crew flew one more sortie and were then rotated. 121620Z May 38G/1800/172/19/ Cont.1 E6

3.115. HQ 38 Gp advised the air staff of CTF 317 on 12 May that the following rules should apply for crew duty (CDT) and crew rest time, unless the Air Commander authorized otherwise: 121620Z May 38G/1800/172/19/ Cont.1 E7

a. Single CDT - 20 hrs.

b. Augmented CDT - 24 hrs.

c. Double CDT - 40 hrs

d. Maximum CDT - 84 hrs.

e. Crew rest time - 14 hrs with one additional hr per CDT above 16 hrs.

The advice was timely for the first AAR Hercules sortie was flown on the 16 May.

3.116. To allow the Hercules to accompany the TF all the way to the TEZ and to support subsequent land operations, it had become clear to MOD that an AAR facility was essential. With no diversion airfields available on the South American mainland the requirement was for a Hercules to fly from Ascension to the Falklands and return whilst carrying sufficient fuel at all times to recover to Ascension without further refuelling. Marshall of Cambridge (Engineering) Ltd became involved with the project to install flight refuelling probes (MOD 5308) on the Hercules on the late afternoon of the 15 April. Thus began a period of intensive design, development, conversion and flight testing that would eventually involve 20 of the RAF's fleet of C Mk 1s (35). CE(RAF)/2/1/167 11 May AMSO 19/8/1.2 E21/6 VCAS 7/7.2 E4

(35) Not all of these were completed by the time the conflict had ended.

3.117. The company had had no previous direct experience when it received the instruction to proceed with the installation of a flight refuelling probe. The probes were standard RAF issue having formerly been used on Vulcans and there was no time to have new probes manufactured. Using Hercules XV 200 which was already at Cambridge for its major service inspection, Marshall completed the first installation within 10 days and, after ground testing, made the first Hercules flight with a probe fitted on 28 April. This first probed Hercules was then delivered to the A and AEE, Boscombe Down where it made its first coupling with a Victor tanker on 2 May. Two more couplings (one at night) followed on 4 May and the aircraft was delivered to Lyneham on 5 May.

DD Eng Pol 2(RAF) 11 May
AMSO 19/8/1.2 E29

3.118. The converted aircraft had the facility to carry the long-range tanks in the fuselage and the following Hercules designations were promulgated by HQSTC:

18G/335/4/21/Ops dated 12 May E116

a. C Mk 1 (P) - C Mk 1 with AAR receiver probe fitted.

b. C Mk 1 (PLR) - C Mk 1 with probe and long-range tanks.

c. C Mk 1 (LR) - C Mk 1 with long-range tanks. If 2 tanks were fitted instead of the standard 4, it could be designated (LR2).

3.119 By the time of the first Hercules C Mk 1 (PLR) delivery to Lyneham on 5 May, No 242 OCU had already become involved in the AAR training of squadron crews after two of its own crews had qualified as AAR instructors with the help of the Marham OCU. The first step was to give training in formation flying - a discipline with which most Hercules pilots were unfamiliar. As the probe was offset, a technique was evolved in which the captain flew the aircraft into position behind the tanker, guided by the distinctive white and red markings on the Victor's underside, while the co-pilot gave final steering commands to the captain to bring the probe into the drogue. Few difficulties were encountered by Hercules crews during conversion. The bulk of the training for AAR was concentrated in a 2½ day period in late May, with five 4½-hr sorties, and 2 complete crews on each sortie, many "prods" being completed by each crew.

47 Sqn F540 May

141425Z May
38G/1800/172/9/Cont.4 E93

3.120 We have seen that the first Hercules C Mk 1 (PLR) deployed to Ascension from Lyneham on 14 May and immediately caused problems in finding parking space for the aircraft and accommodation for the crew. Unfortunately, its deployment coincided with a changeover of a C Mk 1 (LR) aircraft. Ascension were forced to accommodate the extra crews in tents but proposed to rotate the crews through the 'bungalow' for adequate pre- and post-sortie rest.

141410Z May
18G/335/4/21/1/Ops.2 E7 & 13

3.121 The crew of the first Hercules CMK1 (PLR) sortie did not use the augmented crew members and suggested that if they were to be included only a navigator and pilot, AAR qualified

if possible, should be carried. Crew fatigue was no problem since all could rest at some time during the flight. The Captain had to work hard during the 35 minute period involved in refuelling and the Victor and Hercules detachments needed to formulate joint SOPs.

171625Z May
18G/335/4/21/1/Ops.2
E63

3.122 The Hercules was the first propellor driven aircraft to refuel from the Victor tanker and as such posed a few unusual problems. In particular, the discrepancy between speeds of the 2 aircraft made it virtually impossible to refuel in level flight. On all the AAR sorties the aircraft were equipped with full fuselage tanks (these could not be filled during AAR and were used after the final refuelling rendezvous) and the best speed the Hercules could make at around 23,000 ft was 210 kts compared with the Victor's 230 kts minimum. The technique evolved was for the Victor to approach the Hercules from above and behind, calling on the Hercules to begin descent when visual contact was made at a distance of about one mile; with the Hercules descending at 500-1,000 ft/min, the Victor then overtook, usually to starboard and the Hercules moved into line astern to pick up the drogue. A descent rate of 500 ft/min was then maintained for the refuel with the speed between 210 kts to 265 kts. The Victor K2/Hercules AAR procedures were nicknamed CADBURY, no doubt in deference to the old nickname of CHOCOLATE bomber for the Hercules. The shallow descent whilst in contact was called tobogganing.

141935Z May
18G/335/4/21/1/Ops.2
E19

MAR/5025/5/20/
Ops.1 E13 8 Oct

3.123 Another, initially unforeseen, consequence of the Hercules' particular characteristics led to an interesting moment during one "prod" over the South Atlantic, when the aircraft flew into cloud and the Hercules' de-icing system came on automatically. As this took about 15% of the engine power, speed was reduced at once and the aircraft separated unexpectedly, being re-united only after a search for clearer air.

3.124 Following the first successful AAR Hercules sortie, the Air Commander requested that a second AAR Hercules Mk 1 PLR be tasked and sent to Ascension as soon as possible. MODUK Air agreed and the aircraft arrived on 19 May.

172020Z May
TF6.8 E72
181130Z May
TF6.8 E82

3.125 The second AAR Hercules re-supply sortie was mounted on 22 May. With 2 aircraft now available it was possible to plan long-range sorties on a daily basis, although with aircraft unserviceability and other demands made on the Victor tankers this was not always possible. The first 2 AAR sorties had been operated with the aircraft in the 4 internal tank fit. With more freight being presented for airdrop the air staff at CTF 317 decided that as from Airdrop LARA, the probed aircraft would be operated in the PLR 2 configuration. This allowed more freight to be carried although it increased the Victor tanker effort required to 4 aircraft. The rendezvous points were now further south and the fuel intakes larger.

231610Z May
18G/335/4/21/1/Ops.2
E169

3.126 The long-range Hercules were now flying to the edge of the TEZ. Communications between aircraft and ships never have been easy, but for the Hercules crews they were a new skill to be acquired. The Nimrod Detachment at Ascension had been briefing all Hercules crews prior to their sorties but with the flights now reaching the TEZ the Det Cdr considered that the time had come for more formalised procedures to be adopted if the safety of Hercules crews was to be guaranteed. The Det Cdr suggested that the Hercules crews needed all the information and procedures used by Nimrod crews on their sorties and specified that they should have the Task Group's disposition and Missile Engagement Zone (MEZ) details both along route and in the terminal area, an agreed joining procedure, emergency procedures covering loss of communications and operating frequencies. He also suggested that the RN nominate a second receiver ship for use in the event of the non location of the primary receiver.

191615Z May
18G/335/4/21/1/
Ops.2 E90

3.127 The staffs at CTF 317 agreed with most of the Ascension proposals and a set of procedures was agreed and issued to the TF. The Nimrod Operations Cell at Ascension was to continue to provide the specialist elements of the crew briefings and instructions on identification procedures. By this time the 47 Sqn SF Flt Cdr was at Ascension and he suggested, after consultations with the Nimrod Detachment that it was essential to augment all Hercules crews on long-range re-supply sorties with a maritime air adviser. This request was reinforced by the crew of Airdrop NORA, who in their post-sortie report said that without a maritime adviser on board their sortie would not have been completed. The aircraft had had to hold north of the RV point for 30 mins whilst a clearance was obtained to proceed amongst TF ships to the RV. The specialist was instrumental in ensuring that the clearances and procedures conformed to SOPs. HQ 18 agreed that the crews should be augmented and instructed the Nimrod detachment to provide maritime operations specialists, subject to overriding operational commitments. Later this was amended and all air drops were to carry maritime qualified advisers.

270620Z May
38G/1800/172/9/
Cont.6 E100

240812Z May
38G/1800/172/9
Cont.6 E43

311501Z May
18G/335/4/21/1/Ops.3
E152

3.128 As more re-supply flights took place crews became more conversant with the procedures and these in turn were amended in the light of experience gained. However, there were still problems of identifying the Hercules as a friendly aircraft. The 11 hr Hercules transit to the drop zone invalidated most of the pre-flight intelligence. The presence of other ships in the TEZ between the Hercules and the receiving ship was confusing and this was aggravated by the difficulty of establishing radio contact with the Force Marshal. The Hercules crews' lack of maritime training and the fact that the Argentine also operated Hercules aircraft were added complications. As a result of these problems action was taken by CTF 317 which resulted in CTG 317.8 passing relevant extracts from OP GENS A and B (general maritime and joining procedures) and the position of the holding areas and other datums. The receiver ship would provide Ascension with the following information - the entry point for the drop, the Force Marshal's details, its own MEZ, the emission control - radar and communications (Emcon) in force and the disposition of friendly forces within 50 nm of the RV. In addition, the

280740Z May
38G/1800/172/9/
Cont.7 E30

021705Z Jan
18G/335/4/21/1/
Ops.3 E186

receiver ship would monitor the air/sea frequency from Airdrop 'P' hr minus one hour, enhancing range with its helicopter if possible. It was also agreed that CTF 317 would provide maritime advisers for all sorties, that the transop would be copied to CTG 317.8 and all friendly forces under the Hercules flight path, and that the aircraft should avoid all surface contacts by 5 nm until cleared to close.

3.129. The RAF staff at Ascension subsequently suggested some minor additions to these procedures. The crew on Airdrop VERA reported that communications were much improved, the crew having established good 2 way UHF communication with PENELOPE 5 minutes before the descent point. The crew were also able to monitor the Combat Air Patrol (CAP) frequency and inform Sea Harrier (SHAR) CAP through PENELOPE that VERA was friendly. These procedures were consolidated in the joint HQ 18 Gp/HQ 38 Gp Operation Order draft by HQ 38 Gp.

031930Z Jun
18G/335/4/21/1/
Ops.3

214 041350Z Jun
38G/1800/172/9/
Cont.8 E56

3.130 There was one amusing incident outside the TEZ when a crew, frustrated with the coding and decoding and with fuel running low, broke into plain language and asked the ship if they really wanted the mail. The reply was swift and needed no coding.

3.131 By the last week of May the intensity of the airdrop re-supply sorties had increased considerably. The AT Det Cdr Ascension stated that if they were to continue at that rate the time had arrived to re-appraise the size of the detachment. The 2 AD crews at Ascension were almost continuously involved in packing and delivering the varied loads and fatigue would soon become a problem. To ensure an adequate rest cycle he felt that a third AD crew was now essential. He also requested a landrover and forklift truck to assist the detachment. HQ 38 Gp and CTF 317 supported the bid and the extra men were sent on 25 May. HQ 38 also agreed with CTF 317 that the Hercules crew resources at Ascension should consist of 2 augmented crews for long-range AAR tasks and one crew for non-AAR tasks, the augumented crews to comprise a basic crew plus an additional captain and navigator. A further navigator was detached to the Island as the long-range drop operations officer with specific responsibility for planning AAR sorties.

240550Z May
38G/1800/172/9
Cont.6 E44

241700Z May
38G/1800/172
Cont.6 E63

3.132 The Air Commander signalled HQ 38 Gp on 26 May stating that the re-supply of the fleet in the Falklands area was now paramount and more AAR capable Hercules and crews were required. He wished to know when it would be possible to reinforce the Ascension AT Detachment. SASO's response was that provided his one UK based probed aircraft and AAR instructor remained serviceable, that the weather did not intervene and that adequate tanker support was forthcoming, he hoped to build up the resources at Ascension as follows:

261212Z May
18G/335/4/21/1/
Ops.3 E25

271520Z May
38G/1800/172/9/
Cont.7 E26

a. 27-30 May - 2 crews + 2 aircraft (The current situation).

b. 31 May/1 Jun - 3 crews + 2 aircraft.

c. 2/3 June - 4 crews + 2 aircraft

d. 4/5 June - 6 crews + 3 aircraft.

He hoped also to provide an additional 2 PLR aircraft by 10 June and the crew output would match this build-up. He did stress that this rate of build-up depended both upon tanker support and the UK training programme.

3.133. A number of measures were taken to improve the protection and comfort of the crews whilst engaged on long-range sorties. Mention has already been made of the hand-held RWR receiver. For aircraft south of Ascension during the period of hostilities RWR was essential, but the long-range crews expressed grave reservations about the hand-held, battery-powered RWR provided; the wide-band receivers had very little frequency discrimination, only partial frequency coverage of the potential threat, and no Direction Finding (DF) capability. Among the items of survival equipment issued to crews during the operation were parachute and harness, survival packs, quick-don immersion suits and MK 27 Life Support Jackets (LSJs). Some of these items, particularly the quick-don immersion suits, were in drastically short supply and had to be obtained from other stations.

LYE/5111/63/2/Air dated 30 Jul

280735Z May 38G/1800/172/9 Cont.7 E36

3.134 Infra Red Decoys (IRD) were allocated to all probed aircraft. The initial plan by HQ 38 Gp was for these decoys to be fired (Cartridge 105" IR Flare Type 400) from the Pistol Pyrotechnic M8 installation. However, as a result of a Farnborough trial this method of firing was not recommended. The ejection velocity of the cartridges would have endangered the safety of the aircraft at speeds above 130 kts Indicated Air Speed (IAS). Farnborough recommended that the IRD flares be fired from the side door of the aircraft using a signal pistol 1.5" No 4 MK, and subject to a maximum speed restriction of 250 kts IAS.

302131Z May TF63.1 E32

3.135 To improve the comfort of the crews 5 hammocks were provided for each aircraft and long-life ration packs, the Colombo packs, were provided to give more variety in the rations. HQ STC supply staff investigated means of providing some form of suitable acoustic protection for the crews, but without apparent result.

38G/1800/172/27 Cont.1 30 May E8

3.136 With the RMs and Army firmly established on the East Falklands, the Air Commander's staff then studied the feasibility of Hercules airdropping supplies to land Dropping Zones (DZs) in East Falkland. It was felt that the Hercules C Mk 1 PLR 2 configuration offered the best balance between an acceptable Victor tanker effort (7 aircraft would be required) and a useful load. The aircraft would be able to carry 8 one-ton containers, about 18,000lbs of stores. The flight profile would include a descent to low level 250 nms from the Stanley radar, to avoid detection, followed by a low-level transit through the Falkland Sound from the north to the selected DZ.

3.137 The DZ required for the load proposed would need to be 700 yds long by 500 yds wide; men of the Pathfinder Platoon of 2 PARA were capable of identifying such a DZ and laying out

the necessary markings. Either of the 2 LR Hercules crews at Ascension would be able to carry out this task. They were specially trained to find and drop to DZs with minimal markings and would be assisted in this by the enhanced navigational fit of Hercules C Mk 1 PLR.

3.138 The Air Commander informed HQ 38 Gp that they should anticipate a need to task Hercules airdrops to a land DZ and ask for any advice or caveats they might have on such tasking. In the meantime they were asked to position the necessary airdrop equipment at Ascension. HQ 38 Gp replied that to minimize risk to the aircraft, routes and DZs well to the rear of the Forward Edge of the Battle Area (FEBA) should be chosen. If air superiority could not be guaranteed against chance detection by the Argentine Air Force then night drops were recommended, and they stressed that TF sea/land/air forces would require positive and unambiguous briefing on all route and identification procedures. In view of the high weight of the Hercules at the time of such a drop there could be problems with the trim. HQ 38 Gp also stressed that there was a risk of damage to the load if dropped in high winds.

281815Z May 38G/1800/172/9/ Cont.7 E49 A-B
302050Z May 38G/1800/172/9/ Cont.7 E89

3.139 In the event no land drops by Hercules were made before the Argentine surrender. Precise reasons for this were not stated but CTG 317 was apparently not keen to have a Hercules aircraft operating in the TEZ and the cost of supporting the drop in terms of Victor tankers would have been enormous and diverted tanking capacity away from other tasks. The plan would also have involved the Hercules crews in night tanking sorties; although they were trained for both day and night AAR their night time experience was very limited. In the South Atlantic night AAR carried an increased risk of aborting a mission because the Hercules performance dictated a RV at heights where cloud and precipitation problems were likely to be found. Also the refuelling had to be carried out in a descent which often entailed weather penetration. AOC 38 Gp therefore recommended to the Air Commander that he should plan on night AAR only when the operational need was over-riding.

041635Z Jun 38G/1800/172/27/ Cont.1 E36

3.140 From 29 May at least one air drop was planned for every day. As the number of crews and aircraft increased, 2 sorties were planned on some days; the limiting factor became the availability of Victor tankers. By the time of the Argentine surrender on 15 June, 40 sorties had been flown, but to give the impression that all were achieved smoothly would be wrong for problems occurred throughout the period.

3.141 Early in May, the comment was made that the RN should get their DZ clearance techniques right to reduce the load recovery times. They did not always make the best use of their Gemini boats, divers and helicopters to recover the drop loads. The special boxes (Tri-Wall AD Cases) only provided buoyancy for a limited period and several loads sank because of the time taken for recovery. Task MARY dropped 4 Paratroopers to HMS CARDIFF on 26 May at position 47S 047W, and the paratroopers were in the water for 8 minutes before they were recovered. The Captain of the aircraft informed CARDIFF that for live personnel drops, the ship's boats must be in position 200 yds to starboard of the ship ready for

ADET/G/4 14 May 38G/1800/172/9/ Cont.4E89

260500Z May 38G/1800/172/9/ Cont.6 E82

pick-ups. In fairness to CARDIFF it is doubtful whether she knew this; CTF 317 ensured that all future receiver ships were aware of the problem.

3.142 However, not all the lost loads were due to mistakes made by the RN. On Airdrop OLIVE only 4 containers could be dropped because of a very strong wind (310/35) and swell at the DZ, and HMS ACTIVE's helicopter had great difficulty recovering the loads. The parachute on one load did not deflate and dragged the load 5nm away from the ship before it was recovered, somewhat damp. Airdrop QUEENIE to RFA ENGADINE dropped Type 44 torpedos in 5 separate runs. Unfortunately, one load suffered water ingression and on another the warhead broke away from the body and had to be dumped by ENGADINE in 5000m of water. This was the first and last time Type 44 torpedoes were airdropped.

290620Z May
18G/335/4/21/1/Ops.3
E91

302043Z May
18G/335/4/21/1/Ops.3
E128

3.143 The aircrew on Airdrop DENISE appear to have been at fault in their drop to HMS AMBUSCADE. Whilst the crew reported the drop as having been successful, AMBUSCADE reported that dropping should have been staggered to allow helicopter recovery between runs. The packaging of stores in cardboard boxes and the length of time in the water caused some stores to be waterlogged and made the helicopter's lifts difficult and dangerous. AMBUSCADE recommended that in future the drop aircraft allow the helicopter to recover the loads progressively. This should have been the case but to give the captain of the airdrop aircraft credit his sortie did last for 24 hrs 10 mins; on the other hand he still landed with 12,500 lbs of fuel.

120455Z Jun
38G/1800/172/9/
Cont.9 E96

111934Z Jun
18G/335/4/21/1/Ops.4
E119

3.144 Airdrop ELAINE was a minor disaster. The Hercules dropped 28 paratroopers and 8 bundles to HMS ANDROMEDA. Four of the 8 bundles malfunctioned, their parachutes detaching themselves from the bundles, and a lot of kit and weapons were lost or damaged. The SAS major in charge of the drop party maintained that this 50% failure rate was completely unacceptable and that 47 AD Sqn should review their packing procedures. The aircraft captain's report stated that on arrival at the RV point he had very little fuel remaining for the required number of passes but that the SAS major in charge of the drop party insisted that the drop went ahead. Despite the known problems of ADUX chutes disconnecting if colliding in mid-air he was forced to drop the containers in blocks of 5 and 3 respectively and there were 2 disconnects in each block. OC 47 AD Sqn commented that operating outside the JATE clearances was asking for trouble and that there had been no premature disconnects with the previous 200 containers dropped. He advised his staff that if they were asked to drop in a manner with known risk they were to ensure that receivers were previously briefed on the risk by the aircraft captain. CTF 317 relayed OC 47 AD Sqn's remarks to CTG 317 with a request to pass it on for the education of the major concerned.

140640Z Jun
18G/335/4/21/1/Ops.4
E163

140640Z Jun
18G/335/4/21/1/Ops.4
E163

141813Z
18G/335/4/21/1/Ops.4
E184

161420Z Jun
18G/335/4/21/1/Op.4
E267

3.145 In the preceding paragraphs, a few of the mishaps have been highlighted but these were very much exceptional affairs.

Mutual respect and admiration were shown by both aircraft crews and ships' companies. This was particularly so on Airdrop GINA to HMS GLAMORGAN when the sea conditions were marginal at the start of the drop and totally dangerous by the completion. All the loads were recovered but great difficulty was experienced with the non-automatic release of parachutes in 45 to 50 kts winds. In fact GLAMORGAN received a total of 4 airdrop sorties and became well adapted to receiving the loads She was normally accompanied by the tugs positioned 500 yds apart and steamed slowly into wind. The 2 tugs acted as pick-ups and GLAMORGAN used her Wessex helicopters to deck the loads.

141854Z Jun 18G/335/4/21/1/ Ops.4 E175

132040Z Jun 18G/335/4/21/1/ Ops.4 E150

3.146 On 8 June, a Hercules C Mk 1 PLR (4) provided SAR cover along the track of Harrier GR 3 aircraft deploying from Ascension to HMS HERMES on Operation BOWSPRIT. The Hercules crew had to arrange their flight so as to be at a position 2,300 nms along the Harriers' intended track at the time of the Harriers' take off time from Ascension plus 5½ hours. The crew was then to continue along this track until within UHF range of HERMES and, after confirming that the GR3 aircraft were on board, return to Ascension. The crew was augmented with 4 spotters from the Nimrod Detachment at Ascension.

071520Z Jun 18G/335/4/21/1/ Ops.4 E57

3.147 The crew flying on this SAR mission were airborne for 22 hrs 05 mins. On the outbound leg the crew intercepted a message on 121.5 MHZ, at position 450S 4610W, and heard a garbled voice speaking English with a foreign accent for some 5 minutes. The comprehensible part of the message was "ship, ship this is Argentine Air Force Echo Yankee you must speak to me". Intelligence staff felt that this was the Hercules aircraft involved in the attack on the Liberian registered tanker HERCULES.

090425Z Jun 18G/335/4/21/1/Ops.4 E74

3.148 The captain in his post-sortie report commented that the air-sea rescue apparatus (ASRA) would not fit into the para doors on the Hercules C Mk 1 PLR(4) even with the internal tanks in the maximum forward position and that the crew planned, if required, to despatch the ASRA over the aircraft ramp. JATE warned that there was a strong possibility of a ASRA maldeployment or of fouling the aircraft's elevator if the proposed method of despatch was used. A trial was ordered by HQ STC and CTF 317 did not task any further SAR sorties for the Hercules C Mk 1 PLR(4).

090300Z Jun 18G/335/4/21/1/Ops.4 E73
100935Z Jun 38G/1800/172/9/ Cont.9 E62
101651Z Jun 18G/335/4/21/1/Ops.4 E105

3.149 Following the Argentine surrender on 14 June, the airdrop sorties to HMS GLAMORGAN planned for 15 June were postponed, and the air staff at CTF 317 immediately began planning for a drop on land to the TF. Airdrops IRENE and HILARY were planned to drop at a DZ which later became known as SAPPER HILL DZ, to the west of Port Stanley. The RAFLO with CTG 317.1 confirmed that a drop was possible and agreed a drop window of 161730Z to 161930Z. He would attempt to obtain a Mobile Airfield Operations Team (MAOT) to coordinate the drop together with a VHF radio and flares. The Hercules were to fly in with their landing lights on.

151910Z Jun 18G/335/4/21/1/Ops.4 E224
160015Z Jun 18G/335/4/21/1/Ops.4 E236

3.150 The first Hercules dropped its load on SAPPER HILL DZ on 16 June, the captain commenting that the DZ communications were excellent. The aircraft returned to Ascension and landed after a flight of 24 hrs 45 mins. The second aircraft flew a similar mission.

170545Z Jun 38G/1800/172/9/ Cont.11 E41

3.151 By 18 June, there were 5 Hercules C Mk 1 PLR and 7 crews at Ascension, sufficient to carry out 2 sorties a day to the SAPPER HILL DZ. Between the end of the war and the first Hercules landing at the reopened Stanley Airfield the Hercules crews flew 9 long-range sorties to SAPPER HILL DZ, most of these exceeding 24 hrs duration. One flight was airborne for 28 hrs 3 mins which the crew claimed to be a record for a Hercules aircraft. Just what accounted for this flight taking such a long time is not clear, for the aircraft dropping on a similar mission some 4 hrs earlier had accomplished its sortie in 25 hrs 10 mins.

38G/1800/172/9/ Cont.13 E23

3.152 The sight of a Hercules over the Falklands may have been a good morale boost for the troops on the ground, but it was also very rewarding for the crews knowing that the airdropped supplies were delivered only 30 hrs after their loading time at Lyneham. The first Hercules landed at Port Stanley Airfield on the 24 June at 1818Z, and the captain was satisfied that the north half of the runway was acceptable for further Hercules operations. The next 2 sorties on the 25 June, SUSIE and THELMA, returned Mr Hunt, the Falklands Islands Governor, and positioned 2 Hercules slip crews, achieving impressive landings in very poor weather and high cross winds. These landings perhaps marked the climax of the TS sorties shown in support of CORPORATE, a complete list of which is given at Annex D.

242129Z Jun 38G/1800/172/9/

242129Z Jun 38G/1800/172/9/ Cont.12 E69 & 90

3.153 The SAS now booked the Hercules slip crews into the Uplands Goose Hotel and the Rock Guest House in Stanley. MOD Ops (AT)(RAF) had agreed with CTF 317 upon scheduled flights from the Falklands to the UK via Ascension and with AT crews in hotels and scheduled flights planned things were almost back to normal.

D/DD Ops(AT)(RAF) 6/660 24 Jun TF6.12 E46

PART 2 - ROTARY WING OPERATIONS

3.154 From the start of Operation CORPORATE it was apparent that, whatever the concept of operations eventually to be adopted for the recovery of the Falkland Islands, helicopters would play a major part: for ship-to-ship and ship-to-shore lift of freight and personnel, for direct support of troops ashore and for Anti-Submarine Warfare (ASW). Much of this helicopter effort would come from RN resources but there were 2 areas where RN assets were planned, at least initially, to be augmented by the RAF.

3.155 Firstly the RN lacked a heavy lift helicopter capability, which could be provided from Service resources only by the use of the RAF Chinook. Secondly there was the garrison role, for which 5 Inf Bde was to be earmarked and whose contingency staff tables included RAF helicopters for Support Helicopter (SH) operations. Whilst planning for both Chinook and the SH involvement ran to a large degree concurrently, for the purpose

of clarity each will be dealt with separately in this part of the AT Chapter.

NO 18 SQUADRON AND CHINOOK INVOLVEMENT

3.156 On 11 April CINCFLEET requested the deployment of 2 Chinooks to Ascension Island in support of CORPORATE and the AFD examined various options for movement, including self-ferry, 'ship hopping', leasing of USAF C5A space and sea movement. 111021Z Apr TF 14.1 E38.

3.157 Each method had advantages but in the case of self-ferry the time required for diplomatic clearance through France and W African countries (3 to 6 weeks in the case of Morocco) was a positive disadvantage. In addition, a ferry tank fit for the Chinook, whilst having been installed and tested, was as yet unproven. The use of a "ship hopping" technique, whilst allowing ferry aircraft to bypass difficult areas and countries, would nevertheless require considerable coordination and probably tie up too many resources. The possibility of leasing C5A space from the United States was considered but rejected as being politically too sensitive. Whichever of these methods was selected, the bulk of equipment and the personnel would require both sea and airlift and, on balance, the AFD considered sealift for the aircraft should be the primary option. DD/OPS/(AT)(RAF) 6/900 11/12 Apr TF 14.1 E38/47

3.158 CINCFLEET's staff had identified the SS STENA SEASPREAD as the sealift vessel, and it was planned to depart Portsmouth on 16 April and estimated to arrive at Ascension on 27 April. No 18 Sqn was placed on 12 hours' notice to provide an advance party to move with the aircraft; the main party to be airlifted was to arrive in Ascension by 26 April. However, by 14 April the RN had rejected STENA SEASPREAD mainly because modifications would take too long and chose instead SS ATLANTIC CONVEYOR (which was also to carry Harrier aircraft). Although this ship had some unattractive features, particularly domestic accommodation, she was likely to be a better aircraft platform than STENA SEASPREAD. ATLANTIC CONVEYOR was planned to sail on 25 April. DD/OPS(AT)(RAF) 6/900 14 Apr TF 14.1 E60

3.159 During this initial planning stage No 18 Sqn had not been idle and had flown since 6 April to assist in loading the TF, including the over-the-horizon delivery of a 5 ton prop bearing to HMS INVINCIBLE to avoid a public return to Devonport for repairs.

3.160 The AFD next examined options for the deployment of Chinook not only to Ascension but also to the Falklands. It is unclear what sparked the appreciation but almost certainly it stemmed from the realisation that heavy lift would be needed in the operational area. The options examined were for 2 aircraft to deploy to Ascension (as already agreed) and up to 12 aircraft to the Falklands, both with supporting personnel and equipment and, in the Falklands case, with the capacity for 2-3 months' operations. The examination concluded that, whilst 12 Chinooks were capable of lifting 1200 tons per day, this effort could not be fully utilised because of limitations in the handling, build-up and dispersal of loads, an operation which in the proposed environment would be manpower intensive. Furthermore, if Chinooks could not be operated from the decks of the conveying ship they must be disembarked, increasing significantly the support bill in terms of manpower, tentage and provisioning. DD Ops(AT)(RAF) 6/900 16 Apr TF 14.1 E80

3.161 The proposed solution was to embark, as planned, the 2 aircraft for Ascension, with a further 2 or 4 aircraft deploying further south. This solution would ease problems of space afloat and yet still give a realistic maximum heavy lift capability of up to 400 tons per day. In the event, a compromise solution was reached and the MODUK(Air) order to move issued on 19 April detailed 2 aircraft for Ascension and 3 to the Falklands, all to embark in ATLANTIC CONVEYOR on 22 April (36). ATLANTIC CONVEYOR sailed on 25 April and arrived at Ascension on 5 May.

191130Z Apr
TF 41.1 E3

3.162 Four days after the ATLANTIC CONVEYOR had left Portsmouth, Commander Task Group (CTG) 317.0 made a case for increasing the Chinook allocation to the Falklands to allow for greater flexibility in deploying heavy stores whilst retaining some ability to survive attrition. His bid was supported by CBFSU at Ascension who stated he was "happy to trade one Chinook for the retention of one Sea King" which he considered a more flexible aircraft; by inference one Chinook at Ascension could cope with all his heavy lift requirements. Thus it was that when ATLANTIC CONVEYOR arrived at Ascension one Chinook disembarked and on 7 May the remainder moved south to the operational area.

292333Z Apr
TF 41.2, E55

302313 Apr
TF 41.2 E47

AIRCRAFT EQUIPMENT ENHANCEMENT

3.163 Once the decision had been taken to employ the Chinook in CORPORATE it was apparent that the aircraft's survivability and operating capability needed enhancement. Indeed, on 19 April, the same day that 18 Sqn was ordered to stand-by, HQ 38 Gp made a bid for the fitting of a General Purpose Machine Gun (GPMG), the provision of passive night goggles (PNG), and body armour for the aircrews. Efforts were made to meet these demands; GPMGs were fitted, and 10,000 rounds of .762 ammunition ordered. 15 RAF Regt gunners (1 Sgt, 3 Cpls and 11 SAC) were attached to 18 Sqn providing 2 gunners for each of the GPMG-equipped aircraft.

191050Z Apr
TF 41.1 E5

191522Z Apr
TF 41.1 E7

3.164 To improve Chinook self defence, financial approval was requested for the fitting of 2 x M130 chaff dispensers and 1 x M130 Infra Red Decoy (IRD) flare dispenser as carried by US Chinooks and, as an interim measure, 100 IRD cartridges for firing from Verey pistols were provisioned. Radar Warning Receivers (RWR) to provide warning of hostile surveillance and guidance radars were acquired from ex-Vulcan stock. The programme for the fitting of RWR to both the Chinook and the Puma (which despite being excluded from the initial deployment could well have been required for later, on-shore operations) is covered extensively in the Engineering Support chapter. It is necessary here only to record the rapidity with which the Electronic Warfare and Avionic Unit (EWAU) completed the fitting task. From the first tasking date, 16 April, to the first successful trial was a mere 5 days (it should be recorded, however, that preliminary studies for the fitting of RWR

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(36) It was perhaps ironic in the light of subsequent events that the Warning Order contained the instruction for the Falklands aircraft "(support) ... should include sufficient equipment and personnel to operate at least one aircraft on arrival ..."

to the Chinook had been conducted before the Argentine invasion). Nevertheless, the achievement was considerable and by 16 May a total of 6 Chinook had been so modified; when ATLANTIC CONVEYOR sailed on 25 April 2 of the aircraft on board had been modified and plans had been made to equip the remainder on arrival at Ascension.

3.165 A foreseen need for Chinook to fly what would be for a helicopter long distances over the ocean from Ascension, both for replenishment and for emergency Search and Rescue (SAR) sorties, led to the provision of ferry tanks, capable of extending aircraft range to over 400 nms. There were also doubts about the over-sea accuracy of the Doppler navigation system fitted to Chinook, all previous Service acceptance trials having been based on the aircraft's primary over-land role. A request to fit an Inertial Navigation System (INS) was rejected, basically on cost and ability grounds, but a compromise solution which was to prove effective was the fitting of the LITTON 211 OMEGA navigation system (37), which in the event was only installed in aircraft to operate from Ascension and which, in fact, did not arrive in Ascension until the second wave deployment of Chinook somewhat after the cessation of hostilities. No need was seen for this equipment for overland operations in the Falklands.

SH INVOLVEMENT WITH 5 INF BDE

3.166 The 5 Inf Bde staff tables included 19 helicopters, of which 10 were RAF Puma or Wessex and the balance Army Air Corps (AAC) aircraft. Whilst formal Chiefs of Staff (COS) authority for the employment of 5 Inf Bde as a follow up garrison force was not given until 2 May a great deal of anticipatory activity was possible. The RAF allocated the Pumas of No 33 Sqn and from mid-April the squadron's efforts were largely devoted to supporting 5 Bde in its pre-embarkation work-up period. The squadron deployed 10 aircraft to take part in Exercise WELSH FALCON at the Sennybridge training area on 19 April and flew intensively. On 26 April, for example, all deployed aircraft and crews were involved in dummy deck landings and 100 flying hours were achieved on the one day. On 29 April the squadron returned to home base at Odiham, doubtlessly expecting orders to prepare for deployment with the Task Force (38).

COS 177/74/2/1
TF42 E9

COS 1072/742/1
TF 43 E11

33 Sqn ORB

3.167 However, on that day the Director of Operations (RAF) was appraised of an Aircraft and Armament Experimental Establishment (A&AEE) Boscombe Down report setting out the limitations of Puma operating from ships. This report was in response to a request for a Service Deviation (SD) to allow Puma to operate at weights up to 7000 kgs from Carrier Vessel Attack (CVA) and Landing Platform

DD Ops(AT)(RAF)
6/900 29 Apr
TF 41.2 E38

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(37) OMEGA was a long range, accurate, low frequency hyperbolic navigation aid.

(38) An immediate follow-up to the Exercise was the deployment of two Mobile Air Operation Teams (MAOT) by HQ 38 Gp. Their task was to facilitate the helicopters movement of 5 Inf Bde and its support from the base to forward positions.

Interview with
Sqn Ldr Gordon
ALO to 5 Bde

Helicopters (LPH) and from other classes of ship. Apparently, whilst the aircraft was suitable for CVA and LPH operations, utilisation from other ships would be difficult. Because of its high centre of gravity Puma would be prone to overbalancing on rolling or pitching decks and flying controls could be damaged during rotor starting in severe conditions; the Puma's use would, therefore, be restricted because it could only be flown off in fairly calm weather.

3.168 This report effectively ruled out the Puma from CORPORATE, at least whilst operations from ships were contemplated. On 30 April, however, the Director of Military Operations (DMO) formally requested the AFD to earmark 10 Pumas for 5 Bde support. ACAS (Ops) replied on 2 May, pointing out the Puma's limitations and directing that 10 Wessex Mk 2 SH be earmarked instead. This decision had an advantage in imparting a degree of commonalty of aircraft types in the TF since the Wessex 2 was essentially the same aircraft as the RN Wessex 5. No 72 (Wessex) Sqn, then supporting N Ireland (NI) operations at Aldergrove, was ordered to readiness to replace No 33 Sqn in the Falklands role, whilst the Pumas were to take over from the Wessex in NI.

Ops C/Army Ops/105 30 Apr
TF 46.1 E21

TF 46 2 May
TF 46.1 E23

3.169 No 33 Sqn deployed 8 aircraft to Aldergrove on 1 May but within 24 hours the decisions were reversed; No 72 Sqn was withdrawn from the CORPORATE commitment and returned to its normal duties, and on 6 May the Pumas returned to Odiham. No 72 Sqn's ORB tells its own story of those hectic few days:

No 72 Sqn ORB

> "All Sqn personnel across the board responded quite magnificently to the enormous challenge thrust upon us by the requirement to replace No 33 Sqn on standby for the Falklands. The task came out of the blue and with great urgency; a weekend of feverish activity saw the Sqn packed and largely moved to Benson, aircraft generation well in hand, old skills and equipment being rapidly re-discovered. It was very satisfying to note that we would have been well prepared within the stipulated time. The reality of the prospect ahead was more sobering than the atmosphere achieved in any Tactical Evaluation (TACEVAL) but a tremendous drive and enthusiasm underlay all the hard work; the families rallied too and set out to look after each other as the Sqn started to move out. The return to Aldergrove a few days later should have been a shattering anti-climax ....." (39)

3.170 The replacement of the Puma by the Wessex was understandable in the light of the A&AEE report and the added bonus of aircraft commonalty within the TF. The decision to stand-down the RAF Wessex is more complex and was wholly unsatisfactory from the RAF point of view.

Hayr tape

3.171 On 3 May, Director Naval Air Warfare (DNAW), in an unaddressed

(39) No 72 Sqn subsequently took on the RN workload, an increase in daily tasking of 50% to cover for RN aircrews withdrawn from NI for CORPORATE.

brief, recorded that CINCFLEET had identified the need for 10 Sea King and 26 Wessex for support of 5 Bde (40). The RN would form 2 squadrons within the next week, one of 10 Sea King and the other of 16 Wessex 5. This brief noted that 10 RAF Wessex 2 were already included in the 5 Bde loading tables. Thus, it could be inferred that the helicopter force would consist of 10 x Sea King, 16 x RN Wessex 5 and 10 x RAF Wessex 2. TF 41.2 E51 Unreferenced

3.172 However, on the same day the Army Dept wrote to Director of Naval Operations and Trade (DNOT), DNAW, Defence Operations Movements Staff (DOMS) and AF Ops stating a view expressed by DNAW that the 2 ships allocated to carry the helicopters, ATLANTIC CAUSEWAY and ENGADINE, would be unable to carry the full complement of 26: indeed there was space for 10 Sea Kings but only 16 Wessex and the latter would be provided by the RN. The RAF helicopters were no longer required (41).

3.173 The decision to stand down the RAF SH in favour of RN aircraft was described by Ops (SH) (RAF) in a brief to VCAS as a "fait accompli". It was apparently communicated to HQ Strike Command (HQSTC) without the knowledge of COS Fleet or the Air Commander and only confirmed later in the day by CINCFLEET after considerable pressure from the Air Staff, exerted upon and through DNAW, for CINCFLEET so to do. D/DD Ops(AT) 6/660/1 6 May TF 41.2 E74 VCAS 7/4/1.8 E22

3.174 The decision caused adverse comment in RAF circles for the speed with which it was apparently done. Ops (SH) (RAF) remarked "the RN must have known well in advance (of 1 May) of their intention to use their own Wessex". Indeed it is hard to accept that the loading capacity of the 2 ships was discovered only between the decision to use Wessex on 1 May and this latter decision of 3 May (42). RAF antipathy was directed against a decision which it saw as unsound. RAF helicopters had operated in the SH role in support of ground forces over a long period, evolving with the Army the techniques and practices of SH operations, and No 33 Sqn had participated in 5 Bde's work up exercise. RAF expertise was to be replaced by a newly formed squadron, inexperienced in the role and not yet worked up (and with little opportunity to do so). The RN Wessex were not even equipped with the standard Army Clansman radio. TF 41.2 E74 As above

3.175 One of the RN's reasons given to the DMO, and probably accepted by his staff at face value, was that RAF WESSEX were not

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(40) This, despite the original 5 Bde Staff Table which called for 19 helos, of which 10 were RAF Wessex/Puma and the balance Army Air Corps (AAC) assets. One result of the decision was the inefficient loading of helicopters. The Puma's standard underslung load was 3000lbs compared with the Wessex's 2000lbs and the Sea King's 4000lbs. 5 Inf Bde's pallets were 'Puma-sized' and therefore unsuitable for the Wessex, while the Sea King had to fly underladen sorties.

(41) It is of interest that CINCFLEET's identified need for helicopters had been reduced by nearly 30% but no planning was apparently done to make up this shortfall in later vessels.

(42) Furthermore, since the RAF's decision to reject the use of Puma was not made until 1-2 May any previous RN examination of ship capacity would, or should, have been based on the need to embark, inter alia, 10 Pumas.

'marinised'; but then the AAC helicopters and the Chinooks, all to be shipped by sea, also fell into this category. Despite all this, CINCFLEET's decision had been made and both the Puma and the Wessex squadrons resumed their normal peacetime functions.

OPERATIONS FROM ASCENSION

3.176 The No 18 Sqn advance party arrived in Ascension on 27 April and immediately set about procuring accommodation. The situation was apparently confused and the only clear information was that accommodation was in very short supply. Nevertheless, tentage for the ground crew was "purloined" and a base set up at English Bay on the NW end of the island, some 8 miles from the airfield. The aircrew were to be put in a hut (with mattresses!) and all feeding was from a field kitchen using composite rations. An operational chain of command was devised whereby the Chinook was effectively absorbed into RN helicopter operations. OC Detachment liaised directly with CO 845 (RN) Sqn and reported to CBFSU through CO Naval Party 1222, though retaining direct access to the SRAFO. This was considered by all to be a satisfactory arrangement both in terms of a coordinated helicopter effort and also in keeping 18 Sqn's activities separate from the expanding RAF fixed wing operations. No 18 Sqn ORB Aug

3.177 The 18 Sqn main party arrived by air on 5 May just after Chinook ZA 707 had disembarked from ATLANTIC CONVEYOR. It had been hoped that the ground crew would have arrived at least the day before but this was not to be; thus, because Chinook operations began within 1½ hours of arrival from the ship, the ground crew were plunged straight into a full 12 hour working day after an 18 hour Hercules flight from the UK. Furthermore, the helicopter required Primary Star (43) inspection which involved half the airmen in all night work to prepare it for an 0800 hours start the next day - which was achieved.

3.178 Operations continued at a heavy rate. In the first 3 days the Chinook flew in excess of 30 hours. Most of the tasks were vertical replenishment (VERTREP) of ships at anchor but other commitments included the positioning of 12 loads of early warning radar equipment on top of Green Mountain, an operation which incidentally could only have been achieved with the Chinook since there was no road access to the site and no other helicopters were capable of lifting the loads. One long range flight involved flying 200 miles to RFA TIDESPRING to deliver International Red Cross, Special Investigation Branch and Tactical Questioning Teams. (TIDESPRING was carrying prisoners from S Georgia including the controversial Lt ASTIZ)(44).

3.179 This particular sortie involved the use of ferry tanks in the Chinook, a previously unproven modification. It is worth quoting this extract from the Detachment Commander's Report.

> "The ferry system worked perfectly. We have calculated we can fit either forward or after ferry tanks and remain within

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(43) A periodic aircraft maintenance inspection.

(44) Lt ASTIZ, Commander of the Argentinian force in S Georgia, was 'wanted' internationally for alleged atrocities in Argentina against foreign nationals.

Centre of Gravity (C of G) limits. The aft tank can be fitted for winching at long range and the forward tank for load lifting if required or for operations requiring the ramp. The new chain tie-down system scheme means that if the tanks are displaced off the aircraft centre line one row of seats can be fitted. Our plan would be to place the ferry tanks to port and leave the starboard seats giving us winching capacity for 15 seated survivors out to a range of 450 nms. This capacity would only be enacted in extreme emergency."

3.180 Operations continued throughout May at an intensive rate. Ships by now were not anchoring at Ascension to minimise the chance of submarine attack. Flying hours were increased by the need to transit 20 nms out to sea to reach the ships. Whilst much of the tasking involved heavy lift VERTREP, the Chinook was used to replenish supplies at the Green Mountain radar site and the Detachment was also asked to provide NITESUN (a searchlight) and GPMG to assist the RAF Regt Quick Reaction Force (QRF) set up to defend Ascension against possible Argentine infiltration attacks.

3.181 One incident occurred during the lift of a SNOWCAT onto the forward deck of MV IRIS. Her radar sprang up because the radar brake had been left off. To quote the report "The radar detached from the superstructure and jumped into the sea. On the 18 May we went out to the Russian Auxiliary General Intelligence (AGI) PRIMORYE (45) to offer her a bottle of Scotch from CBFSU in the hope that we could repeat our effort on IRIS. Unfortunately she would not play so we never came closer than ½ nm". No 18 Sqn ORB

3.182 By 16 June the second wave of Chinooks, bound for the Falklands, had arrived. ZA 707 went on south and was replaced by ZA 714, an OMEGA-equipped aircraft. The period up to 20 June, whilst busy, marked the end of the heavy VERTREP commitment in Ascension. The Chinook contribution to the operations was invaluable. ZA 707 flew 100 hours without significant unserviceability; a measure of this aircraft's capability is gained from the fact that in one day 350 tons of stores were lifted from the airfield to various ships. The overall success was, of course, in no small way attributable to the unstinting and cheerful efforts of the 18 Sqn personnel, working under difficult conditions and often without the normal ground support facilities.

NO 202 SQN - SEA KING

3.183 The story of operations at Ascension would be incomplete without mention of the No 202 Sqn Sea King. The RAF agreed to provide a Sea King to replace a RN aircraft from No 846 Sqn, which had been despatched from Ascension to the operational area, leaving a gap in the VERTREP capability of CBFSU. No 202 Sqn Sea King XZ593 left Finningley in a Belfast of Heavy Lift Airlines on 8 May together with two crews and supporting personnel, arriving at Ascension on 9 May. This move gave CBFSU a balanced helicopter force of one Chinook and one Sea King from the RAF and two RN Wessex 5s, a combination which was to prove adequate for the task. The Sea King came under the same command and control arrangements as the Chinook (vide para 3.176) reporting to OC Naval Party 1222. No 202 Sqn ORB

(45) PRIMORYE had been observing operations in the vicinity of Ascension for some time.

3.184 The aircraft was re-assembled and tested soon after arrival and became available for tasking on 11 May. However, it became obvious that Deck Landing Training (DLT) was required, a procedure not part of routine SAR Training. Furthermore, HMS DUMBARTON CASTLE, the Ascension guard ship, was newly commissioned and had been unable to complete her work-up with helicopters. DLT would therefore be of mutual benefit to both ship and air crews. From an initial low level of expertise results were achieved which would enable helicopter crews safely to complete ship controlled radar approaches and landings at night without the aid of landing lights. Helicopter in-flight refuelling (HIFR) from ships was also practised and both these newly acquired techniques were to prove essential in subsequent operations. VERTREP operations began on 12 May, which included on that day the transfer of 69 POWs and 12 guards from RFA TIDESPRING to Wideawake Airfield. Flying continued on an almost daily basis, mainly in the VERTREP role, but a limited Search And Rescue (SAR) capability was also maintained. The following illustrations of No 202 Sqn's work are extracted from the ORB and show not only the diversity of the operations but also the capability of this aircraft.

No 202 Sqn ORB

> "20 May. Detachment embarked on HMS DUMBARTON CASTLE for covert passenger and stores transfer to RMS QE2. Ships cleared to 30 nms of QE2 estimated position (range 100 nms from Ascension) and launched XZ593 to find her. Radar used momentarily to locate QE2 then switched off, position inserted in TANS (46) and low level appraoch made to target. Position was passed to 'mother ship' by signal lamp to avoid breaking radio silence. 'Mother ship' closed with QE2 during transfers and whole group closed to within 70 nms of Ascension. Transfer of 150 passengers and stores to QE2 and recovery of 6 casevac to 'mother ship' completed in radio silence. 593 returned to the island at low level and by circuitous route on completion of transfers. The object of the covert aspect of this task was to avoid QE2 being sighted by the Soviet AGI 'PRIMORYE' on station off Ascension. Crews were briefed by Senior Naval Officer QE2 during a similar task later (4 June) that we have been successful in this."

3.185 On 7 June, and in the absence of the Chinook, the detachment was tasked with the lift of a liquid oxygen bowser to HMS DUMBARTON CASTLE. This task necessitated stripping out the aircraft of all SAR and role equipment, troop seats and winches to reduce weight, and taking on a minimum fuel weight of 400 lb. The lift of 7126 lb was completed successfully. (47)

> "15 June. Task was casevac from HM Submarine SPARTAN which closed to within 250 nms of Ascension for the transfer. Patient was suspected epileptic. Top cover was provided by NIMROD Mk 2 from Ascension, which also assisted in location of the target. 593 refuelled on HMS LEEDS CASTLE during return flight. Target had been on continuous patrol for 100 days and without fresh rations for that time. Therefore, in addition

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(46) Aircraft's on board navigation system.

(47) Maximum underslung capacity of Sea King is 8000 lb in much cooler conditions than those experienced in Ascension. Source: "Jane's All the World's Aircraft".

to mail for SPARTAN we also delivered enough fresh strawberries and cream for the entire crew."

3.186 During the period from 12 May to 16 June XZ593 flew over 112 hours in 31 sorties without significant unserviceability and, indeed, those short periods of unavailability which did occur were mainly for lack of spares supply from the UK. No 202 Sqn's contribution in Ascension played no small part in the success of the logistic operations there.

CHINOOK OPERATIONS IN THE FALKLANDS

3.187 The loss of the ATLANTIC CONVEYOR to an Exocet missile on 25 May is well documented elsewhere. Suffice here to record that the destruction of 3 of the 4 Chinooks carried was a severe setback to the helicopter heavy lift capability of the TF. One aircraft, ZA 718, was airborne at the time of the attack and managed to recover safely to HMS HERMES. None of the 18 Sqn aircrew or groundcrew embarked in ATLANTIC CONVEYOR was injured; most re-embarked in other ships and, after spending some hectic time in San Carlos Bay, were eventually to return to the UK.

18 Sqn ORB 18G/335/4/33/ Ops 30 Jun

Misc Reps on Op CORPORATE E1

3.188 The surviving aircraft was subsequently flown ashore, with 2 aircrews and a small party of groundcrew. She was based at Port San Carlos but had no support equipment - tools, spares or lubricants - all of which had been lost in the Argentine attack. In the following 2½ weeks of hostilities this aircraft, despite the odds, was to perform magnificently in providing heavy lift for the ground forces' operations, some of which would have been impossible with other types of helicopter (48).

3.189 Operations commenced immediately despite the almost total lack of ground support equipment, and improvisation was the order of the day; 'snags' were carried which, under normal conditions, would have grounded the aircraft. A failed compass and a 'lost' cockpit door were among defects endured and a gearbox oil leak was sealed with glue.

3.190 The Chinook nevertheless flew 109 hours in the operating period up to the Argentine surrender, considerably in excess of what would be normally authorised, and was involved in assault as well as VERTREP sorties. On one night Special Forces (SF) sortie, 3 light guns (2 internal and one external) and 22 troops were carried. The aircraft flew for 40 minutes whilst under fire to unload the guns on a steep, rock strewn slope (in the process damaging the loading ramp).

3.191 During another SF sortie at night the aircraft struck the sea in a snowstorm at 120 kts. Despite a massive intake of water the engines continued to run and, since the helicopter was still afloat, the pilot took off again and climbed away.

3.192 The Chinook's lifting power was prodigious; it carried and replaced the Murrell Bridge at Mt Kent to enable vehicles to continue to Port Stanley and in a famous incident 81 armed troops were carried

(48) See the article "The Saga of 'Bravo November'" in Warplane Vol 7, Issue 82 of 1987 for further details of its activities.

forward to exploit the tactical situation at Fitzroy (49). CORPORATE saw the first operational use of the triple point hook system which provided a most valuable addition to aircraft flexibility. In one lift it carried, for example, a complete Rapier fire unit (1 ton Land Rover, spare missiles and launcher underslung with crew and kit internally). On the occasion of the disaster in Bluff Cove, 64 casevacs were flown out to the hospital ship UGANDA in one lift.

3.193 In toto, this one Chinook carried, during actual operations, 2150 troops of whom 95 were casevac, 550 tons (50) of freight and 550 prisoners, a remarkable achievement under the circumstances.

CONCLUSION

3.194 By mid-June replacement Chinooks began to arrive in the Falklands bringing the total to 7 aircraft. Post surrender operations are covered elsewhere but up to 1 August, 960 flying hours were achieved, 8033 troops airlifted and 3786 tons of freight delivered. During this time ZA 718 was still flying (with many Argentine Chinook spares fitted) and performing well.

3.195 Throughout CORPORATE helicopters played a major role but it was a source of disappointment to the RAF that the Pumas and Wessex were precluded from taking part and from consolidating the experience and practices developed over years of SH Operations with the Army. The loss of ATLANTIC CONVEYOR, and with it the loss of the No 18 Sqn Chinooks, reduced the entire RAF contribution in helicopter operations outside the UK to 3 aircraft - the sole surviving Chinook in the Falklands, and the Ascension based Chinook and Sea King. Nevertheless the contribution to the logistic line was out of all proportion to the numbers of aircraft involved.

Annexes:

A. Record of ATF Flights to Out of Theatre Areas.

B. Record of Civil Air Charter Flights to Ascension Island.

C. Modification of Hercules as for AAR Tanker and mine laying roles.

D. Air Drops to Task Force.

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(49) This was a remarkable achievement since the standard aircraft capacity was 33, exceptionally 44; a question of standing room only! Another feature of the Chinook's contribution to operations around Fitzroy was its carriage of huge amounts of fuel for Wessex, Sea King and Air Corps helicopter operations; in transferring fuel from San Carlos to Fitzroy Settlement it ensured 5 Bde's mobility for the ultimate push to Port Stanley

(50) The tonnage lifted was in excess of the total carried by an entire squadron of Sea King over the same period.

ANNEX A TO
CHAPTER 3

RECORD OF ATF FLIGHTS TO OUT OF THEATRE AREAS

AIRFIELD KEY

LYE	-	LYNEHAM	YQX	-	GANDER
POB	-	POPE	GUT	-	GUTERSLOH
TEE	-	TEESIDE	CHS	-	CHARLESTON
JAK	-	JACKSONVILLE	LTF	-	LAMBERTSFIELD
SPA	-	SPANGDAHLEM	AKR	-	AKROTIRI
LOS	-	LOSSIEMOUTH	DOV	-	DOVER
MCC	-	MCCLELLAN			

DATE	TASK NO	AC TYPE	ROUTE FLOWN	PAYLOAD
29 Apr	4221	Hercules	LYE-YQX-POB	Classified Freight
13 May	2713	VC10	BZZ-POB	Communication Equipment
15 May	2714	VC10	BZZ-POB	Communications Equipment
16 May	4734	Hercules	LYE-GUT-TEE	12AD Regiment
22 May	4736	Hercules	LYE-CHS-JAK-LTF	Classified Freight
23 May	4737	Hercules	LYE-YQX-CHS	Royal Navy Freight
23 May	4739	Hercules	LYE-YQX-CHS	Royal Navy Freight
26 May	4740	Hercules	LYE-SPA	Shrike Missiles
28 May	4741	Hercules	LYE-SPA	Shrike Missiles
29 May	2627	VC10	BZZ-GUT	Passengers
30 May	4802	Hercules	LYE-SPA	Shrike Missiles
4 Jun	4845	Hercules	LYE-AKR	Type 84 Radar
6 Jun	5072	Hercules	LYE-POB	Classified Freight
8 Jun	4848	Hercules	LYE-AKR	Type 84 Radar
9 Jun	4849	Hercules	GUT-LOS	Pegasus Engine
14 Jun	4853	Hercules	LYE-GUT	Harrier Support Equipment
14 Jun	4858	Hercules	LYE-MCC-DOV	Runway Equipment
14 Jun	5467	Hercules	LYE-YQX-LTF	Harpoon Missiles

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ANNEX B TO
CHAPTER 3

CIVIL AIR CHARTER FLIGHTS IN SUPPORT OF OPERATION CORPORATE

UK Dep Date	Flt No	A/C Reg	Route	Payload (kgs)	Remarks
02 Apr	NP 652	GBEPE Belfast	Yeovilton-Freetown-Ascension	11080	2 Wessex Helicopters
05 Apr	NP 654	GBFYU Belfast	Yeovilton-Dakar-Ascension	10795	2 Wessex Helicopters XT464/XT473
07 Apr	NP 656	GBFYU Belfast	Yeovilton-Dakar-Ascension	9387	Seaking Helicopter
09 Apr	NP 658	GBEPE Belfast	Yeovilton-Dakar-Ascension	11385	2 Wessex Helicopters XT451/XT460
17 Apr	NP 660	GBFYU Belfast	Marham-Stansted-Casablanca-Dakar-Freetown-Ascension	25000	1 A/C Tug
17 Apr	Trade-Winds 507	B-707C	Marham-Ascension	-	Power sets and Victor Detachment Freight
18 Apr	Speed-Bird 362	B-707C	Marham-Ascension	-	Victor Detachment Freight
21 Apr	NP662/3	GBFYU Belfast	Brize Norton-Gander-Washington/Dulles-Belize-Tampa-Gander-Odiham	16237 BZE 5872 ODI	
23 Apr	NP 664	GBEPE Belfast	Kinloss-Stansted-Casablanca-Dakar-Freetown-Ascension	24036	A/C Tug
25 Apr	NP 680	GBFYU Belfast	Waddington-Casablanca-Banjul-Ascension	24550	
27 Apr	NP 682	GBEPS Belfast	Lyneham-Casablanca-Dakar-Freetown-Ascension	26151	
30 Apr	NP 684	GBFYU Belfast	Brize Norton-Casablanca-Dakar-Freetown-Ascension	22970	Harrier Freight
01 May	NP 686	GBEPS Belfast	Waddington-Coningsby-Dakar-Ascension	13103	

CIVIL AIR CHARTER FLIGHTS IN SUPPORT OF OPERATION CORPORATE

UK Dep Date	Flt No	A/C Reg	Route	Payload (kgs)	Remarks
04 May	NP 688	GBFYU Belfast	Lyneham-Casablanca-Dakar-Freetown-Ascension	25361	Mobile Crane
06 May	NP 690	GBEPS Belfast	Yeovilton-Casablanca-Freetown-Ascension	10820	2 Wessex Helo
08 May	NP 694	GBFYU Belfast	Finningley-Freetown-Ascension	8480	S/R Seaking Helicopter
09 May	NP 692	GBEPS Belfast	Yeovilton-Casablanca-Freetown-Ascension	11434	2 Wessex Helo
10 May	NP 696	GBEPE Belfast	Stansted-Casablanca-Freetown-Ascension	19120	
11 May	NP 698	GBFYU Belfast	Stansted-Casablanca-Freetown-Ascension	20720	
17 May	NP 602	GBEPS Belfast	Lyneham-Casablanca-Freetown-Ascension	19922	Mobile Laundry
27 May	NP 622	GBFYU	Stansted-Dakar-Ascension	21725	
30 May	NP 624	GBEPS	Stansted-Casablanca-Dakar-Ascension	18327	
01 Jun	NP 626	GBEPS	Coltishall-Stansted-Akrotiri	18218	Radar Equipment
02 Jun	NP 628	GBFYU	Coltishall-Stansted-Akrotiri	20193	Radar Equipment
14 Jun	NP 632	GBFYU	Stansted-Casablanca-Banjul-Ascension	23429	

MODIFICATION OF HERCULES FOR AAR TANKER AND MINELAYING ROLES

INTRODUCTION

3.1 From the start of Operation CORPORATE the ATF Staffs at MOD and HQSTC were examining ways in which the Hercules could be modified to perform other roles that might be required if the Operation became protracted or in order to support a Falkland Islands Garrison. The first modification completed, the provision of an AAR facility to the Hercules, has already been covered in the narrative, however at the same time 2 other important modifications were being planned, one the conversion of a Hercules into a tanker and the other the development of the Hercules for aerial minelaying.

CONVERSION OF THE HERCULES TANKER

3.2 On the afternoon of 30 April, HQSTC signalled MOD(PE) to request that authority be given for Marshall of Cambridge to prepare a Trial Installation (TI) for a Hercules tanker using a standard Flight Refuelling Limited hose drum unit (HDU) Mk 17b. A Hercules C Mk 1 aircraft XV296 with 4 long range tanks in the fuselage arrived at Cambridge on 1 May, and this aircraft converted to tanker configuration flew for the first time on 8 June; the standard probe was also fitted to allow the tanker itself to refuel in flight: an Omega was installed to improve the navigation accuracy.

30 1500Z Apr 38G/8208/12/2/TS E15

01 1007Z May 1bid E16

3.3 The tanker modification was achieved by locating the HDU on the aircraft's cargo ramp, with the drogue deployment box and auxiliary serving carriage on the cargo door. Unfortunately, this resulted in the Hercules having to de-pressurise whenever the drogue was deployed; to achieve a pressurised system would have been more difficult and time consuming. The fuel supply was taken from the main aircraft tanks (not the auxiliary tanks in the fuselage) by tapping the standard dump pumps, and pressure to the fuel supply through the HDU to the receiver was provided by a bleed-air turbine-driven fuel pump. To cool the bleed air and components in the HDU, two ram intakes and two exhaust posts were incorporated through the pressure hull. Standard external lighting for the tanker aircraft was provided, and the control panel was located above the navigator's station, adjacent to the in flight refuelling panel. The drogue was successfully deployed on the first two flights from Cambridge, on 8 and 10 June and XV296 was delivered to A & AEE at Boscombe Down on 11 June. Dry couplings were made with Harrier and Hercules aircraft but problems were encountered with slight buffeting around the rear fuselage caused by the HDU pack projecting from the cargo ramp, and over-heating of the HDU oil cooler. The aircraft was returned to Cambridge where small strakes were fitted on the cargo ramp and a third ram air intake fitted for cooling the HDU. The Hercules tanker flew again on 20 June and the next day made a successful wet transfer of 5,900 lb of fuel to a Buccaneer, at 1,000 lb/min. A decision had been taken that a

38G/46005/62/Eng 10 May E27

38G/46005/62/Eng 14 May E50

38G/1800/172/27/ CONT 2 Jul E79

dry and wet transfer would be completed by Marshall before all aircraft were delivered to A & AEE. The Hercules tanker returned to A & AEE on 22 June.

3.4 There then followed a further period of development flying including "prods" by Sea Harrier, Phantom, Nimrod and Hercules at varying aircraft weights and altitudes. However the problem with the heat exchanger persisted and it was eventually decided to fit alternatives. The first tanker was delivered to RAF Lyneham on 5 July. The alternative heat exchangers were first flown on the second tanker conversion, XV201, on 12 July. These were then also fitted to XV296, which was finally delivered to Lyneham on 19 July, where the third and fourth aircraft XV204 and XV192 were delivered on 21 and 26 July. Marshall of Cambridge completed the entire design, manufacture, installation, ground and flight testing on all 4 Hercules C Mk 2 (K) tankers within 87 days of the initiation of the first requirement. VCAS stated that it was a great achievement and of critical importance to RAF operations in the South Atlantic.

051120Z Jul
38G/8208/12/2/
TS.2 E39

121405Z Jul
Ibid E53

VCAS 7/7.2 E4

3.5 The first Hercules C Mk 1(K) began operating out of Wideawake airfield on Ascension Island on 28 July. On a typical mission in early August, a Hercules C Mk 1(K) and 2 Victor K Mk 2s were required to get one Hercules C Mk 1(PLR)2 from Ascension to Port Stanley Airfield. While the Hercules proceeded together, one Victor took on 41,000 lbs of fuel to bring its tankage back to the full 123,000 lb before continuing to rendezvous with the 2 Hercules; the first Victor then returned to Ascension. Some 4 hours into the sortie, the primary Hercules took on 23,000 lb from the Hercules tanker, which an hour later topped up with 48,000 lb from the remaining Victor, the latter then returned to Ascension. Finally the transport Hercules received a further 22,000 lb of fuel from the Hercules tanker, since both aircraft at this at this point had sufficient fuel to return to Ascension the tanker turned back and the Hercules C Mk 1 (PLR)2 continued to Stanley.

291500X Jul
Ibid E45

DEVELOPMENT OF A MINELAYING CAPABILITY

3.6 On 15 April ACAS(Ops) asked his staff whether the Vulcan had the capability to drop mines. Later that day CDS asked the same question through DSC (Coord). The staff's advice was that whilst the Vulcan could be used in this role the Hercules might be considered as an alternative. The aircraft had been the AFD's preferred carriage for mines as a MOD(PE) feasibility study (published on 23 Feb 82) showed that 'A' Mk 12 mines (1) could be "pushed out" of the aircraft. Subject to further simple trials and with minimal cost the entire stock of aerial delivered mines could have been 'kitted out' for Hercules delivery within a short timescale. Employing

TF14.1 E65
15 Apr

(1) The RN's Mine 'A' Mk 12 could be delivered by air. Each mine weighed nearly 2,000 lbs and was 3 metres long. They were fitted with a parachute to retard their rate of descent and because of the shape of the nose were only suitable for internal carriage on aircraft.

this system a standard Hercules C Mk 1 could have carried and laid singly up to 16 mines. Obviously the operating area for such a sortie was out of range if a round trip from Ascension had been visualized, thus it would have only been possible if refuelling could have been arranged in South America on either the in-bound or out-bound legs. The Hercules at this stage had no AAR capability.

3.7. MOD(PE) were tasked to carry out a further trial on 29 April to verify the maximum number of mines that could be airdropped per sortie and the shortest delivery interval between mines. Three inert mines and 13 ballast equivalents were used, but the latter proved unsuitable and after 2 platforms jammed on exit the trial was discontinued. Nonetheless the ability to despatch 16 mines at the required interval seemed feasible and a further trial using a load of inert mines was arranged for 10 May in conjunction with the Navy Department.

TF33.3 E14
5 May

3.8 On 10 May, 16 mines were successfully delivered at approximately 3 second intervals on a single sortie, and the next stage was to examine various minefield patterns which took place on 17 May. The CA release for the role was given on 24 May and crew training could then have begun. Each crew to be trained would have been transport support qualified and have consisted of the basic 5 members plus 10 air despatchers. One training sortie would have been needed for a crew to become combat ready. To obtain a reasonable degree of accuracy over long ranges it would have been preferable to use Hercules fitted with INS. In coastal waters mines could then have been delivered to within .5nm of the target by day or night and over open seas to within 1nm, provided the aircraft navigation equipment could have been updated before the mines were dropped.

TF33.4 E73
15 May

240820Z May
TF.65.1. E25

3.9 Thus operational capability could have been quickly established. The RN had some 2000 mines and 800 parachutes in stock. Parachute attachments and aircraft role equipment would have had to be specially manufactured and it would have taken 2 weeks to produce 5 aircraft with crews and equipment for operations.

3.10 The Chiefs of Staff agreed on 21 May that although there was no immediate operational requirement for this capability it was a useful development which might have a future application. No further action was to be taken. The subject was next raised by CDS on 24 June when he was considering submitting to the Secretary of State a case for developing the Hercules mine-laying capability so that it would be available at 48 hours notice. He considered that Hercules mine laying operations mounted perhaps from Ascension would have been an effective and rapid method of applying pressure on Argentina.

2038/1 28 May
TF 65.1. E42

CAS 91385 24 Jun

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ANNEX D TO
CHAPTER 3

AIR DROPS TO THE TASK FORCE

DATE	FLIGHT IDENTIFICATION	RECIPIENT SHIP LOCATION	LOAD DETAILS	FLT TIME (Hrs)	(Mins)
21 Apr	4841	INVINCIBLE/ HERMES	2 CONT 1 PARA 3HP Wt 3962 lbs	7	30
22 Apr	4850	HERMES	1 CON 2HP Wt 1053 lbs	9	10
24 Apr	4872	FORT AUSTIN	1 CONT 2HP Wt 780 lbs	5	25
26 Apr	4883	FORT AUSTIN	1 CONT 6HP Wt 2335 lbs	10	25
30 Apr	4228	BLUE ROVER	1HP Wt 250 lbs	8	45
04 May	4263	ANTELOPE	1 CONT 10 MISC Wt 7134 lbs Partly successful	8	05
06 May	4266	(i) ANTELOPE (ii) STENA SEASPREAD	(i) 3 CONT Wt 1553 lbs (ii) 3 CONT Wt 2686 lbs	10	40
07 May	4277	PLYMOUTH	4 CONT Unsuccessful due to poor WX at RV	18	
08 May	4277	(i) YORKSHIRE-MAN (ii) PLYMOUTH	(i) 1 HP Wt 250 lbs (ii) 4 CONT 1 HP Wt 2650 lbs	17	10
10 May	ANYA	STENA SEASPREAD	2 CONT WT 2205 lbs MAIL + 2 BOXES FREIGHT. (MAIL RECOVERED, REMAINDER SANK) PART SUCCESSFUL	14	30
11 May	BRIDGET	FEARLESS	11 CONT 1HP Wt 10450 lbs PNGs + FREIGHT	9	30
13 May	DORIS	(i) FEARLESS (ii) STENA SEASPREAD	(i) 2 CONT Wt 1295 lbs (ii) 2 CONT Wt 2135 lbs (FREIGHT + GENERATOR)	15	45

AIR DROPS TO THE TASK FORCE

DATE	FLIGHT IDENTIFICATION	RECIPIENT SHIP LOCATION	LOAD DETAILS	FLT TIME (Hrs)	(Mins)
14 May	ERICA	FEARLESS	4 CONT Wt 3845 lbs	16	45
16 May	FIONA	(i) ANTELOPE (ii) CORDELLA	(i) 2 CONT Wt 2235 lbs (ii) 2 CONT Wt 2150 lbs (Harpoon Spares)	9	10
16 May	4960 MK1 PLR	FORT AUSTIN	8 PAX + EQUIPMENT Wt 1000 lbs	24	05
18 May	HELEN	LEEDS CASTLE	3 CONT 1HP Wt 3680 lbs (PAVEWAY + FREIGHT)	16	45
20 May	GLENDA	IRIS	8 CONT 6930 lbs	11	10
21 May	INGRID	AVENGER/ BRITISH TEST BRITISH WYE/ ANCO CHARGER	1 CONT Wt 425 lbs (MAIL)	9	10
22 May	JULIE	ALACRITY/ ANTELOPE	1 CONT Wt 275 lbs (SAS STORES)	23	
23 May	KATIE	(i) OLNA (ii) ANCO CHARGER	(i) 4 CONT 2690 lbs (ii) 1HP 69 lbs (MAIL + FREIGHT)	12	15
24 May	LARA	AVENGER	16 CONT 10307 lbs (SAS STORES + MAIL)	20	05
25 May	MARY	CARDIFF	10 CONT 4 PAX Wt 6710 lbs (4 PAX SAS - CHINOOK SPARES + RAPIER SPARES)	21	20
26 May	NORA	MINERVA	4 CONT Wt 3595 lbs (SIDEWINDER, DIVING EQUIPMENT	24	30
29 May	OLIVE	ACTIVE	12 CONT Wt 7795 lbs ONLY PARTIALLY SUCCESSFUL DUE TO WX AT RV	26	

AIR DROPS TO THE TASK FORCE

DATE	FLIGHT IDENTIFICATION	RECIPIENT SHIP LOCATION	LOAD DETAILS	FLT TIME (Hrs)	(Mins)
30 May	QUEENIE	ENGADINE	9 CONT Wt 6750 lbs (MK 44 TORPEDOES) NOTE: SEVERAL DAMAGED IN DROP. DECISION MADE NOT TO AIRDROP ANY FURTHER MK 44s.	9	35
30 May	SALLY	ANTRIM	11 CONT Wt 6087 lbs ("OLIVE" LEFTOVERS + "AUTOCAT" + AVIATION SPARES (HERMES) + POWER SUPPLY UNIT (BRISTOL)	24	25
01 Jun	URSULA	PENELOPE	1 PAX 9 CONT 1HP Wt 7290 lbs (1 PAX LT COL CHANDLER + 1500 lbs EQPT INC RAF SPARES WERE TO BE DROPPED BY TESSA BUT CX	24	15
02 Jun	VERA	PENELOPE	4 CONT 6 MISC 1 BOX Wt 6138 lbs (PNG, SAS STORES MISC ROCKETS + LAUNCHERS)	24	
04 Jun	WILMA	1. MINERVA	10 CONT 1HP 9092 lbs. SORTIE CX A/C RTB PROBE US ABORTED	8	30
05 Jun	WILMA 2	2. MINERVA	SAME LOAD (PRIORITY STORES) + PAVEWAY + SAS STORES	23	50
06 Jun	XAVIER	MINERVA	17 CONT Wt 8835 lbs (AIRDROP + SUPPORT FOR HARRIER DEPLOYMENT)	24	05
07 Jun	YVONNE	ANDROMEDA	13 CONT 8 PARA Wt 8448 lbs (AS XAVIER + 8 SAS PAX)	24	25

AIR DROPS TO THE TASK FORCE

DATE	FLIGHT IDENTIFICATION	RECIPIENT SHIP LOCATION	LOAD DETAILS	FLT TIME (Hrs)	(Mins)
09 Jun	ZARA	GLAMORGAN	9 CONT 2HP Wt 7625 lbs	24	40
10 Jun	ALISON	GLAMORGAN	2 PARA 15 CONT Wt 8671 lbs (2 SAS PAX + EQPT GENERATOR	25	
11 Jun	DENISE	AMBUSCADE/ IRISHMAN	9 CONT 4HP Wt 7155 lbs (8 x STRIKE + ECW CLOTHING)	24	10
13 Jun	ELAINE	GLAMORGAN/ ANDROMEDA IRISHMAN	28 PAX 8 CONT Wt 8320 lbs (ONLY PARTLY SUCESSFUL. PARA DISCONNECTED ON 4 CONT)	25	10
13 Jun	* FREDA	GLAMORGAN/+ GP	28 X SAS PAX + EQPT (NO DROP RTN ASI SECOND AAR UNSUCCESSFUL)	14	40
14 Jun	GINA	GLAMORGAN/+ GP	12 CONT Wt 6685 lbs (MISC ENC 133)	24	05
14 Jun	* FREDA 2	GLAMORGAN/+ GP	27 PAX 9 CONT Wt 7760 lbs RTN ASI No 2 AAR UNSUCCESS-FUL	15	30
16 Jun	HILARY	STANLEY	12 CONT Wt 9530 lbs FIRST LAND DROP	24	45
16 Jun	IRENE	STANLEY	13 CONT Wt 9305 lbs (SPARES)	25	10
17 Jun	KAREN	STANLEY	12 CONT Wt 6235 lbs INVINCIBLE (FILTER ELEMENTS) + UGANDA SPARES (MAIL))	25	05
18 Jun	JILL 2 (JILL 1 CX)	STANLEY	12 CONT Wt 8870 lbs (TECH STORES + RAPIER STORES)	25	10

AIR DROPS TO THE TASK FORCE

DATE	FLIGHT IDENTIFICATION	RECIPIENT SHIP LOCATION	LOAD DETAILS	FLT TIME (Hrs)	(Mins)
18 Jun	LESLEY	STANLEY	12 CONT Wt 10350 lbs (SHIPS SPARES, STERALISING POWDER, CHARTS + MAIL)	28	05
19 Jun	MAGGIE	STANLEY	10 CONT 1 HP Wt 8325 lbs (TECH STORES + MAIL)	26	05
20 Jun	NICKI 2 (NICKI 1 CX)	STANLEY	12 CONT Wt 8815 lbs (TECH STORES + MAIL)	24	25
20 Jun	OLGA	STANLEY	8 CONT Wt 9140 lbs (MISC)	24	25
23 Jun	PETULA	SAPPER HILL	8 CONT Wt 12465 lbs (MISC)	23	45
23 Jun	QUICA	INVINCIBLE	10 CONT Wt 13950 lbs (MISC)	11	15
24 Jun	ROSIE	SAPPER HILL/ PORT STANLEY AIRFIELD	10 CONT Wt 10595 lbs. (NOTE FIRST LAND AT PSA). AIRDROP AT SAPPER HILL	25	30
25 Jun	SUSIE	PORT STANLEY AIRFIELD	20 PAX INCL MR REX HUNT, RETURNING GOVERNOR	24	15
25 Jun	THELMA	PORT STANLEY AIRFIELD	11 CONT 10 PAX Wt 9507 lbs	23	55

Abbreviations used:

CONT - Container
PARA - Parachute/ist
WT - Weight
HP - Harness Pack
MISC - Miscellaneous
PNG - Passive Night Goggles
WX - Weather
CX - Cancelled

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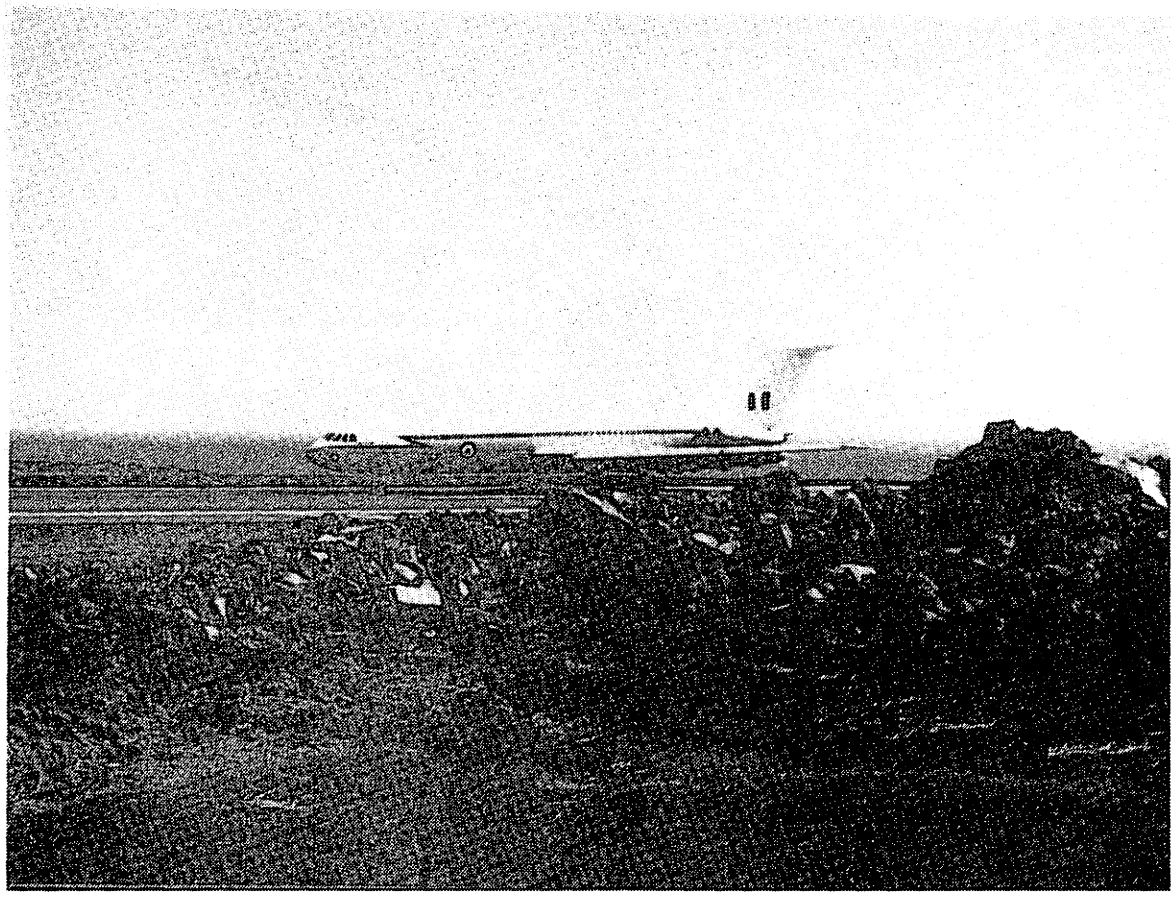
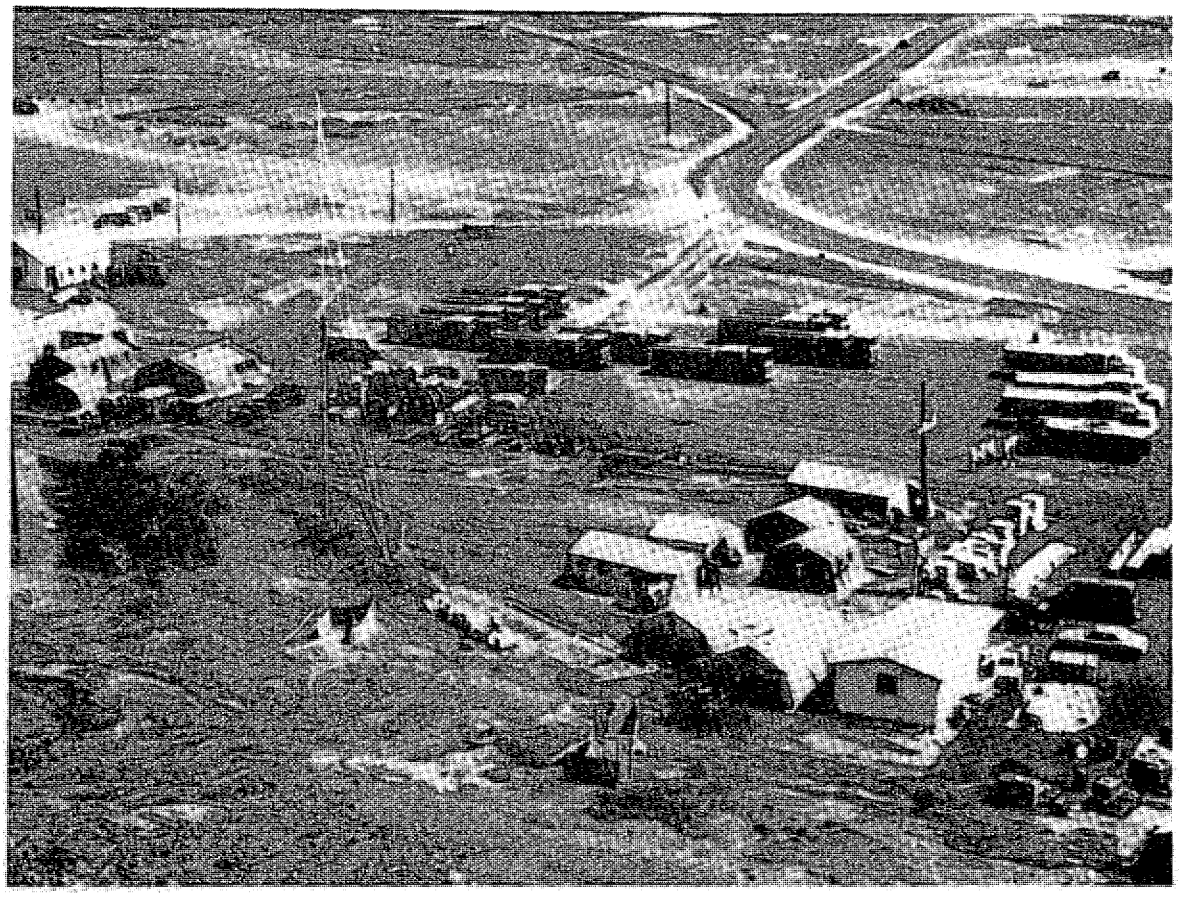


3.1. A VC10 of 10 Sqn arrives at Ascension with personnel and freight as the early build up progresses.



3.2. The build-up accelerates with tented accommodation and assembly of refuelling vehicles. In the foreground is the Nimrod support area with, to the left, the tented HQ complex. The RAF bowzers flown in by Heavy Lift Ltd are in the centre and the USAF bowzers to the right.

3.3. AAR modified Hercules with aircrew.

CHAPTER 4

NIMROD MARITIME PATROL (MP) AND SEARCH AND RESCUE (SAR) OPERATIONS

SUMMARY OF CONTENTS

INITIAL PLANNING FOR MP OPERATIONS

4.1 The use of Ascension Island as a base for Nimrod (1) operations was first mentioned by the Assistant Chief of the Air Staff (Operations) (ACAS(Ops)) in his initial note to the Secretary to the Chiefs of Staff (SECCOS) on 1 April. The aircraft's role would be to carry out surface surveillance and Anti-Submarine Warfare (ASW) operations in areas out to 1000 nautical miles (nms) from Ascension for up to 4 hours and at 1200 nms for about 3 hours. Similar

ACAS(Ops)2/8/347
1 Apr
TF9.1 E1
COS 2 Mtg/82
COS 3 Mtg/82

(1) All references in this chapter to Nimrod aircraft apply to Nimrods Mk 1, Mk 2 and Mk 2(P). The letter (P) referred to the refuelling probe fitted for Air to Air Refuelling (AAR) purposes. Unless specifically stated otherwise there are no references to the Nimrod R1.

operations at a radius of action of 1500 nms were feasible but the TF time on task would be more limited and affected by the heights flown and the number of contacts to be identified. The Nimrod's ability to increase the effectiveness of our own nuclear powered submarines (SSNs) was also stressed at the Chiefs of Staff (COS) meeting on 2 April and in a draft brief for the Prime Minister the same day, although largely in the context of possible operations from Chilean bases, such as Punta Arenas and El Tepual. Concurrently, the availability of Uruguayan and Brazilian airfields for Nimrods was also canvassed.

14.3 3 Apr E3
D/DS11/10/6 2 Apr
CAS/73/2.1 E20
COS 4 Mtg/82
COS 5 Mtg/82
COS 9 Mtg/82
VCAS 90759 Mar
CAS/72/2.1 E11

4.2 It was emphasised throughout that an early decision on the use of Chilean or other South American bases was needed if Nimrods were to be available to match the arrival of the first SSN in the area of the Falkland Islands. Considerable contingency planning for the Chilean option took place at Headquarters 18 Group (HQ 18 Gp) and unit level; on 6 April Kinloss was instructed to place 2 Nimrods Mk 2 and 3 crews at 12 hours' readiness to move Westabout to the Chilean base at Easter Island, in the Pacific. It was hoped that after initial deployment these aircraft would be able to move eastwards to mainland airfields within operational radius of the Falklands. In the event, consideration of British diplomatic overtures proved disappointing and South American airfields never became available for MP operations.

D/DS8/23/63 6 Apr
CAS/73/2 .2
E14, E55, E75
HQ 18 GP ORB Apr
TF14 .1 E3
MODUKAIR 061008Z
TF 19 .1 E3
FCO Tel 131845Z Apr E57

INITIAL DEPLOYMENT TO ASCENSION

4.3 Whilst negotiations with the Chilean authorities were in progress, Commander in Chief Fleet (CINCFLEET) asked, on 4 April, for 2 Nimrods to be sent to Ascension as soon as possible to provide back-up communication links for the SSNs en route for the Falklands, to mount surveillance and give limited air-drop support to our ships proceeding south. As a result, 2 Nimrods Mk 1 and 3 crews were placed at 6 hours readiness at St Mawgan on 5 April, but their deployment was deferred because of fuel and logistic problems at Ascension. However, the delay was shortlived; operations were authorised at an increased all-up weight (AUW) of 180,000 lbs and 2 aircraft were dispatched via Lajes, in the Azores, under the command of Wg Cdr D L Baugh, OC No 42 Sqn.

041802Z Apr
TF 14.1 E77
TF 14.1 E13
COS 5 Mtg/82
050010Z Apr
TF 19.1 E1

4.4 On arrival at Ascension on 6 April, the Nimrod detachment found that the build-up of RN and RM forces was already under way but apart from a small RAF team from No 38 Gp supporting air transport (AT) operations, the RAF ground organisation was very sparse. In particular, fuel pumping equipment was inadequate and bowsers were in short supply. Consequently when OC 42 Sqn was appointed RAF Commander, Ascension on 7 April, he immediately began to set up an organisation to handle the expected build-up of aircraft and personnel. Since accommodation was now a major problem it was decided that the 2 Nimrods could be operated by 2 crews and so on 7 April one crew returned to the UK by Hercules.

No 42 Sqn ORB Apr Annex A
COS 5 Mtg/82

SETTING-UP NIMROD OPERATIONS AT ASCENSION

4.5 At this early stage conditions at Ascension were not unpleasant; aircrew were sleeping 2 to a room and ground crew 3 to a room, whilst everyone was eating the excellent food provided in the dining hall run by Pan American Airways. However, the work-load was high because in addition to normal flying duties Nimrod crews were at first expected to provide an officer 24 hours a day in the Main Operations

No 42 Sqn ORB Apr
Melville-Jackson (206 Sqn) Tape

Room in order to allow the dedicated maritime operations staff to mount similar cover in the Maritime Operations Room (MAROPS). A further commitment was Operation GREAT CIRCLE, which involved operating the Nimrod's Electronic Support Measures (ESM) equipment on the ground to give limited warning of Soviet movements - in particular Bear D reconnaissance aircraft operating from Luanda in Angola. These duties kept 3 Air Electronics Operators (AE Ops) on constant 30 minute call and when coupled with menial but necessary work such as erecting tents, meant that a 16-18 hour working day was the norm. This and the numerous other domestic tasks, involving both air and ground crew, were made more difficult by the steady 20 knot wind and the volcanic dust so characteristic of Ascension.

4.6 Command and control posed some difficult problems during the early days of the detachment. The Defence Secure Speech System (DSSS) which was installed in mid-April was 2 miles from the Nimrod Operations Room while the Army Communications Centre was 2 miles in the opposite direction. In the early days of the Nimrod detachment, a battered Minivan was purchased and a Sherpa vehicle was hired from the local population. To help out, enterprising groundcrew rescued and repaired a damaged lorry from a rubbish dump and ran it on a mixture of aviation fuel and oil. For over a month it formed the only transport available to the ground-crew for the run from Wideawake airfield to the tented accommodation at Two Boats. Even so, with transport in short supply, a great deal of time was spent fetching and carrying signals and messages by hand.

No 42 Sqn ORB Apr Annex A

KIN/CO/39 14 Mar 84

4.7 Tasking orders were received from Northwood via the DSSS, backed up with a follow-on signal. However, the Commander Task Force 317 (CTF 317) sometimes issued a different tasking message with the result that HQ 18 Gp had to make changes at a late stage. Thus because of accommodation problems and the shortage of operations support personnel, Nimrod crew members had to re-learn rapidly the art of drafting Forms Green and Purple (MPA tasking and debriefing), in addition to coping with many other administrative duties which did not usually come their way. In due course, operations staff arrived from Kinloss and set up a more comprehensive operations centre which allowed the aircrew to concentrate on their primary duties. It was also apparent that improved Nimrod plotting maps of the South Atlantic were needed and the Department of Military Survey (D Mil Surv) in the UK set about producing these as quickly as possible; they were available when the longer range operations began.

RE Journal Dec, p.223

FIRST ATTEMPTS TO IMPROVE CAPABILITIES

4.8 On 6 April discussions about the Nimrod's ability to assist the rendezvous (RV) of aircraft engaged in AAR took place between HQ No 18 and No 1 Gps. As a result, it was decided to carry out trials to see how the Nimrod could best employ its navigation equipment to facilitate homing and conjunction of tanker and receiver aircraft.

HQ 18 GP ORB Apr

4.9 On 7 April, MOD sought immediate clearance for the new, more effective Sting Ray torpedo, 10 of which were to be delivered to Kinloss by mid-April, much earlier than originally planned. (By that date only one Nimrod aircraft had been Sting Ray modified). Also on the same day, Kinloss was given permission to begin fighter affiliation training, since it was thought possible that Nimrods might be intercepted by Argentine fighters as operations moved further south.

RAF Kinloss ORB Apr

TF 31.1 E62

HQ 18 Gp ORB Apr

EARLY SORTIES

4.10 Meanwhile, at Ascension on 7 April Flt Lt J G Turnbull of No 42 Sqn flew the first operational Nimrod sortie on Operation CORPORATE. This lasted for 6 hrs 10 mins and consisted of a high-level surface radar plot south-west of Ascension and a successful Postbox (2) with an SSN. A further POSTBOX sortie from Ascension on 8 April to the SSN, HMS SPARTAN was planned but subsequently cancelled as the very long range involved would have required the Nimrod to return without 2 hours Island fuel reserves.(3) With the arrival of a Meteorological (Met) forecasting detachment on 8 April which provided more comprehensive weather information on call, it was possible to reduce Island holding fuel reserves for Nimrods by 50%.

No 42 Sqn ORB Apr
HQ 18 Gp ORB Apr
TF4.3 E23

4.11 On the same evening, MOD decided not to proceed with plans for a Nimrod MPA deployment to Chile. However as CINCFLEET had by now requested additional Nimrod support, Kinloss was instructed to bring 2 Nimrod Mk 2s and 3 crews to 12 hours' readiness. These aircraft for deployment to Ascension were in addition to the 2 Nimrods already on standby for possible movement to Easter Island, which was now to become a second priority task.

MODUKAIR 081955Z Apr
TF4.3 E22

NIMRODS MK 2 DEPLOY

4.12 At Ascension operations continued on 9 April when a Nimrod Mk 1 flew a further POSTBOX and on the 10th a second aircraft carried out a surveillance sortie from the Island 300 nms to the south-west, when 4 contacts were located and identified. On 11 April, a track search was flown by a Nimrod Mk 1 which covered 90 nms either side of a direct track from Ascension to the Falklands out to a maximum prudent radius of action. Because of the fuel penalty involved in descending from radar search height to visual identification height and then re-climbing, this proved to be 1,500 nms. Not unexpectedly the 6 sorties which had been flown by 12 April re-emphasised what was already known: if repeated descents had to be made from radar search height down to a level where visual identification was possible, then severe fuel penalties would be incurred, as well as taking aircraft uncomfortably close to potentially hostile surface contacts. It was clear that the Nimrod Mk 2, fitted not only with improved acoustic equipment but also with Searchwater radar, would be more effective operationally against the Argentine threat, both above and below water, than the less well equipped Mk 1 aircraft. It was therefore decided to implement at once the earlier intention of progressively replacing the Nimrod Mk 1 with the Mk 2 version. Because of the relative complexity of Mk 2 operations, HQ 18 Gp offered to send a Mk 2 Nimrod specialist to sea with the Task Force (TF) but this was not taken up. The first Mk 2, captained by Flt Lt M J A Rough, of No 120 Sqn, departed from Kinloss on 11 April arriving at Ascension via Gibraltar on 12 April. This crew also flew the first Nimrod Mk 2 sortie from Ascension the next day.

No 42 Sqn ORB/ Apr
COS/13 Mtg/82
Chesworth Tape
TF 19.1 E27
No 120 Sqn ORB Apr

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(2) The procedure whereby a Nimrod acted as communication link with an SSN was known as Postbox.

(3) Island holding fuel reserves were normally retained when no bad weather diversion was available, or in case the terminal 1 airfield runway was temporarily blocked.

THE NIMRODS MK 1 LEAVE ASCENSION

4.13 During the period 12-15 April, Nimrods Mk 1 flew three 9-hour surface surveillance sorties to the south-west of Ascension and detected one Argentine ship. On 15 April a Nimrod Mk 2 carried out a mail drop to the naval forces sailing towards South Georgia; amongst the items inside the container delivered to HMS ANTRIM were final orders for the assault on South Georgia (OPERATION PARAQUET) (sic). As the Nimrod Mk 2 detachment built up, the number of Mk 1 aircraft was gradually reduced until the last aircraft left for the UK on 17 April, routing via Dakar to reduce fuel uplift from Ascension. This marked the end of No 42 Sqn's direct involvement in CORPORATE from Ascension, although the Sqn mounted several support operations from the UK and overseas bases later in the campaign. In addition, when his Sqn had departed from Ascension, OC 42 Sqn, Wg Cdr D L Baugh, continued as Senior RAF Officer Ascension (SRAFO) until 16 April and then remained as Deputy SRAFO until 11/12 May.

No 120 Sqn ORB Apr

No 42 Sqn ORB Apr
18 Gp ORB May

4.14 By mid-April, 3 Nimrods Mk 2 plus crews were in residence at Ascension and on 22 April, OC No 206 Sqn, Wg Cdr D Emmerson, took over as Nimrod Detachment Commander. The sorties now being flown usually involved surface surveillance, with a sector search, or a track search 50 nms either side of a track from Ascension, out to the point of no return, either in the direction of Port Stanley or towards South Georgia. During this period the command and administrative structure on the Island was strengthened. On 16 April, Gp Capt M F J Tinley was sent from HQ Southern Maritime Region Mount Batten (HQ SOUMAR) as SRAFO Ascension, accompanied by Wg Cdr J A Morgan from HQ No 18 Gp, who became the senior RAF Engineering Officer (S Eng O).

No 206 Sqn ORB Apr
18G/335/4/6/4/ Ops E82B
No 120 Sqn ORB Apr

CINCFLEET 151343Z Apr
18G/335/4/Ops.1 E85

AAR FOR NIMRODS - EARLY INITIATIVES

4.15 Whilst Nimrod operations within about 1200 nms of Ascension presented no major difficulties, it was clear that sorties further afield into areas of increasing operational concern would require the use of AAR.(4) On 13 April, Vice Chief of Air Staff (VCAS) authorised the modification of two Nimrods Mk 2 by British Aerospace; initially it was estimated that fitting these two aircraft for AAR would take about 2 months. An early appraisal indicated that AAR Nimrods would have about 24 hours endurance, enabling them to fly one track within 200-300 nms of the Argentine coast and then to make a sweep around the Falklands before returning to Ascension about 600-700 nms from the mainland coast. This would allow the Searchwater radar to produce a surface plot of the areas of vital interest to our forces.

MODUKAIR 13020Z Apr
TF 14.1 E55

TF 14 .1 E46B

4.16 Modification of the aircraft was only one part of the problem, since AAR experience in the Nimrod force was limited to a very few aircrew who had acquired some knowledge from operational tours in other aircraft. Training of both ground and aircrew therefore presented a considerable problem in the time available. Flt Lt E L Banfield,, a Qualified Flying Instructor (QFI) with No 18 Gp Standardisation Unit, was selected to be the first Nimrod AAR instructor. With no previous knowledge of this role and very little

(4) Annex A shows the Nimrod Radius of Action (ROA) from Ascension without AAR and Annex B with AAR.

experience of the technique, he became a qualified AAR instructor in only one month. Faced with a considerable training task, he then completed 24 very demanding sorties in 24 days, involving 102 flying hours.(5)

DD Ops(M)(RAF) 22/15 142240Z Apr TF14.1 E63

4.17 Although the original timescale for the modification of aircraft for AAR had been considerably reduced, as late as 14 April revised estimates still showed that about a month was likely to be required; in the event modification and training instructions were issued by 17 April and the first AAR receiver Nimrod arrived at Kinloss on 3 May, only 32 days after the Argentine invasion. This aircraft was immediately integrated into a simultaneous trials and training programme. After exploratory medium and high level formation flying by 2 Kinloss Nimrods, it was decided that a 20 minute refuelling period at about 27000 ft would be satisfactory. To speed matters up further, a Nimrod (XV 229) on loan to the Aeroplane & Armament Experimental Establishment (A&AEE) Boscombe Down was fitted with a dummy AAR probe and used in the early stages of crew training which included numerous practice prods with tanker aircraft. Some of the earliest development work at A&AEE was carried out by a test pilot, Sqn Ldr A F Banfield, assisted by a Victor AAR instructor, Sqn Ldr G H R Barrell. As another example of the work required to validate aircraft, crew and engine performance, a Nimrod captained by Flt Lt A Melville-Jackson flew a 20 hour AAR sortie on 5/6 May to test airframe and engine reaction to a very long mission. The sortie included a navigation exercise to 72°N, two RVs with Victor tankers, some fighter affiliation and a navex around the whole of the UK.

MODUKAIR 171157Z Apr TF 33.1 E20
RAF Kinloss ORB Apr
HQSTC ORB (Eng) Apr
RAF Kinloss ORB Apr
No 206 Sqn ORB Apr

4.18 Work proceeded swiftly and by 10 May, the AAR modification (Mod 700) had been installed in 5 aircraft; 2 completed AAR aircraft had deployed to Ascension on 7 May and a third on 9th. The first operational AAR Nimrod sortie from the Island took place on 9 May, captained by Flt Lt J D Ford of No 206 Sqn. The first long range operational sortie from Ascension which involved multiple RVs, two AAR refuelling brackets and 7 tankers, took place on 12 May, captained by Flt Lt C J Moncaster of No 201 Sqn. Thus, less that 5 weeks after initiation of the programme, Nimrods modified for AAR were flying operational sorties in the South Atlantic.

MODUKAIR 211415Z Apr
TF 33.1 E57
HQ 18 Gp ORB Apr
No 201 Sqn ORB Apr

4.19 As already mentioned, the securing of safe RVs between tanker and receiver, and also the provision of airborne SAR cover, were seen as important tasks for the Nimrod force in the South Atlantic where distances were huge and navigation aids very sparse. Ascension's geographical isolation had long been commented upon by aircrew. Indeed according to a piece of World War II doggerel: "If we don't make Ascension, our wives will get a pension"! Even in modern times the potential consequences of a missed refuelling RV in such conditions need no elaboration. Hence, before AAR procedures could be mounted with adequate confidence in these remote regions, RV trials were essential. During the period 14-20 April sorties were flown both in the UK and at Ascension to test the suitability of the Identification Friend or Foe (IFF) interrogator for the task of controlling third party aircraft. To give one example, during the IFF trial which took place on 18 April from Ascension involving 5

HQ 18 Gp ORB Apr Annex A

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(5) Subsequently Flt Lt Banfield was awarded the Arthur Barratt Memorial Prize for 1982 for his performance in this work.

DCI(RAF)S123/83

Victors, a Nimrod received a Victor's IFF transmission at a range of 195 nms. Thus, it would be possible to provide homing assistance when receiver and tanker were still nearly 400 nms apart. Not unexpectedly various technical difficulties arose with all this new equipment and these had to be overcome; for example, 3 Nimrod radar scanners fitted to 4 different aircraft taking part in the IFF trial were found to be faulty and had to be rectified on 16 April.

HQ 18 Gp ORB Apr Annex A

HQ 18 Gp ORB Apr

NIMROD TASKS IN LATE APRIL

4.20 By the latter part of April it was clear that the operational tasking of Nimrods at Ascension fell into four distinct categories:

No 206 Sqn ORB Apr

a. Surface surveillance in advance of the Task Groups (TGs) heading south.

b. Surveillance of the area out to 400 nms around Ascension, to seek out both intelligence gathering Soviet units and Argentine vessels which might have hostile intent.

c. Providing RV assistance and airborne SAR to cover Victor/Victor and Victor/Vulcan AAR sorties.

d. Providing Direct Support (DS) for the TGs.

By 16 Apr, 11 sorties totalling 105 hours had been flown on all these duties and the requirement was growing.

D/AF Ops/TF1.1 17 Apr E42

4.21 As examples of the types of sortie flown on these tasks, a Nimrod Mk 2 intercepted Soviet electronic transmissions and heard a Bear D aircraft transmitting on VHF within range of Ascension on 17 April. On the 19th, a DS sortie was provided for the TG, and on 20th a Victor Maritime Radar Reconnaissance (MRR) aircraft was launched to obtain a shipping and iceberg plot around South Georgia as part of the preparation for PARAQUET. To achieve about 2 hours on task, the Victor flew for 14 hours 45 minutes, requiring the support of 6 tankers and a Nimrod Mk 2 of No 120 Sqn which gave airborne SAR cover and RV assistance. Finally, on 22 April a Nimrod was launched at short notice following a flash message from HERMES stating that the Argentine aircraft carrier (CVL) might possibly be positioned to the east of the British TG. The aircraft completed a search but nothing was found.

HQ 18 Gp ORB Apr

TF 1.1 E53 21 Apr

No 120 Sqn ORB Apr

No 206 Sqn ORB Apr

4.22 Aircraft deploying to Ascension were not allowed to transit via the Azores when carrying torpedoes. This caused some problems since a Nimrod loaded with weapons and transiting via Gibraltar had difficulty reaching the Island with adequate fuel reserves. However, by 20 April, Nimrods at Ascension had been armed with Mk 46 torpedoes for the first time and modified Mk 2 Nimrods were also able to carry some of the 10 Sting Ray torpedoes which arrived 2 days later. Arguably, the Anglo-US agreement covering RAF use of Wideawake did not permit British forces to mount warlike operations from the airfield; the USAF Base Commander objected to early sorties with live torpedoes and reported the facts to Washington. Subsequently, however, following diplomatic exchanges operations continued unhampered. Four Nimrods were now at Ascension where they continued with surveillance and other operational sorties. As an additional task, TV cassettes of ITN newscasts were dropped to ships of the TF on the specific instructions of the Air Commander. As the main

HQ 18 Gp ORB Apr

A&AEE 191915Z Apr

TF33.1 E33 KIN/CO/39 14 Mar 84

HQ 18 Gp ORB Apr

emphasis on operations had now shifted towards AAR operations, it was decided to replace Gp Capt M F J Tinley, as SRAFO Ascension, with Gp Capt J S B Price, Marham's station commander; this change had taken place on 20 April. HQ 18 Gp ORB Apr

DEVELOPMENTS IN THE UK

4.23 In MOD on 22 April, CAS was given a comprehensive oral brief on Nimrod developments, while the outline plans for recapturing the Falkland Islands (Operation SUTTON) had by now been considered by the COS. This first draft made no specific mention of the use of Nimrods for the support of the operation, an omission commented upon by the Air Staff. However, this was soon corrected and the Operation Order for SUTTON issued on 12 May clearly set out the Nimrods' surface surveillance role and ASW tasks. TF 33.3 E89 COS(Misc)137/74 19 Apr

4.24 On 21 April, Air Staff Management Aid (ASMA) equipment was installed at Kinloss many months ahead of schedule. This computer controlled equipment gave the station rapid secure communication with other users and provided considerable capacity for handling, storing and retrieving the vast amount of information required for effective planning and management of CORPORATE Nimrod activities. The same day, HQ 18 Gp agreed to a MOD proposal that Sideways Looking Infra-Red (SLIR) equipment should be fitted to a Nimrod aircraft. The intention was to site the equipment on the starboard beam window with a 15° traverse and full stabilisation. It was expected to give an effective range of about 10-15 nms and have the capability of being transferred between aircraft. During use it could be connected either with the tactical navigator's display or with a separate display and video recorder. The equipment weighed about 500 lbs and was expected to cost about £100,000 per unit. Subsequently, the first Nimrod fitted with SLIR (STF 081) deployed to Ascension on 7 May. RAF Kinloss ORB Apr HQ 18 Gp ORB Apr

NIMROD SUPPORT FOR MRR SORTIES

4.25 On the night of 22/23 April, MRR was carried out by a Victor to the SW of Ascension. This included overflying the two British TGs and making a radar examination of the Argentine coast with the specific aim of detecting the CVL '25TH OF MAY' and the cruiser GENERAL BELGRANO. Five tankers and 2 flying reserves supported the mission and a Nimrod Mk 2 provided SAR and RV assistance. A similar MRR sortie was flown north east of the Falklands on the night of 24/25 April, once again with Nimrod support. By 25 April, the number of Nimrods at Ascension was fluctuating between 3 and 4 and of these 2 were now capable of launching Sting Ray torpedoes which gave a further boost to the Nimrod's operational effectiveness. TF 1.1 E61 23 Apr TF 1.1 E67 25 Apr

IMPROVING WEAPONS CAPABILITY

4.26 During late April, efforts to give the Nimrod even greater load-carrying flexibility were pursued. The aim was to ensure that the aircraft could be quickly prepared to meet a wide range of threats and tasks. For example, the aircraft was cleared by A&AEE to carry a mixed load of mail containers, SAR apparatus and operational torpedoes. On 23 April, clearance was also given for the carriage of 6 x 1000 lb bombs or 6 BL 755 Cluster Bomb Units (CBU); 6 Nimrod bomb sights for use with these weapons were designed and built by A&AEE. The sights were fixed on the co-pilot's coaming which led to comments HQ 18 Gp ORB Apr MODUKAIR 231635Z Apr TF 33.1 E91 HQ 18 Gp ORB Apr

about the consequent reduction in visibility from the cockpit. However, in the circumstances this was a drawback which had to be accepted pending investigation of the provision of an Air-to-Surface Missile (ASM) in place of free-falling bombs.

4.27 Throughout this period there was pressure to improve the Nimrod's anti-surface vessel capability. Modern aircraft-launched torpedoes are designed and intended primarily for use against submerged submarines, but with possible use against Argentine surface ships in mind the Mk 46 was modified during April. This was partly necessary because some doubts existed about the Sting Ray's effectiveness against surface targets. On 27 April, a St Mawgan Nimrod Mk 1 carried out the first trial with modified Mk 46s; one torpedo hit the practice target but 2 others stopped running prematurely. Nimrods at Ascension were now flying with 3 Mk 46s and 3 of the new Sting Ray weapons. Aircraft which were not yet modified for the Sting Ray had to continue operating solely with the less effective Mk 46.

MODUKAIR 101923Z Apr
TF 19.1 E31
No 42 Sqn ORB Apr

POSSIBLE SEABORNE THREATS TO ASCENSION

4.28 Throughout CORPORATE, Argentine merchant ships came within the vicinity of Ascension. Each vessel had to be checked to ensure that it was not engaged in operations such as landing Special Forces (SF) to threaten Ascension itself, or involved in deliberate or fortuitous intelligence gathering. For example, one such sortie, by a Nimrod Mk 2 on 26 April, located the Argentine merchant ship RIO DE LA PLATA and because of uncertainty about its intentions, various precautionary defensive measures were taken at Ascension. Also on 26 April, HMS FEARLESS reported a possible submarine contact near Ascension and a Nimrod was scrambled to investigate, but the datum was ultimately classified as non-submarine.

HQ 18 Gp ORB Apr
No 206 Sqn ORB Apr

THE PACE QUICKENS

4.29 The pace both of operations and of the introduction of technical improvements began to gather speed towards the end of April. From Ascension, observation was kept on Soviet intelligence gathering ships (AGI) which were now a permanent feature in the area around the island. Also a close watch on Argentine vessels continued on 28, 29 and 30th as planning for Vulcan attacks against the Falklands proceeded, since it was vital that no intelligence about preparations for Operation BLACK BUCK (bombing of the Falklands) should be obtained by these ships. On 30 April and 1 May a Nimrod Mk 1 operating from Gibraltar and Freetown provided airborne SAR cover for Harriers which were being ferried from the UK to Ascension. Also on 30 April a reinforcement Nimrod Mk 2 was held on 2 hour standby at Gibraltar thus allowing relatively rapid reaction to unforeseen CORPORATE tasks, whilst at the same time reducing the number of aircrews and aircraft on the already overcrowded airfield at Ascension.

HQ 18 Gp ORB Apr
HQ 18 Gp ORB Apr

4.30 Amongst many other trials in progress was the use of passive night goggles (PNG) by Nimrod crews to help in identifying contacts at night. At this time the Military Operating Standards section of the Nimrod Operating Data Manual became available for the first time and was issued to crews. This allowed more effective planning of sorties at heavier all-up weights.

HQ 18 Gp ORB Apr

4.31 All in all, it was hardly surprising that the RAF Kinloss ORB described April 1982 as one of the most exciting in the station's history. Kinloss ORB Apr

SUMMARY OF CORPORATE MP ACTIVITIES DURING APRIL

4.32 From 6 April there were between 2 and 4 Nimrods continuously deployed at Ascension. Initially Nimrod Mk 1s from St Mawgan were sent but by mid-April these were replaced by Nimrod Mk 2s from Kinloss because of their improved sensor fit. Operating from the UK, Gibraltar, Lajes and Ascension, 18 Group Nimrods conducted the following tasks in support of CORPORATE: HQ 18 Gp ORB Apr

a. POSTBOXES for SSNs

b. Surface surveillance

c. Direct Support

d. Air drops to ships TF 9.1 E60 12 Apr

e. Airborne SAR cover

4.33 Additionally Nimrods flew on the following CORPORATE related trials:

a. AAR

b. IFF RV

c. Bombing Sorties

d. Torpedo Trials with both Mk 46 and Sting Ray torpedoes

e. SLIR

4.34 Additional Nimrod engineering support consisted of the following:

a. Modification of 5 aircraft for use with Sting Ray Torpedoes (Mods 450 and 556).

b. Speeding up of the fit of Omega navigational equipment to 6 aircraft (Mod 3005).

c. Advancing the fit of Searchwater radar into 3 aircraft.

d. Investigating the fitting of SLIR equipment into the Nimrod (STF 081).

e. The fitting of AAR equipment into 7 Nimrods (Mod 700).

f. Modifications of bomb carriers for the carriage of 1000 lb and CBUs.

g. Examination of the feasibility of carrying Harpoon ASM (Mod 703).

As an example of the engineering work load involved, the Aircraft Servicing Flight at Kinloss worked 13374 hours in April compared with the normal peacetime steady state of 7700 hours.

4.35 Hours flown by No 18 Gp Nimrods during April in support of all the activities described above were:

a. Operational (including transits) - 585.7 hours

b. Trials - 93.5 hours

THE AIR CAMPAIGN DEVELOPS

4.36 May opened with 3 Nimrod Mk 2 aircraft providing SAR and RV assistance for the Vulcan and Victors taking part in Operation BLACK BUCK 1 against Port Stanley Airfield. The overall success of this raid depended upon timely and efficient RVs during the highly complex AAR phases when the Nimrods provided homing bearings to enable receiver and tanker to join up. On the return leg, the Nimrod was at extreme range itself and heading back to Ascension, as the Vulcan was over 30 minutes behind its planned time.

DASB CORPORATE Summary 1 May

RAF Waddington ORB Jun

4.37 Following the incorporation of Mod 700 and the completion of aircrew AAR training which had been in progress for some time, the Nimrod Mk 2 was cleared to carry out AAR operations by day from 2 May. In the meantime, Nimrod surveillance and DS operations continued from Ascension, initially without the benefit of AAR, as the TF moved gradually further south. For example, a Nimrod Mk 2 flew a surface surveillance sortie on 3 May from Ascension in support of HMS ANTELOPE and the LSL Gp. This aircraft covered an area of 100 nms around the Gp's position and 100 nms either side of its track. Four surface contacts were visually identified but all were assessed as non-significant. However, at 0856 a Panamanian merchant ship with the name NEMA was sighted but on a re-visit by the Nimrod 5 hours later the name of the ship had been re-painted more clearly to read TINEMARU! A cradle and painter were observed suspended over the bow. Perhaps the crew thought this a prudent precaution in these waters!

TF 1.1 E94 4 May

HQ 18 Gp ORB May
Nav Log XV 255
KIN/CO/1 29 Apr 85
D/AHB(RAF)2/3/5.1 E106

NIMROD SUPPORT FOR HARRIER DEPLOYMENTS

4.38 The developing scope of CORPORATE called for Harrier reinforcements to be flown quickly to Ascension for subsequent movement south by sea. The first deployment took place between 1 and 7 May but since the only suitable staging post was Ascension, the Harriers departing from the UK were faced with transit, using AAR, of around 4000 nms. In order to decrease the risks of such an inherently difficult operation, it was decided that Nimrods Mk 1 from St Mawgan should provide airborne escort on the UK to Ascension leg. During the period 1-7 May, one Nimrod was detached at Freetown to cover the southern part of the transit. Thus by 4 May, there were 3 Nimrod Mk 2s at Ascension, 2 more at Gibraltar and one Mk 1 at Freetown for SAR duties.

DASB CORPORATE Summary May
TF 1.1 E86

4.39 The importance of this airborne SAR escort was amply shown on 4 May. On that day Flt Lt C Montgomery from No 42 Sqn was providing cover to a force of 3 Victor tankers and 3 Harriers. All proceeded

No 42 Sqn ORB May

normally for the first 3 hours of the sortie but about 200 nms from Madeira, one of the Harrier pilots started to experience fuel transfer problems from his ferry tanks. After taking various measures the problem was eventually solved but it was decided it would be unwise for the aircraft to continue to Ascension and the Harrier pilot was ordered to divert to Porto Santo Island. He began a descent into this airfield, but the Harrier was equipped for navigation by Tacan and Porto Santo only had an indifferent radio beacon. Whilst the diversion was in progress, the Nimrod which had been about 60 miles ahead of the Harrier turned back and arrived over Porto Santo. By this time the Harrier pilot, who had descended to 10,000 ft, called that he had no land in sight and being unable to make voice contact with Porto Santo was turning back to the north on the assumption that he had over-shot the island. On hearing this, the Nimrod crew turned to the west, and carried out a IFF homing on to the Harrier and after gaining visual contact, talked the pilot into formation and led him to Porto Santo airfield, by now over 60 miles to the SE. The Harrier was thus able to land safely and as the pilot himself remarked over the R/T, he would not have been able to find the airfield without the assistance of the Nimrod crew.

4.40 The use of Nimrods for long range SAR from Ascension has already been mentioned but there was also the problem of providing search and rescue cover in the immediate vicinity of the island. It was therefore decided on 3 May to provide an RAF Sea King specifically for SAR and support helicopter (SH) duties at Ascension. The helicopter and 2 crews subsequently moved to Ascension in a civil Belfast on 8 May. This took care of the local SAR problem in the vicinity of the Island and freed fixed wing aircraft for more important tasks further afield. HQ 18 Gp ORB May

THE IMMINENCE OF AAR

4.41 The Nimrods' AAR capability took a further step forward on 3 May when MOD cleared Nimrod 2Ps to carry out AAR by night. The Nimrod 2P now had a full clearance for both day and night AAR; modification of 2 aircraft was virtually complete with 3 more in progress. Deployment to Ascension was planned for about 8 May and in addition, a feasibility study for refuelling Nimrods from Vulcans began at British Aerospace (BAe) Woodford. HQ 18 Gp ORB May

4.42 On 4 May, the second BLACK BUCK operation took place and a Nimrod Mk 2 provided RV assistance and airborne SAR for the Vulcan and its associated tankers. Once again RV procedures went well with the Nimrod picking up the Vulcan's IFF at over 200 nms. The same day, Nimrod 2Ps were cleared to carry a standard load of 3 Mk 46 torpedoes and four 1,000 lb retarded bombs. Thus, the Nimrod had some capability of attacking most sea-going targets as far south as the Falklands themselves. TF 1.1 E98

FREE FALL BOMBING

4.43 The first Nimrod bombing training sortie was carried out on 4 May at Wainfleet range where a crew from No 18 Gp Standardisation Unit dropped twenty-four 25 lb practice bombs using the A&AEE bomb sight from a height of 400 ft and at a speed of 280 knots. The results were judged as "very satisfactory". Further sorties took place on Roseharty range on 5, 6 and 7 May but then MOD decided to HQ 18 Gp ORB May 18GSU(N)70004/ Admin 20 Aug 85 (D/AHB(RAF)2/3/5 E126)

stop the practice bombing by Nimrods, following press speculation that the UK was planning to bomb mainland Argentina. In fact the aim was to give an additional interim capability against Argentine ships, and although never dropped operationally, live 1,000 lb bomb were carried by Nimrods. (Training drops with live 1,000 lb bombs eventually took place on 24 May when political approval was renewed).

HQ 18 Gp 071333Z May
TF 33.3 E50
DD Ops(M)/22/15 5 May
TF 53.3 E17

AN ENGINE PROBLEM

4.44 On 4 May a Nimrod Mk 2 suffered an engine failure and had to be provided with an airborne SAR escort. Subsequently, this aircraft took off from Ascension for a 3-engined ferry flight back to Kinloss. However, the aircraft had a further problem with another engine and landed back at Ascension; replacements had then to be flown out from the UK and a double engine change undertaken. Although another Nimrod was immediately available at Gibraltar, there was insufficient parking space to allow movement to Ascension, where Wideawake airfield was now very crowded.

11 May
TF 1.2 E22

WATCHING THE WATCHERS

4.45 Concern about Soviet interest in the TF continued; on 1 May a Nimrod detected a Soviet Big Bulge airborne radar. On 5 May, the Argentine freighter RIO IGUAZO was located and on 6 May, a Nimrod on a surface surveillance sortie around Ascension reported that the Primorye AGI (SSV501) was stationary 30 miles south of the Island where it was clearly engaged in monitoring the movements and activities of our forces. The same day another Nimrod from Ascension carried out surface surveillance in support of the LSL Gp, locating a Russian fishing trawler and 3 other contacts. Meanwhile on 7 May, the ninth Harrier GR3 arrived at Ascension from Banjul, Gambia, after being refuelled en route by a Victor and given airborne SAR cover by a Nimrod Mk 1 operating from Dakar, Senegal, which then returned to St Mawgan. Also on 7th two Nimrods flew sorties out of Ascension; the first carried out surface surveillance 100 nms around the south-bound LSL Gp and reported no contacts. The second aircraft shadowed and sent position reports on the Primorye AGI during the period when FEARLESS and INTREPID were sailing from Ascension.

HQ 18 Gp ORB May Annex A

TF 1.2 E15

TF 1.2 E10

AAR NIMRODS DEPLOY TO ASCENSION

4.46 As already mentioned, the first AAR Nimrod Mk 2P operational deployment began from Kinloss on 7 May. Unfortunately one of the two Nimrods despatched had to divert to Gibraltar because of the unserviceablity of the Hose Drum Unit (HDU) on the escorting Victor tanker. However, a second Nimrod Mk 2P, captained by Flt Lt J D Ford of No 206 Sqn successfully completed the first AAR direct transit from Kinloss to Ascension in 10 hours 42 minutes, after refuelling over the Bay of Biscay. On 9 May, a further Mk 2P transited direct to Ascension from Kinloss making a total of 3 AAR Nimrods and 4 crews in residence on the Island. On 5 May, Nimrod night AAR training had begun in the UK and the conversion of the 7th and 8th Nimrods Mk 2 for AAR was authorised on 7 and 11 May. The very significant improvement in operational capability wrought by AAR was at once evident. For example, on 9 May a Nimrod Mk 2P carried out surface surveillance for the LSL Gp, achieving 3½ hours on task at a maximum range of 2,450 hms from Ascension during which time it located 12 contacts in an area of some 350,000 square miles. Without AAR, this

TF 1.2 E12

No 206 Squadron ORB May
HQ 18 Gp ORB May

CAS 73/2/1.12 E10

Nav Log Flt Lt J D Ford's Crew

Nimrod would have been unable to operate near the LSL Gp.

SOME TYPICAL NIMROD OPERATIONS IN MAY

4.47 As the TF sailed further south, the timely detection of possible Argentine forces became even more important. Thus on 19 May, a Nimrod Mk 2P flying a surface surveillance sortie in support of the ANTRIM Group detected 20 radar contacts. This aircraft also intercepted a Mode 3 IFF squawk from an Argentine 707 aircraft which was shadowing British units. On 11 May another long range Nimrod sortie was mounted by a Mk 2P which flew from Ascension in support of the FEARLESS LSL Gp to a position about 2,900 nms SW of the Island. In addition to obtaining 17 contacts of which 3 were assessed as being possible warships, the aircraft also obtained radar coverage 180 nms to the south of its further-on point. On the same day a Nimrod flying a surveillance sortie within 400 nms of Ascension detected radar transmissions from a Soviet Bear D and later sighted a second aircraft. The same Nimrod also located the Argentine freighter ALMIRANTE STEWART about 180 nms north of Ascension. As a consequence, another Nimrod was scrambled from Wideawake to keep a close watch on this ship and tracked it through the night using SLIR equipment. This was typical of the Nimrod sorties carried out throughout May within a few hundred miles of the Island to check both merchant ships and the Soviet AGI which remained on-station, mostly 30-60 nms from the Island.

HQ 18 Gp ORB May

TF 1.2 E26

HQ 18 Gp ORB May

707s AND SIDEWINDERS

4.48 On 12 May a Nimrod Mk 2P flew a long range surveillance sortie, and about 600 nms NE of the Falklands gained ESM contact on an Argentine 707 aircraft which was again carrying out surveillance on British surface units. This contact led to a visual sighting of the 707 by the Nimrod crew at a range of about 4 nms. However, even with appropriate Rules of Engagement (ROE) in force, no offensive action would have been possible by the Nimrod since at that time the aircraft was not armed with Air Interception Missiles (AIMs). The Argentine Government had already been warned about air surveillance of British surface forces and following this interception by a Nimrod, the Air Commander asked MOD to study the feasibility of fitting Sidewinder AIM to the Nimrod. This work was arranged by HQ Strike Command (HQ STC) whose advice was that the installation of four AIM 9G or L Missiles looked straightforward, subject to wind tunnel tests which were planned for 16 May. Pylons and wiring would be needed and a trial installation was arranged for completion by 24 May; this took only a day longer than originally planned. Later trials were planned for 31 May, after which it was estimated that modification kits could be produced in about a further 7 days.

MOD Int Sum 78/82
HQ 18 Gp ORB May

COS 30 Mtg/82
COS 47 Mtg/82
MODUKAIR 131645Z
TF 33.4 E44
TF 33.5
22 May E67

HQSTC ORB (Eng) May
HQ 18 Gp ORB May

OPERATIONS IN THE DEEP SOUTH

4.49 Surveillance operations further South now became necessary and to assist these tasks the maximum AUW of the Nimrod was raised to 188,000 lbs. A typical long range sortie consisted of a transit to about 100 nms from the south coast of Argentina, followed by a northerly track parallel to the coast with the aim of detecting any movement by the Argentine Navy from coastal waters. These sorties required 2 AAR brackets during the outbound transit and a further re-fuelling during the return to Ascension. Sortie lengths on these missions ranged from 16 to 19 hours and because of the fatigue

16 May
TF 1.2 E42

problem and the highly accurate flying required, the basic 13 man Nimrod crew was supplemented by an extra pilot and air engineer, both AAR qualified. Sometimes 3 Spanish speaking specialists were also carried. For the first time Nimrods were beginning to operate into the Argentine Fighter Engagement Zone. On one of these sorties on 13 May, a Nimrod Mk 2P supported by 4 Victor tankers went on task only about 500 miles NE of the Falklands; 13 non-significant radar contacts were located during this mission. Communications at such long ranges sometimes proved difficult and the prediction and use of the best frequencies required constant attention and the advice of specialists.

MODUKAIR 182230 May
TF 33.5 E1

CBFSU/ASI151725Z
TF 21.10 E8

4.50 On the 14th/15th another Nimrod flew a 17 hour sortie with the support of 6 tankers operating within about 300 nms of the Falklands and used its Searchwater radar to detect a possible Argentine Type 42 destroyer. A similar sortie operated 3100 nms from Ascension on 15 May completing 19 hours 5 minutes flying time in the process; this was to prove the longest Nimrod AAR sortie flown from the Island during CORPORATE. The crew concerned was from No 201 Sqn, captained by Flt Lt J A Cowan. This sortie operating at one stage in broad daylight on a cloudless day 165 nms from the Argentine coast at heights between 7000 - 12000 ft, detected 9 possible warships and 23 other contacts and also made ESM contact with an Argentine Neptune aircraft radar. Subsequently, Wg Cdr D Emmerson, OC 206 Sqn who was a crew member, commented that it was like flying in a goldfish bowl. All this was achieved despite the erratic performance of the aircraft's Searchwater radar. During this period the daily surveillance sorties around Ascension continued but apart from the Argentine freighter TUCUMAN and the Soviet AGI which were kept under periodic surveillance, contacts were not significant.

MOD Int Sum 83

TF 1.2 E43

No 201 Sqn ORB
Navigation Log
Sortie 15 May
HQ 18 Gp ORB May
Wg Cdr Emmerson quoted in "Air War South Atlantic" p.93
TF1.2 E45 & 49

4.51 Demand for AAR support for Hercules, Vulcan and Harrier aircraft using Ascension was now so great that a long range Nimrod surveillance sortie planned for 16 May had to be postponed until 17/18 May. This sortie, supportd by 11 tankers required 3 AAR brackets, the first 2 on the southbound leg with the final uplift of fuel taking place 2000 nms out from Ascension on the return leg. The route was direct transit to high level to 250 nms from the Falklands where the Nimrod turned west and descended to avoid Argentine ground based radars. At 200 nms from the coast, the aircraft turned north and parallelled the coast. When all ships within 200 nms of the coast had been detected on radar, the aircraft climbed and returned to Ascension. Apart from 3 possible warships there were no significant contacts and the aircraft landed after an 18½ hour sortie.

TF 1.2 E52
No 206 Sqn ORB May

4.52 Operation SUTTON was now imminent and with the possible need to increase the tempo of Nimrod operations in mind, ACAS(Ops) stated that 19 Nimrods out of a fleet total of 23 should be made available by 19 May, and this meant that scheduled servicings planned in the UK had to be temporarily delayed. (6)

18 May
CE(RAF)2/1/167
.3 E97

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(6) Over the 6 months Oct 81-Mar 82 the average daily availability of Nimrods was 14.83.

18 Gp Stats Summary Mar

MORE NEW KIT

4.53 Crews quickly gained practical experience in operating the new equipment. For example, PNG proved a valuable aid; four pairs per crew were issued and their performance on fully darkened targets proved excellent. During one night sortie near the Argentine coast on 21/22 May, the lookouts were able to identify fishing vessels visually at a range of 5 nms. (7) Twelve pairs of gyrostabilised binoculars had also been purchased and they arrived at Ascension on 27 May. MOD had proposed the installation of chaff and infra-red decoy dispensers (IRD) to counter missile threats from Argentine fighters and warships but as an interim measure against the infra-red threat alone, 100 IR verey cartridges were ordered on 20 May.

HQ 18 Gp ORB May
D/D of S Pol 38/21 26 May
TF 23/1.8 E116
MODUKAIR 241614Z May
TF 33.6 E34
HQ STC ORB May

4.54 All the Nimrod Mk 2 aircraft operating from Ascension were drawn from Kinloss, and hence the rapid processing of equipment demands and movements information between Ascension and Kinloss became essential. Here the installation of a direct 4-72 computer link between the Island and Kinloss on 11 May was particularly useful. As a result the time required to process the 310 requisitions received from the detachment during May was considerably reduced.

RAF Kinloss ORB May

4.55 Of course, not every piece of new equipment proved to be entirely successful. For instance, the use of Laser Guided Bombs (LGB) was considered but rejected as only 2 bombs could be fitted into the bomb bay. The Sideways Looking Infra Red (SLIR) equipment held at Ascension was withdrawn as the extra servicing effort entailed and the inconvenience of losing a lookout station on the aircraft outweighed the benefits likely to be obtained.

HQ 18 Gp ORB May
DD Ops (M(RAF)20/2/4 15 May
TF 33.4 E86

SEARCHWATER RADAR PERFORMANCE

4.56 More seriously, the effectiveness of Searchwater radar in the surface surveillance role during CORPORATE was not as wholly successful as had been hoped. Indeed, comments by the TF on Searchwater results had caused concern in the UK. Experience showed that target identification, ship length measurements and the accurate assessment of a surface contact's mean line of advance (MLA) were not being achieved with confidence on the 200 nms range scale.

Chesworth Tape
No 120 Sqn ORB Aug
Melville-Jackson Tape

4.57 Post-CORPORATE analysis has shown that problems encountered operating Searchwater stemmed from inaccurate inertial velocities being fed to the radar. This made target track and speed prediction unreliable and in consequence target identification was difficult and at times impossible. Comments from the crews also suggest that they were expecting too much from a new radar so early in its operational life.

KIN/CO/39 14 Mar 84

THE ARGENTINE BOEING-707 AGAIN

4.58 On 19 May, a long-range radar surveillance sortie operated at a point 250 nms North of the Falklands before returning parallel to the Argentine coast at a range of 150 nms. In addition to locating a

TF 1.2 E54

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(7) On a lighter note, off-duty Nimrod crews found the PNGs were excellent for observing turtles on the beach at Ascension in the dark!

Discussion with Gp Capt D Emmerson Jan 84

number of surface contacts 450 nms north of the Falklands, the crew sighted a Boeing 707 aircraft contrailing and heading towards Argentina; this was thought to be the Argentine shadowing aircraft returning to base.

NIMROD SUPPORT FOR THE ASSAULT

4.59 On 20/21 May, with the San Carlos assault about to take place, a Nimrod Mk 2P operated on task only about 70 nms from the Falklands and later closed within 120 nms of the Argentine coast in order to carry out a complete radar sweep between the Falklands and the mainland. The aircraft completed a 19 hour sortie during which it was supported by 10 tankers. It detected a possible warship and a probable merchantman to the west of the Total Exclusion Zone (TEZ); 55 other contacts were gained during this sortie but all were assessed as non-significant after post-flight analysis. Another Nimrod flew the daily surveillance sortie around Ascension, locating the Argentine freighter CHUBUT and the Primorye AGI. As the CHUBUT presented a possible threat to the Island, a planned local Nimrod surface surveillance sortie was brought foward to the 20th, and shadowing of this vessel continued the next day.

TF 1.2 E62

HQ 18 Gp ORB May Annex A

4.60 On 21/22 May a Nimrod Mk 2P operated on a small area off Bahia Blanca on the coast of Argentina to watch for any possible reaction by Argentine naval forces to British military activities which had been mounted on various parts of the Falklands on 20/21 May. This sortie was supported by 7 tankers and reported no discernable Argentine surface naval movements. However, on 22 May near to Ascension, the local surveillance Nimrod located both the Primorye AGI and a new Argentine contact, the container ship DR ATILIO MALVAGNI.

TF 1.2 E66

4.61 On 22/23 May, a Nimrod originally tasked for a long range surveillance sortie suffered a broken AAR probe during its first fuel transfer. Fortunately it was carrying sufficient fuel to complete a full local surveillance operation during which the positions of both the AGI and the Argentine container ship were updated. A subsequent technical investigation showed that the AAR probe had broken because of metal fatigue, and the aircraft had to return to the UK on 24 May for repair. A replacement Nimrod Mk 2P was despatched from Kinloss to fly direct to Ascension with tanker support and arrived on the same day. Thus the total number of Nimrods on the Island remained at 4.

HQ 18 Gp ORB May Annex A

TF 1.2 E68 E69

NIMROD OPERATIONS IN LATE MAY

4.62 The overnight long range Nimrod Mk 2P sortie on 24/25 May reported 62 ship contacts, but none of these were assessed as being significant. However, off the Argentine coast various land-based radars were detected by ESM. This aircraft was supported by 11 tankers and flew for 18 hours and 45 minutes. On 24 May the daily Nimrod surveillance sortie from Ascension updated the Primorye AGI and detected a ship which proved to be the MV IDEAL, broken down some 80 nms from the island. This ship was considered suspicious as its registration details with Lloyds could not be immediately verified.

HQ 18 Gp ORB May

4.63 Further movement of RAF Harrier GR3s from the UK to Ascension and to the south was now in the offing. As a consequence, a Nimrod Mk 1 from St Mawgan was positioned at Dakar on 26 May to provide

TF 1.2 E82

airborne SAR cover. The overnight long-range Nimrod was tasked with surface surveillance off the Argentine coast and reported a possible Argentine warship radar. The local surveillance Nimrod checked the latest position of the Soviet AGI and made visual contact with the MV IDEAL on 26th, whose Maltese registration had by now been properly confirmed. Also on 26th, 100 IR flares arrived at Ascension for use by Nimrods as an interim self-defence measure - unfortunately they were of the wrong diameter and could not be used.

HQ 18 Gp ORB May

KIN/CO/39, 10 Sep 84

4.64 At the end of May, Nimrod long range operations from Ascension had to be curtailed in order to reduce calls on the Victor AAR force. However, the short-range surveillance and transit flights by Nimrods rotating between the UK and Ascension continued as usual.

TF 1.2 E85

4.65 On 29 and 30 May three Nimrods Mk 1, one from St Mawgan, one from Gibraltar and one from Dakar provided SAR cover for Harrier GR3s proceeding south. Whilst this was under way the local Nimrod surveillance sortie at Ascension located the Argentine freighter MISIONES II, whose deck cargo arrangement and north easterly course aroused British suspicions. This sortie also checked a Soviet tanker, the TUKUMS, which was thought to be associated with the AGI. Finally on 31 May, a Nimrod Mk 2P gave RV assistance and SAR cover to the Vulcan launched to attack the TPS 43 radar in the Falklands with Shrike ASM. This Nimrod then continued with surface surveillance around Ascension, checking on the activities of the MISIONES II and updating the position of the Soviet AGI, now in company with the Soviet tanker TUKUMS 200 nms north of Ascension.

HQ 18 Gp ORB May

TF 1.3 E5

HQ 18 Gp ORB May

SIDEWINDER AND HARPOON MISSILES

4.66 Throughout the period of intensive maritime operations during May, determined efforts were under way in the UK to improve the Nimrod's self defence and anti-surface attack capabilities which before CORPORATE began had been virtually non-existent. Quick reaction, modern weapons with a stand-off capability were clearly needed and this meant missiles. To this end, after a meeting at Woodford on 14 May and follow-up design work, MOD approved the modification of 8 Nimrod Mk 2Ps to carry Sidewinder AIM 9G in order to provide active defence against Argentine aircraft. Training for Nimrod aircrew in the use of the Sidewinder began on 22 May with assistance from the Phantom fighter base at Leuchars and the first Sidewinder Nimrod deployed to Ascension on 5 June. In conjunction with this work, (BAe) began installing a trial fit of the American Harpoon (ASM) missile into a Nimrod. Controller of Aircraft (CA) clearance was given on 31 May and a trial launch set for 9 June.

TF 1.2 E40

HQSTC ORB May

HQ 18 Gp ORB May
HQSTC ORB May

ACAS(Ops)2/8/1
8 May

171215Z May
TF 33.4 E85

AAR PRIORITIES

4.67 In late May discussions took place about the relative priority of fitting AAR equipment into various marks of Nimrod. Eventually it was decided to fit one Nimrod R1 first in order to give No 51 Sqn at least a minimum capability for longer duration sorties. Installation of AAR to a further 8 Nimrods Mk 2 was to follow.

TF 31.7 E89
HQSTC ORB May

SUMMARY OF CORPORATE MP ACTIVITIES DURING MAY

4.68 **Operations.** Four Nimrods with 4/5 crews were based at Ascension throughout the month. From 7 May onwards, Nimrod Mk 2

HQ 18 Gp ORB May

aircraft were progressively replaced by Mk 2s fitted for AAR (Mk 2Ps). Nimrods conducted the following sorties from Ascension during the month:

a. A daily surface surviellance sortie within a circular area radius 400 nms around Ascension.

b. Long range surface surveillance sorties of up to 19 hours duration, in support of the TF; along the sea lines of communication; in the sea area around the Falklands and between the Islands and the Argentine coast.

c. RV assistance and airborne SAR cover for Vulcans and Victor tankers engaged on Operation BLACK BUCK sorties.

Nimrod Mk 1s were deployed to Freetown, Sierra Leone, and Dakar, Senegal and provided airborne SAR cover during the periods when Harriers were being ferried from the UK to Ascension

4.69 **Modifications and Trials.** The following Nimrod aircraft modifications and trials were completed during May: HQ 18 Gp ORB May

a. Seven Nimrods Mk 2 were fitted with the AAR modification (Mod 700). Work on further aircraft was in progress and the fit of another 8 had been authorised by MOD.

b. BAe developed Mod 704 to allow Sidewinder AIMs to be carried on Nimrods. A trial installation in a A&AEE Nimrod was successfully completed. The first Nimrod Mk 2P fitted with Sidewinder was delivered to Kinloss on 31 May and subsequently deployed to Ascension on 5 June. A&AEE 281455Z May TF33.7 E2

c. BAe commenced a trial fit of the Harpoon ASM (Mods 703 and 705) in one aircraft with the aim of carrying out flight trials early in June. DD Ops M(RAF)22/15 26 May TF 33.6 E39

d. A Nimrod was flown to Wyton to allow the fitting of satellite communications equipment to be examined. The idea was not taken up because of weight considerations and the limited availability of the equipment. EWAU Wyton 231333Z May TF 33.5 E82

e. SLIR was fitted into 2 aircraft under STF 081 and deployed to Ascension. However, it was decided on 16 May to remove the equipment because the loss of a visual lookout station combined with servicing problems, outweighed the benefit gained. TF 33.5 E82

f. Searchwater radar colour display equipment was fitted as a trial (STF 083) in one aircraft to see if new radar information improved performance against aircraft targets. However, the trial was delayed as the equipment had to be transferred to another aircraft because the trials aircraft was required in Ascension to replace an unserviceable aircraft. Experience showed that the modified radar could detect airborne targets whilst in the search mode and made it easier to pick up surface contacts close to land.

g. The FIN 1012 inertial navigation (IN) platform fitted into the Nimrod Mk 2 was originally designed to operate for up to 12 hours without serious degradation. However, the very long AAR

sorties meant that inaccurate information was being fed into the navigation equipment and the Searchwater radar. To reduce this error a small modification was made during May to the IN circuitry of all Nimrods Mk 2Ps to reduce the IN drift rate. However, this did not solve the problem entirely. MODUKAIR 101444Z Jun TF 31.10 E15

h. The fit of replacement UHF/VHF radio equipment to improve communications reliability was advanced by agreeing to accept the equipment into service without the associated lower aerial.

i. Trials of Torpedoes Mk 46 modified for shallow water operations (STF 082) started at St Mawgan on 20 May, but proved unsuccessful and were discontinued.

j. PNGs and gyrostabilised binoculars were issued to crews at Ascension and proved to be effective.

4.70 **Support Expended.** As a measure of the effort all this work involved, Nimrods flew a total of 1216 hours on CORPORATE activities during May. By 31 May Nimrods had flown 1880 hours on CORPORATE activities since the beginning of April - 57 % of total Nimrod flying hours during these 2 months. On the engineering side, the Aircraft Servicing Flight (ASF) at Kinloss worked 8469 man hours against the norm of 7700 during the month. As a result the time aircraft spent undergoing servicing in ASF was halved. HQSTC ORB May

4.71 **Nimrod Mk 2 Training.** Twelve Nimrod Mk 2 CORPORATE crews were nominated, trained and kept current in all aspects of operations in the South Atlantic, including AAR refuelling techniques by day and night; new weapons systems; fighter affiliation techniques and the latest Electronic Warfare (EW) tactics. Throughout, training and familiarisation for ground personnel working on modified aircraft, new equipment and weapons was undertaken and many ad hoc arrangements were made throughout the Gp to ensure this was achieved. Great care was necessary when servicing aircraft which varied both in their modification states and equipment fits, because of the speed at which installation was proceeding. RAF Kinloss ORB May/Jun

THE FINAL PHASE

4.72 By June the Nimrod detachment on Ascension was very well established. The aircrew were accommodated in portable buildings which had been flown in from the USA and because of their construction were dubbed Concertina City by the Nimrod detachment; a name soon universally accepted. The Nimrod operations centre had been equipped with an ASMA terminal and a separate DSSS telephone which provided the detachment with secure, real-time communications with the TF, Kinloss, HQ 18 Gp and other formations in the UK. RAF Kinloss ORB Jun Vulcan Crew Tape KIN/CO/39 Mar 84 CBFSU ASI 151725Z May TF 21.10 E8

4.73 One of the earliest operations in the month (BOWSPRIT) involved RAF Harrier GR3s flying south from Ascension to land on board HERMES. This was done in one leg with the aid of AAR and once again a Nimrod Mk 2P provided SAR cover. HQ 18 Gp ORB Jun

4.74 On 2 June, the Soviet Primorye AGI came so close to Ascension that a visual sighting was made from the Nimrod Operations Room on the Island. 3 June saw a Nimrod set out from Ascension to drop mail to the SSN SPLENDID, but at the submarine's request only 4 of the planned 9 containers were launched as bad weather seemed likely to TF 1.3 E19

make safe recovery of the containers too difficult. During the same day, a Vulcan on Operation BLACK BUCK 6, supported by 14 Victor tankers, conducted an attack with Shrike ASMs on radars close to Port Stanley Airfield. On the return flight the Nimrod vectored the Vulcan to the correct RV position which was 70nms east of the planned point. Unfortunately the Vulcan's refuelling probe broke and the aircraft had to divert to Rio de Janeiro, Brazil. The Nimrod continued to provide SAR cover as well as monitoring the Vulcan's conversations with air traffic control and passing airfield and navigational information throughout the aircraft's diversion to Brazil.

4.75 No Nimrod long-range sorties were launched on 4 June as the positions of Argentine surface forces were known with sufficient accuracy. By now top priority for AAR tanker support had switched from long-range surveillance by Nimrods to long-range supply flights by Hercules. Consequently, the Nimrod detachment at Ascension was cut to 3 aircraft and 4 crews on 4 June, and further reduced to 2 aircraft and 3 crews on 18 June. However, one aircraft and one crew were retained on standby at Kinloss in case reinforcement was required.

TF 1.3 E21

HQ 18 Gp ORB Jun

4.76 On 5 June, a Nimrod Mk 2P flew direct from Kinloss to Ascension with support from a Victor tanker. This was the first Nimrod to be armed with Sidewinders and deployed only 23 days after the initial request to fit missiles to the aircraft had been made on 13 May. On 6 June, Wg Cdr M J Butler, OC 120 Sqn arrived to take command of the Nimrod detachment from Wg Cdr D Emmerson, OC 206 Sqn.

6 June
TF 1.3 E27

No 120 Sqn ORB Jun

THE NIMROD MK 1 RE-ENTERS

4.77 A new requirement arose at short notice on 6 June when No 42 Sqn was instructed to deploy 2 Nimrod Mk 1s and 2 crews to Gibraltar, as soon as possible, in order to undertake surface surveillance. The aircraft arrived in Gibraltar the same evening and one crew was placed on one hour standby. The next day one aircraft took off to locate and photograph the Peruvian ship ILO which was suspected of carrying military supplies, including Exocets, to Argentina. The second Nimrod Mk 1 then flew these photographs direct to Wyton for detailed interpretation.

HQ 18 Gp ORB Jun
Annex A
No 42 Sqn ORB Jun

NIMROD SORTIES REDUCED

4.78 Operation BOWSPRIT took place again on 8 June with further Harrier GR3s deploying south to HERMES; a Nimrod Mk 2P provided airborne SAR support. However, the need to concentrate Victor tanker operations on Hercules long range supply flights remained, and a further Nimrod long-range sortie was cancelled on 9 June.

HQ 18 Gp ORB Jun

TF 1.3 E36

ESM IMPROVEMENTS FOR NIMRODS

4.79 In the UK, efforts to improve further the Nimrod's operational capability continued unabated; on 7 June MOD stated a requirement to fit radar warning receivers (RWRs) to Nimrods to assist with the rapid triggering of decoys and chaff and so improve the aircraft's self defence capability. At Kinloss, initial AAR training for 12 crews was completed by 10 June and the first airborne trial of the Electronic Support Measures Audio Pulse Repetition Frequency Printout (ESMAPP) modification was flown. The purpose of this trial was to enable radar signatures intercepted by ESM to be displayed on the AQA

HQ 18 Gp ORB Jun

MODUKAIR 071300Z
TF 31.9 E65

No 120 Sqn ORB Jun

5(M) and AQS 901 acoustic processors. With the standard Nimrod ESM fit, PRF could only be measured with sufficient accuracy to establish the type of radar emitter but the new ESMAPP modification allowed the ESM signal to be fed into the Jezebel processor where the PRF could be measured with sufficient precision to allow individual radars to be uniquely classified and "finger-printed". Although this improvement was not installed in operational aircraft before the Argentine surrender, there is no doubt that it would have been extremely useful during the campaign, since the Argentine Navy was largely equipped with the same types of radar as the RN and USN, and this made the ESM identification of hostile units by normal methods impossible.

SIDEWINDER AND HARPOON GO-AHEAD

COS 73 Mtg/82

4.80 On 11 June, MOD confirmed that a case had been made to equip 8 Nimrod Mk 2Ps with Harpoon. The Nimrods selected were those aircraft which were already being modified for Sidewinders; approval for the purchase of 20 Harpoon missiles was granted and an order placed. Consideration was also being given to modifying some of the remaining Nimrod Mk 2Ps to incorporate Harpoon fixed fittings; indeed HQ Strike Command (HQSTC) had already recommended on 2 June that all 34 Nimrod MR aircraft should receive the Harpoon modification. In the meantime, a Nimrod trial installation was completed and the first Harpoon firing took place on 12 June, with Release to Service on the same day. Assembly of tools and ground equipment for use with Harpoon was completed by 18 June in preparation for the arrival of missiles from the USA on 29 June. The first Sidewinder/Harpoon aircraft arrived at Kinloss from Woodford on 24 June, but it was not until 2 July after all aircrew and ground crew training had been completed, that the first aircraft deployed to Ascension. A welcome bonus from the installation of these modifications was the disappearance of the bomb sight which had been installed on the co-pilots coaming and restricted the field of view from the flight deck.

TF 31.10 E36
HQ 18 Gp ORB Jun

DD Ops(M)/20/2/11 16 Jun
CAS 73/2/1.20 E43
RAF Kinloss ORB Jun

FINAL OPERATIONS BEFORE THE SURRENDER

4.81 In the South Atlantic on 12 June, a Vulcan flew BLACK BUCK 7 from Ascension in order to attack the airfield at Port Stanley with 21 x 1,000 bombs. The Vulcan which was supported by 13 Victors, refuelled 4 times during the mission and a Nimrod Mk 2P provided airborne SAR cover and RV assistance to the force. As on previous occasions, the Vulcan crew reported the RV assistance as being "excellent".

HQ 18 Gp ORB Jun

STC/6000/29/2/1/Ops 2 May
HQ 18 Gp ORB Jun

4.82 Throughout the final days of fighting on the Falklands, Nimrods continued their daily surveillance sorties around Ascension on 11, 12 and 13 June. On the first of these, the Soviet Space Events Support Ship MORZHOVETS was located in the area. Longer range Nimrod surveillance sorties were planned, but at a time when AAR resources were fully stretched, these were cancelled when found not to be essential in the light of intelligence assessments. However, Nimrod operations as a whole did continue for some considerable time after the Argentine surrender; for example on 15 June a Nimrod flew SAR top cover for a Sea King carrying out a long range casualty evacuation from HMS SPARTAN over 250 nms from Ascension.

TF 1.3 E53

SUMMARY OF CORPORATE MP ACTIVITIES 1-15 JUNE

4.83 **Operations** At the beginning of June, 4 Nimrods were at Ascension but this was reduced to 3 aircraft and 4 crews on 4 June, and cut to 2 aircraft and 3 crews on 18 June, with a further aircraft held on a high state of readiness at Kinloss. Two Nimrods Mk 1s were sent from St Mawgan to Gibraltar from 6 to 8 June to shadow the Peruvian vessel ILO which was suspected of carrying Exocet missiles. This ship was located and photographed on 7 June and the ensuing prints and negatives were flown to Wyton for full evaluation. HQ 18 Gp ORB Ju

4.84 During the period 1-14 June, Nimrods flew a total of 296 hours on CORPORATE activities. The following specific operations were undertaken:

a. Daily local surveillance flights around Ascension out to a radius of 400 miles around the Island in which the positions of Soviet intelligence gathering ships were detected and the movements of other suspicious shipping was checked.

b. Airborne SAR and RV assistance was provided for aircraft engaged on BLACK BUCK also airborne SAR cover was given for Harrier GR3s deploying south (BOWSPRIT).

c. Mail drops to RN ships and submarines.

4.85 **Modifications and Trials.** The following Nimrod aircraft modifications and trials took place during the first part of June:

a. An ESMAPP trial to evaluate the display of simultaneously intercepted radar signatures of similar characteristics on the AQA 5(M) and AQS 901 acoustic processors.

b. Bomb bay load carrying panniers were produced and the first one arrived at Kinloss on 18 June. Aircraft modifications for the carriage of Harpoon (Mods 703 and 705 continued and Sidewinder (Mod 704) and both were progressively installed in Nimrods.

4.86 Various improvements to the aircraft's self defence capabilities were under consideration during June, including rearward facing closed circuit television (CCTV), RWR and Chaff/IRD dispensers. The CCTV proposal was dropped because trials at Kinloss showed the equipment had a poor field of view and inadequate detection ranges against contacts of fighter size. An RWR fit was ruled out in the short term because the equipment readily available had no significant advantages over the Nimrod's standard ESM fit. A special trials fit of the Chaff/IRD Dispenser started at Kinloss on 15 June but the installation ran into engineering problems and it was not until 30 June that the first trial flights were conducted. These showed that although the Chaff Dispenser jammed, the IRDs were successful. MODUKAIR 241619Z TF 33.6 E8 MODUKAIR 071211Z Jun TF 31.9 E62

RESULTS - THE STRATEGIC AND OPERATIONAL BACKGROUND

4.87 Before reviewing the results of Nimrod activities during CORPORATE, it is important to appreciate the strategic context within which the force was operating on the eve of the Argentine invasion.

4.88 Although worldwide deployments outside the NATO area were not uncommon, these detachments were limited in scope, size and duration and were usually associated with pre-planned exercises or ASW competitions. Apart from these important, but relatively minor diversions, the activities of the Nimrod force were firmly oriented towards operations within the NATO area, largely in the Eastern Atlantic and Norwegian Sea. It was this emphasis on NATO operations which determined the underlying strategic assumptions and operating pattern of the force; to an extent it also influenced the tasks, equipment fits and tactics employed by Nimrod crews. The practical consequences of focusing the force on NATO operations were both pervasive and significant.

4.89 First, the number, availability and geographical spread of suitable airfields within the NATO area meant that modification of maritime Nimrods for in-flight refuelling was difficult to justify and proposals to this end had never gone beyond the discussion stage. Moreover, the Nimrod's normal speed and flexbility over the distances within its normal operating area meant that unserviceable aircraft could quickly be changed over and the fully comprehensive support and engineering facilities of the UK main bases utilised when required. Equally, when NATO operations had to be mounted away from the main bases in Cornwall and Scotland, adequate logistic backing could be provided through a combination of pre-positioning and limited pre-stocking, coupled with air mobile fly-away packs, underpinned by rapid re-supply by air.

4.90 Secondly, although the principal role of the Nimrods - ASW and maritime surface surveillance - had a universal application, the concept of operations did not envisage the aircraft operating in hostile air space where interception by enemy fighters was likely. Hence, no active or purpose-designed passive self-defence systems were installed. Moreover, despite some early intentions to use ASMs (Martel and AS12) it was decided, inter alia, that the aircraft's inherent vulnerability precluded the use of ASM anti-ship weapons. Whilst Nimrods would assist in anti-ship operations, direct attacks against heavily defended targets would be made by high speed, fully manoeuvrable strike/attack aircraft. In essence, it was envisaged as a matter of fundamental policy that Nimrods as the RAF's only small force of <u>specialist</u> ASW and maritime surveillance aircraft would be concentrated on those tasks geared to NATO operations. The force would not be equipped, trained, armed and fitted with AAR in order to meet worldwide <u>all</u> the multi-role tasks which it was theoretically feasible to undertake.

4.91 Arguments about those underlying assumptions had been pursued since the mid-1960s, but for a combinations of reasons linked to defence policy and financial priorities, which lie outside the scope of this narrative, the force was not fully equipped and trained for all the tasks on which it was, or might have been, ultimately employed during CORPORATE. This situation was, of course, not unique to the Nimrod force.

RESULTS - THE NEW TASK

4.92 As already outlined, the concept of operations and the supporting logistic plans matched the force for NATO operations. But the conduct of unforeseen and sustained, out of area, warlike

operations nearly 8,000 nms from the UK using a virtually bare base on an island at the end of a 4,000 nms partially seaborne supply line, seemed an implausible contingency. That the base would lack a proper operations room, have extemporised communications and be several thousand miles from other airfields, calling for sorties whose length was limited only by human fatigue and would involve penetration into regions where enemy air superiority existed, seemed even more unlikely. Yet this is precisely the scenario into which the Nimrod squadrons were projected between April and June 1982.

RESULTS - THE EQUIPMENT ACQUIRED

4.93 In the early days of CORPORATE, when the requirement for Nimrod operations was very limited in scope, the standard aircraft fit was adequate and AAR was not essential. In effect, the NATO pattern of operations was imposed on an axis extending from the UK to not too far beyond Ascension. So long as Nimrods were required to operate from the UK, from Gibraltar and in the sea area no more than about 1,000 nms from Ascension no major difficulties arose, save for a requirement to improve facilities and backing at Wideawake airfield. However, once it became apparent from about mid-April onwards that very long range tasks far south of Ascension would be required, then radical measures which were still at the planning concept stage had to be implemented immediately. There was now a distinct likelihood of operations in areas where interception by Argentine fighters was a possibility. Moreover, if the Argentine Navy attempted to intervene more actively with the TF or our landing operations, then Nimrods would certainly encounter well defended naval vessels. Surface to Air Missiles (SAM) and Anti-Aircraft Artillery (AAA) fire would present potent threats to large, relatively slow aircraft like the Nimrod. It was now that a complex series of new, interlocking operational and logistic considerations came into play which soon drew in the efforts of the whole Nimrod force and its supporting organisation, irrespective of whether they were directly deployed to the South Atlantic.

4.94 The force entered the campaign in April 1982 with a mixed fleet of Mk 1 and Mk 2 aircraft with all the engineering, logistic and training complications inherent in operating aircraft fitted with significantly different avionic equipment. In addition, the average number of aircraft on strength in April was only 23.5 against an establishment of 32. This was largely due to a number of aircraft undergoing a major conversion from the Mark 1 to the Mark 2 version at BAe's Woodford factory. Moreover, those squadrons which had already converted to the potentially much more effective Mk 2 aircraft were still gaining experience with new avionic equipment, particularly the Searchwater radar. It is worth stressing here that when CORPORATE began, the force had no AAR fit; no modern torpedo in service; no ASM or bombing capability; no active defences and no passive defences, save for ESM. By 14 June 1982, only 75 days later, the force either had, or was in the process of obtaining, all of these capabilities. In the early days, deciding the priority for acquiring new capabilities presented some difficulties, since the exact nature of the new tasks which Nimrods might have to perform was not apparent. A diplomatic solution to the Argentine invasion seemed a possibility, and in the event of further hostilities it was not known whether the Falklands would be blockaded or assaulted. Certainly, it seemed the whole Nimrod force might eventually be drawn into war operations and plans had to be executed accordingly. In

HQ 18 Gp Stats Summary Apr

these circumstances, the most sensible approach seemed to be to acquire both the flexibility offered by AAR and an expanded armoury of improved weapons and systems. The precise process by which all this equipment was procured, fitted and operated within a concept of operations expanded well beyond that envisaged for the NATO task has already been outlined. It therefore now only remains to assess what all this effort achieved.

ESTIMATING SUCCESS - AN EVALUATION

4.95 The success of the RAF maritime air operations can only be assessed against the background set by the potential maritime threats and capabilities of the Argentine Navy and Air Force, rather than by the results which hindsight shows us they actually achieved.

Thus the Argentines were in varying degrees capable of:

a. Threatening Ascension, particularly the vital Wideawake airfield.

b. Gathering intelligence and carrying out maritime air and sea surveillance, either alone or with the connivance of others, including the Soviet Union.

c. Defending South Georgia and the Falklands.

d. Undertaking aggressive air, submarine and surface attacks against the TF.

e. Attacking our maritime aircraft operating within fighter range of the Argentine mainland.

4.96 The aim of Nimrod operations was to contribute to countering and inhibiting all these Argentinian capabilities, whilst concurrently furthering our own operations by carrying out tasks such as airborne SAR cover for Harriers and facilitating RVs during AAR operations. In meeting these tasks, knowledge of what the enemy was not doing was second only in importance to appreciating what he was doing. For example, it was important for CTF to know in late April not only the sea ice conditions around South Georgia but also whether Argentine surface forces were lying in wait off the Island. Moreover, throughout the Campaign it remained essential to know whether the Argentinian fleet was covertly approaching the TF, or indeed any of the numerous British ships on passage strung out over several thousand miles. The freedom of action and peace of mind which this negative aspect of all reconnaissance operations gives to a commander is often over-looked, or under-valued.

4.97 With our present state of knowledge concerning Argentine policy, plans and operations during the Campaign, it would be premature to state categorically that any given British military operation prevented a particular Argentine capability from being brought to bear. Moreover, CORPORATE proved an all arms operations whose threads are inextricably interwoven. Nimrod operations cannot therefore be disentangled from this matrix and analysed in total isolation. However, it can be said that in conjunction with other elements of our forces usually, but not invariably maritime, the Nimrod force made a significant contribution to the success of the operation by:

a. Monitoring Soviet forces in the NATO area which might have been heading for the South Atlantic.

b. Carrying out regular surveillance patrols within about 400 miles of Ascension to detect Argentine, Soviet and any other intelligence gatherers.

c. Monitoring the approaches to Ascension to detect any Argentine seaborne threat against the island.

d. Mounting various types of maritime air operations in support of the TF and over the sea lines of communications with the aim of deterring any kind of submerged or surface interference by the Argentine Navy.

e. Flying long range surveillance operations off the Falklands and in hostile air space near mainland Argentina, sometimes in daylight and with no adequate self-defence systems.

f. Acting as a communications link between SSNs when required. (POSTBOX)

g. Acquiring the capability of attacking less well armed surface vessels with bombs, pending the arrival of Harpoon ASMs.

h. Undertaking limited supply drops and frequent airborne SAR cover for many other aircraft types in the area stretching from the UK to Africa and to the Falklands themselves.

j. Repeatedly facilitating successful RVs between AAR tankers and receiver aircraft of several types, without which all long-range air operations, including the Vulcan attacks and MRR operations, would have been impossible.

4.98 In summary, the fact that no submarine or warship attacks were successfully mounted against either Ascension or British forces at sea must be seen as strong evidence of the valuable contribution made by Nimrod operations, in conjunction with other forces, towards deterring offensive action by the Argentine. (8)

Annexes:
A. ROA of Nimrod without AAR
B. ROA of Nimrod with AAR
C. Summary of Aircrew Flying Effort.

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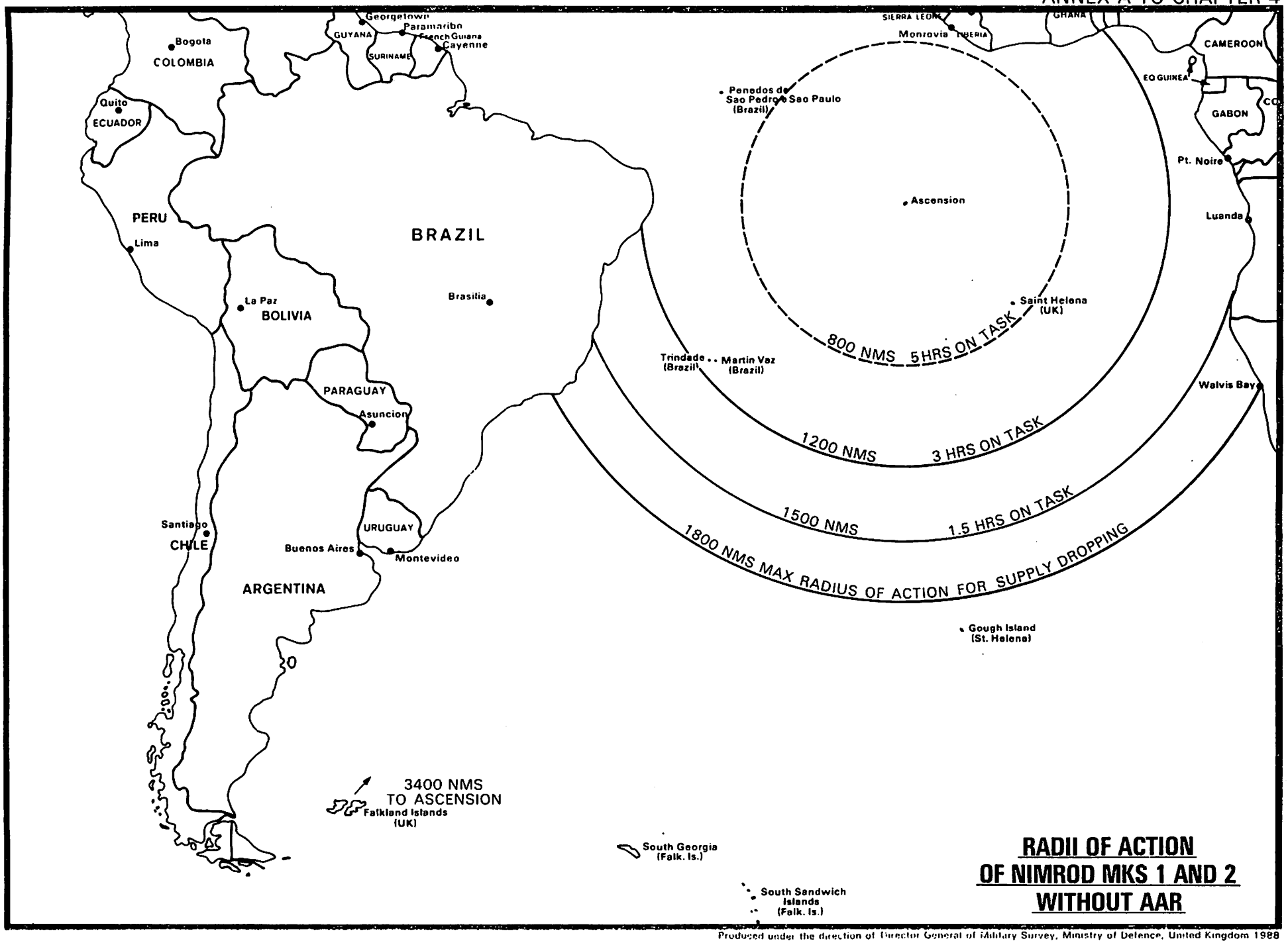
(8) A summary of Nimrod aircrew flying effort is at Annex C.



RADII OF ACTION OF NIMROD MKS 1 AND 2 WITHOUT AAR

Produced under the direction of Director General of Military Survey, Ministry of Defence, United Kingdom 1988

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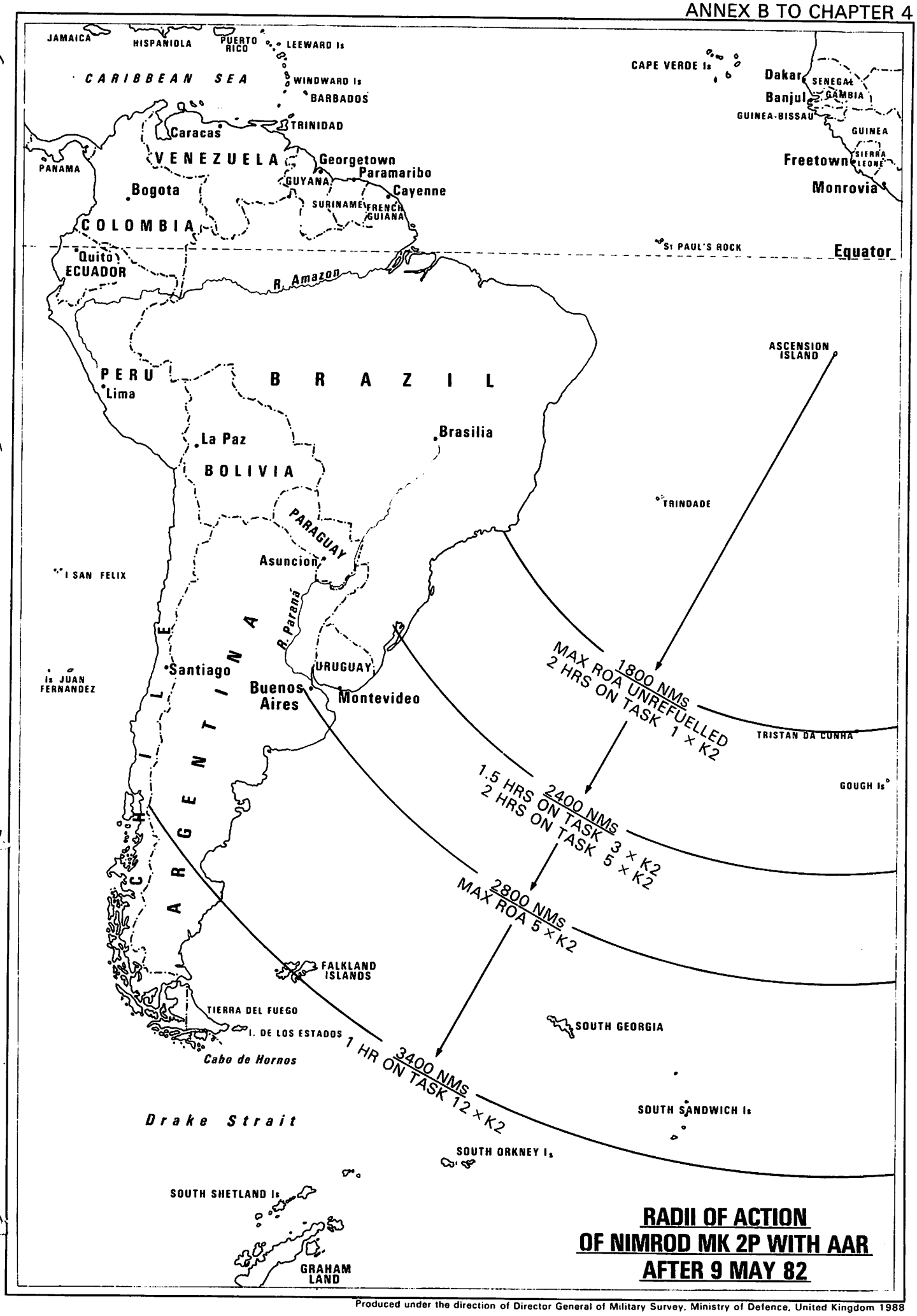

RADII OF ACTION OF NIMROD MK 2P WITH AAR AFTER 9 MAY 82

Produced under the direction of Director General of Military Survey, Ministry of Defence, United Kingdom 1988

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18 GROUP OPERATIONAL NIMRODS - SUMMARY OF AIRCREW FLYING EFFORT - OPERATION CORPORATE

2 APRIL 82-30 JUNE 82

TASK	CODE	KINLOSS					ST MAWGAN	TOTAL ALL SQUADRONS	
		120	201	206	GSU	WING	42	HOURS	%
a	b	c	d	e	f	g	h	j	k
SUB-SURFACE SURVEILLANCE	00	370:50	220:15	531:10	-	-	8:00	1130:15	45.01
SURFACE SURVEILLANCE	01	-	-	-	-	-	58:55	58:55	2.35
OTHER OPERATIONS	02	-	-	-	-	-	110:00	110:00	4.38
TOTAL OPERATIONS		370:50	220:15	531:10	-	-	176:55	1299:10	51.74
CORPORATE SEARCH AND RESCUE	SR1	-	-	-	-	-	114:41	114:41	4.57
CORPORATE TORPEX	M1	-	-	-	-	-	4:15	4:15	0.17
CORPORATE TRIALS	M2	-	-	-	-	-	9:55	9:55	0.39
CORPORATE FIGHTER AFFIL	M1	-	3:55	-	-	7:15	-	11:10	0.44
CORPORATE FORMATION	M1	-	-	-	-	186:55	-	186:55	7.44
CORPORATE WEAPONS TRAINING	M2	-	16:30	-	-	-	-	16:30	0.66
CORPORATE TANKING	M2	-	-	20:00	-	163:50	-	183:50	7.32
CORPORATE FUEL CONS CHECK	M2	-	-	7:20	-	-	-	7:20	0.29
CORPORATE RANGE CLEARANCE	M2	-	-	-	-	4:15	-	4:15	0.17
CORPORATE TRIALS	M3	15:00	5:50	6:55	-	-	-	27:45	1.11
CORPORATE IFF TRIALS	M3	4:50	6:25	7:45	-	55:45	-	74:45	2.98
CORPORATE PR	M4	-	2:00	-	-	-	-	2:00	0.08
CORPORATE TRANSIT	M7	21:00	25:00	13:35	-	60:30	12:46	132:51	5.29
TOTAL MISCELLANEOUS CORPORATE		40:50	59:40	55:35	-	478:30	26:56	661:31	26:34
TOTAL PRODUCTIVE CORPORATE		411:40	279:55	586:45	-	478:30	318:32	2075:22	82.65
TOTAL NON PRODUCTIVE CORPORATE		176:35	29:05	140:00	-	26:20	63:24	435:24	17.35
TOTAL CORPORATE		588:13	309:00	726:45	-	504:50	381:56	2510:46	100.00

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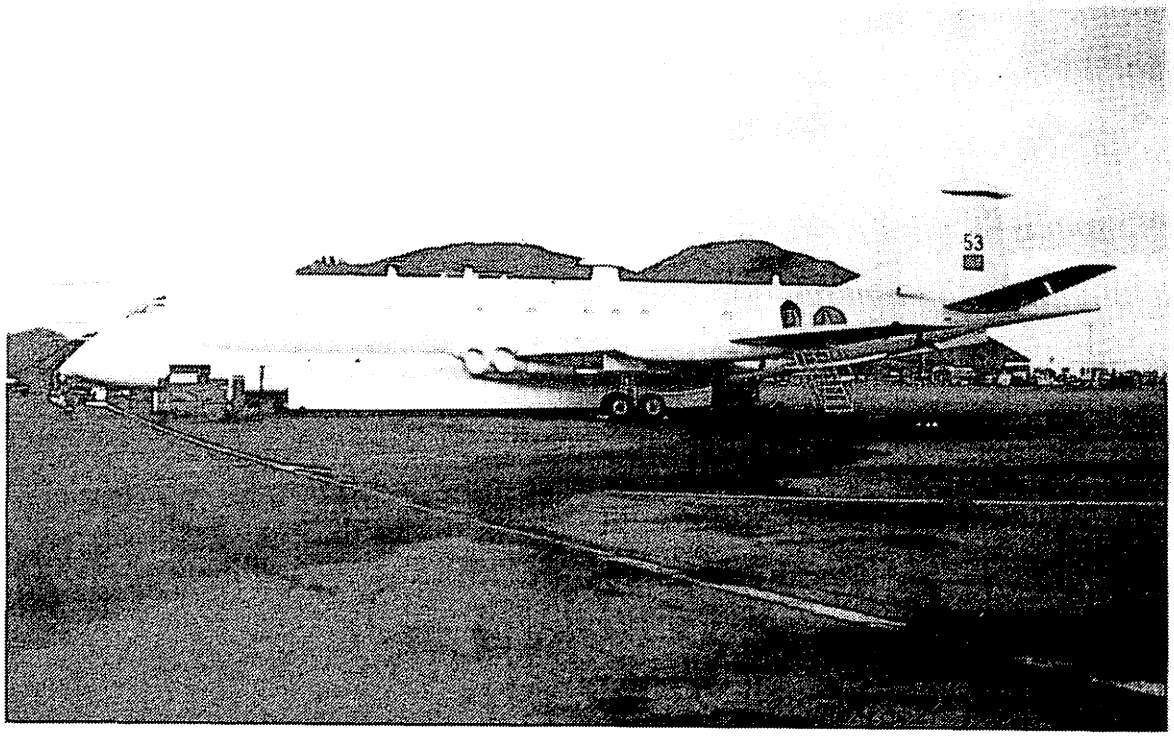
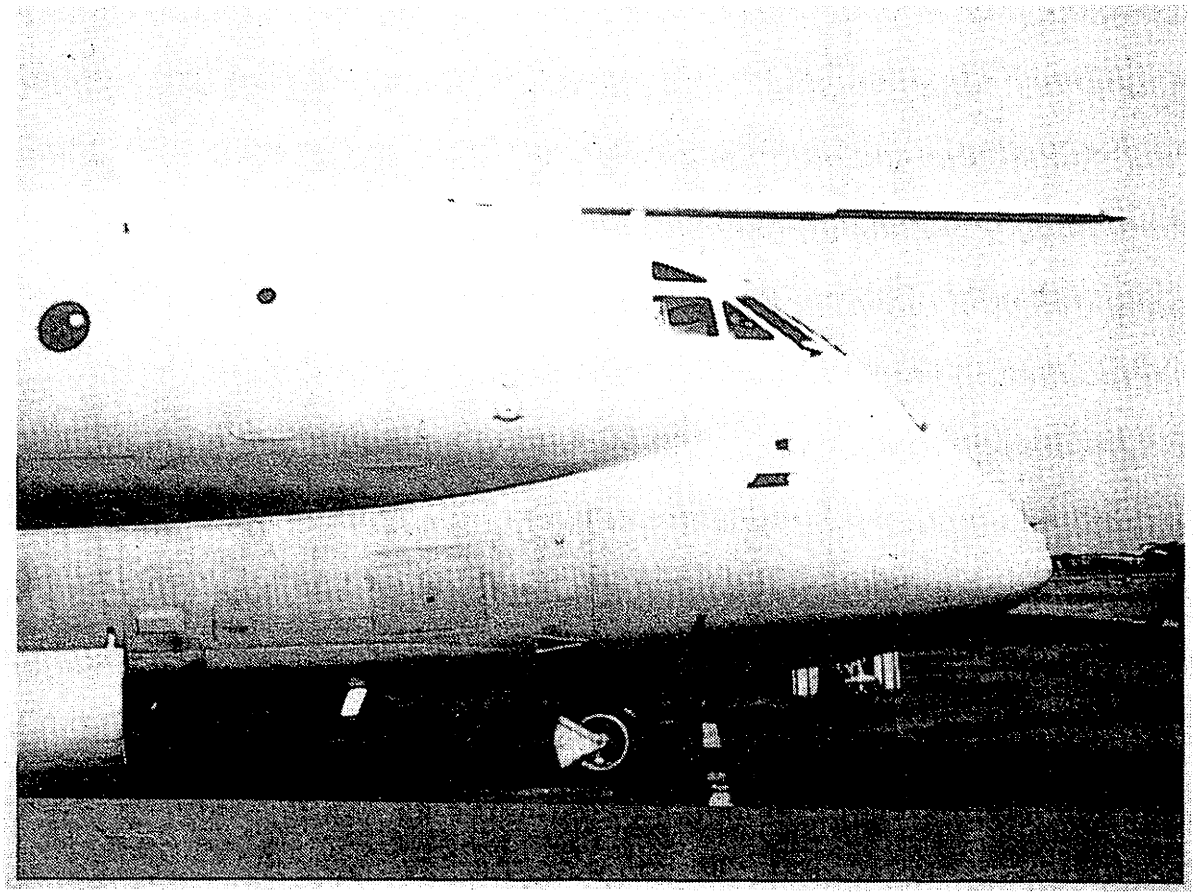
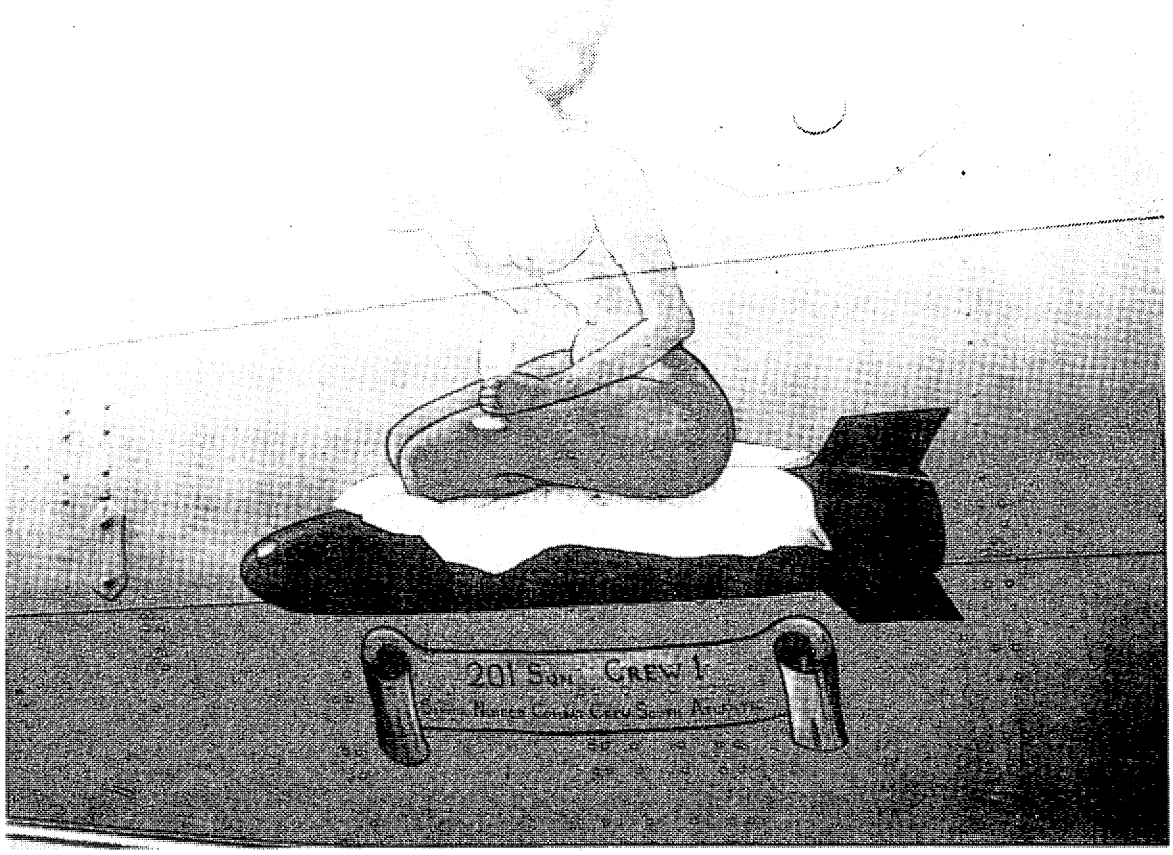


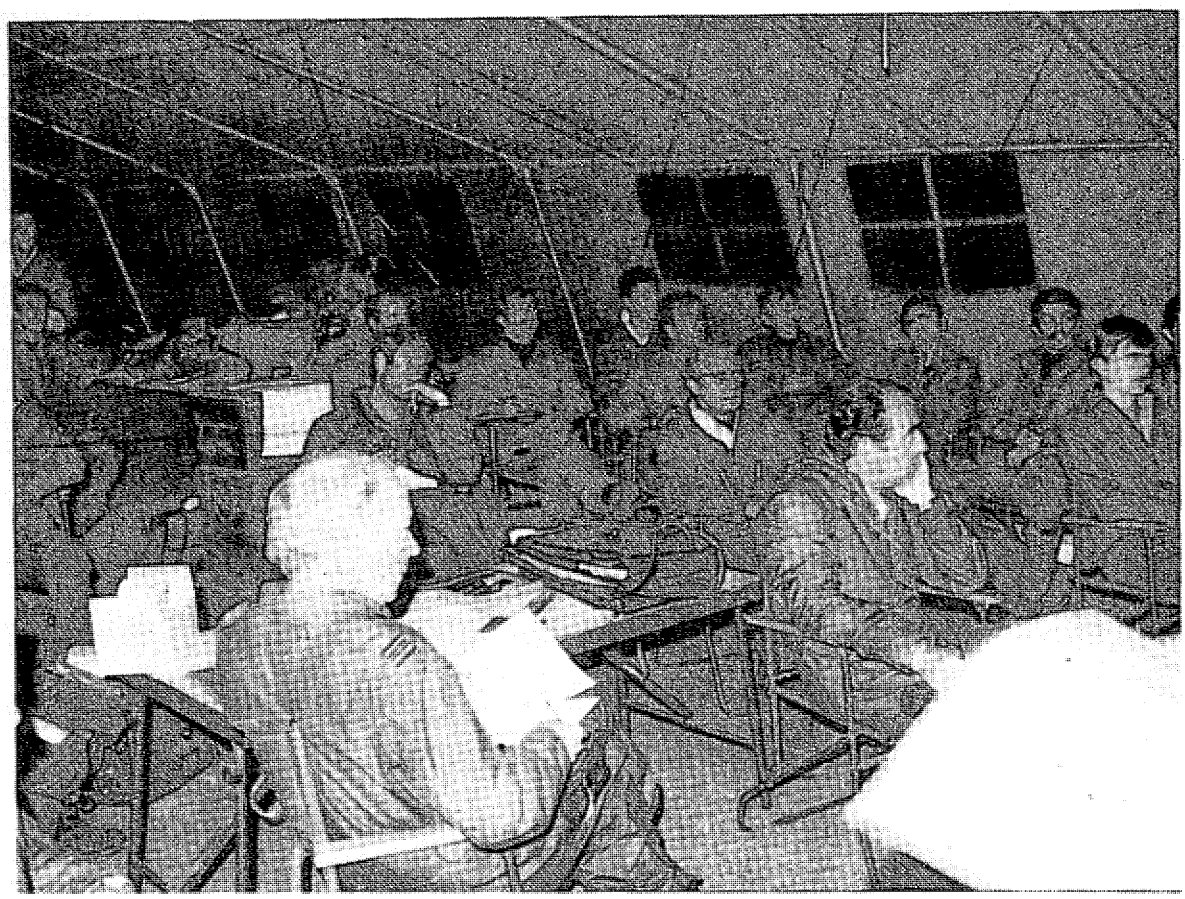
4.1. Nimrod on dispersal at Wideawake Airfield.



4.2. Nimrod XV 247 MR2(P).

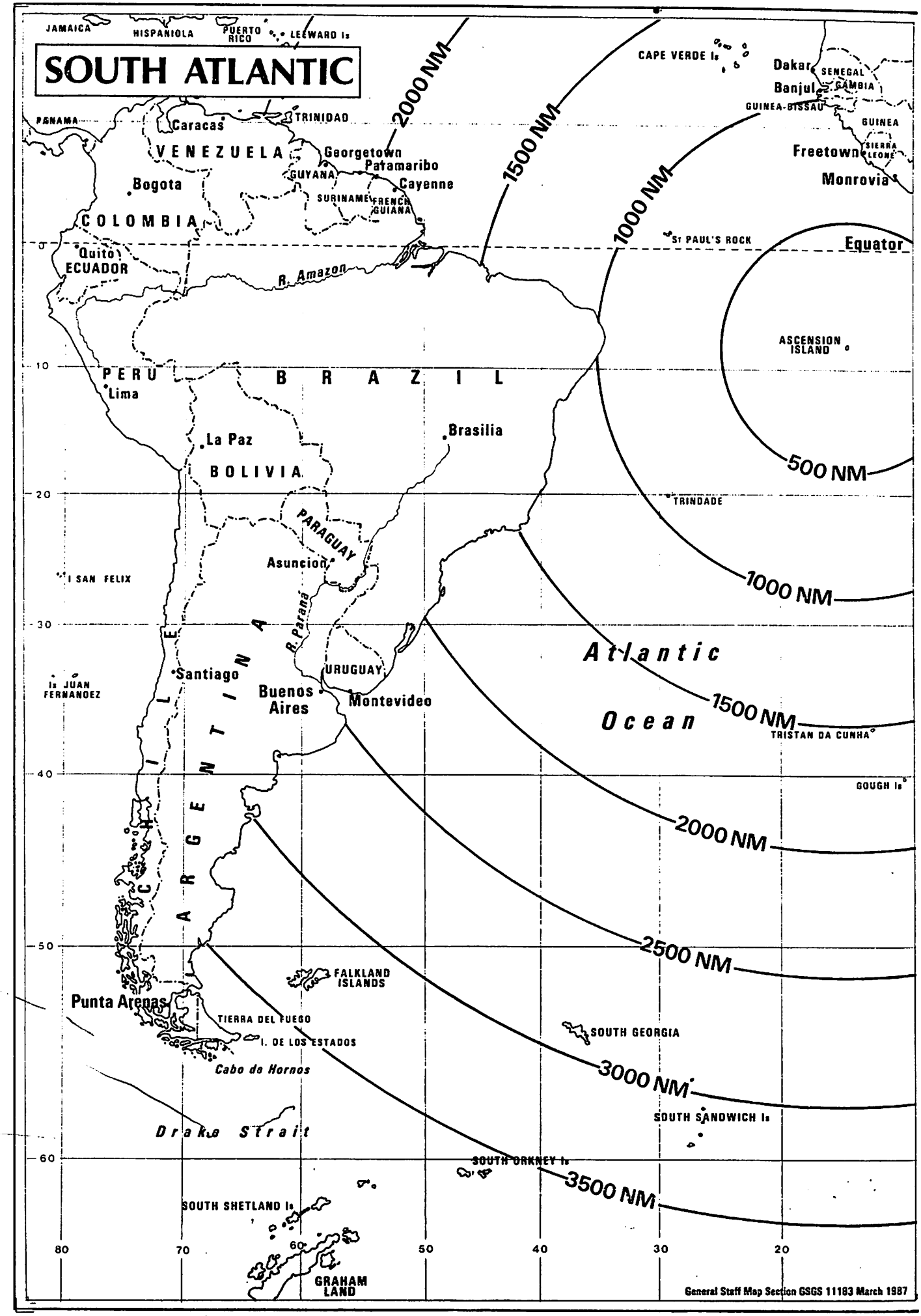


4.3. No 201 Sqn 'mascot'.



4.4. Victor crews brief for a MRR sortie Apr 82.

4.5. Flt Lt Barradell after 1st MRR mission.


SOUTH ATLANTIC
JAMAICA
HISPANIOLA
PUERTO RICO
LEEWARD Is
PANAMA
Caracas
TRINIDAD
VENEZUELA
Georgetown
Paramaribo
GUYANA
Cayenne
SURINAME
FRENCH GUIANA
Bogota
COLOMBIA
Quito
ECUADOR
R. Amazon
PERU
Lima
BRAZIL
Brasilia
La Paz
BOLIVIA
PARAGUAY
Asuncion
R. Paraná
URUGUAY
Montevideo
Buenos Aires
Santiago
CHILE
ARGENTINA
I SAN FELIX
Is JUAN FERNANDEZ
Punta Arenas
TIERRA DEL FUEGO
I. DE LOS ESTADOS
Cabo de Hornos
Drake Strait
FALKLAND ISLANDS
SOUTH GEORGIA
SOUTH SANDWICH Is
SOUTH ORKNEY Is
SOUTH SHETLAND Is
GRAHAM LAND
CAPE VERDE Is
Dakar
SENEGAL
Banjul
GAMBIA
GUINEA-BISSAU
GUINEA
Freetown
SIERRA LEONE
Monrovia
ST PAUL'S ROCK
Equator
ASCENSION ISLAND
TRINDADE
TRISTAN DA CUNHA
GOUGH Is
Atlantic Ocean
500 NM
1000 NM
1500 NM
2000 NM
2500 NM
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20
General Staff Map Section GSGS 11183 March 1987

CHAPTER 5

AIR TO AIR REFUELLING AND MARITIME RADAR RECONNAISSANCE OPERATIONS

SUMMARY OF CONTENTS

5.1 The RAF's tanker force had been based at RAF Marham since its re-equipment with the Victor Mk2 aircraft in 1974. The fleet consisted of 23 aircraft flown by Nos 55 and 57 Sqns supported by No 232 OCU. Its primary peacetime role was the support of air defence aircraft in the UK Air Defence Region and, in war, the force would support NATO commitments in Europe and the Eastern Atlantic. Crews flew approximately 20 hrs per month and the flying task for the force was 470 hrs per month with an average sortie length of 3.5 hrs.

5.2 The force was trained to dispense fuel to receivers (tanking) by day and night and to conduct refuelling (receiving) between Victor tankers by day only; no contingency plan required a proficiency to receive fuel at night. Each

squadron had one captain trained as an AAR instructor. These men, together with the 4 OCU pilot instructors and the OC Victor Standardisation Unit, were to play a crucial part in a crash programme to teach receiver techniques as quickly as possible, once it was decided to deploy various aircraft types to Ascension Island.

OPTIONS AND INITIAL PREPARATIONS

5.3 The possible reinforcement of the Falkland Islands by air was being considered even before the Argentine invasion and would have involved the tanker force aiding the deployment. However, initial examination of attack, reconnaissance and transport operations hinged on the availability of mainland airfields for recovery. A 3-man fuel planning cell at HQ 1 Gp was kept busy as ACAS (Ops)'s staff reviewed the possible options - those using mainland facilities and those involving the use of Ascension Island as a mounting and recovery base.

CAS/73/2.1 E11
ACAS(Ops)2/8/347 1 Apr
TF 9.1 E1

5.4 The use of AAR to support a single Buccaneer would have involved 12 support Victors and was discounted. Vulcan operations from Ascension Island had particular appeal as a deterrent threat to Argentine operations, but without the availability of a South American recovery base, they were not feasible. Another option involved the Victor undertaking maritime radar reconnaissance (MRR) using its H2S radar but this was not pursued at that stage. Finally, the deployment of Sea Harrier (SHAR) reinforcements to Ascension Island using AAR was considered; if ferried via Dakar, 2 Victors would be required for the UK to Dakar leg and one from Dakar to Ascension Island.

ACAS(Ops)2/8/347 1 Apr
TF 9.1 E1
D Ops/3/20/1 5 Apr
TF 14.1 E119
ACAS(Ops)2/8/347 1 Apr
TF 9.1 E10

5.5 The tanker force at once assumed that AAR would play a paramount part in any plans and were not surprised when HQ 1 Gp alerted RAF Marham on 5 April. The next day, HQSTC instructed Marham to restrict flying, to complete routine servicing and to recover all aircraft from deep-servicing. As a result, it was estimated that by noon on 13 April, 19 aircraft would be available for flying.

051655Z Apr
1G/SASO/7 E1
061310Z Apr
1G/SASO/7 E3

THE NAVIGATION AND RENDEZVOUS (RV) PROBLEM

5.6 As the Task Force moved south, CTF 317 urgently needed intelligence about the movements of Argentine maritime forces. While Nimrods operating from Ascension Island would initially carry out reconnaissance, once the Task Force moved out of range the only aircraft able to conduct maritime reconnaissance would be the Victor with AAR support. Thus, HQSTC tasked HQ 1 Gp with providing a Victor plan to conduct MRR operations 250 nms NE of the Falkland Islands. However, the Victor's limited navigation fit, the Ground Position Indicator Mk4 and Green Satin doppler, while adequate for operations within the cover of the UK radar system, was not accurate enough for navigation in the South Atlantic. Aircraft would be outside radar range of land for long periods when accurate updating of the navigation equipment using the Navigation and Bombing System (NBS) mapping radar would be impossible.

061100Z Apr
TF 14.1 E17
HQSTC
080850Z Apr
AHB(RAF)
Box D4 E24

5.7 As a consequence HQSTC carried out a rapid study of Victor MRR operations and informed MOD(Air) that:

a. The Victor radar was considered suitable but would have to be tested in a trial sortie using the NBS for comparison.

b. An MRR sortie ahead of the Task Force in the area 100 nms NE of the Falkland Islands would require refuelling support by 7 Victors. All 8 aircraft would have to leave Ascension Island together as any RV outside radar cover would be hazardous. No AAR was planned for the recovery leg after the task had been completed. A reserve aircraft was needed to ensure a wave of 8 serviceable Victors.

c. The support aircraft could be reduced to 4 tankers if Victor/Victor RVs (1) were used. However, such a plan would rely heavily on the accuracy of the navigation aids, and a Nimrod would be needed to provide a directed homing near the RV. A possible solution would be to improve the Victor's navigation capability by fitting Omega, a modification which would take up to 14 days. (Later, Carousel inertial navigation system (INS) was fitted).

PR AND NIGHT AAR

5.8 CTF 317 also required pre- and post-attack information on Argentine positions on the Falkland Islands, especially Port Stanley airfield. The Victor was the only aircraft capable of carrying out such photographic reconnaissance (PR) before the SHARs of the Task Force came within range. HQSTC therefore arranged a trial installation to fit one vertical and an oblique port camera, to be followed by a trial sortie involving a long low-level transit over the sea to assess the results. The deadline for completion of this task was 13 April. HQSTC 11150Z Apr

5.9 If either MRR or PR sorties were mounted, the tasked aircraft would not be able to refuel in daylight and also land by day at Ascension Island after a 15 hour sortie, and HQ 1 GP therefore recommended that the Marham crews should undertake night AAR training. The number of crews requiring conversion was allied to a revised MRR plan to use 5 Victors to provide coverage north of the Falkland Islands while avoiding Argentine land-based air defence cover by 600 nms. This would also allow diversion to Rio de Janeiro if fuel transfer failed at the recovery RV position. Eight Victors would have to be deployed to Ascension Island, 3 of them Omega fitted, to allow for ground or airborne unserviceabilities. To provide an adequate number of night-refuelling qualified crews, Marham was instructed to AAR ASMA Tote 15 10 Apr

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(1) The Victor/Victor RV involves 2 tankers meeting and transferring fuel. The receiver tanker then continues with the operational task while the donor normally returns to base.

train 6 AAR instructors (AARIs) and 8 Victor Captains for night AAR by 14 April; in the event, 6 AARIs and 10 Captains (including Gp Capt J S B Price, the Stn Cdr) had been converted by that deadline. Each crew flew 2 night sorties - one dual, one solo - to practise contacts at flight levels (FLS) 290 and 330.

VULCAN OPERATIONAL OPTIONS USING AAR

5.10 Marham's activities were not confined to its own aircraft and crews; they also included training for a number of Vulcan crews, who had not used AAR for many years. If a Vulcan sortie against the Argentine mainland was required without an AAR capability, the aircraft would be limited to launching from Ascension Island and landing in Chile. However, a brief for CAS on 8 April outlined an option to employ Vulcans with conventional weapons to attack targets in Argentina from Ascension, after the aircraft with AAR equipment had been refurbished and crews trained in refuelling. It was estimated that the modification of each aircraft would take one day but crew training for day and night refuelling would require 14 days. The concept of operations was for 7 Victors to support a Vulcan carrying 7 x 1000 lb HE bombs against a mainland target - if the Vulcan recovered to a Chilean base only 3 support Victors would be needed. Accordingly, HQ 1 Gp tasked RAF Waddington with refitting AAR equipment to 10 Vulcans and following a short AAR ground school, 3 Vulcan crews began airborne AAR training with Victor tankers on 14 April, each crew having an AARI attached to it. Crews were adjudged competent after 5 receiving sorties and the AARIs returned to Marham after converting one Vulcan captain to a standard sufficient to supervise any additional Vulcan training.

091030 Z Apr
1G/SASO/7 E28

VICTOR MRR TRAINING

5.11 When it was decided to use the Victor MRR sorties, it was also decided that an ex-Vulcan MRR navigator (2) should operate the H2S whilst the Victor was on task. A practice sweep of the SW Approaches to the UK on 8 April confirmed that the Victor's radar performance was as good as the Vulcan's. The Victor's ability to obtain intelligence would be enhanced by fitting an R88 camera, Loran and a Radar Warning Receiver (RWR); if Omega was fitted, Loran would not be needed. Nine ex-27 Sqn MRR Vulcan navigators were attached to Marham to form an MRR cell and training flights quickly familiarised them with the Victor environment. In turn, they gave lectures to the AAR crews and supervised the MRR sorties; each crew completing at least one before deployment to Ascension. In addition to this flying, PR training was also set in hand for 3 selected Victor crews.

Marham
081600Z Apr
1G/SASO/7 E14 & E25

VICTOR PR TRAINING

5.12 Markings on the cockpit canopy were made to help pinpoint the correct ground stand-off distance for the port oblique camera before PR flying started. A successful PR trial sortie was then

Marham
121950Z Apr

(2) From 1974-81, the Vulcan crews of No 27 Squadron had carried out the MRR task and some ex-squadron Nav/Rads were still reasonably familiar with the special techniques required.

mounted on 12 April, when a flight at 250 ft preceded a pop-up to 2/3000 ft before the target. Three crews underwent 3 sorties of intensive training to familiarise themselves with the equipment and associated techniques and to rehearse the profile to be used against Port Stanley Airfield. Some adjustment of the camera positions and techniques was required following instruction given by Canberra PR crews of No 39 Squadron and the erstwhile tanker crews were debriefed on their PR sorties by JARIC (UK) at RAF Brampton. All training was completed by 17 April. 1G/SASO/7 E52 HQ 1 Gp 141630Z Apr 1G/SASO/7 E68

AIRCRAFT MODIFICATIONS

5.13 The examination of the MRR and PR options led to the identification of several ways of improving the aircraft's capabilities, and various modifications were approved by MOD on 14 April. They included: TF 14 12 Apr

a. The fitting of the Twin Carousel INS into 4 aircraft by 18 April, the first installation to be flight tested on 14 April.

b. Fitting 4 Victors with the F95 camera mountings.

c. Fitting a different wave form generator to 10 Victors to provide an additional long-range scale on the NBS radar for MRR.

d. The fitting of ARI 18228 RWR, displaying radar signals in the range 2.5 to 18 GHz into 10 Victors, 4 of which had been ready by 14 April.

CONCEPT OF THE VICTOR MRR/PR

5.14 In a brief prepared for CAS on 12 April, the assessment was that in the absence of satellite information about Argentine force dispositions and access to South American airfields, the only aircraft which could carry out a round trip of 6800 nms from Ascension Island and undertake an MRR/PR sortie involving AAR by day was the Victor. The concept of operations assumed that the minimum number of Victors would be used and that all aircraft would remain outside Argentine air defence range. All supporting Victors would retain sufficient fuel to land back at Ascension and the primary aircraft would, in the event of an RV or refuelling failure, land at a Brazilian airfield, probably Rio. It also assumed that the primary Victor would be fitted with Omega and that the tanker responsible for the AAR recovery RV with the primary aircraft would receive navigational assistance from a Nimrod. TF 14 12 Apr

5.15 Two PR route options were examined, both requiring 5 Victors with a further 3 aircraft as ground reserves. The first would provide PR of the area around Port Stanley Airfield. The aircraft would have to approach the airfield from 50 nms at low level, pull up to 3-4000 ft for photography and descend again until 25 nms from the target. The second involved PR of Grytvyken, South Georgia, but this was overtaken by an urgent naval requirement for MRR of South Georgia on 2 successive days CTF 317 121830Z Apr

from 19 April. This support for Operation PARAQUET (3) led to the shelving of the PR options.

DEPLOYMENT PREPARATIONS

5.16 Activities at RAF Marham were now intensive. While some crews were completing their MRR and PR training others were operating to provide AAR training for Harrier GR3, SHAR and Vulcan pilots. The night conversion programme also continued and 4 new crews were undergoing ground school under the few remaining tanker OCU staff. The latter were particularly pressed to meet their commitments for they were also providing ground instruction to Nimrod crews, following a feasibility study of Nimrod Mk 2 AAR modifications for which airborne training would start on 1 May.

DD Ops(M)/22/15
14 Apr
TF 14.1 E63

5.17 The tanker deployment warning order arrived on 15 April. Nine Victors with a ground support party and equipment were to fly to Ascension Island on 18 April for subsequent MRR and PR operations. Transport support by 15 to 20 Hercules would be provided to uplift the logistic support. On arrival at Ascension, operational control would pass to AOC No 18 Gp (the Air Commander for CTF317). The detachment commander was to be Wg Cdr D W Maurice-Jones, OC Ops Wg at RAF Marham. Coincidently, in order to offer fuel planning advice in response to the many options being explored by MOD, the tanker planning cell at HQ 1 Gp was reinforced by 2 Marham officers and 2 others joined the CTF 317 staff at Northwood

5.18 A brief for CAS on 16 April confirmed that 18 Victors were at 12 hours readiness to deploy and a total of 20 would be available by 30 April. Five aircraft had been equipped with Carousel and one with Omega - if the ensuing flight test of the trial installation were successful a further 4 sets were ready to be installed. Wiring for the F95 camera had been installed in 7 aircraft and 4 aircraft out of the 5 to be fitted with the camera had been completed. The NBS modifications had been achieved as had 4 of the 10 RWR modifications. The training programme was also proceeding apace. Six AARIs and 10 captains had completed night AAR training and that of a further 6 was underway. Additionally, the crews had been given a series of ground lectures by experts from other stations - Wyton personnel covering PR and Carousel operations; Scampton MRR; Brize Norton, Omega techniques and the JSIW Ashford, resistance to interrogation. Finally, the station EWO at Marham instructed on RWR operation.

5.19 On 16 April, MOD requested Portugal to allow 9 tankers to refuel at Lajes (Azores) on 18 April en route to Ascension but, anticipating difficulty, HQ 1 Gp planners hurriedly produced a revised itinerary to move 9 Victors over 18/19 April using AAR from other Victors off Cornwall. The tankers would return to Marham and the receivers proceed direct to Ascension. Under this plan, only 5 Victors would be able to deploy on 18 April and the other 4 would follow next day.

HQ 1 Gp
171909Z Apr
1G/SASO/7 E11

(3) The Oxford Guide to the English Language 1984 shows the correct spelling as PARAQUAT; however, the word is spelled PARAQUET in the official papers held by AHB(RAF)

5.20 A final brief was given to the RAF Marham crews on 17 April in the presence of AOC 1 Gp, AVM MWP Knight. They were told that the likely task had changed from PR to MRR, since the naval force (CTF 317.9) heading for South Georgia hoped to maintain surprise for as long as possible and did not want a PR sortie. However, the force would need MRR of the South Georgia area to build up the surface picture.

Recollections of Sqn Ldr M E Beer, AEO in Sqn Ldr R Tuxford's Victor crew and drafter of this Chapter

ARRIVAL AT ASCENSION ISLAND

5.21 Little was known about the facilities available at Ascension Island. There had been no opportunity for an on-site review and only data contained in the Flight Information Publications (FLIPs) and Terminal Approach Charts (TAPs) were available for study. The advance party arrived at 0530Z on 18 April - they had not been expected until the following day - and found that the tentage arranged by Marham had been helo/lifted out to a ship. Moreover, no detachment site had been allocated. Improvisation was clearly called for and the Det Cdr selected the site for his control centres adjacent to the aircraft ramp. His ground party "found" a mobile hospital tent complex and began to erect it on the site!

Victor Detachment Report 1 Jul held by AHB(RAF)

5.22 Five Victors arrived late that afternoon and caused an immediate problem by dropping their tail parachutes on the runway. The airfield had no parallel taxiway and so aircraft had to back track along the runway. The USAF Base Commander and PAN AM, who ran the airfield services, therefore laid down regulations whereby aircraft were to jettision chutes whilst canted off the runway. One hundred and twenty ground support personnel, equipment and a spare tanker crew arrived during the day and, by cease-work, the Operations (Ops) complex was being prepared and 5 aircraft were in-situ with 6 crews. TCW (Tactical Communication Wing) also began to set up their HF radio facility next to the Ops tent.

5.23 Aircrew were accommodated in USAF Barrack Block 13 with 2 to each room, while the groundcrew occupied tents in Two Boats village 3 miles from the airhead. Those at the main base fed at the commissary which had a high standard of catering and a field kitchen set up in the community centre fed those at Two Boats.

5.24 At this stage the detachment were not aware when they would be required to begin air operations. Because of the need for extreme secrecy, they were not told that MOD had decided on 18 April that MRR sorties would be launched on 20 April - less than 2 days after the detachment had arrived at Wideawake. Lacking this key information, the ground and aircrews set to work to erect the tentage for the control centre whilst they awaited 4 other Victors en route from Marham.

5.25 During the early afternoon of 19 April, the detachment received signalled orders to launch a large operation late the same night. The impact was stunning; domestic construction stopped and the ground crew at once set to work preparing the aircraft. The planners began to apply their limited knowledge of actual winds in the South Atlantic and the aircrew went to bed to try and recoup some of the energy consumed by more than half a day's hard physical work under an unaccustomed hot sun.

Sqn Ldr Beer, Op Cit

SORTIE PLANNING

5.26 The planners - known colloquially as "number crunchers" - had to refine the Air to Air Refuelling Combined Tasking Message (AARCTM) received by signal from CTF 317. They took into account the meagre information available on the spot and produced a more refined and accurate version than was possible in the UK. This was to be the first of many gruelling planning sessions for AAR purposes, which over the next few weeks underpinned the successful airborne transfer of over 12.2 million pounds of fuel.

5.27 Painstaking and thorough planning on the ground proved to be the key to the success of the AAR throughout the operation and the Ops Room Staffs quickly developed and refined detailed procedures for this work. During the planning stage of each operation, the AAR planners (Flt Lts C F Haigh and B J Ireland) determined the number of tankers needed to complete the task with the calculated flight profiles. The details were then passed to the Flight Planning Co-Ordinator (Flt Lt D S Davenhall) who compiled navigation flight plans and worked out the details of the timing, based on the forecast provided by the Mobile Met Unit (MMU) detachment at Ascension. Every flight plan was then duplicated so that each crew, including ground reserves, carried the same package. An identical package was given to the receiver crews. Having determined the flight profile of each tanker, the AAR planners worked out the precise fuel availability figures based on the flight plans for each day's operations. Next, using fuel required figures, provided by the receiver crews, they drew up a refuelling plan which detailed the amounts of fuel to be transferred at each refuelling bracket. Two copies of this refuelling plan were then attached to each flight plan package. With 16 crews needed in some operations all this involved a great deal of detailed but essential work. In addition to the flight plans and refuelling plans, the briefing package contained the Met forecast. From the start of Operation CORPORATE, it became obvious that the MMU had little accurate information on which to base weather forecasts. Forecasts were being produced which were based on a computer model of the atmospheric circulation in the South Atlantic, rather than on observation. This had occurred partly because Argentina had suspended the transmission of Met data for her area of responsibility. To help to overcome these difficulties a local Met debrief form was produced to allow actual observations of wind, temperature and cloud to be recorded by the crews during their sorties. This information was then used to refine the forecast for the next operation.

Discussions between AHB 1(RAF) and Sqn Ldr D S Davenhall Apr 87

VICTOR MRR TO SOUTH GEORGIA

5.28 The first Victor task was to carry out MRR of the area around South Georgia with the aim of determining by radar whether shipping was in the vicinity of the Island, and also to check if significant numbers of icebergs were in the area. Visual identification from the height being flown was not, of course, possible. The purpose of these missions would be to support Operation PARAQUET - the re-possession of South Georgia - which was to involve a small task force led by HMS ANTRIM, landing a force of Royal Marines and Special Forces on the Island.

5.29 MOD UK Air had developed 3 options for a probe Victor to conduct MRR or PR in the area of South Georgia, or possibly near the Falklands themselves. The Victor MRR probe would require the support of 7 Victor tankers; 3 outbound and 4 for their recovery, using an RV 450 nms east of the Brazilian coastline. Following discussions between CAS and the Secretary of State, it was emphasised that the MRR sortie was only to be mounted if CTF 317 himself had come to the conclusion that there was no other way of obtaining the intelligence essential for the success of the operation. In the event, the PR option was not pursued and the task ordered was solely to be a radar sweep by a probe Victor. Any important operational information discovered was to be passed over UHF radio to the Naval Task Group, but otherwise any intelligence gathered would be disseminated from Ascension after the sortie was over. A specialist with MRR experience on the Vulcan was to be carried in the 6th seat of the Victor and would operate the radar on task.

TF 14.1
15 Apr E74

CAS 7/4/1.2
7 Apr

5.30 The 4 Victors, mentioned earlier as being en route from Marham, landed around 1600Z after 9 hour flights on 19 April. The South Georgia profile required 8 crews, and the latest arrivals would not be fit to fly again on an MRR sortie which was due to take off at 0145Z the next morning (20 April). The mission would therefore have to be supported by the 6 crews who had arrived on 18 April. However, the newly arrived crews had to play their part too; whilst those detailed for the MRR sortie tried to sleep, the remainder carefully flight checked the aircraft avionic systems. When this had been completed, the ground crew pumped 109,000 lbs of fuel into each aircraft.

Diary of Sqn Ldr Ops at Ascension
HQ 1 Gp
182333Z Apr
1G/SASO/2/3.1
E1

5.31 As always, there had been a tension between telling everybody well in advance what was intended and the need to avoid any possibility of premature disclosure. But, by now no one was in any doubt that a long night of hard work lay ahead of them; pitching tents and sorting out the domestic site which was what they had been engaged in for some hours was hardly the best preparation for flying what was to become the longest reconnaissance sortie in the history of the RAF.

BRIEFING AND LAUNCH

5.32 The usual Ascension wind made the tent flap loudly as the 6 crews began briefing at 2330Z. Everything inside looked stark by the light of several 100W bulbs dangling forlornly from black cables. A generator whined outside, providing power and light to the Operations Room. A UHF radio had also been installed to allow the launch to be controlled from the Ops Room and to make it possible for the reserve aircraft to be quickly called up in the event of unserviceabilities. For the outgoing wave, 4 crews were to fly, covered by another 2 crews manning reserve aircraft on the ground. Each crew was allocated its own callsign based on the Black Bull design from Marham's badge. This was intended to ease the identification problem if aircraft had to be switched from one profile to another during the critical launch stages.

Sqn Ldr Beer
Op Cit

5.33 The plan for start-up and launch had been carefully discussed beforehand by the crews. The lead aircraft in the

Sqn Ldr Beer
Op Cit

formation would call for engine start-up, taxy and take off clearances using a disguised transport aircraft callsign. This would be the only aircraft to transmit on the air traffic control frequency. This subterfuge was considered necessary in case an intelligence gathering platform was in the vicinity of the Island. This might have detected a multi-aircraft launch, whose destination could only be the far South Atlantic. Other aircraft in the wave were to start engines simultaneously with the lead aircraft and to taxy out strictly in turn. The stream take-off was planned to be at 40 second intervals as only the first aircraft could line up on the runway and roll immediately. Thereafter, the remainder of the wave would enter in turn from the small taxiway connecting the ramp to Runway 14.

5.34 All 6 Victors started up on time, but just as Wg Cdr C C B Seymour began to taxy out as the first aircraft in the stream his aircraft hydraulics failed. Fortunately, enough room remained for other aircraft to squeeze past him and the other 9 Victors already parked on the ramp. Seymour was soon replaced by Flt Lt A M Skelton in the reserve aircraft. Sqn Ldr R Tuxford had been selected to fly the probe aircraft which was fitted with Carousel INS which required 30 minutes to run up, in order to reduce any inaccuracies. This part of the procedure had been completed successfully, but when he taxied out his Carousel failed, and this completely halted the first wave. Tuxford's navigator tried repeatedly to realign the INS, but without success and since the only other aircraft fitted with Carousel was Sqn Ldr J G Elliott's, he was now instructed to assume the task of probe crew. Whilst these changes were being made, the 4 aircraft in the first wave and the remaining reserve continued to burn up precious fuel. After 15 minutes the formation was reallocated; Elliott was ordered to be the probe aircraft and Tuxford without his Carousel INS was to fly a short tanker sortie. The original plan had envisaged Tankers 1 and 3 refuelling Tanker 2 and the probe aircraft, 850 nms down track from Ascension. At that point, the probe and Tanker 2 would continue filled with fuel and Tankers 1 and 3 would return to Ascension with sufficient fuel remaining to hold for one hour, in case bad weather developed. A further 1,000 nms downtrack Tanker 2 would refuel the probe aircraft and then return to Ascension. Because of the fuel consumed by the wave before the first 4 aircraft launched, Sqn Ldr M D Todd followed in a reserve aircraft to deal with any fuel shortages which might develop. Shortly after reaching the top of climb, he refuelled tankers 1 and 3, thus replacing the fuel which had been burnt while the problems on the ground had been sorted out. At 0253Z, the Tanker Force was on its way - albeit to a plan unforeseen by the planners!

EXECUTION

5.35 During the second refuelling bracket, clear air turbulence (CAT) appeared and this was to become a regular feature of the later downtrack refuelling; the further south refuelling occurred, the greater was the turbulence encountered. It was turbulence which made the fuel transfers very difficult and sometimes meant that track and height changes had to be made, which in turn consumed more fuel. As the sortie progressed, the navigators logged wind, temperature and cloud cover, to assist the Ascension Met forecasters and the AAR planners.

5.36 Whilst the probe aircraft flew South the tanker recovery wave took off at 0943Z. Only 2 aircraft were needed, one to refuel the other, which would be at the RV position to meet the returning probe aircraft. However, since there were enough crews and aircraft, 2 were in fact made available at the tanker RV position. Hence, if one HDU became unserviceable and prevented the aircraft from passing fuel, the probe aircraft could then be refuelled from the spare Victor, whereas with only one tanker at the RV, any technical problems would have meant that the probe Victor would have been forced to divert to Brazil. Throughout the operation, fuel reserves were planned to allow aircraft to recover to Ascension, or to divert to Brazil, if the need arose.

5.37 During the sortie, the Victor formation used the RV Bravo procedure, whereby the tanker controlled the direction and speed of both tanker and receiver, using UHF/DF and Air to Air Tacan. At a range of about 20 nms, the tanker commenced turning in order to be 2 nms in front of the receiver aircraft on roll out. Throughout the sequence, a Nimrod accompanied the Victors and assisted the join-up procedures (4). An RV position was selected which not only allowed the Victor to divert to Brazil if fuel transfer failed, but also permitted the Nimrod to cover the recovery RV for a 30 minute period before reaching a fuel state which would dictate its own return to Ascension.

5.38 Although, fortunately, not required by the Victor crews during CORPORATE, a suitable procedure and cover story had been devised for the crews to use if diversion became necessary. The aircraft door would be blown open at low level over the sea and all equipment and classified material relating to the sortie would be jettisoned. On landing the Brazilian authorities were to be told that the aircraft was on a training sortie from Ascension and that the door had inadvertently opened in flight, causing an emergency diversion. Later, this plan was expanded to include a code word for use if a refuelling RV failed, so that the British Embassy in Brasilia could be warned that a diversion was imminent.

HQSTC
191720Z Apr
1G/SASO/7.2 E22

RESULTS

5.39 The first MRR sortie was completed and the probe aircraft landed at 1735Z on 20 April, after a flight of 14 hours 42 mins. Post-flight analysis showed that RV timing and the fuel plan had worked very well. No militarily significant maritime contacts had been detected, but a fishing fleet and 2 fish factory ships were visually observed during the flight and the RN Task Group en route to South Georgia was also seen. A thorough radar check for icebergs had also been made, since it was feared that ice might interfere with the Task Group operations in the vicinity of South Georgia.

5.40 Although the operational intelligence which had been obtained was almost wholly negative, to be aware that no Argentine warships were lying in wait near South Georgia for the small RN Task Group was, in itself, both reassuring and vital to the success of the preparations for re-taking the Island. Once again,

(4) The development of these procedures is described in Chap 4.

it was proven that negative intelligence is just as useful, in some respects more so, than positive information.

5.41 The Air Commander was lavish in his praise of the results; he pointed out that the mission must have been one of the longest AAR flights on record. Later the sortie was claimed as the longest reconnaissance sortie ever flown by the RAF. Certainly the crew were the first British force to over-fly occupied British territory since it had been invaded by the Argentines.

02020Z Apr
8GP/335/4/21/1.1
E1

SORTIE LESSONS

5.42 Whilst the crews rested after the inevitable photographs and press interviews, the longer term implications were not lost on the staffs. Clearly, AAR would continue to be the core feature in the success of future land-based air operations during CORPORATE; accurate Met information would be essential, both for fuel and navigation planning, and the need to avoid CAT where possible during fuel transfer was already apparent. Although in mid-April 1982 the Victor was the only aircraft capable of reaching South Georgia and the Falklands themselves, its obsolescent avionics precluded very accurate navigation and when radar responses were obtained they could not be classified, identified, or properly evaluated. Even tentative identification required a chance gap in the clouds, since a descent for a visual check was clearly out of the question. The provision of reliable air reconnaissance seemed, therefore, likely to be an insoluble problem during CORPORATE, one which future events were to confirm fully.

KEY PERSONNEL CHANGED

5.43 At this point the emphasis on AAR operations had led the Air Commander to send Gp Capt J S B Price, Marham's Station Commander, out as SRAFO Ascension (vice Gp Capt M F J Tinley). Wg Cdr D W Maurice-Jones returned to command Marham, which was by now extremely busy training Harrier, Vulcan and Victor pilots in flight refuelling. Wg Cdr A M Bowman, OC 57 Sqn, was appointed as Victor Detachment Commander at Ascension.

THE SECOND MRR SORTIE - 22 APRIL

5.44 The second Victor MRR probe task was received on 21 April. HQ 1 Gp had sent a route brief and fuel plan to Ascension, indicating that the task should be carried out on the same lines as the previous one which comprised a probe aircraft supported by 7 Victors in 2 waves - and CF 317 issued the tasking message, which set out the route to be flown to the west of the 2 Task Groups en route to South Georgia. The aim was to detect any Argentine Naval Forces which might be approaching from the mainland to threaten the Task Groups. MRR was to be conducted at night and the recovery RV was to be in the same position as before, with a Nimrod providing airborne RV assistance.

HQ 1 Gp
211445Z Apr
1G/SASO/7/3.1 E2

5.45 The mission launched at 2153Z and the 4 Victors took off on time, each carrying 115,000 lbs of fuel. The Task Groups had already been sent the Victor's IFF coding, and expected time overhead, in order to allow safe penetration of their missile engagement zones. The probe crew was briefed to report on UHF

details of any contacts which were observed to be approaching the Task Groups. All other contacts were to be recorded by the crew for dissemination after landing. In the event, information on one contact was passed immediately to the Task Groups and 2 further contacts were recorded and reported on return to Ascension. Fortunately for all concerned the number of surface contacts in these remote parts of the South Atlantic was remarkably few. The probe aircraft landed on 23 April at 1200Z after a flight of 14 hours 6 mins, having satisfactorily determined that no Argentine naval vessels were approaching the Task Groups.

CBFSU 231510Z
18Gp/335/4/25/1/Ops
E25

5.46 Again the AAR plan had worked well, but one of the Victors (XM715) which had an history of elevator flutter had encountered problems when receiving fuel. It was decided to change this aircraft with one flown out from Marham, and Flt Lt A D Richardson arrived on 23 April in XH672.

TASKING PROBLEMS

5.47 CTF317 had set out a requirement to survey the threat area twice daily, if possible, but unfortunately with the tankers available, the task was beyond the detachment's capability. Moreover, the main Task Force would soon be too far away from Ascension to permit Nimrod support - the Nimrod had no AAR capability at this stage. Therefore, it seemed prudent to mount no more than one reconnaissance mission every 36 hours in order to conserve the limited effort available. Since aircraft parking space at Ascension was now coming to be the limiting factor (5), it was out of the question to send the extra 3 Victors from the UK which would have been needed if a MRR sortie was to be mounted every 24 hours, rather than every 36.

CBFSU 240930Z
18G/355/4/25/1/Ops
E29

MRR SORTIE - 24 APRIL

5.48 Orders for the next MRR sortie arrived on 24 April. The area had been shifted slightly and the search required was between the Task Group, and the Falklands. This was subsequently refined to meet a request from the Task Group for a radar sweep 400 nms astern, 600 nms ahead and 400 nms to the port and starboard of HMS ANTRIM, with all contacts within 200 nms of the Group being reported in flight by a flash message. Much of the planning for this sortie had already been completed by the Operations Staff who had refined the fuel plan by varying the fuel transfers to ensure that all aircraft could recover to Ascension, or divert to Brazil safely, at any time during the mission. All this careful preparation significantly reduced the amount of time required by the crews for pre-flight preparation and helped to conserve their energy for the long flights ahead. It was a procedure which was quickly standardised throughout Operation CORPORATE.

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(5) Aircraft parking problems at Ascension are discussed in detail in Chap 2.

5.49 Humour was not entirely absent from the very serious operational business in hand, for when the USAF bus arrived, carrying the crews for briefing, it was noticed that it rather flippantly and indeed incorrectly showed its passengers' destination as Stanley! Flight preparations went ahead quickly and both waves of tankers launched without mishap at 2157Z; 2 Victors were held as ground reserve, but were not needed. The whole sortie went according to plan, and the probe aircraft returned on 25 April after a 14 hour 5 mins sortie. A number of contacts had been detected, but none was asessed as being of military significance. No ESM interceptions were received, but UHF radio traffic was overheard which indicated that an ASW action was taking place near South Georgia. This turned out to be the attack on the Argentine submarine SANTA FE by RN Wessex, Wasp and Lynx helicopters.

FURTHER MRR SORTIES

5.50 Following the successful sortie on 25 April, the Air Commander reaffirmed the need for MRR cover, since it was vital that British surface forces were not surprised by the Argentines, and called for 4 more tankers to be sent to Ascension as soon as possible.

5.51 The next MRR probe sortie was planned for 26/27 April. This was to be a radar sweep in an area around HMS HERMES at 4430S 4130W; consequently, only 3 Victors were required on the outbound wave. The recovery wave still required 2 tankers, although 4 would fly to provide adequate reserves at the RV. During the day, 2 more Victors and crews arrived direct from Marham; the detachment had now risen to 12 crews and 11 aircraft. However, these latest additions had not been fitted with Carousel navigation equipment and this was a distinct drawback for these unmodified aircraft were of limited use as they could not carry out the full MRR task in place of the probe aircraft if the need arose.

HQ 1 GP
261200Z Apr
18G/335/4/25/1/Ops
E36

CBFSU
261330Z Apr
1G/SASO/7/1.3 E2

5.52 In the event, this difficulty resolved itself when the sortie was cancelled by a flash message over the DSSS, as the surface picture was now considered adequate without an update by the Victor probe. Since no further operational tasks were notified for the next 24 hours, it was decided to launch 4 Victors on a simulated MRR sortie which had the underlying purpose of practising the join-up procedures which would be required should a possible Vulcan operation materialise. This would involve no fewer than 4 separate formations and be of great complexity. The aircraft launched 5 minutes apart on the night of 28 April at 2035Z, in order to simulate the 4 separate formations. This was a useful shake-down exercise but as no Vulcan was available to fly, it was not fully representative of the real thing and failed to expose all the problems which arose later.

CTF 317
261736Z Apr
18G/335/4/25/1/Ops
E40 & 41

CBFSU 281520Z Apr
18G/335/4/25/1/Ops
E46

5.53 By 29 April, preparations for a Vulcan attack on Port Stanley Airfield (Operation BLACK BUCK) were beginning to reach fruition. However, before describing these sorties, it is necessary to review AAR developments in the UK concerning Nimrod, Harrier and Hercules aircraft.

UK AAR TRAINING FOR NIMROD CREWS

5.54 There was a great need for the improved sensors of the Nimrod Mk 2 to be used in surface and sub-surface surveillance in support of the Task Force. This could not be undertaken effectively beyond about 1200 nms from Ascension until the Nimrod was fitted for AAR. British Aerospace at Woodford quickly produced a modification to allow in-flight refuelling and there was therefore an urgent requirement to train crews in the techniques. No 232 OCU, Marham was tasked to provide the ground school and to assist in training during the 8 sorties needed to qualify pilots and air engineers in day and night AAR procedures. The first AAR sortie was planned for 1 May, but this target was easily beaten. Nimrods normally operated on their own and their pilots had to be trained in formation keeping; this was first undertaken on 26 April. A navigator from Marham began to give lectures to the Nimrod crews on AAR techniques at Kinloss on 27 and 28 April; on 28th, a Nimrod picked up 2 AARIs from Marham and conducted the first AAR sortie between a Nimrod and a Victor. A test pilot from AAE (Sqn Ldr A F Banfield), a former Victor QFI, conducted the clearance trial and assisted in pilot AAR instruction. One great advantage with the Nimrod was that it was able to carry several other pilots as passengers who could later take the controls and practise AAR techniques. Thus, a Victor filled with fuel was able to transit to a refuelling area where a succession of Nimrod pilots underwent training. Training of this kind continued by day and night and it was not unusual for up to 100 Victor - Nimrod AAR contacts to be completed in a single sortie.

DD Ops(M)(RAF) 12/15 14 Apr
CAS/7/4/1.2 16 Apr
18G/335/4/25/1 Ops E27

5.55 The HQ 1 Gp AAR planners and the Kinloss Operations staff estimated that an AAR-equipped Nimrod with Victor support could conduct a surface surveillance sortie from Ascension to an area about 3,000 nms away, and spend up to 5 hours on task. Two AAR modified Nimrods deployed from Kinloss to Ascension for this purpose on 7 May. After refuelling over the Bay of Biscay, the first Nimrod Mk 2P reached Ascension after a sortie of 10 hours 42 minutes. Unfortunately, one of the Victor's HDUs failed and the second Nimrod had to divert to Gibraltar, subsequently arriving at Ascension on 8 May. The first operational AAR sortie was flown from Ascension the next day (9 May).

CTF 317 Op Order 2/82 181900Z Apr
HQ1 Gp 070230Z May 1G/SASO/7/3 E35

AAR FOR HARRIER MOVEMENTS

5.56 Marham organised re-familiarisation AAR lectures for both RN and RAF Harrier pilots. Simultaneously, a plan to send reinforcement SHARS to the Task Force was being thoroughly examined. One proposal was to fly 8 SHARS direct from Yeovilton to Ascension, where they would be loaded on the ATLANTIC CONVEYOR for onward movement to the Task Force. Since the Marham Victors were needed for training sorties with Vulcan, Nimrod, and Harrier crews, this meant that the move of the SHARS could not take place simultaneously. It was therefore decided to move them over a 3 day period, using Banjul, in Gambia, as an overnight refuelling stop. Despite some difficulties with one of the moves on 2 May, the whole transfer was successfully completed by 3 May and all 8 SHARS were deployed at Ascension.

HQ1 Gp 281020Z Apr 1G/SASO/7/3 E19

5.57 RAF Harrier GR3s had been offered to CTF317 to support air operations from the Task Force. The initial plan required 8 Victors from Marham to deploy 12 GR3s from St Mawgan to Ascension, with an intermediate overnight stop at Dakar, in Senegal. However, the eventual task was increased to 17 aircraft - a mixture of the 8 SHARS and 9 GR3s. Again, because of the UK tanker commitments, the deployment had to be staggered and the GR3s could be moved only after the SHAR deployment had been completed. A complex AAR plan was devised to cover the deployment over the period 3-5 May. This, too, was successfully accomplished, although one of the GR3s had to divert to Porto Santo.

TF14.1 16 Apr E76

TF14.1 4 May

AAR FOR THE HERCULES

5.58 Modification of the Hercules C Mk 1 had been set in train to allow the aircraft to be used for AAR purposes. Although the freight capacity was decreased by bulk and weight of the extra fuel carried, the aircraft's range was very considerably extended and this allowed it to support the Task Force, both as it sailed south and after the landing had taken place. Once again, Marham was called in to arrange ground and air training. The ground lectures began at Lyneham on 27/28 April, and an AAR Hercules flew to Boscombe Down on 29 April for release-to-service trials. Each Hercules crew required 2 day and one night sorties, but as the Hercules, like the Nimrod, could carry many pilots on any one flight, the only limiting factor was Victor endurance and crew fatigue.

38 GP
291935Z Apr
1G/SASO/7/1.2 E107

5.59 One problem encountered during training was the mismatch in performance between the Victor and the Hercules. The faster 4 jet Victor could not easily be flown slow enough for the Hercules to maintain proper contact with its AAR probe when operating at its maximum cruising speed. Moreover, the problem grew worse as the Hercules took on more fuel and became heavier. Consequently, a technique called, appropriately, "tobogganing" was developed; this called for the 2 aircraft to make contact in a shallow descent at 210-230 kts and gave the Hercules enough extra speed to make and stay in contact. However, to allow for the unforeseen, refuelling was stopped when the aircraft reached 5,000 feet. As one Victor crew commented: "It was like any other refuelling sortie - only different" Another task which was to prove markedly different was BLACK BUCK 1, to which this Chapter now turns.

BLACK BUCK 1-30 APRIL - VICTOR PLANNING

5.60 The executive order to prepare a Vulcan attack against Port Stanley Airfield was received at Ascension on 29 April. As the Vulcan's bomb bay fuel tanks had been removed to accommodate extra bombs, at least 10 supporting tankers would be needed, together with a further 3 as ground reserves. This meant it would not be possible to mount concurrent MRR and bombing missions. Owing to the shortage of tankers, it was also decided that the 3 Victor AARIs, who had conducted the Vulcan AAR training in the UK whilst flying on board a Vulcan, were now sufficiently competent to fly with the regular crew during an

operational sortie. They were therefore allocated to each of 3 Vulcan crews with whom they would fly in the 6th seat. During each sortie, they would exchange seats with the Vulcan co-pilot before fuel transfer brackets began and help to fly the refuelling portion of the sortie. This would assist in reducing Vulcan crew fatigue and exploit the expertise of the AARIs. Since they were not, of course, trained in bombing techniques when this phase of the sortie started they would retire to the 6th seat until the return transit began.

5.61 Gp Capt Price and his Victor Planning Team at Ascension were concerned about the large number of aircraft which had to take off and formate at night at the beginning of the sortie. Experience with launching 5 aircraft on the first wave of the initial MRR sortie on 24 April could not be safely read across to a launch involving twice as many aircraft. With 8 Victors and a Vulcan, plus a Victor and Vulcan airborne reserve, the launch would be extended over a period of about 10 minutes. The resulting separation would be too long for the last aircraft to catch up the formation in time for the first refuelling bracket, about 720 nms down track. A different way had to be found and a concept was devised to launch the formation at normal intervals but to break the aircraft into 3 elements. Each would then fly to a RV and perform a racetrack at the top of climb. Each group would have a ETD at which it must leave the RV and fly down track. The tankers were ordered to form up in a holding pattern and to leave at a specified 2 minute interval, so that only 2 minutes would have to be made up in heading down track to the first refuelling. This procedure allowed for delays during take off which were a distinct possibility with so many aircraft.

Price Tape

5.62 Two Vulcans and another Victor arrived at Ascension on 29 April. The Island base was now very crowded with large 4 jet aircraft, which by 30 April included 14 Victors. The Victors had until now used a collective call sign on ground radio nets based on "Black Bull" - the design within RAF Marham's badge - but this raised the possibility of confusion with the term BLACK BUCK. "Black Bull" was changed into the not very subtle "Red Rag" and remained in use by the Victors throughout CORPORATE.

Sqn Ldr Beer
Op Cit

5.63 Fourteen Victors and 14 crews, each with at least 5 members, required a great deal of accommodation. The aircrew were allotted 4 to a room, but unfortunately there were only 2 beds in each one. Presumably, this problem was soon solved by reference to the Air Force List; those who were the most junior got springs and the base, whilst those with more seniority acquired the more comfortable mattress, and a suitable portion of floor space. It may be supposed that the Air Force List was devised to preclude disputes arising in circumstances of this nature!

5.64 Detailed planning for BLACK BUCK 1 now went ahead, using 2 Vulcans (one of which would be an airborne reserve) and 11 Victors outbound. For the recovery phase, Ascension would launch 2 Victors to be at the final RV position in order to refuel the single Vulcan returning from the raid. A Nimrod would also assist the RV, using techniques successfully tested during the earlier MRR sorties.

5.65 The Ascension AAR planners worked all day on 30 April and into the early evening to tailor the plan prepared in the UK and based on the statistical Met data covering the approximate period of the operation. The Vulcan crews at Ascension had fuel planning figures recently measured in flight which differed from those used in the basic plan supplied from the UK. Moreover, the tanker force was totally unfamiliar with operating large formations over such long distances. Any small discrepancies in time, distance, or fuel consumption rates would certainly be magnified in a multi-aircraft formation. The plan was therefore examined and adjusted many times before Gp Capt Price was satisfied with its feasibility. Even then he had reservations, since there was no spare fuel available in the airborne tankers to cater for any unforeseen problems. Furthermore, the initial wave of tankers conducting the first fuel transfers would be returning to Ascension with very low fuel states. In all the circumstances, it was not surprising that eye witnesses later reported observing a general mood of tension and concern when the message to execute the sortie arrived on the evening of 30 April, with a time on target of 0700Z on 1 May.

BLACK BUCK 1 - AAR ASPECTS

5.66 The AAR plan was based on launching 13 aircraft. Two of the Victors and one Vulcan would be airborne reserves and would leave the formation when the first refuelling was successfully underway. If not required, the 2 Victors would return immediately to Ascension, since the same crews and aircraft would be needed to mount the recovery wave a few hours later. Two more Victors and crews had arrived at Ascension early on 30 April, making a total of 15 crews and 14 aircraft to mount an operation requiring 15 sorties. However, only 13 of the crews were considered fit to fly, since those who had just arrived had already completed 9 hours flying that day, and had been awake for much longer.

5.67 All the aircraft started up on one radio clearance from Air Traffic Control so as to simulate a single transport aircraft about to depart from Ascension. The launch of 13 aircraft was completed in the remarkably short time of 15 minutes without the need to use the ground reserves. After take-off, all the Victors trailed their centreline refuelling hoses in order to check their serviceability. No problems ensued except that the primary Vulcan, captained by Sqn Ldr R J Reeve, became unserviceable owing to pressurisation problems and returned to Ascension at once. The remaining Vulcan, captained by Flt Lt W F M Withers took over the task. With him was Flt Lt R J Russell, his AARI, who was now entering the first hour of his 50th year, heading for a bombing raid on Port Stanley Airfield on his birthday!

5.68 The 3 Victor elements joined up in their respective holding racetracks, as had been rehearsed during the formation sortie flown on 28 April. Each element left the datum point on time, but Sqn Ldr F Milligan's aircraft developed an HDU fault. He turned back to Ascension, and one of the airborne reserves was allocated his refuelling task leaving only one airborne reserve Victor. Approaching the first refuelling position the lead aircraft's navigation lights were temporarily turned off;

this was the signal to begin a descent from FL390 to the refuelling altitude of FL290 where the aircraft were more responsive and stable. 800 miles south of Ascension, the aircraft separated into pairs, tanker and receiver relying on light signals to direct the receiver into position behind the tanker. Four Victors refuelled 4 other Victors, and the Vulcan was topped up by a separate tanker. All the receiver tankers were filled to their maximum fuel capacity of 123,000 lbs. In complete radio silence the donor Victors then broke formation and returned to Ascension.

5.69 When the returning tankers reached their descent points, each had an average of only 5,000 lbs of fuel remaining. This was very low, 10 or 12,000 lbs being the usual peacetime figures, and at the end, the formation had insufficient fuel to allow each aircraft to land and backtrack along the runway, whilst the remainder waited. As each tanker landed, it therefore rolled to the end of the runway, in order to allow other aircraft to land behind. The whole process occupied only 5 minutes in total; fortunately, there were no brake failures and a disastrous pile-up on the runway was thus avoided. Turn-round of the aircraft by the ground crew began at once, as the aircraft would soon be required to fly again.

5.70 The concerns expressed by Gp Capt Price earlier were now beginning to turn into reality. The first tanker wave had recovered, with each only having about 3,000 lbs of fuel remaining at touch down when the planned figure had been 12,000 lbs. Moreover the tanker which had refuelled the Vulcan at the first transfer had also given more fuel to keep the Vulcan at a maximum fuel capacity of 72,000 lbs. Thus, the attacking Vulcan was already taking on more fuel than planned and was therefore now known to be burning fuel faster than calculated. As the recovery wave was being prepared for launch, Gp Capt Price decided that all Victors and crews remaining at Ascension would be brought to readiness in order to provide a terminal airborne tanker in case any inbound aircraft ran critically short of fuel. The precaution was to be proved wise, since in the end 3 such sorties had to be launched

5.71 Down route, radio silence precluded any tanker receiving information on the increased rate of the Vulcan's fuel consumption. At fuel transfer 3, Sqn Ldr R Tuxford's tanker topped up the Vulcan and was then due to pass his remaining spare fuel to the primary tanker (Flt Lt S Biglands). The night was pitch black, with moderate CAT; after Biglands' Victor came into contact with Tuxford's tanker and fuel flow had begun, the formation entered a violent thunderstorm which had not been seen as the airborne radar was switched off. The refuelling sequence now took on a Wagnerian quality; the HDU hose whipped around and the aircraft pitched up and down as much as 30 feet, while throughout the scene was illuminated by vivid lightning flashes! By now Biglands was trying to both disconnect his probe and to avoid a disastrous ramming of the rear of Tuxford's aircraft; he succeeded in this endeavour but before he could disconnect, his refuelling probe snapped. When Biglands' crew had used their torches to confirm the damage they broke radio silence since immediate action was needed.

5.72 First, Tuxford had to recover his fuel from Biglands' aircraft and take all the spare fuel the latter still had available. Later on, it would be necessary for Tuxford to concern himself about the broken probe, for if it was stuck in his own drogue coupling, this blockage could not be removed in the air. Hence, it would not be possible for Tuxford to refuel the Vulcan again and the bombing sortie would fail. Meanwhile Biglands' problem was to calculate how much fuel he could pass to Tuxford. Now that Biglands knew he had a broken probe, and could not take on fuel from another tanker launched from Ascension, he would have to rely on his own fuel to get back to the Island. His crew's fuel calculations would need to be very accurate in order to ensure that Tuxford received the greatest quantity possible consistent with Biglands' safe recovery to Ascension, nearly 3,000 nms away. The weather had not improved as the Victors changed over their tasks; while Tuxford, by accurate flying, still managed to connect in very severe turbulence the oscillations proved to be so violent that he was forced to break contact. This occurred 4 or 5 times and only small amounts of fuel had been transferred as the formation continued further and further south. The planned termination of the refuelling bracket was now long past; for every minute Biglands went south after the planned end of the transfer, he had to add 2 minutes worth of extra fuel for his own aircraft since he would have to recover on a northerly track the same distance. Just as Tuxford was tiring the formation flew into clear air. The refuelling recommenced quickly, and when completed Biglands at last turned for home.

Sqn Ldr Beer Op Cit

5.73 The next step for Tuxford was to let the accompanying Vulcan inspect his drogue and refuelling coupling. When the aircraft were in the required position, Russell and Withers in the Vulcan looked through their windscreens and shone torches on the Victor. With some relief, they saw that no apparent damage or obstruction was evident. The broken probe from Biglands' Victor had fortunately dropped into the South Atlantic far below. The Vulcan pilots cautiously connected with the Victor, took on 5,000 lbs of fuel and finding all was well continued towards Port Stanley.

5.74 Tuxford, already under pressure, was soon to have further difficulties. Throughout the sortie, his Navigator Radar, Sqn Ldr E F Wallis, and his Co-Pilot, Flt Lt G D Rees, had worked in concert with the Navigator Plotter, Flt Lt J N Keable, to solve the fuel problems which constantly crowded in on them as the flight proceeded. In essence, this required them to recalculate continuously the amount of fuel required to recover to Ascension; the balance remaining was the amount they had available for transfer to the Vulcan. At last the final refuelling bracket with the Vulcan commenced, Tuxford knowing that the further south the formation flew during the transfer the more fuel he would require to get back to Ascension and the less he would have available for the Vulcan. The minimum fuel required by a tanker to return to base had acquired the unofficial title of "Chicken Fuel", and when his co-pilot called "approaching Chicken", Tuxford prepared to turn to port and climb to a higher level for the best fuel consumption during the return trip of over 3,000 nms.

Sqn Ldr Beer Op Cit

"Chicken" was called and Wallis, the Navigator Radar, switched on the Red Warning Signal for the Vulcan to disconnect - but nothing happened. The Vulcan crew were apparently reluctant to do so.

5.75 Radio silence was now broken in an attempt to resolve the situation. Withers in the Vulcan wanted more fuel, since he had not taken on sufficient to complete the attack on the airfield and to recover to the AAR RV on the return leg. But Tuxford realised that to continue passing fuel would hazard his own aircraft, and require an unplanned refuelling bracket from another Victor in order to recover to Ascension. After conferring with his crew, Tuxford decided to let the Vulcan crew continue refuelling. When a further 8,000 lbs of fuel had been transferred, Tuxford asked Withers to disconnect the Vulcan, since he could offer no further fuel when flying on a southerly heading away from Ascension. He now turned north indicating that if Withers followed suit some more fuel might be available, but the Vulcan disconnected and continued towards the Falklands. It was clear that the 23000 lbs of fuel transferred by Tuxford had still not filled the Vulcan to capacity; all the extra fuel which had been consumed by various aircraft during the sortie had gradually been subsumed into a cumulative deficit which had now appeared in the fuel tanks of both Tuxford's Victor and Withers' Vulcan. Tuxford was left with insufficient fuel to return to Ascension; an American would have said the 'bottom line' was a minus.

5.76 Sometime later Tuxford's crew monitored the HF channel and intercepted the code word indicating that the Vulcan had successfully attacked the airfield. There was no response from Ascension, so his AEO, Flt Lt M E Beer, acknowledged the message and at the same time was told that the Vulcan would be 30 minutes late at the RV. Moreover, he would require a further 10,000 lbs of fuel over and above the planned figure! The whole message from the Vulcan was repeated to Ascension and Tuxford's plight was also explained; he needed an additional, unplanned refuelling, or his aircraft would have to ditch. At Ascension, Wg Cdr C C B Seymour's crew was already at readiness; a new RV was immediately calculated in order to allow the 2 Victors to meet, refuel and recover safely to Ascension. As all this was in train, Tuxford's crew watched their fuel readings dwindle, while over the HF radio they heard another Victor depart from Ascension to assist Flt Lt A M Skelton's aircraft which had developed a fuel leak. This was largely a precautionary measure for in the event Skelton did not need any further fuel. But when Flt Lt A J Barrett was also launched on the morning of 1 May at 0730Z every tanker from Ascension was airborne; if further problems should arise, nothing else was available. It was an anxious time for those on the ground and in the air.

5.77 As Wg Cdr Seymour headed south, his crew spoke frequently to Tuxford's men, who by now were feeling slightly edgy as their fuel rapidly diminished. Fortunately, a perfect RV was completed between the 2 aircraft; fuel was transferred and the return to Ascension was uneventful. Tuxford landed at 1130Z after a flight of 14 hours 5 mins. A quick appraisal showed that if the final RV had failed, Tuxford's aircraft

would have run out of fuel 460 nms before reaching home.

5.78 The recovery phase for the Vulcan was now about to begin. After an anxious wait at the RV, the Vulcan arrived and Russell, the AARI, made his approach to the drogue for the 7th time that sortie! All went well, and after a successful transfer, both aircraft returned to Ascension, the Vulcan having completed a 16 hour sortie. After landing, the fuel problems which had been experienced using the sortie were explained to Flt Lt Withers, who at once decided to seek out Sqn Ldr Tuxford to thank him for his crew's efforts. When he eventually located them, he found that fatigue had already taken its toll they were all fast asleep! Thus ended Operation BLACK BUCK 1; 18 Victor sorties had been launched to support the single Vulcan and 5 Victor crews had flown twice. The Vulcan had reached its objective and successfully hit the runway, but the re-fuelling aspects of the sortie had revealed some disquieting features.

BLACK BUCK 1 - THE AFTERMATH

5.79 The inquest started at once; it was clear that the plan needed significant readjustment before any follow-up sorties were attempted. The fuel burnt in a multi-aircraft formation had proved to be a good deal higher than forecast as the Victors towards the rear of the formation had had to use large amounts of throttle to keep in step with the leading aircraft. Moreover, the holding racetrack procedure had consumed too much fuel and would have to be abandoned. It was decided that the formation would have to split and be assigned to different altitudes. An RV would then be made down track and the height and speed difference used to allow a join-up procedure by the end of the first refuelling bracket.

CBFSU
012315Z May
1G/SASO/1/3/E30

5.80 So far as fuel calculations were concerned, it was decided that the responsibility for AAR planning of all sorties from Ascension would be vested in the staff on the Island. Not surprisingly, the refuelling programme planned on a UK computer had shown a divergence from the Met conditions and wind speeds actually encountered during BLACK BUCK 1. All fuel plan changes made by the Ascension planners would then be transmitted to Northwood and to HQ 1 Gp at Bawtry, for cross checking and verification. Gp Capt Price signalled further explanatory remarks about the original fuel plan for BLACK BUCK 1, stressing that there had simply not been enough reserve fuel built into the plan. The problems had occurred even though Victor take-off fuel loads had been increased to 115,000 lbs, and intermediate fuel transfer for the Vulcan had been inserted. Notwithstanding the favourable winds encountered during BLACK BUCK 1, the Vulcan had still been left 12,000 lbs short of fuel; moreover a Victor had been put at severe risk. It was clear to everyone that it would be inadvisable to mount another BLACK BUCK operation until the weaknesses identified in the first sortie had been corrected and work to this end was set in hand immediately.

BLACK BUCK 2

5.81 On 2 May, Gp Capt Price informed CTF 317 that the sortie planned for 3/4 May would have to be altered in the light of the detailed analysis carried out of BLACK BUCK 1. As the planning proceeded, it became apparent that the forecast headwind component was likely to be in the order of 100 kts in the South Atlantic, well in excess of the 45 kts which was the statistical assumption used in the UK plan. More fuel had therefore to be made available in the air to meet any unforeseen problems which might occur, and accordingly a series of complex AAR plans were devised to cover a variety of refuelling contingencies. A Nimrod would also be sent to assist in arranging the RVs and it would be capable of remaining for 1½ hours in the area. All these measures built in a great deal more flexibility to deal with the unexpected.

022315Z May
18G/335/4/25/Ops
E119

5.82 It was calculated that the Vulcan would require 9 Victors on the outbound leg and a further 5 to support the recovery phase. To cater for any airborne unserviceabilities, 11 Victors and 2 Vulcans would be launched into 2 sections. The reserve Victor and Vulcan would break off and return after the first fuel transfer.

CTF 317
031126Z May
STC/2651/2/Ops E80

BLACK BUCK 2 - EXECUTION

5.83 When the briefing had been completed, Gp Capt Price stressed to all the crews that they must not rely on terminal airborne tankers in order to recover safely to Ascension, but were to divert to Brazil if they were short of fuel. The launch of the first wave of Victors and 2 Vulcans began at 2344Z on 3 May, with the second wave of 7 Victors following shortly afterwards. The lead section climbed to FL330 and the second to FL360. The join-up was not as quick as planned; the climb to height and the descent for refuelling and climb back up again into the formation used more fuel than anticipated. However, unlike BLACK BUCK 1, the second mission proceeded fairly smoothly from that point on. Five tanker crews for the recovery wave were launched at 0622Z, but one of them, Sqn Ldr A M Tomalin, found his HDU unserviceable during the climb and Sqn Ldr M D Todd had to be scrambled to replace him. Apart from this the refuelling calculations worked out very well, and the Vulcan plan, after all the refinement which had gone into it, was within 1,000 lbs of the theoretical calculation before take-off. Of course, all the flexibility built into the plan had increased the number of refuelling contacts. For example, Sqn Ldr Reeve's crew had to refuel no less than 8 times, which had increased the occasions when a probe might break with dire results for the mission. Nevertheless, the way the fuel plan had worked in practice caused considerable satisfaction and Gp Capt Price even used the word "masterpiece" in a fit of justifiable exuberance!

CBFSU
040842Z May
STC/2651/2/Ops E94

CBFSU
041808Z May
STC/2651/2/Ops E98

DOMESTIC AND OPERATIONAL ADJUSTMENTS

5.84 Following BLACK BUCK 2, air tests were the only sorties undertaken by the Victors, pending the Air Commander's decision on further operations. More accommodation had now become available on the airfield and in 2 bungalows, in nearby

Georgetown. Although the crews were now spread out over a 5 mile area, they were more comfortable and able to rest and recover from their recent arduous activities. Since they were not immediately needed, the Vulcans were sent back to Waddington from Ascension on 7 May, with the support of 6 Victors. Two flew 2 Ascension sorties; 2 went to Dakar and night stopped, followed by a support leg to Marham, and 2 took on fuel in a similar fashion to the Vulcan and flew direct to Marham. The end result was a decrease in the number of 4 jet aircraft at Ascension, which enabled the first AAR capable Nimrods to be deployed while 10 Victors and 11 crews remained at Ascension.

5.85 In the UK, the AAR Planners had moved to UK RAOC (High Wycombe) and closed down at HQ 1 Gp; responsibility for planning AAR sorties form Ascension devolved upon Flt Lts Haigh, Ireland and Davenhall who were based on the Island. UK RAOC was still required to produce refuelling plans for the Ascension staff to refine and modify.

CTF 317
031450Z
18G/335/4/25/1/Ops
E120

EXPANSION OF TANKER COMMITMENTS

5.86 The size of the Ascension Island tanker force now varied betwen 10 and 14 aircraft, which left 8 Victors at Marham to support UK training and deployment operations and allowed Nimrod, Hercules, Vulcan and Victor AAR training to continue at a reasonable level.

5.87 The MOD staffs were well aware of the pressure which the Victor force was now under and the way in which all operations were totally dependent upon AAR. In an effort to increase tanking resources, plans were therefore made for 6 Vulcans to be fitted with centreline HDUs. The first flight of one of the modified aircraft was planned to take place on 8 June but this target was easily beaten, and the first flight took place on 21/22 May. In addition, 4 Hercules were also to be fitted with AAR probes and an HDU.

5.88 But even with these planned improvements, with 75% of the Victor force detached to Ascension and Marham based aircraft heavily committed to training different crews in AAR techniques, it was becoming increasingly difficult to keep 2 Victors and crews on standby, to meet the essential commitment of providing AAR support for the QRA fighters held on immediate readiness to investigate aircraft intruding into the UK ADR (Operation TANSOR). As a consequence, the US authorities were asked if they were willing to provide USAF KC 135 tanker aircraft, based at Mildenhall, to support the British on TANSOR. The Americans proved most co-operative, and under a plan named JOINT VENTURE, they took on the task of providing AAR suport for the QRA fighters - thereby releasing 2 more Victors for CORPORATE tasks.

UK RAOC
151130Z May
TF60.1

AAR OPERATIONS WITH NIMRODS

5.89 UK RAOC issued the fuel plan for the first Nimrod Mk 2P surveillance sortie which was to take place on 9 May. The Nimrod was to be supported by 5 Victors and refuelled twice before going on task. The Nimrod would then not require any further AAR but would complete its task and return to Ascension. However, the refuelling plans produced at Ascension required

UK RAOC
071700Z May
18G/335/4/25/1/Ops
E67

only 3 Victors to fly, backed up by 2 ground reserves held at cockpit readiness. There was no need for an accompanied flight by the Victors which would use up 25% more fuel. Moreover, the superior avionic fit of the Nimrod allowed an overtake rendezvous to be used and thus both the Victors and the Nimrod could operate at their most efficient altitudes. For all these reasons, the Ascension plan was judged to be superior to that issued in the UK.

5.90 When the tasking message was issued from the UK, it did not specify the number of Victors to be used in support and Gp Capt Price therefore decided to implement his own 3 Victor plan. The Nimrod took off 30 mins before the Victor formation and flew to 1,600 nms down track. The first Victor took off, followed by the others at one-minute intervals. It fell to Sqn Ldr Tuxford's crew to become the first crew to in-flight refuel a Nimrod in the operational theatre on 9 May. Apart from CAT during the final refuelling, no problems were encountered and Tuxford landed after a sortie lasting 7 hours 47 mins.

CTF 317
081610Z May
18G/335/4/25/1/Ops
E69

5.91 On 10 May, a maritime surveillance was required further south than on the previous sortie. This time, 4 Victors were needed to support the task. Two Victors completely refuelled 2 others at a range of 850 nms south of Ascension. The 2 full Victors continued south and the first gave the Nimrod 42,000 lbs of fuel 1,720 nms down track; the second one joined later and passed 17,000 lbs of fuel to the Nimrod. The Nimrod then went on task and recovered without further AAR. The first Victor launched at 0833Z on 10 May, but soon reported an unserviceable HDU and the first manned reserve was therefore scrambled as a replacement; otherwise the sortie went as planned. Concurrently with these Nimrod AAR support sorties, the Victors undertook a new task: Harrier CAP.

CTF 317
091700Z May
18G/335/4/25/1/Ops
E75

AAR FOR HARRIER CAPs

5.92 The HMS FEARLESS group with the SS CANBERRA and the ATLANTIC CONVEYOR were now en route for the Falklands. However, an Argentine Boeing 707 had been conducting surface surveillance of the Force, and if a SHAR fitted with Sidewinders could be launched from the helicopter pad on the ATLANTIC CONVEYOR, it would be possible to intercept the shadowing aircraft. However, since the sea state might prevent a landing back on the ship, AAR would be needed so that the SHAR could be given enough fuel to divert safely to Ascension. Alternatively, a Victor could give enough fuel to prolong the SHAR CAP until a landing was possible back on to the ship. This plan initially received the unofficial title of "Hack the Shad" which later became Operation GRAMMERIAN. Two Victors took part; one refuelled the other, and the full Victor proceeded to join the Naval Group ready to provide support to the SHAR. The latter was not, however, required because the Argentine 707 did not appear. The operation was repeated on 11, 12 and 13 May, but once again the Argentine shadower failed to materialise.

18G/335/4/25/2/Ops
E30

CTF 317
Op Order 5/82

FURTHER AAR PREPARATIONS

5.93 Early in May, the UK staffs had reviewed tanker rates of effort, in order to determine the correct balance between BLACK BUCK, Nimrod surveillance and Hercules long range air-drop sorties. As a consequence, a further 2 Victors were sent from Marham on 13/14 May. They were planned to accompany 2 Vulcans coming from Waddington, with the whole movement being supported by 2 Victors which would recover to Marham after the first fuel transfer. Unfortunately, one Victor's HDU failed, so 3 Victors and one Vulcan had to return to base. The remaining Victor and Vulcan continued to Ascension, but the latter ran into trouble en route.

5.94 Flying along the African coast not far from Dakar,the Vulcan began to experience apparent fuel consumption problems. The aircraft had 21 x 1,000 lbs bombs on board and was fitted with Martel pylons and a jamming pod. The fuel consumption indicated that the Vulcan would not be able to reach Ascension without a further AAR bracket. Sqn Ldr R J Reeve, the Vulcan Captain, decided to jettison his bombs and called Ascension for more fuel. Sqn Ldr J G Elliott was already being held at readiness to support a Nimrod on maritime surveillance and quickly scrambled to meet the more urgent Vulcan task. Unfortunately, his HDU proved to be unserviceable shortly after take off and after jettisioning fuel, Elliott had to return to the Island almost at once. His crew immediately changed to another aircraft and were airborne within one hour of his first launch. After arriving at the RV, he passed 24,000 lbs fuel and then recovered to Ascension without further incident.

CBFSU 141837Z May
1G/SASO/7/4.2 E26

Diary of Sqn Ldr
Ops Ascension
14 May

AAR FOR LONGER RANGE NIMROD OPERATIONS

5.95 By 14 May, following more tanker reinforcements, there were 13 Victors and 14 crews at Ascension. The parking area was now very crowded; in addition to the Victors, there were 3 Nimrods, one Vulcan, 3 Harrier GR3s and a newly arrived AAR fitted Hercules CMk 1 LR 2P. However, the need for long range maritime Nimrod surveillance sorties was now becoming more acute and for these the extra Victors were essential. A new concept was therefore developed which involved 2 Victors launching, followed about 30 minutes later by a second wave of 4 Victors. The plan was that wave No 1 would provide a full tanker to overtake the Nimrod and transfer fuel about 1,200 nms from Ascension. Meanwhile, in the second wave 2 Victors would refuel the other 2 Victors and return to Ascension. The 2 full tankers would continue down track and one would then overtake the Nimrod to give it its second fuel transfer at RV 2 about 2,500 nms down route. The Nimrod would continue on task and recover to Ascension without refuelling again. To cater for unforeseen problems, a further Victor would be held at readiness on the Island.

5.96 The new procedures were tried out on 14 May when a Nimrod was tasked to provide maritime surveillance in an area at 48S41W. The first wave of Victors launched at 1646Z and the second wave at 1720Z. The last tanker in the second wave soon experienced a HDU failure and was replaced by a reserve aircraft. The new procedures for AAR worked extremely well and gave the Nimrod

CTF 317
132008Z May

additional range and more time on task. Overall, the sortie time was increased to allow the Nimrod to complete over 19 hours if required. This was sufficient for a Nimrod to patrol off the Argentine Coast and to sweep areas to the south and west of the Task Force. Sorties involving up to 11 Tankers were flown on these tasks on 15, 16, 17/18, 19, 20, 21, 22, 23 and 24 May.

18G/335/4/25/1/Ops
E107

5.97 During the inter-Victor fuel transfer en route on the final sortie, Flt Lt D A Foulger, who was receiving from Sqn Ldr A J Brooks, noticed a large fuel leak coming from the bomb bay area of Brooks' aircraft. As a consequence, Brooks was ordered to return to Ascension immediately, but before much progress could be made, Brooks' navigator Flt Lt J Foot reported that the electrical control of the HDU had failed. This meant that the drogue was stuck in an extended position. Brooks turned for Ascension and immediately began to transfer fuel out of his bomb bay tanks in order to limit his fuel loss, but before the leak was finally topped he had lost a large quantity of fuel. He therefore decided to ask Ascension to bring the Victor reserve on to a high state of readiness, but in due course he found he did not need further fuel and was able to land at Ascension with his hose extended. On touch down, the drogue struck the ground, sending sparks flying into the area of the deployed tail brake parachute. Since - unknown to the crew - this had already been soaked with fuel it now caught fire and was jettisoned immediately. Inspection of the aircraft after landing showed that the HDU area in the aft bomb bay was peppered with large holes, all of which indicated an explosion from inside the HDU. (6) Subsequent engineering investigation showed that the turbine of the HDU had disintegrated, cutting through an electrical loom and a box girder before finally departing through the fuselage! It was a shaken crew who realised what had happened and felt relieved that they had not known all that was going on during their long transit back to Ascension. To make matters worse, they found their efforts had been in vain since the Nimrod which they had been supporting had also gone unserviceable and returned early to Ascension. The final CORPORATE Nimrod AAR surveillance sortie was flown on 25/26 May, and once again the aircraft had to return early, so the Victor recovery wave was not required. Priorities were again changing and the Victors were now required once more to support BLACK BUCK operations.

Sqn Ldr Beer
Op Cit

VULCAN OPERATIONS RESUMED

5.98 After praising the tanker detachment by signal on 14 May, the Air Commander set out his new priorities for AAR. Parking space available at Ascension was strictly limited, and it was therefore necessary to decide which of the many competing operational tasks should be given the highest priority. Since the Port Stanley runway remained usable by the Argentines, it was decided that BLACK BUCK operations remained a firm requirement, as did Nimrod surface surveillance with the Task Force approaching the most dangerous area near the Falklands themselves.

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(6) Photographs of the damage are shown in the photo-section at the end of this chapter.

5.99 On 16 May, the Air Commander alerted Ascension to prepare for Operation BLACK BUCK 3, which was to be a conventional 21 x 1,000 lbs bombing attack on Port Stanley Airfield. The fuel planners at Ascension set to work to adapt the refuelling plan produced at UK RAOC, to take into account the latest Met forecast. Soon, however, they ran up against an insurmountable problem. The UK plan had been based on headwinds of 45 knots outbound and tailwinds of 30 knots inbound. However, the latest Met forecast available at Ascension meant that the refined plan had to be based on a 60 knot headwind. Despite many efforts to develop a modified solution which would ensure that the aircraft participating in the raid would be able to divert safely if anything untoward occurred, the planning task proved impossible. After much discussion involving both Northwood and the Victor and Vulcan crews awaiting briefing, BLACK BUCK 3 was therefore postponed, and the Air Commander ordered the sortie to be mounted again on the following day (17/18 May). However, since this clashed with a maritime surveillance sortie which had already been planned and was given higher priority, BLACK BUCK 3 had to be cancelled.

ADJUSTMENTS AND REAPPRAISALS

5.100 Throughout this period, the Air Commander wished to keep sufficient Victors, Vulcans, Nimrods and Hercules on Wideawake, to allow full flexibility in mounting operations. Gp Capt Price was asked to determine if there was sufficient room for 16 Victors, 4 Nimrods, 2 long-range Hercules and 2 Vulcans, while still allowing for air transport movements. Additionally, an amended fuel planning regime was ordered. In future, the planners at Ascension were to check the UK RAOC refuelling plan as it was received by signal and if necessary amend it to allow for local conditions and updated weather information. These amendments were then to be signalled back to the UK for cross-checking. Any changes in times, numbers of tankers, or routes were also to be signalled back to Northwood. To help with this work, an additional UK RAOC AAR planner (Flt Lt B E Hamblin) was sent out from the UK to help with the continuous heavy workload.

CTF 317
151500Z May
TF49.3 E37

CTF 317
181145Z May
1G/SASO/7.4 E12

5.101 The 2 Vulcans which had been on the Island were returned to Waddington on 20 and 23 May, each supported by 3 Ascension-based Victors which then returned to the Island after the fuel transfers were completed. By 18 May, the Victor detachment had reached 15 aircraft and 16 crews, and remained at this level until the arrival of the Harriers GR3s, when the tanker numbers reached a peak of 16 aircraft and 17 crews.

VICTOR SUPPORT OF HERCULES AIR DROPS

5.102 The Hercules aircraft which had been converted for AAR was ready for flight trials by AAEE at Boscombe Down on 6 May. Two test pilots based there, Sqn Ldrs A F Banfield and J A Brown, had both previously flown Victor tankers and their expertise was now used, not only to explore the characteristics of the converted Hercules, but also to train simultaneously the Hercules pilots in their new role. This short circuiting of normal peacetime procedures allowed the first long-range Hercules to arrive at Ascension on 15 May and to carry out the

first air drop on 16 May. This was only 10 days after the first flight trials had taken place in the UK.

5.103 The distance south of Ascension where the air drop was to take place was used to determine the number of tankers required for support. Various refuelling plans were developed to cover these air drop sorties, each involving 2 or 3 Victors, and when air drops on the Falklands themselves were required, up to 4 Victors were used, operating in 2 waves. This pattern was necessary as the Hercules had to be refuelled twice on its way south, and then to complete its task and recover to Ascension without taking on more fuel. A complex AAR plan was therefore designed to ensure these airdrop tasks could be met.

5.104 In order to ensure that sufficient Victors were available, 2 ground reserve aircraft were kept manned. This was necessary because on some occasions several operations were being mounted concurrently and tankers had to be available to switch tasks at short notice. For example, on 21/22 May, AAR support of a long-range Hercules air drop required 3 Victors. Additionally, terminal airborne tankers were allocated for each Hercules recovering after its mission, in case fuel reserves became unacceptably low, or bad weather was forecast for Ascension. Over 20 air drop sorties were supported in this way, before the cease fire occurred on 14 June.

5.105 The widespread speed difference between the Hercules and Vulcan has already been mentioned and required a new AAR procedure. This involved a refuelling from a Victor in a gentle 800 ft/minute descent at about 220k, down to an altitude not below 5,000 ft. While every effort was made to arrange the transfer of fuel to Hercules in clear weather, free of turbulence, time and time again CAT was encountered - the further south the refuellings took place, the more the turbulence seemed to appear. Often the refuelling formation carried out its task to the east or west of the planned track and sometimes below 5,000 ft, in order to finish refuelling in an area of better weather.

38G/191600Z May
18G/335/4/25/1/Ops
E29

HQ 1 Gp
191210Z May
1G/SASO/7.3 E14

5.106 A major problem with this low-speed refuelling configuration occurred because of the Victor's centre-line refuelling equipment. The hose drogue was termed a "high speed" version and its characteristics and size were such that it achieved the best stability when operated with high performance aircraft. At the lower speeds it sometimes wound-in of its own accord, especially if during contact the speed fell away. Much thought was given to fitting either an intermediate speed, or a low speed drogue, which was already being fitted to the Hercules tanker for Hercules-Hercules transfers. The disadvantage of this was that the hose was unsuitable for the higher performance aircraft, like the Nimrod, Vulcan and Harrier, and as it was undesirable to reconfigure the Victors for specific sorties, it was decided that the high speed drogue would not be changed. Unfortunately, the HDUs continued to give problems at low refuelling speeds and some sorties ended in failure when fuel transfer could not be fully completed. It was not uncommon for a Victor and Hercules to break contact during a descent owing to their equipment mismatch and the time taken to reconnect

sometimes ate into the available altitude, and led to the aircraft going below 5,000 ft.

PHANTOMS TO ASCENSION

5.107 Air defence of Ascension continued to be necessary against the possibility of an Argentine attack and it was decided to send Phantoms to strengthen the Island's air defences. The first 2 aircraft departed from the UK on 24 May, supported by Victors from Marham. The third aircraft deployed from Coningsby on 26 May, supported by 3 Victors; subsequently a further Victor launched from Ascension to RV with the Phantoms before recovering into Ascension.

UK RAOC
231531Z May
1G/SASO/7.3 E28

AAR PRIORITIES REVIEWED

5.108 On 27 May, the Air Commander reassessed his priorities, noting that 16 Victors based at Ascension would be capable of supporting one long-range 4 jet aircraft on task and one long-range Hercules task per day. Of course, this would depend upon aircraft serviceability and demanded long hours of work, both for the air and ground crew. As for the UK-based Tanker Force, he set out his priorities as:

a. Deploying 6 more Harrier GR3s to Ascension.

b. Deploying a Vulcan with Shrike ARMs to Ascension

c. Training Hercules crews in AAR, in order to increase air drop capacity.

VULCAN ARM SORTIES

5.109 The continued use of TPS 43 radars by the Argentines to improve their early warning and to control their own aircraft remained a matter of concern to CTF 317, and it was decided to attack the radars with Shrike ARMs. Accordingly, a Vulcan fitted with Shrike pylons arrived at Ascension on 28 May supported by Marham Victors. The Vulcan's fuel consumption during the transit from the UK had been closely monitored and remained as predicted. At Ascension, the Shrike missiles were fitted and the AAR plan finalised. Six Victors were to be used to support the Vulcan outbound. A follow-up wave of 6 more Victors would be used to refuel the Vulcan after the attack and the Victor from the first wave which had gone farthest south in order to give the Vulcan its final pre-attack fuel transfer.

5.110 The Vulcan already at Ascension was tasked to prepare for this attack, designated BLACK BUCK 4, and the 12 supporting Victors were each planned to carry 115000 lbs of fuel, with a Nimrod being used to control the recovery RV. The sortie was launched on 29 May, when the AAR went according to plan on the outbound leg until Transfer 4. At that point, with only 2 Victors accompanying the Vulcan, one Victor's HDU became unserviceable and the mission had therefore to be totally abandoned, much to the chagrin of Sqn Ldr C N McDougall, the Vulcan Captain. The operation was postponed for 24 hours and re-mounted on 30/31 May as Operation BLACK BUCK 5.

CTF317
280910Z May
TF49.4 E24

CBFSU
291415Z May
STC/2651/2/Ops
E37

Once again, the operation was supported by 12 Victors and a Nimrod; the Vulcan completed its task as planned, noting that the fuel arrangements had worked well. CAT was in evidence as usual, and at the last transfer, 8 approaches had to be made before contact was made; over 20 minutes of throttle manipulation was required, and this increased the Victors' fuel consumption. As a consequence, a further fuel allowance was built in for this purpose in future fuel plans.

CBFSU
312015Z May
TF49.4 E52

5.111 Soon afterwards the Air Commander alerted Ascension for Operation BLACK BUCK 6 which was to be launched on 3 June. The Vulcan, fitted with 4 Shrikes, was again to be supported by 12 Victors in 2 waves with a Nimrod to provide assistance at the RV. The launch was successful, refuelling went according to plan and after completing its attack, the Vulcan flew to the recovery RV. Eight approaches were made to the drogue by the Vulcan but it failed to make a satisfactory contact. Eventually a coupling was achieved, but unfortunately the probe broke-off the Vulcan at the weak link and as the aircraft did not have sufficient fuel to reach Ascension, it diverted to Rio de Janeiro.

CBFSU
031455Z Jun
TF49.4 E58

BLACK BUCK 7

5.112 A further Vulcan was now deployed from Waddington captained again by Flt Lt W F M Withers and with Flt Lt P A Standing as his AARI, and Ascension was instructed to begin planning for Operation BLACK BUCK 7 on 12 June, using a load of 21 x 1,000 lbs bombs; the target was to be Port Stanley Airfield itself and not the runway. The AAR plan required 15 Victors and one Nimrod in support and the profile chosen was similar to the earlier bombing sorties, except for the numbers of tankers involved. Since it could carry no fuel tanks in the bomb bay, the Vulcan had a higher weight than for the Shrike sorties so 10 tankers were required in the first wave. The primary Victor - which would give the final fuel transfer - and the Vulcan itself would require a second wave at the RVs in order to recover safely to Ascension. All told, this needed a further 5 tankers.

CTF317
110910Z Jun
TF49.5 E36

5.113 The fuel plan devised for Operation BLACK BUCK 7 was sound and went well, but the turbulence forced the formation to climb to FL350 for the final transfer, and after 8 attempts, the Vulcan pilots noticed that No 1 engine had flamed-out and run-down. The formation descended to FL310 where the Vulcan managed to achieve a partial relight, and after a further descent a full relight took place and refuelling began again at FL280. However, it took another 6 attempts to get in contact, with the result that 2 of the transfers became telescoped into one long session. To make matters worse, the RV Nimrod went unserviceable and had to return to Ascension, but the formations successfully carried out their RV, using UHF and Air to Air Tacan. The 2 Vulcans involved returned to the UK on 14 June, whilst the aircraft which had diverted to Rio returned to Ascension on 13 June. All 3 aircraft were supported by Ascension-based Victors.

CBFSU 121935Z Jun
TF49.5 E70

OPERATION BLACK BUCK - THE RECKONING

5.114 Thus it was that Operation BLACK BUCK 7 closed the sequence of these operations. Those responsible for the AAR planning had experienced many problems; Victor tanker operations to support the Vulcans had been expensive, taxing and at times hazardous. The Victor tankers had flown 85 sorties in support of 6 Vulcan operations (one had been cancelled) and all told the crews had flown 550 hours and transferred over 3,000,000 lbs of fuel between the various aircraft involved. Concurrently with the final BLACK BUCK sorties, the tanker force was engaged in other tasks and it is now necessary to review these operations.

RAF HARRIER DEPLOYMENTS TO HMS HERMES

5.115 CTF 317 had decided during late May to deploy Harrier GR3s to the Task Force as replacements for those lost in combat and to provide further close air support. The deployment was code-named Operation BOWSPRIT (Operation Order 4/82). Six Harriers were prepositioned at St Mawgan and they deployed in two waves of three aircraft on 29 and 30 May respectively, each wave being supported by 3 Victors launched from Marham. Two tankers completed the early refuellings and one Victor and the Harriers continued south. After a further 3 Harrier refuellings, the Victor proceeded to Dakar to refuel and return to Marham. Meanwhile, an Ascension-launched Victor completed a rendezvous with the inbound Harriers and accompanied them to Ascension.

302100Z May
TF51.4 E80

241935Z May
1G/SASO/7.4 E35

5.116 On 31 May, orders were issued to deploy 2 Harriers to HMS HERMES supported by 8 Victors, and a Nimrod and LR Hercules in the SAR role. The supply vessel RFA ENGADINE was in transit along the flight path of the formation and was warned to be ready for use as an emergency Harrier landing deck in the event of refuelling problems. Each Harrier was supported by 4 Victors and was refuelled 6 times en route to the carrier; a third Harrier accompanied the formation to the first refuelling to act an airborne spare. The success of the operation prompted CTF 317 to comment that it was a splendid achievement and reflected great credit on all concerned.

311625Z May
1G/SASO/7/3.2 E48

RAF Marham
CORPORATE Report

011924Z Jun
1G/SASO/7/3.2 E53

5.117 It was intended to deploy the second pair of Harriers to HMS HERMES on 2 June but poor weather in the Task Force area caused a postponement. A plan to launch on 6 June was also delayed by bad weather and it was not until 8 June that the weather was considered acceptable. By that time, RFA ENGADINE was too far south to support the same emergency diversion plan and in the event of a broken probe, or failure to take on fuel out of range of Ascension, a Victor would have accompanied the Harrier to a friendly ship so that the pilot could eject and be recovered.

071700Z June
1G/SASO/7/3.2 E74

5.118 These Harrier deployments to Ascension Island and thence to HMS HERMES were the longest Harrier sorties flown up to that time with each leg being in excess of 9 hours. The sorties clearly demonstrated the short timescale in which Harrier reinforcements could be delivered to the Task Force with the help of AAR.

ENGINEERING SUPPORT OF VICTOR OPERATIONS

5.119 None of the operations described so far could have been completed without proper engineering backup - often extemporised at short notice. The early recovery of Victors from servicing has already been mentioned and this had produced no fewer than 21 aircraft by the end of April. High tanker utilisation and the need to retain flexibility in the choice of operational support sorties to meet Task Force requirements meant that there was no time between aircraft sorties to carry out the full peacetime pattern of servicing. With up to 16 Victors on the ramp at Ascension and, some days, 13 of them being tasked, ground staffs were presented with major servicing problems and had to resort to economy servicing, achieving what they could when aircraft were available. Their prime task, however, was post-flight rectification of faults to make aircraft available for the next sortie.

061310Z April
1G/SASO/7 E3

HQSTC
061310Z Apr
1G/SASO/7 E3

5.120 During CORPORATE, Victor crews flew over 2500 hours in the course of several hundred sorties and some crews achieved up to 120 hours a month each, six times the peacetime rate; dozens of sorties exceeded 10 hours and the longest flight reached 14 hrs 40 mins. As already described, the Victor's fuel load on take-off at Ascension had to be increased so that long-range operations could be supported. The peacetime maximum of 109,000 lb was progressively increased to 115,000 lb of fuel and all airborne transfers filled the Victor to its capacity of 123,000 lb. Such high all-up weights, together with the high temperatures on take-off at Ascension, inevitably increased aircraft fatigue consumption (7).

RAF Marham
CORPORATE
Report, July

5.121 The most significant serviceability problem concerned the centre-line HDU, but even here, only 3 aircraft could not be rectified by the engineering detachment and had to be returned to UK. One of these was XL232, which had an explosion in the HDU. Fortunately, most failures were noticed immediately after take-off allowing a replacement Victor to be scrambled. Thereafter, only 3 AAR missions were aborted because of HDU failure down-route. At the most southerly point, the plan required all HDUs to be serviceable or the sortie had to be abandoned. When HDUs went unserviceable whilst there was still a selection of tankers available at Transfers 1 or 2, the formation leader could alter the plan and safeguard the mission - although individual tankers recovering to Ascension would have reduced fuel reserves. There is no doubt that the professionalism and ingenuity of the engineering staff contributed in a major way to the success of the missions achieved in the period 18 April to 18 June which are shown at Annex A.

APPRAISING VICTOR OPERATIONS

5.122 The ramp limitations at Ascension were particularly restrictive. Initially it was assessed that only 12 multi-engined aircraft could be accommodated but this was later increased to 24 in addition to the transport resupply aircraft. With some options requiring up to 16 Victors to be deployed, however, the Air

(7) This aspect is dealt with in more detail in Chap 9.

Commander's operational options were limited by the space available to house different aircraft types - there was no way that Victors, Nimrods, Hercules, VC10s, Vulcans and Phantoms could use the airfield simultaneously. Thus, many aircraft had to return to the the UK after their missions had been completed in order to permit another operational option to be mounted. Limited tanker numbers further restricted the Air Commander's choices for they could support either an offensive or a surveillance operation in a 24 hour period, but not both.

ACAS(Ops)/2/8/1/1058
30 Sep
VCAS/7/7.3 E12

5.123 Besides the problem of coping with the small parking ramp, ground staff found that special measures were necessary to protect Victor undercarriages, auxiliary power plants and vents from volcanic grit and dust. Shortage of accommodation was another problem which aggravated the effects of intensive operations carried out mainly at night; some crews began to show signs of fatigue as the combination of high workload, frequent night sorties, disturbed sleep patterns and noisy accommodation had their effect. As a short-term expedient, the Institute of Aviation Medicine, Farnborough, agreed to sleeping pills being issued to crews. Better accommodation was eventually provided and the problem was significantly eased with the development of "concertina city" in early June.

5.124 Though aircraft serviceability was satisfactory, the unreliability of the centre line refuelling hose equipment and the absence of suitable organic electronic warfare (EW) equipment were sources of concern for air and ground crews. Lack of confidence in the performance of the refuelling equipment, the HDU Mk 17, made it necessary to mount reserve Victor sorties; furthermore, aircraft and crews were held in in ground reserve in case of failure during the launch phase. On take-off, each aircraft trailed its HDU and in the event of failure, one of the reserves would be scrambled. Reserve aircraft flying accounted for 6% of the total Victor sorties.

ACAS(Ops)/2/9/1/1058
30 Sep
VCAS/7/7.3 E12

5.125 The provision of the ARI 18228, EW passive warning receiver, did not prove a success and despite continual efforts the equipment's shortcomings were never remedied. It suffered from internally produced component and electrical circuit interference and the noise saturated the receiver; consequently many crews preferred to fly with the older Blue Saga. A one-shot chaff capability was provided in the wing refuelling hoses and some 2 inch chaff cartridges were carried. However, there were no infra-red decoys, and the chaff available would not have masked the aircraft's radar cross-section. Thus, aircraft were unprotected and had to avoid entering enemy fighter or maritime missile engagement zones.

5.126 Long-range sorties which depended on recovery RV would not have been possible without Omega or Carousel navigation equipment. Experience showed that Omega had better long-term accuracy and was more conveniently fitted into the aircraft.

PLANNING AND MOUNTING REFUELLING OPERATIONS

5.127 The initial deployment and the BLACK BUCK 1 refuelling plan were produced on a strictly need-to-know basis at HQ 1 Gp, Bawtry, and contingency planning for proposed operations

continued to be carried out there until the team moved to UK RAOC to become the nucleus of a larger AAR planning team covering all aircraft. This HQ cell was intended to produce all detailed plans for AAR task which the Ascension team, reinforced by 2 AAR planners from HQ 1 Gp, was then expected to amend in the light of up-to-date meteorological and local conditions. In practice, it was found that detailed planning was best done at Ascension where closer liaison between planners and operators was possible, thus leaving the UK RAOC team to conduct feasibility studies and produce basic plans for the many options being examined. Decisions on methods to be adopted were often delayed, however, because of the cumbersome procedure whereby agreement had to be reached by CTF 317, UK RAOC, No 1 Gp and CBFSU at Ascension. Application of the need-to-know principle also added to the detachments's problems and task orders were issued with barely adequate time to implement them properly.

5.128 Complex fuel plans relied upon accurate knowledge of aircraft flight parameters but this was not always available. Furthermore it was soon apparent that refuelling plans involving statistically derived Met information and uncertain fuel consumption figures were not acceptable. With such large formations of aircraft, even minor variations had a cumulative and significant effect on the formation's fuel requirements over the long distances flown. More precise consumption figures for the Vulcan in its various roles ought to have been obtained before deployment. Once it had been agreed that final, detailed planning should be carried out at the forward mounting base and that rigid application of need-to-know could be relaxed, the Victor staff were better placed to cope with adapting operational tasks to the South Atlantic conditions as experience clearly demonstrated.

RAF Marham Report
MAR/5025/5/20/Ops
19 Sep

5.129 Complicated refuelling sorties relied on good briefing. Crews received extremely full and detailed briefings so that missions could be conducted in RT silence. Flying in formation, a practice unusual to the tanker force, required thorough briefing so that aircraft could safely change position in silence, at night and with only anti-collision lights for guidance. Knowledge of aircraft systems performance was also invaluable and crews were expected to self-brief on the quirks of an individual aircraft and the minor unserviceabilities being carried - a book for this purpose was maintained in the Ops Room.

5.130 Management of the parking area during the start up and launch phase was most demanding. With so many aircraft taxying in turn - up to 13 for BLACK BUCK 1 - it was essential to have a controller in radio contact with the aircraft, groundcrew and tugmaster so that any unserviceable aircraft could be swapped, or moved without delay. Not every aircraft had a full navigation fit to allow it to complete every part of a mission and so speed was of the essence when, with aircraft running engines and consuming precious fuel, an unserviceability was declared. The limited manoeuvring area compounded the problem for there was insufficient room to shift aircraft around once they had moved from their positions. Control on the ground therefore depended upon the expertise of the ground staff; that

such activities were completed without incident testifies to their ability.

5.131 Differences in aircraft performance between the Victor, Nimrod and Hercules called for new RV procedures to be developed. The Victor, with a higher airspeed, took off later than the other aircraft and gradually overtook them in transit to an agreed RV datum point. The RV complete, the Victor would descend and, using UHF D/F and Air-to-Air Tacan, position itself behind the receiver, but 2000 ft higher until visual contact was made. This joining procedure permitted independent flight to the RV thus saving the Victor fuel which it would otherwise have consumed if forced to fly lower and slower in company with the receiver.

5.132 Crews were suddenly faced with the requirement to fly in mass formation and to refuel by night often in conditions of moderate to severe clear air turbulence. Some missions required Victors to take on fuel 3 times before they eventually themselves transferred fuel. Such long-range sorties were foreign to their peacetime training experience but, to their credit,they quickly absorbed the required skills without any major mishap. Airborne problems encountered beyond the range of assistance from Ascension had to be solved quickly by the formation leaders and revised fuel plans speedily implemented.

ACAS(Ops)2/8/1/1058
30 Sep
VCAS/7/7 Pt 3 E12

THE RECKONING

5.133 The distances involved in supporting the Task Force dictated that AAR would play a crucial role in extending the scope of RAF operations. Initially, of the aircraft which lent themselves to operations in the South Atlantic, only the Harriers were equipped for AAR-supported missions. Within a few weeks, however, Victors were refuelling Vulcans, Nimrods, and Hercules as well as Harriers, enabling them to operate over the vast areas between Ascension and the Falklands. Moreover, the Victors were hurriedly equipped with additional equipment including Omega navigation and Carousel inertial navigation systems, RWR, F95 cameras and NBS modifications. Three crews were trained for photo reconnaissance but CTF 317 did not use the option.

CAS's Brief Sep
Special Supplement
DASB/CB/22/82

5.134 In summary, Victor aircraft took part in MRR of South Georgia and the Falklands areas; gave AAR support to Nimrod Mk 2P maritime surveillance, to Vulcan bombing missions and to Hercules air-drop sorties. The tanker force allowed the deployment of aircraft between the UK and Ascension and from the latter to the Task Force to be carried out. It also made possible the provision of SHAR CAP over HMS FEARLESS, as well as providing UK ground and air training for Vulcan, Hercules AAR and tanker crews, Harrier, Sea Harrier, Phantom, Nimrod and Victor pilots by day and night. Victors flew over 2500 hours with less than 1% failure rate attributable to refuelling equipment. Only 6 missions were aborted or only partially successful because of fuel transfer difficulties.

DPR(RAF) Notes
on RAF Ops - 2 Sep

5.135 The Falklands campaign demonstrated conclusively the value of AAR in successful long-range air operations. Distances were greater than ever envisioned for out-of-area operations, but this only served to emphasise AAR's value as a force multiplier. The modifications and crew training tasks were achieved with

remarkable speed and the AAR support of long-endurance sorties into the far South Atlantic became almost a matter of routine. Without doubt the outstanding performance of the ageing Victor and its crews underpinned nearly all fixed wing air operations in support of the Task Force (8).

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(8) A more complex review of AAR/MRR operations is held by AHB(RAF); this contains details of many papers not referenced here.

Annex:
A. Victor AAR Sortie Task Details to 18 Jun 82.

VICTOR AAR SORTIE TASK DETAILS TO 18 JUN 82

	MRR	BB	NIMROD	HERCULES	SHAR	TRIALS	MISC SORTIES	TOTAL HOURS	TOTAL FUEL PASSED
Operational Tasks	4	6	14	25	4	12	-		
Sorties Flown	29	85	112	97	13	44	24		
Reserves Flown	Ø	5	9	8	Ø	2	Ø		
Flying Hours	190.45	551.05	703.55	623.35	80.05	178.05	196.20	2523.50	
Fuel Passed x LBS 000	758.7	3109.7	3811.7	3037.7	400.00	1113.6	Ø		12231.4
Totals to 18 Jun	Total Prods	Total Broken Probes	Victor	2 1 May 8 Jun	Total Operations Aborted	Hercules	2 HDU 1 Probe		
			Nimrod	1 22/23 May		Nimrod	1 Probe		
	547		Vulcan	2 23 May 3 Jun		Vulcan	1 HDU 1 Probe		
			Hercules	1 4 Jun					

Legend
BB = OPERATION BLACK BUCK (VULCAN)
SHAR = SEA HARRIER

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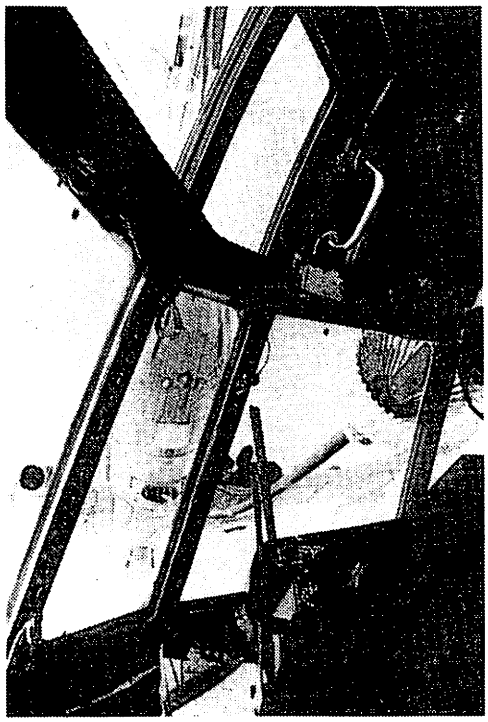
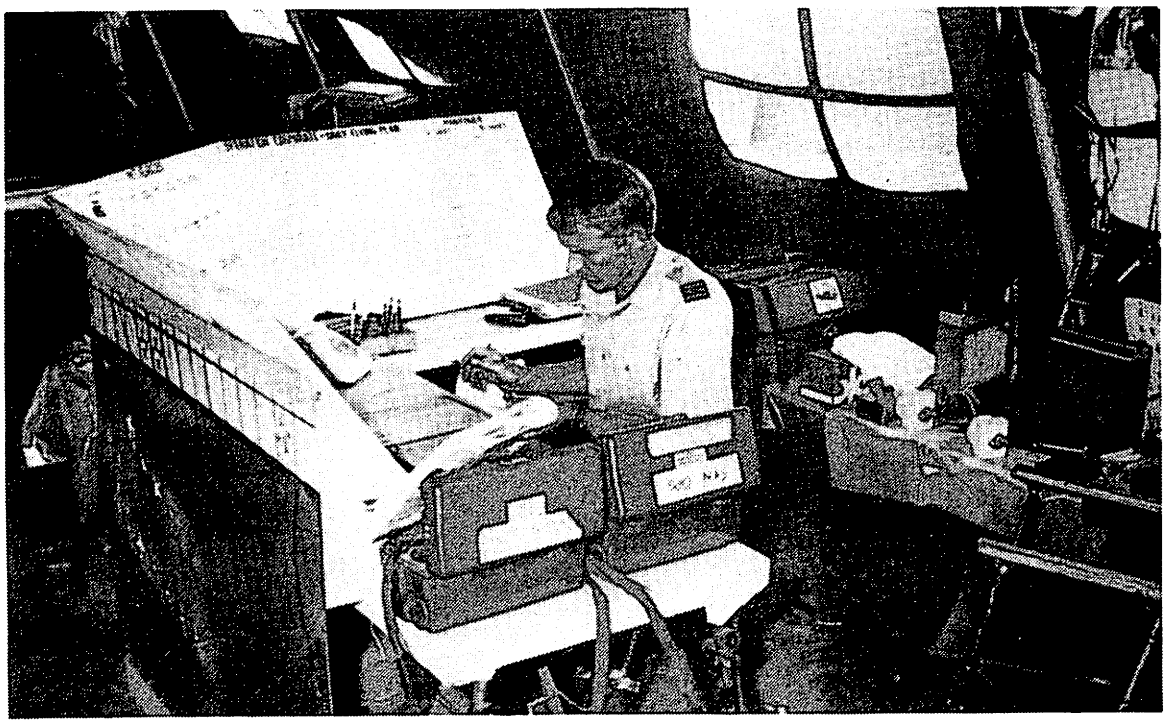
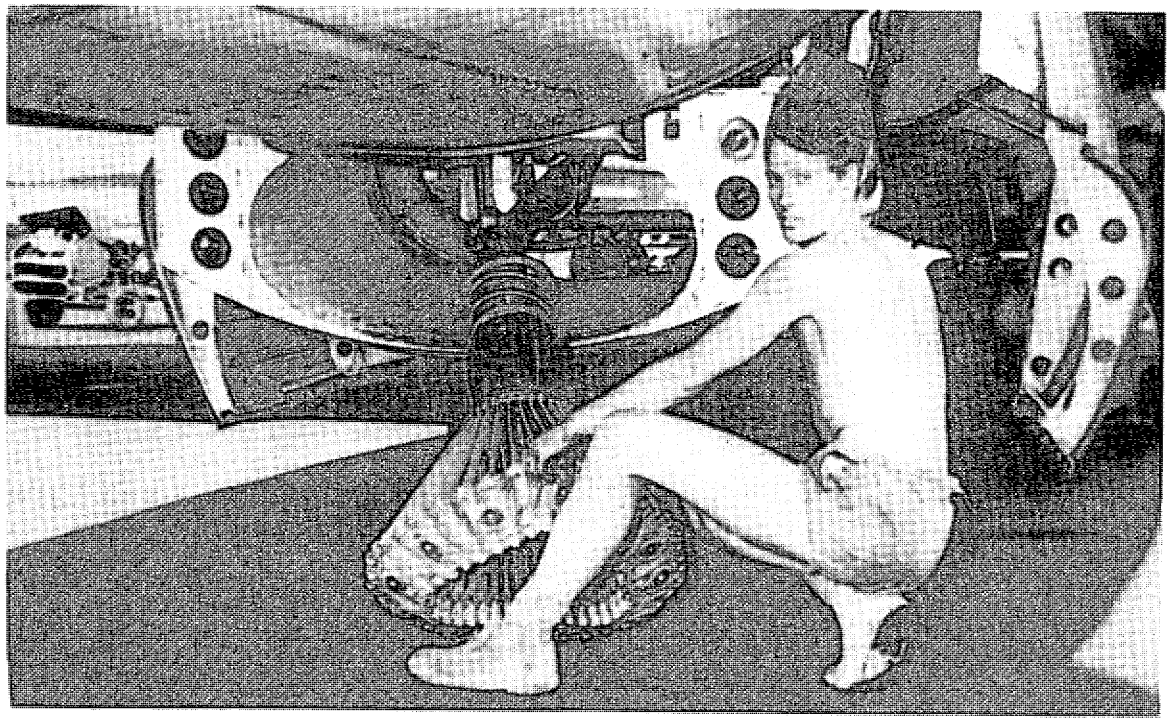


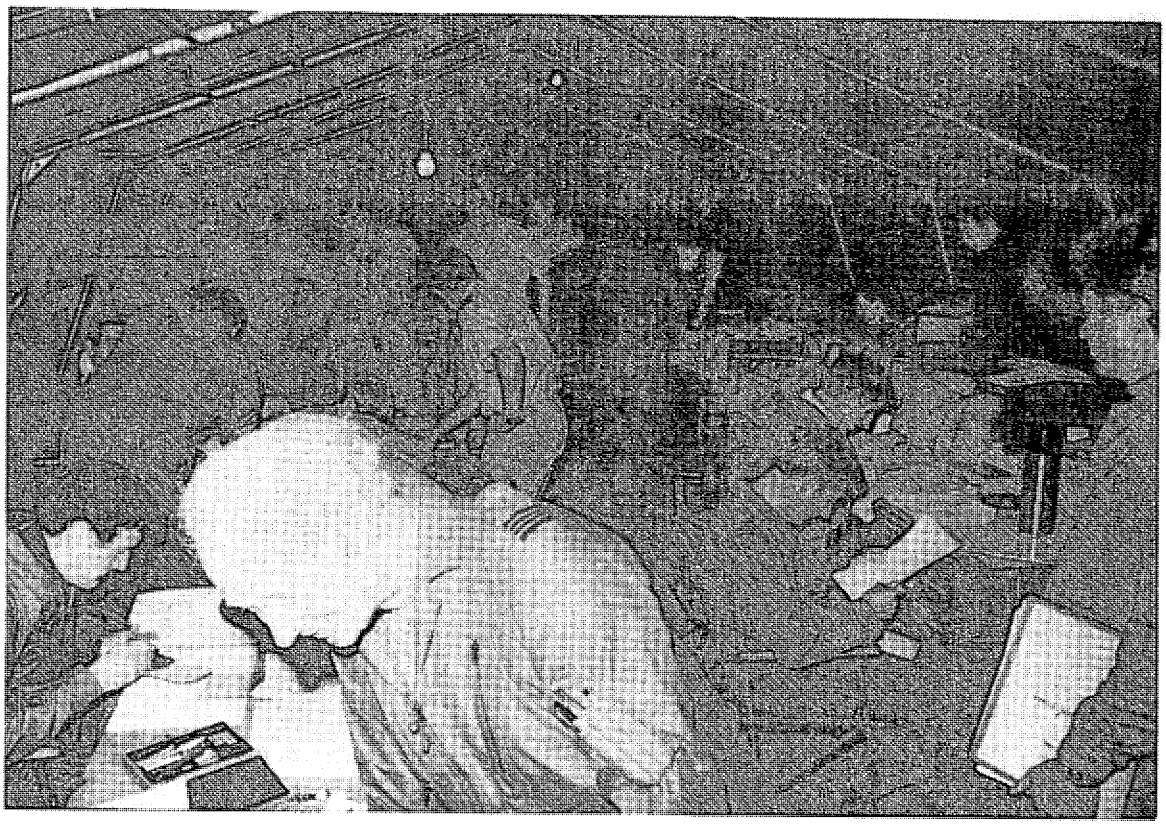
5.1. 'Contact' — Victor K2 refuels Hercules.



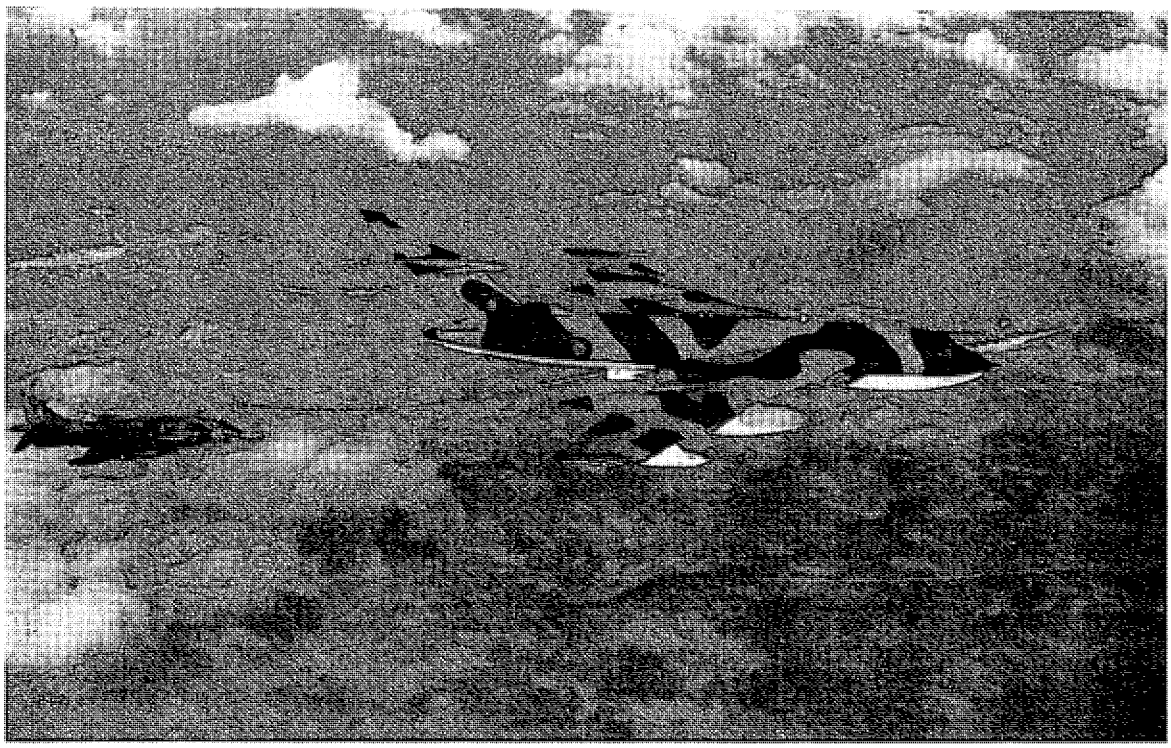
5.2. Fighting the paper battle. Sqn Ldr Bill Lloyd, Victor detachment S Eng O, engages 'the enemy'.



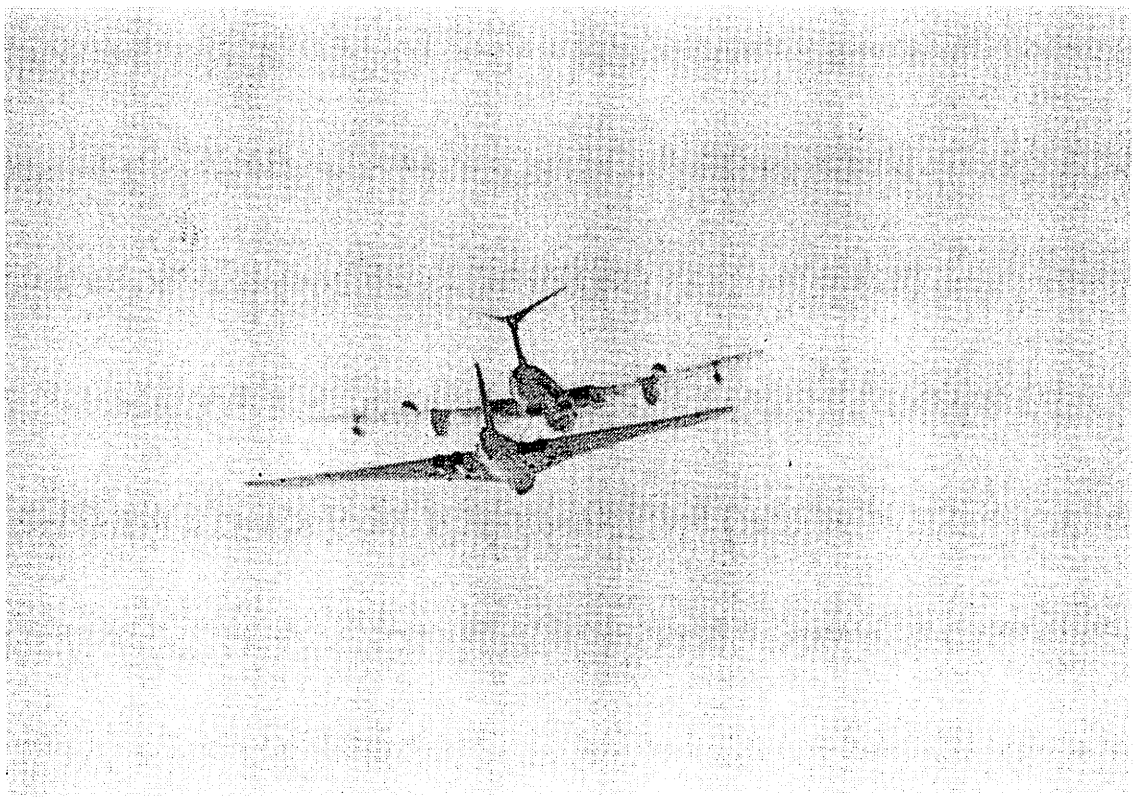
5.3. Tradesman checks the AAR basket.



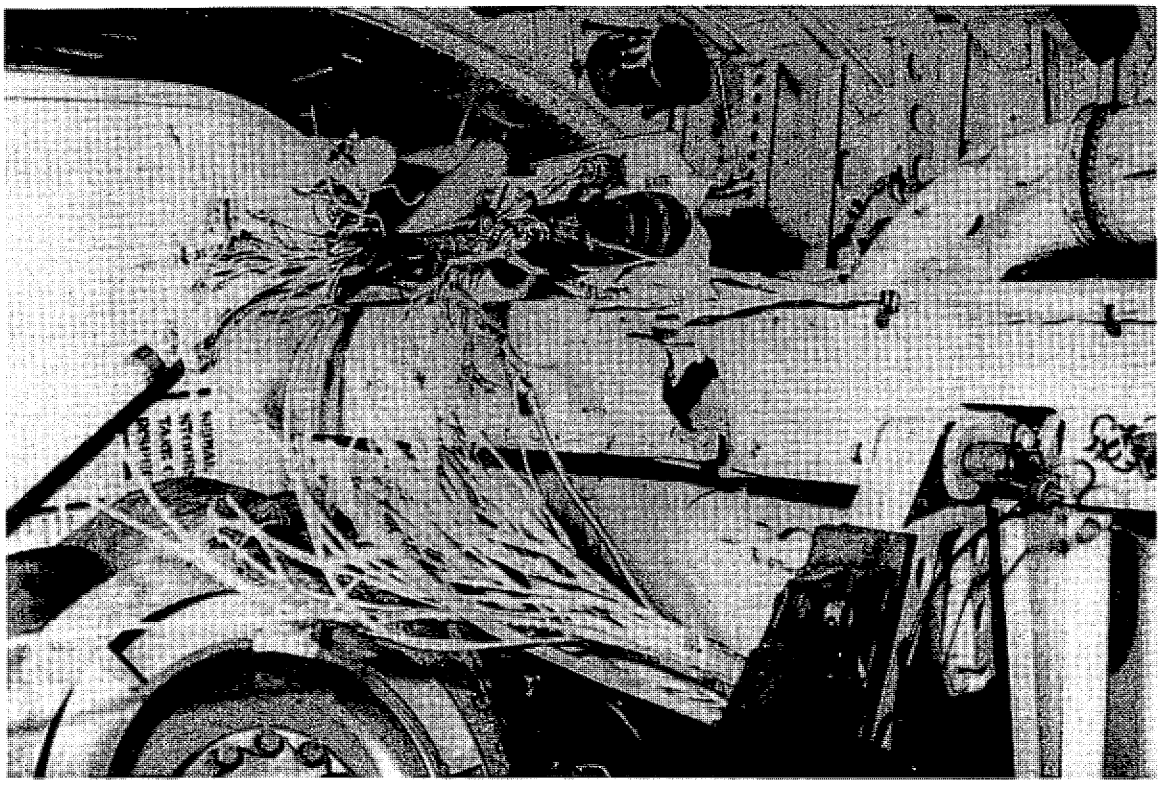
5.4. Victor/Vulcan crews planning for a BLACK BUCK mission.



5.5 Victor/Harrier AAR training sortie.



5.6. Victor/Vulcan AAR during BLACK BUCK mission.



5.7. Damage to Victor resulting from the disintegration of the HDU.

CHAPTER 6

VULCAN OPERATIONS

SUMMARY OF CONTENTS

6.1 When the Falkland Islands crisis developed in late March 1982, half the Vulcan force had already disbanded and the other half was due to disband by the end of June (1). The Vulcan's in-flight refuelling system was no longer functioning and the crews were not current in Air to Air Refuelling (AAR) techniques; indeed no AAR training had been carried out for about 10 years. Moreover, the force was geared to nuclear operations and current crews were untrained in the various complex methods of delivering conventional bombs. The aircraft had no capability to launch air to surface missiles (ASMs), and the self protection Electronic Counter Measures (ECM) fit was far from modern. Thus when a wasting force, lacking the avionics and weapons required, was abruptly ordered to prepare for war-like conventional operations in the South Atlantic as soon as possible, it could hardly have been called upon at a less suitable moment (2). Such was the unfavourable background against which work was set in hand to examine the feasibility of long range offensive air operations by the RAF.

APS/SofS TF9.1 7 Apr E31

OPERATIONAL FACTORS

6.2 The possibility of using South American airfields to counter any threat or invasion of the Falklands had, of course, been considered by the Air Staff at various times in the past, but it was thought, correctly as it turned out, that neighbouring countries would be most unlikely to permit offensive air operations from their territory. Therefore, the huge distances involved had made any pre-planning for the land-based offensive air operations against the Falklands impracticable.

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(1) Nos 9, 35 and 617 Squadrons had disbanded by March and Nos 44, 50 and 101 Squadrons were planned to phase out by 30 June 82.

(2) Certainly nothing like it had been seen since the Suez operations of 1956, when the V force went into action soon after the Valiant came into service.

6.3 When intelligence indicated, in the very last days of March, that an Argentine landing on the Falklands was becoming highly likely, it was obvious that long range offensive air operations against a variety of targets might become necesary.

6.4 A rapid appraisal made very early in April showed that effective Buccaneer aircraft operations from Ascension Island could not be supported by the available tanker force, except against shipping targets out to a maximum of 1500nms. To launch even one Buccaneer from Ascension with 5 x 10001b bombs against Port Stanley Airfield would require 12 Victors to provide AAR support. The use of Vulcans therefore seemed the only viable alternative, but the force lacked the range to reach the Falklands and return to Ascension unrefuelled.

ACAS(Ops)/2/8/347
1 Apr
TF9.1 E1

TF14.1 6 Apr
E17

6.5 Even before the Argentines landed, HQ Strike Command (HQSTC) carried out a quick study which showed it was just possible for a Vulcan, with bomb bay fuel tanks, to reach Port Stanley Airfield and land there carrying 7 x 10001b bombs. Subsequently, it was hoped to be able to operate at low level out to 300 nms from there. The whole concept was seen as marginal but the Argentine invasion put paid to any such ideas - and since there was little fuel on the airfield, operations would most probably not have been feasible anyway. However, operations from Chilean airfields would have been feasible and several options were examined. Indeed as late as 21 April, the Air Commander was briefed on possible Vulcan operations against Port Stanley Airfield from San Felix airfield (3) but diplomatic negotiations never reached fruition on any of these proposals.

STC/6000/29/2/
Ops.1
1-7 Apr E2-4

18G/335/4/22/Ops.1
20 Apr

6.6 As a consequence of all these factors, it was clear Vulcan operations in the South Atlantic presented formidable problems and like much else during Operation CORPORATE, would have to be extemporised.

THE EARLY CONCEPTS AND PLANS

6.7 The first preliminary consideration of Vulcan operations appeared as an attachment to a minute of 30 March for CAS concerning options for reinforcement of the Falklands. The piece on Vulcan offensive operations was not, of course, directly related to the contents of this minute but was attached with a manuscript note from the Personal Staff Officer (PSO) to CAS (Gp Capt D Cousins), just before the parent document was passed in to CAS. This note on the Vulcan option had been requested earlier by CAS, following a discussion with the Assistant Chief of the Air Staff (Operations) (ACAS(Ops)) (4).

Discussion with
Gp Capt Cousins
and AHB1(RAF)
27 Feb 86 and
with MRAF
Sir M Beetham
3 Feb 87

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(3) San Felix is a Chilean island base in the Eastern Pacific Ocean.

(4) This attachment was the first written assessment of the use of Vulcans located in Air Force Department (AFD) files.

6.8 All the early, tentative concepts of operations produced in HQ 1 Gp and the Ministry of Defence (MOD) were in the context of sorties in the region of mainland Argentina, since the absence of a functioning AAR system in the Vulcan meant that no attacks on the Falklands themselves were, as yet, feasible.

6.9 The first ideas envisaged deploying 6 Vulcans to Ascension, each loaded with 7 x 1000lb bombs and 2 bomb bay fuel tanks. Technical support was limited to 12 airmen and there was no mention of operational planning support. The role envisaged by CAS was "area presence, threatening Buenos Aires" (Argentina). However, it was noted that if actual bombing operations were ordered, the aircraft would have to recover to Montevideo (Uruguay) or possibly Santiago (Chile), since no British controlled airfield was close enough for round trip sorties against the Argentine mainland. No other options were feasible without AAR.

Discussion between AHB1(RAF) and Sir M Beetham 3 Feb 87

6.10 Work on refining options continued and on 1 April, the Secretary to the Chiefs of Staff (SECCOS) was informed that in addition to the attacks on the mainland, Vulcan bombing attacks could be made on Argentine shipping out to 1750 nms from Ascension. The mainland and shipping options were then incorporated into a draft outline of a military appreciation which was being prepared by the MOD Central Staffs over the weekend of 3 - 4 April. However, in a short brief prepared on 2 April for the Secretary of State (SofS) to send to the Prime Minister on military options, the use of Vulcans was not mentioned - possibly because there was no time for the Secretariat (DS11) to clear the original draft with CAS (who was also acting Chief of the Defence Staff (CDS) at the time).

6.11 At this stage there was apparently some uncertainty about the use of Vulcans since, despite the exchanges already outlined, the AFD input to the military appreciation specifically stated that Vulcan attacks on Argentina were "no longer considered feasible" and this was reflected in the first draft of the full paper issued on 5 April when the option was not mentioned. Moreover, a brief prepared by the Assistant Under Secretary (Air Staff) (AUS(AS)) for SofS to use in the House of Commons Falklands debate on 7 April went so far as to say that Vulcans were not needed for Falkland operations, since: "other more suitable aircraft were available". In the background note, SofS was advised, rather prematurely, that:

COS(Misc) 88/742/1 5 Apr

TF9.1 E24
AUS(AS) S9/5474 7 Apr
TF9.1 E31

> "Vulcans would not be appropriate for use in the Falklands operation; even supposing that base facilities within range of the Falklands were available in the southern Atlantic or Pacific, the back-up support required could not be provided and sustained at that distance without detriment to other operations".

In the event no mention of the use of Vulcans was made in the ensuing debate. (5)

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(5) The first mention of Vulcan operations by the Govt, in the House of Commons was on 4 May. See the Falklands Campaign, Digest of Debates HMSO Jul 82 pps 26-69.

6.12 Notwithstanding some of the advice being given to SofS, the Air Staff considered it prudent to continue investigating various concepts for Vulcan operations. Many avenues were explored by the Staffs of their own volition and formal paperwork was not always produced, except when financial expenditure was required. Often, particularly during the early days, the only exchanges which took place initially were informal discussions at staff level, oral reference to Director of Operations (Strike) DofOps(S) and ACAS(Ops) and, when required, a telephone discussion with Senior Air Staff Officer (SASO) HQ STC, before the appraisals went ahead.

Hayr Tape

6.13 Amongst the options examined was the use of a single Vulcan to carry out a one way attack against Port Stanley Airfield. This would involve a Vulcan with a reinstated AAR system, taking off from Ascension carrying out two refuelling brackets followed by a low level dash into and out of the target area and a medium level transit to the Task Force (TF) where the crew would bale out and hopefully be rescued. The launching of such a risky mission was thought unwise by HQ 1 Gp and the proposal was not pursued. In any event, it would not have been possible until later in April, when at least some surface ships would be reasonably near to the Falklands and able to recover the crew. Nevertheless, although the mission was impossible without sacrificing an aircraft and possibly a crew, it illustrates that at a very early stage no option was left unexamined. Moreover, it demonstrates that more than a week before Commander Task Force (CTF) 317.8 specifically asked for a raid on Port Stanley Airfield, the Air Staff already had such an attack under consideration.

HQ 1 Gp 061555Z Apr 1G/SASO/7.1 E4

Discussion with Gp Capt M A H Smith Gp Capt (Air) at HQ 1 Gp with AHB1(RAF) 21 Jan 85

6.14 A firepower demonstration from Ascension by 4 Vulcans each dropping 7 x 1000lb bombs, then landing and re-loading with a further 7 bombs, was also considered. These operations would have been mounted at 72 hrs notice, without AAR. The intention of this operation seems to have been to show the Argentines that the RAF had a considerable operational capability which might be brought to bear against mainland targets. However, the proposal did not proceed beyond the stage of feasibility planning.

HQ 1 Gp 082030Z Apr TF14.1 E26

6.15 Simultaneously, the concepts for operations against the Argentine mainland were extended to include attacks by Vulcans on area targets defined as; "towns, airfield, or port installations in the vicinity of Buenos Aires". This study estimated that about 2 weeks would be required to re-instate the AAR system in 8 Vulcans, train the crews in day and night AAR procedures and to give them refresher training in conventional bombing techniques. The force which could be brought to bear would depend on whether the Vulcans from Ascension could recover to Santiago, in which case 4 Vulcans followed by a further four, 24 hours later, could drop a grand total of 84 tons of 1000lb bombs. If return to Ascension was necessary then the size of a single Vulcan raid would have to be sharply reduced to match tanker availability. For all raids, low-level, radar, night bombing profiles were recommended. Two factors ultimately determined that these options were not implemented; first the tanker support required would only have been available at the expense of other operations such as Maritime Radar Reconnaissance (MRR) and Nimrod surveillance but the more telling

TF 14.1 9 Apr E27

Comments by CDS (A F Lord Lewin) in Guardian Article 28 Jan 85

objection was probably the questionable legality of such operations (6).

6.16 Significantly, this paper showed clearly that when the Vulcan force was once again capable of receiving fuel in the air and using conventional weapons, the limiting factor would be tanker availability rather than Vulcan capability. As with all other fixed wing RAF operations during CORPORATE more Vulcan sorties could have been mounted had more tankers been available.

PREPARING THE AIRCRAFT

6.17 On 8 April, the No 1 Gp Engineering staff were recalled from Easter leave to start investigations into the generation and modification of Vulcans and Victors. The next day, Easter Saturday, Waddington began work to reconvert 4 Vulcans to accept AAR. This consisted of replacing sealed non-return valves with unsealed items and servicing the AAR probes and nozzles. In addition, 4 other aircraft were to have their conventional weapons fit made useable so that aircrew training could begin. In all, a total of 10 aircraft were to be progressively made serviceable in both AAR and the conventional weapons role. As none of the 5 aircraft selected had been resprayed in the latest camouflage scheme, all of these were still wearing the older matt dark green and matt medium sea grey camouflage with light aircraft grey undersides. The CORPORATE modifications to their colour schemes involved the application of a dark sea grey over the light grey undersides and the removal of squadron insignia from the fin.

HQ 1 Gp
ORB Apr
RAF Waddington
ORB Apr
201305Z Apr
1G/SASO/7/4.1
E3

6.18 Other modifications were to be incorporated to improve navigational and conventional bombing accuracy. These included Carousel inertial navigation systems (INS) removed from ex-British Airways VC10s, stored at Abingdon); triple offsets from the bombing system; reference units to give more accurate heading inputs to the Ground Position Indicators; directional jamming aerials; a second Identification Friend or Foe (IFF) installation and a Radio Altimeter Mk 7 indicator to allow the co-pilot to monitor height more closely. All these improvements involved speedy and complex work over very long hours (60,000 extra man hours in April alone). For example, engine changes, which normally took two working days, were completed in 8 - 10 hours. Marham freely assisted Waddington with installation work on the avionic improvements. The trial installation of Carousel was done at Marham and from 19 April help was provided to allow the first two Vulcans to deploy with ALQ101-10 (Dash 10) jamming pods attached to a locally made pylon fitted to the mounting points originally provided for the Skybolt ASM, which had been cancelled nearly 20 years before!

RAF Waddington
ORB Apr

MOD UK AIR
112245Z Apr
38/2/5.1 E1

ASMA
211636Z Apr
STC/6000/29/2/2
Ops.1 E3

PLANNING AT UNIT LEVEL

6.19 In parallel with the engineering work, planning and training began at Waddington. On Good Friday, 9 April, Wg Cdr S A Baldwin, a navigator and Officer Commanding 44 Sqn, was recalled from leave to lead a planning team whose terms of reference were simple; to produce a long-range conventional bombing capability as soon as

No 44 Sqn
ORB Apr

(6) The political aspects of mainland operations fall outside the scope of this narrative and have not been fully investigated.

possible, utilising up to 10 Vulcans and 4 crews. Wg Cdr Baldwin was allowed to choose his own team and by 13 April had selected a small number of experts like Sqn Ldr J A Williams whose bombing experience, as a Navigator Radar (Nav Rad), stretched back to No 1 Vulcan Course in 1957. Extra telephones were installed and the team began, at once, to work very long hours planning what were to become the longest operational bombing missions in terms of distance ever flown by the RAF or, indeed, by any other Air Force.

Interview with Sqn Ldr A J Brookes - Copy held in AHB(RAF)

6.20 The next task was to select and begin training the aircrews. Initially, one crew was drawn from each of Nos 44 and 101 Sqns and 2 crews from No 50 Sqn; later an extra crew from No 9 Sqn, which disbanded at the end of April, was brought in. Two of the 3 'lead' crews had taken part in Red Flag (Simulated hostile environment training in Nevada) detachments to the United States and, hence, were assessed as being best qualified to operate at low level against opposition from air and ground defences. The first requirement was to train these crews for conventional bombing and for AAR; both these activities began in mid-April.

McDougall Crew Tape

MOD UK AIR 131215Z Apr TF9.1 E75

AAR AND WEAPON TRAINING

6.21 AAR refuelling training began on 13 April with lectures by instructors from Marham, followed by day flying practice in tanker rendezvous line-astern position holding, dry and wet receiver training (known as prods), and finally night tanking. At first, AAR instructors (AARIs) from the Victor tanker Operational Conversion Unit (OCU) at Marham were attached to each Vulcan crew to give instruction. The AARIs were particularly valuable because none of the Vulcan pilots had experience of tanker formation techniques, and when it became clear that there would only be time to train Vulcan Captains and not co-pilots, it was decided to retain the AARIs for the real missions. The AARI would sit in the co-pilots's seat and fly or supervise the 'prods' down to the Falklands. The co-pilot sat in the sixth seat and after the final 'prod' would change seats with the AARI for the bomb run; afterwards they would swap seats again for the return leg. This arrangement was aimed at relieving the strain on the Captain and conserving his energy for the attack phase. Moreover, it would provide a valuable reserve capability in case the Captain was incapacitated. During the training period the 3 crews flew 50 hours in 10 days, of which 70% was at night. Unfortunately, the training was beset by problems, minor continuous probe leaks obscured the pilots windscreens and major leaks caused 3 double engine flameouts. At first it was suspected that inexperience, combined with incorrect AAR prodding techniques might be the cause but a thorough airborne analysis by AARIs showed that was not the case. However, these problems coupled with some tanker unserviceabilities hampered the training plan and eventually, after a personal appraisal by AOC 1 Gp (AVM M W P Knight), a 48 hr delay in deploying Vulcans to Ascension was recommended on 25 April, since only 2 aircraft Captains were fully trained in AAR by night. Intensive engineering investigations of the fuel spillage problem were set in train at once and after considerable effort the cause was narrowed down to bent, substandard spindles on the mushroom valves in new probes fitted to the Vulcans. When two modified new probes were provided, fitted and tested by groundcrew experts from Marham the problem was overcome.

HQ 1 Gp 250415Z Apr 1G/SASO/7/4.1 E31

091530Z Apr STC/6000/29/2/3/ Ops.1 E37

6.22 Conventional weapon training took place during the AAR course and consisted of ground training in the classroom and on the weapon training rig, and air training at ranges around the UK. Three types of weapon were dropped in training: the 28lb practice bomb, the 1000lb HE bomb and the 1000lb inert weapon. All 4 crews qualified and there were no major setbacks in weapon training and the conventional bombing equipment functioned satisfactorily despite its age and the length of time since its last use. Ground training by Carousel experts from RAF Wyton preceded air familiarisation for the crews, during which it was found the navigation accuracy of the twin Carousels matched specification. Finally, to prepare for a long sea crossing followed by a low level segment, the crews practised night astro techniques at high level and flying at 300 - 500 feet over the sea at night. The ground and air training of 4 primary crews in AAR, conventional bombing, Carousel operation and ECM pod use, night astro, night low-level training began on 14th and were completed on 27 April.

RAF Waddington
ORB Apr
Annexes A & C

PLANS FOR ATTACKS ON PORT STANLEY AIRFIELD - MOD ASPECTS

6.23 On 11 April, CTF317.8 requested assistance from MOD(Navy) in planning the best method of using Sea Harriers to disrupt Port Stanley Airfield. However, attention also focused on how the Vulcan might be used in this role, too, now that the restoration of AAR refuelling aircraft systems held out the prospect of two way missions from Ascension. This was by no means the first consideration of Vulcan options, which as already outlined had been under continuous appraisal from as early as 30 March. Yet, this specific request by Adm Woodward does seem to have given additional impetus to the planning already underway since HQSTC received a telephone request to investigate the Port Stanley Airfield attack option, probably on 11 April, and responded with a reply on 12 April, which also referred back to the earlier work by HQ 1 Gp outlined in a signalled report on 8 April.

CTF/317.02
111114Z Apr
TF9.1 E57

122140Z Apr
TF9.1 E67

6.24 These two signals were key documents which formed a skeleton concept of operations and contained the essence of what subsequently developed into Operation BLACK BUCK - Vulcan operations against the Falklands. It was envisaged that by drawing on the 10 Vulcans which had been re-roled for AAR and conventional operation, a few crews could be trained in these skills over a 10 day period. Two or three aircraft would then deploy to Ascension each carrying 7 x 1000lb bombs from where they would mount an operation which would permit daytime refuelling brackets followed by a night bomb release over the target. Ten tankers plus 2 or 3 reserves would be needed and measures would be required to facilitate safe Rendezvous (RV) with the Vulcan receiver.

HQ 1 Gp
082030Z Apr
TF14.1 E26

6.25 MOD replied on 13 April stating that HQSTC proposals would be placed before CAS for decision; in the meantime flight checking of 3 Vulcans and the training of 3 crews was to begin. At this stage, an attack bomb load of 7 x 1000lbs, plus bomb bay fuel tanks was envisaged and Carousel was to be installed to improve Vulcan navigation system accuracy. However, the raid plan was by no means finalised and many options were considered and adjusted during the next 10 days.

131215Z Apr
TF9.1 E75

6.26 ACAS(Ops) staff produced an appreciation, whose precise date is uncertain, but was probably written on 13 April. The short document distilled much of the oral discussion which had taken place over the previous week. After reviewing capabilities, weather, defences and attacks tactics it was concluded that: TF49.1 E6

a. The use of Stanley airfield and its collateral facilities could be temporarily denied to the Argentines by conventional attack by a single Vulcan carrying 21 x 1000lb bombs.

b. The earliest possible time for attack would be the night of 26/27 April with the capability of a further attack 24 hours later.

c. The forecast weather should not prevent the operation.

6.27 In conjunction with this work, the Air Staff provided CAS with a speaking note to use when briefing SofS on the overall Vulcan concept of operations. The brief reported progress in restoring the Vulcan's capability and noted that AAR training was the limiting factor. Here a bomb load of 7 x 1000lbs was again envisaged; although as already indicated the staff's ideas were already moving towards a load of 21 x 1000lb bombs. An HQSTC concept involving an attack with 21 x 1000lb bombs from 800 ft at night was the preferred option and was validated by 1,000 computer runs. The attack was to be at night using a high level transit followed by a low level radar aimed pop-up attack to give a 95% probability of hitting the runway with one bomb. Although the brief was clearly directed towards seeking political approval for the attack in late April, no specific recommendations were contained in the paper which concentrated on simplifying the complex technicalities of the operation. Significantly in a covering minute to CAS, D Ops(S) (Air Cdre J W Price), pointed out that the brief made "only passing reference to the risks implicit in an operation of this nature ..... the demands of such a lengthy and taxing flight are plainly considerable". Thus, whilst there was ample initiative and drive behind the planning and a robust approach to the operation and the results it was hoped would be achieved, it is also clear that right up to senior levels in the AFD there were no illusions about the risks involved or the consequences if things went wrong in these remote regions of the South Atlantic. In particular, CAS was conscious that Vulcan and tanker losses might occur but these risks had to be borne because of the potential threat posed to the TF from Port Stanley Airfield.

TF14.1 E61
14 Apr

140630Z Apr
STC/6000/29/2/
Ops.1
E10 and E16

Discussion
AHB1(RAF)
& Sir M Beetham
3 Feb 87

6.28 Considering what was already afoot in the AFD it seems odd that the first draft of a Central Staffs appreciation on 13 April on re-capturing the Falklands made no mention of Vulcan operations. However, the Air Staff themselves were never in any doubt about the role of the Vulcan even at that early date. CAS's minute to SofS suggesting a run-on of up to 3 Vulcan Sqns (7) until 31 December is worth quoting at length, since it gives a clear idea of thinking at this juncture about the roles Vulcans could play. "With AAR support from Ascension they could be used to attack the airfield or other

DP9/82 (Draft)
TF9.1 E83

CAS 90885
19 Apr
D of S Pol/38/2/
5.A E14

(7) After discussion during May, it was decided to run on one modified Squadron (No 50) for AAR purposes.

VCAS91145
25 May
D/D of S Pol/38/
2/5.A E21

military targets in the Falklands. We could let it be known that we had a force of Vulcans on Ascension with the range to carry out attacks as far as the Argentine mainland posing a threat to their airfields and naval units in port. The Vulcans also have a MRR capability, and could give useful support to CTF. The Argentines would be aware of all these possibilities from published data on the Vulcan. Positioning some Vulcans at Ascension could also force the Argentines to maintain or deploy some of their fighters to the northern part of Argentina where they could not pose a threat to our TF in the area of the Falklands."

AN EXCURSION INTO MINING

6.29 Although most planning effort was being devoted to the Port Stanley Airfield attack options, there remained a possibility that other air operations against the Argentine mainland might be required, although the concept of bombing the mainland was no longer being developed. To this end, tentative exploration of air mining options took place on 15 April, when the Air Staff advised that the Vulcan (and the Hercules) were capable of being used for this purpose. About a week would be required to prove the carriage and release of 10 Mk A12(UK) sea mines by a Vulcan. However, with two drum tanks fitted, only 3 mines could be carried and this would require bomb carrier modifications, as later ground trials were to show, but a two way mission from Ascension to the River Plate area could not be mounted until the AAR capability had been restored - the latter was, of course, already underway. CAS was recommended to discuss the option with CDS, but the upshot was that the work was not taken to the stage of front line operations.

TF14.1 15 Apr E65

A&AEE 231610Z Apr STC/6000/29 2/Ops(O).1 E106

BOMBING OPTIONS AGAIN - PREPARATIONS PROCEED

6.30 By 14 April, progress on the Port Stanley Airfield bombing option had reached the stage where all 10 Vulcans had been fitted with refuelling probes and the refuelling systems had been proved on the ground. The Olympus 301 engines which had previously been limited to 98% power to conserve engine life, were restored to full thrust. Carousel INS had been fitted to four aircraft and one of these was flight tested on 19 April with good results. Ten conventional weapon release systems had also been installed. Flight trials involving a Nimrod and a Vulcan showed that IFF decode could be achieved at 167 nms and in the Air-to-Air mode. Tacan lock on was successful at 140 nms. Thus there was every prospect that a Nimrod would be able to give effective assistance in setting up AAR RVs between Vulcan receiver and donor tankers.

TF49.2 2 May E3

TF14.1 14 Apr E64 & E90

RAF Kinlos 222200Z Apr STC/6000/29/2 Ops .1 E95

6.31 During the next 10 days a period of intense discussion followed between MOD, HQ STC and HQ 1 Gp and other organisations such as the Royal Aircraft Establishment (RAE) and the Department of Air Warfare (DAW) at Cranwell concerning the best height for weapon release to achieve maximum runway penetration and the type of bomb to be employed. These exchanges were protracted and made more difficult by the lack of readily available advice and the conflicting statements by various experts. For example, there were even arguments about the type of natural material beneath the runway surface. The chosen method had to balance attack accuracy and the weapon effectiveness required against the risk to the Vulcan from Argentine Air Defences (AD). At first options were focused mainly around various type of retarded delivery techniques for 21 x 1000lb bombs from 250 or 900 ft - with a clear preference for the latter by

TF14.1 15 Apr E68

night. It was calculated that this would give a 70% assurance of one Vulcan getting two bombs out of 21 on the runway. Although two bombs should hit the runway from these heights it could not be predicted which ones they would be - hence a stick of 21 had to be dropped.

TF14.1 19 Apr E91

6.32 One key meeting in the planning process took place in MOD on 21 April, when Operations, Intelligence, Research, Command, Group and Station (Waddington) staffs met under the Chairmanship of Deputy Director Air Force (Operations) (DDAF Ops) (Gp Capt M J C Burton) to consider attack options. The aim of Vulcan attacks on Port Stanley Airfield had already been judged to be maximum disruption of the airfield, to deny use of the runway and to produce an Explosive Ordnance Disposal (EOD) problem by using some delay fuzes (8). The task of the MOD meeting was, therefore, to review the options and facilitate final planning before political approval was sought. No minutes of this meeting have been located but a manuscript account written for the Air Commander by an unidentified officer from HQ 18 Gp on 21 April reflects the material subsequently set out in the formal military appreciation issued on 22 April.

MOD UK AIR 202120 7 Apr 1G/SASO/7/4.1 E4

160930Z Apr STC/6000/29/2/2 Ops.1 E1

211600Z Apr 18 G/335/4/22/ Ops .1 E3

6.33 This appreciation set out the AAR requirement and possible priority clashes after 28/29 April; outlined the probability of success with a Vulcan dropping 21 x 1000lb bombs by night (90% chance of 1 crater, 78% chance of two); confirmed that civilian casualties or damage were unlikely, assessed the threat from enemy defences and concluded that in order to launch an attack at the earliest opportunity (26 April), a decision was needed by 24 April. Although the Air Commander was ultimately responsible to MOD for the Vulcan operation, CTF317 himself had a close interest and received a short written brief on 22 April which confirmed that the operation was feasible and broadly outlined the intended plan. The Air Commander noted, in his own hand, that he believed the staff assessment that the Argentine would be able to restore the runway (after a single bomb strike) for Hercules C130 operations within 15 hrs was "very optimistic". On the same day following this brief the Air Commander signalled MOD that CTF317 required authority for a Vulcan attack on Port Stanley Airfield ' at the earliest date". MOD replied 11 hours later that a warning order for movement on 25 April had been issued but final political approval was awaited.

TF49.1 E29 Undated

ASMA 211831Z Apr STC/6000/29/2/ Ops .1 E3

220800Z Apr 18G/335/4/22 Ops .1 E25

18 Gp 221047Z Apr E44

222200Z Apr TF9.2 E44 and E46

SECURITY/PUBLICITY

6.34 As training programmes proceeded, public interest increased. On 19 April, Mr Michael Marshall, MP(Arundel), asked in the House if the Government was concerned about TV publicity on Vulcan training (9). Reports that the Royal Society for Protection of Birds was

Falklands Campaign Digest of Debates HMSO P109

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(8) Ultimately HQSTC decided on 21 April that only impact fuzing would be used. This was to eliminate the possibility of bomb skip leaving the runway undamaged.

211831Z Apr STC/6000/29/2/2 Ops .1 E3

(9) MOD had publically announced on 18 April that a number of Vulcans were being converted for conventional bombing, although the spokesman refused to confirm that they were to be used in the Falklands area.

Adams pps 84-85

worried about the use of Cape Wrath (Garvie Island) range led to a humorous, but not entirely welcome cartoon in The Times, showing 2 nesting birds under the shadow cast by a Vulcan, supposedly saying: "It's not the noise I mind so much as the droppings". Public interest in night flying by Waddington Vulcans resulted in the station being instructed to avoid answering queries locally and to refer enquirers to HQSTC Public Relations Officer (PRO). Later, on 27 April, the Air Commander expressed concern that MOD had told the BBC the Vulcans would soon deploy south and claimed that all surprise would be lost. VCAS pointed out in reply that MOD had merely said Vulcan training was going well. The rest was media speculation and D notices were of little avail, since they did not prevent the media from retailing material culled from overseas sources.

The Times 21 Apr

18 Gp
271755Z
TF49.1 E22

MOD UK AIR
281249Z Apr
TF49.1 E33

6.35 Notwithstanding these concerns, bombing, Carousel and AAR training went ahead in the third week of April, when 3 visual and 2 radar runs took place on Garvie Island, supplemented by 9 radar runs on Jurby range, using 10001b bombs from 500 up to 800 ft at speeds of 350K. The results of these trials were recorded accurately and were then compared statistically with existing theoretical models by the STC Ops Research Branch and MOD Science 2(RAF). The comparison confirmed that the theoretical estimate of bombing error (75 ft Circular Area Probability (CAP) was sound; indeed the 9 low-level drops on Jurby were significantly more accurate than this but with a bias to the left of the target. At the same time, consideration was given to the optimum height, speed and direction of attack, to the number of bombs to be delivered in a stick and to the likely crater size. It was forecast that a low level attack following a high level approach, at night with no moon, using radar aiming only, would have a 90 per cent probability of getting at least one crater on the runway. Furthermore there was no significant chance of a stray bomb landing in Port Stanley town.

ASMA
171915Z Apr
STC/6000/29/2/3
Ops.1 E7

ASMA
202100Z Apr
STC/6000/29/2/3
Ops .1 E10
Chief Scientist
(RAF) Report
D/CSRAF/45/Falks
23 Aug

AIRCRAFT VULNERABILITY

6.36. Central to all these assessment of likely attack results were discussions about attack heights and these in turn related to balancing the requirements for accuracy against considerations of aircraft vulnerability.

241135Z Apr
1G/SASO/7/8/
TS.1 E9

6.37 Studies showed that although a Vulcan might well be detected en route by suitably deployed Argentine or Soviet ships, there was little likelihood of it being intercepted at high level by aircraft from the mainland, or engaged by the Argentine Type 42 destroyers equipped with Sea Dart. However, detection would deny any element of surprise and would allow the Argentine forces on the Falklands to disperse their aircraft and bring their defences up to full readiness. Once the Vulcan had descended to low level, it was unlikely to be detected by the single TPS 43 surveillance radar, then believed to be deployed (10), in time for an interception by Argentine aircraft operating either from the mainland or the

D/CSRAF/45
Falks 23 Aug

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(10) Later it was discovered that two TPS 43 radars were present but their precise locations proved difficult to pinpoint for several weeks.

Falklands. The greatest threat would come from the Anti Aircraft Artillery (AAA) defences deployed around Port Stanley which were then thought to include two 3 gun, 35 mm Oerlikon batteries and 2 Superfledermaus Fire Control Radars. Analysis made of the expected reaction times of the radars and gun crews and of the fire power available indicated that a Vulcan attacking at 400 ft and 350 knots could suffer at least 30 hits from one radar-laid AAA battery. Neither the effect of the Vulcan's ECM equipment, nor the possibility of other AD Weapons (such as Roland or Blowpipe) being used, were considered at this stage, but the study showed that while an increase in bombing altitude to 8,000 ft would have little effect, an attack at 14,000 ft would reduce the expected number of hits to one-third of that first calculated.

TF49.1 15 Apr E5

6.38 Argument about the trade-off between maximum accuracy and vulnerability continued for several days. For example, an unsigned MOD (Air) note entitled Summary of Preferred Vulcan Options stated positively that a medium level attack would not be accurate enough. This Paper was undated, but was probably written about 20-22 April. Furthermore, on 24 April, when the Air Commander was briefed at Northwood by Wg Cdr A T Atkinson, Vulcan specialist from HQ STC, he was advised that for maximum effectiveness the attack height should be 400 ft.

TF14.2 E15
18G/335/4/22 Ops.1 24 Apr E26

6.39 However, on 26 April, HQ 1 Gp signalled HQ STC to recommend consideration of an attack height of 8000 ft as this "would render attacking aircraft safe from known defences". A ballistic attack was also now thought likely to give an increased cratering effect, but this view was disputed by some MOD staff officers (for example, Ops Nav 2 and others), who took the view that accuracy and cratering effects would all suffer from 8000 ft. Even at this height, the aircraft would not be safe from the threat of Roland Surface to Air Missiles (SAMs) which had a maximum engagement height up to 11,500 ft. An unattributed series of points for inclusion in a brief for CAS stated baldly, after rehearsing the arguments that medium level bombing was "considered unwise".

HQ1 Gp 260850Z Apr TF49.1 E8

DCDS(I)26 26 Apr TF49.1 E10 TF49.1 E11

6.40 The argument continued in this vein for several days. On 21 April, AOC 1 Gp sent a long and closely argued signal to the AOC-in-C Strike Command, setting out his final recommendations for a Vulcan attack and he came down firmly for a pop-up attack with the release of 21 x 1000lbs instantaneously fused bombs. The key argument underpinning this recommendation was the assumption that the threat to the Vulcan would come from AAA fire effective up to 6500 ft and that SAM defences would be "no threat". This view contrasts with that set out by the Chief Scientist (RAF)'s staff on 23 and 27 April which stated that increasing the attack height to 8000 ft would have "little effect" on the AAA threat. However, the earlier figures given by the CS Staff had been based on a straight and level overflight at 8000 ft. When a pull-up manoeuvre from 8000 ft after weapon release was considered, the vulnerability of the aircraft to AAA was assessed as being significantly reduced - although not completely eliminated.

281100Z Apr 1G/SASO/7/4.1 E49

D/CS(RAF)45 30 Apr TF49.1 E84

6.41 In fact, this advice underwrote what had already been decided on the night of 28/29 April, when a signal amplifying the basic Operation Order had been despatched, setting out the tactical instructions for the first attack, which was to be known as BLACK BUCK 1. This gave the bomb release height as 8000 ft. Probably, the neatest encapsulation of the protracted exchanges and discussions about tactics, which took place over this early raid, was contained in HQ STC Strike Cell Comments on CORPORATE, written in August 1982, which stated:

CTF317
Op Order 3/82
TF49.1 E53
UKRAOC
290041Z Apr
TF49.1 E75

> "The initial concept involved a low level attack using retarded 1000lbs bombs. However, initial uncertainty about defences drove delivery heights up and dictated ballistic deliveries."

STC/6000/29/2
Ops.5 11 Aug
E59

FINAL PRELIMINARIES

6.42 At Ascension concerns were now being expressed by the local US Authorities about the use of the airfield by Vulcans since they had observed preparations being made on the Island and photographs had been taken of British activities. However, following diplomatic exchanges in Washington, CBFSU at Ascension was instructed to inform the USAF Base Commander that Vulcans would be arriving once the deployment decision was signalled. With this problem resolved, events began to move rapidly. On 26 April, CAS, AOC-in-C STC, the Air Commander and the AOC 1 Gp visited Waddington to discuss Vulcan operations and they were followed by ACAS(Ops) on 27 April, who gave a high level briefing. CTF 317.8 (Adm Woodward), now signalled that his main requirement was for a Vulcan attack in advance of the TF arriving in the TEZ, in order to damage significantly the Port Stanley Airfield runway, aircraft on the ground, POL dumps and ground defences. In addition, he expressed a hope that a Vulcan attack would allow the Sea Harrier to concentrate on the AD role. very clearly CTF 317.8's views about the potential threat posed by the Argentines at Port Stanley Airfield, and the relative priorities for tasking Sea Harriers and Vulcans. Northwood replied on 29 April that BLACK BUCK 1 was now approved and that quick follow-up Sea Harrier attacks, with photo recce, would be needed to monitor results. The aim throughout was to inflict maximum military damage in the shortest time.

CBFSU
212200Z Apr
1G/SASO/7/4.1
E14
MODUK
251029Z Apr
18G/335/4/22/
Ops.1 E23
RAF Waddington
ORB Apr
281750Z Apr
18G/335/4/22
Ops.1 E62
301246Z Apr
18G/335/4/22
Ops.1 E107

DEPLOYMENT TO ASCENSION

6.43 Deployment of 2 Vulcans was planned to be covert using operational air traffic procedures so the flight would not be notified by a standard air traffic flight plan which might leak to the Argentines. If problems were encountered en route, bombs would be jettisoned over the sea and a standard emergency declared on distress frequencies. However, this plan was subsequently modified. HQ 1 Gp had already stated that they had the crews and the aircraft with which to tackle the deployment and the operational task and awaited only the go-ahead. On 27 April, MOD formally instructed HQ STC to deploy 2 Vulcans to Ascension on 28/29 April. Subsequently, HQ STC refined this order to one of deploying 2 Vulcans using covert air traffic flight plans but showing the type of aircraft as Victor and the home base as Marham. This was felt to be necessary since a Soviet Auxiliary General Intelligence (AGI) ship was off the Lincolnshire coast and might be expected to report a Vulcan departure.

Unref
DS8 Minute
TF49.1 28 Apr
E54

270745Z Apr
TF49.1 E13

271102Z Apr
TF49.1 E16

271150Z Apr
TF49.1 E17

6.44 The first Vulcan crew to deploy to Ascension was captained by Sqn Ldr A Montgomery. After returning to Waddington from their final training sortie, on 27 April, Montgomery's crew were whisked off to Brize Norton by Andover and within 4 hours of landing were en route to Ascension in a VC10 which had been specially held back for them. Before the VC10 landed at Ascension, Montgomery and his co-pilot (Flt Lt W J Perrins) went on to the flight deck to examine the approach path, since they expected to be the first Vulcan crew to operate on a BLACK BUCK mission. To their chagrin, they found on landing that Montgomery was appointed as a Vulcan Detachment Commander and his crew were to become the specialist mission planners in the rudimentary operations complex on the Island. Also on the same VC10 flight was the Chief of Staff (COS) HQ 18 Gp (AVM G A Chesworth), who was sent to oversee the final preparation and execution of BLACK BUCK 1, and to make any high level decision on the spot. The presence of a 2 star officer was not so surprising as may seem at first sight since this was to be easily the most complicated air operation ever launched by the RAF involving a single bomber.

P17
HQ 18 Gp ORB Apr
DOMS Movement Log 271800Z Apr
Chesworth Tape

6.45 Shortly afterwards, on the evening of 29 April, the 2 Vulcans nominated as primary and reserve aircraft for the first raid, XM598 and XM607, arrived at Ascension. Each was refuelled twice in flight and carried 21 x 1000lbs bombs. Engineering and crew preparations began at once - as Sqn Ldr R J Reeve, one of the Vulcan Captains, commented later: "there was no hanging around and waiting, we got started the next day".

STC/6000/29/2/ Ops.2 25 Apr E44
Middlebrook P117

RUMOURS v REALITY

6.46 Whilst all this activity went ahead, wild rumours continued to appear in the British press. Her Majesty's Ambassador (HMA) Santiago reported that he had been approached by the BBC and others about a report in the Daily Star that Vulcans were to operate from Punta Arenas in return for the sale of RAF Hunters to Chile. However, the truth of what was afoot might reasonably have been divined by the astute from the written Parliamentary answer given by the Secretary of State on 28 April, concerning the implementation of the Total Exclusion Zone (TEZ). This cryptically announced, in its penultimate paragraph, that from 1100Z on 30 April:

HofC Digest of Debates HMSO, Jul

> "Port Stanley Airport will be closed, and any aircraft on the ground in the Falkland Islands will be regarded as present in support of the illegal occupation and accordingly liable to attack".

This statement of intention was rapidly followed by an order to execute. Less than 2 hours after Port Stanley Airfield was deemed to be closed, MOD authorised the Air Commander to attack the airfield "at your discretion".

MOD UK AIR 301240Z Apr 18/335/22/Ops.1 E99

BRIEFING AND EXECUTION

6.47 Final orders for executing the first raid were issued by the Air Commander in the form of an Operation Order, which was subsequently amplified by a signal. CTF 317.8 was also briefed by signal on 28 April about the raid and warned that fuel requirements would preclude normal identification procedures and hence care must be taken to avoid an inadvertent interception of the Vulcan by

Op Order 3/82 271440Z Apr
TF49.1 E53 281249Z Apr 18G/335/4/22 Ops.1 E59

shipborne Sea Harriers. He was also instructed to ensure that photographic reconnaissance (PR) by Sea Harriers was arranged as quickly as possible after the Vulcan attack had taken place.

301246Z Apr
18G/335/4/22
Ops.1 E107

6.48 Meanwhile, the crews finally selected to fly were informed on the morning of 30 April. The primary crew was to be that of Sqn Ldr R J Reeve, whose Nav/Rad, Flt Lt M A Cooper, was regarded as one of the best in the V Force, on occasion he had been referred to as a real "scope wizard". The secondary crew was to be led by Flt Lt M Withers. In the early evening, both crews were given a high quality pre-flight meal at the US Commissary; but as one of the aircraft Captains reported later: "nobody ate very much". At 2000Z on 30 April, the Vulcan and Victor crews went into the tent which served as the Operations Centre. Soon over 80 aircrew and briefers were crammed under the flapping canvas. The briefing began with the Met Officer setting out the weather details. The upper level winds were generally westerly or south westerly, averaging around 65 knots. For part of the route, no significant weather was expected but near 20°S and 40°S, two cold fronts lay at right angles to the route and both were associated with heavier cloud and clear air turbulence (CAT), which might be expected to make the AAR slots difficult to fly. As the briefing progressed, the lights flickered and the hand held megaphone which was used by the speakers to make sure they could be heard did not always work properly. In addition to all the highly complex operational detail, a full intelligence briefing was given. The crews were warned that fighter interception, at night, was not thought to be likely but threats which existed from the enemy radar and AAA defences were rated as more significant. Information relevant to the procedures to be followed in the event of a diversion to Brazil was set out and finally, but not least important, the location of safe houses in the Falklands themselves was given, in case escape and evasion should become necessary.

RAF Waddington
ORB Apr
Annex C and H

Middlebrook
P120-121
Eyewitness
account by
Sqn Ldr M E Beer

Met Forecast -
Copy held by
AHB(RAF)

18G/335/4/22/
Ops.1 28 Apr
E50

6.49 The 2 Vulcan crews completed their flight and fuel plans and carefully checked them against each other, however, no comparison with the Victor Flight plans was thought to be necessary. Subsequently, as will be seen, this led to difficulties when the flight plan times of both types of aircraft became displaced by about 30 minutes.

OPERATION BLACK BUCK 1

6.50 Sqn Ldr Reeve was allotted Vulcan Mk 2, XM598 and Flt Lt Withers, the Reserve Captain, took XM607. Both crews went to their aircraft and changed into immersion suits. Although both aircraft had coolers, with the outside air temperature at 24°C, the crew compartments proved very uncomfortable during the 45 minutes of checks which took place before engines were started.

RAF Waddington
ORB Apr
- Report by
Sqn Ldr R J Reeve

6.51 In due course, 12 Victor tankers and 2 Vulcans started engines and taxied out for a stream take off, with one minute between each aircraft. The whole Force was airborne shortly after 2300Z, but a problem arose almost immediately in the primary Vulcan, when the port Direct Vision (DV) window would not close and hence the aircraft could not be presssurised. Despite his best efforts, Sqn Ldr Reeve was unable to close the window properly and the frustration he felt was very well conveyed in an interview he gave later:

"It was one of those little triangular side windows. I must have closed that thing a thousand times during my RAF career without any problems, but as soon as we got airborne, the noise level went up and up and up, as we accelerated away until we could hardly hear ourselves speak on the intercom. The rubber seal had come loose from the frame. We tried to fix it with a polythene bag out of the ration box; then I tried opening and closing it several times to try and get it to seal. We were climbing all the time and by the time we got to 16,000 ft, it was clear that the aircraft wasn't going to pressurise. I had no option but to declare ourselves unserviceable and to return to Ascension". Middlebrook p120

The feelings of those on the ground were well illustrated in an explanatory signal which was sent to the Air Commander an hour later: CBFSU 010150Z May TF49.1 E77

"failure of the port DV seal .... for half-penny worth of tar, the ship was lost!"

6.52 Thus, very unexpectedly, Flt Lt Martin Withers, an Australian serving in the RAF, assumed responsibility for the task. Although the sky was clear, nothing was visible except stars. Withers reported later that at one stage he began to formate on a bright star in the mistaken belief that it was a Victor! Eventually, after firing numerous verey cartridges, the correct pair of Victor tankers was identified and the Vulcan joined up for its first AAR sequence. Middlebrook p121

6.53 The general principles which had been adopted for fuel planning for Black Buck operations called for as much fuel as possible to be lifted as far as practicable southwards down the out-bound tracks. The Vulcan was to be topped up with fuel to maintain its capability to return to Ascension for as long as feasible on the out-bound track. (11) Tanking presented some difficulties in the Vulcan, particularly for the relatively inexperienced pilots. Speeds used for climbs and descents had not been covered at the briefing and the Vulcan could not keep formation in a descent even with all 4 throttles closed.

6.54 As the aircraft moved steadily south, the weather proved to be quite varied, but between 40° and 50°S the formation ran into severe electrical storms which required close formation to avoid losing the leader and made refuelling extremely difficult. In due course, the Vulcan was left with only one Victor in company and the Captain broke radio silence to let the Vulcan know that he thought he still had its probe stuck in his drogue. The Vulcan pilots manoeuvred behind the drogue and with the help of the Air Electronics Officer (AEO)(Flt Lt H Prior) and his torch, managed to establish that the drogue was empty. To be quite sure that the drogue was serviceable, the Vulcan took on another 5000 lbs of fuel. RAF Waddington ORB Apr Annex H

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(11) A more detailed review of AAR operations associated with all BLACK BUCK operations is contained in Chapter 5.

6.55 By this time, the Vulcan Navigator/Plotter (Flt Lt G Graham), had noted that the formation was over 30 minutes late based on his flight plan. The Vulcan had also taken on a correspondingly increased quantity of fuel and was going to require more than was planned from the last tanker. Because the navigation flight plans had not been compared before take off, the Victor crew were still on time in accordance with their own flight plan. Part of the explanation for increased fuel consumption lay in the requirement for the Vulcan to keep descending from its cruising height of 33,000 ft, down to a less economical 27,000 ft in order to refuel from the heavier Victors. This, together with the Vulcan's own high weight (210,000 lbs at take off), and the general problems of handling during the refuelling, meant that more fuel was being consumed than originally estimated.

6.56 With about 5 minutes to go at the end of the last refuelling bracket, the Victor Captain (Sqn Ldr R Tuxford), instructed the Vulcan crew to disengage the probe. However, this left the Vulcan 5,000 lbs short of its fuel requirement with still some distance to go to the descent point. The Vulcan Captain asked the Victor Captain to pass more fuel. The latter said that it was impossible to pass more and still make his Terminal Airborne Tanker (TAT) point. The Victor then turned north towards Ascension and the Vulcan also turned, the crew being under the impression that more fuel might be available in a northerly heading. However, no fuel was offered; so the Vulcan turned south again towards the Falklands, already well below its planned fuel level. (It subsequently transpired that the Victor crew had deliberately passed more fuel than was originally planned to the Vulcan and had they not met up with the Terminal Airborne Tanker, which flew south of its original pre-planned position, Tuxford's aircraft would have been unable to return safely to Ascension).

6.57 At the descent point, the Air to Air Refuelling Instructor (AARI)(Flt Lt R Russell), who had played a valuable part during the 7 hours transit flight which had involved 6 refuelling brackets, retreated from the front of the aircraft and handed over to the co-pilot. Russell was fully aware that the aircraft was below the planned fuel level and would be unable to reach Ascension or even to divert to Rio if the next refuelling bracket failed; a matter which would undoubtedly have been of concern to an experienced tanker captain.

6.58 The Vulcan now began its descent and levelled at 300 ft and 320 knots. The TF was heard on the pre-briefed R/T frequency and 15 radars were identified by the AEO. During the descent, the Nav/Rad (Flt Lt R D Wright) saw that the scanner position indicator on the aircraft's H2S was fluctuating wildly, and hence he was unsure of its precise position. At 50 miles from the target, Wright scanned the radar ahead, but he saw nothing on the scope; the aircraft climbed to 500 ft in an attempt to obtain a fix. Immediately, an Argentine TPS 43 radar was switched on and indicated on the aircraft's Electronic Support Measures (ESM) receiver at a range of 42 nms. This indicated to Wright that the radar scanner position was not what he believed it to be, so he motored the scanner up; at once the high ground on the Falkland Islands started to show and enabled him to establish the aircraft's position which proved to be only about one nautical mile different from that indicated on the

aircraft's navigation system (12). Throughout the sortie, the Nav/Plot (Flt Lt G Graham), had compared the 2 Carousel INS and averaged out the error. Moreover, since Graham did not have a suitable plotting chart of the South Atlantic, he had plotted the aircraft's progress using a chart of the Northern Hemisphere turned upside down! At 30 nms a climb was started to the planned attack height of 10,000 ft and the aircraft was accelerated to 350 knots. The weather over the target area proved to be 7/8ths of stratus with tops of 1500 ft, through which the lights of Port Stanley town could be seen. As the bombing run began, the AEO set the false IFF MODE 2 setting and also began to jam the Argentine Superfledermaus radar with the Dash 10 ECM pod.

CBFSU
011530Z May
TF49.1 E61

6.59 The bombing run went extremely smoothly, the bomb doors were opened in good time and the Nav/Rad felt confident of his aiming using Mengeary Point headland, 3½ miles from the runway, as the offset aiming point. The angle of approach was critical since the intention was to get at least one bomb somewhere on the runway. The stick was dropped at an angle of 30° across the runway which was 150 ft wide and with the bombs being set to burst at intervals of 100 ft. Statistically, if the stick straddled the runway, one hit was almost certain and 2 were just possible. The 21 bombs took 5 seconds to reach the ground and the crew later reported that for them it seemed like "an age". When all the bombs were released, the pre-planned escape manoeuvre at full power was begun, with a smooth pull to 1.8g for the climb and a 45° turn to port. In the turn, flashes from the ground could be seen through the thin cloud and explosions were sensed. It was at this stage that the Argentine AAA apparently opened fire.

CBFSU
012150Z May
TF49.1 E64

Middlebrook
P122

Briasco and
Huertas - P157

6.60 As the aircraft climbed to 41,000 ft, the Argentine TPS 43 came on again and continued to scan the Vulcan until the aircraft was about 200 nms from Port Stanley Airfield. When the aircraft passed near the TF the H2S was sector-scanned towards the Fleet to indicate a successful attack. The effect on the morale of the TF may be judged by the fact that the operations room complement on HMS INVINCIBLE cheered out loud when the news of the Vulcan attack was received, soon after it had taken place.

Personal account
by crew member of
HMS INVINCIBLE
Broadcast on
BBC R4 13 Jan 85

6.61 Radio contact was made in good time with the Nimrod controlling the Rendezvous (RV), and the procedures worked very well. The Nimrod was already at extreme range, heading for Ascension, with its fuel at minimum owing to the Vulcan being over 30 minutes later than planned. The tanker had also gone south of the planned RV in order to meet the Vulcan and transfer urgently needed fuel - the Vulcan was down to 13,000 lbs by this time. Since at least 10,500 lbs of fuel would have been required to divert from the RV to overhead Rio, the crew were naturally a little anxious in case the AAR bracket would prove to be troublesome. The Vulcan connected at the second attempt but fuel flooded out of the basket and poured over the windscreen, making it impossible to see out even with the wipers selected to fast speed. Flt Lt Russell, the AARI, managed to maintain formation for most of the 10 minute refuelling

RAF Waddington
121730Z May
1G/SASO/7/8/TS.2
E5

(12) This fault in the scanner was later found to be due to dampness when the aircraft was serviced on return to Ascension.

bracket whilst the Nav Rad (Flt Lt Wright) stood on the ladder and looked through the bottom of the centre windscreen where there was a clear area. Whilst he gave instructions the pilots to go "up, down, forward or back", the Vulcan managed to take on 36,000 lbs of fuel from the tanker, of which 34,000 lbs went into the tanks and the rest was blown into the air of the South Atlantic! Shortly before reaching Ascension, the crew were surprised to pick up a BBC World Service broadcast, announcing their attack.

Air Pictorial Jul 83 P251

6.62 The Vulcan landed from a visual approach with 12,000 lbs of fuel remaining and taxied back into a tremendous reception. The sortie had lasted 15 hrs 58 mins and throughout the aircraft had remained largely serviceable, although pressurisation of the tail warning radar and the HF had been lost some hours before.

6.63 Post flight analysis showed that the main problems encountered during the sortie had centred around the Vulcan's fuel consumption; There was no doubt that the amount of fuel required to cover all aspects of the mission had been under estimated both by the planners in the UK and at Ascension, as subsequent post flight analysis showed. As the Air Commander's COS, AVM G A Chesworth, succinctly summed up the situation later: "BLACK BUCK 1 was a close run thing"

Discussion with Gp Capt J Laycock Stn Cdr RAF Waddington (Apr 82) Jan 85 Chesworth Tape

6.64 A thorough review of the sortie was now set in hand so that the lessons learned could be applied to future operations. In the meantime, all those involved received the personal congratulations of both the Air Commander and CAS the same evening; the latter called the sortie "a splendid team effort carried out in very demanding circumstances and applied clinically"

CBFSU 021040Z May 1G/SASO/7/8.1 E50 TF49 Pt 1 Es 59 & 83

6.65 One of the earliest and most urgent requirements after BLACK BUCK 1 was a post-attack reconnaissance, preferably one which would include good photography. This could only be done by organic aircraft from the TF and CTF317 had already stressed the requirement by signal, pointing out that he was unwilling to arrange a further attack unless reconnaissance showed that BLACK BUCK 1 had been ineffective. As a consequence, CTF317.8 launched combined attack/reconnaissance Sea Harrier sorties on 1 May. They reported by visual assessment, through a 1200 ft cloud base, that the Vulcan's 21 bombs had produced a scar 273 yds x 76 yds across the airfield in a NE-SW direction with one crater on the runway and 2 others near by (13), (14), (15).

CTF 317 281030Z Apr 18G/335/4/22 Ops.1 E72

CTG317.8 011737Z May TF49.1 E82

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(13) An examination made when the airfield was captured in Jun 82 showed that the single crater was approx 550 yards from the eastern end (GR4697335). The crater itself was 84 ft x 115 ft; by the end of the campaign, the Argentinians had filled it with rubbish, vegetation and topsoil up to a point 5 ft from the surface.

Army Qtly Jul 83 p 274

(14) Cdre Destri, the Argentinian Pucara Commander at Port Stanley Airfield, claimed later to have faked bomb craters on the runway (Sunday Telegraph Magazine article 9 Feb 86 p27). However, there was never any doubt that at least one Vulcan bomb had hit the runway, as statistically expected.

(15) Various post hostility reports, which have not been corroborated from official British sources, state that some Argentine personnel were wounded. The road to Port Stanley was definitely closed and a small hangar destroyed.

PREPARATIONS FOR FURTHER RAIDS

6.66 As the staffs tried to assess the planning and effectiveness of the tactics employed in BLACK BUCK 1, they constantly sought more comprehensive information about the first raid to help in preparing for future operations. Unfortunately, partly because of bad weather after BLACK BUCK 1 and visibility limitations, which affected satellite coverage, only a small amount of amplifying information became available. Requests for photographs taken by Sea Harriers of damage caused by BLACK BUCK 1 were still being signalled to the TF on 12 May. This was a matter of concern for all those involved, for example the Station Commander at RAF Waddington (Gp Capt J Laycock), lamented that his planning team were most perturbed that the first time that they saw the photographs of the results of BLACK BUCK 1 was in a national newspaper. Not unnaturally, the staffs asked why they could not have photographs which had been made available to a reporter! Some acrimonious signals passed between the UK and the TF, and - as MODUK pointed out forcibly - photographs which had been properly subject to interpretation were essential, not only to allow post-attack assessment but also to allow calibration adjustments to be made to the Vulcan aircraft bombing systems. Much effort was expended by the staffs, especially at Waddington on bombing analysis and equipment adjustments designed to prove the bombing accuracy of each individual Vulcan, but the lack of feedback from the TF continued to be a problem which eventually reached the level of the COS Committee.

HQ1 Gp
011951Z May
TP49.1 E63
PSO to CAS
Brief 10 May
TF49.3 E8
1G/SASO/7/4.1
E91
DASB
Interview
1 Jun (Copy in
AHB(RAF))
ASMA
030355Z May
STC/6000/29/2/
3/Ops.1 E25
Chesworth Tape
TF49.2 E17
1G/SASO/7/4.1
E81

6.67 Despite these difficulties, routine planning for a follow-up attack became more urgent when high level reconnaissance indicated that 5 Pucaras - which required only short take-off runs - had returned to Port Stanley Airfield within 12 hours of the BLACK BUCK 1 attack, notwithstanding the damaged runway. As a consequence, the airfield had been shelled by warships on the night of the 1/2 May, but clearly this was undesirable as the ships were at risk and valuable Sea Harrier cover had to be employed for their protection. In these circumstances, it was not surprising that CTF317.8 (Adm Woodward), requested a follow-up Vulcan attack as soon as possible.

CTF317
012335Z May
TF49.1 E65

6.68 The Air Commander was, of course, alert to the possibility of the Argentines continuing to use the undamaged portion of the runway and had already called for planning to go ahead for a follow-up raid at the earliest possible time. Indeed he questioned AVM Chesworth very closely on this point and expressed disappointment on being told that BLACK BUCK 1 required close analysis before further raids were launched.

CTF317.8
022012Z May
18G/335/4/25
Ops.1 E117
Chesworth Tape

BLACK BUCK 2 - DETAILED PLANNING

6.69 To no one's surprise, the next day (2 May), the Air Commander issued firm instructions for another Vulcan attack to cut the runway again to cause collateral damage "as soon as practicable". However, after BLACK BUCK 1, only one load of 21 x 1000lb bombs remained at Ascension and re-supply was not due to arrive until 2340Z on 2 May;

020840Z May
STC/600/29/2/2/
Ops.1 E10
UKRAOC
022118Z May

this made the earliest launch time for BLACK BUCK 2, 4 May (16). It remains unclear why additional bombs, for a follow-up attack, were not ordered until the evening of 30 April (2½ hours before the launch time of BLACK BUCK 1). Perhaps this was an oversight by the hard-pressed staffs; it could hardly have occurred because of over optimism about the likely results of the first raid, since it had been correctly envisaged that no more than one, or at best two bombs would hit the runway and hence further attacks would almost certainly be necessary to counter possible Argentine repair efforts. However, in the event, as the post flight recovery of Victor and Vulcan aircraft and crews meant that a follow-up attack could not be launched until 3 May at the earliest, the lack of bombs until the night of 2/3 May did not prove a limiting factor and the take-off time for BLACK BUCK 2 was set for 2345Z on 3 May, with the primary aircraft (XM607), being captained by Sqn Ldr R J Reeve of No 50 Sqn, and the reserve aircraft (XM598), being captained by Sqn Ldr A Montgomery of No 44 Sqn.

E54
ASMA
020720Z May
STC/6000/29/2/
Ops.1 E5
Unref Manu-
script Note
TF49.1 E66
UKRAOC
301913Z Apr
TF49.1 E79
CBFSU
021040Z May
1G/SASO/7/8.1
E50

6.70 Following the first raid, it was expected that the Argentines would be fully alerted and also might be expected to make use of Roland SAM which was now thought, possibly, to be in position at Port Stanley Airfield; hence it seemed prudent to discuss varying tactics for any follow-up Vulcan raid. After some discussion between MOD and lower formations about bombing accuracy, it was decided to set an attack height of 16,000 ft with the aim of keeping the Vulcan above the effective height envelope of Roland.

TF49.2
E18 & 24
ASMA
031220Z May
STC/6000/29
2/3 Ops.1 E25

6.71 Detailed planning to implement the lessons learned from BLACK BUCK 1 went on continuously. BLACK BUCK 1 had clearly demonstrated that Vulcan fuel consumption was, in practice, higher than theoretically estimated. This was due to a variety of factors associated with flying in formation with the Victor tankers, joining up manoeuvres, CAT and the need to undertake AAR at heights lower than desirable for maximum fuel economy. As a result, a number of amended procedures were introduced; the Victor Tankers would carry out an overtake RV with the Vulcan; extra refuelling brackets were introduced so that the Vulcan could always return to Ascension either direct, or via the RV off the Brazilian coast. The navigation flight plans of the Victors and the Vulcans were to be carefully compared to ensure that they were fully harmonised in respect of timing, something which had not been foreseen as necessary before BLACK BUCK 1, when the cumulative significance of their slightly differing aircraft operating characteristics had not been fully appreciated. Thus, all the lessons learned were carefully appraised and applied in the planning sequences for future operations.

Annex E to
RAF Marham
MAR/5025/5/
20 Ops.1
1 Jul

RAF Waddington
ORB
May
Annex B

BLACK BUCK 2 - THE SORTIE AND ITS RESULTS

6.72 Both Vulcans took off at 2347Z and this time the primary aircraft was serviceable so Sqn Ldr Montgomery returned to Ascension. Before take-off, the presence of a Soviet AGI near to Ascension had precluded a ground check of the H2S radar and this was carried out as soon as the Vulcan was airborne. The high level transit flight went

RAF Waddington
ORB May

(16) At least 2 full loads of bombs had to be available to allow both the primary aircraft and the airborne reserve to be fully armed. After the experience described above, the Air Commander gave orders that 84 x 1000lb bombs (4 Vulcan loads) were to be held at Ascension at all times.

060251Z May
STC/6000/29/
2/4/Ops.1 E11

fairly well, although a stronger than forecast tail wind changed the time of the refuelling brackets and at one stage the crew had to use their radio to resolve the problems. Ascension transmitted the revised weather forecast for Port Stanley Airfield, but the code used for this was not secure enough to pass the TF's latest position. Severe turbulence nearly caused one Victor to miss its final fuel uplift, but the Vulcan AAR bracket went very well in RT silence, with the aircraft needing 10,000 lbs less fuel than the planned maximum figure. The crew commented later that this period of unfavourable weather caused them some "missed heart beats". CBFSU 041610Z May TF49.2 E41

6.73 After descending 300 ft above the sea, the aircraft accelerated to 320 knots and flew a track to avoid the TF whose radars had been detected on ESM. This allowed the crew to keep the H2S radar off until only 40 nms away from the target when a pull up was initiated to 16,000 ft. At this stage, the H2S was giving the Nav Rad (Flt Lt M A Cooper) problems and he had to re-tune to get a satisfactory picture. During the final stages of the run in on 234°T he had difficulty in getting the target offsets under the markers and some over-correction caused the bomb steer to fluctuate. However, the 21 bombs were released at 0822Z and the aircraft made the usual steep climbing turn, during which the Captain saw bomb flashes on the ground. CBFSU 041950Z May TF49.2 E42

6.74 The crew noted that the weather over the target area was clear, and the wind 250/30 knots. There appeared to be no blackout in force and the lights of Stanley town were clearly visible. No Argentine radars were detected before the attack but as the aircraft departed several ground radars were switched on!

6.75 The aircraft levelled at 41,000 ft and soon afterwards dawn broke. Although outside the theoretical range of both Argentine radar and aircraft, the crew felt vulnerable as the aircraft was producing contrails and was silhouetted aginst a brightening eastern horizon. The Captain, therefore, deemed it prudent to turn further eastwards away from the Argentine coast. The AAR RV went exactly as planned, with the Nimrod picking up the Vulcan's IFF at more than 200 nms; 30,000 lbs of fuel was transferred and the Vulcan landed with ample reserves. The planners were reassured to know that their highly refined fuel plan was fully proven and consumption had turned out to be within 1000 lbs of the forecast figure. UKRAOC 181820Z May 1G/SASO/7/4.2 E53

6.76 Once again it was some time before the post-attack reconnaissance by Sea Harriers was possible. This took place 6 days later, on 12 May, and showed that all 21 bombs had fallen about 70 yards to the west of the runway, along a 1000 yards line running roughly south west. However, it was noted that no attempt had been made to repair the runway crater made on BLACK BUCK 1, nor had damaged aircraft been moved. It was assessed that about 750 yards of runway was still available for the Argentines to use. TF49.3 E9 & 12

FUTURE PRIORITIES

6.77 The Air Commander was now faced with a problem of whether to continue with Vulcan bombing attacks, or to give higher priority to the many demands on his limited AAR tanker resources during the next phase of air operations. CTF317 051157Z May TF49.2 E51

6.78 After considering the relative priorities between Nimrod maritime surveillance, long-range (LR) Hercules supply drop, MRR sorties and the need to return tankers to the UK for Nimrod Mk 2P AAR training, the Air Commander decided to recall 2 Vulcans to the UK on 7 May. In due course, he planned to replace these with 2 Vulcans modified to carry Martel ASMs (2 of these missiles had already been sent to Ascension on transport aircraft). Although there was, therefore, to be a lull in launching BLACK BUCK operations, this did not mean that planning and preparation would not be maintained at full swing, as will now be illustrated.

STC/6000/29/2
3/Ops.1
E27 & 31

A BLACK BUCK ON GOOSE GREEN

6.79 With the amphibious units due to make a landing at San Carlos Water in about 12 days, there was considerable concern that Argentine Pucaras and Skyvans would continue to make use of the primitive landing strip which was known to exist at nearby Goose Green. Accordingly, the COS invited MOD(Air) to examine the feasibility of a Vulcan attack on the airstrip. The remit was passed down to the planning team at RAF Waddington who were instructed to study the likely results of dropping 21 x 1000 lb bombs on the grass runway area, with the proviso that none were to fall within 2000 ft of the estimated 100 civilians living in Goose Green/Darwin areas.

COS45/82
8 May

UKRAOC
091151Z May
1G/SASO/7/8.1
E111

6.80 The Waddington Study Team soon found that virtually the whole area between the strip and the beach area was suitable for landing light aircraft and had been used in this way in the recent past. Several options wre studied but even a risky low level attack with 21 x BL 755 cluster bombs would not be likely to deny a minimum Pucara operating strip. When combined with the risks to local settlements, these factors indicated that a Vulcan attack against Goose Green would be "highly unattractive". In due course, after VCAS saw the Study's outcome, no further action was taken on the proposal.

1G/SASO/7/8.1
E115 & 120

Brief for
VCAS 10 May
TF49.2 E74

ATTACKS ON MAINLAND BASES

6.81 Vulcan attacks on mainland airfields were amongst the many options considered as a means of countering the air threat to our land and sea forces during the crucial landing period. Early in May, an attack on Commodoro Rivadavia was briefly considered, followed a few days later by a more detailed appreciation of conventional bombing attacks against the airfields at Rio Gallegos and Rio Grande. This showed that a raid launched and recovered from Ascension was feasible with a bomb load of 7 x 1000 lbs. However, if a Chilean base was used for recovery, the load could be increased to 21 bombs. Towards the end of May, the appreciation was revised and extended to include San Julian Airfield where the possibililty of using Laser Guided Bombs (LGBs) (17) with ground designated laser target markers was

TF49.2
E72 and E74
8 & 10 May

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(17) In an effort to increase the offensive air support available, a feasibility study of using 3 LGBs from a Vulcan against targets illuminated by a ground operated laser target marker was undertaken. Test releases were successfully made with two LGBs at West Freugh on 23 May where successful hits within 30 ft of the aiming points were achieved. Subsequently 3 LGBs were successfully launched on Larkhill Range on 24 May by No 101 Squadron.

A&AEE
201800Z May
TF49.3 E58

No 101 Sqn
ORB May

examined. Once again, the raids were assessed as being feasible but with considerable advantages accruing if a Chilean airfield was available for recovery. A feint Vulcan operation towards the Argentinian mainland with the idea of dropping chaff was also mooted by the Air Commander, as a means of confusing the enemy defences. Naturally, all these operations would have required a major AAR effort involving at least 12 tankers. In the event, none were ordered (18).

Adams pps 114-115 - on press comment

VULCAN PLANNING - MARTEL

6.82 The Argentine TPS 43s deployed in the Falklands represented a threat to British forces by offering both early warning of our operations and acting as co-ordinators of their own air activities, including Exocet attacks on the TF. (19) Hence, it was highly desirable to put these radars out of action as soon as possible. One method would be to employ ASMs, but the only missile in the British inventory was the Martel anti-radiation missile (ARM).

6.83 The use of Martel was first considered in mid-April, but a quick appraisal soon confirmed that considerable practical difficulties stood in the way. The capability of the missile to discriminate between two TPS 43 radars was doubtful; it was considered that the missile would probably home between the two locations and therefore not succeed in hitting either of the radars. Moreover, Martel had no capabilities against the weapon associated radars like Superfledermaus. As a consequence, preliminary work on a Martel fit for the Vulcan was abandoned. However, the need to reduce Argentine early warning capabilities became so vital that this decision was reversed within 48 hours, and Waddington was instructed to recommence the work on the Vulcan which was now to take precedence over fitting the missile to the Victor.

18G/335/4/22 Ops.1 E53 & 57

UK RAOC 301617Z Apr TF49.1 E56

6.84 A trial installation began on Vulcan XM597, which involved the suspension of a missile on the port mounting point of 5 Vulcans. The initial pylon was manufactured in the Station Workshops at Waddington from a commercial angle iron to a local design (STF 235). An improved version was later produced at St Athan. A successful acquisition and firing was later carried out from Vulcan XL391, under the supervision of the Aeroplane and Armament Experimental Establishment (A&AEE) on 13 May. The flight trials resulted in a Release to Service on 6 May with the proviso that after a long transit flight, at high level, the aircraft would have to fly at medium level for not less than 30 minutes in order to allow the missile to recover from the low temperatures previously experienced. The trials flying also indicated that increased fuel consumption, caused by the extra drag of the externally mounted Martel, would be about 2%. (Subsequently, these figures were to be disputed as will be explained later).

RAF Waddington ORB May Annex M 1G/SASO/7/4.1 E94 STC/6000/29/2 Ops.3 E91

ASMA060345Z May STC/6000/29/2/3 Ops E29

ASMA061920Z May STC/6000/29/2/3 Ops.1 E30

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(18) S of S for Defence told the H of C on 26 May that bombing of the mainland was not militarily feasible but on 27 May, the Foreign Secretary said on TV: "we have ruled 'out' no military options".

Adams p114

(19) For example, in Aerospacio May/Jun 85, page 54, Capt J L Carini described how a TPS 43 helped to co-ordinate air raids by Canberras, which he led.

6.85 The qualification of more Vulcan crews in AAR techniques was not proving easy to arrange at this time as the Nimrod Mk 2P Force had priority - on 6 May, only 4 Vulcan crews had been AAR trained and this too would present difficulties in producing an effective Martel operational capability.

ASMA061445Z May
STC/6000/29/2
Ops.1 E14

6.86 The problems which faced the staffs were well summarised in a brief for AOC No 1 Gp (AVM M W P Knight) which succintly set out the difficulties as seen at the end of the first week in May. One of the two TPS 43 radars was believed to be located near Port Stanley Airfield and the other one not far away at Government House; their performance and electronic characteristics were assessed as being good. The key problem in attacking these radars with Martel was to decide which of the two radars the missile had acquired. To do this, the Vulcan crew would have to approach within 15 nms at 8000 ft in order to achieve about a 10 degree deflection so they could be sure which TPS 43 the Martel missile had acquired.

1G/SASO/7/4.1
E101

HQ 1 Gp
091430Z May
1G/SASO/7/8.1
E117

6.87 A further problem was the radar tactics which the Argentines might be expected to employ. The radars had to be transmitting long enough for the Martel to acquire and once this was successfully achieved, the missile would home on to residual radiation, even if the radar was then switched off. Providing the other TPS 43 radar was not within 3 degrees either side of the acquisition bearing, the missile would not be seduced away. Since the radars were not being used very often at night, a daylight attack would be required. Moreover, in order to lure the Argentines into using the radars, it would probably be necessary to employ baiting tactics, by flying up into the radar beam and then rapidly descending before hostile action began. The possibility of combining the best attributes of Martel together with those of bombs was considered, but this was rejected, largely on the grounds of fuel consumption. In addition to these tactical difficulties, Martel itself was by no means an advanced technology missile and had a number of tactical limitations. For example, it required servicing after 25 hours carriage in the air - about sufficient for one transit flight from the UK and a single attack on the radars. Long periods of cold soak which would be experienced between Ascension and the Falklands might also impair its reliability. It would require up to 35 minutes warm-up before launch and it was inadvisable to run the missile for more than one hour, hence the duration of any baiting tactics would be limited.

HQ 1 Gp
092245Z May
1G/SASO/7/8.2
E1

A&AEE
052045Z May
TF49.2 E53

6.88 Clearly, the use of Martel presented the Vulcan Force with an option of difficulties. HQ No 1 Gp called a meeting on 7 May of all those mostly concerned, to review the following questions: Would the missile be serviceable when fired? Would it acquire on a single radar? What would happen if it was seduced and went off course? Would it land in Port Stanley town? Would the Argentine TPS 43s oblige by transmitting? Was the risk of a Vulcan loitering and baiting with its ECM (ALQ 101) switched off acceptable - probably in daylight when Roland SAMS would be a threat to at least 4000 ft and possibly higher? Despite all these awkard questions which crowded in on the staffs, their sense of humour remained sufficiently intact, afterwards, for HQ 1 Gp to point out to HQ STC that Martel was spelt with only one "L" and a second "L" turned it from a missile into a good brandy!

ASMA
051127Z May
STC/6000/29/2/3
/Ops.1 E27

ASMA
051620Z May
STC/6000/29/2/3
Ops.1

6.89 Although action on preparing for the use of Martel continued for about another 10 days, eventual solutions to the TPS 43 attack problem were already beginning to emerge elsewhere. On 7 May, SASO, HQSTC, asked MOD to investigate the possible use of the American owned Shrike (AGM 45A) ASMs which, unlike Martel, also had a capability against the fire control radars used with Skyguard. Exchanges with the US Authorities about this proposal were set in train within 48 hours of the initial suggestion. Meanwhile work on Martel continued and when by 8 May, 2 Vulcans (XM597 and XM598) had been fully modified, Waddington tried to develop suitable tactics designed both to overcome the problem of differentiating between the two TPS 43s and to reduce the possibility of Port Stanley town being hit inadvertently.

UK RAOC 071718Z May 1G/SASO/7/4.1 E103

BDSW 132140Z May TF49.3 E22

ASMA 080115Z May STC/6000/29/2/4 Ops.1

6.90 On 13 May the 2 modified Vulcans departed for Ascension, each carrying 21 x 1000lbs bombs and one Martel each. One of these aircraft (XM612, captained by Sqn Ldr R J Reeve), experienced apparent fuel consumption problems during the transit to Ascension and, as a consequence, the bomb load was jettisoned. However, 5 bombs did not release and subsequent investigations showed this was probably caused by an incorrectly connected bomb carrier. A Victor was scrambled from Ascension to refuel the Vulcan and recorded 24,000 lbs as having been transferred, but when the Vulcan landed at Ascension, it still had a fuel load of 12,000 lbs. This caused some consternation because the incident appeared to cast doubt on the validity of several 5 hour flights in the UK which showed that an increase of up to 5% in fuel consumption would be caused by the carriage of a Martel. Very careful refuelling checks carried out at Ascension on 16 May showed that the Vulcan's fuel gauges were not at fault, indeed the bowser and the aircraft figures differed by only 1025 lbs. Despite the most thorough investigation, it appears that the precise cause of these fuel problems during the transit was never finally determined, although much speculation occurred and several theories were advanced. Immediate action was taken to check the validity of the Vulcan fuel consumption figures yet again. A special flight trial was carried out by Waddington on 15 May, with a Vulcan configured similarly to XM612 during its transit flight to Ascension. The outcome was to revalidate the fuel planning figures which had been used for XM612's transit.

1G/SASO/7/8.2 E7 and 12
141837Z May 1G/SASO/7/4.2 E26
Eng Diary Sqn Ldr M F C James Vulcan Det

CBFSU 161500Z May 1G/SASO/7/8.2 E26

162114Z May TF9.3 E40 A&B

6.91 All this led to a degree of uncertainty about the timing and scope of the next BLACK BUCK sortie. The Air Commander expressed his concerns on 14 May, stating categorically that he must be "reassured in more concrete terms of the Vulcan's capability" before ordering another BLACK BUCK sortie. On Martel, the Air Commander commented that the continued low confidence expressed by the HQ 1 Gp staff on the ability of the missile to distinguish between 2 TPS 43 radars meant that the carriage of Martel did "not seem worthwhile". All this, coupled with the overriding need to avoid civilian casualties, effectively ended further active consideration of using Martel and work shifted to Shrike, on which a trial installation started on 18 May.

142112Z May 1G/SASO/7/8.2 E13

ASMA 150855Z May STC/6000/29/2/2 Ops.1 E27

BLACK BUCK 3 PREPARATIONS

6.92 Despite the general uncertainty about BLACK BUCK operations, and in particular the relative AAR priorities to be allocated to the Vulcan and Nimrod operations, planning for BLACK BUCK 3 was pressed ahead. SASO HQ 1 Gp called a meeting at Waddington on 15 May to

CTF 317 160940Z May TF49.3 E26

review bombing results and procedures. By now the crews of both BLACK BUCK 1 and 2 (Flt Lt Withers and Sqn Ldr Reeve respectively), had been intensively debriefed in the UK. These discussions revealed a number of new, small but important lessons such as the need to check H2S serviceability during the pre-flight aircrew checks at Ascension, notwithstanding the presence of a Soviet AGI. If this was not done, the next time unserviceability came to light would be during the attack run near to the Falklands and the raid would have to be aborted.

152015Z May
1 Gp/SASO/7/8.2
E16

BLACK BUCK 3

6.93 In order to ensure that the Vulcan had the most up-to-date intelligence, the TF was asked to signal the results of an attack by 4 Sea Harriers with 12 x 1000 lbs bombs against the airfield on 15 May. The reply showed that a new crater had been made 200 ft west of the one made by the Vulcan on BLACK BUCK 1 on 1 May. It seemed that no effort was being made by the Argentines to repair the runway, but the eastern end of the runway still remained untouched.

121730Z May
1G/SASO/7/8.2
E5
161511Z May
TF49.3 E30
162010Z May
TF49.3 E33

6.94 As already related, Vulcans XM607 and XM612 had returned to Ascension on 14 May, and now that the fuel problems encountered during the latter's transit flight had been thoroughly investigated, it was decided to mount BLACK BUCK 3 on 17 May with an attack time of 0545Z. Once again, this was to be from 16,000 ft on a south-westerly heading with 21 x 1000 lbs bombs aimed at the runway. Flt Lt Withers was to lead the primary crew in XM607 and Sqn Ldr Reeve was to be the back-up in XM612.

160210Z May
1G/SASO/7/8.2
E19
161255Z May
TF49.3 E28

6.95 However, when the Operations staff at Ascension had carried out several hours detailed planning using the locally forecast winds and the most accurate fuel consumption figures available, it became clear that there was insufficient AAR effort available and the Vulcan mission was a non-starter. This message was relayed to Northwood where the Air Commander was informed by his COS, AVM Chesworth - who later re-called this occasion as his "worst moment" of the Campaign.

Price tape

Chesworth tape

6.96 Whilst all this was taking place, SASO HQ 1 Gp (Air Cdre H S Carver) called the Detachment Engineering Officer (Sqn Ldr M F C James), on the secure phone link, and instructed him to remove the Martel pylons from the Vulcans because of the concern about possible excessive fuel consumption which might be caused by the extra drag involved (20) This work was completed for both aircraft in 1¼ hours, but by that time the raid had already been delayed for 24 hours for the reasons set out above. However, a clash later arose between launching this BLACK BUCK sortie and a Nimrod mission which had greater priority and the delayed BLACK BUCK was cancelled.

James diary

TF49.3 E37

1G/SASO/7/8.2
E34

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(20) The precise circumstances leading to cancellation of BLACK BUCK and to this DSSS call are not wholly clear from the surviving documents and the recollections of those directly involved differ in some respects. It should be noted here that although Martel missiles had been flown to Ascension on 2 Vulcans on 13 May, the detachment did not have an <u>operational</u> Martel capability.

MAR/5025/5/20/
Ops 1 Jul
James comment
23 Oct 87

POST RAID RECCE - CONTINUING PROBLEMS

6.97 The Air Commander decided that the lack of timely and accurate reconnaissance of the Falklands was now so serious that it should be raised at the highest levels in MOD. On 18 May, he wrote to VCAS saying that he had raised the issue almost daily at Northwood and although there were signs that the message was "sinking in", the latest Sitrep from the TF (18 May) contained the first reference to low level photo reconnaissance since BLACK BUCK 1 (30 Apr - 1 May). The Air Commander went on to say that there were still major shortcomings, and added that:

160940Z May
TF49.3 E26

18G/335/4/6/4
Ops.1 E35

> "On those occasions that photographic evidence is gained, the reports are vague, incomplete and bear no resemblance to correct Recce and Misrep format; disappointing as there is an RAF Photo Interpreter with the Force". (21)

6.98 VCAS replied that CAS had raised this topic on seveal occasions, the most recent being at the COS meeting on 17 May, when CAS had stressed that he needed to know of the effectiveness of Vulcan operations, since amongst other reasons Ministers took the "very closest interest". VCAS went on to observe:

CAS 51/82
17 May

> "if Sandy Woodward were denied access to Reports from the long range Nimrod flights you mounted from Ascension, I am sure he would not be amused".

18G/335/4/6/4
Ops.1 19 May

For reasons which remain a matter of conjecture, the problems of post reconnaissance reporting were never satisfactorily resolved throughout the campaign. The Air Commander believed after mature reflection that the main reasons underlying these difficulties stemmed from a lack of appreciation in the TF of the urgent requirement for recce of Port Stanley Airfield, and the absence of RN interpretation expertise and facilities on the carriers, coupled with the indifferent recce capabilities of the Sea Harriers. However, it is important to stress that the RN Sea Harrier Squadrons were tasked with air defence and had received no training in recce operations.

AHB1(RAF)
Discussion with
Air Mshl
Sir John
Curtiss
12 Feb 87

SHRIKE COMETH

6.99 As already mentioned, the use of Shrike ASMs had been postulated early in May and following the cancellation of BLACK BUCK 3, work on Shrike received an increased priority. Shrike was more modern than Martel and could be released much closer to the target when the launching aircraft was flying at 16,000 ft; this removed the problem of angular discrimination between radars which had bedevilled plans to use Martel. Unlike Martel, the Shrike Dash 9 could also be used against Skyguard radars with a kill probability of around 80%. It therefore promised to be an effective way of dealing with the threat posed by Argentine TPS 43s.

071345Z Jun
STC/15281/2
GW.1 E1

TF49.4 E56

TF49.3 E98

6.100 Its main disadvantage was that it was an American weapon, in American hands in Germany, and it was untested on the Vulcan. The story of how 30 of these weapons were procured, fitted and given a trial firing is told elsewhere in this narrative. One operational

UKRAOC
011450Z Jun
TF52.2 E104
USAF WASH

(21) However it should be noted that the man concerned was an RAF Warrant Officer, (J W Woof (4166442)) and was under naval command.

aspect of this process was the dispatch of a USAF F4G aircraft from Spangdahlem (FRG) to Waddington on 21 May to bring the necessary publications and to allow the USAF crew to give advice on Shrike tactics to the Vulcan aircrew. By 28 May, 8 Shrikes and 4 ground tradesmen were in position at Ascension ready to begin operations.

192055Z May
TF49.3 E52

STC/6000/29/2
Ops.1 E90

LEAFLET DROPPING CONSIDERED

6.101 Whilst plans for Shrike operations were being brought to fruition, MOD asked on 27 May for a study to be made of the feasibility of dropping 10,000 leaflets onto the Argentine Garrison in the Falklands during a BLACK BUCK sortie. The planning team at Waddington judged that this could be done and requested further operational details of the task. However, the Air Commander and MOD seem to have decided that the operation would be too risky and no further reference to it appears in the records.

281834Z May
STC/6000/29/2/2
Ops.1 E86
Gp Capt
D H Magor
& AHB1(RAF)
discussion
10 Feb 85

BLACK BUCK 4 - AN ABORTIVE SORTIE

6.102 BLACK BUCK 4 was planned to be the first Shrike attack with a load of Shrike Dash 10 missiles, together with bomb bay fuel tanks. No bombs were to be carried and the missiles were to be targetted against the TPS 43 radars. Sqn Ldr McDougall's crew had arrived at Ascension only about 24 hours before the planned take-off time but after a full briefing which included the instruction "head for San Carlos" in the event of bailing out, the crew departed in Vulcan XM598, just after midnight GMT on 28/29 May on BLACK BUCK 4. Joining up with the Victor tankers did not prove easy and radio silence had to be broken. After 4 successful fuel transfers, the fifth proved more difficult owing to CAT. At this stage, the hose drum unit on one of the Victors failed and prevented inter-Victor fuel transfers; hence the Vulcan had to abandon the sortie after about 5 hours and return to Ascension.

272355Z May
TF49.4 E23

RAF Waddington
ORB May

CTF317
OP Order 3/82
271500Z May
1G/SASO/7/4.3
E11

BLACK BUCK 5 - A SHRIKE ATTACK

6.103 Plans to launch a repeat sortie were begun at once and BLACK BUCK 5 took off on 31 May with Sqn Ldr McDougall's crew in XM597, carrying a load of 4 Shrike missiles and 2 bomb bay fuel tanks.

TF49.4
E39 & E47

6.104 The take-off spacing between the 16 aircraft was reduced to only 45 seconds, the joining up was much smoother and therefore much less fuel was consumed than on earlier sorties. During the flight south, the rear crew members worked out a procedure to eliminate any residual doubts as to which TPS 43 Radar the missile would lock on to. It was not possible, during the approach around 0830Z, to be completely certain which radar the missile was aiming at, so an overflight was necessary. A second overflight was needed to differentiate between the TPS 43 because the range was so critical, and a third run was required at about 9 nms from Sapper Hill. The aircraft's nose was lowered into a 20 degree dive; at 7½ miles the AEO fired the first missile, and at 6½ miles the second missile was released from the other wing. Both Shrikes were seen to leave the aircraft and one was seen to explode. The Nav/Plotter, who monitored the ESM was timing from the first firing and confirmed that the radar had stopped transmitting as the first explosion was seen. Throughout the Vulcan's time in the target area, a low level attack by Sea Harriers was seen to be taking place, it was hoped that these aircraft would encourage the Argentine radar to continue transmitting.

RAF Waddington
ORB May
Annex F

Immediately after the second Shrike had been launched, all information was lost from the remaining missiles and could not be regained. (22) The Vulcan then left the area and climbed on track for Ascension.

6.105 The return flight went according to plan and the RV with the final AAR tanker did not need assistance from the Nimrod. The fuel plan had worked extremely well although it was noted, once again, that fuel consumption during the Vulcan/Victor contact periods, in turbulence, was high. The aircraft's internal equipment all worked well, and on arrival at the Falklands, it was noted that the Carousel was only 4 nms in error. Subsequent post hostilities accounts revealed that the first Shrike had detonated about 45 ft from the TPS 43 antenna, inflicting repairable damage which had caused the set to be shut down; the second missile had missed by about 240 ft. (23) Although the main radar was fully operational again within 24 hours, the Argentines were not prepared to risk a follow up attack on their operations trailers, and surrounded them by a triple wall of soil-filled fuel drums covered by overhead protection, consisting of metal planking with a layer of soil, so that only the antenna was exposed within its surrounding blast walls. Documents captured later also showed that stricter electronic transmission policies were introduced.

CBFSU 312015Z May 1G/SASO/7/8.2 E78

Briasco and Huertas P153

D/AHB(RAF) 2/3/5 Pt B E46

BLACK BUCK 6

6.106 By 1 June the second Vulcan at Ascension (XM598) had been modified to carry 4 Shrike missiles in the record time of 12 hours by ground crew flown out from Waddington. Thus, both aircraft (XM597 and XM598) had received the same capability by this date. Stocks of AGM 45 Dash 9 and Dash 10 missiles had been increased and as the TF was once again reporting new intercepts from TPS 43 radars on the night of 1/2 June, it was decided to launch another Shrike operation on 3 June, with a time on target of 0915Z.

18G/335/4/33/ Ops 15 Jun E105

RAF Waddington ORB Jun

6.107 The Vulcan was loaded with bomb bay fuel tanks and 2 Shrike Dash 10 missiles for use against the TPS 43 Radar and 2 Dash 9 missiles for employment against the Argentine weapon control radars. Sqn Ldr McDougall's crew were keen to carry 7 x 1000 lbs bombs in addition but this was not approved.

021700Z Jun 1G/SASO/7/8.2 E84
021025Z Jun TF49.4 E54

6.108 The crew were briefed that the third pilot (Flt Lt B R Gardener - not an AARI but a Vulcan Captain trained in AAR techniques) would occupy the left hand seat in rotation. The Captain would be in the left-hand seat for the low-level phase to ensure that a constituted crew executed the attack. The take-off and RV with the tankers went exactly as planned, except for one minor difficulty encountered en route when the Hose Drum Unit (HDU) lights on one of the tankers failed to work.

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(22) Later investigation indicated this was due to a fault in the aircraft's switching system, outside the crew's control.

050100Z Jun TF49.4 E99

(23) US sources reported that the missed distance was 100 ft and noted that the TPS 43 radar had changed frequencies by 100 MHZ immediately before going off the air.

6.109 As the aircraft descended from high level, the TPS 43 radars were heard on the missile receivers. During the climb, the Dash 10 missile locked onto the TPS 43 and an attack run was started once positive identification of the radar on Sapper Hill had been confirmed. Unfortunately, during the attack run, the TPS 43 was switched off when the aircraft was within 11 nms, and despite the Vulcan having made 3 attack runs, it was not switched on again until the aircraft was departing outbound on the homeward leg. During these attack runs, the Captain got the impression that the Argentine radars were being selectively switched, so that they were off when the aircraft flew towards Port Stanley town and were on again as it flew away. Since the Vulcan was beginning to approach the minimum fuel level for a safe departure, the Captain decided to tempt the Argentines into keeping the weapon radars operating. During the final turn in, the aircraft descended to 16,000 ft and one TPS 43 was still operating; at 8 nms flashes were seen which were taken to be AAA fire, as the planned supporting Sea Harrier raid had been cancelled owing to fog and hence the AAA could only have been against the Vulcan. At 7½ nms, a Shrike Dash 9 missile was fired after entering a 20° dive and a second one was fired at 6½ miles, followed by a sharp pull up by the aircraft and a climb. During the turn the co-pilot saw 2 flashes shortly after the missiles entered the fog in the direction of the target (24)

RAF Waddington ORB Jun Annex B

6.110 Following the attack, the aircraft departed and the flight to the AAR RV went without incident with help from the Nimrod which vectored the Vulcan to the RV, some 40 nms east of the planned point. Five attempts were made to contact the refuelling drogue, but without success. On the 6th attempt, contact was made and the Vulcan moved into the receive position. After a few seconds there was a slight bang and the Vulcan's windscreen was covered in fuel. The Captain could see through the fuel that the drogue was about 2ft to the right of the probe and that fuel was flowing from the valve. Realising that the probe was broken, he allowed the Vulcan to fall back clear of the tanker. A rapid fuel check showed that about 9,000 lbs of fuel would be left following a diversion to Rio de Janeiro, Brazil, and the Captain, therefore, decided to head in that direction immediately.

CTF 317 041736Z Jun 1G/SASO/7/8.1 E90

EN ROUTE TO RIO

6.111 The crew were, of course, carrying codes and classified papers which had to be safeguarded against possible compromise. All this material was put, together, into two weighted containers, the aircraft depressurised, the aircraft entrance door opened and the whole lot consigned into the South Atlantic from 40,000 ft! But when the crew tried to re-close the door they found it would not lock shut preventing repressurization of the cabin. In the meantime the crew had declared a Mayday emergency, on several frequencies, but although HF radio contact was made with the control centre at Rio, communication proved extremely difficult. Fortunately, the Nimrod had been able to pass frequencies and let down procedures for Rio over the radio. In the unpressurized cabin the crew had to breathe pure oxygen under pressure, which had an effect on their voices. Sqn Ldr McDougall later explained: "We tried to discuss our emergency with a Brazilian but he could not understand us - which was hardly

(24) Media sources reported later that one Skyguard radar was destroyed and 4 men were killed.

Burden - BAR Gp P367

surprising, since his English was not all that good and we all sounded like Donald Duck!" (25) The Captain now decided to launch the two Shrike missiles to avoid any diplomatic embarassment on landing. Shipping contacts on the H2S meant the aircraft had to turn away from its direct track to Rio. The aircraft was put into a steep dive and the first missile fired. The second was initiated after the AEO had carried out his briefed switching but it failed to leave the aircraft.

6.112 About 15,000 ft was lost during the jettison attempts and by now landing fuel was expected to be no more than about 5,000 lbs. As the aircraft approached Rio the Captain decided to remain at 20,000 feet and to avoid overflying the main city area. A Brazilian controller with a heavy American accent came on the air traffic radio and gave permission for a landing on RWY 32 at Rio Galeo airport, which meant a 15 knot downwind component. The Captain accepted this, as fuel was now very short and after making a rapid emergency descent over Rio harbour, he successfully landed downwind, at 1405Z. Subsequent checks when the aircraft was refuelled indicated that a fuel leak was present and that less than 3000 lbs fuel remained - almost certainly insufficient for a circuit. (26)

CTF
111411Z Jun
1G/SASO/7/8.2
E2

BRAZILIAN INTERLUDE

6.113 After clearing the runway the aircraft was met by the airfield security police and while one of the pilots spoke to them, the AEO made the Shrike missile safe. On leaving the aircraft the crew were met by about 30 Brazilian officers and men. The Captain was invited to accompany one of them to see the Station Commander and the rest of the crew were taken to the Officers' Mess. Two members of the crew stayed on guard and tried to keep the people away from the aircraft and missile, without being too forceful. They were not successful; the aircraft generated immense interest and curiosity and was endlessly photographed.

6.114 The Brazilian Station Commander was polite but cool. Stalemate soon ensued when he would not let the Captain phone the British Air Attache (AA), unless he first explained what the Vulcan had been doing, which Sqn Ldr McDougall declined to do. Fortunately a phone call from the AA, Wg Cdr J E Brown, announcing he was on his way to Rio Galeo defused the situation.

6.115 The possibility of CORPORATE aircraft diverting to Brazil had, of course, been foreseen. Crews of all relevant aircraft types had been briefed with an appropriate cover story and as early as 28 April, the British AA had agreed to go to any Brazilian airfield to meet diverted aircraft. MOD were quick to invoke this arrangement by Flash Signal after receipt of information from the Nimrod that the Vulcan was en route to Rio with Shrike on board.

MOD UK AIR
031915Z May
TF49.2 E28

TF49.4
E55 & E57

6.116 Within 30 mins of the Vulcan landing at Rio Galeo airport, the AA was summoned by the Brazilian Air Minister, in Brasilia, about the

HM AMBASSADOR
Brasilia

(25) Interview with Warplane Magazine Vol 2 (1985) Issue 18 p344

(26) The Brazilians had attempted to intercept the Vulcan en route with two F5 fighters but they did not succeed in doing so until 1 nm from the end of the runway!

aircraft's arrival. The AA reported the Minister was: "very relaxed and perfectly understood how it has come about". After telephoning the Station Commander at Rio Galeo, the AA set off at once for Rio where he arrived about 4 hours later and took over the delicate negotiations with the Brazilians.

031600Z May
TF49.4 E59/60

6.117 The Vulcan crew set up a 24 hour guard on the aircraft and this caused the Brazilian Air Force to double their armed guards to protect the crew from the possibility of a revenge attack by Argentine nationals living in Rio. Although under open arrest in the Mess, the crew had free access to the swimming pool, were allowed to jog around the airfield and even appeared on Brazilian TV. They were never formally interrogated and throughout were treated in a friendly fashion, especially by the Brazilian host officer who was himself a graduate of the RAF Staff College, Bracknell!

161708Z Jun
TF49.5 E81

RAF Waddington
072130Z Jun
STC/6000/29/2/
Ops.4 E102
111409Z Jun
TF49.5 E49

6.118 At first there seemed some possibility that the Vulcan might be allowed to refuel and depart but the presence of a missile - which, because of the similarity in the airframe, the Brazilians mistakenly thought was a Sparrow - complicated matters. Several days of intense press interest and official diplomatic wrangling, involving Brazil and Argentina, ensued before the crew and aircraft were eventually permitted to depart for Ascension on 10 June, on the understanding it would not be used again operationally (27).

BRITDEFAT
Brasilia
051720Z Jun
TF49.4 E92

6.119 The Shrike missile had to be left behind at the insistence of the Brazilians - the US State Department was informed but was "not unduly exercised about its retention". Earlier the Shrike had been safely unloaded by the crew and held under circumstances which, at times, had Gilbertian overtones; keys were passed from hand to hand and at one stage the missile was guarded by the Air Attache's clerk -a role his UK briefings, before going to Brazil, can scarcely have covered! Perhaps the unusual atmosphere surrounding this whole incident is best encapsulated by the AA's own words; "the highlight of the week was a small lunch-time drinks party to celebrate the Queen's Birthday on 9 June, to which I invited selected station officers and two Brigadeiros. The outgoing Brazilian CAS who happened to be there on that day delivered a speech saying what a great pleasure it was to have the RAF crew there, and insisted on toasting Her Majesty's health himself. All the officers, on the base, raised their glasses and a more solid gesture of friendship and support I have yet to see here".

BRITAIRAT
Letter
AA/104
16 Jun to MOD
(Air Cdre Int)
(Copy held by
AHB(RAF))

BLACK BUCK RECONSIDERED

6.120 Late on 3 June, after reviewing the total air situation, the Air Commander decided that no further BLACK BUCK sorties would be required for at least 48 hours. In any event he believed that regardless of the success of BLACK BUCK 6, the Argentine radars would be better taken on by ground forces. Ideas of mounting co-ordinated attacks by Harrier GR3s and a Vulcan were examined but not pursued. Moreover, the problem of tempting the TPS 43 radars to continue transmitting after missile launch, or when aircraft were closing was never solved. The Air Commander therefore decided to deploy a second

031656Z Jun
1G/SASO/7.4
E65
032206Z
STC/6000/29/2
/2/Ops.1 E105
UK RAOC
060840Z Jun
TF49.4 E98

(27) Full detail on these aspects are contained in MOD files TF49 Pts 4 & 5.

Vulcan to Ascension on 10 June, to replace the one which had returned from Rio, with the intention of ordering a disruptive attack against the airfield using air burst bombs.

101653Z Jun
1G/SASO/7.4 E91

BLACK BUCK 7 - THE LAST RAID

6.121 The warning order for BLACK BUCK 7 was issued late on 10 June and called for 21 x 1000 lb bombs to be dropped, fuzed "VT PLUS IMPACT (TAIL)". This was refined the next day to Type 952 VT fuzes with the airfield aircraft parking area as the target. The execute signal followed specifying an attack time of 0800Z on 12 June.

101800Z Jun
TF49.5 E36

111223Z Jun
TF49.5 E43

6.122 The Vulcan (XM607), captained by Flt Lt Withers, was detailed to attack the airfield parking and storage area, 25m south of the southern edge of the runway from 20,000 ft, using 21 x 1000 lb Mk 12 VT fuzed bombs. 13 Victor tankers (flying 17 sorties) and a Nimrod were detailed to provide support.

UKRAOC
111223Z Jun
1G/SASO/7/8.2
E99

6.123 After the incident of the broken probe on BLACK BUCK 6, a Victor AARI (Flt Lt P A Standing) was included to fly with Flt Lt Withers, and to share the refuelling. All went well until the fifth refuelling bracket, when turbulence was encountered. The formation had climbed to 35,000 ft to remain above cloud, but refuelling at this altitude, with a hose moving up and down several feet, proved beyond the ability of either pilot. Each had 4 attempts before deciding to try at a lower level. In the descent, it was noted that number one engine had flamed out, and had already run down to 14% RPM. A cold relight was attempted at 31,000 ft, but only a partial relight was obtained. At this stage the aircraft had gone past the end of the refuelling bracket. The fuel remaining would have allowed it to return to Ascension Island to land with normal residual fuel, without jettisoning the bombs. The Captain therefore decided to continue south because the Vulcan was still in company with the tanker and still had a probe even though it only had 3 engines operating! Finally, at 25,000 ft the engine relit. The next bracket was with the same tanker and by starting as soon as the relighting had taken place, it would be possible to take on all the planned fuel by the end of the bracket. However, further difficulties were encountered by both pilots because of turbulence and each had had 3 attempts before Flt Lt Withers finally managed to make contact. The final AAR bracket went without incident.

RAF Waddington
ORB Jun

6.124 The weather near the Falklands was good with light winds, very little cloud and bright moonlight. The Carousel position proved to be only about 1 nm in error after 7½ hour flying. At 60 miles from the target, a pull up from 300ft was initiated and the aircraft was climbed to 20,000 feet. The AEO (Flt Lt H Prior) had contacted the Fleet and passed the target ETA; throughout the run it was possible to hear the TF's R/T, which sounded like a normal peacetime airfield.

6.125 The target run was exceptionally smooth but problems now set in. Despite confirming to the Nav Plotter, (Flt Lt Graham), that all switches were made, at bomb release nothing fell off because, in fact, the Navigator Radar had not selected the isolation switch to "ON".(28)

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(28) The crew were not using a Challenge and Reply checklist.

The aircraft was turned 'downwind' to have another run. The crew turned back towards the target too quickly and were unable to make all the switch selections and aim properly, while the Captain was manoeuvering to regain the briefed attack track, so again the bombs were not released. This time, as the aircraft was turned 'downwind', the Captain ordered the crew to take their time and ensure that there was time to check everything and have a steady run-in on the correct attack track. This was done, the attack appeared successful at 0846Z, and as the aircraft turned after release, to avoid overflying friendly positions, bomb flashes were observed from below. Although the aircraft was loitering over the target area, the TPS 43 radar had been switched off when the Vulcan reached 15 nms since the enemy were probably expecting a missile attack and must have been surprised to have bombs dropped on them.

6.126 The transit up to the tanker RV was uneventful. The Vulcan had ample fuel despite the extra time over the target. The join up with the Victor went like clock-work, even without Nimrod assistance, and 35,000 lbs of fuel was taken on without any problems. During the transit back, the Vulcan lost one fuel booster pump but otherwise remained serviceable and the remainder of the sortie, which lasted 15 hrs 15 mins, was uneventful.

BLACK BUCK 7 - POST MORTEM

6.127 After landing it was discovered that the bombs had been dropped with tail impact fusing set, instead of Nose/Tail and VT. The latter would have produced an air burst, thus minimizing possibilities of unexploded bombs, or damage to the runway, since the airfield was expected to be in British hands before many days. (29)

CAS Brief
14 Jun
TF49.5 E77

6.128 When this news reached Northwood the Air Commander ordered a formal enquiry to be carried out at Ascension. This showed that an error had been made, by the Nav/Rad, in leaving the isolation switch to "Isolate" during the first run During the final run, confusion had occurred as a result of the way the briefing team had issued the pre-flight instructions for fuzing and the crew interpreted and executed them. This had resulted in the wrong fuzing switch selections being made. There was some dispute within HQ 1 Gp as to which aspect had contributed most to the errors, but the outcome was, as the AOC 1 Gp wrote: "all those involved have taken the affair as a serious blow to their pride and professionalism". The Air Commander was less oblique in his comments, stating unequivocally it was a "switchery pig" by the crew.

18G/335/4/6/4.1
E76 21 Jun

141825Z Jun
1G/SASO/7/8.3
E15

1G/SASO/7/8/.3
E17 & E18

Curtiss Tape

FINALE

6.129 As no further suitable targets were available the Air Commander decided on 13 June to recall the Vulcans from Ascension and they left for Waddington the next day. However, personnel and aircraft remained on 24 hours standby in the UK for some time as a precaution against hostilities breaking out again. This did not prevent members of the Vulcan CORPORATE team, not on standby, from enjoying a celebratory

CTF 317
131524Z Jun
TF49.5 E75

RAF Waddington
ORB Jun

(29) Subsequent analysis showed that the bombs had landed 435 yds to the west of the runway and hence no craters had been made on the runway.

132120Z Jun
1G/SASO/7/8/.3
E14

party in Hangar 3 at Waddington on 18 June! (30).

6.130 As a tailpiece to Operation BLACK BUCK, Sqn Ldr A C Montgomery's crew, from No 44 Squadron, were the first Vulcan crew into Ascension and acted as airborne reserve on 4 raids, but were fated always to return to the Island and never carried out a live raid!

ESTIMATING SUCCESS - AN EVALUATION

6.131 BLACK BUCK operations and the UK training which preceded them, acquired the highest public profile of all the many RAF activities during CORPORATE. This interest began at once and continued after hostilities ended. The raids provoked a steady stream of comment which has not yet ceased, a good deal of it characterised by piercing hindsight and a fundamental misunderstanding of what was feasible in the remote South Atlantic during 1982. Moreover, the discussion had occasionally been tinged with a degree of rancour which serves as a reminder of General Wolfe's 18th century question: "Why this censure when the affair is so happily ended. To exercise one's ill nature?". Notwithstanding the absence of a spirit of genuine enquiry in the questions which some critics have posed, the ensuing paragraphs set out to give a tentative, preliminary evaluation of the results achieved by BLACK BUCK operations which lasted in total only 73 days.

6.132 When the Argentines seized the Falklands it was obvious that the airfield would be used to bring in supplies and reinforcements for the garrison. But more seriously it was thought likely they would take urgent steps to improve the runway and bring in arrester gear in order to allow fast jet operations, possibly including Super Etendards carrying air to surface missiles. In addition, the introduction of early warning radars and control systems seemed certain. The combined threat which these measures posed to the approaching TF needs no elaboration and the various staffs had begun to plan counter air operations even before the first Argentine had set foot on the Islands.

6.133 A rapid appraisal quickly eliminated all options, except Sea Harriers and possibly Vulcans. Both had severe drawbacks, whilst the Sea Harriers could certainly bomb the airfield, they would not be in range until the TF arrived around late April. On the other hand, the Vulcans were part of a wasting force, fitted with far from modern bombing and navigation gear; their crews were untrained in AAR procedures and conventional bombing techniques and the aircraft AAR system were themselves inoperative. But it seemed a prudent precaution to prepare some Vulcans for whatever contingencies might eventually arise and measures to restore both the AAR and conventional bombing capability were set in train at once, the aim being to achieve a limited operational effectiveness at Ascension by about the third week of April.

Beetham and Curtiss tapes
Chesworth and Hayr tapes

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(30) Although the Vulcan bomber force disbanded completely a few months later, two ex-CORPORATE Vulcans continued life in a new guise: XM607 (BB1, 2 & 7) became gate guardian at RAF Waddington and XM598 is permanently displayed at the RAF Aerospace Museum, Cosford.

Air Clues Nov 85 pps 428-429

6.134 Despite these precautionary decisions, the Air Staff were far from convinced that a single aircraft Vulcan attack, supported by at least 12 tankers would be the most cost-effective way of cutting the runway. Statistically, only 1 or 2 bombs could be expected to hit the runway and numerous re-attacks would certainly be necessary to keep the runway out of action. Conversely, Sea Harriers would be available only a few days later than the Vulcans and could drop bombs accurately from low level and quickly re-attack when required. For all these reasons, CAS advocated using Sea Harriers to attack the airfield and indeed assistance in planning such operations was requested on 11 April. Concurrently, various options for using Vulcans were also examined but they were focused on operations elsewhere than on the Islands themselves.

6.135 However, the Naval Staff and CTF317.8 became steadily more concerned about the small numbers of Sea Harriers and the need to conserve them for the AD of the TF. This requirement was reiterated several times; most forcibly by R Adm Woodward when he signalled:

> "My main requirement is for a Vulcan attack in advance of Battle Group arrival in the TEZ ..... this would allow me to close the Falklands for follow-on offensive air operations and to sustain local air control. More importantly, it cuts Sea Harrier attrition to a mininum and ..... I need all I can get for their primary AD role. Tasking the Sea Harriers in advance of the Vulcans for fire suppression obviously puts them at risk ....."

CTG 317.8 281750Z Apr 18G/335/4/22/ Op.1 E62

6.136 The evidence is clear that the Air Staff at all levels, whilst preparing for eventualities, were fully seized of the difficulties and disadvantages of using the Vulcan. Furthermore, it was not only with the agreement with the Navy Department, but at the urging of CTF317.8 himself, which helped to convince CAS that he should offer the Vulcan to his colleagues on the COS Committee. When this offer was accepted and endorsed by his military colleagues, the OD(SA) had then to be convinced that BLACK BUCK was a well thought out operation. (31). This needed patient explanation by CAS, and was not without its difficulties, since Ministers, particularly Mr Whitelaw and Mr Pym, were properly concerned about the risk of casualties amongst the civilians in nearby Port Stanley town. In due course these natural doubts were assuaged and the operation received political approval.

6.137 As the planning progressed, no one in the AFD or the RAF underestimated what would be involved. A single Vulcan had to fly a distance equal to that from London to Karachi and release its bombs, at night, on a narrow runway, positioned on a defended airfield. Throughout, it would have to rely absolutely on AAR support from no fewer than 13 tankers in order to undertake the sortie at all. Moreover, the Vulcan crews had received only the absolute minimum of additional training; their H2S bombing radar was not much better, and their bombs no better than those used by the Lancasters of World War 2. Ten years before, CAS who had to carry ultimate responsibility for BLACK BUCK operations, had been the Commandant of the RAF Staff College. If, at that time, he had painted such a scenario for his

RUSI Journal Mar 85 pps 33 & 34

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(31) CAS was careful, however, to leave no doubt in the minds of OD(SA) that only one Vulcan could attack Port Stanley Airfield on each raid and - this would be insufficient to close the airfield totally.

students to consider and plan, it seems certain that his grasp of likely contingencies would have been called into question - in private, if not in public. That Vulcan operations against the tiny runway were attempted at all from such a distance was unprecedented, that they should succeed in hitting the runway at the first attempt was remarkable.

6.138 The consequences of the successful first attack extended beyond merely damaging the airfield and ensuring it could not be used safely by Super Etendards or Skyhawks. (32) It also showed the Argentines that the RAF had the potential to hit mainland targets. As a consequence they moved their Mirage fighters further north to meet the perceived threat, and this had the effect of precluding their use as escorts to the mainland Skyhawk raids against the Falklands themselves.

Combat Rept by Commodoro C E Gorino Held in AHB(RAF)

6.139 Although the two Vulcan bombing attacks mounted later (BB2 and BB7), did not succeed in hitting the runway again, the damage and disruption caused to the airfield was significant, as an eye witness report from a trained airfield repair officer of the Royal Engineers (Col D Brownson), graphically demonstrates: "bomb craters proliferated, ... airfield tracks were generally impassible to anything but high mobility vehicles; drainage ditches could not compete ..... vehicles, aircraft and equipment ..... littered the area ...." Similarly, although damage caused by the two Shrike sorties was not as great as had been hoped, in that the radar heads were not directly hit, the operational effectiveness of the TPS43 and weapon control radars was considerably impaired by the passive defence measures which had to be improvised to protect the scanners and equipment. Additionally, whenever Vulcans appeared, the radars were switched-off and it was this defence suppression aspect whch has been overlooked by some of the more myopic critics.

RE Journal - Jun 83 pps 83 & 84
Army Qtly Jul 83 p 273
D/AHB(RAF) 2/3/5 Pt B E46
Adams p100

6.140 These were the tangibles achieved by the Vulcan raids, but the intangibles should not be overlooked. The impact on Argentine morale (33) was certainly greater than the physical damage and casualties caused. At one stage, their Soldier's Newspaper on the Islands was reduced to writing, after a Vulcan raid with 21 bombs: "An unidentified aircraft attacked the airfield during the night (and) dropped <u>two</u> 450 kg bombs." Conversely, the uplifting effect on British morale of the Vulcan attacks, particularly before the San Carlos landing, has been commented upon by many members of the TF. Indeed, it was partly the morale aspects which led to the raids being immediately publicised in London. The aim was to impress the Argentines with the capability of British forces and to demonstrate, unequivocally, the strength of purpose of the British Government.

Middlebrook P124
Adams pps 86, 87 and 100
Middlebrook p139
Memo Submitted to H of C Def Cttee 21 Jul CAS/73/6.1 E9 A1-2

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(32) Many references to the continued use of Port Stanley Airfield by Argentine Hercules have been made, but Cdro Gorino's Combat Report states that only 70 tonnes and 340 personnel arrived by air <u>after</u> the first Vulcan raid. (The heaviest use was before 1 May).

(33) The impression made on the Argentines and the Falkland Islanders by BLACK BUCK 1, had been graphically described several times in open sources by eyewitnesses amongst the civilian population.

6.141 Whilst outstanding airmanship and professionalism characterised the planning and mounting of the raids, it would be unrealistic not to acknowledge that problems did arise. There was, undoubtedly, some friction between the various UK HQs involved, as comments in the post campaign reports make clear. Some procedural errors were made by the aircrew and planning staff, particularly over BLACK BUCK 7. Bombing accuracies were not as good, overall, as the UK training sorties seemed to promise. Subsequent analysis by the Research Staffs has shown that the bombing results could not be attributed to 'bad luck' but stemmed from operational degradation factors, probably associated not only with equipment limitations, but also with fatigue flowing from the very long sorties.

18 Aug
STC/6000/29/2.5
E63 A&B

1G/17/1/AIR
12 Aug
STC/6000/29/2.5
E77

6.142 Throughout the campaign, the shortage of tankers constantly hampered the Vulcans' efforts; had more been available they could then have satisfied Adm Woodward's plea after BLACK BUCK 1; "Can we have a raid like that every night?!" Yet, notwithstanding all the difficulties rehearsed here, the Vulcan force achieved more than could have been reasonably expected, and it did so in the twilight of its operational life, and in circumstances which could scarcely have been more unfavourable. (34)

Annex:
A. Summary of Vulcan Flying Effort.

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(34) The total Vulcan effort expended directly on Operation CORPORATE is shown in Annex A.

OPERATION CORPORATE SUMMARY OF VULCAN FLYING EFFORT (EXCLUDING UK-BASED TRAINING SORTIES)

Dates 1982	From	To	Flt Time	Remarks	Captain & Vulcan No.	
29 Apr	WA	ASI	9.00	Deployment ASI		
29 Apr	WA	ASI	9.10	Deployment ASI		
30 Apr/1 May	ASI	ASI	2.25	BB1 - cabin pressurisation failure Returned to ASI	Withers	XM598
30 Apr/1 May	ASI	ASI	15.55	BB1 reserve. Reserve flew mission (21 Bombs)	Reeve	XM607
3/4 May	ASI	ASI	15.50	BB2 (21 Bombs)	Reeve	XM607
3/4 May	ASI	ASI	3.30	BB2 reserve	Montgomery	XM598
7/8 May	ASI	WA	10.15	Recover UK		
7/8 May	ASI	WA	10.55	Recover UK		
13/14 May	WA	ASI	9.20	Re-Deployment ASI		
14/15 May	WA	ASI	8.50	Re-Deployment ASI		
20 May	ASI	WA	9.30	Recover UK		
23 May	ASI	WA	8.35	Recover UK		
27/28 May	WA	ASI	8.45	Re-Deployment ASI		
29/30 May	WA	ASI	8.55	Re-Deployment ASI		
29/30 May	ASI	ASI	8.00	BB4. Aborted due to Victor HDU problem (Shrike)	McDougall	XM598
30/31	ASI	ASI	16.00	BB5	McDougall	XM597
30/31	ASI	ASI	4.15	BB5 reserve	Montgomery	XM598
3 Jun	ASI	Rio	13.30	BB6 diverted Rio de Janeiro during recovery (Shrike)	McDougall	XM597
3 Jun	ASI	ASI	4.10	BB6 reserve	Montgomery	XM598
10 Jun	Rio	ASI	3.55	Rio ac after release by Brazil. Not to be used again		
10/11 Jun	WA	ASI	9.15	Replacement for Rio ac		
12 Jun	ASI	ASI	15.15	BB7 (21 Bombs)	Withers	XM607
12 Jun	ASI	ASI	3.20	BB7 reserve	Montgomery	XM598
13 Jun	ASI	WA	8.25	Rio ac to UK		
14 Jun	ASI	WA	8.40	Recover UK		
14 Jun	ASI	WA	8.55	Recover UK		
	TOTAL:		234.35			

Notes 1. WA = RAF Waddington
2. ASI = Ascension Island
3. BB = Operation Black Buck (BB3 was cancelled before T/O)
4. Captains - Withers = Flt Lt W F M Withers No 101 Sqn
Reeve = Sqn Ldr R J Reeve No 50 Sqn
McDougall = Sqn Ldr C N McDougall 50 Sqn
Montgomery = Sqn Ldr A C Montgomery 44 Sqn

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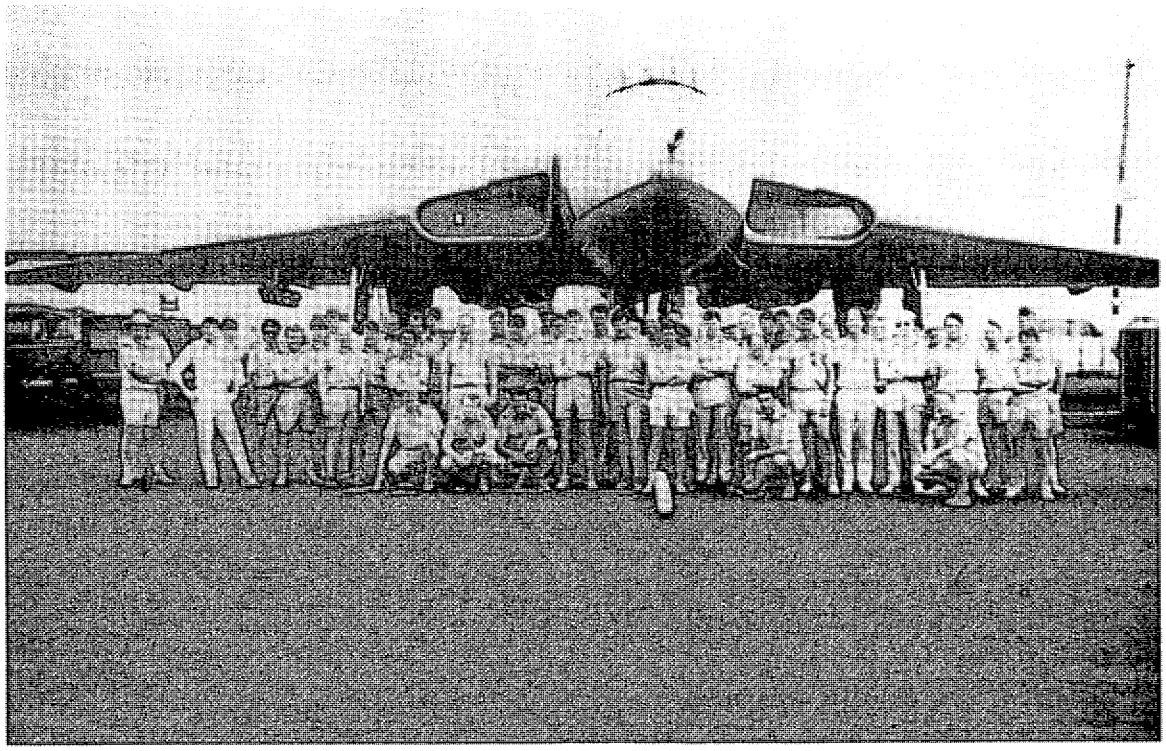
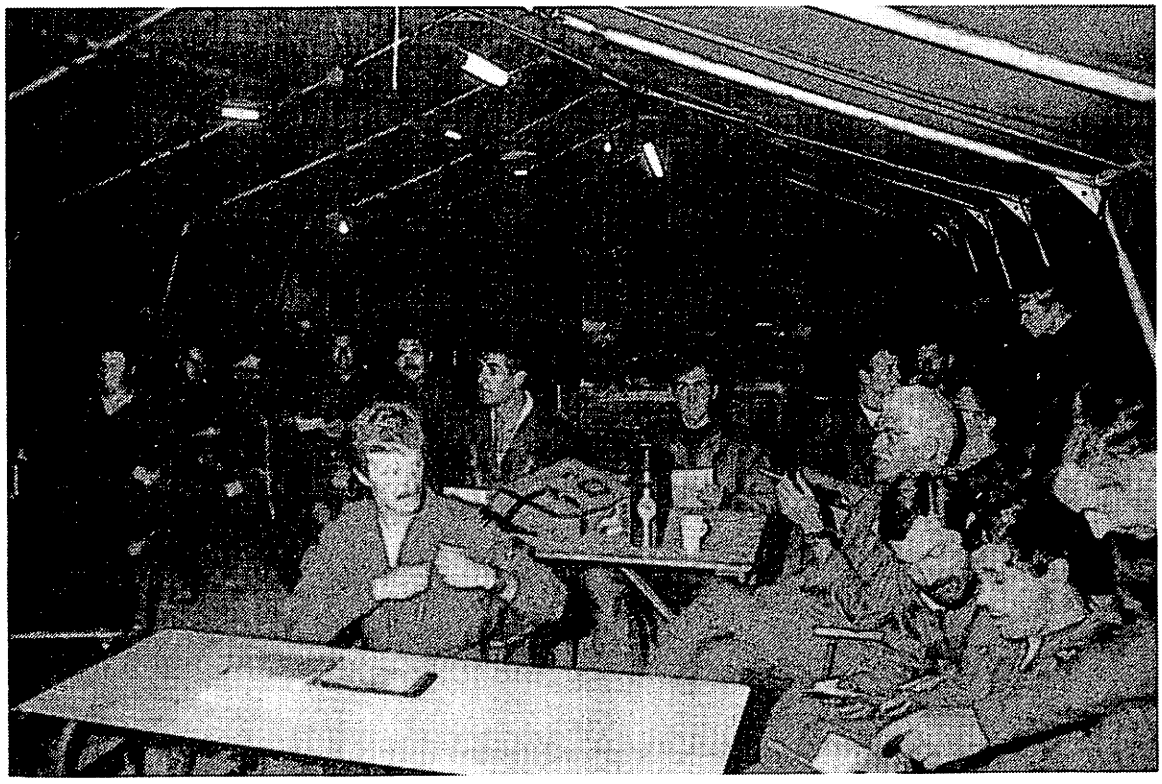
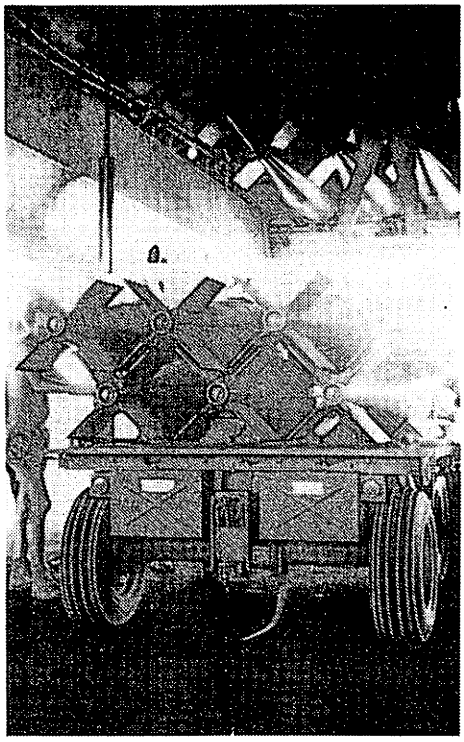


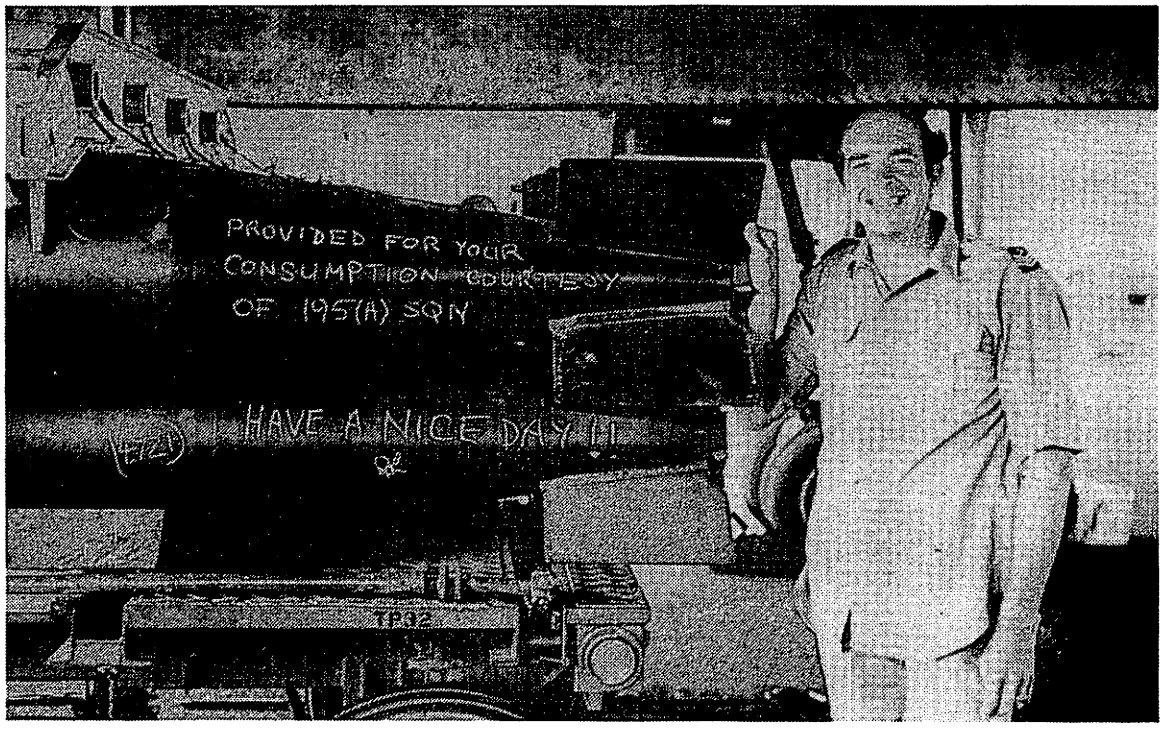
6.1. The Waddington Vulcan Detachment at Ascension Island.



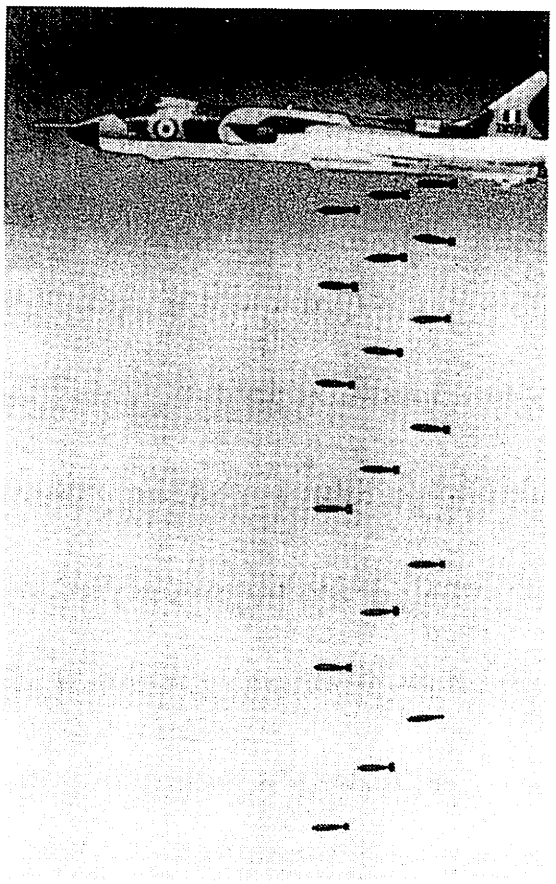
6.2. Victor/Vulcan aircrews relaxing after a BLACK BUCK briefing.



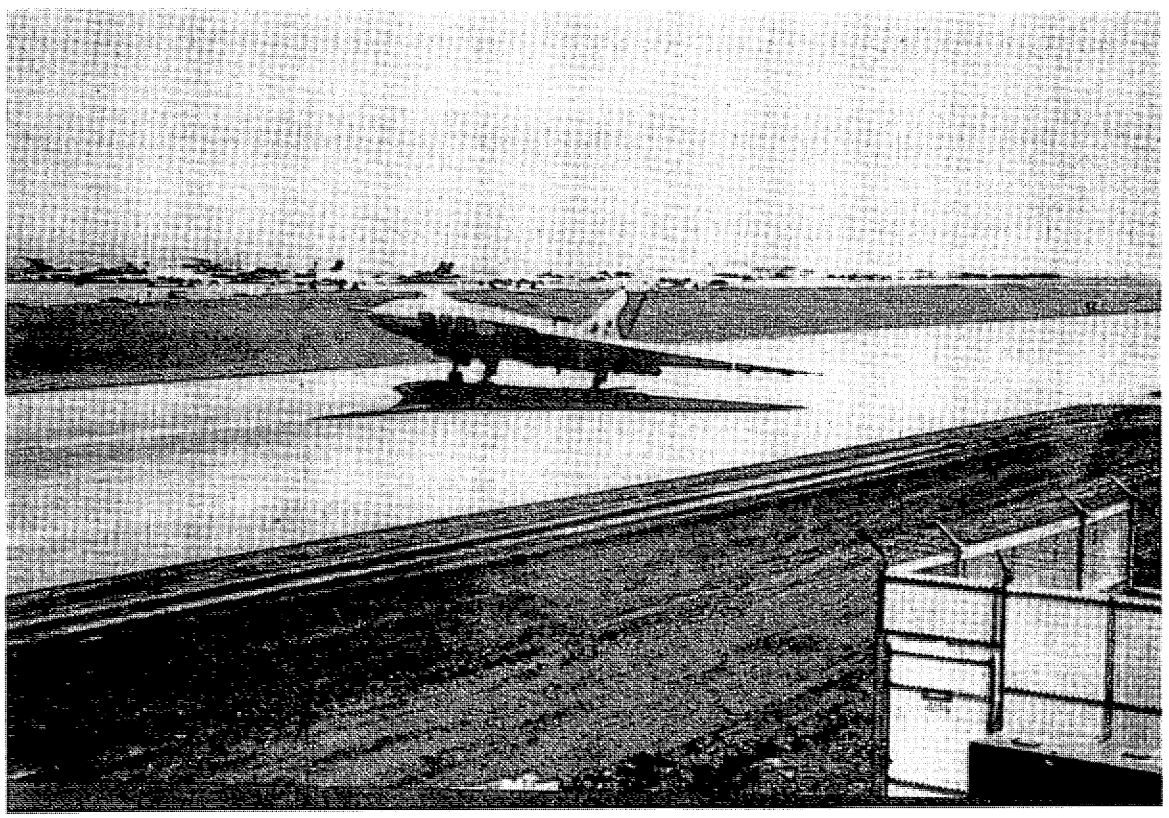
6.3. 'Bombing up' — Vulcan XM612.



6.4. Ch Tech Dave Lindo (Vulcan Crew Chief) with part of the bomb load for BLACK BUCK 3.

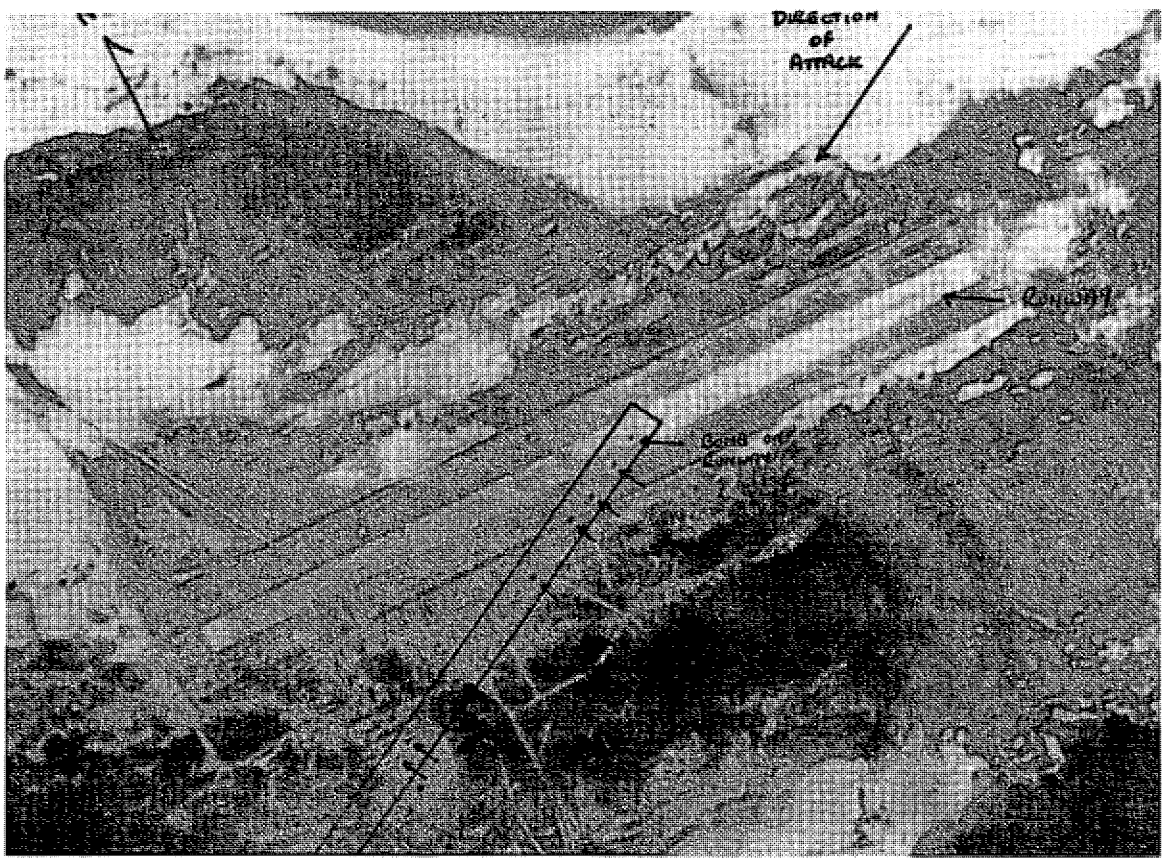


6.5. The bulk of a 1000lb bomb stick 'caught' during a training sortie.

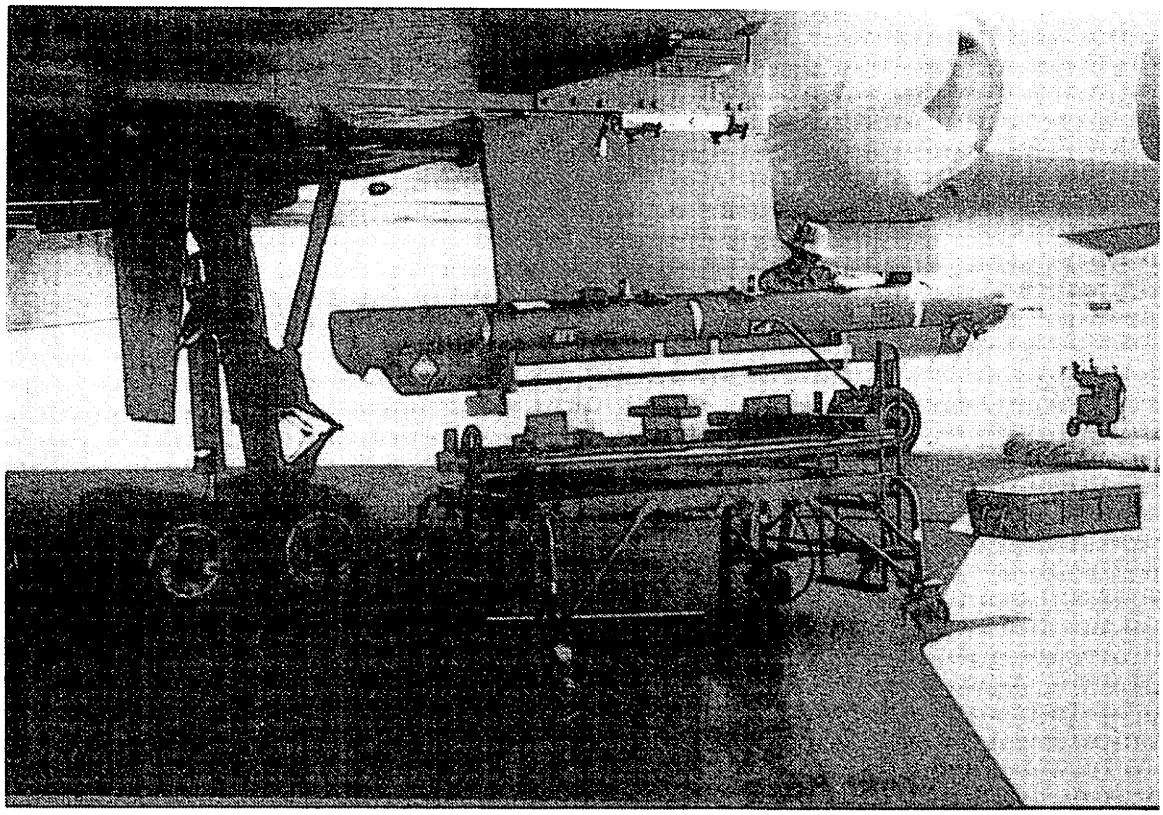


6.6. Vulcan returning to Wideawake Airfield after a successful mission.

6.7. Flt Lt Martin Withers face shows the strain of a tense sortie.



6.8. Reconnaissance after BLACK BUCK 1 showed that the runway was cut.



6.9. The modified Westinghouse ALQ-101 ECM pod being fitted to Vulcan XM607.

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CHAPTER 7

RAF HARRIER GR MK 3 INVOLVEMENT

SUMMARY OF CONTENTS

7.1 The following account traces the events leading to the first deployment of the Harrier GR Mk 3s (GR3) to the Falkland Islands as attrition replacement aircraft, the limited use of the Harriers for air defence of Ascension Island, the second deployment of aircraft in support of 5 Bde, and the story of the GR3 in action; it concludes with some lessons. The reader will appreciate that this account is not always in chronological order since many events occurred concurrently in widely differing areas.

7.2 Operation CORPORATE was to prove the sterling worth of the Harrier both in its RN version, the Sea Harrier (SHAR), and the land based RAF GR3. Indeed there was no other fixed wing aircraft in the inventory of either Service capable of operating from ships in the AD, anti-shipping and Offensive Air Support (OAS) roles or of performing these roles at such great distances from land bases.

7.3 SHAR was to be the main offensive RN air asset, embarked in and operating from the two Carrier Vessels (CVs), HMS HERMES (the flagship) and HMS INVINCIBLE. However, as early as 8 April consequent on discussions between the Air Force Department (AFD) and Navy Department (ND) on possible RAF assistance to the SHAR force, No 1 (F) Sqn was warned to standby for the embarkation of six GR3 in HMS ILLUSTRIOUS, sister ship to INVINCIBLE which at that time was being brought to readiness and expected to be ready for sea by mid-May (1). 101502Z Apr TF 19.1 E34

FIRST DEPLOYMENT PLAN

7.4 At this stage the Chiefs of Staff (COS) were concerned about attrition in the small force of SHAR embarked in HERMES and INVINCIBLE and the need for replacement aircraft. The RN had already re-formed No 809 Sqn at the Royal Naval Air Station (RNAS) Yeovilton but the aircraft allotted to this unit (2) represented the last available (at least in the time scale envisaged) and the number was insufficient for battle damage replacements. The decision was therefore taken to augment the 8 SHAR with 12 RAF GR3. Since HMS ILLUSTRIOUS was not to be available before late June it would be necessary to take up ships from trade (STUFT) in order to transport these 20 aircraft (as well as a large number of helicopters) to the south and on 13 April representatives of No 1(F)Sqn, which was to provide the GR3s and crews, joined a RN inspection team in Liverpool to examine SS ATLANTIC CONVEYOR as a potential platform. She was assessed as suitable for carrying, but not operating, Harriers and could be ready to sail on or about 23 April. No 1 Sqn ORB

7.5 Once the decision to deploy GR3s had been made much needed to be done to prepare the aircraft for shipborne operations and to modify systems for the new roles, in particular AD (since at this stage the GR3s were to be SHAR replacements). The re-engineering task was comprehensive and is covered in detail in Annex A to this chapter. Time was short if the embarkation deadline was to be met and the following days were to be fully occupied. Of great importance was the need to familiarize the pilots with the new demands of operating at sea.

PILOT TRAINING

7.6 As soon as the first deployment was mooted, the Sqn was tasked to carry out familiarisation on the Ski-Jump (3) at RNAS Yeovilton. Four aircraft deployed on 14 April in anticipation of the Controller of Aircraft (CA) clearance to perform this training

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(1) Subsequently, HMS ILLUSTRIOUS was found to need a further six weeks work up and would not be ready until late June. This plan was, for the time being, abandoned.

(2) Ten aircraft of which 8 would be available for operations, leaving 2 at Yeovilton as a training nucleus.

(3) An inclined end to a flight deck which 'pushed' the aircraft into the air, enabling much larger payloads to be carried.

which unfortunately was not given until late on 15 April. Nevertheless, by the end of 16 April the bulk of training had been completed and the remaining pilots finished their training over the next week. The Ski-Jump technique proved to be far simpler than expected and it was found that one sortie was sufficient rather than the planned three. 151345Z Apr TF 19.1 E46

7.7 On 16 April the Sqn was advised to concentrate its training in the AD, anti-shipping and OAS roles. As the Sqn was current in OAS operations having just completed work up training for Exercise MAPLE FLAG, initial priority was given to Dissimilar Air Combat Training (DACT) and splash firing (4). The Sqn received excellent support from other units and formations and DACT with Lightnings and Hunters took place on 16, 19 and 20 April. To get the most out of sorties with Lightnings, Harriers deployed daily to Binbrook whilst Hunters from Brawdy flew to Wittering to minimise the need for 1 Sqn to deploy. On 20 and 21 April RAF Marine Craft provided a splash target off Great Yarmouth. Practice weapons were used on 20 April, but on 21 April Cluster Bomb Units (CBUs) were allocated out of war stocks and these were successfully dropped against the splash target on 21 April.

7.8 MOD UK(Air) also investigated the possibility of DACT training with French Air Force Mirage III and the French Navy Super Etendard. The French were extremely helpful and provided both types for 2 versus 1 and 1 versus 1 DACT training on 22 and 23 April. To avoid publicity and possible political embarrassment to the French (5) the Mirages, both single seaters and a 2 seat trainer version, deployed to Coningsby. The Harriers flew from Wittering to rendezvous with the Mirages after take-off. The 1 Sqn pilots were ferried to and from Coningsby by road and air for briefings and debriefings. Some pilots flew in the rear seat of the 2 Seat Mirage III. The Super Etendards flew from a base in France and rendezvoused with the Harriers over E Anglia. The sorties showed the Harrier to have a slight advantage over the Super Etendard but to be closely matched by the Mirage III. Generally, the Mirage was superior at heights above 20,000ft and the Harrier superior at heights below 15,000ft. The Mirage, which required re-heat in combat, ran out of fuel far quicker than the Harrier. BRIT DEFAT Signal CAS 73/2/1.5 E4 CAS/73/2/1.5 E12

7.9 The Sqn also practised with 30mm strafe, 68mm rockets and 49lb practice bombs on Holbeach Range on 23, 26 and 27 April. The rockets were delivered from both the standard 10° dive and a new level delivery. The level delivery proved particularly effective against the ship target at Holbeach. The level rocket profiles were also flown with a level break-out rather than the usual pull up over the target. The Sqn had always intended to use this profile in war to avoid exposure to Surface to Air Missiles (SAM) and Anti-Aircraft Artillery (AAA) but flight safety constraints had prevented its use in normal training. However,

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(4) Firing against a target towed by a ship.

(5) Because of the political sensitivity the sorties appear in the 1 Sqn Authorisation Sheets (F 1575B) as General Handling Sorties.

clearance to use this technique was quickly obtained. Simulated attacks were also made against a Type 42 Destroyer (the Argentinians had 2 Type 42s), to familiarise pilots with the Radar Warning Receiver (RWR) signature of the ships' radars (6).

7.10 A Release to Service was issued for the use of 2" RN rocket pods which were tested at Holbeach Range on 28 April. The results showed that they had very similar characteristics to the RAF 68mm SNEB rockets (7).

7.11 The Sqn believed that high value would be gained from training in Ultra Low Level (ULL) techniques at 100 ft above ground level (AGL). There was, at first, a reluctance at senior level to agree to this since there were obviously many connotations to such approval, not the least the inherent risks, but authorisation was given and training conducted over Wales. Squire Tape

7.12 By 29 April time was running out for training before the impending deployment (8). The CA release trial for the Air Interception Missile (AIM) Sidewinder (9) was due to take place on 29 April but, because of aircraft unserviceability, was delayed until 30 April. The first 2 missiles were to be fired by a Aeroplane and Armament Experimental Establishment (A&AEE) Boscombe Down test pilot and the remaining 6 allocated to be fired by No 1 Sqn pilots. This was later done over Cardigan Bay with success, only one missile failing and the remaining 5 scoring direct hits against a flare target towed by a drone aircraft.

7.13 On 1 and 2 May the remaining aircraft which had been undergoing modification were fitted with long range ferry tanks on the inboard pylons and 100 gallon combat tanks on the outboard pylons (10). All were flown to confirm fuel flow and for a general 'shake-down' after the long period on the hangar floor. Inevitably there were some problems but all the required aircraft were positioned at St Mawgan in time for the air-to-air refuelling (AAR) flights to Ascension (11).

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(6) See Engineering aspects at Annex A.

(7) See Engineering aspects - the 68mm pods were electronically incompatible with the RN ships systems hence the use of the 2" pods.

(8) The ATLANTIC CONVEYOR was due to sail on 23 April. However, the deployment plan for the Harriers was changed; this is covered more fully in paras 7. 14-16

(9) See Engineering Aspects at Annex A

(10) The 100 gallon tanks were fitted because of a shortage of combat tanks on the CVs with the TF.

(11) Vide paras 7. 18-21

CHANGED DEPLOYMENT PLAN

7.14 Meanwhile, the proposal to sea-lift the Harriers was to cause much concern; the GR3 was not 'navalised' and salt water corrosion could play havoc with airframes, engines and systems. At best the Air Staffs sought to minimise the problem by keeping the sea voyage for the aircraft as short as possible. Thus, it was decided that the GR3s would fly to Ascension, using AAR, in time to join up with ATLANTIC CONVEYOR on her arrival on 5 May. This plan had the advantage of extending Sqn preparation and work-up time, a precious commodity at that stage. The aircraft would then sail south in ATLANTIC CONVEYOR and transfer to HMS HERMES and INVINCIBLE once near to the operational area.

7.15 By 17 April modifications to ATLANTIC CONVEYOR had progressed to the stage whereby she would be ready to sail on 23 April. However, although there was deck space for 21 Harriers, the conflicting need for helicopters to support the forthcoming landings reduced the number of Harrier spaces available to make way for Wessex and Chinook. As a consequence only 6 GR3s were to embark in ATLANTIC CONVEYOR at Ascension, and Wittering was ordered to deploy 9 GR3 to Ascension (to ensure that 6 aircraft were available to join the ship).

7.16 The RAF still had nagging doubts about the wisdom of exposing the Harriers to a long sea voyage and proposed an alternative plan whereby the GR3s would remain at Ascension until called forward (as battle replacements) when they would transfer to the carriers using AAR. Whilst this was a perfectly feasible operation it would have involved the use of a large number of tankers, perhaps overstretching the AAR assets at Ascension when other tasks were pressing. The Air Commander was appraised of this, and also that the engineering staffs considered that the Harriers could be adequately protected, inter alia, by the use of canvas bags. Thus it was agreed that the GR3 would travel in ATLANTIC CONVEYOR and the AAR plan was shelved (but see paras 40 et seq).

7.17 Over the period 2 to 5 May, the GR3s pre-positioned at St Mawgan (to reduce tanker needs as much as possible) and made the long journey south, their arrival coinciding with that of ATLANTIC CONVEYOR. Together with the 8 SHAR they embarked on 6 May and sailed on 7 May for the South Atlantic. On 17 May preparations began for the transfer to HMS HERMES (12) and by 20 May all GR3s were safely on board.

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(12) Whilst the GR3 'first wave' was in transit to the Falklands a re- think of the roles of both the RAF aircraft and the SHAR had been occasioned by early SHAR losses. It became apparent to the Commander Task Force (CTF) that AD was of paramount importance in protecting the Task Force (TF) and that SHAR assets must be husbanded. Thus the SHAR would be employed in the AD role and the GR3s would be used in OAS in addition to and not as replacements for SHAR. All GR3s would thus be embarked on HMS HERMES and to meet the demands of the changed concept of operations a party of twenty No 1 Sqn groundcrew was dispatched south on 18 May.

7.18 As an aside, No 1 Sqn was well versed in AAR operations and, in early April, had ferried 8 RAF Germany (RAFG) Harriers to Goose Bay (Labrador, Canada) for Exercise MAPLE FLAG because the RAFG pilots were not trained in AAR. They returned to Wittering on 14 April, correctly feeling that the 8 hour trans-Atlantic 'hop' had been a useful dummy run. No 1 Sqn ORB

DEPLOYMENT SOUTH

7.19 No 1(F) Sqn's move to the area of operations began on 1 May when the Sqn S Eng O (Sqn Ldr B L Sobey), J Eng O (Flt Lt B T Mason) and a party of 38 groundcrew deployed to Ascension in Hercules of the Air Transport Force (ATF). The next day 5 aircraft deployed from Wittering to St Mawgan in preparation for the long flight South on the following day. No 1 Sqn F1575B (Flight Authorisation Forms)

7.20 On 3 May 3 aircraft, flown by Wg Cdr P T Squire, Flt Lt M J W Hare and Flt Lt T A Harper, climbed out of St Mawgan and joined up with 3 Victor K2 en route for Ascension. Unfortunately, at the last refuelling bracket the remaining tanker had insufficient fuel to allow all 3 aircraft to reach Ascension. Hare and Harper were topped up and they continued to Ascension, landing after a 4009 nm flight of 9 hrs 15 mins, which remains the longest ever flown in any Harrier. Surprisingly, the last 1000 nm were flown completely unescorted despite several requests made by the Squadron. Wg Cdr Squire diverted to Banjul in The Gambia in company with the Victor. As soon as both aircraft had been refuelled they continued on to Ascension and landed at 2215 hrs, making a total of 10 hrs 55 mins flown by Wg Cdr Squire in one day. Also on 3 May a further 3 aircraft were pre-positioned at St Mawgan. TF1.1 E95 4 May No 1 Sqn ORB No 1 Sqn F1575B 1S/105/4/4/OP 9 Sep No 1 Sqn F1575B

7.21 Sqn Ldr R D Iveson, Sqn Ldr J J Pook and Flt Lt J Rochfort left St Mawgan and joined up with 5 Victors en route for Ascension on 4 May. After the second refuelling bracket Rochfort developed fuel transfer pressure failure and he was forced to divert to Porto Santo, an island near Madeira (13). Iveson and Pook arrived at Ascension after a flight of 9 hrs 10 mins and on this occasion the flight was escorted over the last 1000 nm by a Nimrod providing Search and Rescue (SAR) cover. That evening the pilots of No 1(F) Sqn were guests of No 809 Sqn RN at the Exiles Club in Georgetown. A further 3 aircraft were pre-positioned at St Mawgan on 4 May. TF1.1 E98 5 May No 1 Sqn F1575B No 1 Sqn ORB

7.22 The last wave of 4 aircraft flown by Sqn Ldr P V Harris, Sqn Ldr T R C Smith, Flt Lt J W Glover and Flt Lt A R Boyens left St Mawgan bound for Ascension in company with Victor tankers on 5 May. Flt Lt Boyens arrived the next day having had his aircraft repaired overnight. The ATLANTIC CONVEYOR also arrived at Ascension on 5 May and Wg Cdr Squire and Lt Cdr Gedge (OC 809 Sqn RN) were able to carry out a survey of her facilities and plan the embarkation due for 6 May. TF1.2 E1 6 May

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(13) Flt Lt Rochfort continued to Ascension a few hours later in a Hercules of the ATF. His aircraft was recovered to the UK by Flt Lt C R Loader who flew it to Gibraltar on 8 May and then back to Wittering via Istres (France) on 10 May. The diversion to Porto Santo is described in greater detail in Chap 4. No 1 Sqn ORB TF1.2 E14 9 May

7.23 The embarkation of 6 No 1(F) Sqn Harrier GR3s and eight 809 Sqn Sea Harriers was carried out in slow time and without mishap on 6 May although most 1(F) Sqn pilots approached their first landing on deck with some apprehension. Because of a shortage of space, only Wg Cdr Squire, Sqn Ldr Iveson, Flt Lt Mason and 17 groundcrew could be accommodated on the ATLANTIC CONVEYOR. The remaining pilots, Sqn Ldrs Pook and Harris, and Flt Lts Harper, Rochfort, Hare and Glover were accommodated aboard MV NORLAND. Also on NORLAND were Sqn Ldr B S Morris (Ex 38 Gp, then Harrier Liaison Officer designate to CTG 317.8) and the Ferranti Inertial Navigation Reference and Alignment Equipment (FINRAE) (14) team of Flt Lt C D Drew and 2 SNCOs who had been attached to Ferranti Ltd. On 7 May the remaining stores were loaded aboard, including 12 AIM 9Gs which were a last minute addition to give the SHARs some air defence capability whilst in transit. That evening, the amphibious force led by HMS FEARLESS weighed anchor and set sail for the South Atlantic.

TF1.2 E5
7 May
No 1 Sqn ORB

7.24 During the first 2 days of the voyage the groundcrew carried out a variety of tasks to minimise corrosion before bagging the aircraft in the special-to-type 'Driclad' bags. These turned out to be highly successful, but the modifications to accept pylons carried out at Wittering were essential. The FINRAE team assembled their equipment and began trial alignments on one of the aircraft. Initially, they arrived each day by helicopter from NORLAND but as they experienced problems with the equipment and the helicopter service proved highly unreliable (15), they were eventually found cramped accommodation on ATLANTIC CONVEYOR. The trials revealed a wiring snag on all the aircraft and a software error in the FINRAE. Even after these two faults were rectified, the FINRAE proved incapable of achieving a perfect alignment and throughout the campaign, navigation was by map and stopwatch and all weapon aiming used the manually set aiming angle. Nevertheless, Drew and his 2 SNCOs worked tirelessly and managed to achieve accurate heading and a stable platform, both of which proved invaluable to the attack capability.

1G/900/42/1/05.1
E21D
1 Sqn ORB

7.25 During the passage south all the pilots gathered in ATLANTIC CONVEYOR and joined No 809 Sqn RN pilots in briefings and ground training. These sessions were important and gave everyone an insight as to what would be expected of them on a CV. As well as deck operations and other naval matters, the briefings also covered OAS operations and on one day the aircrew were joined by the Air Liaison Officer (ALO) and Tactical Air Control Parties (TACPs) of 3 Commando Brigade (Cdo Bde) and were able to discuss Forward Air Controller (FAC) Standard Operating Procedures (SOPs). The weather

1 Sqn ORB

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(14) See Annex A for further details about the FINRAE system.

(15) The helicopter programme proved to be a nightmare. The programme was written in 'local' time. Unfortunately, merchant ships at sea change 'ships' time when they please to fit in with the ship's routine. This frequently resulted in up to 3 hours difference in 'ships' time between different vessels in the fleet.

was generally good during the voyage south with the notable exception of the night of 15 May when a force 9 gale caused the ship to roll up to nearly 20°. On 16 May the amphibious group joined up with the Landing Ship Logistic (LSL) group to make a total of 21 ships - an impressive sight to the RAF crews on board. 1S/105/4/4/Op 9 Sep

7.26 On 17 May the aircraft were unbagged and prepared for the transfer to HMS HERMES planned for the next day. She came into sight on the afternoon of 18 May and cross-decking operations could begin. Fortunately the weather was perfect, with only light winds and a gentle swell, and the vertical take-offs and landings, although approached with some trepidation, were completed without incident. Lack of time and minor faults prevented all six aircraft from transferring on 18 May, the last two flying-on on 19 and 20 May respectively. A move to get the CO and Flt Cdrs night qualified, without primary instruments, on the first evening was thankfully cancelled - but only just (16). HMS HERMES ROP TF1.2 E52 19 May 1S/105/4/4/Op 28 Jun 1G/900/42/1/105.1 E21C

AIR DEFENCE (AD) AT ASCENSION

7.27 The importance of Ascension as the forward mounting base was well recognised and (as discussed in Chapter 2, para 27 at seq) concern for the defence of the island heightened when the Argentine merchant ship RIO DE LA PLATA was detected near the island on 26 April. An intelligence estimate recognised the possibility of an attack to deny the runway which could be mounted by seaborne or airborne Special Forces (SF). It was decided, therefore, that the three GR3s remaining at Ascension should be allocated an, albeit limited, AD role (17)

7.28 The limitations of the GR Mk 3 to carry out the AD task were quickly realised, particularly as the Rules of Engagement (ROE) promulgated on 10 May required intruders to be identified by day or night. In order to improve the GR Mk 3's capability at night, the MODUK AIR 101904Z May TF51.1 E96

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(16) In HMS HERMES, the Captain himself exercised a very tight control on flying operations and the Squadron's programme was totally dictated by the ship's programme. On this occasion the first 3 pilots who had landed on from ATLANTIC CONVEYOR were hurriedly briefed and ordered into the air on a training sortie with a planned take-off just before sunset. The Inertial Navigation and Attack System (INAS) could not be aligned as the FINRAE had not yet been transferred. In the event start up clearance was delayed and Cdr Air was eventually persuaded to cancel the sorties, which would otherwise have been launched 15 mins after sunset without primary instruments. 1G/900/42/1/105.1 E21D

(17) Following the departure of ATLANTIC CONVEYOR from Ascension, Sqn Ldr Smith was left as OC the detachment on the island with Flt Lt Boyens and Robertshaw, 3 aircraft, and a party of 21 groundcrew including Sqn Ldr Sobey. One of the aircraft developed a severe centre tank fuel leak and had to be dismantled and returned to UK by Hercules; however, it was not thought necessary to replace this aircraft for the required AD duties. Sqn Ldr Sobey (Diary)

use of passive night goggles (PNG) was investigated. Results were encouraging and showed that interceptions for identification were possible against a lights-out target with some moonlight, or a lights-on target without moonlight. However results against a lights out target without moonlight were mixed. Nevertheless the trials project officer was dispatched to Ascension on 16 May to supervise the necessary cockpit lighting modifications and 3 PNG trained pilots were dispatched on 17 May. TF51.2 E43

7.29 The flying from Ascension was limited by requirements to conserve fuel and keep one aircraft on standby. Initially several sorties were used to calibrate the newly arrived S259 radar on Green Mountain and later sorties consisted mainly of practice intercepts and surface search around the island. The only 'live' scramble to intercept occurred on 15 May when the 'intruder' was found to be a returning Victor with Identification Friend or Foe (IFF) failure. 18G ORB May (Annex A)

7.30 Once the AD commitment at Ascension Island was increased to an aircraft on 5 mins readiness 24 hrs per day, it was necessary to increase the number of pilots to 5. Accordingly, Flt Lts M M MacLeod and D A Haward were attached and arrived on 12 May. With the introduction of PNGs, Sqn Ldr J A West who had carried out the trials in UK relieved Sqn Ldr Smith as OC the detachment on 17 May. The GR3s maintained their limited AD posture until 26 May when they were replaced by 3 Phantoms of No 29 Sqn. The Harriers were then absorbed into further deployments to the Task Force (TF). TF51.2 E36

THE SECOND DEPLOYMENT

7.31 In late April CTF 317 requested the deployment of 3 more battalions (the '5 Inf Bde' Option) for garrison duties, as a follow up for the initial landings and assault on the Falklands (Operation SUTTON). To support this force, which was to be transported by QE2 and ATLANTIC CAUSEWAY, CTF 317 required air support from GR3s in excess of those already deployed in HERMES. In addition, he saw a need for a fully operational Forward Operating Base (FOB) sited ashore but tasked directly from FEARLESS, capable of supporting OAS operations at intensive rates by 8 aircraft with a further 4 aircraft in reserve. Accompanying the six aircraft ready embarked in ATLANTIC CONVEYOR was equipment for a basic 1000ft x 38ft runway complete with fuel system; the equipment was split between ATLANTIC CONVEYOR and SIR BEDIVERE and NORLAND (18). A further 6 aircraft were therefore required with

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(18) In mid April CTF expressed a wish for a FOB to be established ashore but, whilst the proposal was supported by the Air Commander there was a dearth of shipping to move the full support package of 225 personnel and over 100 truck loads of equipment for a fully operational Harrier FOB. However, it was eventually agreed that an improvised FOB could be provided to meet the need for a SHAR emergency diversion. In its original form the strip was to measure 850ft x 45ft but it later transpired that the length could be usefully extended to 1000' by reducing the overall width to 38ft.

350 personnel and 1000 tons of freight to provide a full FOB including an RAF Regt Rapier AD System. The request for this deployment was finally agreed by the Secretary of State on 10 May and planning proceeded to fly the aircraft to Ascension, as had been done with the first wave, and then to embark in STUFT for the journey south. Over the period up to 11 May much midnight oil was burned in finding a suitable vessel to carry the Harriers and with these difficulties came the suggestion that, if no ship could be found, a vessel already unloaded in the Falklands could be returned to Ascension, or the aircraft flown direct to the CVs using AAR (19).

7.32 However, on 11 May MV CONTENDER BEZANT was found to be capable of carrying the GR3s; she was to sail on 20 May accompanied by MV SAINT EDMUND. Thus the plan eventually put into effect was that those elements required to construct and defend the FOB (REs, Tactical Supply Wing, Tactical Comms Wing and 63 Sqn RAF Regt (Rapiers)) would travel in QE2 and ATLANTIC CAUSEWAY. The aircraft weapons and some engineering equipment would travel in TOR CALEDONIA and the bulk of equipment and aircraft in CONTENDER BEZANT, whilst the No 1 Sqn engineering personnel would be berthed in SAINT EDMUND.

FURTHER TRAINING

7.33 Once the OC and the first 9 aircraft had deployed, Sqn Ldr H G Mackay (the Sqn Exec O) was left in charge of the training and preparations for any further deployments. The training for subsequent deployments followed very similar lines to the first, including Ski-Jump, DACT, Weapons, ULL and AIM 9 training. However, there was no further DACT with the French, neither were any more CBUs or live AIM 9 missiles allocated. Nevertheless, AIM 9 acquisition rounds were available and considerable AIM 9 missile tactical training was completed.

1 Sqn ORB

1 Sqn F1575B

7.34 By 11 May, when the second deployment of 6 aircraft and 8 pilots was confirmed, 1 Sqn had 2 combat ready (CR) pilots at Wittering (20) (Exec O + Flt Lt Loader) and 3 CR pilots at Ascension (Sqn Ldr Smith and Flt Lts Boyens and R Robertshaw). Flt Lts Haward and MacLeod were also attached to 1 Sqn from RAFG and were en route to Ascension to bring the number of pilots there up to 5, as required by the new 24 hr AD commitment. In order to maintain the 5 pilot strength at Ascension and provide 8 pilots for deployment 1 Sqn now required 6 more combat ready pilots. Accordingly, Sqn Ldr West was attached from Bracknell and Sqn Ldr R Thomas and Flt Lts M Beech, C Gowers, A Bascombe and D Gibbons were attached from Gutersloh.

UKRAOC 111448Z May
TF 51.2 E36

RAFG 121545Z May
TF 51.2 E41

(19) This was the plan originally proposed, and rejected, for the onward delivery of the first phase aircraft (vide para 16).

(20) Flt Lt J D Arkell had returned to 233 Operational Conversion Unit (OCU) which was now fully committed to refresher training and trials flying on top of its usual training task.

7.35 To add to the difficulty of conducting a training programme with constantly changing pilots there was a considerable requirement for trials flying as new capabilities were added to the GR Mk 3. The advantage of using Sqn pilots for trials flying was that they could take the expertise gained on the trial with them when they deployed south. Some of these trials are described in the following paragraphs.

7.36 Flt Lt Beech took part in the successful Trial PURITAN using Laser Guided Bombs (LGB) at West Freugh between 19 and 23 May. He later deployed to HERMES on 1 June

292158Z May
TF 51.4 E72

7.37 Sqn Ldr West took part in Trial SAVE to prove the use of PNGs at Wittering between 12 and 15 May. The PNGs were successful against either a lights-out target under some moonlight or a lights - on target with no moon. Sqn Ldr West deployed to Ascension to command the Harrier detachment there on 17 May.

233 OCU F1575B

TF 51.2 E47

7.38 Flt Lt N S F Gilchrist (21) took part in Trial ATHENE from 30 May to 2 June firing Anti-Radiation Missiles (ARM) 45 Shrike missiles from a GR Mk 3. The trial proved successful provided the position of the target radar was known but the aircraft equipment was inadequate for targets of opportunity. Flt Lt Gilchrist deployed to HMS HERMES on 8 June but unfortunately without the Shrike missile equipment which, because of an administrative error, ended up in Uruguay having been left, unmarked, aboard an RAF VC10. (Further details of this incident appear in Chap 3).

1 SQN F1575B

TF 51.5 E54

THE JOURNEY SOUTH - SECOND PHASE

7.39 On 28 May, 6 aircraft pre-positioned at St Mawgan for the flight south. These were joined early on 29 May by a further 3 aircraft. Later that morning Sqn Ldr Mackay and Flt Lts Beech and Gowers flew 3 aircraft direct to Ascension using the same AAR plan as the first 9 aircraft to deploy. On 30 May Flt Lts Loader, Haward and Robertshaw took off to fly another 3 aircraft directly to Ascension but after take-off Haward's aircraft became unserviceable. Fortunately, the remaining 3 aircraft had also taken off to provide spares aircraft for just this contingency and Flt Lt Boyens was able to replace Haward in the formation. All arrived safely.

7.40 During the week that followed the successful deployment of the first wave of Harriers to HMS HERMES, 2 SHAR and 2 GR3s had been lost. The need to provide more rapid reinforcement than could be provided by the aircraft to be embarked at Ascension raised again the possibility of flying the Harriers directly to the Task Force using AAR (22).

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(21) Flt Lt Gilchrist was on No 12 Qualified Weapons Instructor (QWI) course at the outbreak of hostilities. Much to his personal annoyance the course was not cancelled until mid-May when the Harrier pilot shortage became critical.

1G/335/4/4/7/
Ops.1 E34

(22) Whilst this plan carried some obvious risks ACAS(Ops), himself a Harrier pilot of long experience, had always been confident that the plan would work from the AAR point of view and had proposed it to CAS.

7.41 The original plan called for 2 GR3s to deploy with tanker support to HMS HERMES under Operation BOWSPRIT. Eight Victor tankers would be needed and the GR3s would be fitted with 330 gall ferry tanks inboard and 100 gall tanks outboard (there was a shortage of these combat tanks on HERMES). Royal Fleet Auxiliary (RFA) ENGADINE was to be used as a mid-point diversion and HMS INVINCIBLE and the FOB at Port San Carlos as terminal diversions. Weather minima for the recovery to HMS HERMES were set at 1000 ft cloudbase and 2.5 nm visibility. A Nimrod was to provide SAR cover out to maximum high level unrefuelled range. On 30 May, with 8 GR3s now at Ascension, another GR3 was lost in the Falklands and the deployment plan was therefore changed, to allow 4 aircraft to fly directly to HERMES, leaving the remaining 4 to be embarked in CONTENDER BEZANT.

7.42 The ferrying of GR Mk 3s direct to HMS HERMES from Ascension, despite being feasible, carried risks and both Ops(OS) and the Captain of HMS HERMES expressed severe reservations. It is not surprising, therefore, that the Air Commander found it a most difficult decision to make. Nevertheless, in the early hours of 1 June he issued the executive instruction for Operation BOWSPRIT for the first 2 aircraft to proceed. Flt Lts Beech and MacLeod left Ascension at 0905 hrs in company with 8 Victor Tankers(23). The aircraft were configured with long range ferry tanks inboard, the empty 100 gal combat tanks outboard and both guns armed with 120 rounds of 30 mm High Explosive (HE) ammunition. The flight was to last almost 8½ hours and involve 5 refuelling brackets for the Harriers. The RFA ENGADINE was at the mid point as a form of diversion, but she could not be reached from all the refuelling brackets and only had a small helicopter flight deck. In the event, the AAR went smoothly although turbulence was experienced during one bracket. The 2 GR MK 3s were cast off from the last Victor some 700 nm from HERMES and flew on alone for about an hour before they made RT contact and met up with 2 Sea Harriers who shepherded them to the ship. This RV, high over the South Atlantic, was to form a major entry in the No 3 Sqn Diary as both formation leaders (Flt Lts M D Beech and J R Leeming) were 3 Sqn pilots on loan to 1 Sqn and 809 Sqn RN for the duration of CORPORATE. For the landing on HMS HERMES the weather was fine but with a strong wind and a high sea state such that the Captain was heard to comment "we're surfing!" Nevertheless both aircraft sucessfully jettisoned their long range tanks and completed comfortable vertical landings on the somewhat crowded deck.

Curtiss tape

1 Sqn F1575B

3 Sqn ORB

HERMES R of P

TF 51.5 E10

7.43 The second pair of GR Mk 3s for Operation BOWSPRIT left Ascension on 8 June flown by Flt Lts Boyens and Gilchrist. The Harriers were again accompanied by 8 Victor tankers and used the same refuelling plan except that on this occasion there was no mid-point 'floating' diversion because ENGADINE was too far south. Any failure to transfer fuel from the second refuelling bracket onwards would result in the loss of an aircraft. It had also been hoped to carry Shrike missiles on the outboard pylons instead of 100 gal combat tanks. However by now the aircraft with HERMES had suffered battle damage to several drop tanks and now required the tanks more urgently than the missiles. This time the weather forecast for

1 Sqn F 1575B

23. Flt Lt MacLeod had piloted the last Phantom F4K to be catapulted by HMS ARK ROYAL and so was not inexperienced in deck operations.

HERMES was less promising with temporary deterioration to 500 ft cloudbase and 2000 metres visibility, but the flight went according to plan although not without some apprehension as two of the refuelling brackets were under Instrument Meteorological Conditions (IMC) and one had considerable turbulence. The GR MK 3s were again shepherded to the ship by SHAR and the weather proved better than expected. The long range tanks were again jettisoned without problem and both aircraft made comfortable landings on the deck of HERMES after 7¾ hrs flights.

7.44 Meanwhile at Ascension the four remaining aircraft were flown onto the deck of CONTENDER BEZANT on 31 May. Because of the shortage of accommodation on the ship the pilots (Sqn Ldr Mackay and Smith and Flt Lts Robertshaw, Loader and Haward) with Sqn Ldr Sobey and 15 groundcrew joined the 170 No 1 Sqn personnel already in SAINT EDMUND. A further 5 groundcrew from Ascension joined CONTENDER BEZANT and the two ships set sail for the TF on 2 June. During the journey south groundcrew were lifted between the ships by helicopter on a daily basis to complete bagging of the aircraft in their 'Driclad' bags, to continue servicing schedules and to finish off minor modification work. 1 Sqn F 1575B

7.45 The journey south was delayed by 3 factors. Firstly, the ships routed well to the East following the attempted Argentine C130 bombing attack on the tanker BRITISH WYE. Secondly, CONTENDER BEZANT suffered engine troubles on the journey, and finally the ships were forced to heave-to for 2 days during a severe Force 11 storm. The two ships were just about to enter the Total Exclusion Zone (TEZ) when they learned of the Argentine surrender and finally dropped anchor in Port William Bay off Port Stanley on 17 June.

7.46 To complete the No 1 Sqn deployment to the Falklands, the 20 extra groundcrew called for by CTF on 15 May (24) (3 Operational Turn-Round (OTR) teams with Ch Tech J D Howarth) flew from UK to Ascension Island on 18 May and then boarded MV BALTIC FERRY for transport to the TF. They were offloaded at San Carlos at the end of May but unfortunately nobody there knew what to do with them (the Harrier FOB was at Port San Carlos). The next day the party were put aboard SS CANBERRA to transfer to HMS HERMES. Attempts to achieve this consistently failed until 11 June when 4 of the armourers, including Ch Tech Howarth, reached that ship. The remaining tradesmen under Cpl Jackson were left on board CANBERRA and used to guard Argentine POWs to and from Uruguay, before eventually joining the Squadron at Stanley on 30 June. TF51.2 E97

HARRIER COMMAND AND CONTROL

7.47 Operational control of all Harriers with the TF remained with CTG 317.8 throughout the conflict. The GR Mk 3s were absorbed into the embarked Air Group and answered directly to Cdr Air who was responsible for the authorization of all flights. In HMS HERMES the Captain himself exercised a very tight control over flying operations and the Squadron's programme was totally dictated by the ship. As the senior air adviser afloat, the Captain of HMS HERMES was the air adviser to the Admiral. On arrival the GR3s were used as reinforcements to, rather than replacements for, the 1G/900/42/1/ 05.1 E21D Squire Tape

(24) See Note 12

SHAR and were roled for attack duties throughout the conflict. There were 3 sources of tasking for the GR3; the Admiral's staff, the ship's staff and the forces ashore. However, there was no formal allocation of effort either by quantity or time.

7.48 Neither the Admiral's staff nor HMS HERMES crew were organized to control OAS for forces ashore. The forces believed that a Tactical Air Co-ordination Centre (TACC) existed on HMS HERMES, but this was not the case. Sqn Ldr B S Morris, Harrier Air Liaison Officer (HALO), joined the Admiral's staff with the arrival of the GR3s but he found it difficult to fulfil his role and after the first 10 days he was sent ashore to command the FOB. The ship's air operations room was manned by only one officer who was responsible for all air operations, including helicopters, and did not have the capacity to manage the rapid handling of tasks and mission monitoring. The ship's air intelligence cell was located 4 decks below the air operations room, was manned by one Cpl and had no ground or air situation maps. The established Carrier-Borne Ground Liaison Officer (CBGLO) had been re-allocated to the Admiral's staff and was unable to be permanently involved in the tasking chain. Finally there were no attack planning facilities. Some externally tasked sorties were transmitted to CTG 317.8 rather than HMS HERMES and were sometimes not recognized by non-specialist staff and as a result not flown. Similarly, HMS HERMES initially responded to Air Requests rather than Air Tasks until this was corrected.

HQ CLFFI 18 Oct
1G/900/42/1/05.1
E23

1G/900/42/1/05.1
E21D

7.49 The OAS tasking chain ashore was also fraught with difficulties. During the initial landing phase the 3 Cdo Bde Air Liaison Officer (ALO) was part of the Supporting Arms Co-ordination Centre (SACC) in FEARLESS. Once HQ 3 Cdo Bde were established ashore the ALO became part of the Fire Support Co-ordination Centre (FSCC) in Bde HQ. Four Tactical Air Control Parties (TACPs) were deployed with units ashore. An HF Tactical Air Request (TAR) circuit linked the TACPs, SACC/FSCC and the TACC aboard HERMES. In theory Air Requests generated by TACPs and co- ordinated by the ALO would be passed on to the Tactical Air Co-ordination Centre (TACC) by the TAR net. However, communications with HMS HERMES rarely worked and, apart from a few exceptions, communications with HMS FEARLESS never worked. The ALO had to resort to FLASH messages on the Defence Communications Net (DCN).

HQ CLFFI R of P
18 Oct
Annex L

7.50 During the subsequent land battle phase it was planned to re-establish the SACC with HQ Land Forces Falkland Islands (LFFI) aboard HMS FEARLESS with the FOB and 5 Bde ALO and TACPs all joining the TAR net. The RAF Liaison Officer (RAFLO) (Wg Cdr Trowern) at SACC would monitor requests from brigades to the TACC on the 'silence is consent' basis or allocate any aircraft at the FOB to a task. In the event that TAR became overloaded each brigade was allocated its own TAR net and a separate net was used to link brigade's ALOs to SACC, the FOB and TACC. Not one system worked due to the failure of the HF nets and it was necessary to use the DCN for most communications and occasionally DSSS from FEARLESS to HERMES. It was not until RAFLO established himself ashore with 3 Cdo Bde in the latter stages of the campaign that he was able to co-ordinate the requests of both brigades. The TACPs and ALO teams were properly constituted. However, the OAS tasking with HQ LFFI was not, and the RAFLO was expected to man the TAR and co-ordinate all OAS tasking on a 24 hr basis while at the same time

HQ CLFFI ROP
18 Oct
Annex L

giving advice to the GOC and completing other tasks such as surveying potential FOB sites. Trowern Tape

7.51 It is a remarkable achievement of extemporisation, that, with neither control agency (TACC, SACC) properly organized, with the failure of the HF communications, and with HMS HERMES' lack of OAS support facilities, effective OAS missions were still mounted successfully. 38G/1800/172 32/Cont.1 E35B 2 Sep

DECK OPERATIONS

7.52 Becoming familiar and confident with deck procedures was something of a challenge for No 1 Sqn pilots as only one day was available for practice before operations over the Islands began. Shipboard procedures were totally alien to Harrier GR3 pilots and it took some time for them to accept the cramped parking, the continual back taxying, using braking stop nozzles, and the marshalling of aircraft nose to tail at very high power settings. Perhaps harder to accept was the feeling of lack of control of one's own destiny experienced by formation leaders during the launch cycle. The launch cycle was controlled with no RT from Flying Control (Flyco) over a closed loop comms system with the deck crew which the pilots could not hear. The extremely cramped conditions dictated the launch order and frequently separate formations were mixed together and launched in any order. The pilots merely had to keep quiet and obey the deck crew's signals and then try and sort out the formation once airborne. Mission leaders had little control over the consequences of aircraft unserviceablility on start up; on one occasion the No 2 of one mission and the leader from another were launched together as a pair while their partners were unserviceable on deck.

7.53 The Ski-Jump take-offs were straightforward and posed few problems, although certain aircraft with poor engine performance required "water injection" to be selected after launch when operating at either high weights or with low wind over deck. Take-offs in either low visibility or before sunrise were less comfortable, and one formation, when launching in fog, found it difficult to transition on instruments, particularly as the lead aircraft lost primary instruments during the take-off roll. Vertical landings, even facing aft or across deck, created few problems, although pilots preferred landing abeam the rear of the island with the ship into wind. Pilots found the Carrier Controlled Approach (CCA) at 130 kts wth 50-60° nozzle to be simple and landings were even carried out up to 50 mins after sunset without experiencing any noticeable difficulty.

THE FORWARD OPERATING BASE (FOB)

7.54 The requirement for an FOB to support limited GR3/SHAR operations and to provide an emergency diversion was identified early in the conflict. The equipment provisioned allowed for the construction of a metal strip 1000 ft x 38 ft forward operating pad, taxiways, aircraft standings/protection, a fuel delivery/ storage system with 4 x pillow tanks capable of storing 40,000 gals and domestic support (tents, cooking facilities etc) As has been noted all equipment, RE construction personnel and Tactical Supply Wing (TSW) support were conveyed in ATLANTIC CONVEYOR, NORLAND and 18G/335/4/17 Ops.1 E 13-18 18GP/335/4/4/ 7/Ops.1 E 7 18G/335/4/17/ Ops.1 E 28

SIR BEDIVERE. When the ATLANTIC CONVEYOR was sunk with the loss of all significant FOB equipment it was thought that this would delay the start of Harrier shore operations. However, in the event, it was discovered that 59 Commando Engineer Brigade had used the Perforated Surfacing Aluminium already put ashore from RFA STROMNESS to build a landing strip and pad at Port San Carlos (25). The strip was inspected on 30 May by Wg Cdr Trowern (RAFLO), Sqn Ldr Morris (ALO), Cdr Hunneyball (SAVO to Flag Officer First Flotilla (FOF.1) and Sqn Ldr Iveson (Harrier pilot being recovered to HERMES after his ejection on 27 May) and declared to be satisfactory although some runway lengthening was needed and adequate comms provided.

18G/335/4/17/ Ops.3 E 55

26/1550/May 18G/335/4/17 Ops.3 E51

7.55 The FOB was located at GRID UC 615923 (approx 51295 05858.30W) with the EFHE (Emergency Fuel Handling Equipment) just to the West (GRID UC 614923). The site was next to the helicopter re-fuelling area allowing the one available fuel line to feed both the Harrier FOB and the helicopter landing site. The take-off strip of 260m was laid along a ridge line to the west of the settlement and connected to a landing pad with 2 semi-circular taxi/parking loops which allowed up to 4 aircraft to be positioned there at any one time. Although the strip was far from ideal it did permit both SHAR and GR3s (internal fuel and either 2 x CBU or 2 x 2in rocket pods only) to respond more rapidly to demands for AD CAPS and attack operations, especially since the Etendard/Exocet threat had forced the TF to move well to the East. The undulating nature of the strip made take-off exciting but operations were conducted with up to 30 kt cross or tail wind, on occasions making full use of the fact that the ground dropped some 150 ft just beyond the lift-off point.

270105Z May 18G/335/4/17/Ops.3 E59

1 Sqn ORB

1 Gp/900/42/1/Ops.1 E23

7.56 THe FOB was commanded by Sqn Ldr B S Morris and was manned by 2 x RAF airmen, 4 x RN ratings from HMS HERMES and a signaller from HMS FEARLESS, who were transported to SIR BEDIVERE on 1 June for night 1/2 June and then by landing craft to FEARLESS and finally by helicopter to the FOB mid afternoon on 2 June. The site was declared ready for operations on 2 June; however, because of fog at sea (unbeknown to the site detachment) the first aircraft did not arrive until 5 June. No weapons, domestic services (food, tents, cooking facilities etc), or other support personnel were provided for the detachment or positioned at the site, and the capability was strictly limited to fuel turn-rounds only. All food and accommodation were scrounged from the RN Helicopter detachment, local inhabitants, or, when they arrived, from No 63 Sqn and TSW. Clansman 320 and PRC 344 radios were provided from HMS FEARLESS and used theoretically to link the site into the TAR net and to provide comms to the aircraft/Local Area Air Warfare Control (LAAWC). Comms into the TAR net were never fully achieved and although UHF comms

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(25) The stripping used had originally been planned for repairs to Port Stanley Airfield but by this stage the American AM2 matting had already been allocated to that task. The loss of pillow tanks and dracones (large floating rubber cylindrical fuel storage tanks) was significant and could not immediately be remedied, but a number of pillow tanks had already been put ashore for use by the helicopters, and they had been earmarked for concurrent Harrier use at Port San Carlos. Plans were also made to airlift additional tanks to Ascension for onward transmission on TOR CALEDONIA

18/335/4/4/7/Ops.1 E16

with aircraft and the LAAWC improved to be reasonable, the UHF comms with CTGs 317.1 and 317.8 were never satisfactory; this seriously degraded the capability of the site to provide any tasking input or instruction.

7.57 The aim of the Port San Carlos site was to allow pre-positioning of up to 6 GR3/SHAR each day with Operational Turn Round (OTR) support, so as to allow maximum stand-off distance whilst improving reaction times and economy of effort. The concept was firstly for SHAR to hold Quick Reaction Alert (QRA) for rapid scramble and intercept, secondly for ground alert GR3s to be tasked by CTU 317.1.1 on OAS missions, and finally to provide an emergency diversion. The basic plan was that the first 2 GR3s airborne from HERMES tasked for OAS that day were to land at the FOB to re-fuel if either they were short of fuel or weapons were not expended, thereafter they would either return direct to HERMES for a re-fuel/re-tank or remain at the FOB for re-tasking. Two SHAR would also be kept at the FOB on QRA alert and be replaced once scrambled. In the event the GR3s flew only 17 sorties into Port San Carlos (including one involving a crash), of which only 2 were after 10 June, the main reason being the poor command comms which prevented effective tasking. The SHAR used the site extensively with about 100-140 movements into the FOB (exact figure not known). Movements into the site exceeded the plan threefold with a maximum of 18 movements in one day (the limiting factor being fuel). There were also concurrently up to 40 helicopter movements per day into the adjacent helicopter site.

RAFLO Report 1G/900/42/1/05.1 E23

1 Gp/900/42/1/ Ops.1 E23 RAFLO Report

7.58 The landing site was well prepared and maintained by a very hard working troop of engineers; administratively, however,it was chaotic. The FOB team lived within walking distance of the site (approx ½ mile) in the direction of the Port San Carlos settlement. Sqn Ldr Morris lived with a local family and the airmen/ratings lived initially in a tent borrowed from the RN Helo detachment and then in a local house. The site operations area was a slit trench which remained until TSW arrived with their comms tents which then became the ops area. Mail and supplies (including whisky for the local residents in exchange for beer) were brought directly by the visiting Harriers which also provided the best comms link with the ship.

7.59 There were several incidents at the site worthy of note:

a. Chinook downwash overturned part of the Harrier taxi-strip causing 2 SHAR to be diverted to ships. The Engineers cleared the site in a couple of hours and the diverted SHAR recovered to Port San Carlos before being refuelled and returning to their ship.

b. One of the SHAR's nosewheels penetrated the taxiway over a soft piece of ground. The aircraft was lifted out using a tractor and a fork lift truck without damage. After the incident the offending section of taxiway was declared unusable and the metal used to enlarge the one remaining taxiway which was on higher, firmer ground. The action confined the parked Harriers to a small area of high ground making them even more vulnerable to attack by the Argentine forces - at one time there were 6 Harriers parked together on top of a hill.

Morris Tape

c. Ice on the strip caused one SHAR to start sliding dangerously towards the edge. The groundcrew managed to stop the movement but not before the pilot had stopped and then restarted his engine. The resultant fuel spillage caught fire on start-up and the one domestic fire extinguisher borrowed from a local farmer proved hopelessly inadequate. Luckily the fire went out of its own accord and there was no damage. De-icing compound was subsequently supplied from HERMES.

d. A crash landing by Wg Cdr Squire is reported separately, but it did cause a lot of damage to the runway by lifting the strips. The repairs took several hours although the ground party had cleared sufficient for the orbiting Harrier to land within minutes. Morris Tape

e. Two members of the ground party were injured, firstly a Petty Officer who broke his finger when he fell whilst carrying a rifle, and secondly a signaller (never replaced) who broke his ankle.

7.60 The site was defended by a RAPIER battery and a 40 Commando detachment. Although subject to many warnings which caused short notice jumps into slit trenches, the site was not attacked by the Argentine forces and few enemy aircraft were seen. Recovery procedures into the site were simple with either an approach at low speed ('lame duck' configuration) with undercarriage down or, more usually, by obtaining clearance where necessary when silent procedures could not be used. Morris Tape

7.61 The site concept was proved to be viable and, despite the reduction in FOB capability because of limited tin strip, the topography of the site selected and the many comms/tasking difficulties, it did confer significant benefits in that: RAFLO Report 1G/900/42/1/Ops.1 E23

a. Combat Air Patrol (CAP) loiter times were greatly extended.

b. SHARs were given a ground based QRA capability.

c. GR3's flight times to a target were reduced considerably.

d. The number of turn-rounds at the CVs was reduced.

e. It provided a diversion airfield.

MISSIONS

7.62 The missions flown can be broadly split into 4 groups, namely the landing phase, the Goose Green offensive, the move across East Falklands, and finally the re-capture of Port Stanley. A detailed analysis of aircraft/aircrew hours can be found in Operational Evaluation Group (OEG) report 3-83 (OP CORPORATE Harrier Aircraft Operations) and a summary of relevant sections is given at Annex B. It is intended in this main section to cover briefly all operational GR3 sorties in support of CORPORATE but to dwell only on those sorties of significance. OEG Report E-83

LANDING PHASE

7.63 Flying started from HMS HERMES on 19 May with 15 training Air Combat Manoeuvre (ACM) sorties. During the first of these sorties the CO and Flt Lt Glover were re-tasked to intercept a possible enemy intelligence collecting aircraft 180 nms NE of the TF (suspected to be a Boeing 707). The rules of engagement authorised them only to shadow and deter; however, in the event the intercept was unsuccessful as the target turned away and radar contact was lost. Later the same day a Sea King 4 ditched with the loss of 21 troops; the loss to the RAF was significant since it included Flt Lt Garth Hawkins, Forward Air Controller (FAC), and an SAS Laser Target Marker (LTM) team with its equipment. The loss of expertise and equipment meant that LTM Laser Guided Bomb (LGB) missions in the Stanley area under the guidance of SAS forces were effectively cancelled.

HARR/GEN/2
MISREP FI/001
E30 19 May

Glover tape

7.64 The first tasked mission was against a POL storage area at Fox Bay (East) settlement using 9 Cluster Bomb Units (CBU). The weather was poor near to HERMES but good in the target area with good visibility below full cloud cover at 1200 ft. The attack was unopposed and completed as planned. A post-strike recce sortie by SHAR reported that CBUs had destroyed dispersed oil drums very effectively. No other flying was possible on 20 May due to poor weather at sea although a further attack on Fox Bay had been planned.

HARR/GEN/2
MISREP FI/002
E30 21 May

HARR/GEN/2
E1
HERMES ROP

7.65 D-Day for the landings at San Carlos (Operation SUTTON) was 21 May and 1 Sqn saw enemy action. The first pair led by Sqn Ldr Pook took off 20 mins before sunrise tasked with CBU/strafe against a possible helicopter FOB on the slopes of Mr Kent. The first run identified the existence of one Chinook, one Puma and one UH1H (with engines running). The re-attack using 30 mm cannon accounted for the destruction of 1 x Chinook and 1 x UH-IH, and the disabling of one Puma (this was subsequently destroyed on 26 May). The 2 CBUs dropped during the re-attack missed and 2 others hung-up and were jettisoned prior to recovery. During the attack the lead aircraft was damaged by gunfire and holed on the intake and port wing; after battle damage repairs the aircraft flew again the following day.

1 Sqn F1575B
20 May

HARR/GEN/2
Misrep F1/018
E30 26 May

7.66 The second pair of the day (Wg Cdr Squire and Flt Lt Glover) was tasked as Close Air Support (CAS) CAP for possible tasking in support of an assault in the Amphibious Operations Area (AOA). On take-off Squire's undercarriage stuck down (the ground-lock was still in place) and Glover continued alone to be re-tasked on armed recce in the Port Howard area. During this recce his aircraft was hit by Blowpipe/20mm and after a successful ejection Glover was taken as the only RAF, indeed UK, POW (26). He was finally released on 8 July. Details of his capture by the Argentine were formally received on 4 June although message intercepts on 22/23 May indicated the capture and told of his transfer to Port Stanley.

Squire Tape

Glover Tape

1 Sqn War Diary
1 Sqn ORB para 10

(26) Argentine records attribute the kill to a 'Blowpipe'; however, a de-brief of Glover states 'First indications of groundfire was the aircraft shuddering under the impact of one and then 2 more explosions'. Glover now thinks 3 x 20 mm shells destroyed the aircraft.

"INFORME OFFICIAL EJERCITO ARGENTINO 1983"

7.67 The remaining 2 pairs of the day were allocated to armed recce of the area Cape Dolphin/Bombilla Hill/ Bodie peak and of Dunnose Head airstrip. All sorties were uneventful and nothing was seen. Flt Lt Rochfort from task 3M009 landed with his outrigger wheel in the HERMES port catwalk; there was however no damage and the aircraft was recovered by the deck crews lifting the outboard CBU and pulling down on the inboard one (27) Two other pairs were planned and held at ground alert but were not subsequently tasked.

HARR/GEN/2
Misreps FI/005 & 6

HERMES ROP
1 Sqn F1575B

7.68 22 May started quietly with 2 formations of 3 aircraft being held at ground alert for different times during the morning, and one pair being flown to provide radar tracking calibration for EXETER. The major event of the day was a 4 aircraft attack on tented positions and possible dispersed Pucara aircraft at Goose Green. Heavy AAA was known to be in the area and the attack was planned as a simultaneous attack from the east on 4 briefed target positions. Pook attacked a camouflaged box-bodied vehicle on the rear of the airstrip; Iveson attacked a line of foxholes on the northern edge of the air-strip and saw Pook's weapons cause secondary explosions; Harris was locked onto by AAA directing Super Fledermaus radar which was probably broken by a hard jink and chaff, and then continued to weapon release point only to suffer a CBU hangup; finally, Rochfort dropped his weapons on his briefed target position. All aircraft were subject to considerable AAA and departed at 20-40ft agl. The expected Pucara targets were not found having probably been forewarned by Argentine radar units. An armed recce sortie of the airstrip at Weddell Island later on 22 May proved uneventful with nothing seen, although the Argentine freighter, the MONSUNEN, was spotted south of the Sound but was not attacked, since at the time she was not positively identified as hostile.

HARR/GEN/2
Misrep FI/007
E30 22 May

1 Sqn War Diary

HARR/GEN/2
Misrep FI/008
22 May
1 Sqn War Diary

7.69 Operations on 23 May started with a 4 aircraft attack on Dunnose Head airstrip with Nos 1 and 3 each dropping 2 x CBU and Nos 2 and 4 each dropping 3 x 1000lb retarded bombs. It was believed that the strip was being used for Argentine Hercules re-supply flights from the mainland although in all probability they had been merely descending to low-level at this point before making their way out of view of the TF radars (28). All aircraft dropped weapons as briefed although it was thought that No 2's third bomb fell close to the settlement. As a result one civilian lost the sight of one eye and some civilian property was damaged. Before this sortie took-off there was a delay caused by a short notice request by Commodore Amphibious Warfare (COMAW) to change the target to Pebble Island. This resulted in discussions between 1 Sqn/CTG 317.8/HERMES on whether to change the task which would involve considerable re- brief delays or whether to continue as pre-planned. CTG 317.8 decided to proceed as briefed against Dunnose, but acknowledged that GR3s were COMAW assets. CTG did however stipulate that the ship's captain must be consulted before any GR3 tasking was finally agreed.

COMAW report

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(27) It was consoling to learn that the CO of 800 Sqn also landed his aircraft into the catwalk on HMS HERMES showing that SHAR pilots too could commit errors on their own territory.

HARR/GEN/2
HERMES ROP
E1

(28) The Argentine report discussed the use of Dunnose as a staging post for helos and it is understood that 2 aircraft had left shortly before the attack en-route for Stanley. There was no mention of use by Hercules aircraft.

7.70 An armed recce sortie against Port Howard was uneventful, detecting few targets visually. However, film analysis revealed many defensive positions and tents and some activity in the settlement itself. The recce and film debrief led to an attack on Port Howard on 26 May. The final sortie on 23 May was planned to be a 4 aircraft attack against Pebble Island airfield combined with an armed recce of Chartres airstrip. One aircraft went unserviceable after take-off; however, the remaining 3 attacked Pebble Island destroying several Pucaras (all of which had already been put out of action by the SAS). The recce of Chartres was uneventful with no enemy targets.

HARR/GEN/2 Misrep FI/010 E30 23 May

HARR/GEN/2 Misrep FI/011 E30 23 May

7.71 CTG 317.8 became worried at this stage about the possibility of arrester gear being fitted at Stanley and its use by Argentine fighter-bombers and was therefore keen to mount an urgent attack. As the mission could not launch before dark the task was given to the SHAR who lofted a mix of VT, contact and delayed fused bombs onto the airfield. To follow-up it was also decided to mount a mixed SHAR/GR3 attack on 24 May. The mission for the event was to be a co-ordinated attack against Port Stanley Airfield with 2 x SHAR providing defence suppression (tossing VT 1000lb bombs) some 45 seconds before the GR3s attacked with 12 x 1000lb retard bombs. The attack went much as planned with 3 or 4 GR3 bombs hitting the runway, causing some surface damage with 1 x Pucara and 1 x helo also damaged. The SHAR were locked onto by Super Fledermaus radar and Roland SAM when out of range and acting as decoys, and the GR3s were locked-up only on egress. Some small arms and AAA was seen by Nos 2 and 4 with No 4 receiving some airframe damage (probably debris). The attack was a little disappointing with the weapons not inflicting the degree of damage expected. The probable reason for the poor performance was incorrect arming of the bombs due to confusion between the RAF instruction "Instantaneous" which was not in the RN armament instructions and the RN interpretation of "Direct Action" which required anything between a delay of 0-90 millisec. As all previous 'Direct Action" bombs had been at 40 millisec, the armourers wrongly assumed no change and the bombs were all set to the same timing allowing the bombs to bounce before explosion and probably explode when not in direct contact with the ground. After the mission there was some discussion on the way ahead and it was decided, in view of the minor runway damage achieved with a high degree of risk to pilot and aircraft, that the low level attack would not be repeated and instead the loft/medium level bombing options would be investigated. Two other pairs planned for 24 May were not flown as no tasking was received.

HARR/GEN/2 Misrep FI/012 E30 24 May

HARR/GEN/2 Misrep FI/012 E30 24 May

7.72 The counter-air campaign against the airfield continued on 25 May with 2 x loft bombing missions and one medium level attack. The first mission was tasked as a 6 aircraft (2 x SHAR, 4 x GR3) attack on Port Stanley Airfield wth 12 x 1000lb free-fall bombs using a variety of fuses. Each pair of GR3s was led by a SHAR during the weapon release profile (loft) in order to carry out simultaneous weapon release using the SHAR loft computer programme. The attack was completed as planned with the GR3s in loose VIC formation on the SHAR. Following release of the bombs Sqn Ldr Pook climbed above the airfield to observe fall of shot. Bombs from the first 3 aircraft were seen to impact on the west end of the airfield, whilst those from the second wave fell approximately 100 yds north of the eastern threshold. Whilst in the over-head Pook was locked onto by Roland SAM and saw the missile in flight; it

peaked at about 15000 ft some distance below him. Pook also saw a Tiger-cat SAM launched against the second wave but this too fell short.

7.73 The second attack on 25 May against the airfield was a medium level delivery with 2 x GR3 dropping 6 x 1000lb bombs from 20,000 ft. The mission was uneventful with all bombs dropped singly; however, the 3 bomb impacts observed fell in Yorke Bay. AAA and Roland SAM were fired during the attack but the aircraft remained out of range. The final sortie was intended to be another medium level event; this was changed to a 30° loft due to weather but all 3 bombs fell short of the target. The use of loft/medium level bombing profiles reduced the element of risk but had very little chance of success (even with computer fitted aircraft), and only served to reduce enemy morale with a slight probability of inflicting damage.

HARR/GEN/2
Misrep FI/013 & 14
E30 25 May

HARR GEN/2
Misrep FI/015
E30 25 May
Squire tape

7.74 The only other mission on 25 May was an armed recce sortie which was scrambled from Alert 5 but nothing was seen.

Auth Sheets
25 May

7.75 Another loft delivery against Port Stanley airfield was completed on 26 May together with further attacks on Port Howard and more armed recce. The attack against the airfield was conducted by one aircraft from a 30° loft profile during which 2 x 1000lb bombs were released (the third hung-up) but with unknown results. Two armed recce missions were also flown, the first to find artillery in the Two Sisters area but without success and the second to recce the area from Teal Inlet to Port Stanley. During this recce a Puma was destroyed by CBU (probably the one damaged by the raid FI/003) and there was evidence of AAA and SAM firings including a Blowpipe SAM which exploded above Sqn Ldr Pook's aircraft. The attack on Port Howard was as a result of the armed recce mission on 23 May. Both aircraft attacked a line of tents plus a box-bodied vehicle; a SHAR overhead confirmed the effectiveness of the attack and there was no sign of the expected AAA/small arms fire.

HAR/GEN/2
Misrep FI/017-19
E30 26 May

HARR/GEN/2
Misrep FI/016
E30 26 May

GOOSE GREEN OFFENSIVE

7.76 27 May started with thick fog and no flying, and then developed as one in support of the Goose Green offensive. The first mission of the day, however, was a 6 x 1000lb loft bombing attack against Port Stanley Airfield. Weapons were delivered with 3 of the bombs seen to result in smoke just to the west of the runway and the other 3 landing in water just to the south. AAA was seen but it was well out of range. Subsequent airfield recce revealed no evidence of damage to the runway.

7.77 The major activities were support of the Goose Green offensive for which 3 missions were flown, all using FAC control. The first attack was targetted against a 105mm gun which was not seen by either pilot. However, on the first run Flt Lt Hare dropped CBUs on a group of approximately 15 troops and Sqn Ldr Iveson, whilst continuing to search for the primary target, eventually dropped CBUs on a line of foxholes during his 3rd pass. The second sortie was unsuccessful due to a poor choice of Initial Point (IP), cloud surrounding Bodie Peake and inaccurate navigation equipment. This resulted in missing the Universal Transverse Mercator (UTM) co-ordinates and there was insufficient fuel for re-attack. On the

HARR/GEN/2
Misrep FI/020-23
E30 27 May

final mission on 27 May against the 105mm gun, the target was not seen so re-attack was completed against a company of troops; further attacks against troops and guns were made using strafe and it was during the final (3rd) pass against the same target that Iveson's aircraft was hit by AAA and caught fire. Iveson continued to fly west before successfully ejecting some 40 seconds after being hit, and he then hid in nearby Paragon House until picked up by a 3 Cdo Bde Air Squadron Gazelle some 3 days later. 1 Sqn War diary

7.78 All Goose Green CAS missions on 27 May were allocated the same IP, Bodie Peak, which was in cloud preventing accurate overflight and routeing to the target: furthermore, the terrain between the IP and the ALO (who was giving instructions in the absence of the FAC (29)) prevented UHF comms unless aircraft were in excess of 6000 ft (above cloud). Putting the attackers so high allowed the Argentine radars acquisition and any degree of surprise was lost. FAC briefing was also limited with little information on friendly targets and with confusing descriptions (for example one pair was directed against a target "close to the lake"; there were many lakes in the area and no possibility of distinguishing one from the other). Aircraft in the hold at the IP were frequently locked up by AAA radars increasing the subsequent chance of destruction. A debrief of Flt Lt Hare from the third sortie expressed the feeling well: HARR/GEN/2 E18 Squire Tape HARR/GEN/2

> "Bombed troop concentration and offered to re-attack. FAC asked us to target guns. All AAA firing; tracer and small arms- wall to wall tracer. Dreadful terrain to identify targets; could not see the guns; full of foxholes, each with 5 men in them; our troops just kneeling in the grass. We strafed the UTM (co-ordinated); my leader got lost; went round again, and then called that he was hit; hydraulic failure, on fire. Troops saw him eject." HERMES ROP E1

7.79 The final sortie of the day was a medium level recce of Port San Carlos and Goose Green with search runs to try and locate Iveson but these were unsuccessful. A first film run at 18000 ft of Port Stanley Airfield and Goose Green was successful, followed by a second run at Goose Green at 15000 ft. The aircraft was locked onto by Super Fledermaus radar and heavy AAA was observed. The film was subsequently used to assist briefing for the final mission against Goose Green on 28 May. HARR/GEN/2 Misrep FI/014 E30 27 May

7.80 The weather on 28 May started with fog at sea with low cloud/drizzle over the target areas. The weather remained poor over the sea but improved to be reasonable over land. The first mission was tasked as a pre-planned 3 aircraft attack on storage areas SE of Mt Kent using 6 x 2 in rocket pods. The target area was located but low cloud and poor visibility (50 - 100 ft) prevented UTM acquisition; however, only one aircraft was unable to HARR/GEN/2 Misrep FI/025 & 2 E30 28 May 6 1 Sqn F1575B

(29) The FAC was Sqn Ldr G H Penman who was directed to march with all his FAC Kit (designator, radio and associated equipment) from San Carlos to Goose Green. During the walk Penman, who was in his fifties, became medically exhausted and was withdrawn to hospital leaving 2 Para without a FAC. The ALO gave some directions and assistance but did not have the experience/ ability to give anything approaching an adequate service.

release its weapons and secondary explosions were seen from the leader's rockets. A recce mission against the Douglas settlement revealed nothing.

7.81 One of the more significant missions of the conflict was the air attack on Goose Green just prior to the Goose Green surrender. The mission was tasked as CAS for 2 Para who were unable to progress from Darwin as they were effectively pinned down by artillery and troops. The attacks were successful with CBU and rockets being used to destroy artillery and to demoralise troops. The subsequent White Paper referred to this sortie as "a timely strike (which) considerably helped the progress of the paratroopers".

HARR/GEN/2
HERMES ROP
E1
Defence White Paper "The Falklands Campaign. The Lessons"

MOVE ACROSS EAST FALKLANDS

7.82 29 May was a quiet day with only one GR3 task despite considerable CAP activity by the SHAR. The one mission was tasked to attack outposts on the West face and dug-in defence positions on the Northern slopes of Mt Kent. Nothing was seen at either briefed position although rockets and guns were used against both UTMs.

HARR/GEN/2
Misrep FI/027
E30 29 May

7.83 In contrast 30 May was busy with 10 sorties in support of the move towards Stanley. Attacks against UTMs were carried out at Mt Low, Mt Round, the northern slopes of Mt Kent (SAS support) and a road south of Mt Challenger. Neither targets nor activity were seen at any of the briefed UTMs although in most cases they were known to be active, dug-in defensive positions.

HARR/GEN/2
Misreps
FI/028)
FI/029) E30
FI/032) 30 May

7.84 The first of the LGB sorties was flown on 30 May and attempted to establish if the GR3 could use its Laser Ranger Marked Target Seeker system (LRMTS) to designate for the LGB. Weapons were dropped against Port Stanley Airfield runway from a 60° dive, initiated from 35,000 ft; however, no bomb impacts were seen and as a result it was assumed that the bombs had not guided.

HARR/GEN/2
Misrep FI 030
E30 30 May

7.85 During another mission, this time against Mt Wall, Sqn Ldr Pook's aircraft (X2963) was hit by small arms fire causing a fuel leak. After the attack the fuel leak became worse and resulted in Pook ejecting 31 nms from HMS HERMES having descended from 25,000 ft to 10,000 ft gliding with no engine. Having been pre-warned, the SAR helicopter quickly recovered Pook from the water and he was back on full flying duties by 2 June. Incidentally, Iveson was recovered to HERMES by helicopter shortly before Pook's return.

HARR/GEN/2
Misrep FI/031-033
E30 30 May

7.86 The second LGB sortie was conducted on 31 May, but again no impact was seen and the bombs were assumed not to have guided. It was subsequently confimed that the GR3 could not designate for an LGB and no further sorties were completed.

7.87 The other significant mission on 31 May was an attack on parked aircraft at Port Stanley Airfield in which No 1 Sqn was fortunate to avoid major losses for an attack that was a vast over-reaction. The mission was originally tasked for ground alert in support of ground forces; however, the task was changed at no notice as a result of an urgent report from HMS INVINCIBLE'S SHAR CAP which reported "4 x Swept-wing aircraft at Stanley - possibly Etendard". A new task was rapidly given to the GR3s/SHAR to attack the aircraft adjacent to the eastern threshold of the airfield

RAF Wittering Report OPS(OS) Folder E58 Para 41a
1 Sqn ORB
HARR/GEN/2

using Rockets/Guns with SHAR providing loft 10001b bombs as defence suppression. The GR3s were at cockpit alert for another task, and were briefed on the sortie by Sqn Ldr Iveson whilst in the cockpit; despite representations Captain Middleton would not allow the pilots out of the cockpit to complete a full brief. The aircraft (including SHAR) took off 37 mins from being tasked and then attacked the briefed targets using a similar profile to the one used on 24 May. The targets appeared to be straight-winged, although earlier photos had indicated possible A-4 skyhawk dummies; however, subsequent post war recce showed them to have been Aeromacchi on triangular pads which from high altitude distorted the plan view. Considerable small arms firing was seen during the attack and both aircraft suffered cracked front canopy screens; furthermore, both the leader's drop tanks were holed and No 2 had a bird strike.

Misrep FI/034
E30 31 May
HARR/GEN/2
HERMES ROP
E1
HARR/GEN/2
HERMES ROP
E1

7.88 Only one mission was flown on 1 June owing to aircraft unserviceability. This sortie was tasked to carry out a line search from Bluff Cove to Goose Green followed by an attack on a possible enemy radar on Mt Osborne; after a great deal of debate a SHAR was provided in support. The line search was completed as briefed with no activity seen, although the film showed defensive positions by Fitzroy Bridge. An attack was carried out against the enemy radar at the briefed UTM but nothing was seen. The same day, two replacement aircraft arrived from Ascension after an 8½ hrs flight with AAR support, and there followed 3 consecutive days of sea fog which prevented any flying. On 2 June Sqn Ldr Morris plus a small aircraft turn-round team of 6 ground-crew and two GR3 pilots arrived at the FOB from the ships but could not be used until 5 June.

F1575B No 1 Sqn
1 Sqn ORB

7.89 The first sorties into Port San Carlos were flown on 5 June with 2 pairs of GR3s landing during the day and, incidentally, allowing the first accurate alignment of the INAS during the war. The first of these missions was tasked for close air support in the Stanley area (tasking direct from HMS HERMES); however, as no FAC contact was achieved, the weapons were retained and the aircraft landed at Port San Carlos for re-tasking. The aircraft were finally flown by the 2 GR3 pilots who had arrived on 2 June to attack troops in the Two Sisters area, the aircraft landing back on HMS HERMES after the mission. Of the 2 remaining missions on 5 June, the first was tasked to provide low level photo recce of the strip from Bluff Cove to Hooks Point, looking in particular for shore based MM38 Exocet launchers. On this mission No 2 was sent ahead out of AAA range to act as spoof, using chaff, whilst the leader completed the run. The results were disappointing, only revealing some defensive positions to the south of Stanley; the main reason for this was the requirement to stay at 20-70ft hence reducing the possible photographic coverage - and no Exocet launcher was seen. The final mission of the day was an armed recce of Pebble Island, Kepple Island, Rat Castle Shanty, Dunnose Head and Spring Point Hill. Nothing new was seen although Pucaras at Pebble were re-attacked. The recce of Rat Castle, Dunnose Head and Spring Point Hill was not completed owing to fuel shortage.

1 Sqn ORB
1 Sqn F1575B
HARR/GEN/2
Misrep FI/036
E30 5 Jun
1 Sqn
War Diary
HARR/GEN/2
Misrep FI/037
E30 5 Jun

7.90 Only one mission was flown on 6 June because of poor weather and limited tasking. The one mission which was tasked was to

search for the Exocet, and to attack enemy positions found by the recce on 5 June (see Misrep FI/036). The search revealed nothing,and the leader dropped his weapons as briefed on enemy defensive positions near Stanley. No 2, however, did not locate his target (battlefield radar) and did not therefore release any weapons.

HARR/GEN/2
Misrep FI/038
6 Jun

7.91 7 June saw an improvement in the weather but little tasking. A pair was tasked against a 155mm gun position near Sapper Hill, and there was a medium level recce of Port Stanley Airfield. The attack against Sapper Hill had a confused start in that because of aircraft unserviceabilities the leader from one pair and No 2 from another were joined up under the control of HMS HERMES. It was fortunate that the leader, although not originally tasked against Sapper Hill, was familiar with the target and able to assume the lead with the minimum of briefing. Attack direction constraints (AAA/SAM) and the need to attack into a low morning sun resulted in neither pilot acquiring the target; however, weapons were released at the UTM. A SHAR pilot observed the attack from high level and reported what appeared to be a SAM fired at the 2 aircraft as they departed to the south; the SAM was however seen to explode before reaching the aircraft.

HARR/GEN/2
Misrep FI 039
7 Jun

7.92 There was no operational flying on 8 June because of unpredictable weather, aircraft unserviceabilities, the FOB being closed for 3-4 hrs following Wg Cdr Squire's crash landing, and the long transit to the FOB. Of the aircraft that flew, 2 went unserviceable en-route to Port San Carlos and returned to HMS HERMES, 250 nms away, and Wg Cdr Squire crashed whilst moving away from the hover (the aircraft was assessed CAT 4). Two more aircraft arrived on HMS HERMES from the UK (Op BOWSPRIT) flown by Flt Lts Boyens and Gilchrist, and the latter's aircraft was subsequently modified to carry SHRIKE anti- radiation missiles. The modification was completed by 13 June but, in the event, its capability was not needed.

HARR/GEN/2
HERMES ROP
E1
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HARR/GEN/2-E9
1 Sqn ORB

7.93 On 9 June, with HMS HERMES still cleaning boilers some 260 miles from CAP areas, 2 aircraft were deployed to Port San Carlos to be used on a CAS mission with 4 x 2 in RP pods against enemy artillery positions on the northern slopes of Mt Longdon; both aircraft fired at the UTM although nothing was seen. The only other mission of the day was tasked from HERMES against a pair of 155mm guns adjacent to Sapper Hill. During this mission No 2 aircraft was hit by shrapnel during egress from the target which resulted in a hydraulic failure when the undercarriage was lowered for landing.

HARR/GEN/2
Misrep FI/040
E30 9 Jun
HARR/GEN/2
Misrep FI/041
E30 9 Jun

7.94 A busy day on 10 June saw the continued use of Port San Carlos and the start of a new attempt to use the LGB. The morning sorties were uneventful, but in the afternoon the first mission was to recce the route Mt Harriet to Mt Tumbledown to Wireless Ridge and between Mt Two Sisters and Mt Longdon. CBUs were dropped on enemy positions on Tumbledown and Mt Longdon; furthermore, film revealed enemy concentrations at Moody Brook and the presence of enemy troops armed with Blowpipe and SAM 7 at Mt Longdon. A second sortie was later launched to attack the targets at Moody Brook. The area was easily identified but individual targets were hard to

HARR/GEN/2
Misrep FI/042
10 Jun
HARR/GEN/2
Misrep FI/045
10 Jun

see in the failing light; however, the briefed UTM was attacked and several secondary explosions were seen. Considerable AAA was seen by both pilots during run-out and No 2's front canopy screen was hit and badly scratched by small arms fire.

7.95 A trial sortie to test the remote Laser Target Marker (LTM)/LGB combination was flown; however, owing to a failure to communicate correctly a revised time on target the experiment was cancelled and the bombs jettisoned during recovery to HMS HERMES. A further pair were scrambled at 1630Z in support of the SAS at Port Howard, but no radio contact could be established. The aircraft carried out armed recce of the area but no targets were seen. HARR/GEN/2 Misrep FI/043 & 44 10 Jun 102001Z Jun HARR/GEN/1-E65

RE-CAPTURE OF STANLEY

7.96 The ground forces continued to move towards Stanley and GR3 activity was concentrated in this area with heavy continuous flying, success at last with LGBs and continued extensive use of the CBU. As the defensive perimeter closed around Stanley the threat of battle damage increased and few missions returned without some damage to at least one of the aircraft. 1 Sqn ORB

7.97 A further attempt to use the LGB against a point target in Stanley was made on 11 June; however, the FAC's LTM was unserviceable with a flat battery and bombs were delivered using manual 30° loft profile into the area of Mt Tumbledown (results unknown). Considerable AAA was seen to be emanating from the Stanley area but the aircraft remained out of range. HARR/GEN/2 Misrep FI/046 E30 11 Jun

7.98 On 11 June 3 pairs, each aircraft armed with 2 x CBU, were tasked against Two Sisters, Mt Harriet and Mt Longdon respectively. Significantly, the ALE40 flare/chaff dispenser was used operationally for the first time during the attack on Two Sisters. In the incident the leader received a warning on his RWR. He released chaff and the radar immediately unlocked (there is no collateral to prove that the ALE 40 broke the lock - it could have been evasive manoeuvres by the Harrier, radar lock failure, or a false unlock indication on the RWR). HARR/GEN/2 Misreps FI/047-049 1 Sqn War Diary Misrep FI/047

7.99 Finally, on the 11 June 2 aircraft armed with 4 x 1000lb retard bombs with a variety of delay fuses were tasked against artillery military and HQ positions on the eastern slope of Mt Tumbledown. The selection of weapons was aimed at denying the use of prepared positions during the night hours. The logic was questionable as retard bombs, if not instantaneously fused, frequently bounce, probably well beyond the target. In the event all the bombs dropped free-fall as the tails had not been properly set; fortunately they did not have time to arm and fell unexploded. During the attack the lead aircraft was hit by small arms and the cockpit holed. On egress SAMs were fired at both aircraft, one missile falling short of the leader but No 2 having to take evasive action against his; it exploded some distance above his canopy. An intercepted signal told of the evacuation by Argentine forces of Moody Brook Barracks later that day because one of the unexploded 1000lb bombs had lodged in the building. 1 Sqn War Diary

7.100 Three attack pairs on 12 June were launched against targets around Sapper Hill, in particular on enemy gun positions, troops in the open and a pair of 155mm guns. Attacks were successful although for the first target only the UTM was attacked. The ALE40 equipment was used extensively particularly during egress and this seemed to cause confusion amongst the enemy AAA/SAM; however, there was still considerable minor damage to most aircraft. The only significant damage occurred during the attack against the 155mm guns when Flt Lt MacLeod's aircraft was hit by shrapnel which penetrated the rear equipment bay fracturing the aft reaction control air pipe. On decelerating to the hover during recovery a fire started at the rear of the aircraft with extensive smoke and some debris seen. Fuel indications suggested a considerable fuel leak at the same time, and a very quick and professional landing was executed in extreme circumstances. Once on deck the fire was quickly extinguished by the RN/RAF groundcrews, and damage was thus minimised.

HARR/GEN/2
Misreps E30
FI/051-053

Misrep FI/053

HARR/GEN/2
HERMES ROP
E1

7.101 The culmination of considerable effort by the GR3 associated teams was apparent on 13 June - the LGB had proved successful, the FOB was working well, the Harriers had effective self-defence (ALE40), recce was being used sensibly and finally the tasking chain had become clear and effective. Had the conflict continued beyond 14 June then considerable damage would have been inflicted on the Argentine forces and it seems a pity, in retrospect, that the aircraft and support services could not have been in that state at the beginning of the campaign.

1Sqn ORB
Squire tape

7.102 Only 2 attack missions were flown that day both of which used the LGB against point targets. The first mission with 2 x LGB on the lead aircraft (No 2 was armed with CBU for mutual support) used a 30° loft profile from behind the British ground forces. The first bomb fell short by 400 yds because the FAC illuminated the target immediately on weapon release (the weapon started to guide immediately in a direct line to the target, and did not therefore reach its trajectory peak, which reduced the potential maximum traverse range - in this case making it fall short). The second bomb was successful with a direct hit on the designated target.

HARR/GEN/2
Misrep FI/054
E30 13 Jun

7.103 A similar profile was carried out later against a 105mm gun at Mt Tumbledown. On this occasion the first bomb hit the target but the second was 400 yds short. During both these attacks the aircraft released their weapons from behind friendly lines, with twofold consequences; the attacking aircraft were out of range of enemy AAA/SAM, but ironically the friendly troops on the ground saw weapons being released directly overhead and assumed, wrongly, that they were being attacked and opened fire. Luckily none of our own aircraft was hit.

HARR/GEN/2
Misrep FI/055
E30 13 Jun

1 Sqn War Diary

7.104 The final GR3 attack mission during the hostilities was to have been against 155mm guns and an Argentine HQ. In the event the improved communications allowed the aircraft to be held off for 30 mins as the enemy in the target area had surrendered and ceasefire negotiations were underway in Port Stanley. The mission was eventually aborted and the aircraft recovered to HMS HERMES. Two others sent to Port San Carlos remained untasked and returned to HMS HERMES that afternoon.

HARR/GEN/2
Misrep FI/056
E30 14 Jun

REFLECTIONS

7.105 At the end of the Campaign numerous studies were undertaken to identify the lessons learned. The principal points which emerged concerning the Harrier GR3 are outlined below:

a. Major problems with the command, control and tasking arrangements were identified and the integration of a FOB and the addition of FAC tasking into an already confused command structure further overloaded the system. — ACAS(OPS)Report VCAS/7/7.3 E12

b. The importance of joint exercises was emphasised and the exchange, on a permanent basis, of key advisory personnel who could maintain joint common SOPs was seen to be an essential requirement. — RAFLO Report HARR/GEN/2 E6

c. The procedures for FAC tasking, briefing and establishment, and the capabilities of available equipment (especially LTMs and Comms) were questioned. Some revisions were suggested to keep aircraft losses to a reasonable level and weapons effective in modern scenarios. Furthermore, the need to attack targets identifiable by the pilot was stressed along with the need not to commit aircraft against targets that could more effectively be destroyed by ground-based systems. — ACAS(OPS)Report VCAS/7/7.3 E12; CTTO Report VCAS/7/7.1 E15

d. The contingency plans for the deployment of Harriers were thought to be in need of revision to include options similar to those employed in CORPORATE. — ACAS(OPS)Report VCAS/7/7.3 E12

e. The intelligence provided to the squadrons was frequently inadequate particularly at the start of the conflict. The provision of a permanent squadron intelligence officer was suggested. — WITTERING Report HARR/GEN/1-E58. ACAS(OPS)Report VCAS/7/7.3 E12

f. There was widespread condemnation of the communications in particular the inability to talk secure voice. Major revision of all comms systems from Command centres, FAC and aircraft was considered essential. — Report VCAS/7/7.1 E15 HARR/GEN/1 E57

g. The importance of AAR was stressed and moves to strengthen this arm of the RAF were strongly supported. — D Air Plans Folder D18-E3.

h. The vulnerability of the Harrier to AAA/SAM was stressed. The inclusion of a standard EW/Self Defence package of AIM9L, Chaff, IR decoys and active Electronic Counter Measures (ECM) equipment was thought essential for all military aircraft. Attacks on well defended targets were also discussed with general agreement on the need to veto inessential attacks and to protect (if necessary with armour) vital points on attack aircraft whilst completing regular attack practice at below 50 ft. — CTTO Report HARR/GEN/1-E57. RAFLO Signal

j. Tactically many lessons were learnt especially in relation to ultra low level (ULL) attack and the requirement to evolve tactics to combat the major threat of AAA. The need to re-attack was also questioned and only thought necessary when the loss of the pilot and/or aircraft would be acceptable to achieve a particular aim. — ACAS(OPS)Report VCAS/7/7.3 E12; CTTO Report VCAS/7/7.1 E15

k. The need for more realistic training with particular regard to ULL flying and target acquisition was stressed, as was the need to practise, albeit infrequently, deployments similar to CORPORATE including when possible exercises from RN ships. — 38 Gp Report HARR/GEN/2 E5B. WITTERING Report HAR/GEN/1 E58.

l. Full scaling and the formal addition of consumables to aircraft FAPs was recommended. — ACAS(OPS) Report VCAS/7/7.3 E12

m. Defence of airfields should not be based exclusively on the missile and studies into the revision of RAF airfield defence policy should include the provision of modern LAA guns.

n. The general comments on the state of the Harrier airframe were typified by the 38 Gp comment "It is a salutory lesson that no 38 Gp aircraft entered the war zone in its peacetime fit. Superb engineering achievements must not be allowed to over-shadow the stark truth that we were unprepared for war, and that time may not be on our side to retrieve the situation in future operations". Many modifications both new and war-tested were recommended for retention and/or introduction, most of which were already recognised as being essential prior to the war but which had been vetoed, normally on cost grounds. Not to have front line aircraft ready for war tomorrow was a serious shortcoming. — 38 GP Report HARR/GEN/2 E5B. CTTO Report VCAS/7/7.1 E15 ACAS(OPS) Report VCAS/7/7.3 E12.

p. The lack of an effective stand-off capability was strongly criticised and the need to enhance weapon effectiveness was frequently recommended. The ability to arm weapons released at less than 100 ft was also thought to be a severe operational limitation and a review was thought appropriate. — WITTERING Report HARR/GEN/1 E58.

q. Whilst battle damage repair was, on the whole, successful, there was a need to re-learn some old lessons and to advance into the age of composite materials. — ACAS(OPS)Report VCAS/7/7.3 E12

r. The lack of recce tasking, the inability of the Harrier recce-pod to perform effectively at ULL and the lack of long range recce assets were major shortcomings. The need for rearwards facing strike cameras was particularly stressed. — ACAS(OPS) Report VCAS/7/7.3 E12

7.106 It may therefore be concluded from these observations that the Harrier GR3 force was not ready to go to war although, through outstanding efforts by Service and civilian personnel, the aircraft were in the event suitably modified to carry out their assigned task. While some of the modifications, eg navalisation, could have been regarded as peculiar to Operation CORPORATE, modifications such as AIM9L and ALE40 should have been available prior to the war for minimum effective self defence in the more hostile European airspace. — CTTO Report VCAS/7/7.1 E15

7.107 The preparation for war and the deployment to Ascension worked well, as did the deployments both by sea and air to the Falklands. On HMS HERMES, however, the command and control aspects, the tasking arrangements, and the allocation of tasks were unsatisfactory as was the use of outdated weapons. This resulted

in the under-utilisation and inefficient use of valuable assets. It was only towards the end of the war that the situation improved and the full potential of the GR3 was realised. It must be stressed, however, that the initial concept was for GR3 to be a SHAR replacement in the air defence role. It was only after the invasion, when it was realised that SHAR losses were not going to be as high as feared and when the need for close air support was better appreciated, that offensive support tasking became the primary mission. Unfortunately, the command structure, as organised and manned in HMS HERMES and HMS FEARLESS, was not geared to the revised task. Regrettably, OC 1 Sqn's advice was consistently ignored and he was used as a squadron pilot rather than as an executive/advisor for ground attack operations.

FINAL COMMENTS

7.108 The RAF Harrier GR3 force proved in combat that its concept of operations was valid. Certainly, equipment deficiences were exposed and human errors were made, but a remarkable combination of extemporising on the ground and at sea, coupled with flexibility and skill in the air, allowed operations to go forward successfully. Without the Harriers operated by RAF and RN, the naval task force and British ground units would have had to face the very considerable Argentine forces with no on-the-spot fixed wing air support; the consequences this would have had need no elaboration here. It is a simple fact that no other aircraft could have done the job from the ships and shore bases available at that time.

Annex
a. Aircraft Preparation (30)

(30) Full details of RAF Harrier GR3 aircraft and aircrew flying statistics are held by AHB(RAF).

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ANNEX A TO
CHAPTER 7

AIRCRAFT PREPARATION

7.1 A meeting in MOD on 14 April attended by representatives of MOD(AFD), MOD(ND), MOD(PE), BAe, Ferranti and No 1(F) Sqn decided that the GR Mk 3 would require considerable modification before it could successfully operate from a CVS. The modifications required were: MODUK 161230Z Apr TF 31.1 E46

a. Tie-down shackles fitted to the outriggers to permit aircraft to be securely tied to the deck, combined wth modification to the outrigger fairing. 18G/335/4/17/OPS E36

b. Modification to the nosewheel steering system to permit hands off steering once the anti-skid was turned off. MOD DOI/16406/1 Pegasus Mod 2945

c. The provision of a 35° nozzle stop position to permit Ski-Jump operations. MOD DOI/16406/1

d. Modification to the HP compressor wash attachment to make it compatible with ship's equipment.

e. Drainage holes in the aircraft lower skin and several other minor anti-corrosion measures.

f. External tailplane trim position marking to permit deck crews to check before launch. MOD DOI/16406/1

g. A means of aligning the inertial platform whilst on a moving deck at sea. The necessary equipment had previously been tried out by No 1 Sqn aboard HMS ARK ROYAL in 1971, and was known as FINRAE (Ferranti Inertial Navigation Rapid Alignment Equipment). DOI/16406/3/4/5/ RAFG 211446Z Apr TF 31.2 E14

h. An 'I' Band transponder to permit CVS controlled radar approaches. (The CVS radar could pick up a Harrier inside 5nm). ARI 5983 DOI/16406/2./6./7

i. Modification to permit the carriage and firing of AIM9L missiles to give the aircraft a limited day clear airmass air defence capability. The modification was slightly altered subsequently to take account of the ALE 40 Mod and test requirements. MOD HARRIER/1388 MODUK PE 301900Z Apr TF 31.3 E56 & 63

7.2 It was considered that those modifications in paras a-f would be feasible in a reasonable timescale, but that the FINRAE, I Band transponder and AIM9L missile fit could prove more difficult and would require further study by BAe and Ferranti. A suggestion from the No 1 Sqn representative to fit chaff and flare dispensers like those fitted to the USMC AV8C was not taken up. At the time there was considerable doubt as to whether 12 GR Mk 3 aircraft could be prepared for shipborne operations and fitted with AIM9L missiles in the required timescale, without looking for additional capability. At this stage it was thought the aircraft would have to be ready STC/10171/53/EC&P Pt 6 E36 161230Z Apr TF9.2 E24

to deploy by 26 April. By 19 April the development plans had changed to 9 aircraft deploying by AAR on 26-28 April and so work was concentrated on 11 aircraft. Work progressed well with many snags being encountered and quickly overcome and by 22 April it was estimated that the initial 6 navalization mods would be complete by 24 April.

MODUKAIR 192253Z MAY TF9.2 E41
MODUKAIR 212000Z Apr TF 31.2 E20

7.3 Unlike the Sea Harrier the GR Mk 3 was not painted on the inside of the aircraft skin and had numerous magnesium alloy parts. This led to considerable concern about the safety of aircraft on the exposed deck of ships despite the drainage and anti-corrosion mods. The firm which made the storage bags for VC10s at Fairford were therefore tasked to produce similar 'Dri-Clad' bags for the Harrier out of the same plastic coated canvas. Unfortunately when the bags arrived at Wittering it was realized that they were designed for an aircraft without wing pylons. To remove and then refit the pylons of a Harrier would be a long laborious task and likely to result in electrical faults to the weapons system. In order to avoid this task on the deck of ATLANTIC CONVEYOR in the South Atlantic, the bags were modified at Wittering to accept pylons and flown to Ascension before embarkation.

HQRAFG 201340Z Apr TF 31.1 E86
TF 31 PT 2 E28, 1 Sqn ORB

7.4 By the time the first 9 aircraft had been deployed, the deployment of a further six was already being discussed and so work continued to modify the 7 aircraft remaining on No 1 Sqn. However, time now permitted consideration of further modifications to increase the aircraft capabilities. Of most concern was the lack of chaff, flares or active ECM. A trial installation of the AN-ALE40 chaff and flare dispenser fitted in the rear hatch of a GR Mk 3 was begun on 29 April, but there was insufficient time to consider modifying the first batch of aircraft to deploy. However, when a second deployment looked likely action was taken and 24 sets were acquired from the German Air Force on 14 May. BAe began modifying rear hatches on 15 May and a consignment of flare cartridges were received from the USA on 16 May. The Chaff cartridges were produced in the UK.

STC/10171/53/EC&P.6-E61
TF 14.2 E22
MOD/HARR/1500
STC/10171/53/EC&P.6 E36
TF 14.2 E41

7.5 Following reports of considerable AAA controlled by Super Fledermaus radars in the initial actions at the beginning of May, a counter to these radars was required. A trial installation of ECM equipment fitted instead of an Aden gun in the starboard gun pod was flown on 15/16 May and found to successfully break the lock of a Super Fledermaus. The ECM equipment was made from components taken from the Skyshadow production line and produced ECM modulation identical to that of the ALQ 101-10 pod fitted to the Vulcan. The final modification to aircraft of the second batch before they deployed South was to the Display Waveform Generator (DWG) and gave a proper aiming symbol in the Head-Up Display (HUD) for firing the newly acquired AIM9 missiles.

18G/335/4/17/Ops PT 3 E15
HARR/GEN/1 E59
STC/10171 53/EC&P.6 E41
HQRAFG 150845Z May TF 14.2 E79

7.6 The requirements for night identification during AD operations at Ascension led to the introduction of PNGs. This required a modification to the cockpit lighting system. One aircraft as modified at Wittering for Trial SURE and a further 2 aircraft were then modified at Ascension, on 16/17 May, with kits sent from UK.

131230Z May TF 51.2 E46
38 Gp 131745Z May TF 51.2 E47

7.7 The final modification to GR3 for CORPORATE was the fitting of AGM 45 SHRIKE missiles. By 27 May the missiles were already being fitted to Vulcans. However, there was concern at the amount of effort required to get 1 Vulcan with 2 small missiles over the Falklands. With the knowledge that more GR3s were to deploy South, STC requested UKRAOC to investigate the possibility of fitting the missiles. A GR 3 was despatched to Waddington and the initial look seemed promising and so a formal request to MOD(PE) was made for a trial installation leading to CA release on 28 May. The trial installation was successful and trial 'ATHENE' proved the system would work provided the target position was known. It was decided to modify the 2 aircraft left at Ascension before they deployed to HERMES on Operation BOWSPRIT 2. A team of technicians from Wittering flew to Ascension by VC10 on 5 June with the modification kits and tools. Unfortunately, the kits and tools were not offloaded at Ascension before the VC10 continued on to Montevideo, having been packed behind the medical stores and not manifested. They were subsequently found by the Uruguayan authorities and impounded. More kits were made up at Wittering and Kingston in very quick time but arrived at Ascension after the aircraft had deployed to HERMES. The kits plus 8 SHRIKE Missiles, 4 x LAU 37 launchers and associated equipment were air dropped to the TF on 11 June (Air Drop Denise). The first aircraft was modified by 12 June.

UKRAOC 280806Z May TF 51.4 E33
MODUKAIR 281100Z May TF 51.4 E34
WITT 041350Z Jun TF 51.5 E54
STC/15281/2/GW Pt 1 E12
HQSTC ORB Jun
38G/1800/172/9/ CONT.9 E96

7.8 The other modification events which affected GR3 operations are summarised below:

a. **Laser Guided Bomb (LGB).** The lack of accurate delivery methods for 1000lb bombs was rapidly appreciated and moves to obtain LGB release clearances for Harrier and Vulcan were were initiated on 14 May, concurrently with instructions to provide some equipment on the CONTENDER BEZANT. A trial installation to evaluate weapon system capabilities (Trial PURITAN) was issued on 18 May and was followed shortly by CA release for the carriage of the weapon on 21 May. Formal CORPORATE clearances for various configurations and weapon loads were issued during period 21- 28 May. Once the feasibility had been established Central Trials and Tactics Organisation (CTTO) issued tactical instructions on the release from the Harrier during dive and toss manoeuvres, with instructions on the use of either remotely controlled target designators or FAC designation. The results of Trial PURITAN were satisfactory and JATE was instructed to prepare LGB equipment for air drop to the force. The drop was successful on 24 May using Airdrop Lara with all equipment delivered to AVENGER.

STC/10171/53/ ECCP.6 E100
MODUK 141800Z May TF49.3 E43,44
MOD 262140Z MAY 335/4/17/OPS.3 E58
CTTO 241718Z May TF49.3 E90
335/4/17.3 E27,47

b. **Forward Looking Infra-Red (FLIR).** The feasibility of fitting a FLIR pod to a Harrier T4 was investigated at a meeting at MOD on 14 May. The meeting discussed in particular the advantages gained by being able to conduct night attack/recce operations, but decided that the modification time scale it could be in use in the Falklands about 5 Jun - and the effect on UK training were such as to make the project not worthwhile, and the notion was shelved.

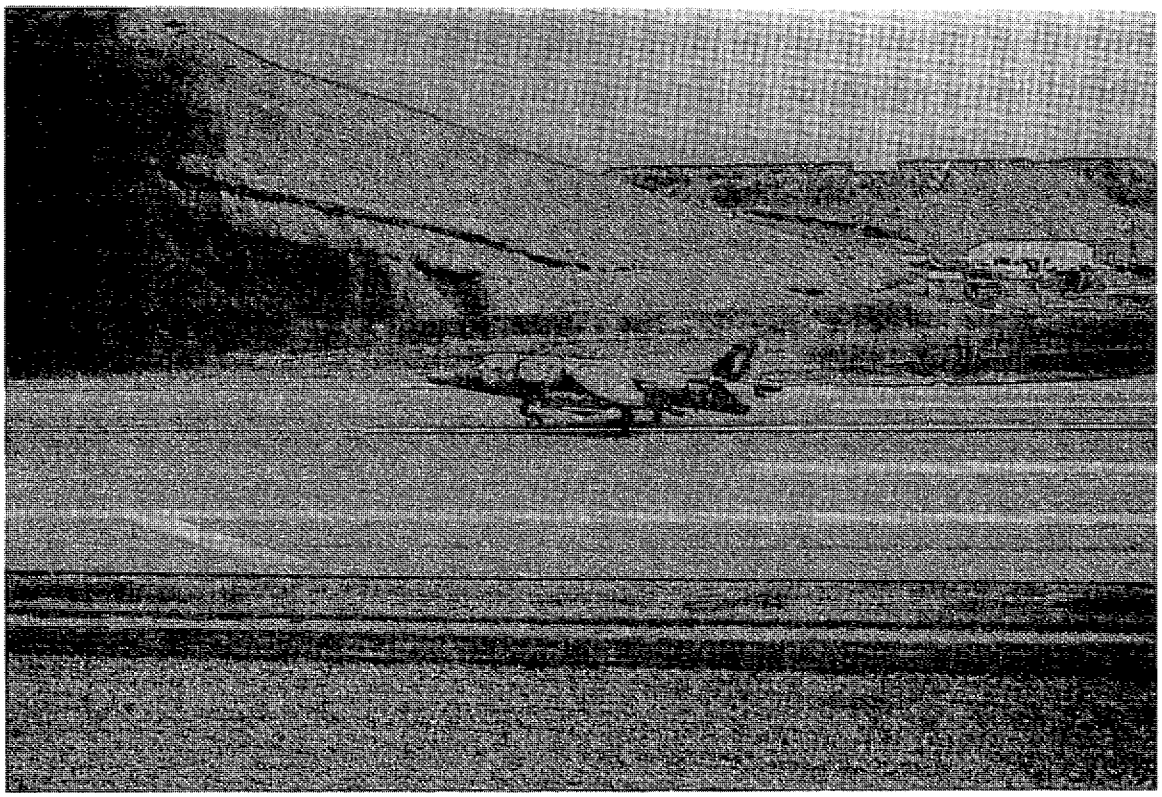
335/4/4/7/Ops.1 E9

c. **Identification Friend or Foe (IFF)3.** Test sets to enable Harrier pilots to test their IFF during taxi were developed and tested by Bruggen. The sets were supposedly deployed but no further reference can be found nor did the sets ever arrive at the Falkland either during or after the war.

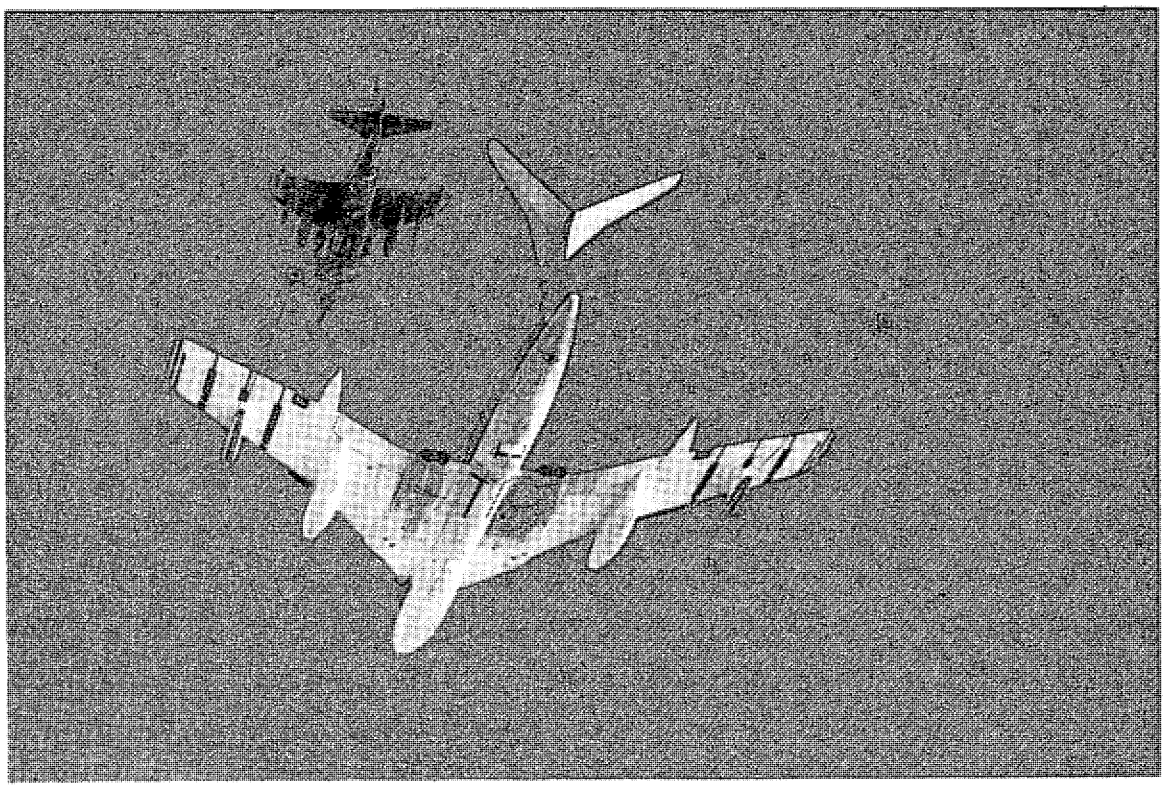
Folder C6-E2

Telecon with Sqn Ldr Moules

d. **SHAR/GR3 Engineer Interchange.** During the early stages of SHAR introduction modification kits were produced by the RN to allow GR3 engines to be fitted to the SHAR. A potential shortage of SHAR engines during the war led to the re-investigation of the modification. (It was not possible to use SHAR engines in the GR3 as the Pegasus 104 is slightly wider than the RAF version and would not enter the GR3 engine compartment). It has to be assumed that the investigations were satisfactory, though no record of any modification kits being used came to light.

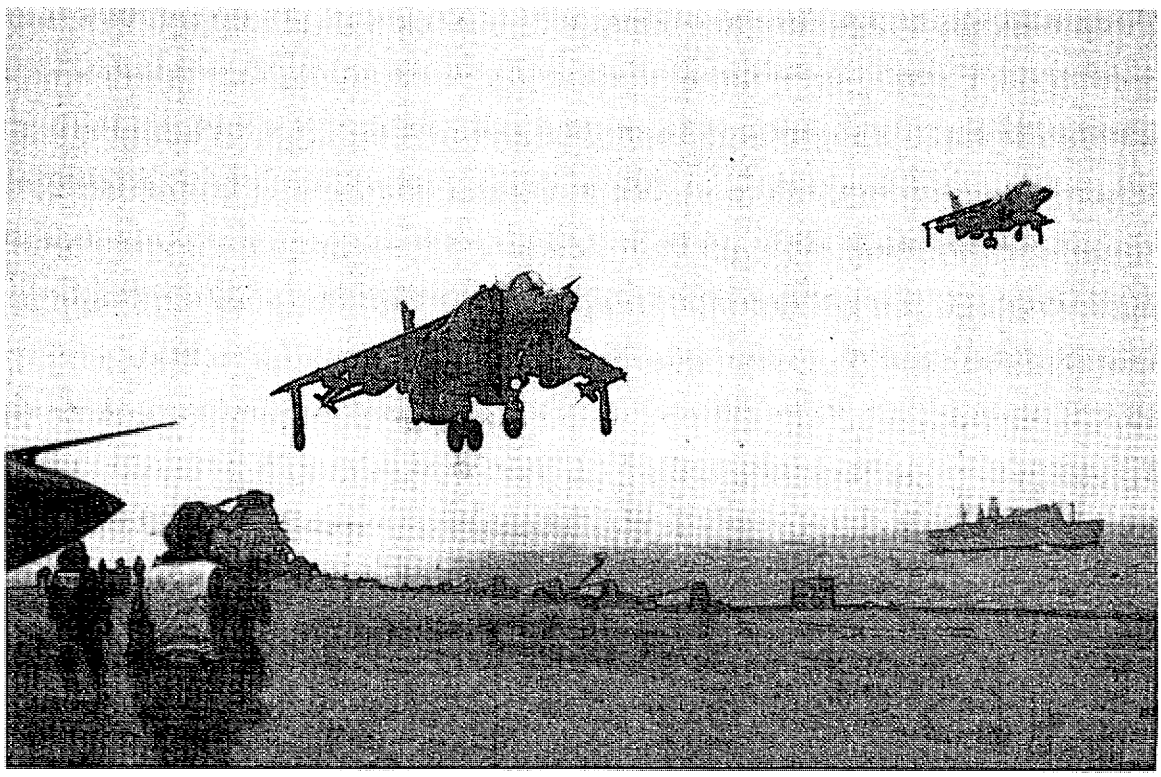


7.1. A Harrier GR3 arrives at Ascension Island.

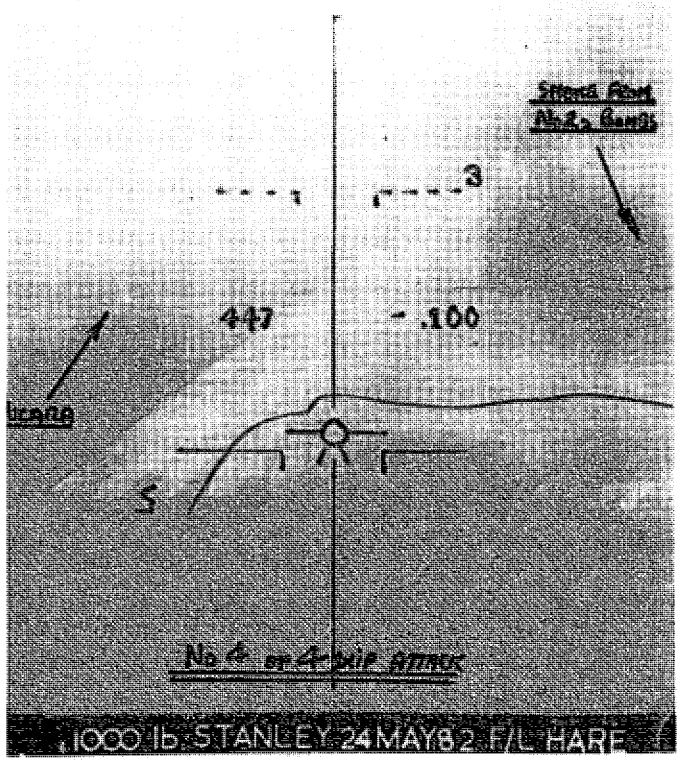


7.2. Victor/Harrier AAR.

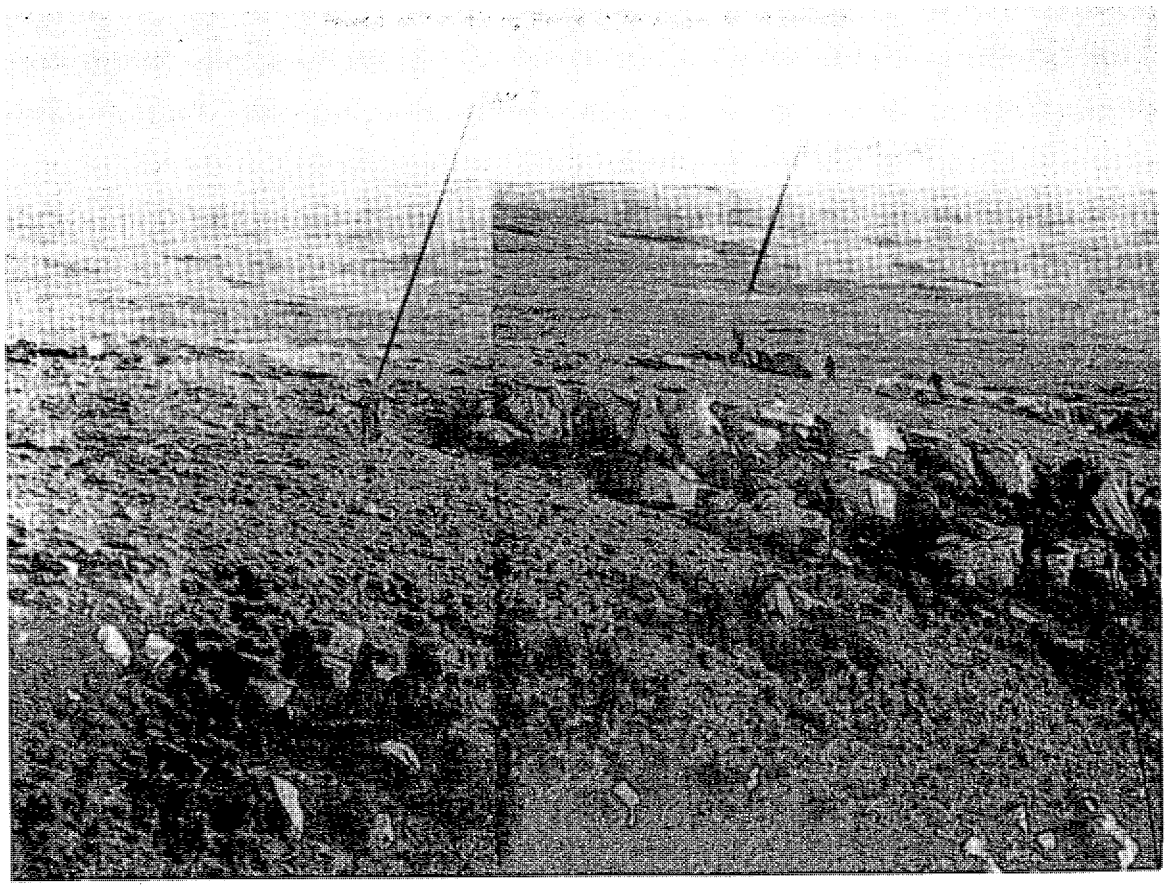
7.3. No 1 Sqn pilots before deployment to HMS HERMES.
Left to Right Standing
Sqn Ldr Peter Harris, Flt Lts Jeff Glover, Mark Hare, John Rochfort, Sqn Ldr Jerry Pook, Wg Cdr Peter Squire, Sqn Ldr Bob Iveson.
Seated Flt Lt Tony Harper.



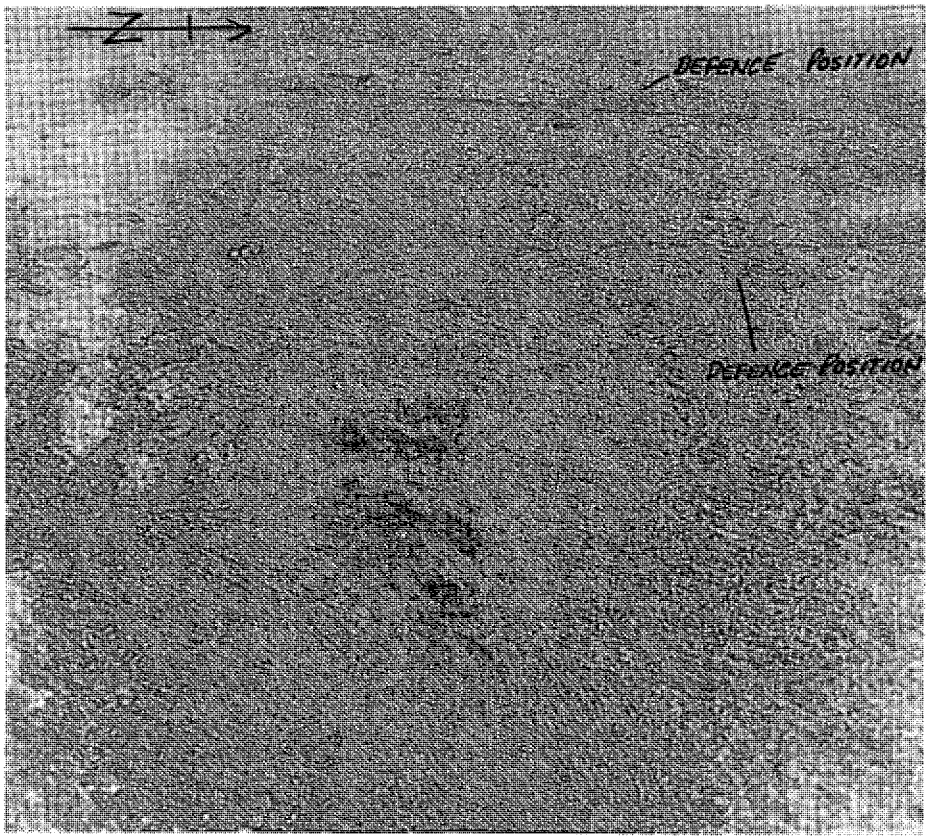
7.4. Harrier GR3 landing on HMS HERMES with a SHAR in attendance. Photographs 5–16 are reproduced by courtesy of Wg Cdr Squire, OC "No 1(F)" Sqn.



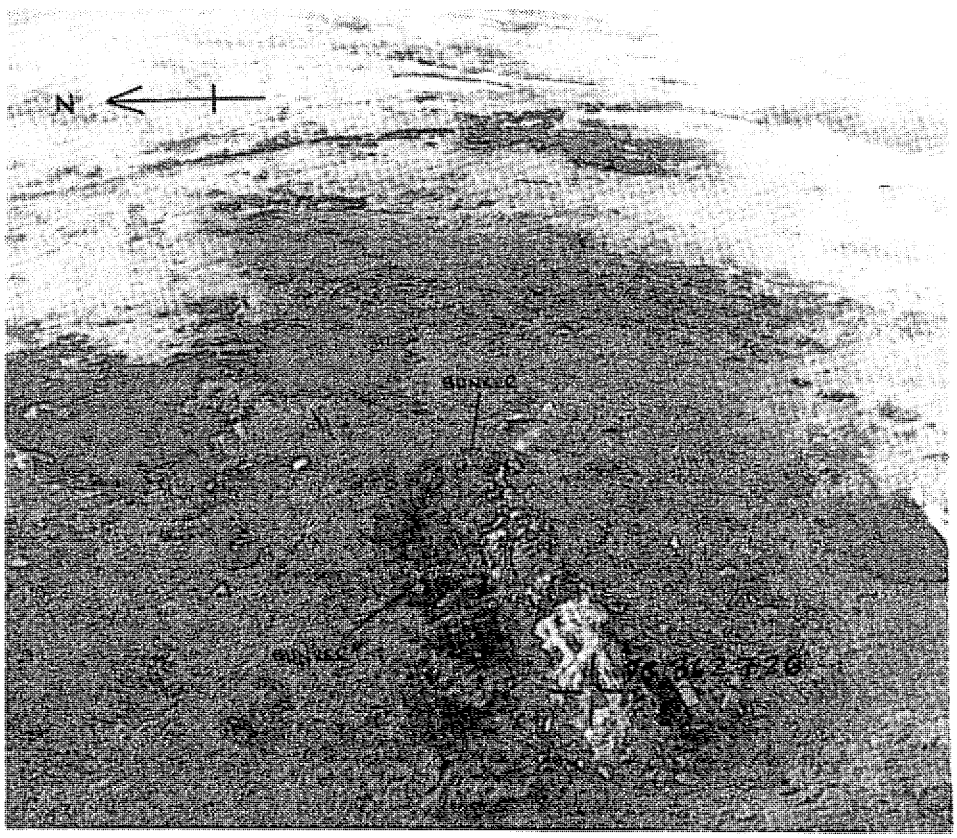
7.5. One frame from the gun sight recorder camera of Flt Lt Hare's aircraft during the 4 aircraft attack on Port Stanley runway on 24 May. The leading element of 2 aircraft had attacked from the north west at about 45° to the runway while I led Flt Lt Hare in from the west to attack along the line of the runway. The frame shows that Flt Lt Hare was flying at 447 knots while the –100 ft is an indication of height. Clearly he is low but the inaccurate read out is due to the wrong pressure setting being used.

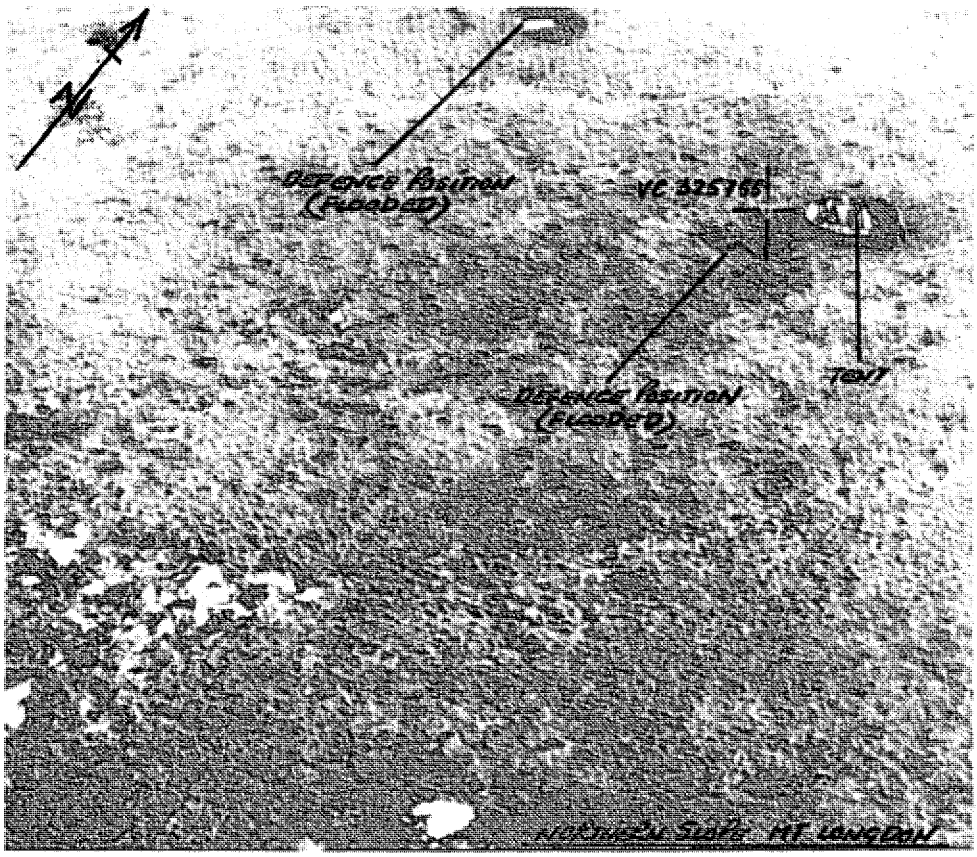


7.6. Another frame from the F95 camera in Flt Lt Hare's aircraft on 10 June when he and Wg Cdr Squire were tasked to recce the Moody Brook area. The frame clearly shows Argentinian soldiers holding both Blowpipe and SAM 7. It provided firm proof that they had the Russian SAMs. Fortunately, both soldiers were facing the wrong way but the print shows the sort of heights aircraft were flying at.

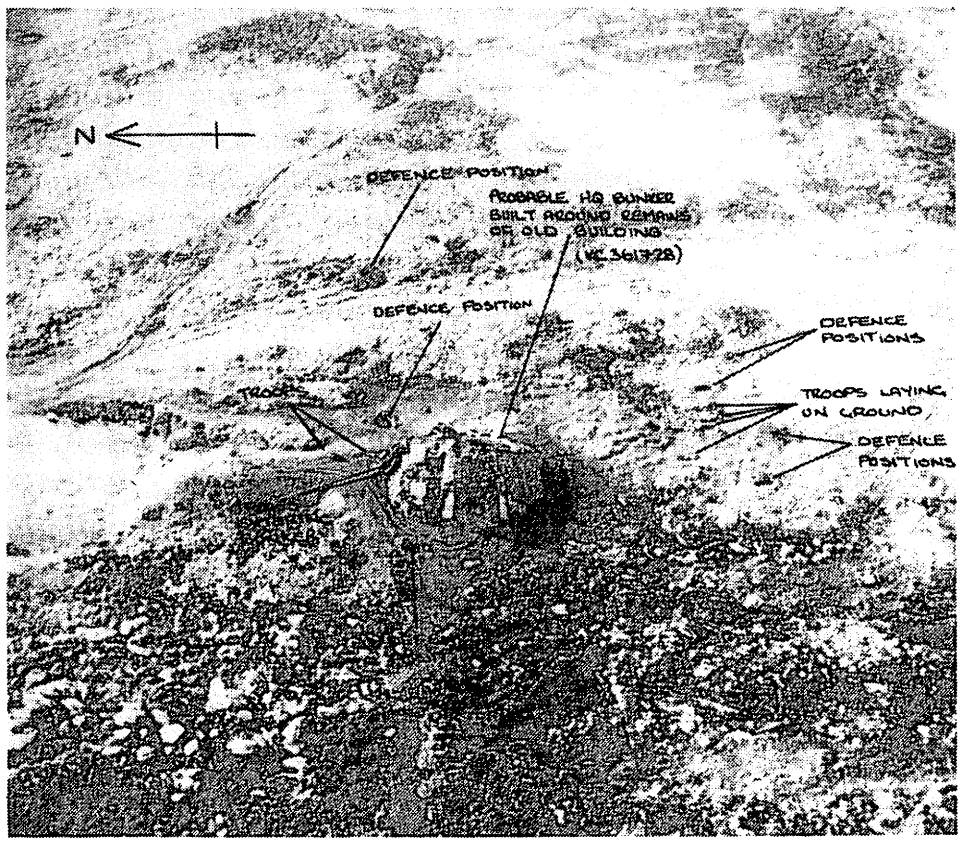


7.7. On that same sortie Wg Cdr Squire's aircraft had a full recce pod fitted and the next 8 photos were taken from the films produced by the 5 cameras on that one sortie. This one shows a deployment site being used by the Argentinians for their artillery guns (105 and 155 mm). They only towed the guns out at night but they left a decoy there (the piece of piping) by day. Hare and Squire returned to attack these on 11 June with 1000lb bombs with a variety of delay fuses. Regrettably, the bombs had been incorrectly set up and fell as "slick" rather than "retarded" and ended up as UXBs.

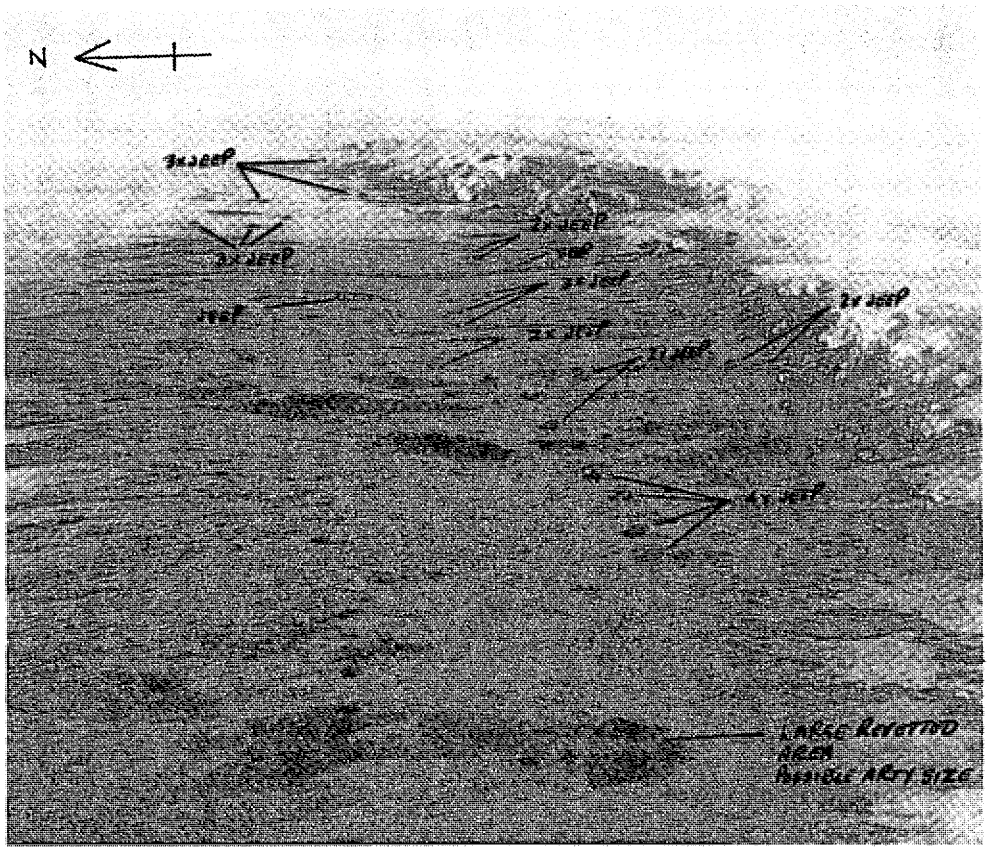




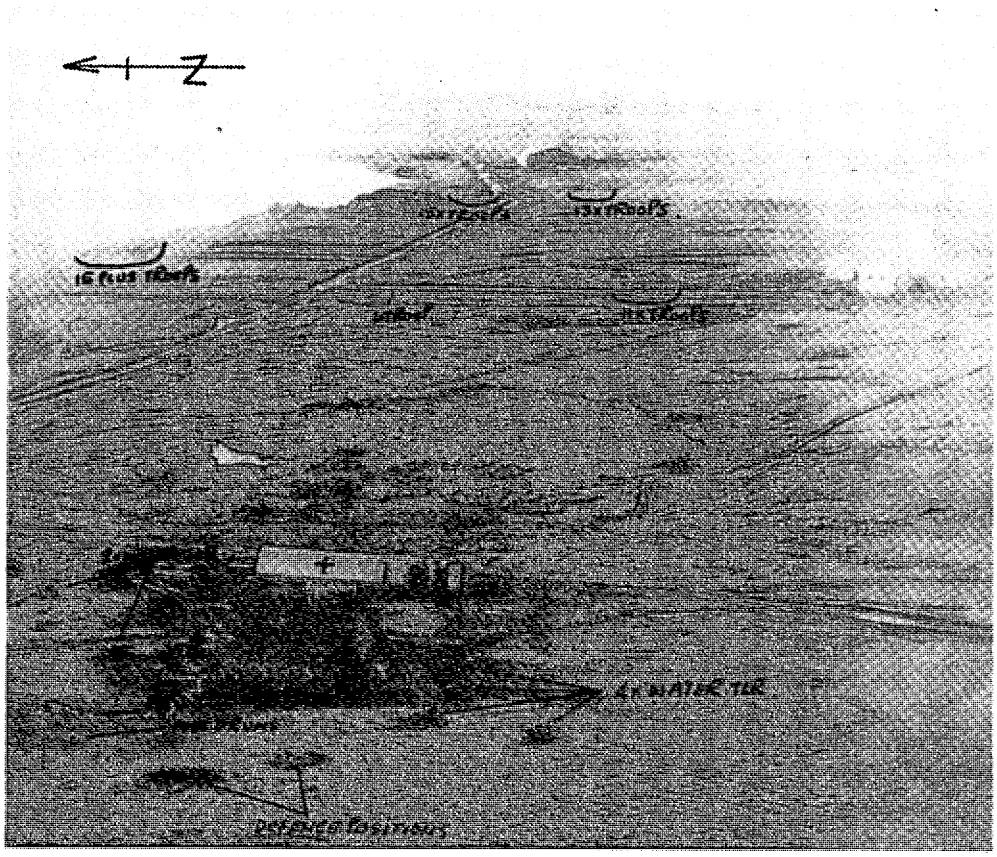
7.8 and 7.9. Wg Cdr Squire wrote: "I have included these just to show the sort of terrain over which we were flying and the difficulty we had in identifying defensive positions. As you can see, the land is very barren with many rocky outcrops and scars in the peat. Thus it was that defensive positions were very difficult to acquire visually at the sort of ranges that we were required to fire our weapons".



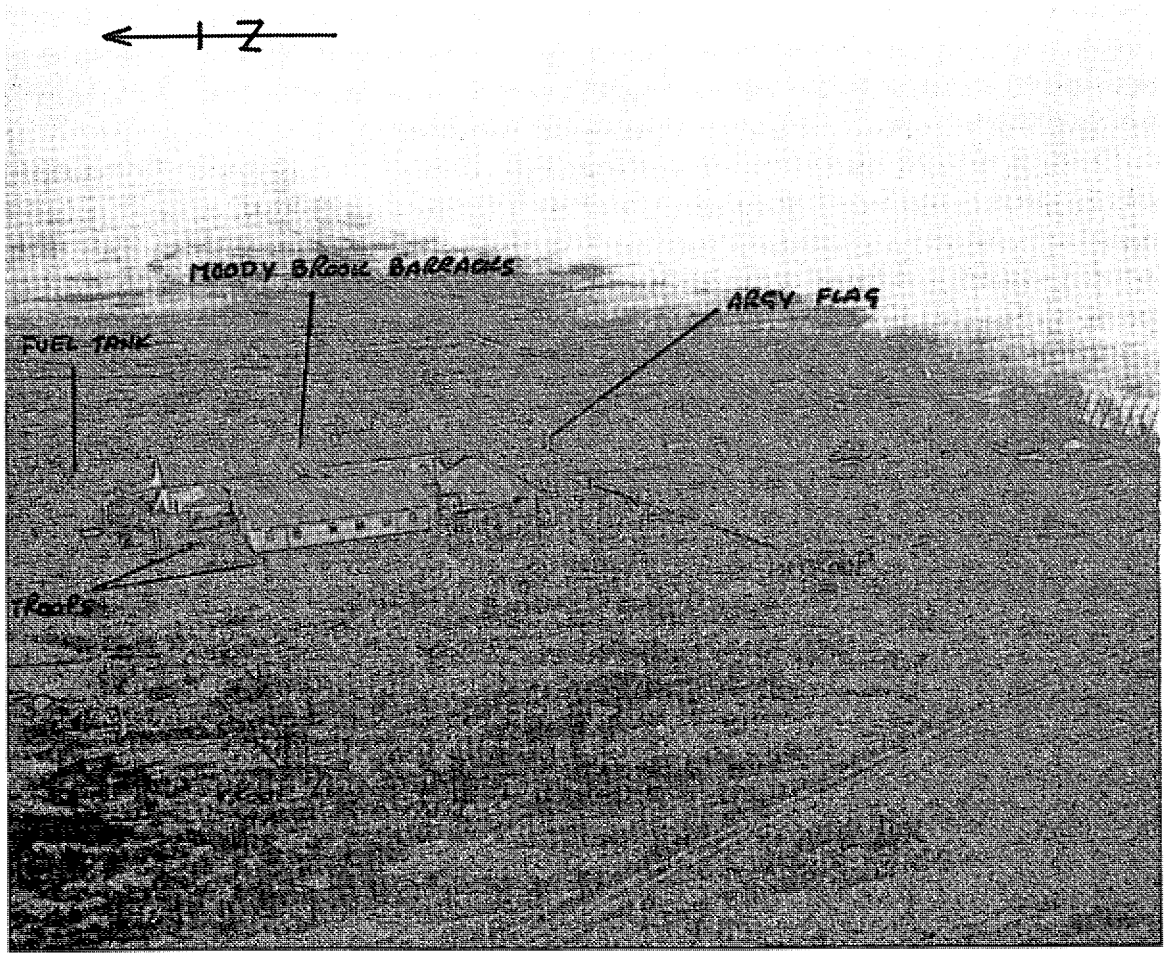
7.10. This print shows part of an old mine which had been turned into some sort of Command and Control Headquarters on the western outskirts of Stanley and had been well camouflaged.

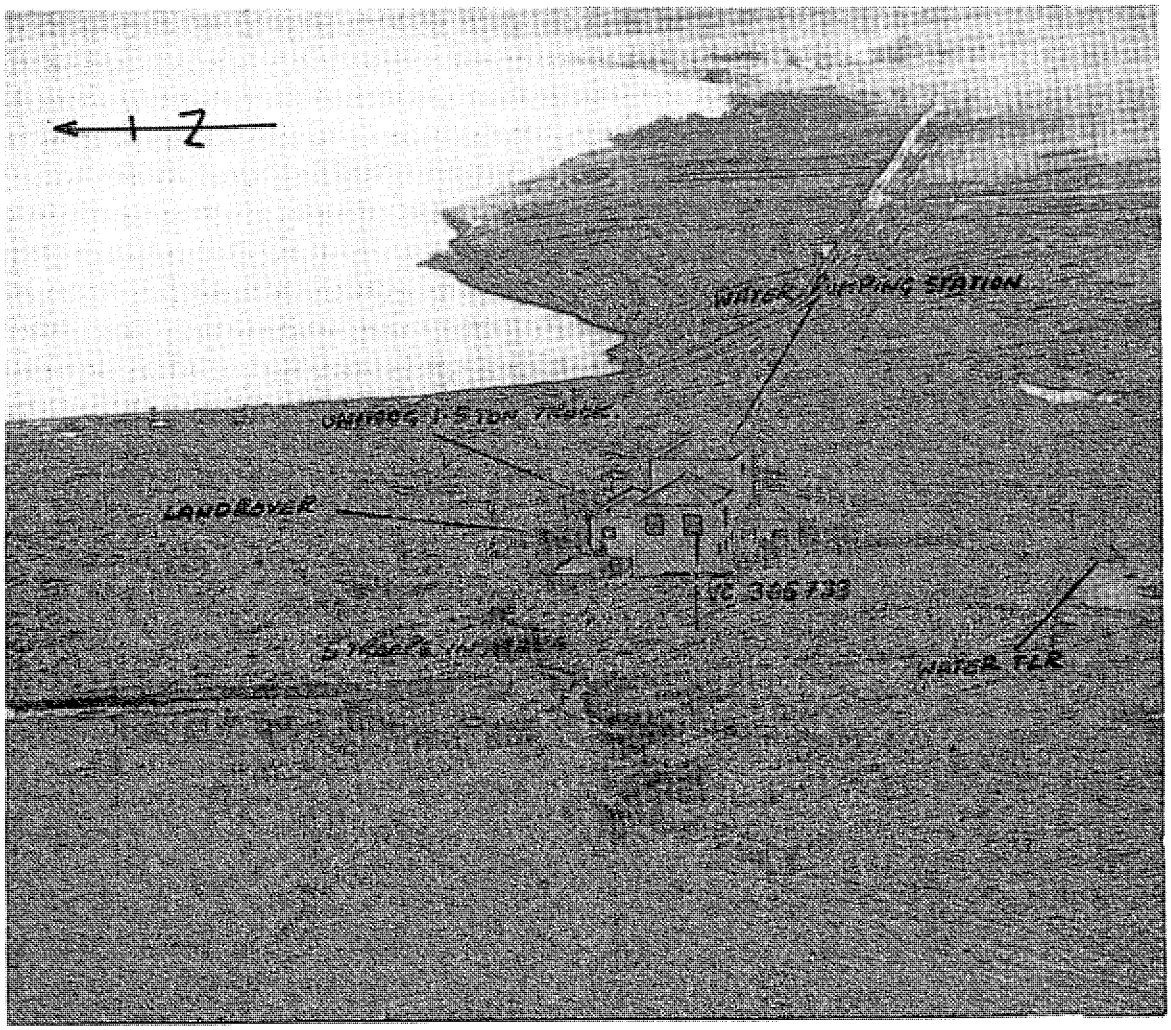


7.11. This recce photograph shows a line of some 23 soft skinned vehicles, which had been parked against the ridge line running west from Stanley. Later that day Flt Lt McLeod and Wg Cdr Squire went back to attack these vehicles; however, it was very nearly dark by then and impossible to see whether or not the vehicles had been moved.

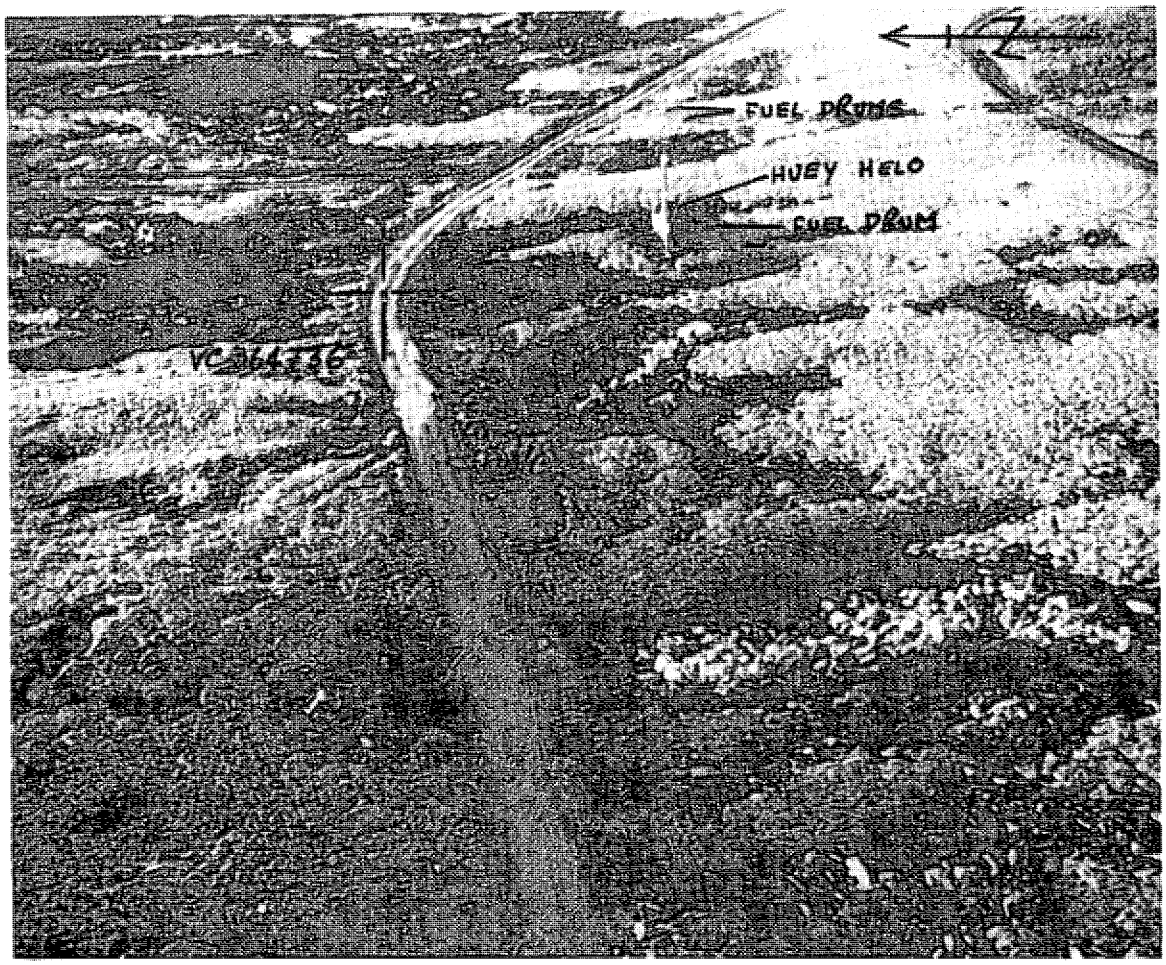


7.12. This photograph is interesting for 2 reasons. Firstly, it shows the platoons of Argentinian troops having some sort of refreshment break and, secondly, that they had built defensive positions around a Red Cross facility.

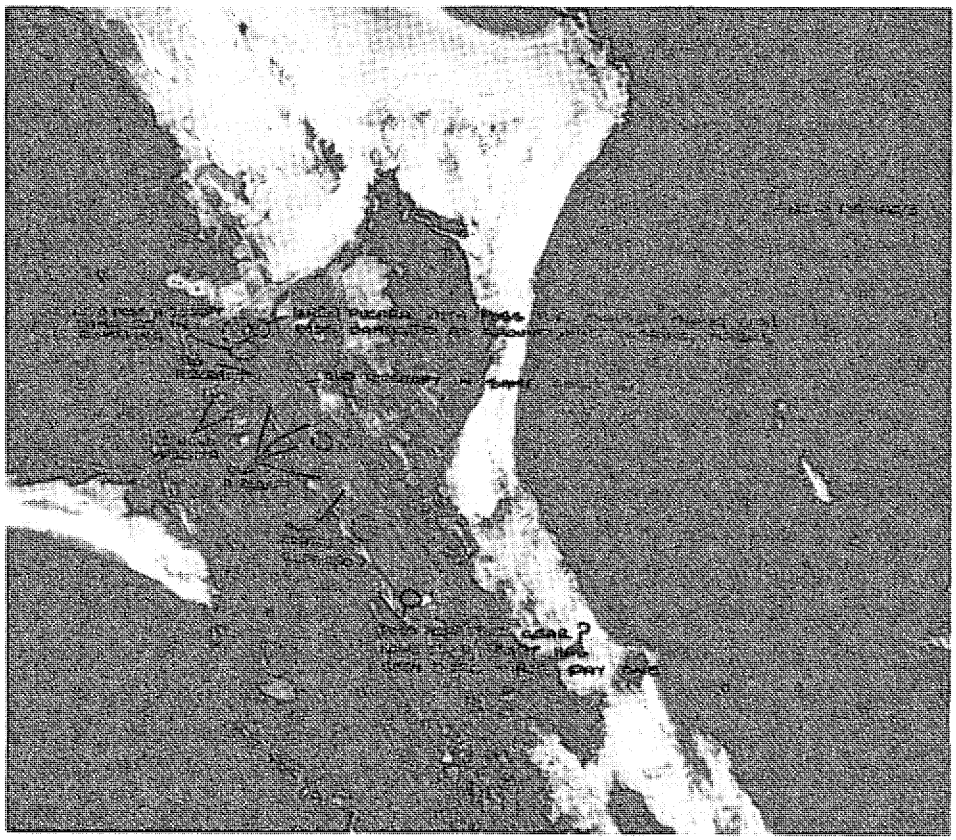




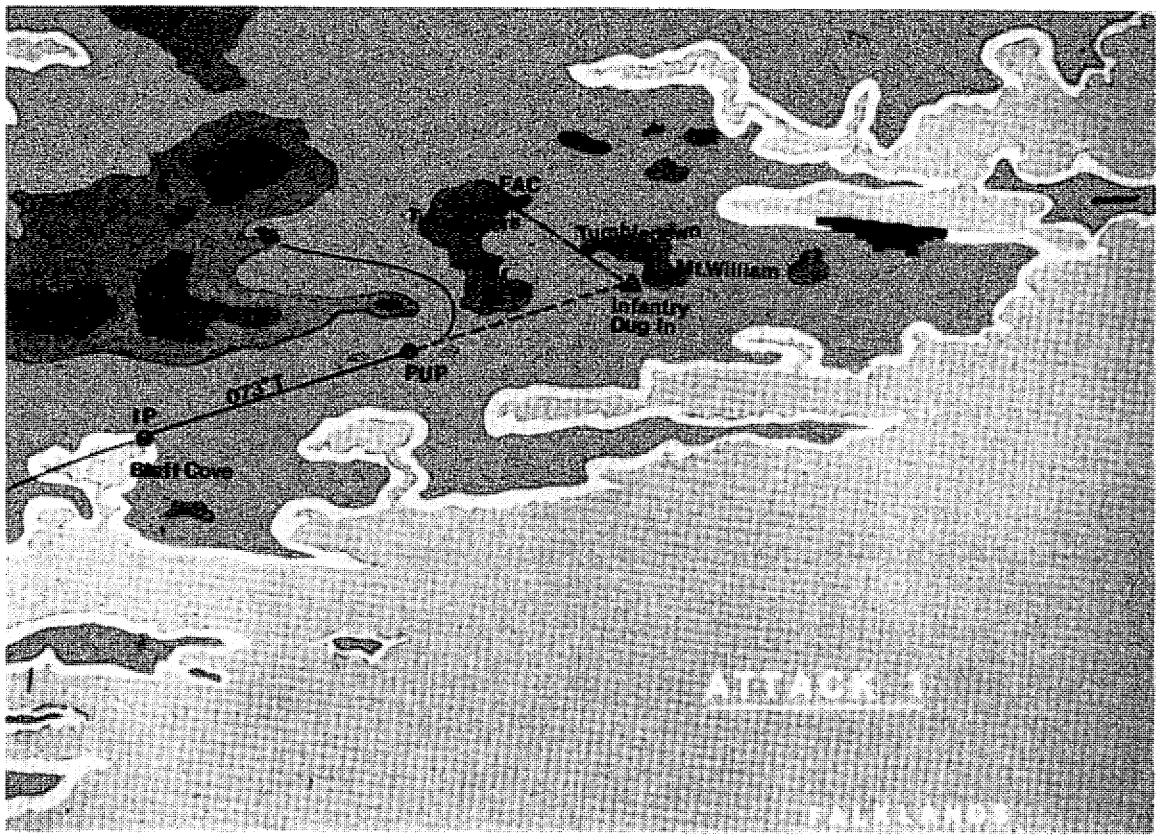
7.13 and 7.14. These photographs show the water pumping station and barracks at Moody Brook. One of the "slick" 1000lb bombs, which had been intended for the artillery positions well to the south, actually landed in the Moody Brook barracks. As a UXB it caused considerable disruption to the Argentinian troops located there.



7.15. This photograph shows one of the few remaining helicopters available to the Argentinians at the end of the campaign. It was located reasonably adjacent to the camouflaged headquarters shown at photograph 10.



7.16. A photograph of Stanley airfield taken shortly after the 4 aircraft attack, referred to at photograph 5. It shows that the damage caused by the retarded 1000lb bombs which, although accurately delivered, did not do a great deal of damage to the surface. This was largely because the fusing had been set at about 40 milliseconds, which meant that the bombs actually bounced slightly before exploding. The arrester gear shown by the threshold eventually turned out to be 2 Aermacchi aircraft which were positioned on an ORP. On the 31st May these aircraft were reported by a Sea Harrier pilot to be possibly Etendards and, as a result, Flt Lt Hare and Wg Cdr Squire were tasked to attack them with 2" rockets.



7.17. The final LGB attack was called off at the last moment.

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CHAPTER 8

ROYAL AIR FORCE REGIMENT OPERATIONS

SUMMARY OF CONTENTS

REQUIREMENT AND WARNING ORDERS

DEFENCE OF ASCENSION ISLAND

8.1 Once the decision had been taken to send a Task Force (TF) to repossess the Falkland Islands it was clear to the RAF Regiment (RAF Regt) staff officers at the Ministry of Defence (MOD) that Regiment Squadrons might become involved and so the airlift

D/AF Ops 5 Apr
CG&DG Sy(RAF)
10/3/3A E1

requirements for various deployment options were studied. (1) However, it was not until the end of April (2) that the first requirement emerged: to provide ground defence of the airhead at Ascension Island. On 28 April the Chiefs of Staff Committee (COS) was briefed on the threat to the island. CTF 317 had sought MOD advice on air defence (AD) measures, but when this request was discussed at an Air Force Operations (AF Ops) meeting on the same day it was considered that the air threat at that time did not warrant the presence of a RAF Regt Rapier Sqn. However, to assess the ground defence requirement for Ascension an Army Security Survey Team (ASST) (comprising 2 Majors) was despatched, to meet a COS call for interim recommendations by 2 May. 3A 29 Apr E28

8.2 The first warning order to RAF Regt units was issued by MOD on 30 April and placed a wing headquarters (Wg HQ) (No 3 Wg RAF Regt) and a field flight (Fld Flt) from No 15 Sqn RAF Regt on 24 hours notice to move. The task for the Wg HQ was to co-ordinate the ground defence of Wideawake Airfield and its associated installations, and to prepare, brief and train all combatant personnel. This requirement was confirmed by the ASST in their initial report, which recommended that a defence command structure was essential and suggested that a RAF Regt Wg HQ was ideally suited to fill this role. They also reported that a guard force for key points (KP) plus a small Quick Reaction Force (QRF) was required because no other dedicated or trained manpower was available. They suggested an RAF Regt Flt, less heavy weapons, for those tasks. However, at this stage there was great concern at the number of men on Ascension and the Wg HQ was restricted to a total of 10 men and the Fld Flt to 31. There was also discussion about the role of the Fld Flt. (3) During the debrief of the Security Survey Team at an Assistant Chief of the Defence Staff (ACDS)(Ops) meeting, the team had envisaged the Flt providing a Static Guard and Quick Reaction Sections. The staff view was that some of the 650 personnel on Ascension should do the static guarding leaving the Fld Flt to provide the QRF; but no decision was recorded.

301330Z Apr
3A E29
301710 Apr
3A E31
021800Z May
TF13.3 E82
031224Z May
Folder.1 E39
AF Ops Duty RAF Regt Officer's Log 4 May

8.3 On 4 May the COS agreed to deploy a Wg HQ and one Flt to Ascension as soon as possible. MOD issued instructions for HQ 3 Wg to deploy on 5 May and 'C' Flt from No 15 Sqn on 6 May. OC 3 Wg was directed to coordinate the ground defence of all assets and to man the Airhead Defence Centre (ADC), whilst the Fld Flt was to undertake the ground defence duties. Consideration was given to deploying a second RAF Regt Flt but this was never implemented.

COS 41 Mtg
CAS/73/2/4.1 E4
041433Z May
3A E35
061600Z
Folder.1 E73

(1) File series D/CG&DG Sy(RAF)/10/3/3 are referred to as 3A, 3B in the reference column throughout this chapter.

(2) During this period and indeed throughout the campaign, staff officers at MOD were also deeply involved in the planning and preparation for a Review of the RAF Regt by HM the Queen at RAF Wittering on 21 June. Although consideration was given to cancelling this event, it did take place as planned.

(3) AFOR Defence Desk Folders for Operation CORPORATE are referred to as Folder .1, .2 etc.

OTHER TASKS AND DETACHMENTS

8.4 In addition to those already discussed other likely tasks for RAF Regt Sqns were discussed at MOD, HQSTC and HQ RAFG throughout April and May and some units were placed on 48 hours notice to move. The first Squadron affected was No 37 Sqn, based at Bruggen, which was tasked on 10 May to place on standby one Rapier Flt (comprising 4 Rapier Fire Units) and a Forward Repair Team. The following day HQ No 33 Wg, based at Gutersloh, was also placed on standby. The other units affected by this standby commitment were Nos 1 and 2 Sqns RAF Regt which were both Light Armoured Squadrons. On 18 May, No 2 Sqn based at Hullavington was informed that as RAF Regt Standby Sqn it was to be prepared to move a flight of men at short notice on CORPORATE, and on 10 June it was further warned to prepare a move in toto to the Falklands as part of the RAF Garrison. No 1 Sqn RAF Regt, based at Laarbruch, was placed on standby for CORPORATE on 19 May, but this, along with the Wg HQ standby, was subsequently cancelled on 1 June. No 2 Sqn remained on standby until 30 June and No 37 Sqn was on standby until it replaced 63 Sqn on 11 September.

No 37 Sqn ORB May
No 2 Sqn ORB May
No 1 Sqn ORB May
No 37 Sqn ORB Sep

8.5 Also during April No 18 Sqn from RAF Germany was tasked with supplying Chinook aircraft and crews for direct support to CORPORATE both in the Falklands and at Ascension. The Chinook helicopter operations are covered in Chapter 3; however, mention must be made here of the 15 RAF Regt gunners (4 NCOs and 11 SACs) deployed with the Squadron. The crew of each General Purpose Machine Gun (GPMG) fitted aircraft was supplemented by 2 RAF Regt gunners. A range practice was held at Lilstock and good results were achieved. The RAF Regt Section's primary role was to be the defence of the helicopter sites and it became an integral part of the Squadron.

191522Z Apr TF41.1 E7

8.6 These RAF Regt gunners accompanied No 18 Sqn when it deployed south. They flew to Ascension and boarded the MV NORLAND on 6 May, thus becoming the first members of the RAF Regt to land in the Falklands. They arrived in San Carlos Water on 21 May in company with other ships and soon came under heavy and sustained enemy air attack during daylight. The gunners manned 4 of the GPMGs which were used to defend the ship. That evening the NORLAND left San Carlos Water but returned again at first light on 23 May when, once again, the gunners manned their GPMGs as all the ships in the anchorage were subjected to heavy and sustained air attack. On 23 May all 18 Sqn personnel cross-decked to FEARLESS where the RAF Regt gunners were again deployed in the AAAD role. They saw further action during the daylight hours of 24, 25 and 26 May, but the remainder cross-decked to MV EUROPIC FERRY and joined the main Task Group. By 14 June all the gunners were ashore and the No 18 Sqn section was deployed in defence of the Chinook Site at Port San Carlos.

18G/62/4/Org 22 Oct 3D E82

8.7 Another small group of detached RAF Regt personnel should also be mentioned here. Elements of No 1 Sqn (Harrier GR3s) left the UK on board the MV ST EDMUND on 21 May and their complement included Flt Lt C J Miller, 2 Sgt Gunners and 2 Cpl Gunners. During the journey they organised the local AAAD of the ship and conducted various training programmes, but their ship did not reach the Falklands until after the Argentines had surrendered on 14 June.

8.8 However, these RAF Regt elements were comparatively small compared with the activities involved in the ground defence of Ascension airfield.

DEPLOYMENT AND OPERATIONS

ASCENSION ISLAND - GROUND DEFENCE

8.9. The first units to deploy, HQ 3 Wg and 'C' Flt, No 15 Sqn, were moved by road and air. The Wg HQs convoy (comprising 3 Landrovers/trailers and 10 personnel), left RAF Catterick on 5 May for Lyneham, boarded 2 Hercules and departed for Ascension. Prior to leaving the officers were briefed on their operational tasks by the two majors who had conducted the security survey at Ascension the previous week. The Wg HQ party landed on 6 May and was met by two RAF Regt NCOs who had been detached to train RAF personnel in small arms. Their first task had been to collect the supplies of small arms which had arrived piecemeal in a variety of containers; they were in the middle of this when the HQ party arrived and they returned to the UK a few days later. Meanwhile, 'C' Flt, No 15 Sqn had moved to road to Lyneham on 6 May and then also flew by Hercules to Ascension. By 1800 hours local on 8 May they were operationally deployed. HQ 3 Wg ORB May No 15 Sqn ORB May

8.10 A tactical appreciation by the defence commander, OC 3 Wg, had concluded that the selected KPs could be defended by a RAF Regt Flt augmented by station personnel, provided adequate intelligence and early warning were available to allow for a progressive increase in the defence state. This arguably risky conclusion, bearing in mind the rough open terrain and wide dispersion of the KPs, was based on the following factors: HQ 3 Wg ORB Jun BFSU/9/Regt 29 Jun

a. It was essential to limit the overall number of people on the island because of shortage of water, accommodation and catering facilities.

b. It was difficult to quantify the threat, though the probability of an incident occurring was considered very low.

c. The Argentines would probably be disinclined to attack the air base and so risk harming American personnel and property.

d. From the 900 permanent combatants on the airfield, an adequate Augmentation Force of personnel could be mobilized in an emergency.

The KPs were variously grouped and included the runway, aircraft dispersal area and BFI; the main fuel inlet; the US power station and desalination plant; the BBC power station, fuel oil tanks and desalination plant; the bomb dump, ammunition store and the radar site.

8.11 On 7 May OC 3 Wg issued orders at Wideawake Airfield and subsequently to all RAF Regt forces deployed to their operational locations. 'C' Flt, 15 Sqn, was initially organised into 6 patrols each of 4 men to guard KPs and provide an Immediate Readiness Force (IRF). An Augmentation Force was also established HQ 3 Wg ORB May

together with an alerting system to ensure that station personnel were able to continue their primary duties for as long as possible before being stood to. The Wg HQ established a Defence Operations Centre (DOC) to coordinate ground and air defence activities and from 11 May it also assumed responsibility for plotting all surface movements within 400 nms of the island. Information for this task came from a daily Nimrod air surveillance sortie, the RAF radar on Green Mountain and the guardship.

8.12 Throughout the remainder of the campaign a defence posture was maintained in keeping with the defence state in force at the time: State 1 (Normal), State 2 (Increased Vigilance), and State 3 (Attack Imminent). The latter called for all forces, including the Augmentation Force, to stand-to. There were a number of occasions when Quick Reaction Alert (QRA) aircraft were scrambled and RAF Regt forces stood to, but no threat ever materialised. While communications between the various elements of the defences proved difficult in the early days, they improved later when more equipment was made available and a rebroadcast station was set up. Radio communications were particularly difficult because of the large number of aerial farms (BBC, NASA, Cable and Wireless) established on the island. The constant presence of the Soviet Auxiliary General Intelligence (AGI) ship, PRIMORYE, meant that communications security became paramount and at one stage additional non-existent callsigns were used to give the impression of a Wg/Sqn net.

8.13 In addition to its routine defence duties the RAF Regt became involved in the following tasks:

a. The provision of guards and prisoner handling facilities during the 5 hour period on 13/14 May that 189 Argentine POWs captured at South Georgia were passing through Wideawake Airfield.

b. Between 14 and 25 May seven RAF Regt gunners formed part of the guard force on board the RN guardship for Lt Alfredo Astiz, the former commander of the Argentine garrison on South Georgia.

c. Assistance in loading supplies on helicopters/ships.

d. Securing small arms and constructing an armoury.

e. Training Army and RAF Augmentation Forces.

f. Running temporary firing ranges.

g. Establishing a defence communications network, including the laying of a landline.

8.14 While it may be seen that a clear need had arisen for the RAF Regt to become involved in the ground defence of Ascension, no such requirement had as yet been endorsed for RAF Regt Rapier Units to be landed on the Falklands themselves.

THRUSTING IN RAPIER

8.15 Originally the Royal Artillery (RA) had been tasked to provide Rapier support for the TF, but two more tasks soon emerged: the defence of the Harrier Forward Operating Base (FOB) and, later, Port Stanley Airfield. The FOB task arose from a request from the Commander Task Force (CTF) for additional forces for follow-up operations. The longer term task arose in late April when the COS were considering a paper on the "Maintenance of the British Garrison in the Falkland Islands" following a successful military reoccupation; the proposed force levels included the possibility of a RAF Regt Sqn.

211516Z Apr
CAS/73/2/4.2 E18

COS(Mis)185/742/1
30 Apr

8.16 Clearly, the first task had priority and on 2 May the OD(SA) Committee authorised reinforcements to be available to CTF 317 in accordance with his request for 5 Inf Bde with supporting elements and additional Harriers. This latter requirement led to studies at Northwood and HQ STC into a Harrier concept of operations in support of 5 Inf Bde. The resulting draft paper on full-scale Harrier GR3 operations proposed RAF Regt Fld and Rapier Sqns for defence of a Harrier site. Following a meeting at Northwood on 4 May, HQSTC submitted a concept of operations in support of 5 Inf Bde and the detailed logistic support included one RAF Regt Rapier (Blindfire) Sqn(4). This signal was rapidly followed by a warning order from MOD to RAF Germany (RAFG) which required one RAF Regt Rapier (Blindfire) Sqn to be brought to 48 hours notice to move to the UK for onward deployment by sea to the Falklands. The unit selected for this task was No 63 Sqn RAF Regt based at Gutersloh, the home of the RAFG Harrier Force (5).

COS 1072 742/1
2 May

18G/335/4/17/Ops.1
E115

062338Z May
3A E39

062338Z May
3A E39

8.16 Whilst all this planning and preparation was taking place in the UK, No 63 Sqn was deployed in an area just west of the River Weser, on Exercise SPRING TIGER (3-7 May) (6) which, although not a Harrier exercise, did in fact provide a useful run-up for CORPORATE. However, it also left the Squadron with a number of

No 63 Sqn ORB Sep

(4) 'Blindfire' was a term used to describe a fire unit which could fire in all weather day and night. Such units were equipped with a Radar Tracker in addition to the Optical Tracker.

(5) The exact reasons for selecting No 63 Sqn and not a UK based Squadron for Operation CORPORATE are not on record. However, it was the only squadron which had practised defence of Harrier FOBs; it was equipped to the same Field Standard as the RA Battery with 3 Commando (Cdo) Bde, and it had recently completed both its annual Categorisation Board and Range Practice Camp. Moreover, it was not involved in the Royal Review.

(6) Exercise SPRING TIGER was a 230 Sqn (Puma) exercise in which 63 (Regt) Sqn deployed to an adjacent area to provide a Rapier defended zone. However, 63 Sqn did not deploy by helicopter, nor did it rely on helicopter support; its personnel were not familiar with relevant procedures, therefore, when they subsequently deployed to the Falklands.

101857Z May
3A E72

unserviceabilities and a lack of spares. The last elements of the Squadron arrived back at Gutersloh at 1400 hours on 7 May. Equipment had to be unloaded, cleaned, checked for serviceability and then reloaded. Personnel were briefed and issued with additional equipment. At one point, in accordance with the warning order, tropical kit was issued, but this was later withdrawn to be replaced with 24 sets of arctic clothing. Ferry bookings to the UK had to be arranged by both Army and RAF staffs. During the preparation phase it was decided to reinforce the Squadron with 2 officers, 4 SNCOs and 4 gunners (some to make good manning deficiencies); these personnel were drawn from HQ 4 Wg and Nos 16, 26 and 37 Sqns and provided the essential command and control for the expected tri-Service short range air defence (SHORAD) environment. In the event No 63 Sqn was ready to leave RAF Gutersloh late on 8 May.

8.18 The commitment of 63 Sqn was not a decision to be taken lightly since the squadron was declared through Supreme Allied Commander Europe (SACEUR) to CINCENT as an Alert Status force. Whilst Chief of Defence Staff (CDS) sought the Secretary of State (S of S)'s approval to proceed with the Harrier/Rapier deployment, MOD staffs were preparing a signal to be sent to SACEUR explaining the effects on RAF Rapier Declarations. In order to minimise the effect on NATO, No 27 Sqn, RAF Regt, based at Leuchars was brought to readiness to deploy to Gutersloh within 48 hours.

CDS2038/1/1 8 May Folder.1 E109 &111

DAP/73/1 10 May 3A E67

DEPLOYMENT FROM GERMANY OF NO 63 SQN

8.19 In contrast to the earlier deployments to Ascension, that of No 63 Sqn was far more complex. In the first instance the squadron moved to RAF Odiham - a nominated 'Interim Point' in the UK. The main convoy, comprising 11 groups each of 5 vehicles, left Gutersloh on 9 May and, after refuelling in Belgium, drove to Zeebrugge and caught the civilian ferry to Dover. At the insistence of the civilian police the journey onwards to Odiham was made as one large group of 55 vehicles and predictably the traffic jams caused by this 2-3 mile convoy were reported in the national evening news. Meanwhile, a small advance party of 8 personnel had flown by Hercules from Hanover to Lyneham and then went by road to Odiham.

No 63 Sqn ORB Sep

8.20 Whilst there the squadron collected large quantities of spares and equipment, including 240 Rapier missiles and small arms ammunition. On 11 May all vehicles (48 prime movers and 44 trailers) and heavy stores were taken to Devonport for loading on ATLANTIC CAUSEWAY and 5 airmen sailed with this ship. At one stage there was a plan to carry out a modification to the RAF Rapier trackers at Devonport and to send a team with the ship to modify the missiles, but this was not approved by MOD.

111710Z May 3A E83

8.21 The main party left Odiham by coach on 12 May for Southampton and, by 0930Z, 5 days after receiving the warning order at Gutersloh, the squadron was on board the QE2 which sailed that afternoon.

63 SQN AT SEA

8.22 A daily training routine was soon established onboard the ship. This included launcher simulator training, tracker trainer

sessions, aircraft recognition (including conducting training for 5 Inf Bde), all arms air defence (AAAD), Rapier system procedures, fitness training and weapons training, including live firing. After one week at sea the squadron was tasked with co-ordinating the local air defence of the ship. 7.62 mm GPMGs and .50 Machine Guns (the latter borrowed from 5 Inf Bde) were manned and a detachment from 43 AD Bty RA provided 4 Blowpipe crews. An air defence scheme for QE2 was published on 22 May and a Control Post was established on the bridge. No 63 Sqn ORB Sep

8.23 Initially the squadron became part of 5 Inf Bde, but Rapier was soon declared a 'Force Asset' and the squadron came under the direct control of the Commander Land Forces Falkland Islands (CLFFI). Sqn Ldr C Feek (attached to the squadron from HQ 4 Wg RAF Regt) joined CLFFI's staff as the RAF Rapier Liaison Officer.

8.24 On 27 May Sqn Ldr Feek cross-decked to HMS FEARLESS, via HMS ANTRIM, and remained on board with HQ LFFI for the remainder of the campaign. QE2 arrived at Grytviken, South Georgia, on 28 May, at which point a conflict of interests arose about the cross-decking plans for 63 Sqn. HQ LFFI staff wanted to divide the squadron equally between 3 ships so that their air defence expertise could be used to co-ordinate the local all-arms air defence of each ship. On the other hand, the Squadron Commander wanted to retain his squadron on one ship so that he could pass the necessary deployment orders when he himself received them. At this stage no one aboard QE2 had any idea of the location of ATLANTIC CAUSEWAY, or when it would arrive at the Falklands. Nor did anyone know where, or when, the various 5 Inf Bde ships would land on the Falklands. In the event, the bulk of 63 Sqn (HQ, B and Eng Flts) cross-decked to SS CANBERRA, 'A' Flt cross-decked to MV NORLAND and 1 Officer and 5 airmen cross-decked to the RFA STROMNESS; these separate elements were unable to communicate with each other. They landed at Port San Carlos as follows:

a. ATLANTIC CAUSEWAY (containing the Sqn's equipment) - am 1 June

b. MV NORLAND - 0630Z on 2 June

c. SS CANBERRA - 1500Z on 2 June

d. RFA STROMNESS - pm 3 June

63 SQN - THE FINAL LEG

8.25 Offloading the squadron equipment was organised by Sqn Ldr Feek who had arrived on HMS FEARLESS. This task employed a Landing Craft Unit, 2 Mexeflots, some Royal Engineers (RE), and for 24 hours the five squadron personnel from ATLANTIC CAUSEWAY. At this stage of deployment each element of the Squadron was completely on its own. An extract from the Sqn Cdr's diary summed up the situation as the squadron sailed towards the Falklands: "I still have not been told if I am just to defend the Harrier Sites or the Brigade Maintenance Area as well. As we prepare to go ashore I do not have the locations of T Battery (the RA Rapier Battery with 3 Cdo Bde) or where their Control Post is. The only information we get is from the BBC and the odd signal that the ship manages to intercept, thus giving us a glimpse of what might

happen or what is going on. During the evening of 31 May I attended a Force meeting to end all meetings. We met and no-one, not even the Brigadier had anything to say. The meeting lasted 30 seconds. That really sums up the situation as we go ashore".

NO 63 SQN DEPLOYS

8.26 Thus, it was in the "fog of war" that No 63 Sqn RAF Regt began operations in the Falklands. The Squadron's arrival in San Carlos Water on 4 different ships at different times; the constant change in movement plans and the lack of a directive bore some resemblance to the unhappy events witnessed during the Norwegian campaign of 1940! Sqn Ldr Feek had arrived in San Carlos Water on 29 May and so fortunately was able to organise the off-loading of the Sqn's equipment when ATLANTIC CAUSEWAY arrived early on 1 June. However, he had insufficient manpower to deploy and operate the fire units. Although NORLAND arrived in San Carlos Water shortly after ATLANTIC CAUSEWAY, priority was given to off-loading the Ghurka Bn before 'A' Flt could go ashore at 0603. When CANBERRA finally arrived priority was again given to other troops before the elements of 63 Sqn could get ashore. Of course, those making the decisions were not aware that the Rapier equipment was already ashore and since 3 Cdo Bde had already broken out from the beach-head, the priority was to get more infantry troops ashore. These frustrations were summed up by the Sqn Cdr: "As we came closer to the time to go ashore I had expected to receive some orders, but this was not to be. Circumstances beyond my control dictated the order that the Sqn went ashore and it was totally in the wrong order. By the time I arrived 'A' Flt were deploying. So much for orders, reconnaissance and the normal deployment sequence. It was, I suppose, inevitable as events moved so quickly and amphibious operations can change the whole sequence of events for a small unit".

8.27 When the Rapier Flts (A and B Flt) landed at 'Green' Beach they found the entire complement of squadron vehicles, equipment and stores, including missiles, parked/stacked on either side of the only track leading away from the beach. Sqn Ldr Feek issued the necessary orders and 'A' Flt and 2 fire units of 'B' Flt deployed on 2 June with the remainder of 'B' Flt deploying on 3 June. No reconnaissance was possible prior to deployment, and six of the 8 Rapier sites required helicopter support as they were for the most part inaccessible from the ground. A map of the area showing site locations is at Annex A; four of these sites were taken over from 'T' Battery RA when its fire units moved to Bluff Cove (7). During the deployment on 2/3 June there were up to 4 Sea King helicopters working for the Squadron at any one time since each fire unit comprised 5 underslung loads. Although the Squadron had no experience in helicopter operations the deployment went exceptionally well with no equipment damaged. During the evening of 2 June the Sqn Cdr managed to hold his first Orders Group.

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(7) The redeployment of the Army's 'T' Battery forward with 3 Cdo Bde, leaving 63 Sqn RAF Regt to defend the Harrier FOB, highlighted the different training and operational objectives of the two units.

8.28 By pm 3 June the Squadron was fully deployed around the Harrier FOB at Port San Carlos, with 6 fire units on the surrounding hillside and 2 fire units in the valley. Because of the Squadron's reliance on helicopter transport there were some delays in rectification of any faults; however, after a settling-in period the Squadron maintained 6 or 7 fire units at Blindfire and the remaining 1 or 2 Optical. Apart from some minor amendments, operations conformed to normal squadron procedures although the operating techniques of the Forward Repair Teams (FRTs) had to be changed to suit helicopter operations. Initially, a Sea King would lift the 2 engineers with their FRT trailer to the location of the unserviceable fire unit. Later on Wessex were used and the FRT trailer could not be taken. This delayed rectification since the FRT did not have the full range of spares with them and equipment had to be ferried to them by helicopter. There was never any shortage of serviceable spares at the HQ site and the Squadron second-line workshop, which included a second Electronic Repair Vehicle (ERV), also provided vital support to 'T' Battery. Much later in the deployment serious problems were experienced with the Rapier generators which showed that they could not stand 24 hr operations for weeks on end.

FOB OPERATIONS

8.29 Despite many discussions with HQ LFFI on QE2, it was not possible to formulate any detailed plans for the arrival and departure of Harriers from the FOB. Two factors which prevented this were the lack of any Harrier personnel on the ship and, for much of the time, the absence of precise information about the strip. Fortunately 63 Sqn was on the ground 3 days before the first Harrier landed at Port San Carlos (1218Z on 5 June) and during this time the Sqn Cdr and the OIC Harrier FOB, Sqn Ldr B S Morris, drew up some broad plans. Although normal East/West Safe Lanes were considered they were never declared. Instead aircraft entered and departed from the area via Fanning Head (See Annex A) and the weapon control order (WCO) "Weapons Tight" or Weapons Tight Fixed Wing" was declared for all aircraft movements. Harriers also adopted the 'Lame Duck' (8) procedure when entering the area. In fact the WCO tended to remain "Weapons Tight" except when hostiles were in the Total Exclusion Zone (TEZ) and heading for the Falklands. From 5 June onwards both GR3s and SHARs made regular use of the FOB during daylight hours and the fact that no friendly aircraft were engaged by Rapier is a credit to the defences. The same cannot be said for the Argentine SHORAD who shot down 2 of their own aircraft.

8.30 Whilst helicopters were the lifeline for 6 of the Rapier fire units they were also a menace to the Rapier defence. From dawn until dusk helicopters flew to and fro. Most did not have Identification Friend or Foe (IFF) fitted and those that did had been instructed, wrongly as it turned out, to switch it off because of problems raised early on by 'T' Battery. Since the

(8) 'Lame Duck' was a term used to describe the procedure adopted by an aircraft with no radio communications approaching a defended airfield. The aircraft would approach slowly with landing lights on to demonstrate clearly that it was not in an attack profile.

Squadron was at 'Battle Stations' the Detachment Commanders had continually to use the Selector Engagement Zone (SEZ) to prevent the system locking-up on those friendly helicopters which were not capable of giving a 'friendly' IFF response; often when 3 or 4 helicopters were airborne in the area at the same time it was necessary to switch-off the radar. There were numerous air raid warnings RED, mostly during the day, but some at night. On one occasion 2 Mirage aircraft came across Falkland Sound, engaged a ship and then attacked Ajax Bay. The fire unit at Wreck Point could have engaged them had it been serviceable at the time and the fire unit at Hospital Point tracked one of the aircraft, but it was "Out of Cover" and then "in-taboo" (9). There were no other opportunities for the Squadron to engage enemy aircraft. During this period (3-14 June) the ground forces were moving towards Stanley and Argentine air attacks tended to be against forward positions or ships.

8.31 On 9 June, an Argentine Medical Officer walked up to the fire unit at Windy Gap and surrendered. As a result of information he supplied, the Royal Marines were able to capture several Argentine soldiers hiding in a house some 5 miles inland. During this period the Harrier Strip at Port San Carlos was thought to be a likely target for a ground or Special Forces (SF) type attack, but no such attack ever materialised.

8.32 Thus for nearly a further 3 weeks, No 63 Sqn remained deployed at Port San Carlos until it moved to the newly formed RAF Stanley on 30 June, where it remained until mid-September.

POWS - AN UNUSUAL SIDELINE

8.33 One task which had not come the way of the RAF Regiment for many years was the interrogation of POWs. During May, whilst the Wg HQ and Regt Flt undertook duties at Ascension, an RAF Regt officer on board RFA TIDESPRING was questioning Argentine POWs from the Argentine Submarine SANTA FE. The officer concerned was Flt Lt G Bransby, a Spanish linguist (10) who, after returning to the UK for debriefing, flew to Ascension and joined 5 Bde on board QE2. He subsequently deployed to the RFA TIDESPRING and was later involved in questioning Argentine POWs on board CANBERRA at Ajax Bay and at Fitzroy. At one stage he became a member of the Force Tactical Questioning Centre. An RAF NCO instructor from the JSIW (FS A Black) was also included in this unit. Following the surrender on 14 June, both moved into Port Stanley and until they returned to UK they were employed in selecting the "Special Category" POWs whose return to the Argentine was to be delayed.

Flt Lt Bransby's informal report.

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(9) Although in theory Rapier could fire the entire 360°, in practice it was often necessary to stop it firing in certain directions because of nearby obstructions. These sectors were referred to as "in-taboo".

(10) Flt Lt Bransby attended a concentrated course in interrogation principles and techniques at the Joint Services Intelligence Wing (JSIW) from 19 to 23 April.

REFLECTIONS

REQUIREMENT FOR THE RAF REGT

8.34 Air support for CORPORATE provided several situations where the RAF on the ground needed to be defended - a classic RAF Regt role. RAF Regt units were deployed to meet some of these tasks, but not all. The number of units warned and put on standby for the operation indicates that the MOD staffs initially expected to meet all these commitments, but participation in the 40th Anniversary Royal Review had a bearing on which units joined the Task Force. Many of the original ideas and plans were overtaken by events and changing circumstances as the overall operation developed. Of the two Wg HQs and three Squadrons warned for the operation, only one Wg HQ, one Sqn, one flt and one section actually took part. Though only the RAF Regt gunners of No 18 Sqn became engaged in battle, the significant contribution made by other units in fulfilling important tasks must not be overlooked.

GROUND DEFENCE OF ASCENSION

8.35 The ground defence of the airhead at Ascension was one such vital task. It was never attacked, but a successful Argentine SF raid against this critical airhead could have seriously delayed, or even crippled the whole operation. There was no Joint Theatre Plan (JTP) for the activation of the airfield and no plan for its defence; consequently no dedicated airfield defence forces were deployed in the initial stages of CORPORATE and there was no expertise available to the CBFSU on the organisation of his defences. Once this deficiency was recognised the task was given to the Wg HQ and one RAF Regt Flt. Although the conclusions of the tactical appreciation may have seemed risky at the time, they did provide for the establishment of an effective defence with minimal dedicated ground forces. The presence of a tri-service support unit and a mixed group of British and American civilian agencies required close liaison. However, a simple, effective plan soon emerged and this reflects credit on the RAF Regt's capacity to adapt to almost any situation and to do a great deal with slender resources.

DCS 1/82 27 Oct
VCAS/7/7.5 E1

HQ3 Wg ORB Jun
BFSU/9/Regt
29 Jun

8.36 Surprisingly, none of the RAF personnel who deployed initially to Ascension were armed. Later, weapons were sent out in bulk but there was no armoury to provide secure storage and safe custody. There were no standard orders for field dress and the wide variety of working dress made identification of intruders almost impossible. The Wg HQ lacked the resources to set up a station Ground Defence Operation Centre (GDOC) on a bare base, which in turn lacked the basic ground defence requirements of a field telephone system, ground defence radios, air-raid sirens, tannoy and armoury. Moreover the fast build-up of the airhead presented a constantly changing scene. New units arrived and set up their facilities without thought for the effect on the ground defence plan, which had to be changed to incorporate the revised arcs of fire from the weapon positions. Even a rudimentary outline JTP would have taken into account many of these problems before the deployment to Ascension. As it was these problems had to be resolved as they occurred. As a consequence many lessons were learnt, including the complexity of the joint communications and coordination required for ground

ACAS(Ops)/2/8/
1058 30 Sep
VCAS/7/7/3 E12

defence in a situation involving tri-service and civilian agencies.

AAAD

8.37 Ironically, the only combat action involving the RAF Regt during this campaign centred on the defence of a ship. Whenever RAF Regt personnel were afloat they always became involved in the local AAAD of that ship, irrespective of their particular speciality. Even for the gunners of No 18 Sqn, the ground defence of the helicopter sites became their primary role. Indeed, prior to CORPORATE, AAAD had been fading from the scene and many believed - regardless of the American experience in Vietnam - that it was unnecessary in a world of fast jets and SAMs. However, the experience of the gunners of 18 Sqn and of those ashore suggests that small arms fire, heavy machine gun fire and even light cannon remain very effective in the AAAD role. DCS 1/82 27 Oct VCAS/7/7.5 E1

RAPIER IN THE FALKLANDS

8.38 In the Falklands themselves, the primary SHORAD system was Rapier and the campaign highlighted the fact that there were insufficient Rapier resources in the UK to support Out of Area commitments as well as NATO roles. Since No 63 Sqn had deployed on Harrier field exercises during the 2 years prior to CORPORATE, it was appropriate for them to defend the Harrier FOB at Port San Carlos. Of course, there were many differences from Germany: San Carlos was probably the worst imaginable territory on which to deploy towed Rapier - there was no ground access to most sites and poor radar coverage. Moreover, there was only one Harrier site as opposed to 6 in Germany. The initial deployment was considerably hampered by the lack of reconnaissance, the absence of orders and the sequence in which the various elements of the Squadron landed. This highlighted the point that Rapier personnel, prime equipment and engineering support should always be grouped together to achieve speedy deployment. Ibid E1

8.39 That the Squadron rapidly recovered from this difficult start was in the main due to its high standard of training. During Harrier force exercises in Germany, personnel had become adept at setting-up operations from scratch in the middle of nowhere, and unfamiliar terrain was no stranger to the Rapier detachment commanders. However, they had never deployed at nor operated from sites which were inaccessible by land movement. Training and operational sites in UK, Germany and Belize did not require helicopter support for either deployment or operations and the helo-lift of Rapier equipment did not form part of a Squadron's training programme. At Port San Carlos, however, helicopters were crucial to the deployment, resupply and servicing of fire units. Squadron procedures had to be adapted to cater for this unusual situation and major changes were necessary in engineering support. In addition, the Squadron was required to provide 2nd line engineering support to the Army's 'T' Battery which had initially deployed to the Falklands without it. This highlighted the need for Rapier fire units to have both 1st and 2nd line engineering support.

8.40 Although the Rapier defence of the Harrier FOB was never tested operationally, an effective defence was developed - as the

Argentines probably realised. The presence of RAF Regt Rapier fire units also released Army Rapier fire units for redeployment to Fitzroy and Bluff Cove. But the campaign showed that the Army was unfamiliar with take-off and recovery procedures for friendly aircraft and lacked the expertise to set-up a SHORADEZ around the Harrier FOB. In the event, safe procedures were established and despite many problems no friendly aircraft were engaged by Rapier. Yet all this served to show the differing nature of the tasks of Rapier units in the Army and RAF.

8.41 The operational deployment of No 63 Sqn at Port San Carlos for the latter part of the campaign confirmed that training had adequately prepared the unit. In particular, it brought home the need for instant reaction to air attacks. The equipment also did remarkably well in such adverse conditions, for once Rapier was "up and running" it usually kept going. However, the provision of constant power to the system proved difficult as the generators could not continue to run for weeks on end. Although rectification was slow, owing to the inaccessibility of the sites, the deployment layout ensured that effective defence was always maintained.

RESUME OF RESULTS

8.42 The two main operational tasks for the RAF Regt units involved in CORPORATE were the ground defence of the airhead at Ascension and SHORAD for the Harrier FOB at Port San Carlos. Other possible tasks for RAF Regt units, such as the SHORAD at Ascension and the ground defence of the FOB and subsequently of Stanley Airfield, never materialized. The air defence concept for Ascension included Harriers, a guardship, a RAF EW radar and Nimrod long-range maritime patrols but did not require ground-based SHORAD. The ground defence of the Harrier Strip and Port Stanley Airfield, both classic RAF Regt tasks, were undertaken by elements of 40 Cdo and Army companies respectively.

CTF317 061600Z May
Folder.1 E73

8.43 The deployed RAF Regt units and personnel considered themselves the fortunate ones, and those who were on standby but did not deploy were bitterly disappointed. Both the ground defence of Ascension and the SHORAD defence of the Harrier FOB were efficiently provided. Arguably, both the Harrier FOB and later Stanley airport would have benefited if an RAF Regt Squadron had been specifically deployed to meet the ground defence tasks at those locations. CORPORATE brought home that the air and ground defence of airheads/FOBs raised particular problems and the task would have been better given to units specially trained in the role. But in stating this point, the key argument set out below must not be overlooked.

THE OLD LESSON REITERATED

8.44 One lesson from the campaign that was not at all new served only to reinforce what Sir Winston Churchill had written almost 41 years to the day before the Argentine surrender:

Mr Churchill's Minute to CAS 18 Jun 41 - 2nd World War, Vol 3 P689

> "All Air Force ground personnel at aerodromes have got to undergo sharp, effective, and severe military training in the use of their weapons, and in all manoeuvres necessary for the defence of the aerodromes. Every single man must be

accounted for in the defence, and every effort should be made to reach a high standards of nimbleness and efficiency."

Annex:
A. Rapier Deployment at Port San Carlos

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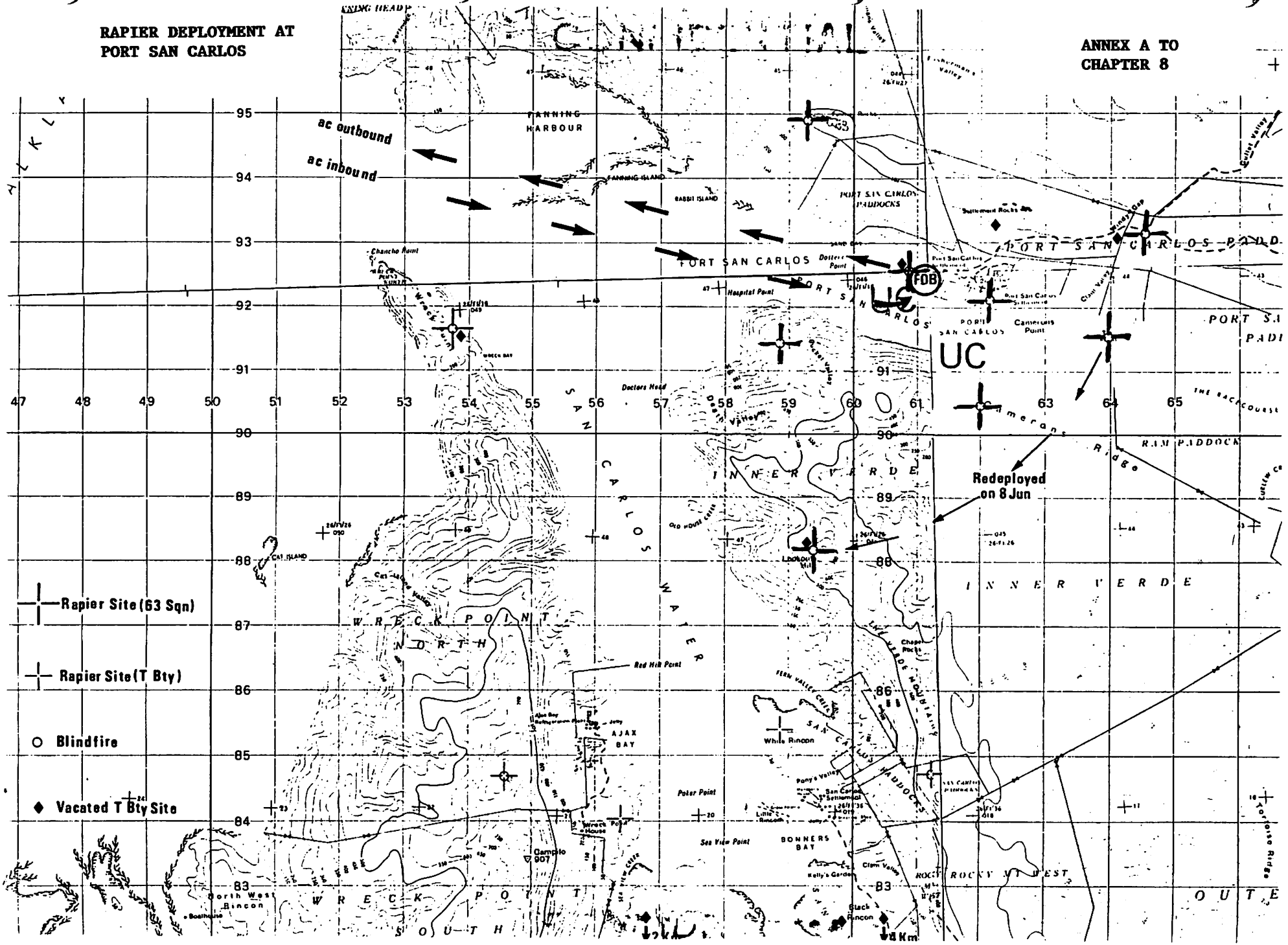
RAPIER DEPLOYMENT AT PORT SAN CARLOS

ANNEX A TO CHAPTER 8



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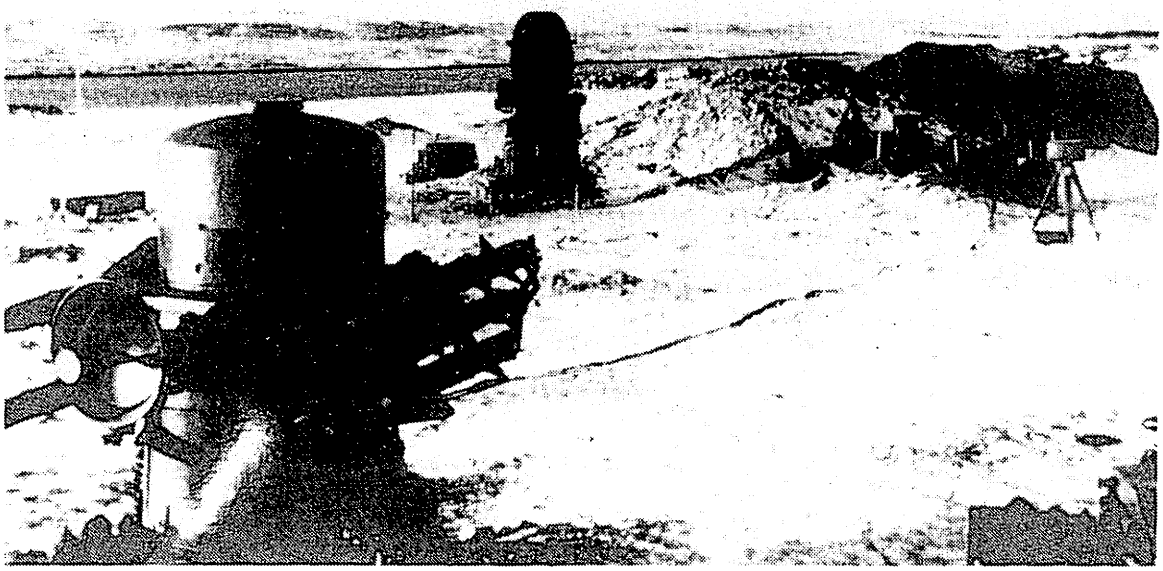
8.1. Regt section with ordnance at Ascension under the command of Flt Lt Evans.

8.2. Regt gunner, SAC Buchanan, at his firing position at Ascension.

8.3. Regt vehicles on a Mexeflote on their way to the beach.

8.4. Command Post site at Port San Carlos.



8.5. An associated Rapier position.

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CHAPTER 9

ENGINEERING SUPPORT ACTIVITIES

SUMMARY OF CONTENTS

FACING UP TO THE ENGINEERING CHALLENGE

9.1 British defence policy in 1982 required priority to be given to operations within NATO and only minimal support for operations outside the NATO area. The effects of such doctrine on the RAF had been felt particularly in the support area where economies had been such as to permit only limited support for the Task Force (TF) being envisaged. No detailed contingency plans therefore existed and though some earlier plans had contained concepts of operations they were not sufficiently detailed to form the basis of complex support planning, even if it were possible to sustain operations at that distance. Franks Report

9.2 As ideas were floated and proposals put forward for use of the RAF they implicitly recognised that the aircraft, equipment and weapons involved were intended for the NATO context and would require some modification. Thus as plans for RAF support and offensive operations became more ambitious there was a dramatic increase in the intensity of engineering support activities. This chapter outlines those measures taken to modify aircraft and equipment and to provide engineering support and also covers the specialist activities of Tactical Communications Wing, electronic warfare units and establishments, and the explosive ordnance disposal and battle damage repair organisations.

COMMAND AND CONTROL

9.3 The meeting of the Alert Measures Committee (AMC) on 5 April convened under the Director of Operations (Strike)(RAF) (D of Ops(S)(RAF))'s chairmanship was attended by Deputy Director Engineering Policy 4(RAF) (D/D Eng Pol 4(RAF)) in his capacity as Assistant Director Engineering Policy(RAF)

(A/D Eng Pol(RAF)) and he thus undertook responsibility for the AFOR Engineering Desk. As the range of information which was required about modifications and serviceability states increased, the desk's importance as a channel of communication became increasingly significant. This was particularly so as the Committee needed to keep the fluid situation under constant review so that it could anticipate problems and avoid eleventh hour measures. The AMC meetings also provided a useful forum for establishing priorities where conflict between projects might otherwise have arisen.

7 Jul CE(RAF)/2/1/167.7 E78

9.4 It was important not to bypass normal staff channels, however, and engineering staffs had to retain control of a volatile situation. Although the operation involved only few aircraft types and relatively small numbers, with so many agencies involved a confused picture could soon have emerged. Agencies at all levels from Ministry of Defence (MOD), Command and Group HQs to stations initiated enquiries in response to air staff requirements, some of which were at the very least speculative. These, in turn, frequently prompted the proposing, investigating, developing, manufacturing and installing of urgent modifications.

9.5 The AFOR organisation was essentially repeated at HQ Strike Command (HQ STC) level where, within the Regional Air Operations Centre (RAOC), the Contingency Planning and Resource Management (CPRM) cell, which included an engineer officer, provided a focal point for the day-to-day management of STC's part in the operation. This was an important link for with the majority of Delegated Engineer Authorities (DEA)s at the HQ it was important for MOD to monitor developments at formation level. Thus, in addition to his regular meetings of DEAs, the Chief Engineer (CE(RAF)) required headquarters' staffs to keep MOD informed of their DEA and general engineering activities and of options they had been asked to review. The sensitivity of some of the latter was such that direct AF Ops approaches to units were necessary on occasions but this often proved counter productive as concern and confusion could arise and headquarters' action was subsequently required. By early May, the DEAs were particularly under pressure and CE(RAF) sent a number of his own staff to reinforce them. Similar liaison was essential between certain engineering and supply specialists and from 12 May the Director of Supply Policy (RAF) (D of S Pol(RAF)) attended CE(RAF)'s meetings of DEAs and D Eng Pol(RAF) attended Director General Supply (RAF) (DGS(RAF))'s meetings of Directors.

MOD UK AIR 16 1600Z Apr DofS Pol/38/2/2/1.A E15

CE(RAF)/2/1/167.2 7 May E90

DGS/350/510 12 May

9.6 CE(RAF) was also aware of the repercussions that the flurry of special arrangements could have upon engineering support. Thus, he required DD Eng Pol 2 on 20 April to form a committee to assess the longer term implications of the operation. He was particularly concerned that the location and the nature of the air operations being supported or planned were not based upon existing arrangements. The committee was tasked to anticipate possible shortcomings in engineering support and, where possible, to eliminate constraints, addressing itself particularly to the likely effects upon Priority One commitments.

CE(RAF)/2/1/167.1 20 Apr E50

9.7 The normal subordinate position of the Gp HQs in relation to the Command and MOD was in some ways reversed by the establishment of Commander Task Force 317 (CTF317), within which the Air Officer Commanding (AOC) No 18 Gp was the Air Commander. This presented some initial command and control problems for support area staffs at the three levels. Engineering staffs at HQ 1, 18 and 38 Gps of Strike Command (STC) and in the Maintenance Group of RAF Support Command (RAFSC) were soon immersed in Operation CORPORATE activities. At No 18 Gp, a combined engineering and logistics cell was established on 3 April and the engineering staff had to be boosted by two squadron leaders from HQ STC specifically to undertake watchkeeping duties in monitoring Nimrod modifications. At No 1 Gp, key staff were recalled from Easter leave to supervise the generation and modification of Victor and Vulcan aircraft and the Operations Room engineering desk was manned continuously from 14 April by a squadron leader, with a wing commander on call. HQ RAFSC initiated the generation of RAF aircraft and RN Sea Harriers (SHAR) in store or being serviced at Abingdon and St Athan. The task of monitoring the engineering activities at stations and detached sites as well as liaising with the other HQs necessitated frequent staff visits, particularly to locations where special trial fits (STF) were being hurriedly introduced, and 24 hour manning of engineering cells was to last throughout the operation. Annex A outlines the Air Member for Supply and Organisation (AMSO)'s senior staff structure and lists the engineer officers holding senior staff appointments.

18 Gp ORB Apr

1 Gp ORB Jun

MAIN ENGINEERING CHALLENGE

9.8 Following the generation of unserviceable RAF and RN aircraft at 3rd line, the RAF's capacity to assist the Task Force (TF) was greatly influenced by shortcomings in role equipment, especially in respect of air-to-air refuelling (AAR), stand-off weapons, long-range navigation, communications and electronic warfare (EW). CE(RAF) later observed that much of the engineering story of the conflict concerned the development of ways of meeting that shortfall; a notable feature of subsequent RAF operations was that no aircraft went into the engagement zone equipped with its standard NATO fit. Furthermore, the challenging operating environment of the South Atlantic, long trans-ocean flights, the adoption of new roles or the resumption of discarded ones all contributed to the intense pace of modifications.

9.9 Operational requirements in the emergency demanded speedy response but the staffing procedures for Service engineered modifications laid down in AP100B-04 proved unacceptably slow. Hence the recourse to STFs for numerous modifications, although in some cases there were attendant longer-term disadvantages. With such a pitch of activity it was also important to relate the costs of such programmes directly to the operation and not against Air Force target headings; moreover, the longer term implications of the spares and engineering support needs of the modified aircraft had also to be taken into account. The tension of the

38G/1800/172/32/CONT E35

situation might so easily have led to muddle or oversight. MOD(Air) in applauding the success of extempore measures, for example, had to admit that confusion had indeed arisen, citing occasions such as when two separate organizations had tasked MOD Procurement Executive (MOD(PE)) or HQRAFSC with the same project. In connection with the many and various modifications outlined below, it should be noted that in order to meet the deadlines for embodiment it was often necessary to accept levels of safety significantly below normal engineering standards. It was this corner cutting which in CE(RAF)'s view led to the Vulcan having to divert to Rio de Janeiro (Brazil) still carrying a Shrike Anti Radiation Missile (ARM) and also to the tragic, fatal incident involving the inadvertent firing of a Sidewinder Air Interception Missile (AIM) on the Stanley runway (see Chapters 12).

131400Z May
STC/6000/29/2/Ops.3
E51

CE(RAF)Note 9 Oct 86

9.10 Where possible, extensive use was made of industrial resources and station engineering facilities but major burdens fell upon St Athan and the Electronic Warfare Avionics Unit (EWAU) at Wyton. St Athan's workload on the Sea Harrier and the Victor was particularly heavy but it also became involved in numerous special programmes for other aircraft. The need for additional range navigational equipment, radar warning receivers (RWR) and special communications fits on a number of aircraft threw much strain on the design and installation teams of EWAU but the mixed Service and civilian staff responded appropriately to the challenge. Pressure on component engineering facilities was similarly heavy and 30 Maintenance Unit (MU), RAF Sealand, had to intensify throughput to fulfil the Avionic Direct Exchange Scheme (ADES) commitment, but other front-line tasks were fortunately little affected.

HQRAFSC ORB Jun

RAF Sealand ORB Jun

9.11 An essential agenda item for the AMC was the priority to be accorded to aircraft generation and the next section describes the engineering activities necessary to modify and maintain aircraft and equipment to meet the needs identified by the Committee. Each aircraft type is considered in turn, whether or not it was ultimately deployed to the South Atlantic. Some aspects have already been referred to in the various role chapters but, where duplication has occurred, it has arisen in the cause of completeness of the engineering story. The aircraft priorities decided at successive AMC meetings are shown at Annex B.

AIRCRAFT MODIFICATION AND ENGINEERING SUPPORT

HERCULES MODIFICATION

MARSHALL OF CAMBRIDGE'S ROLE

9.12 The arrival of the "route activator" Hercules at Ascension Island on 3 April marked the start of a strategic airlift task which required major modification of the aircraft. The fitting of a probe to allow inflight refuelling was the most significant element in the programme and on 15 April MOD tasked Marshall of Cambridge with the

18 Gp ORB Apr

modification of Hercules XV 200 and XV 179. The company took 15 days to modify and flight test the first aircraft, which, following a series of Aeroplane and Armament Experimental Establishment (A&AEE) tests, was delivered to Lyneham on 5 May. Full Controller of Aircraft (CA) release was granted on 7 May for a probed CMk1 aircraft to refuel from a Victor K Mk2 tanker by day or night up to the aircraft's maximum all up weight (AUW). Thus, a probed Hercules supported by a single Victor on the outward leg could drop up to 21,000 lb of freight in the vicinity of the Falkland Islands and return to Ascension. The Air Staff Requirement (ASR) was initially for 8 aircraft to be fitted with the probe but the programme was extended in June to cover 14 aircraft. The modification caused some reduction in the range performance of UHF radios and Tactical Air Navigation (TACAN) avionics, particularly in the starboard sector, but the effects were not thought significant.

TF4.9 E12 14 May

CAS/73/2/1 E11 14 May

HQSTC ORB Jun

9.13 The installation of the Omega inertial navigation aid had been planned to take place as part of the 1984/85 avionic update but was hurriedly brought forward. 20 sets of equipment were obtained from Litton Incorporated and on 30 April MOD tasked Marshall with a special trial fit (STF) in Hercules XV 179; this aircraft thus became involved in a programme which included the 2 modifications and a major servicing. The installation was completed on 9 May and clearance of the servicing and installation followed a flight test at Marshall's on 12 May. The first of 14 aircraft to be equipped with the aid was delivered to Lyneham the next day.

Marshall's Account

9.14 Ways of augmenting the tanker fleet by converting a number of Hercules were examined and resulted in the initiation of a trial installation on 30 April. It involved fitting a Flight Refuelling Ltd Mk 17 Hose Drum Unit (HDU) on the rear cargo loading ramp. The first estimate for completion of the installation and CA clearance was 31 May. However, the project proved a complicated one and involved, inter alia, modification of the cargo door to accept a drogue deployment box, fitting a separate air intake to the port side of the aircraft, fitting strakes to the cargo door to reduce drag and also providing an alternative heat exchanger. Four aircraft were converted to the role between 1 May and 26 July, the first, XV 201, being delivered to Lyneham on 15 July.

RAF LYNEHAM AIR ENGINEERING SQUADRON (AES) ACTIVITIES

9.15 Marshall of Cambridge's commitment to CORPORATE was matched by that of Lyneham AES which was also heavily involved in modifying and servicing the Hercules. The squadron undertook an extensive STF programme which included the installation of ex-Andover internal long-range ferry tanks (STF/03) as part of the flight refuelling modifications, a co-pilot's radar altimeter repeater (STF/05), pilot's and co-pilot's seat armour (STF/09) and plastic-coated splinter

Lyneham ORB Apr

proof windscreens (STF/10)(1). Provision of a hand-held RWR (STF/06) also entailed the installation of an astrodome (STF/08). Similarly, the use of passive night goggles (PNG) in clandestine operations required the provision of a diffused lighting system in the cockpit.

9.16 Modifications on this scale were bound to generate pressure when coupled with the support of an intensive flying programme. Transport fleet flying time in May was 2.6 times the SD98 rate and servicings were being carried out at flying hours backstops rather than at the usual calendar intervals. Nevertheless, by dint of a great deal of effort, serviceability remained high; an important influence was the presence at Ascension of 5 multi-trained tradesmen whose task was to accompany Air Transport (AT) aircraft to destinations where limited engineering support was available. Some concern was expressed about the intensive use of the Mk1 creating a servicing backlog and HQSTC urged that greater use should be made of the Mk3 to achieve an approximate 2:1 ratio. However, the situation did not become critical and a proposal to establish a minor servicing line at Marshall was not followed up though a marker was put down that the facility might occasionally be required.

CE/2/1/167 28 May E1

HQSTC 061547Z Jul TF 23.28 E67

9.17 The fatigue consumption caused A&AEE to review the clearance conditions applied to modified aircraft and they were limited to CORPORATE operations until such time as the long-term implications could be discussed with the aircraft manufacturers. A&AEE also felt that effects on engine life of frequent power changes at high power settings had to be considered. Engineering staff at HQSTC were of the opinion, however, that any increased fatigue caused by high take-off weight would be offset by the longer sorties being flown.

A&AEE 141425Z May TF31.5 E57

HQSTC ORB May

HARRIER GR3 MODIFICATION

9.18 Following an MOD meeting on 14 April which examined the feasibility of the Harrier GR3 being modified for deck operations, Wittering's engineering staff was tasked with an intensive modification programme with the support of HQ staff and industry. The programme involved 18 modifications, 7 of them associated with the navalisation of the aircraft and 11 designed specifically for CORPORATE operations. These are described in detail in Chapter 7 and this section emphasises only the engineering and servicing implications of the programme.

MOD 161230Z Apr TF31.1 E46

RAFG/15038/16 16 Aug CE 2/1/167.9 E1

9.19 The station was tasked with modifying 12 aircraft and it interpreted this to mean that 16 aircraft would have to be prepared. The major features of the modification programme were:

Wittering ORB Apr

(1) The long-range tank fit, based on surplus Andover tanks, was a technically complex modification the importance of which is explained in Chapter 3 - Air Transport Operations.

Lyneham ORB Apr

a. To provide a facility to align accurately the Inertial Navigation System (INAS) on a moving platform to the Ferranti Inertial Navigation Rapid Alignment Equipment (FINRAE) (Mod 1496). HQSTC ORB Apr

b. To adjust the nosewheel steering to conform to RN requirements for deck operations (Mod 1058).

c. To provide the aircraft with basic AIM facility. (Mod 1497).

d. To attach tie-down shackles on outrigger legs to facilitate anchoring the aircraft to the deck (Mod 232).

e. To adjust fuel control units to match AVCAT fuel.

f. To provide drainage holes in the lower skin and weather-proofing for anti-corrosion protection in crucial airframe areas (16404 and 2945).

g. To provide an I-band radio transponder for Aircraft Carrier (CVS) controlled radar approaches (Mod 1495).

h. To fit nozzle position detentes for ramp take-offs.

9.20 To achieve modifications on such a scale whilst at the same time producing enough aircraft for crews to complete work-up training, it was necessary to boost No 1 (F) Sqn's aircraft strength which virtually doubled overnight. Both No 233 Operational Conversion Unit (OCU) and RAF Germany (RAFG) provided extra aircraft, some to be navalised and deployed and others loaned for the training task. The activity initially entailed round-the-clock working over a 7 day week at Wittering for which the Squadron groundcrew were split into 2 twelve-hour shifts but this was subsequently relaxed to a 3 eight-hour shift system. As in the case of other aircraft modification programmes, matters did not proceed entirely as planned and further problems emerged. A few days after the MOD meeting, for example, it was discovered that the jet-pipe temperature limiter (JPTL) and the SNEB rockets were incompatible with the electro-magnetic emission from a CVS. SHAR modifications provided the solution with the JPTL being replaced by a hardened version as used in the SHAR and an adjustment to allow the use of RN 2" rockets instead of SNEB; but further difficulties arose. The I-band transponder modification consumed many man hours before working satisfactorily and the hatch covers initially provided by British Aerospace (BAe) did not fit and had to be returned for readjustment.

1 Sqn ORB Apr
HQRAFG 171225Z Apr
RAF Wittering 171430Z Apr
TF31.1 E48 & 50
RAF Wittering ORB Apr
Pegasus Mod 3128

9.21 The AIM9L and FINRAE tasks were even more time-consuming. It was hoped that firing trials of the AIM9L could begin on 27/28 April but the FINRAE installation was not expected to be completed until 9 May though, with luck, a 2 May target might be achieved. The aircraft modification to accept inputs from the external FINRAE equipment, involving an input socket and wiring modification to the INAS, was estimated to be completed by 27 April; however, the external equipment consisting of a power source, an inertial platform and a digital computer required designing and manufacture from

FERRANTI 201255Z May
STC/10171/53/EC&P.6
E80

scratch and was going to take much longer. A trolley-borne system was eventually produced.

9.22 The delay of the deployment to between 2 and 4 May fortunately permitted the modifications to be completed and allowed the GR3s to meet up with the ATLANTIC CONVEYOR at Ascension; the FINRAE external equipment arrived just in time to be loaded before the ship weighed anchor. Altogether, 18 aircraft were modified and, in addition, 9 of the aircraft were provided with the AN-ALE 40 chaff and flare dispenser (Mod 1500) and Electronic Counter Measures (ECM) facility (Mod 1504). These modifications were not cleared before the first batch departed but the second wave of aircraft which deployed by means of AAR to Ascension on 29/30 May, had been modified and kits were despatched to the TF for embodiment in those aircraft already deployed. Two other modifications were introduced during May with the aim of enhancing the aircraft's ground attack capability. The first was the provision of a Laser Guided Bomb (LGB) delivery capability and the second involved the fitting of AGM-45 Shrike ARMs.

UKRAOC 231553Z May
18G/335/4/17.1 E38

UK RAOC 111448Z May
TF 51.2 E36

MOD 141800Z May
TF51.2 E72

MOD 281100Z May
TF51.4 E34

DEPLOYED ENGINEERING SUPPORT

9.23 Of the 18 aircraft modified for South Atlantic operations 14 aircraft were ultimately deployed with the TF, 4 arriving after the surrender; of the other 4 aircraft, 3 deployed to RAFG to assist in the work up of No 3 Sqn and one was on minor servicing at Wittering. Eventually, 6 of the RAFG aircraft were fitted with the naval modifications so that they could deploy to HMS ILLUSTRIOUS on 16 July to assist in its preparations for South Atlantic duties.

HQ STC ORB Jun

17 Jun
CE 2/1/167.7 E84

9.24 **Engineering Policy Afloat.** The 10 Harrier GR3s on HMS HERMES flew a total of 208 hours during their deployment (2 were available for 12 flying days and 2 for only 7 days following the second deployment - see Chapter 7) which represented an average flying rate marginally below the normal SD 98 rate. The servicing procedure for GR3 aircraft operating from RN ships was declared by Flag Officer Fleet 3 and was endorsed on 20 May by the Harrier Delegated Engineering Authority which had already on 26 April instructed that RAF servicing policies would apply until the aircraft embarked on the CVS when RN procedures would be observed. The 40 maintenance tradesmen of No 1 (F) Sqn were struggling despite the apparent advantage of operating in the carriers' self-contained workshops. It was therefore decided to deploy an additional 20 tradesmen to assist in routine servicing and turnround operations but only 4 weapons specialists were able to join the detachment before the end of hostilities.

GR3 Flying Statistics
(Held by AHB(RAF))

200905Z May
18G/335/4/17.3 E6

Wittering ORB
Jun

9.25 **Servicing Support.** Aircraft serviceability during CORPORATE was generally high with 4, sometimes 5, of the initial 6 aircraft being available each day. To have only one aircraft out of action, normally for servicing or battle damage repair and particularly when the availability of spares was a limiting factor, was a tribute to the RAF and RN servicing effort. By 31 May, 3 aircraft had been lost and another, XV789, required an engine change and by the end of the day only one aircraft was serviceable. The engine

Wittering ORB
Jun

change presented difficulties since a spare Pegasus 103 engine and other spares went down with the ATLANTIC CONVEYOR and the SHAR 104 engine would not fit the GR3; however, another Pegasus 103 had been stowed on HMS INTREPID. Though undertaken at sea, the engine change took only about 60 hours despite the diversion of the small team to turning round other aircraft and to battle damage repair. A Pegasus 103/104 interchangeability modification was cleared soon after the end of the conflict. The completion on 2 June of the Port San Carlos Forward Operating Base (FOB) by the Royal Engineers (RE) provided greater flexibility, but it was the scene of a mishap to XZ989 on 8 June when the partial loss of the aircraft's engine power and the resultant crash-landing caused CAT 4 damage. The damage proved to be beyond the capabilities of repair teams on the spot and the aircraft was used extensively for spares. At one stage there were plans to rotate the 1 (F) Sqn GR3s with those RAFG GR3s which had been navalised. However, a post-conflict survey of the deployed aircraft showed that they had stood up well to the operating environment and so the plan was shelved.

5 Jul CE2/1/167.7 E84

7 Jul CE2/1/167.7 E69

9.26 **Longer Term Applications.** Many of the 18 Harrier modifications undertaken for the Operation had long-term application. They could be grouped roughly into those which provided for ship-borne operation and those specific to CORPORATE. The tie-down ring, airframe drainage, engine wash and the electromagnetic (JPTL) modifications were made permanent features. For general operations, the hover stop, AIM9 symbology and weapon pylon modifications were also retained.

16 Jul 14 Jul CE2/1/167.8 E16 E41

VICTOR MODIFICATION

9.27 The warning order for the deployment of 9 Victors to Ascension on 18/19 April had been preceded by a short, intensive modification programme. To enable it to operate in the South Atlantic, whether as a tanker or in the Maritime Radar Reconnaissance (MRR) role, the Victor K Mk 2's navigation system had to be enhanced. An AF Ops brief on 10 April stated that the aircraft was not equipped for accurate navigation outside TACAN or H2S radar range and that the achievement of vital rendezvous (RVs) depended on improved equipment. First installations would have to be ready by 14 April in order to meet the deployment deadline.

162024Z Apr TF 9.2 E23

12 Apr TF 14.1 E43

9.28 The first of a series of feasibility studies had been initiated on 8 April when the possibility of fitting MRR Launcher Release Units (LRUs) in selected aircraft was mooted. Though the modifications eventually carried out were not as extensive as for other aircraft, the options explored were sufficient to generate very considerable engineering effort at Marham and EWAU before the first deployment.

HQ 1 Gp Engineering Diary

9.29 The Omega navigation aid was fitted into 10 aircraft and aircrews considered the fit neat, convenient and easy to operate. Its reliability and accuracy proved to be such that it became an Air Staff Requirement (ASR) standard fit for the tanker fleet after the conflict. The Delco Carousel INS was

fitted into 5 aircraft - with an additional one in the FAP at Ascension - and also proved reliable and accurate; crews had the advantage of a useful crosscheck when both systems were fitted and the navigator's task was eased to the extent of allowing him time to monitor the fuel position. To facilitate the aircraft's use in the MRR role an additional aid, the enhanced Navigation Bombing System, was provided in 10 aircraft and provided a longer range radar acquisition, extending it from 200 nm to 300 nm. The aircraft were also given a photo reconnaissance (PR) role which entailed the fitting of a variety of F95 cameras into a rig designed to fit into what had previously been the bomb aimer's window area. Where these windows had been blanked off, a transparent modification was installed to allow operation of a vertical camera and an oblique one depressed at 20° from the horizontal. The other modification which was directly related to the first Victor MRR sortie on 20 April was to provide an RWR facility with ARIs 18228/6 and 18235. They were essential for operations close to South Georgia and the Falklands but the equipments caused interference problems and were considered to be only of limited value.

4 May
IG/SASO/7/4.1
E85

9.30 Subsequently, other trial fits included the Martel Air to Surface Missile (ASM)which incorporated a new pylon electronic release unit and weapon carrier and Infra Red (IR) line scan equipment, but neither was pursued. A Sidewinder (AIM) feasibility study was also undertaken but was not followed up.

UKRAOC 301617Z Apr
TF 49.1 E86
HQSTC ORB May

ENGINEERING SUPPORT BY RAF MARHAM

9.31 The scheduled servicing routine of Engineering Wing (Eng Wg) was disrupted as soon as the Victor deployment became likely. A reorganisation of 1st and 2nd line staffs allowed reinforcement of the latter who went on to 24 hour manning; by 26 April, however, the pace of activity required additional tradesmen to be drafted in. Minor servicing turn round time (TRT) was reduced to 4 days and Majors to 30 days, and between 8 and 30 April 2 Majors and 4 Minors were accelerated. However, the flying rate during April was nearly double the normal, with round-the-clock training of Vulcan and Nimrod crews in AAR techniques and of Victor captains to give them "Receiver-qualified" status. The supply situation of the Conway engine was causing concern by the end of the month because, though Rolls-Royce had accelerated planned delivery dates, there was still no buffer available "in view of the extra hours and greater throttle movements being used".

RAF Marham ORB Apr

22 Apr
TF 23.9 E30

9.32 In May, ground crews continued to produce outstanding results with the 1st line carrying out rapid Operational Turn Rounds (OTRs) and 2nd line regularly achieving complete Minor services in 4 days, Minor Star in 6 and Minor 2 Star services in 8 days. Nevertheless, with crews achieving approximately 4½ times the normal peacetime number of sorties, in spite of continued 24 hour day/7 day week working the servicing effort failed to cope with additional servicing instructions and the need to rectify aircraft returning from Ascension. In

particular, much time was devoted to the Cat 3 repair of XL 232 which suffered structural damage when a HDU disintegrated - the result was a slight increase in 2nd line TRTs.

9.33 By the end of June the tanker force had exceeded its allocation of flying hours for 1982/83 and 7 Victors were overdue scheduled servicing. Though commendable servicing timescales were being achieved at St Athan, which completed Majors on XL 231 and XM 717 in 27 and 22 days respectively when the normal TRT was 60 days, a backlog nevertheless built up and it was necessary to establish a second Major line at the depot on 23 July.

St Athan ORB Jun 061547Z Jul TF 23.28 E67

ENGINEERING DETACHMENT AT ASCENSION (2)

9.34 Detailed engineering plans for the ground servicing party's tasks were made prior to the deployment, but problems arose from the lack of information about facilities at the Forward Mounting Base (FMB). The advance party commenced deployment on 17 April but realised on arrival that more support equipment should have been deployed and that the manpower support was unbalanced. However, immediate problems were solved before the arrival of the first wave of Victors and, an operating routine having been established, the support party applied itself to countering the major difficulties. Chief among these were a restricted aircraft parking area, climatic conditions, the effects of volcanic dust on sensitive equipment, and the absence of a parallel taxiway. (This aspect is dealt with in more detail in Chapter 2.)

9.35 By the end of April, 11 Victors were deployed to Ascension and during May the deployment averaged 14 to 16 aircraft, ie 70% of tanker assets; the figure remained at that level for most of June. A 150 strong support party was required to maintain this size of fleet and it included 126 1st Line, 16 2nd Line and 7 supply tradesmen. Because of the loss of this manpower, Marham was reinforced with Victor experienced personnel from Support Command.

Victor Detachment Report

AIRCRAFT SERVICEABILITY

9.36 With an average sortie length of 7 to 9 hours and an increased sortie frequency it proved difficult to conform to normal servicing schedules; significant extensions of servicing intervals became the order of the day. Primary servicing which was normally carried out every 25 hours was extended to 50 hours or 6 flights to reduce over-servicing and TRTs. Minor servicing extensions of up to 100% were requested on some aircraft before they returned to Marham for servicing.

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2. While each aircraft detachment deployed with its own groundcrew, ground support equipment and Fly Away Pack (FAP), a skeleton Eng Wg organisation was set up at an early stage and general functions such as refuelling, runway sweeping and so on were performed on a pooled basis.

CE(RAF) Note Oct 86

9.37 Serviceability and success rates were impressive with only 9 out of 634 planned fuel transfers failing. All in all, the serviceability of the Victor force well justified the high standard of peacetime maintenance that had provided the springboard for those surge rates of effort. When unserviceability did occur, however, the restriction on an aircraft's use was a problem. Two failure areas of note were the undercarriage oleos, which had to contend with high aircraft AUW and the need for considerable ground manoeuvring by tugmaster to align aircraft for taxying in the confined space, and the aircraft auxiliary power packs (AAPP) because of dust ingestion. The vital but aged Mk 17B HDU fortunately suffered only 3 failures which could not be rectified at Ascension. One additional difficulty was created by the build up of avionic LRUs in the Ascension to RAF Marham pipeline for it was not only expensive in aircraft space but also in time and assets lost in turn round. Eventually, Waddington provided a Transportable Air Radio Defect Investigation System (TARDIS) which arrived at Ascension on 3 June and, after modification, was operational from 9 June; it rapidly justified its presence by providing a 2nd line avionic facility for the repair of 91 LRUs between 9 and 25 June.

TF13.6 E48

Victor Detachment Report

AIRCRAFT FATIGUE

9.38 By the end of May AF Ops were expressing concern about the fatigue implications of operations at the current rates. HQ STC's response was not reassuring, for the tanker fleet had flown 1980 hours in May and had consumed 58.7 units of fatigue index (FI) which represented 2.96 FI per aircraft a month or 35 Fl a year. Peacetime consumption was normally 8.2 annually and so the CORPORATE rate was 4.3 times the normal. By the end of June the fleet leader was only 11.3 FI behind the BAe Fatigue Test Specimen (FTS) and so the Company was requested to seek ways of accelerating the testing of the specimen so that critical limits could be identified and the differential be maintained. (The ultimate life of the Victor airframe had not at that time been established). The telling conclusion, however, was that if operations continued at that pace for another year, aircraft life would be reduced by 3 years. Thus in June 1983, an aircraft that would have phased out in 1991 would be life-expired in 1988. Such reduction gave further justification for the effort being put into providing additional AAR tanker assets.

Eng Tote 041311Z
1Gp/SASO/7.4 E67

RAF Marham ORB Jun

NIMROD MODIFICATION

9.39 Though plans already existed to enhance the Nimrod's capabilities, when the conflict started it was essentially a surveillance aircraft with limited range, virtually no self defence and limited attack capability. Thus, early investigations into the use of the Nimrod MR Mk2 in providing surveillance support for the TF necessarily involved the conversion of the Nimrod force to enable it to undertake war operations in the South Atlantic. The first deployment option, postulating the use of a South American base, highlighted the vulnerability of the aircraft in an area of enemy air superiority and led to the provision of self-defence measures. As operations

RAF Kinloss ORB Apr

from Ascension got underway, however, the emphasis changed to long-range surveillance in which an anti-shipping capability would be useful. Subsequently, following the arrival of the Nimrod MR Mk2 Ps on Ascension on 7 May and the increasing use made of AAR tactics, the protection of the aircraft against air attacks in the battle zone obtained greater emphasis. Such a diversity of capability and therefore of role equipment entailed embarking upon a series of modification programmes which demanded the closest cooperation between manufacturers, contractors engineering staffs, stations and MUs.

COOPERATION BETWEEN ENGINEERING STAFFS AND BRITISH AEROSPACE

9.40 By chance, engineering and operations staffs had only just completed an analysis of future commitments. The purpose was to confirm that the servicing organization would be in a position to meet the increased servicing task following the move of 236 OCU from St Mawgan to Kinloss in April. The receipt on 6 April of a warning of a 2-aircraft deployment with, on 8 April, a further 2 put on standby for deployment to Ascension caused total reorganisation of the servicing plan. The onset of a complex series of modifications, commencing with the Sting Ray torpedo capability, caused the reduction of flying commitments to the minimum. The Kinloss Aircraft Servicing Flight (ASF), with the assistance of the Nimrod Major Servicing Unit (NMSU) and the Contractor's Working Party (CWP), embarked upon a crash programme of scheduled servicing over the Easter period. To reduce down-time to a minimum, some servicing content was reduced and the opportunity was also taken to tone down 5 aircraft in the new hemp paint scheme. Normal shift working increased from 45 to 56 hours and ASF completed almost double its average monthly manhour effort; the NMSU and CWP also produced some 7000 manhours in support. By this means, 10 aircraft were serviced in drastically shortened timescale and operational flexibility was restored.

9 Aug KIN/20/135/Air

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Kinloss ORB Apr

9.41 Such a crash servicing programme was not pursued in isolation for it coincided with many other developments. At that time, for example, the number of Nimrod aircraft available for operations was limited by the programme of converting the Mk1 to Mk2 which was underway at BAe Woodford. Moreover, the commencement in quick succession of elements of the multiple modification programme together with the generation of aircraft for aircrew training purposes occurred when engineering staff were hectically preparing a massive Unit Air Staff Table (UAST) and FAP - when completed, the pack-up and personnel required airlift to Ascension by 9 Hercules and one VC10. Thus, from 19 April to the end of May, with a detachment of between 2 and 4 aircraft at Ascension and the engineering activities at Kinloss and BAe Woodford, the UK Nimrod MR MK2 strength averaged only 6.7 aircraft. Nevertheless, the introduction of a 3 team extended-day shift system of 18 hours helped to mitigate the effects of such inroads and the flying hours generated for the fleet enabled it to exceed the SD98 rate of 1026 hours per month in April and reach 1433 hours in May. In fact,

Kinloss ORB May

flying hours in May in support of CORPORATE alone almost matched the monthly rate.

9.42 Accelerated and multiple modification programmes on a limited number of aircraft obviously caused planning problems. Most careful engineering management of aircraft and resources as well as thorough dissemination of information had to be exercised. One particular difficulty, for example, was the constraint on the numbers of tradesmen at Ascension which impeded the detachment of specialist avionics servicing personnel whose presence would have been vital if all equipment options had been utilised.

THE MODIFICATION PROGRAMME

9.43 **The Sting Ray(Mod 450), AAR(Mod 700) and OMEGA(Mod 3005) Programmes.** To enhance the aircraft's capability against Argentine submarines, the station was instructed on 7 April to prepare an aircraft to launch the Sting Ray torpedo. The first two aircraft selected for the fit were XV 238, which was already at BAe Woodford on the MK2 conversion programme, and XV 232, which was flown there from Kinloss on 19 April. By this time, it had been decided that Sting Ray equipped aircraft were to have refuelling capability (Mod 700). On a staggered programme, XV 229, 230 and 227 were also fed into BAe and a successful trial was flown on 20 April. By the end of April the first three aircraft had returned to Kinloss. Throughout May, work continued fitting further aircraft with the Vulcan refuelling probe (linked to the aircraft systems by means of ordinary fuel bowser hosing) and the Sting Ray launch facility. By 31 May seven Nimrod Mk2 had returned to Kinloss and were operational - their numbers were XV 238, 232, 230, 227, 243, 254 and 255; XV 234, which remained on the Mk 2 conversion programme, had also been modified. Another feature of this programme was its linking with Mod 3005, the installation of Omega navigation equipment, which had already been funded for six aircraft as part of the Mk2 programme. From 11 May all three modifications were carried out concurrently.

STC ORB Apr - Jun

9.44 **Self-Defence Modifications.** A demand for supplies of chaff cartridges on 8 April was an early indication of the decision to provide the aircraft with some form of self-defence facility. As an interim measure, A&AEE was requested to clear the use of an IR Verey pistol as a decoy dispenser. Meanwhile, the Command Engineering Development and Investigation Team (CEDIT) pursued the idea of fitting the Vulcan chaff dispenser and Tracor ALE 40 IR decoy dispenser into the aft pressure hull of the Mk2. On 30 May A&AEE reported that the 1½in IR cartridge had not been cleared because its low ejection velocity was a potential hazard. CEDIT was formally tasked on 3 June to carry out the trial installation of the IR/Chaff dispenser. Its report on 30 June contained mixed results. The chaff dispenser jammed during its first test run and further work on the installation was necessary. However, the IR decoy device worked successfully and the operational aspects were fulfilled in that few flares were needed to mask the aircraft's position. In the event, the Central Tactics and

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KIN/20/135/Air
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Trials Organisation (CTTO) recommended that both IR decoys and chaff should be fitted. Another recommendation was that both pilots and beam look-outs should be provided with IR decoy firing switches and that the capability be provided for IR decoys and chaff to be fired simultaneously because missiles automatically detonated on flying through chaff. It so happened that a previously proposed self-defence modification was a feasibility study into the fitting of RWR to assist in triggering decoys and chaff using the ARI 18228. EWAU started the study on 7 June but, on 14 June, it reported that the equipment was not cost-effective to install since the removal of the ARAR/ARAX was necessary and the new installation would still not intercept J band radar transmissions. The quick-fit RWR solution was therefore discarded. Following the interception of radar emissions from an Argentine Boeing 707 by an unarmed Nimrod, it was decided to provide the Mk2P with an active defence facility; on 14 May MOD gave the go-ahead for a trial modification (Mod 704) to install AIM9 Sidewinder. Despite problems in obtaining training rounds and special tools, the programme culminated in a successful firing at Boscombe Down on 27 May. MOD approved the modification on 1 June for eight Mk2Ps to be equipped with AIM9G missiles - the more advanced 9L version was not made available since it was in short supply. The first AIM9G-equipped Nimrod deployed to Ascension on 5 June.

STC ORB Jun

18 Gp Diary of Events - Jun

9 Aug KIN/20/135/Air Misc Reports

9.45 **IR Imagery (STF081).** IR equipment was under development for another application but on 24 April two sets of equipment were made available for installation into the side observation windows of two aircraft as Sideways Looking IR (SLIR) facilities. The equipment was deployed to Ascension on 7 May but it proved to have limited operational value in the Nimrod environment and in the sortie profiles flown; furthermore, it created additional servicing complexities and on 16 May the modification was cancelled and removal of the equipment was required.

18 Gp Diary of Events - Jun

STC ORB Apr

TF33.5 E82

9.46 **Heavy Weapons against Surface Targets.** The feasibility of a surface attack role for the Nimrod was mooted early in the Operation and first thoughts turned to the Martel ASM. However, Martel wiring had unfortunately been removed during the Mk2 conversion and it was considered impracticable to re-instate it. On 19 April STC Eng 22 examined the possible manufacture of bomb bay panniers and the manufacture of 4 was approved on 20 April, the first of which was fitted by 17 June. CA release for the delivery of 1000 lb/1000 lb Retard bombs and of BL 755 CBUs had been received on 26 April though a shortage of link units affecting the use of bomb sights delayed the trials (3). Mod 5040 covered a variety of options and involved collaboration with the Central Servicing Development Establishment (CSDE). The modification of AV 286 carriers and the production of schedules and training packages for air and groundcrews on

RAF Swanton Morley ORB - May

(3) A&AEE's design and production of a simple bomb sight in a matter of days was an outstanding example of a series of improvisations which in the event were not used.

the delivery of heavy weapons were among the tasks commenced on 4 May. At that stage a mix of 1000 lb bombs and Mk46 torpedoes was envisaged but because of political sensitivity heavy weapons training was suspended on 7 May.

9.47 **Harpoon (ASM) Launch Capability (Mod 703).** This decision coincided with the announcement of the results of a BAe study into the carriage of Harpoon missiles which concluded that the stowage of a missile was possible. The modification programme to provide a Harpoon launch facility for anti-shipping tasks had begun on 13 April and it culminated in a successful firing on 11 June, CA approval being given the next day for the carriage, release and jettison of up to two Harpoon ATM - 84A missiles. The release recommendations covered internal carriage within the bomb bay in conjunction with three Mk46 or Sting Ray torpedoes. With the assistance of the US firm, McDonnell Douglas, schedules for testing, loading, servicing and safety procedures were prepared, tested and issued. The firm also helped in devising a lead-in training programme for A Tech W and A Tech E tradesmen. An initial batch of eight missiles was eventually delivered on 29 June and tested and accepted by Kinloss on 30 June. The ASR was for eight aircraft to be capable of launching the missile and the first aircraft selected was to be fed into BAe on 1 July. To ease the problem of making aircraft available for the programme, a recommendation that the Harpoon launcher should be fitted to AIM9 modified aircraft was approved. This created a requirement for modification of the armament electrical system (Mod 705).

DD Ops M/22/15 26 May TF33.6 E39

18 Gp Diary of Events Jun

9.48 **Fuel Weight Limitations.** Such multiple additions to the aircraft's capabilities were not achieved without penalty. It was perhaps inevitable that Kinloss would at some stage have to report the identification of a potential problem associated with increase in zero fuel weight (ZFW) limitation which was set at 104,000 lb. The station diary for 12 May noted that the Mk2P weight was reaching critical scale. However, the operational advantages of the Harpoon/ Sidewinder configuration were thought to outweigh these difficulties provided that some restriction of the stores/fuel load was acceptable.

9.49 **Effect Upon the Mk2 Conversion Programme.** At the end of CORPORATE, the DEA assessed that these modifications, many of which had required major BAe involvement, had imposed a 2-3 month delay on the Mk2 conversion programme. However, the conversion of the last three MR Mk 1 aircraft had been authorised and purchase of modification kits and long lead items had been progressed. The use of an overtime working schedule was expected to enable BAe to meet the original deadlines and, in the event, the delay proved insignificant.

VULCAN MODIFICATION

9.50 DD S Pol 8 warned the AMC on 13 April that on current plans all Vulcans would be withdrawn from service by 1 June. Later that day, the disposal of Vulcans was suspended, but

AFOPs TF22.1 E17

the decision to use the Vulcan when its withdrawal from operational service was imminent necessitated a rapid return to use of numerous equipment items; chief among these were the in- flight refuelling systems which had not been used for years. The disposal of aircraft and spares as scrap was halted and the subsequent heavy demand for common user items such as flight refuelling probes proved what a wise precaution the measure was to be.

CE(RAF)/2/1/167.1 E22

STC 121030Z May 1G/SASO/7/4.2 E3

AAR CAPABILITY

9.51 The re-conversion of 10 aircraft to accept in-flight refuelling was the first major task and it was achieved over the Easter weekend 9-11 April. The conversion consisted of replacing sealed non-return valves with unsealed items and servicing and testing probes and nozzles which in some cases had been long out of use. Waddington acquired a probe bay during May which catered not only for its own needs but also serviced and supplied probes for BAe Woodford and Marshall of Cambridge. The probes which had been removed from scrapped and serviceable Vulcans were required for installation in Nimrod and Hercules aircraft.

RAF Waddington ORB Apr

RAF Waddington ORB May

9.52 The receiver modification did not proceed without a hitch, for difficulty was experienced with fuel spillage during transfers. Three minor modifications were introduced to overcome these problems on aircraft XM 607, XM 597 and XM 598 - STF 231 consisted of a colander fitted to the AAR probe, STF 233 was the provision of a gutter below the pilot's windscreen and STF 234 involved the fitting of a series of 12 vortex generators on the nose of the aircraft.

9.53 Certain electrical engineering modifications also proved necessary and were fitted during a hectic April. ARI 23120, a UHF/Direction Finding (DF) fit, was installed and the twin Carousel INS enhanced the aircraft's facilities; since the Victor already used the equipment, Marham and EWAU personnel conducted the Trial Installation (TI) and assisted Waddington in completing subsequent fits. The EWAU was also tasked to examine a possible Omega fit but, whilst it would be feasible, installation could not be achieved within an acceptable timescale and so the project was shelved.

Marham ORB Apr

TANKER CONVERSION

9.54 Because of the pressure upon the Victor K2 fleet the decision was made in April to examine the provision of extra air refuelling capacity by converting a number of Vulcans to the tanker role. The installation of the Mk 17 HDU used by the Victor was authorised as MOD 2600 and the initial design work was started by BAe Woodford in late April. The design involved fitting the HDU in the ECM compartment to the rear of the bomb bay. Three fuel tanks would give a capacity of 96,000 lb compared with the 109.000 lb capacity of the Victor (with take-off fuel limitation). XH 561 was selected as the trial aircraft and it flew to Woodford on 4 May. Authority in principle for the conversion of 6 aircraft was issued on 8 May and the other 5 aircraft (XH 558, XH 560, XJ 825, XL 445 and XM 571) were detached progressively for the purpose. The

MODUK PE 070905Z May 1G/SASO/7/4.1 E110

TF4 E12 14 May

CAS73/2/1.13 E11

ASMA 040519Z TF 49.2 E34

first test flight took place on 18 June but proved only partially successful and the release to service limited the aircraft to daylight operations only. No 50 Sqn received its first Vulcan K Mk 2 for work up on 30 June and four more were delivered in July; when BAe released the sixth aircraft in August the Vulcan K2 fleet was complete and ready to fulfil the plan to retain it until the end of 1983.

VCAS 91145 25 May
DofSPol/38/2/5 Pt A
E21

ECM IMPROVEMENTS

9.55 Enhanced ECM capabilities were necessary to counter the Argentine radar threats expected around the Falklands. The first project was initiated on 19 April and was to fit a Westinghouse AN/ALQ-101 ECM pod (ARI 23234) to the old Skybolt (ASM) missile mountings on the wings of some Vulcans; it was hoped to attach the pod by means of a pylon adaptor. By chance, the task was facilitated by the existence of pipes along the starboard wing which had previously been used to convey coolant to the Skybolt installation. Thus, connecting wires could be fed from the bomb bay along this wing to just forward of the ECM pod. With the assistance of the Honington Electrical Eng Sqn, work on the installation began on 20 April when XL 391, which was undergoing minor servicing, was fitted with a prototype which proved successful. Following the design and manufacture of an improved pylon, the modification (STF 232) was installed in XM 597 and was successfully flight tested on 22 April; by 24 April two further installations were made and fitted to XM 607 and XM 598.

IG/SASO/7/4.2
E19

STC ORB Apr

RAF Waddington ORB Apr

WEAPON FITS

9.56 As explained in Chapter 6, an ASM missile was needed to attack the Argentine TPS 43 radars and the ECM project was quickly followed by an investigation into the suspension of a Martel ARM on the port Skybolt mounting point. The Eng Wg once again designed a pylon which received BAe approval and it was manufactured locally from angle iron. On this occasion the Martel Servicing Support Unit from Marham assisted in connecting up the system. The installation (STF 235) was fitted to XL 391 and a successful firing took place at Aberporth under A&AEE Boscombe Down supervision. The aircraft selected for CORPORATE were duly fitted with the pylon but the missile was not used operationally because emphasis was later placed upon the use of the AGM-45 Shrike ARM.

A&AEE 052045Z May
TF 31.3 E96

9.57 There was another possibility to be examined in the meantime. HQ STC believed that the French Air Force had a radar head which covered the relevant range of 8400 to 10,000 MHZ. This was soon discounted, however, and using the Martel wiring on the port wing and the ECM pod wiring on the starboard wing, a trial installation (STF 237) proved the feasibility of carrying and releasing the AGM-45 Shrike missile. A special loan of a missile from the USAF base at Spangdahlem was arranged through the US Defense Department and the HQ USAFE; experts from the US Design Authority, China Lake, and US military technicians assisted in the trial fit on XM 598. St Athan had meanwhile manufactured an improved

10 2350 Z May
STC/6000/29/2/4/Ops
E14

F6(Air)2/180/664/7
E33 & E134

pylon made of aluminium alloy which was one-third of the weight of the Waddington version and more streamlined. A&AEE once again monitored the trials which culminated in a successful firing on 26 May at a Red Steer radar mounted on a barge in the Irish Sea. MOD decided initially on a twin Shrike fit but later resolved to use a four Shrike option with two missiles on each pylon.

9.58 Early work on the trial fit of the Paveway LGB had started in April but was not finished until May; XM 654 took part in trials at RAE West Freugh from 19 to 25 May under A&AEE supervision. In the final trial three LGBs were suspended in the centre mountings of the bomb bay with an empty rear tank fitted - a forward tank was not fitted because of the missiles' protruding radar heads. CA release was given for the delivery of up to three 1000 lb LGB, but the project was held in reserve as an option for future use.

MOD UK
182050Z May
TF 14.2 E43
MOD UK PE
26115Z May
TF 31.7 E55

9.59 A similar feasibility study was carried out during May into the installation of the AIM 9G Sidewinder using the recently-installed Martel pylon and wiring. Though the installation was successful, the project was not taken further during the Operation.

ELECTRICAL ENGINEERING MODIFICATIONS

9.60 The adaptation of the Vulcan to operations in the South Atlantic also involved a number of electrical modifications. Some were prompted by the experience of crews who had taken part in Exercise RED FLAG held in Nevada in February 1982. The most important were the fitting of modified Heading Reference Units (HRU) to give a smoother and more accurate heading input into the Ground Position Indicator (GPI). To provide Mode 1 and 2 operation a second ARI 18076 was fitted with a modified control unit and Type M55 aerials were fitted to the ARI 18146 to provide directional jamming. Also, triple offset facilities were fitted to the Navigation and Bombing System (NBS) and a duplicate Radio Altimeter Mk 7 indicator was provided for use by the co-pilot.

STC ORB Jun

EFFECTS UPON ENGINEERING SUPPORT AT ASCENSION

9.61 The variety of weapon launch options arising from the modification programme was to present engineering support staff at Ascension with difficulties. The preparation of 1000 lb bombs and of Martel (ASM) missiles, for example, required different types of expertise and CBFSU's senior staff took some convincing that tradesmen capable of one role were not competent to fulfil another - the situation was aggravated on 9 May when a team of BL 755 armourers arrived expressly to upload/download Cluster Bomb Units (CBUs). CBFSU's primary concern arose from the desperate shortage of accommodation for personnel, but accommodation on the pan was also critically limited and when it was realised that Martel-armed Vulcans had to be parked on safe heading much tactful negotiation with the Nimrod detachment preceded the rearrangement of its aircraft.

S Eng O's Diary

9.62 A period of hectic activity arose from aircrew suspicions that the Martel pylons were causing excessive drag - a 10% increase in fuel consumption had been recorded by XM 612 on 14 May. This was discounted after a 5 hour trial at Waddington indicated only a 1% increase in consumption. XM 607 arrived on 15 May and though an under-reading of its No 1 port tank was noted it was not as serious as that of XM 612. The ground staff undertook a thorough test of the latter by defuelling it and then checking bowser offtake figures with tank readings during refuelling. The conclusions were that total contents were being under-indicated by about 1000 lb and so no further action was needed. XM 612 seemed fated for on 18 May when receiving fuel from a Victor tanker its probe was damaged and the subsequent repair was unsatisfactory. The aircraft eventually returned to Waddington on 23 May without undertaking a mission.

141837Z May
IG/SASO/7/4.2 E26
TF 9.3 E40

S Eng O's Diary

HELICOPTER MODIFICATION

9.63 The preparation of support helicopters (SH) for Falklands deployment involved Odiham in the examination of a series of special fit options, some of which, though successful, were not subsequently followed up. The helicopters concerned were the Chinook and Puma and the majority of modifications were undertaken at the station and by EWAU. On a lesser scale, some engineering support was provided for RN Wessex and Sea King and the RAF Sea King deployed to Ascension.

ENGINEERING SUPPORT OF THE CHINOOK

9.64 The Air Staff Requirement (ASR) for the Chinook included special fits for up to 10 aircraft to be equipped with RWR (ARI 18229) in both nose and tail (4) The RWR installation was developed at EWAU in 3 days with a team of tradesmen working on the aircraft and a draughtsman/designer, with all of his equipment, working alongside. The work progressed smoothly and the first 2 radomes for the T1 were cast on specially made moulds by SSU Woolwich in the space of one night. Two aircraft, ZA 716 and ZA 718 were equipped and cleared by the end of April. Additionally, up to 6 aircraft were to be adapted to carry internal fuel tanks and for the provision of 3 sets of general purpose machine gun (GPMG) fittings for the waist hatch stations. The installation of ex-Andover ferry tanks was discussed at a meeting at Odiham on 10 April and work on the internal fitting of tanks and associated fixtures started immediately. By the end of the month 5 aircraft had been equipped (ZA 706, 707, 716, 718 and 719) and this had involved 6 hours trial flying. Further aircraft were equipped during May to provide a second batch and station engineering staff also designed and manufactured an improved manual reversion system in case of ferry tank transfer failure.

STC ORB Apr

RAF Odiham ORB Apr
DDOps EW&R 16 May
TF14.2 E41

(4) The RWR task was fulfilled by EWAU, with technical support from Odiham under SRIM 4052 and the activity is described in the EW section of this Chapter.

STC ORB Apr

9.65 The installation of the GPMG proved a more complex task and involved the CEDIT staff in a number of visits to A&AEE and to St Athan for trial firings and the production of port and starboard mountings respectively. During May, the design of an aft-firing system was completed and ramp mounting kits were despatched to the TF. RAF Odiham ORB May

9.66 The aircraft had also to be equipped with enhanced navigation aids and the Air Commander suggested that the compact Carousel could speedily be fitted whilst the Chinooks were at Ascension. However, it was decided to equip them with the Litton 211 Omega system and 4 aircraft were completed within 4 days of tasking. Other enhancements were the modification of a rescue hoist and of the Chinook power supply to allow the Harrier to use it as an auxiliary power unit (APU) for start up. For self defence, the use of IR cartridges fired by Verey pistol was considered but was superseded by the fitting of M-130 Chaff and IR flare dispensers. HQ 18 Gp 231955Z Apr TF31.2 E63 RAF Odiham ORB May HQSTC ORB Jun

9.67 Special preparations had also to be made for the transit by container ship. Chief among them were the development of a local scheme to proof against salt water corrosion and the manufacture of tie down adaptors and blade racks. The on-board movement of aircraft had proved difficult during the first deployment and 3 mechanical handlers were modified in June to assist during the transit of the garrison engineering support detachment which embarked on 19 June. RAF Odiham ORB Jun

9.68 The assembly of ground support equipment and items for a 400 hour FAP caused some difficulty. Austere initial spares provisioning, resulting from the manner in which Chinook had originally been procured, was to give rise to many shortages which were later aggravated by the loss of special tools and cockpit instruments on the ATLANTIC CONVEYOR. Furthermore, the examination of a variety of deployment options entailed extensive robbing of other aircraft. The shortages were such that on 11 May it was agreed that the support pack at Ascension would form the basic FAP for the garrison detachment for 45 days at 600 hours a month; UAST details were required by 16 June. UK elements of the FAP were to be embarked on MV MYRMIDON at Middlesborough ready for departure on 1 July. HQSTC ORB May STC 110822Z Jun TF23.23 E53

ENGINEERING SUPPORT OF THE PUMA

9.69 Though the Puma was not eventually deployed with No 5 Brigade (Bde), much engineering effort went into the identification and preparation of aircraft for Operation WELSH FALCON and for the South Atlantic deployment.

9.70 Eleven Pumas were needed to meet the Bde training and deployment requirements and would require some modification. However, an A&AEE report came out with stringent weight and operating parameters and cautioned against the helicopters' operation from other than a CVA or LPH type ship because of its high Centre of Gravity (C of G) and possible damage to flying controls during rotor starts in severe conditions. A&AEE 261540Z Apr TF41.2 E4

This undoubtedly led to the decision not to deploy the Puma with the Task Force, though, as has been explained in Chapter 3, the circumstances were not clear at the time.

9.71 However, its deployment in the longer term was being planned and in mid May MOD initiated an EWAU study into the feasibility of an RWR fit, acknowledging that STF procedures would be permissible if abbreviated Service Radio Installation Modification (SRIM) procedure was thought inappropriate. On 19 May, MOD linked in the same timescale as the RWR project a similar proposal for the Tracor M130 Chaff and IR decoy dispenser. The RWR task was carried out at EWAU on ZA 937 and the feasibility report was favourable; the modification was duly completed and the aircraft returned to Odiham on 2 June. The station had in the meantime been engaged in the modification of the Puma for shipborne operation. Tasks included the examination of a blade-fold capability, tie down facilities, assistance to manufacturers making transit bags and the manufacture of undercarriage gags. However, the aircraft was never deployed on CORPORATE duties.

141458Z May
TF41.3 E31

EWAU WYTON 190758Z May
MODUK 190850Z May
TF31.6 E36 E34

RAF Odiham ORB Jun

RAF Odiham ORB May

SEA KING MODIFICATION

9.72 The Finningley Eng Wg included among its tasks the 2nd line support of the numerous Search and Rescue (SAR) detachments in the UK and it therefore played an important part in preparing the Lossiemouth Sea King, XZ 593, for its air deployment to Ascension. The aircraft arrived at Finningley on 29 April and departed in a Heavylift Ltd Belfast on 8 May. The avionics servicing bay was also involved during April in the repair of RN Sea King engine temperature controllers. The assistance continued during May when avionic repair and testing facilities for servicing Wessex and Sea King were provided for 14 MU Carlisle. XZ 593 remained remarkably serviceable throughout its operations at Ascension despite the intensity of flying activities and the tropical climate. When unserviceability did arise, its duration was sometimes determined by the wait for spares from the UK, but the holdups were not significant.

202 Sqn ORB Apr

RAF Finningley ORB May

9.73 The station also became involved in the preparation of the 3 helicopter detachment for garrison support, working in close conjunction with EWAU and C Flt from Coltishall. The aircraft were repainted in a dark sea grey scheme prior to their departure on the MV CONTENDER BEZANT on 7 August.

202 Sqn ORB Aug

MODIFICATION OF THE CANBERRA PR7 AND PR9

9.74 Proposals to explore the employment of the Canberra in PR operations around the Falklands received Secretary of State (S of S) approval on 8 April and it fell to Wyton to undertake the task of preparing the Canberra PR7 and PR9 aircraft for operations in that area. Four weeks of intensive Eng Wg activity ensued.

MO 5/21 8 Apr
CAS 73/2.2 E31

9.75 Because the Canberra PR7's photographic reconnaissance role had lapsed in January 1982, its role equipment had been returned to supply depots or scrapped. Thus, it was first necessary to establish whether the equipment could be retrieved for re-installation. Investigation showed it possible to refit 3 aircraft with equipment recovered from the Reconnaissance Sensor Servicing Flight, 30 MU Sealand. The retrieved equipment was fitted (5) to each aircraft following a Primary Servicing. A hand-held RWR facility was connected to the pilot's headset and a third seat (Rumble Seat) was installed in each aircraft. The equipment was successfully flight-tested but the aircraft were not subsequently deployed South. RAF Wyton ORB Jul

9.76 By mid April the MOD Ops EW and Recce sponsored task for 2 PR9s to be prepared for South Atlantic operations presented engineering staff with 2 main problems. The aircraft had first to be given the range to reach the operating area and, once there, the ability to operate in the expected EW environment. With BAe and DEA assistance, station engineers succeeded in developing the following special modifications which made the detachment of two aircraft possible. STC ORB May RAF Wyton ORB Jul

9.77 **Fuel Tank Modification.** Initial studies involved the fitting of Hunter 100 and 250 gallon drop tanks underwing but, when it was realised that the wing hard points would be required to carry other equipment, the possibility of fitting a tank in the flare bay was examined. A Canberra TT 18 bomb bay tank was shortened by about 13 inches and then fitted to a modified flare beam before installation in the PR9 flare bay. A fuel feed system, operated from a control panel at the navigator's station, delivered fuel from the flare bay tank into the fuselage tanks. After a successful flight test, 2 systems were manufactured and installed, giving the aircraft an extra 270 gallons of fuel. STC ORB May

9.78 **Fitting a Chaff Dispenser.** It was decided to fit a chaff container and stripper unit into the PR9's rear vertical camera position, with a chaff dispensing chute replacing the camera mounting. Chaff dispensing speed was controlled at the navigator's station. The first flight test showed that it was necessary to create a suction in the dispensing chute; a chute extension was fitted and achieved the desired effect in a second test. This was followed by a successful training sortie against a Lightning interceptor and the subsequent despatch of 2 sets of equipment to the detachment site where they were installed on the aircraft.

9.79 **Provision of an ECM Pod.** The fitting of BAe supplied wing pylons was the first stage in equipping the PR9 with an underwing ECM pod but, unfortunately, the aircraft's electrical system could not provide the pod with the necessary power. After examining the possibility of fitting

(5) The fit consisted of 3 x F95 (low level tactical), 4 x F58 (20" focal length), port facing oblique F52 (48" lens) and vertical F49 (6" lens) cameras.

a ram air turbine (RAT) generator, the DEA proposed the purchase of a Dowty Rotol RAT which was designed for continuous operation. Engineer staff designed and produced a suspension system for the RAT which was then fitted to the underwing hard point opposite that of the ECM pod. Once again, a control facility was provided at the navigator's station, though wiring connection through the static inverter instrumentation allowed the pilot also to monitor frequency and output. The system was proved during a series of flight tests. STC ORB May

BUCCANEER MODIFICATION

9.80 One of the earlier options considered by AF Ops was the use of the Buccaneer in various anti-shipping and mainland target operations but it was not pursued. Later in the conflict, plans were made to deploy 4 aircraft with the associated spares and tools pack-up to form part of the future garrison. However, it was its possible use in the reconnaissance role which prompted DD Ops E W and Recce (RAF) to initiate feasibility studies into providing the aircraft with an Infra Red Line Scan (IRLS) capability. TF9 4 Apr TF41/1.1 E12 12 Sqn ORB May

9.81 Engineering staff at HQ STC suggested 2 options which would utilise in-service equipment. The BAe series 201/212 IRLS equipment used in Northern Ireland operations would meet the air staff requirement. Fitted to either the Vinten Vipor or Vicon 70 reconnaissance pods - both had standard NATO attachment lugs and were cleared to Mach 0.95 at sea level - the modification would be ready in 7 to 10 days. The BAe 401 IRLS equipment would also meet the requirement - it was currently fitted to the Jaguar reconnaissance pod and could be made available in 2 to 3 weeks. STC ORB May

9.82 The provision of long-range fuel tanks was associated with the IRLS studies and another study involved the carriage and delivery of the Paveway LGB. Though none of the options was eventually taken up during the conflict, the examination of ways in which the Buccaneer might have a useful role in CORPORATE was to give specialist desks at all levels a far from relaxed time. IG ORB May/Jun

LIGHTNING AND PHANTOM MODIFICATIONS

9.83 Planning for a 12 aircraft element to provide AD for the Falklands garrison started in April and involved some modification of the Phantom. As the conflict developed, the increasing importance of the FMB also occasioned plans for the air defence of Ascension and both the Lightning and the Phantom were considered for the task. UKRAOC 071731Z May 11G/5100/5/1/AOC E1

9.84 The possible deployment of the Lightning to Ascension led to the generation of 6 FMk6 aircraft in the over-wing tank fit. Binbrook continued to hold 4 aircraft in this configuration and all remaining FMk6s were checked for system serviceability in the course of scheduled servicing. An STF with a target completion date of 10 June was also initiated to adjust the cockpit lighting to allow night goggles to be used. The STFs were duly prepared for revision CTF 317 18141Z May 11G/5100/5/1/AOC E6

of cockpit lighting in one T Mk5 and one F Mk6 aircraft. However, despite favourable engineering factors at the UK end, the aircraft would have created many operating difficulties at Wideawake Airfield and so the Air Commander subsequently decided not to deploy the Lightning to Ascension. Instead, he requested 11 Gp's agreement to the deployment of 3 Phantoms in the AAM/gun fit (6).

CTF317 181412Z May
IIG/5100/5/1/AOC
E6

9.85 As part of the preparations, the Radar Reliability Programme, ECP 152(UK), was switched from Leuchars to Coningsby on 29 April. Plans were made to increase the modification rate from 2 to 5 systems for a period of 4 weeks, and 13 aircraft and the Air Portable Avionic Workshop (APAW) had been modified by the end of May.

HQSTC 211353Z May
TF31.6
E97

9.86 A short list of 15 FGR2 aircraft was selected and the aircraft were assembled at Coningsby during May, their preparation dominating the work of the station during the period. The process was complicated because engineering and supply staffs were simultaneously preparing for the early deployment of a small detachment to Ascension and, in the longer term, for the garrison deployment. Having been warned of the possibility of the Ascension detachment at the end of April, 29 Sqn and station supply and engineering staff began to assemble a FAP but, even as late as 17 May, HQ STC was requesting details of the total manpower support required for a 4 Phantom detachment to Ascension given 30 days' operations without re-supply. Phantom STF 5/82 to adjust cockpit lighting when using PNGs was initiated in May and trials were carried out in the rear cockpit only. At HQ STC's request, however, a further trial took place at Ascension to clear the front cockpit and the STF was duly amended. Other preparations involved St Athan workshops camouflaging XV 484/C, XV 468/W and XV466/E in the 3 tone grey scheme prior to the deployment.

Coningsby ORB May

171550Z May
IIG/5100/5/1/AOC
E4

211442Z May
TF 31.7 E4

STC ORB May

9.87 While this was underway, the 11 Gp engineering staff had been resolving UASTs for the support of the future garrison detachment, and engineers and suppliers at Coningsby were proceeding with the build up of support arrangements. Included in these preparations was a design investigation into the fitting of AN/ALE 40, but the installation was actually undertaken by a civilian working party at the station. The other significant modification, the provision of a fuel tank liner (Mod 698), had been planned for embodiment within 2 years but the programme was brought forward and commenced in June. The deployment to the Falklands eventually occurred on 17 October.

DD Ops(AD)/2/8/1
TF 14.2 E29

Coningsby ORB Jun

STC ORB Jun

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(6) A related deployment was that of the AD radar to Green Mountain - its preparation, transportation and siting were formidable problems and its maintenance was not without difficulties. Similarly, mention should be made of the radar convoy prepared by RAFSEE at RAF Henlow which formed the basis of the Falklands garrison radar site on the top of Mount Kent. (See Chapters 2 and 12 for further details).

CE(RAF) note 9 Oct 86

THE CONTRIBUTION OF TACTICAL COMMUNICATIONS WING

9.88 The speed of events and the rapid development of joint service measures led MOD AFOR (acting through the Defence Situation Centre) to assume sole tasking authority for Tactical Communications Wing (TCW), by-passing the normal HQ STC channel. Because the Operation was centred largely upon a Naval TF, tactical communications were initially seen as conforming to standard joint service systems and no major problems were expected. However, the scale of the Operation, the assortment of vessels taking part and the distance from the UK base were to pose many special problems which TCW was to play a major part in solving.

MODUK
281500Z May
TF21.12 E86

9.89 Major naval units were equipped with Satellite Communications Ocean Terminal (SCOT) equipment which gave direct secure communications to the UK from the South Atlantic. The ships' communications were comprehensive and included HF back-up to the satellite terminals. The Royal Fleet Auxiliaries (RFA) and large commercial ships, however, were generally fitted with Maritime Satellite (MARISAT) which gave an insecure voice and a secure telegraph circuit from each ship to the UK. Thus, to enhance the available facilities, TCW detachments were to deploy in significant numbers during the build-up of the TF. Their tasks were to fall broadly into 3 categories - Ascension activities, air control and maritime support. Recognising the need for dedicated air control communications at Ascension, MODUK deployed an RAF detachment at an early stage. Prime roles were to support Nimrod operations as well as the TF and its support shipping. Another detachment equipped with a TACAN navigational aid, HF radio for air transport management and UHF radio for local operations and air traffic control on the Falklands was to embark upon the RFA FORT AUSTIN at Ascension. For support of maritime operations in the South Atlantic, RAF VHF/HF secure Radio Automatic Tele-Type (RATT) were subsequently provided on SS CANBERRA and MV ELK using RAF purpose-built cabins, whilst other Ships Taken Up From Trade (STUFT) were fitted with VHF/HF communications with secure signal traffic facilities. But, at the outset, many of these roles had not been identified.

DSS(C) 12/7/6 5 Apr
Folder C9

INITIAL TASKS

9.90 TCW's first task was initiated before the Argentine invasion of the Falklands; at midday on 1 April it was tasked to prepare on air-head detachment offering ground-to-air communications, air traffic control (ATC) communications and navigation aids. The resulting detachment of one officer and 7 airmen was on the move only 12 hours later, leaving Brize Norton for Ascension which it reached at 1230 hours on 4 April. Two days later it embarked on the RFA FORT AUSTIN as an on-board communications facility but with the ultimate task of providing air-head communications as a self-contained unit capable of operating for 7 days following the landing. Its more immediate challenge, however, was ship-board operation. Acknowledging the problems of operating TACAN in a steel hull and on a moving platform, MOD nevertheless stressed the importance of the facility to the TF whilst en

38G/1800/172/32/Cont
E51

091618Z Apr
TF21.1 E93

route for the South Atlantic. However, the detachment was not at that time to know that it would be 61 days before it landed at Port San Carlos and that, in addition to its primary role, the detachment would play a prominent part in the low-level air defence of the ship during the creation of the bridgehead.

9.91 TCW had in the meantime been ordered on 2 April to put all resources on 24 hour standby and over the next 7 days it deployed a variety of detachments. Among the early ones the most important were to fit and man equipment in 4 STUFT - the SS CANBERRA, MV ELK and the Convoy Escort Oilers BRITISH TAMAR and BRITISH ESK - and to provide a communications and meteorological detachment for Ascension operations. By 8 April, the CAS was able to brief the Chiefs of Staff (COS) Committee that 3 officers, 38 airmen and 30 tons of communications equipment were deployed to provide airhead, point-to-point and ship-to-shore links; details of these deployments were by then appearing on the Air Staff Management Aid (ASMA) totes.

38G/1800/172/32 Cont
E51

TF22 8 Apr
D of S Pol/38/2/2/1A
E9

ASCENSION ACTIVITIES

9.92 Elements of TCW's flight watch of one officer and 9 airmen deployed to Ascension on 3 April and provided first indication of the frequencies available. By 5 April, MOD had decided to form a British Joint Services Communications Organisation (BJSCO) under command of an RAF engineer officer and early activity was directed to establishing HF communications to the UK and for aircraft operating to and from the FMB. Early air movements were required to monitor the appropriate frequencies to receive operating instructions which were normally passed in code.

052030Z Apr
TF23.1 E27

BRIZE 032210Z Apr
IG/53080/22/2/Ops.1
E6

9.93 The extension of facilities to cater for Nimrod operations was extremely involved and necessitated the installation of new ground equipment, the re-siting of aerials and much consultation about frequency prediction. Air-to-ground communications improved as a result although even by the surrender there was still some uncertainty that this essential link would be consistently available. Such was the intensity of traffic and the need to maintain security that on 1 May all telephone, telex and telegram circuits from Ascension were suspended. Some relaxation of the suspension occurred on 13 May when monitored telex and telegram circuit were reactivated but telephone links remained cut.

KIN/CO/39 21 Jun
18G/335/4/6/41
E82
ASI 051000Z May
TF 21.7 E25

FCO 131817 May
TF21.9 E24

9.94 The complexity of TCW's task at Ascension was conveyed in a MODUK (Air) message to the TF on 13 May referring to the operation of 4 HF ground-to-air circuits, 2 long-range circuits directed south and 2 short-range omni-directional circuits paired for Victor/Vulcan and Maritime Reconnaissance (MR) sorties respectively. Staggered servicing of the equipment in far from ideal circumstances because of dust ingression was a further problem. That same day, however, OC BJSCO was reporting that the ASMA and SCC Hendon terminals were on-line and that the arrival of the metal Portakabins for the new HQ complex would require a TCW party to play its part in the move of communications and telephone equipment,

MODUK 131620Z May
TF21.9 E24

ASC 131930Z May
TF21.9 E100

a move which eventually took place on 31 May. But such improvements did little to ease the communications burden for each additional facility brought attendant problems - for example, the identification of the reasons for ASMA being frequently off- line was later to tax TCW elements at Ascension and the RAF Signals Engineering Establishment in the UK. It should also be mentioned that the re-location of the HQ site on 3 occasions did little to ease the communications burden. With an average of 30 TCW personnel deployed at Ascension the team provided long-range HF ground/air telegraph facilities for Nimrods and HF voice facilities for Victors, Vulcans and Hercules, secure HF ship/shore telegraph circuits, DSSS and ASMA terminals, as well as UHF channels for squadron ops cells, management radios and meteorological facilities

ASI 311825Z May
TF21.13 E20

BENSON 222130Z May
TF 21.11 E32

BJSCO Report Aug 82

DEPLOYMENT WITH 5 BDE

9.95 On 13 April, the Wing was alerted to the possible need to support 5 Bde by providing ground to ground communications between the Bde HQ and the Harrier FOB. As a prelude, a pre-deployment exercise, WELSH FALCON, was held in the Brecon Training Area to work up the Bde and to provide practice for its support elements. 31 TCW personnel and associated equipment were thus deployed from 27 to 30 April. The team nominated for Falklands duties were eventually accompanied by 9 soldiers of 244 Sigs Sqn (AS) when they embarked on the MVs ST EDMUND and CONTENDER BEZANT and the QE2 on 11 May.

Brize Norton ORB - Apr

9.96 The detachment disembarked at Port San Carlos on 4 June and successfully established HF, VHF and UHF support for No 1 Sqn Harriers and 63 Sqn RAF Regt at the Harrier FOB, the first Harrier landing at Green Beach the next day. By 7 June, the TCW Det Cdr noted that whilst the team were getting accustomed to Harrier operations, the control system was bedevilled by difficult HF links with HMS FEARLESS in the next bay. The RAF Liaison Officer (RAFLO) was later to report that the detachment had managed to establish a successful but insecure link between the FOB and HMS FEARLESS but that the set in the Amphibious Operations Room was ineffective. On occasion, the detachment acted as a rebroadcast station for other units temporarily out of contact with FEARLESS

Det Cdr's Report

BENSON 222130Z May
TF 21.11 E32

RAFLO Report Aug 82

NEED FOR MANNING AND EQUIPMENT REINFORCEMENT

9.97 By 22 April, 5 officers and 112 airmen had been deployed or earmarked for possible deployment as well as a major element of the equipment inventory. Concern was beginning to be expressed about TCW's ability to meet its NATO Priority One commitments since, following the first deployment, TCW was no longer manned to Priority One requirements and each subsequent deployment aggravated the position. The equipment situation was less critical because extensive use was fortunately possible of redundant, long-haul equipment rather than of the shorter range CLANSMAN radios designed for NATO use; the value of retaining such obsolescent equipment against contingencies outside the normal was amply demonstrated at that time. Nevertheless, it

DSS/10/16/7 23 Apr
TF21.4 E69

was anticipated that if hostilities broke out the likely wastage of TCW resources would make reinforcement essential. CE/2/1/167.7 12 Jul E104

9.98 The personnel shortfall was identified as 8 officers and 183 men and, as a first step, the RAF Personnel Management Centre (PMC) was asked to carry out an internal trawl of TCW-trained personnel; this resulted in 43 airmen being put on 72 hours notice to move under the Emergency Reinforcement Scheme. As to equipment, urgent procurement action in respect of HF long-haul, field generation equipment and management radios was in train and CLANSMAN radios were recovered from other RAF sources. TF22.1 23 Apr E30 MOD UK 271756Z Apr TF21.5 E74 D of S Pol/38/2/2/1 30 Apr E50

TACTICAL AIR TRAFFIC CONTROL (TAC ATC)

9.99 A sub-unit of TCW, the TAC ATC team, provided a limited tactical ATC facility during the Operation. When hostilities started the unit had 2 controllers although they were not currently validated. The unit's normal function was to provide a radar facility for airfields whose own radars were off-the-air during servicing or refit periods. Its equipment was mostly obsolescent and the only item worth retrieving from the 38 Gp store was a tactical flare path which was refurbished. By chance, plans for the reactivation of an effective TAC ATC facility had given rise to the formation in February 1982 of a small team to take part in Exercise GREEN LANYARD which involved the control of an FMB (at Sculthorpe) and an airhead (at Watton). The exercise included the use of a mobile ARI radar, Clansman UHF radios and the TAC ATC flare path. It was this team that formed the core of the ATC unit assembled by Group Air Traffic Control Officer (GATCO), 38 Gp on 19 April in case deployment became necessary. TAC ATC Report STAN/180/ATC 20 Sep

9.100 Whilst standing by for the deployment decision, the team used the opportunity to work up the equipment being assembled. Little Rissington was reactivated for 2 days to allow the trial installation of a basic ATC facility; this consisted of a 26064 Control Cabin, Clansman radios, mobile UHF direction-finding equipment and the flare path. Numerous squadrons assisted by tasking aircraft to test the system. At that stage, a number of variables had to be taken into account - location, type and intensity of air traffic, availability of local aids - but the position clarified on 12 May when D AF Ops announced that preparations for deployment to Port Stanley Airfield were to commence and that communications and navigation aids for deployment would be tested in a mock layout at Hullavington because the 2 airfields had similar runways. CE/2/1/167.3 12 May E26

9.101 The serviceability and interoperability of the equipment was again tested in a hectic trial involving the overflying of a wide variety of aircraft. Two days were also spent at Coningsby where the Precision Approach Path Indicators (PAPIs) were located to enable the F4 Phantoms to practise positioning for engagement with the Rotary Hydraulic Arrester Gear (RHAG); it was gratifying that accuracies of + 10 ft were achieved on touch down. A series of call forward dates were to elapse before the detachment finally left Brize Norton on 15 June, the equipment going on the MV RAF Hullavington ORB Jun

STRATHEWE and MV CEDAR BANK and the personnel embarking on the TEV RANGATIRA. The unit was to play an important part in the eventual reactivation of Port Stanley Airfield prior to the arrival of the first F4 Phantoms on 17 October.

TCW's CONTRIBUTION

9.102 Thus, whilst TCW's main task at Port Stanley Airfield was to provide airhead communications facilities the unit also assumed responsibility for ATC services and emergency arrangements. It therefore deployed all airfield communications facilities, navigation aids, fire and ambulance vehicles as well as airfield lighting equipment. The communications facilities also included meteorological forecasting support which is covered in Chapter 11. 138 personnel were on TCW's manifest at Port Stanley Airfield of whom 88 were deployed strictly for communications tasks; the remainder comprised emergency services drivers, firemen, AT controllers, unit personnel and airfield maintenance crews not normally on TCW's strength.

CE/2/1/167.4 17 May
E51

9.103 The operation made major inroads into TCW's equipment and manpower resources and it needed reinforcement to enable it to support its NATO Priority 1 tasks. However, the retention of redundant equipment to cater for such an out of area contingency had proved invaluable in enabling it to support the TF. AHB(RAF) holds a TCW report which lists the 61 tasks placed upon TCW and gives a breakdown of how the 208 personnel, 191 radio equipments, 105 generators and ATC radars were deployed. It was the largest commitment of manpower and equipment ever undertaken by the Wing.

CE/2/1/167.7 12 Jul
E104

ELECTRONIC WARFARE (EW) OPERATIONS

9.104 Events during the conflict were to drive home the increasing importance of EW for the survivability of forces, the speed of reaction to changing situations and the operational control of those events. The conflict gave the UK its first opportunity to test a new generation of electronic systems in hostile conditions and, overall, they performed up to expectations and proved highly reliable. Here, as in so many other spheres, however, the story is one of innovation and adaptation to enable the RAF to contribute to a campaign for which no contingency plan existed at the outset. The preparation of aircraft for operations in an EW environment is largely covered in the relevant role chapter of this narrative. This section concentrates upon the activities of DD Ops (EW&R)(RAF)'s and D Sigs (Air)'s departments and of the various EW agencies.

DD OPS(EW&R)(RAF)'S ORGANISATION

9.105 Shortly after the Easter Break, Assistant Chief of the Air Staff (Operations) (ACAS(Ops)) called a meeting of Gp Capts to assess how best to manage the EW aspects of the impending conflict. The assembled group were particularly aware of the problem of the inter Service co-ordination of EW activities, each Service naturally being geared to cope with the challenges faced in its own environment and therefore

DD Ops(EW&R)
(Gp Capt Allen) Tape

equipped with different methods of responding. The Army's EW organisation was considered to have only limited capacity whilst the RN's EW posture was understandably centred on its ships. Since the nature of this out of area operation was to demand close MOD direction of all facets of operations, some means of co-ordinating EW activity was clearly essential. ACAS(Ops) therefore agreed to DD Ops(EW&R)'s organisation providing a centre upon which to focus MOD EW management, including the coordination of the activities of specialist establishments such as the Farnborough EW Department, the EW Operational Support Establishment (EWOSE), the RN research establishments and the HQSTC EW Detachment at Scampton. As an on-going organisation responsible for the tri-Service EWOSE, Ops(EW&R) was in a good position to undertake such a role and also to take advantage of links which already existed between the staffs of HQSTC and CINCFLEET. The joint activity that developed was to extend into the procurement field. So, for example, to facilitate the purchase of items such as flares which could be used by both the SHAR and the Harrier GR3, it made sense to have an Operational Requirements representative within DD Ops(EW&R)'s organisation so that retrospective agreement of ASRs could be actioned smoothly.

AVM Hayr tape

DD Ops(EW&R) (Gp Capt Allen) Tape

EW ASSISTANCE FOR THE RN

9.106 The immediate challenge was to provide the 3 Services with a picture of the Argentine EW orbat so that they could carry out the necessary switch from Warsaw Pact to Argentine environments. The task involved the Defence Intelligence Staff (DIS), Government Communications HQ (GCHQ) and EWOSE which had, on its recent formation, inherited the former SCSHQ EW Staff and signature data base. Nevertheless, this had to be supplemented to enhance our understanding of the parameters, emitters and characteristics of likely Argentine equipment. One of the first problems faced, for example, was the presence in both navies of the Type 42 destroyer which RAF computers were programmed to discount. Both navies also had Exocet ASM and SSM and the Argentine Naval Air Force was known to have purchased Super Etendard aircraft as a launching platform for ASM.

EWOSE ORB Apr

9.107 Having obtained intelligence assessments of the Argentine capabilities, the staff's urgent task was to devise means of protecting the ships, aircraft and personnel then en route for the South Atlantic. The options varied enormously - from the crude device of throwing up a curtain of chaff around ships to more sophisticated methods of missile containment.

9.108 The RN's problem was an immense and almost intractable one for, as DD Ops(EW&R) observed, the ship is virtually a giant echoing system. ECM and ESM alone were incapable of thwarting missiles and so means of distracting them were sought. The story of how this was achieved illustrates particularly well the advantages gained from the unified approach adopted for EW operations. The broad outline of events was that the Admiralty Surface Warfare Establishment

DD Ops(EW&R) Tape

(ASWE), Portsdown on 20 April requested RAF assistance with the development of a counter to AM39 Exocet. Vulnerability to an air-launched Exocet and difficulty in finding and shooting down its Super Etendard carrier prior to launching the weapon were disquieting prospects as the TF moved South. The idea of a helicopter-borne jamming device was mooted and the possibility of converting the Lynx to this role was conceived. Two sets of India Band JS 603 jammers (ARI 23165) were made available by the RAF/RN 360(Canberra)Sqn, together with aircrew and technicians. An RAF pilot took part in 2 live Exocet firing trials against a ship target on the Aberporth Range on 8 May; both were successful in that the jammer seduced the missiles away from the target. There was some doubt, however, about the realism of the first trial since it took place during abnormally fine weather; the second occurred in conditions more akin to those expected in the South Atlantic and the results persuaded the staffs that the modification was successful. By 28 April a further 10 sets had been despatched to the Naval Technical Investigation Unit (NATIU), Lee on Solent, to equip 6 Lynx, each with a spare. The Navy Department (ND) approved the use of the Lynx ECM jammer on 10 May and, in the course of CORPORATE, a total of 26 sets were delivered to NATIU and packed in special containers for air dropping to the TF.

CAS 73/2/1.19 7 Jun E23

HQ STC ORB Apr

360 Sqn ORB

CAS 73/2/1.19 7 Jun E23
DD Ops(EW&R) tape

HQ STC ORB Apr

COMMUNICATIONS INTELLIGENCE (COMINT) ACTIVITIES

9.109 Though it was later claimed that the intelligence problem was more one of analysis and a lack of incisive assessment, the basis of success had to be the collection and collation of data. The Joint Intelligence Committee (JIC) had in 1980 accorded the collection of intelligence on the Argentine military posture the lowest priority (Priority 4) and this had contributed to the lack of intelligence when the threat emerged (see Chapter 1 paras 7-9). This was soon remedied, however, with the redeployment of Radio Operators (Voice)(ROV) from NATO tasks.

CE/2/1/167.6 15 Jun E65

9.110 The pool of linguist operators was used to supplement the resources of other services. They were deployed to HM ships, submarines and RFAs throughout the operation and a situation report on 11 May referred specifically to the attachment of linguists to HMS BRISTOL, COVENTRY, FEARLESS and HERMES. The same report mentioned the attachment of an officer and an SNCO to augment GCHQ facilities. Another 2 linguists plus a number of SIGINT technicians were deployed on the RFA FORT GRANGE to provide a satellite communications facility.

DSS(Air)/34/17/11.B 11 May E1 & 2

9.111 Despite the strange operating environments, the RN was later to observe that all those detached had quickly adjusted to the respective situations and had made valued contributions to the success of SIGINT activities. (7).

T5A/82
FOF3 20 Oct
DSS(Air)/34/17/11.E E11

(7) One ROV had the singular misfortune to escape the sinking of SHEFFIELD by being transferred just in time to undergo the demise of ATLANTIC CONVEYOR - the happy ending was that he survived.

AIRBORNE SIGINT ACTIVITIES

9.112 Certain SIGINT equipment was deployed to Ascension to facilitate airborne SIGINT tasks, and specially equipped Nimrod MR aircraft were modified to record encrypted data in the course of their normal maritime sorties. Four aircraft were engineered to take the equipment, sufficient of which was deployed to equip two at any one time. A detachment of ten 51 Sqn aircrew, which included three ROVs, was deployed to Ascension to man the intelligence positions on these MR sorties. However, from 25 May when land and sea-based stations became effective, the task was discontinued.

8 Jun
DSS(Air)/34/17/11.C

9.113 Other means of obtaining maximum V/UHF and HF COMINT in the South Atlantic region prompted the exploration of using a suitably equipped civil aircraft for the purpose. The plan was to fit an ELINT receiver in a cargo-carrying Boeing 707 which would have special aerials carried in a fibre-glass freight container and would monitor D-band radars in particular. Four RAF special operators would travel as civilians on flights running parallel to the Argentine mainland at 240 nms distance. The company involved wished to lay down unacceptable conditions, however, and the scheme was not pursued.

DS8 Minute 3 May
VCAS 7/4/1.5 E32

MO5/21 S of S 5 May
CAS/73/2/1.10
E26

ECM FOR THE HARRIER

9.114 From the purely RAF point of view, the production of an EW defence facility for the Harrier was the most immediate EW problem. There was on the stocks a plan to give the Harrier a complete jamming suite but at the beginning of the conflict the Harrier GR3s had no active ECM capability. The Wittering staff engaged in preparing No 1(F)Sqn aircraft for TF operations were concerned about this and asked MOD about the possibility of fitting chaff or flares as a short term measure. MOD replied that it would not be possible since the only available store, Phimat, would involve extensive rewiring of the wing and other pylon and cockpit modifications. It was thought that this additional work would unduly stretch MOD PE and industrial capacity and so the decision was made to discount chaff for the time being. Thus, on 26 April when the Harrier specialist briefed the Air Commander on Wittering's tasks no mention was made of ECM activities.

MOD 231600Z Apr
TF14.2 E6

COS/CORP/2.1 E28

18G/335/4/17/Ops 26 Ap
E64

9.115 Wittering personnel were not deterred by this and persevered with their attempts to provide some sort of capability. In conjunction with BAe engineers they looked at the feasibility of fitting the US Tracor AN/ALE-40 Chaff/IR dispenser and the results were encouraging enough for DD Ops(EW&R) to seek DS8's agreement for the UK AA Bonn to approach the German Air Force for one set of Tracor equipment for a trial installation; if successful, 24 sets would be required for 12 Harriers.

DD Ops(EW&R)/1/2/2
TF14.2 E22

9.116 At this point, it should be stressed that such activities did not occur in isolation but formed only one of many simultaneous EW investigations. At that time, for example, MOD and Marconi Space and Development Systems (MSDS)

Wittering ORB Apr

Stanmore were looking into the means of providing a self protection counter against the Superfledermaus radar and were involved in urgent activity to assess the feasibility of using Sky Shadow ECM equipment for this purpose. The adaptation of Sky Shadow electronics for use in a Harrier gun pod was particularly noteworthy; from initial concept to 10 being produced, tested and ready to move to the South Atlantic took only 15 days.

CA REVIEW of A&AEE Programme 82

9.117 Meanwhile, the carriage and operation of the ALE40 chaff dispenser were investigated by A&AEE from 10 May; the trial aircraft arrived on 12 May and the trial was completed that day. CA release was given on 13 May and operational release for use by SHAR was granted on 14 May by read across from the Harrier trial. 24 kits arrived at Brize Norton from West Germany that day and BAe Kingston commenced fitting the dispensers to the rear equipment hatches the next morning. A doubtlessly relieved EW desk was able to report this to D AF Ops on 16 May, giving at the same time information about the supply of UK manufactured chaff cartridges and of IR cartridges from the USA. Unfortunately, it did not prove easy to obtain an adequate and timely supply of IR cartridges and on 20 May Ops EW(RAF) had to signal Ramstein requesting the release by 81st Tactical Fighter Wing, Bentwaters, of 415 MJU-7 cartridges, the loan to be repaid from the manufacturer's delivery after mid June.

DD Ops(EW&R)/1/2/2 16 May TF14.2 E41

201520Z May TF 52.2 E15

HELICOPTER PROTECTION

9.118 Longer term issues had also to be considered. Plans for the protection of SH employed on Falklands garrison duties were gathering pace. In addition to RWR work on the Chinook which had already started, DD Ops(EW&R) circulated on 20 May details of action required to produce the necessary EW fits for the Chinook and, possibly, even the Puma. The breakdown of functions associated with the Chinook provided a good illustration of the variety of agencies involved in such a modification programme.

201410Z May TF 52.2 E12

a. The CTTC and the Aircraft Engineering Development and Investigation Team (AEDIT) were to propose the best positions for 2 chaff and one IR flare dispensers.

b. MOD Ops EW/CTTO were to define which of either the M130 or ALE 40 dispensers was to be fitted.

c. AEDIT was to undertake the feasibility study by mid June.

d. CTTO was to carry out an operational chaff/IR flare evaluation at RAE Larkhill towards the end of June.

e. MOD Air Eng 22c was to arrange for kits for retrospective fitting of those Chinooks already in the theatre of operations.

9.119 At that stage the position regarding the Puma was less clear for there was some uncertainty about the behaviour of chaff in the Puma airflow and therefore about the best point for the dispenser to be fitted; RAF Signals Engineering Establishment (RAFSEE) was asked to agree to an EWAU feasibility study once the position and the type of dispenser were decided upon. 201350Z May TF 52.2 E18

MEETING THE SKYGUARD THREAT

9.120 Another problem to arise on 20 May, and just as the ARI 23353 Harrier gunpack ECM jammer programme was nearing completion, was the emergence of a Skyguard radar laid/anti aircraft artillery (AAA) threat. It was realised that, although effective against the Superfledermaus threat, ARI 23353 would actually serve to enhance the Harrier radar cross section (RCS) on Skyguard and CTTO recommended that where the Skyguard threat was relevant ARI 23353 should be switched off. On 21 May, CE(RAF) was to report to AMSO that a feasibility study into the fitting of AN/ALQ-131 as a counter was under way, a set of equipment for the trial installation having been obtained from the USAF on a Govt to Govt loan. This set, together with the associated test equipment and the eventual supply of the ECM pods, was provided by HQ USAF as part of Project PEACE RAPID. Westinghouse was to provide the necessary training for RAF maintenance personnel starting on 1 June; however, a suggestion that Ferranti technicians might be included in the party was firmly declined. By 1 June EWOSE was able to circulate an amendment to its database chapter on Skyguard.

201500Z May TF 52.2 E28

CE/2/1/167.4 E26

282230Z May TF 52.2 E69/86

010752Z Jun TF 52.2 E93

REQUIREMENT FOR A PRECISION ANTI RADAR WEAPON

9.121 The threat came not only from the Skyguard, however, because the TPS-43 radars in the Port Stanley Airfield area had for some time concerned the Air Commander. They were inhibiting our operations by delaying the achievement of air superiority over the Falklands. The radars gave warning about Harrier operations and, albeit indirectly, even of ship movements for they tracked the Harriers' radar signatures on ascent and descent. They were also warning the AA defences, controlling resupply missions from the mainland and even targeting the Super Etendard/Exocet attacks. The radars were known to be sited close to Port Stanley town and so bombing was out of the question. The use of Martel ARM had also been considered but was discounted for the same reason. A precision weapon was required and UK RAOC's attention turned urgently to the smaller Shrike (AGM-45A) ARM since its shorter range permitted a launch profile which assured greater accuracy and thus greater protection to the neighbouring population. A period of intense UK/US negotiation followed by hectic engineering activity and trials culminated on 28 May in an Ops(EW) report that the previous day a successful release of Shrike from a Vulcan had been achieved (see Chapter 6). By close of play on 28 May, 8 Shrikes had been positioned at Ascension, 6 designed to attack the TPS-43 and 2 to cover the Skyguard and

DD Ops(EW&R) tape

011450Z Jun TF 52.2 E104

DD Ops(EW)/1/2/2 28 May TF 52.2 E63

Superfledermaus frequencies. Fitting Shrike to the Harrier GR3 was also being examined and a successful firing trial took place on 2 June against India Band radars at Spadeadam Range.

BRIZE 050200Z Jun
VCAS/7/4/1(ENC).2 E10

EFFORTS TO COUNTER BELATED ARGENTINE MEASURES

9.122 The approaching climax of the conflict coincided with a couple of developments which were to prompt continued wariness. The first arose from the identification of radar signals in the South Atlantic which were 'parametrically similar to a more significant radar' operated by the Argentines. GCHQ had requested information about platforms carrying the Japanese manufactured radar, AR-L51C, as early as 14 May but none was available. The radars were identified as ANRITSU and on 8 June MOD signalled the Defence Attache in Tokyo to obtain all possible information and parametric data on the AR-L52 and AR-L51C, a lack of which was adding to the confusion. This was aggravated on 13 June when the TF reported that the TPS-43 was emitting unusual signal parameters which possibly indicated a change of radio frequency.

TF 52.2 E114

EWOSE Report

TF 52.2 E126

9.123 These were indications of new and challenging Argentine initiatives. On 11 June, a signal from Northwood to elements of the TF advised that there had recently been a number of intercepts of an unidentified India Band radar from the Falklands and requested that details of further intercepts be passed to main EW agencies. Further evidence of increasing Argentine use of Electronic Counter Counter Measures (ECCM) was circulated by the Hd Tech Int(Air) on 10 June and it was perhaps as well for the success of the British campaign that such tactics had not been employed by the Argentines earlier in the campaign.

111744Z
TF 52.2 E123

TF 52.3 E19
DSTI Tech Int(Air)
45/17/18

EWOSE'S INVOLVEMENT

9.124 Having been formed at Benson only in November 1981, EWOSE quickly faced the challenge of justifying its existence and demonstrating its capabilities to a wide audience. It was tasked with creating and operating a support system which would assist in realising the full operational capability of Service EW equipments by integrating intelligence, engineering and operational resources and, as such, was able to play a key role for all 3 Services but particularly for the RAF and the RN.

RAF Benson ORB Nov 81

9.125 At the heart of the establishment, the EW Data Base (EWDB) held parametric information on Soviet and Warsaw Pact emitters and on some 60% of friendly and neutral emitters and was in almost constant use throughout the CORPORATE. The original Support Command Signals HQ strength of 15 personnel had fortunately grown to a strength of 26 Officers, airmen and civilian staff but, nevertheless, EWOSE faced the challenge of intensifying demands without the advantage of back-up or relief facilities. By chance, the STC EW Development Team at Scampton had become part of EWOSE on

DD Ops(EW&R)/1/2/2
15 Apr
TF 14.1 E89

HQ STC ORB Apr

1 April but because of the intervention of CORPORATE no changes were made to the tasking or management arrangements and it remained as a separate detachment. In the event, the build up of EW activity was reassuringly consistent with transition to war (TTW) concepts devised for the European theatre, with a rapid peaking of activity and workload in the period leading up to the start of hostilities. Thus, despite a very different scenario, the surge in questions, the requests for advice and the pattern of EWOSE responses closely followed the concepts devised for Europe. A relatively unknown unit which had not before been exercised was therefore quickly to enhance the tri-Service recognition that it and its Support Command predecessor had been establishing within the very small circle of those who recognised the need for greater EW capability.

EWOSE DET/100/524 18 Jan

EWOSE/22/Air 30 Jun

EARLY ACTIVITIES

9.126 The first EWOSE activity occurred on 5 April when there was an exchange of information with GCHQ, EWOSE providing an Extract of Data Base giving all available information on Argentine facilities and GCHQ providing an assessment of the Argentine Electronic Order of Battle (EOB). The first task was also received that day when HQSTC requested details of Argentine maritime and land based air defence emitters so that RWRs could be reprogrammed. An update was provided on 6 April, the next day a meeting was held at HQ STC to assess threat priorities, and by 9 April the main programming priorities had been agreed In the meantime, special permission for all officers and WOs to release signals up to SECRET and IMMEDIATE had been given on 6 April.

EWOSE/22/Air 30 Jun

STC 051123 Apr
STC/51900/1/1/.1 E1

9.127 EWOSE was tasked by MOD and frequently received tasks over the phone and even direct from ACAS(Ops). During the early stages of the build up its major areas of involvement were the supply of data on the Argentine EOB to CINCFLEET, Directorate of Scientific and Technical Intelligence (DSTI), Directorate of Naval Air Warfare (DNAW), GCHQ, HQSTC and HQ 18 Gp. It also supplied RAF and RN operations staff with the threat indications most likely to be given by the RWR fitted to the Sea Harrier, Harrier GR3 and Buccaneer. The Tape Production Centre (TPC) was involved in the production of audio training tapes and a new operational programme for the Buccaneer ECM pod. By mid April EWOSE's tasks in order of priority were:

15 Apr
D/DD Ops(EW&R)(RAF)/1/2/2
TF14.1 E89

a. The collection and dissemination of parametric data on Argentine equipment to improve definition of the electronic environment in the Falklands area.

b. Definition of the EOB of the armed forces of Chile, Peru, Uruguay and Brazil.

c. Continued updating of indications on RWRs for the Sea Harrier, Harrier GR3, Buccaneer, Vulcan and Victor.

d. The improvement when possible of RWR performance by revised settings and component changes.

e. Preparation of audio training tapes to take account of changes in RWR indications.

f. Production of contingency programmes for the Buccaneer ECM pod to meet changing environments.

9.128 The importance of these functions was implicitly acknowledged by MOD when it agreed to an EWOSE bid on 15 April for special secure communications and, on 19 April, tasked RAFSEE with installing the facility and advised EWOSE about manning it. The special communications were in operation at 1215Z on 21 April and thereafter manned on a 24 hour basis. EWOSE/22/Air 30 Jun

ASSISTANCE FROM THE USAF

9.129 In its efforts to assemble the necessary data, it was soon clear that EWOSE would need to invoke the Memorandum of Understanding (MOU) with the USAF, and on 6 April AD Ops(EW&R) reported that in its survey of the likely area of operations EWOSE had prompted a trawl of US sources. The MOU was actually implemented on 7 April and the exchange of parametric data commenced; the MOU with Canada was implemented on 8 April. The RAF/USAF co-operation was particularly rewarding and contributed significantly to the effectiveness of the electronic environment survey of the operational area. On 16 April, for example, the Electromagnetic Compatibility Analysis Center (ECAC) supplied BDS Washington with magnetic tapes and computer listings of Argentine emitters and the USAF Electronic Warfare Center (USAFEWC) subsequently provided data on Skyguard radar, the Italian built anti-ship missile, OTOMAT/TESEO and on the AN/TPS-44 radar. On 26 May, a team of US personnel arrived at Benson to construct the Blue Tape for AN/ALQ-131 to be fitted to the Sea Harrier.

EWOSE/22/Air 30 Jun
AA/JAB 051315Z
TF 14.1 6 Apr
E19
D 4/2 15 Apr
D/D Ops(EW&R)/1/2/2

EWOSE DETACHMENT'S CONTRIBUTION

9.130 The EWOSE Detachment (EWOSE Det) undertook a variety of tasks under the general title, Task 524, a report on which is held by AHB(RAF). Tasks 524A and B concerned an assessment of the feasibility of fitting APR9 and Alt 21 to the Vulcan and involved MSDS, CTTO and 2 technicians from EWAU. It was eventually resolved that the operational requirement was for the APR9 to be fitted to the H2S Scanner in a Vulcan as a DF facility against the Argentine 707 reconnaissance aircraft. Task 524C required an EWOSE Det team to deploy to Marham to assist in resolving problems with the ARI 18228 installation in the Victor. No clear cut solution was produced and certain suggestions made to crews to counter earth loops could not be followed up because essential feedback from crew debriefs did not materialise.

EWOSE DET/100/524
18 Jan 83

9.131 Task 524D, which was opened on 30 April, was to finish more positively. It aimed to provide an airborne jamming facility for use against Argentine Blowpipe SAM while giving immunity to similar British systems, Feasibility and development lasted from 30 April to 8 May and the first trial

24 May
D/DMO/17/28/A/MOI
TF 52.2 E48

took place at Larkhill Range on 12 May. This was an inter Service endeavour and the Assistant Chief of the Defence Staff (ACDS(Ops)) later advised ACAS(Ops) that EWOSE Det technicians at Scampton had designed a small hand held jammer which had successfully caused missiles to stray and self detonate in a final trial held on 24 May. The equipment was subsequently installed in the RN's Wessex 5s. Another successfully concluded task, 524E, was the assessment of the implications of fitting Shrike ARM to the Vulcan for use against AN TPS 43 and Skyguard radar. Opened on 17 May, the work was completed by 27 May and the first successful firing on the Falkland Is occurred on 3 June. Task 524F entailed the provision of facilities for RSRE scientists involved in producing a jammer against Argentine ground-to-air communications used for guiding bombers on to targets; however, the work was incomplete when hostilities ceased.

EWOSE DET/100/524
18 Jan 83

18 Gp ORB

DISSEMINATION OF EW INFORMATION

9.132 Meanwhile, the distribution of parametric data and EWOSE's reprogramming function had become routine activities and a range of other tasks was undertaken. These included such activities as the construction of EOBs, advice on the use of Martel, the modification of hardware, and the design and production of new equipment.

9.133 Though a routine feature, the issue of Argentine EOB data posed some difficulties - the very scale of the data output and its distribution began to present problems. The rate of printout from the computer, coupled with the need for recipients to receive the output simultaneously, significantly restricted the speed and frequency of assembly. The EWDB formal output was to enlarge dramatically in the course of operations. The initial issue of data on 6 April involved 10 copies of 220 pages and its update on 8 April merely 2 copies of 115 pages. By mid May, however, the routine was for 20 copies of 700 or more pages to be produced. Already on 14 April there had been a request to MOD for extra stationery for computer outputs. A hardware modification of the computer at the height of operations necessitated a signal to interested formations advising that data production and response to ad hoc questions would therefore be limited; thus, an extra full print of 800 pages was produced on 27 May to compensate for those which would not be raised on 24 and 31 May. Delivery to recipients also caused difficulties, for outputs of that scale proved quite beyond the capacity of signals circuits; thus, courier delivery of hard copy proved to be the normal method of circulating the data. Compliance with every request, moreover, was not feasible - provision of 455 pages to Ops EW Sqn, Wyton on 19 April presented no difficulty but it was not possible to meet the request for a second, water-soluble copy!

EWOSE/22/Air 30 Jun

BENSON 241957Z Apr
TF 14.2 E11

9.134 Two aspects of the hardware situation merit mention. Concern that the loss of the database capability would occur in the event of a power cut or transient reductions in mains

power output gave rise to the need for an uninterrupted power supply (UPS). In the previous year, the computer had apparently been occasionally out of action for periods up to 24 hours and downtime of that extent was clearly unacceptable. A UPS was provisioned in early May at a cost of £30K. The second aspect was the need for more test equipment if EWDT was to carry out several tasks concurrently and to meet its deadlines. HQSTC gave the necessary authority.

16 May D/DD Ops(EW&R)/1/2/2 TF14.2 E41

EWOSE/22/Air 30 Jun

9.135 It was obvious, however, that EWOSE was, at the beginning of CORPORATE, under-equipped and under-manned for the task that lay ahead. Task deadlines were generally achieved but frequently only because they had been agreed with customers in the light of the digital manning situation and the absence of any relief capacity. Even so, during the early days of Operation CORPORATE, personnel occupying key posts in particular areas were sometimes involved in continuous pressure activity until a task was completed. There was just a hint of relief in the announcement on 16 June that the regular output of EWOSE data packages was suspended "in view of the continuing uncertain situation".

EWOSE/22/Air 30 Jun

EWOSE 161250Z Jun TF 52.3 E16

EW AVIONICS UNIT (EWAU) ACTIVITIES

9.136 The avionic and EW modification of aircraft so that they could play a part in CORPORATE was a vital function in which EWAU figured prominently. EWAU was a combined Service and civilian establishment of some 200 personnel based at Wyton and provided the RAF with a third line electronic engineering facility. By 7 April it was already responding to requests for advice on avionic installations and for manpower assistance. At that stage the unit was preoccupied with feasibility studies into installing INS and/or OMEGA equipment in, first, the Vulcan and subsequently the Victor.

9.137 **Installation of Chinook Radar Warning Receiver (RWR).** It was on 16 April that it received its first installation task when Air Eng 14 formally tasked EWAU with the installation of the ARI 18228 RWR equipment in the Chinook helicopter, a task for which it had prepared initial designs before the conflict began. An interim design, partly using features of the original concept and such expedients as hurriedly moulded fore and aft radomes and mounting the receiver and power supply unit to the floor, was quickly produced (8) and the TI on the first aircraft, ZA 718, was successfully completed and test flown at noon on 21 April, only 5 days after the task was placed. It was this Chinook which survived the attack on the ATLANTIC CONVEYOR and was to prove such an invaluable asset during the campaign. On 12 May, a 30 man EWAU detachment started work at Odiham on another 3 Chinooks, the third aircraft being completed in the early hours of 15 May. A second detachment started installation work on 4 aircraft on 26 May and beat all previous installation times by completing one of them in 27 hours.

EWAU ORB Apr

EWAU ORB Apr

(8) The radomes for the RWR antennas were manufactured at the Special Signals Unit at Woolwich.

9.138 **Puma RWR.** Early in the campaign there were plans to deploy Puma aircraft to the South Atlantic and EWAU was required to produce an installation design of the same RWR equipment (SRIM4069). This time, without the benefit of preliminary design work and commencing the task on 14 May, EWAU completed the design in 10 days and the TI in a further 3 - a successful air test followed on 28 May. Unfortunately, as we have seen the effort was of no avail during the conflict for the Puma was not deployed. EWAU ORB May

9.139 **Range of EWAU Activities.** There was little consistent pattern in the nature and scale of projects, though all were carried out in the shortest possible timescale. Activities encompassed the investigation and in some cases the installation of such facilities as radar detectors and jammers, navaids, communications equipment, IRLS and the wiring up of weapon fits (9). Much activity sometimes took place at the front line stations with EWAU providing detachments of engineering officers and technical staff to carry out trial installations - it was for this reason that a small detachment was based at Ascension and operated under the S Eng O. On other occasions the tasks involved an on-the-spot appraisal by EWAU with the station's own staff then carrying out the task - examples of this procedure were the Victor and Vulcan IN/Omega appraisals at Marham and Waddington in the period 10-14 April. EWAU ORB Apr-Jun RAFSEE 010937Z May STC/51900/1/1.2 E22 EWAU ORB Apr

9.140 **Tasking of EWAU.** The demand for EWAU assistance was such that many on-going tasks had to be considerably delayed, if not put to one side, despite the introduction of round-the- clock working on 16 April. Moreover, requests for assistance arrived somewhat haphazardly from a variety of sources and it was not surprising, therefore, that on 26 May RAFSEE drew attention to the pressure on EWAU and on its own design and production resources; it advised MODUK Air and HQSTC that requests for EWAU tasking should be signalled to RAFSEE and it instructed EWAU not to respond to task bids without RAFSEE's approval. There is no record of the response to the message but the need for a better system of allocating and communicating priorities was to feature in post-conflict discussions. EWAU ORB Apr RAFSEE 261013Z May TF 52.2 E54 C Eng Conference 1982

THE EW CONTRIBUTION

9.141 Overall, developments in avionics and EW had figured prominently in the campaign's success. By the end of hostilities, the value of electronic navigation aids had been demonstrated by the AAR achievements involving multiple RVs. Electronically controlled bomb aiming and target marking devices had proved their effectiveness, as did the hurriedly-acquired night vision equipment. Improvements in weapons and equipment were given further value by advances in information collection, telecommunications and analysis

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(9) The multiple tasks undertaken by EWAU are covered comprehensively in the Unit's ORB for April-June and in a report held by AHB(RAF).

systems. For the RAF, a remarkable feature had been that no aircraft flew an operational sortie in the South Atlantic with its peacetime electronic fit. In-service 2nd and 3rd line avionic engineering teams had undoubtedly proved their worth.

Chief Scientist (RAF) Report 23 Aug D/CS(RAF)/45/Falks

COMMUNICATIONS

HF COMMUNICATIONS

9.142 No 2 SU played a major part in the provision of HF communications with the South Atlantic and its activities involved the re-jigging of East-West 2000 mile links to provide long-haul North-South links over 4000 or 8000 miles. Understandably, the provision of conference facilities between the theatre of operations and the Whitehall complex occasioned a huge increase in high precedence traffic; this, in turn, required major engineering effort being directed to maintaining the 100% serviceability of transmitting stations.

SATCOM

9.143 The ability of the CTF to direct operations 8000 miles from his HQ relied heavily upon the availability of Satcom. In the absence of an independent UK link, MOD had to depend upon US satcom facilities for contact with the TF. The demand for voice, telegraph and data links stretched the available capacity and use was also made of the Cable and Wireless Company's Satcom facilities at Ascension but a limitation was that they were not exclusively available.

30 Jun RAFSC/298640/4/AOM CE(RAF)/2/1/167.7 E57

9.144 1001 SU, Oakhanger provided the vital UK Satcom/ground station link and, from the start of CORPORATE, was heavily involved in coping with activity on the Army and RN circuits, particularly the latter.

9.145 For the RN, a total of 3 ship/shore paths, one common user and 2 dedicated, was available but the existence of only one shore/ship path caused congestion and resulted in ships queueing for calls. To help out matters, additional tradesmen were drafted in to cope with the increasing workload. HERMES was equipped with RN INTEL capability and BRISTOL followed suit in May when she became the second subscriber to the Data Relay Module (DRM). ILLUSTRIOUS became the third subscriber in June. Data circuits between the HERMES, BRISTOL and GCHQ were established in May and were relatively trouble free, being used successfully on a number of occasions.(10)

RAF Oakhanger ORB Apr

22 May 18G/335/4/6/1/Ops.1 E80

9.146 30 Signals Regiment handled the Army's satellite terminal, the Telemetry and Command Station (TSC502), but some re-engineering was required at Oakhanger. Two stations were deployed to the Falklands and the first disembarked from

(10) The Nimrod's role in providing a communications link for the SSN submarines has been described in the Nimrod MPA/SAR Operations Chapter 4 in reference to Operation POST BOX.

the RFA SIR GERAINT on 25 May, communications being established that day. The second equipment was activated after hostilities ceased.

9.147 Oakhanger played a conspicuous part in providing the sole ground station in the UK and the measure of its contribution was that there was never a serious break which cut communications between Northwood and the TF.

RAFSC/298640/4/AO 30 Jun
CE(RAF)/2/1/167.7 E57

THE DEFENCE SECURE SPEECH SYSTEM (DSSS)

9.148 The DSSS system was being installed when CORPORATE started and the system was hurriedly expanded to meet the services' needs. One of the first measures, for example, was RAFSEE's go-ahead for the installation of the equipment at Ascension on 6 April, a task which was completed within 48 hours. The availability of standard drawings and of equipment stored ready for planned projects enabled many tasks to be completed in very tight timescales. The Radio Engineering Unit (REU) played a major part in installing terminals in the key command and operational stations and a total of 33 facilities were provided during the conflict.

BENSON ORB Apr
082356Z Apr
TF21.1 E77
CE(RAF)/2/1/167.7 E104

9.149 The system had its critics, however, and was accused of unreliability and poor quality. Even when technically serviceable, difficulty in understanding other than the simplest dialogue was sometimes experienced. Nevertheless, until ASMA became more widely available, DSSS was heavily used and some faults arose because of unfamiliarity with the system. D Sigs (RAF) later observed that certain shortcomings were understandable in view of the excessive demands upon it - the UK Zone Exchange (UKZE), for example, handled 16 times the traffic load for which it was intended. Other criticism stemmed from the fact that it was only a two-way system and was not recorded, but the provision of a secure, real-time facility was never intended to replace normal staff action by other means.

38G/1800/172/32/CONT
2 Jul E17

AIR STAFF MANAGEMENT AID (ASMA)

9.150 Rapid expansion of the ASMA system became necessary. HQ18 Gp made the first request for connection with the facility on 8 April when it asked HQSTC to explore an urgent installation at Northwood. A RAFSEE team from SSU Woolwich arrived that evening and it had completed its task by 1030 hours on Good Friday, 9 April.

HQSTC ORB Apr

9.151 The system's value as a command and control asset, especially because it provided secure communications, was quickly apparent and within a week the network was expanded by RAFSEE to include RAF Kinloss, Odiham, Wittering and HQ 38 Gp. TCW at RAF Brize Norton and SASO, HQSTC were on line by 23 April and Marham was added before the end of the month. Under normal circumstances such expansion would have taken several months, not days, and it continued throughout CORPORATE. Further terminals were provided at HQSTC and new locations were linked into the system; chief among them were the other STC Gp HQs and Ascension where the installation was completed on 13 May.

MOD 231035Z Apr
STC/6000/29/2/Ops E100

9.152 An enhancement of the system which had been planned for 1983 was brought forward. This provided a standby facility in the event of a failure of the ASMA ICL 2956 computer and involved the connection of remote terminals to the main HQSTC ICL 1904.

STC/6000/29/2/Ops E100

9.153 Not all the links were trouble free, however, and the vital Ascension facility caused particular concern. Short breaks frequently occurred and, on 19 May, the installation party which was still at the airfield became convinced that the fault lay at the UK end of the circuit. Staff at the base continued to experience difficulties and UK RAOC sought to reassure them on 7 June that every effort to remedy the problem was being made by UKZE, British Telecom and RAFSEE. The reliability difficulty was however never fully resolved before the end of hostilities.

TF22.1 E50

071640Z Jun
TF 21.14 E23

9.154 The extension of ASMA to the airfields with detachments in the South Atlantic and to the theatre of operations greatly enhanced the communication system. It provided a flexible alternative to other systems and, though it proved somewhat unreliable and insufficiently rugged in the tactical environment, it greatly assisted the Air Commander in controlling the air assets deployed to Ascension.

AVM Chesworth tape

SIGNALS TRAFFIC AND CRYPTO MATERIAL

9.155 The signals traffic system and Special Handling Cells coped adequately with the increased loads and the automatic routing equipment was equal to demand during pressure peaks. The amount of signals traffic bearing national security caveats and requiring special handling rose nearly threefold. The signals distribution system, however, was less satisfactory. NASIS caused the distribution of signals to many recipients not involved in the matters covered and resulted in excessive numbers of copies being delivered.

30 Jun
RAFSC/298640/4/AO Maint
CE(RAF)/2/1/167.7 E57

9.156 The demand for secure communications escalated and, as the agent for the control and distribution of crypto material, the RAF Central Distribution Agency (CDA) at Thatcham was under intense pressure throughout CORPORATE.

12 Jul
DSS(Air)/16/18/4-55
CE(RAF)/2/1/167.7 E104

COMMUNICATIONS SECURITY

9.157 The RAF COMSEC Monitoring Unit, 591 SU, was alerted to monitor CORPORATE traffic on 2 April. Its task was to mount a watch on communications systems and so demonstrate what information could be obtained by interception of communications transmissions; such monitoring would reveal any security weaknesses in operational and signals organisations and procedures. 24-hour monitoring of radio and telephone traffic was instituted on 6 April and watches consisting of one junior NCO and 4 airmen commenced. The unit reported daily to MOD, HQSTC and the units concerned.

591 SU ORB Jun

9.158 At the same time, MOD issued a general COMSEC warning to every RAF unit and COMSEC/OPSEC officers at Command HQs were provided with a preliminary assessment of the

DSS/36/11/2/541 23 Apr
DofSPol/38/2/2/1 E49

Argentine SIGINT capabilities; the assessment was updated on 24 April. The first 591 SU detachment to join the TF embarked on 6 April, linking up with the Fleet Electronic Warfare Support Group (FEWSG); a week later, another detachment deployed to Gibraltar and one of its tasks was monitoring CORPORATE traffic. This detachment of 8 ROV tradesmen (1 FS, 2 Sgts, 4 Cpls and one J/T) subsequently deployed from Gibraltar to join the TF, leaving on 20 May.

DSS(Air)/34/4/13 4 May

9.159 At the UK end, DD Sigs 3(RAF) visited the unit on 8 and 10 April to brief personnel on special features of the operation. One follow-up was the detachment on 13 April of a team of 12 personnel to HQSTC to carry out telephone monitoring of selected lines. The task was completed on 7 May though another team deployed to the headquarters for further checks on 24 May.

591 SU ORB

9.160 By 23 April, D Sigs(Air) was able to report that all CORPORATE ground to ground communications had been crypto-protected, as had the rapidly-expanded DSSS and ASMA systems. He also commented that the RAF CDA had coped well with the huge demand for material. Crypto-security breaches were reported through normal channels to Sigs 6(Air) but breaches up to that time had not been significant. Some concern had been expressed by aircrew who were staging through Dakar (Senegal) and Banjul (Gambia) and carrying crypto material. The material had to be handed to the Det Cdr when aircraft were delayed and, since he shared accommodation with the Air Afrique representative, there was a risk of loss or compromise. The British Embassy facilities could not be used since it was 2 hours away from the airfield. However, no incidents were ever reported.

DofSPol/38/2/2/1.A E49

2 Jul 38G/1800/172/32/Cont E17

9.161 Monitoring reports on air/ground HF communications were sent to Command and unit COMSEC and OPSEC officers and revealed that there had been some initial laxness when it had been possible to identify aircraft type, base units and ultimate destinations. After appropriate local action, however, security was tightened and radio discipline was assessed as good and improving. But operational limitations continued and CBFSU was to request provision of secure communications to facilitate re-tasking capability.

591 SU ORB

121425Z May TF21.8 E84

9.162 The increase in signals traffic occasioned associated security risks which soon became apparent to the AFOR staff. By their very nature, MOD peacetime procedures tended to encourage the proliferation of copies of papers and particularly of signals traffic. The Delivery Indicator Group (DIG) system, for example, sometimes proved embarrassing when, unwittingly, an originator used an incorrect DIG and so broadcast a signal's contents more widely than intended. Moreover, as ACAS(Ops) was later to observe, the use of the "Exclusive for" caveat had to be used in both directions otherwise a response to him could well languish in an AFOR tray for all to peruse and speculate upon.

AVM Hayr tape

EXPLOSIVE ORDNANCE DISPOSAL (EOD)

9.163 The need to deploy a small RAF EOD team was pointed out by CE(RAF) on 26 April. He observed that the RE had deployed only two trained EOD experts and, to support 1(F) Sqn and assist in the clearance of Port Stanley Airfield, they would need to be reinforced. He proposed the deployment of an RAF EOD party of one officer and ten airmen. CINCFLEET chose not to take up this offer of EOD assistance since it was considered that the resources already deployed were adequate. Nevertheless, there was a request for two RAF experts to be attached to 59 Ind Cdo Sqn RE which was due to embark in the RFA SIR BEDIVERE. Further inter-Service discussion ensued, however, and after a great deal of confusion A/D Eng Pol reported to AMC on the 30 April that CINCFLEET staff had accepted the need to deploy an RAF EOD team.

VCAS/7/4.2 E16

MODUK 270133Z Apr
CE/2/1/167.1 E110

DofSPol/38/2/2/1 E50

9.164 The RAF Armament Support Unit (RAFASUPU) was thus tasked with providing the detachment which constituted about half a full EOD team with a follow-up detachment on standby. The previous days had been devoted to the assembly and preparation of equipment and so the unit was quickly at readiness to move. After a number of false starts it finally left Brize Norton on 7 May and landed at Ascension early the next day. Because of the heavy swell at the anchorage, some difficulty was experienced in loading its equipment on SIR BEDIVERE but helicopter lift solved the problem; the RFA sailed for the Falklands on 14 May.

C T Hankinson's Diary

9.165 Soon after arrival in San Carlos Water in the morning of 24 May, SNCO members of the team joined RN EOD personnel to advise on the identification of unexploded bombs (UXB) and types of fuzes on ships which had been hit. The task went on throughout that day and the next, an activity which was punctuated by frequent Argentine air attacks.

9.166 The detachment did not finally disembark until the evening of 25 May, doing so at Ajax Bay where it was accommodated in the hospital complex. Despite the lack of clear lines of command and control, its activities over the next 2 days followed a similar pattern but came to a climax on 27 May when at 1935 hours there was an Argentine attack which damaged the hospital. Two UXBs were subsequently discovered in the building which was evacuated by all except those who could not be moved. Any attempt to defuze the bombs was eventually put off because the type of fuzing was not known and the possible destruction of the building was unacceptable. By the early hours of 28 May, EOD personnel were increasingly convinced that the bombs were not delayed action ones and, to reassure those who could not be moved, they undertook to sleep in the hospital. From then until the end of May the detachment did little more than assist in the movement of casualties returning from Goose Green and were becoming impatient about the lack of action.

F S Knights' Notes

9.167 However, following a visit to Goose Green on 3 June by EOD Det Cdr and a small party of NCOs, activities took a more professional turn. The small airstrip was covered in 2.75 in rockets and also contained large stocks of 20 mm ammunition, napalm tanks and 125 kg bombs. The clearance of Goose Green and Darwin Settlement were the detachment's main activities from then until the ceasefire when the unit moved by sea to Port Stanley Airfield arriving on 20 June. There, its tasks centred on the runway where it was largely concerned in the disarming of ejection seats in Pucara aircraft and the moving of captured stocks of 125 and 250 kg bombs. The clearance of ordnance from the runway environs also preoccupied the unit until its embarkation on the MV SIR GERAINT on 28 June for the return to UK.

F S Knights' Notes the

AIRCRAFT BATTLE DAMAGE REPAIR (ABDR)

9.168 Despite their common ground deriving from ABDR training at Abingdon, deployed RN and RAF units initially made their own arrangements for ABDR resources by direct approach to their parent stations. MOD soon decided, however, to exercise better control of these resources and on 14 April it requested Command HQs to vet such requests.

MODUK 141500Z Apr TF31.1 E34

9.169 It was decided later that month to augment RN facilities by deploying a small ABDR team led by a former junior engineer officer of No 1 (F)Sqn, and it subsequently deployed with the TF on the carriers HERMES and INVINCIBLE. The need to ensure high serviceability rates among both the Sea Harriers and the GR3s and the likelihood of aircraft damage occurring particularly in low level operations made this a wise precaution. Additional support for the TF was provided by an Abingdon detachment of specialist crash recovery personnel at Ascension and one chief technician aircraft damage assessor at sea with the TF. Ten Harrier GR3s participated in CORPORATE, of which 3 were lost to enemy action and one crashed. The remaining 6 all suffered battle damage. Because of the critical weight factor associated with the Vertical Short Take Off Landing (VSTOL) concept, the use of weight saving materials had possibly reduced the level of protection normally provided for many vulnerable systems. Moreover, with the aircraft operating in the majority of air support sorties at ultra low level they were especially exposed to the whole range of the Argentine air defences. Thus, damage to the aircraft skin and the composite material of the drop tanks was commonplace. The ABDR team greatly assisted in the maintenance of high serviceability rates despite these increased damage levels and major repairs were completed on 2 aircraft in addition to numerous repairs to skins, wiring, ducts and drop tanks.

18 Gp ORB Jun

Harrier Folder Gen/1 E55 & 57

Wittering ORB Jun

9.170 The vulnerability of the small SH fleet also caused concern and the 18 Gp ORB noted that there was an upsurge in the number of battle damage repair trainees at RAF Odiham during April in case operations became protracted.

THE ENGINEERING CONTRIBUTION

9.171 Engineering response to the problems presented by CORPORATE involved the rapid generation of RAF and RN aircraft and the adaptation of engineering support planned for Priority 1 tasks. The absence of contingency plans, the need for short notice modifications and equipment purchases unrelated to the RAF's main defence posture, the need for discreet initiation of some tasks in a way which cut across the normal chain of command - all were to present engineering staffs with formidable control difficulties. The AMC provided some means of central control though the significance of its function was not always understood by those responsible for development, purchase and installation activities. The role of those Engineering Authorities delegated to Command HQs was complex for they were simultaneously supporting their Command function and acting as AFD agents. The unusual command and control arrangements which sometimes involved direct MOD Air Staff calls on sqn engineers markedly exacerbated this problem. At Gp HQ level, the small engineering staffs were called upon to provide wide-ranging advice to their AOCs, getting involved in advising and supporting units, coordinating activities and being a focal point for communications with HQSTC and the Gps themselves. They coped with the additional burden, but special reinforcement of HQ 18 Gp was required.

D Eng Pol/18/26 12 Jul
CE(RAF)/2/1/167.8 E21

9.172 Specialist units in RAFSC made significant contributions in meeting Air Staff requirements for minor changes. In those areas where industry had no expertise, units such as RAFSEE and EWAU responded rapidly to changing requirements and enabled industry to concentrate on major design work. Thus, the design, testing and incorporation of many operational improvements were achieved in remarkable circumstances and timescales. In this respect, important contributions were made by CSDE and the AEDITS and, in the field of communications, TCW's support for the 3 Services demonstrated its flexibility and ingenuity. The newly re-formed EWOSE rose magnificently to the challenge of supporting operations in an unexpected situation, as did the small EOD and ABDR teams deployed with the TF.

RAFSC/298640/4/AO 30 Jun
CE(RAF)/2/1/167.7 E57

9.173 The intensity of air operations which included much movement between the UK and Ascension made it necessary to relax scheduled servicing standards (Summaries of aircraft flying hours are given at Annex C). Servicing periods were extended and servicings were restricted to the contingency periods laid down in AP101B-04. No increase in the incidence of defects was noted and serviceability rates remained high for the short duration of CORPORATE. However, substantial deterioration was later noted during the return to normal peace-time servicing standards.

CE(RAF) Note 9 Oct 86

9.174 Secure communications were in the process of being introduced when the conflict started and the DSS was unable to cope with the sudden surge in demand for terminals and traffic capacity. Extension of the ASMA system made up for the shortcoming to an extent but the rapid pace of events

required much greater availability of secure speech facilities.

9.175 RAF Engineering staff at all levels and Post Design Services staff in MOD PE displayed initiative and flexibility in responding to Air Staff needs and to the many unique demands of the operation often by spontaneous ad hoc groupings. Manpower resources were adequate following transfers of skill and personnel from RAFSC but if the conflict had lasted much longer and given rise to casualties among engineering personnel, war establishments would have been stretched.

Annexes:

A. Air Member for Supply and Organisation - Principal Staff.

B. Alert Measures Committee Meetings - Aircraft Priority Lists.

C. Operation CORPORATE Flying Hours.

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AIR MEMBER FOR SUPPLY AND ORGANISATION (AMSO) - PRINCIPAL STAFF

AMSO
AM SIR JOHN ROGERS

Director General of RAF Organization
DGO(RAF)
AVM J B FITZPATRICK

Director of Command, Control
Management Information Systems(RAF)
D of CC/MIS(RAF)
AIR CDRE P G PEACOCK

Director of Administrative Plans(RAF)
D Admin Plans(RAF)
GP CAPT R B GUBBINS

Chief Engineer (RAF)
CE(RAF)
AM SIR ALEC MORRIS

Director of Engineering Policy (RAF)
D Eng Pol(RAF)
AIR CDRE K A CAMPBELL

Director of Aircraft Engineering (RAF)
D Air Eng(RAF)
AIR CDRE J M P CALNAN

Director of Weapon & Support Engineering (RAF)
DWSE(RAF)
AIR CDRE F M HOLROYD

Director General of Supply(RAF)
DGS(RAF)
AVM D I O'HARA (To 28 May)
AVM A R MARTINDALE (From 29 May)

Director of Supply Policy(RAF)
D of S Pol(RAF)
AIR CDRE A R MARTINDALE (To 25 May)
AIR CDRE A BEILL (From 26 May)

Director of Supply Systems(RAF)
D of SS(RAF)
AIR CDRE B HUGHES (To 23 May)
AIR CDRE I D WILKINSON (From 24 May)

Director of Supply Management 1(RAF)
D of SM1(RAF)
AIR CDRE I D WILKINSON (To 21 May)
AIR CDRE J G DE'ATH (From 22 May)

Director of Supply Management 2(RAF)
D of SM2(RAF)
AIR CDRE J R LAMBERT

Director of Catering(RAF)
D Cat(RAF)
GP CAPT R I LAWRENSON

SENIOR ENGINEERING STAFF APPOINTMENTS AND OFFICERS WHO SERVED IN THE SOUTH ATLANTIC DURING OPERATION CORPORATE

MINISTRY OF DEFENCE

CE(RAF) A M Sir Alec Morris

D Eng Pol Air Cdre K A Campbell

D/D Eng Pol 1 Gp Capt D R French
Wg Cdr P W Swindlehurst

D/D Eng Pol 2 Gp Capt J M Brant
Wg Cdrs J Wiltshire
I J S Corderey
D R Vickers
S K Morgan

D/D Eng Pol 3 Gp Capt P J Arthur
Wg Cdr B King
J W Mair

D/D Eng Pol 4 Gp Capt E A Mansfield
Wg Cdrs P J Nutt
C C Mitchell
A J Pitt

D Aircraft Eng Air Cdre J M P Calnan

D/D Air Eng 1 Gp Capt D H Wardill
Wg Cdrs R A Hancock
C A Cooper
T P Dickins
J Machray
R H Elwig
J W J Hawkins

D/D Air Eng 2 Gp Capt S R Parsons
Wg Cdrs R J Garlick
H G Empson
T F Reynolds
J M Ross-Smith

D/D Air Eng 3 Gp Capt D J Sledge
Wg Cdrs D M F Bright
C J Rowland
E P Folland
K D M Gordon
P J Perry

D Wpn & Spt Eng Air Cdre F M Holroyd

D/D SE 1 Gp Capt G F Lawrence
Wg Cdrs G Gleave
G P Proctor
D A Parker
R J Lockett

D/D MTSE Gp Capt R C Tear
Wg Cdrs P Taylor
P J Cornaby
R Smeeton
P G Bell
M Lacey

D/D Wpn Eng Gp Capt M C Darby
Wg Cdrs R W R Young
R L Greenhall
R J Baker
P Fairhurst

D Marine Craft Gp Capt J E F Williams
Wg Cdr P Greenall

D Tornado Eng & Supply Gp Capt A J Lowery
Wg Cdrs I R Blunt
R A Kinghorn
A J Kent
P A Douty

HQ STRIKE COMMAND

Air Officer Eng AVM E C Dunn

Gp Capt EC&P Gp Capt W R J Fewing
Wg Cdrs D N Brown
T Ogilvie
I T Nicoll
M T B Rowley
F J H C Lock

Air Cdre Electrical Engineering Air Cdre J J Burke
Gp Capts J E Barker
J P Downes
Wg Cdrs T W T North
N C McLean
A G Shaw
E J Hammond
C R Bates
J C Collier
C Morris
W M Everitt
E I Pease

Air Cdre Mechanical Engineering Air Cdre G B Tyler
Gp Capts A Andrews
E T J Manning
Wg Cdrs R J Hayter
H E Studwell
J A Rowlands
D G Simmons
C G Plowman (from 16 May 82)
F W Pike
K C Youldon
R K Grinter (from 4 May 82)
R A J Jones
F B Cooper

HQ No 1 Gp

Gp Capt Eng - Gp Capt A B Callaway
Wg Cdrs M G Trumper
D M Powell

HQ No 11 Gp

Gp Capt Eng - Gp Capt P H Troughton
Wg Cdrs M Garrigan
R A Gill

HQ No 18 Gp

Gp Capt Eng - Gp Capt R L Smith
Wg Cdrs I L Martin-Jones
J A Morgan

HQ No 38 Gp

SO Eng - Gp Capt G Rees
Wg Cdrs D R West
G H Glover

HQ RAF SUPPORT COMMAND

AOC Maintenance Units AVM D W Richardson

Air Cdre Supply and Movements listed under Supply Staff appointments

Air Cdre Aerosystems Maintenance - Air Cdre G M G Cooper
Gp Capts P T Ryans
B J Hunter
Wg Cdrs G D Rork
S R Parsons
M J Gregory
R W Quartermaine
R W Smith
B Renyard
C L Farrell (from 26 April 82)

Commandant RAF Signals Engineering Establishment and Support Command
Signals Staff - Air Cdre W J J Northmore
Gp Capts J B Main
A F Goddard
Wg Cdrs D A Kidd
M P Beck
D V Baker
B C McCandless
L A Nash

RECIPIENTS OF THE SOUTH ATLANTIC MEDAL

Wg Cdr J A Morgan
Sqn Ldrs B G Benstead*
R Betteridge*
R P Bull
J M Burton*
J R H Douglas
W M Henry
G Jones*
W F Lloyd*
D J Seaton
B L Sobey*
M S Taylor*
S J Wilson*
Flt Lts K J Banks
T C Burke
C D Drew*
D Helliwell*
A C Holdstock*
A M Kidd*
B T Mason*
A Neale
A J Swan*

(*Rosette for service in the Falklands and associated areas)

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ALERT MEASURES COMMITTEE (AMC) MEETINGS - AIRCRAFT PRIORITY LISTS

6 Apr - AMC1	8 Apr - AMC2	13 Apr - AMC3	20 Apr - AMC5	23 Apr - AMC6	27 Apr - AMC7
Hercules - AT	Hercules	Hercules and VC10	Hercules	Hercules	Hercules
Nimrod Mk 1 - MP	Nimrod Mk 1	Nimrod (no longer R)	VC10	VC10	Victor
Nimrod Mk 2 -	Nimrod Mk 2	Victor (MRR fit)	Nimrod MR Mk 1	Nimrod MR Mk 2	VC10
Victor - Tanker	Nimrod R	Harrier	Nimrod MR Mk 2	Nimrod MR Mk 1	Nimrod MPA
Buccaneer - Attack	Victor	Vulcan	Victor	Victor	Harrier
	Buccaneer	Buccaneer	Harrier	Harrier	Vulcan
	Harrier		Vulcan	Vulcan	Chinook

5 May - AMC9	11 May - AMC11	15 Jun - AMC18
Victor	Victor	Victor
Hercules	Hercules	Hercules
VC10	Nimrod MPA	Nimrod MPA
Nimrod MPA	VC10	VC10
Harrier	Harrier	Harrier
Vulcan	Vulcan	Chinook
	Chinook	

Note:

(1) The AMC decided that no change was required in the priority list during the following meetings:

AMC4 - 16 Apr	AMC12 - 14 May	AMC15 - 26 May
AMC8 - 30 Apr	AMC13 - 18 May	AMC16 - 1 Jun
AMC10 - 7 May	AMC14 - 21 May	AMC17 - 8 Jun

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OPERATION CORPORATE FLYING HOURS - APRIL 1982

Ser No a	Aircraft b	Operations c	Trials d	Transits e	Other(Incl Trg) f	Totals g
1	Nimrod	585.45	93.30	-	-	679.15
2	Victor	475.55	-	-	279.45	755.40
3	Vulcan	40.30	-	Included	131.30	172.00
4	Harrier	-	181.00	in	30.00	211.00
5	VC10	770.00	-	Operations	-	770.00
6	Hercules	4800.00	-	Totals	-	4800.00
7	Chinook	82.30	26.10	-	-	108.40
8	Sea King	-	-	-	-	-
9	Phantom	-	-	-	-	-
		6754.40	300.40		441.15	7496.35

OPERATION CORPORATE FLYING HOURS - MAY 1982

Ser No a	Aircraft b	Operations c	Trials d	Transits e	Other(Incl Trg) f	Totals g
1	Nimrod	631	185	214	186	1216
2	Victor	1682	185	Incl in Ops	412	2279
3	Vulcan	68	114	73	-	255
4	Harrier	133	10	127	150	420
5	VC10	1132	-	-	-	1132
6	Hercules	5425	37	-	-	5462
7	Chinook	91	-	-	-	91
8	Sea King	58	-	-	90	148
9	Phantom	3	3	28	17	51
		9223	534	442	855	11054

OPERATION CORPORATE FLYING HOURS - JUNE 1982

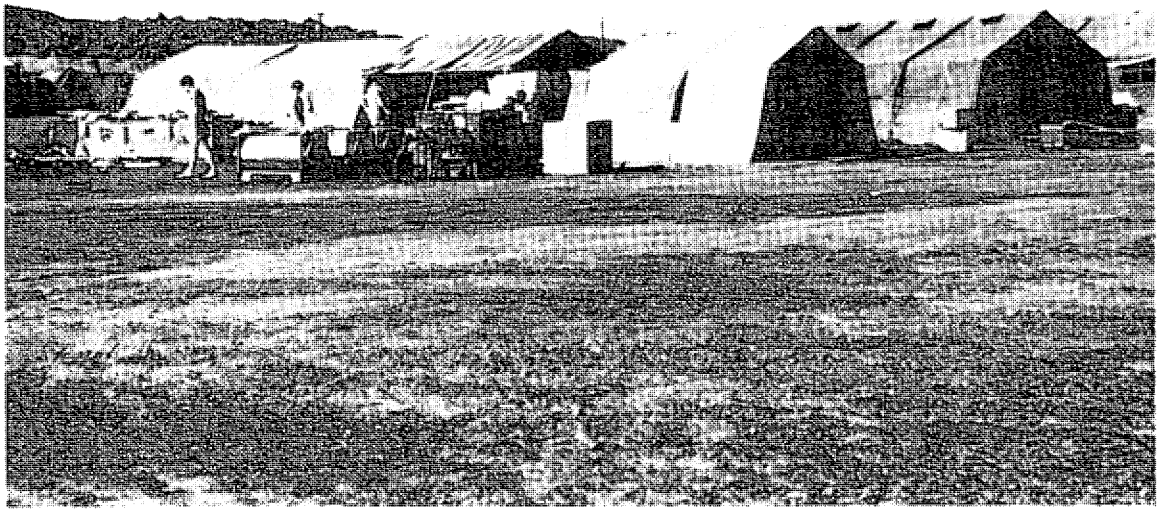
Ser No a	Aircraft b	Operations c	Trials d	Transits e	Other(Incl Trg) f	Totals g
1	Nimrod	325	84	102	96	607
2	Victor	1348	-	57	231	1636
3	Vulcan	41	40	37	-	118
4	Harrier	317	-	-	-	317
5	VC10	831	-	-	-	831
6	Hercules	3565	-	-	-	3565
7	Chinook	554	-	-	-	554
8	Sea King	116	-	-	60	176
9	Phantom	4	-	-	60	64
		7101	124	196	447	7868

OPERATION CORPORATE FLYING HOURS - 1 APR to 14 JUN

Ser No a	Aircraft b	Operations c	Trials d	Transits e	Other(Incl Trg) f	Totals g
1	Nimrod	1541.45	362.30	316.00*	282.00	2186.15
2	Victor	3505.55	185.00	57.00*	922.45	4613.40
3	Vulcan	149.30	154.00	110.00*	131.30	435.00
4	Harrier	450.00	191.00	127.00	180.00	948.00
5	VC10	2733.00	-	-	-	2733.00
6	Hercules	13790.00	37.00	-	-	13827.00
7	Chinook	727.30	26.10	-*	-	753.40
8	Sea King	174.00	-	-	150.00	324.00
9	Phantom	7.00	3.00	28.00	77.00	115.00
		23078.40	958.40	155.00**	1743.15	25935.35

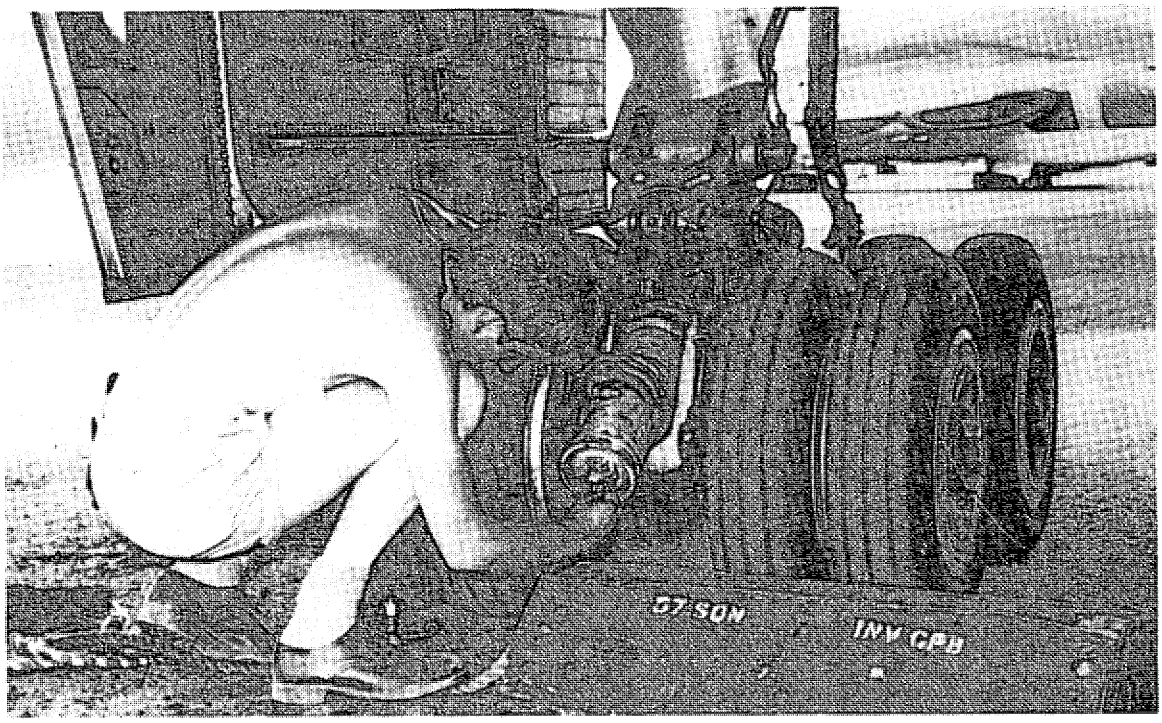
Notes: * Transit time also included within Operations totals.

** Harrier and Phantom figures only.

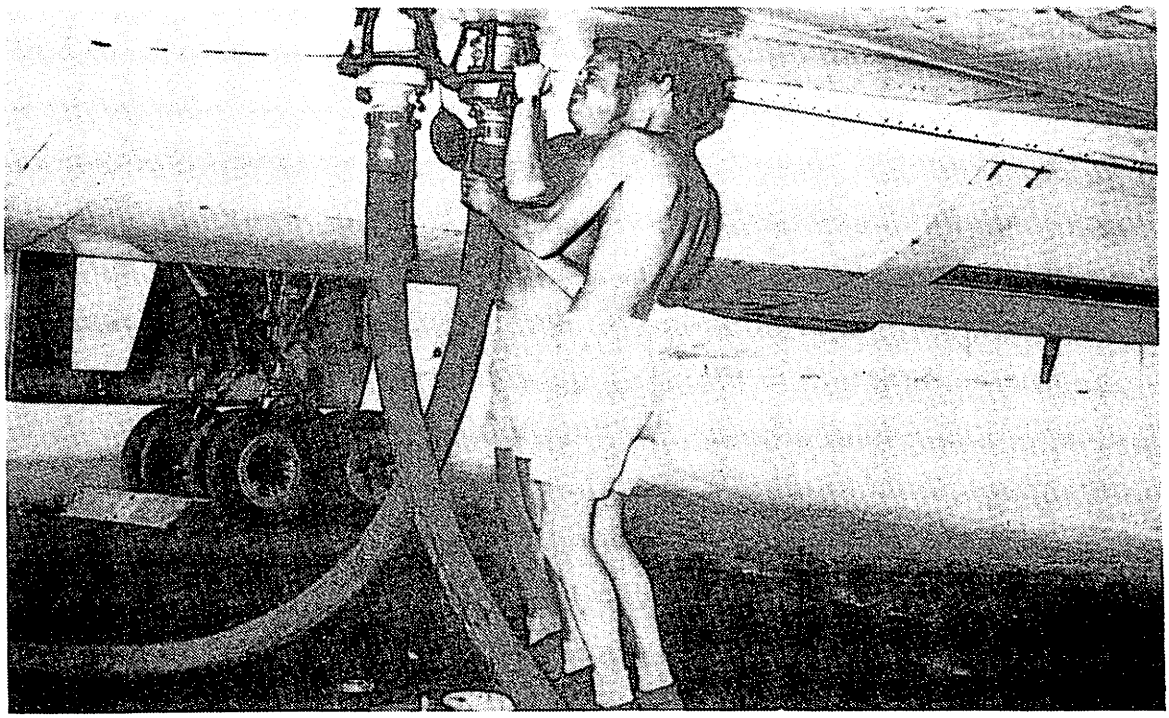


9.1. The Vulcan Detachment engineering complex at Ascension Island.

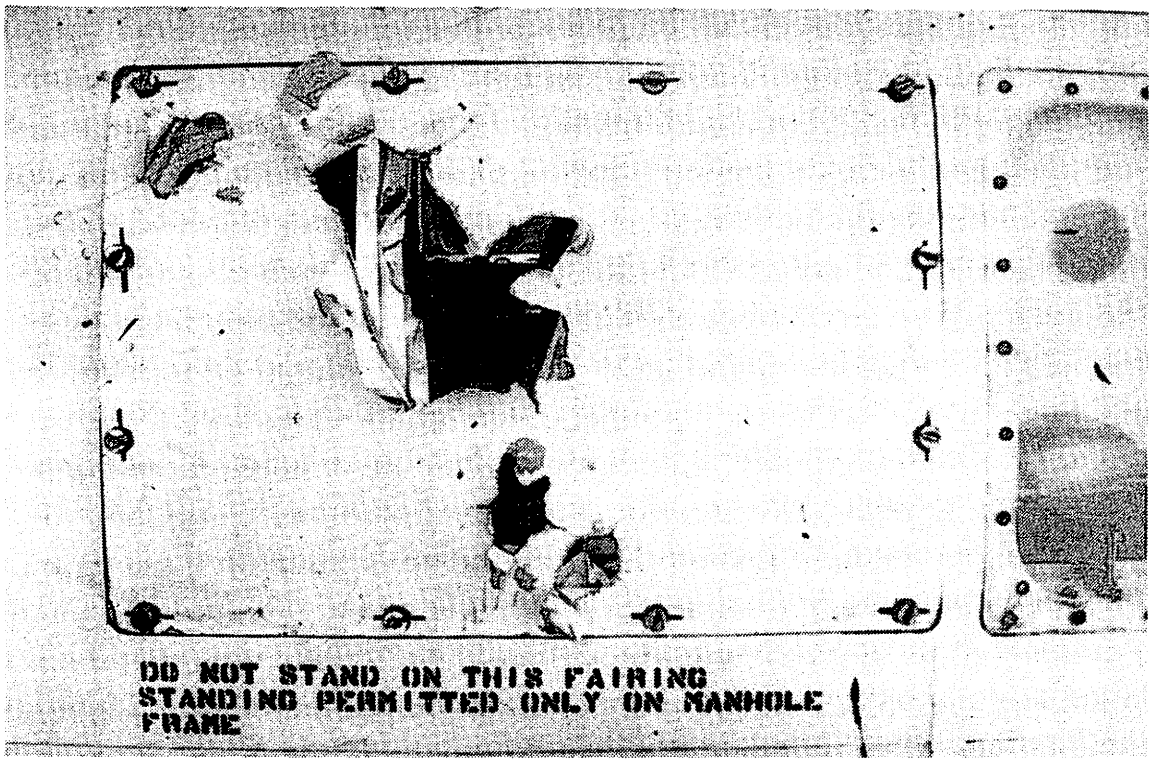
9.2. Flt Lt Mel James, Eng O to the Waddington detachment, with an advertising slogan on the Detachment Land Rover on 30 Apr.



9.3. Pressure checks on a Victor undercarriage.



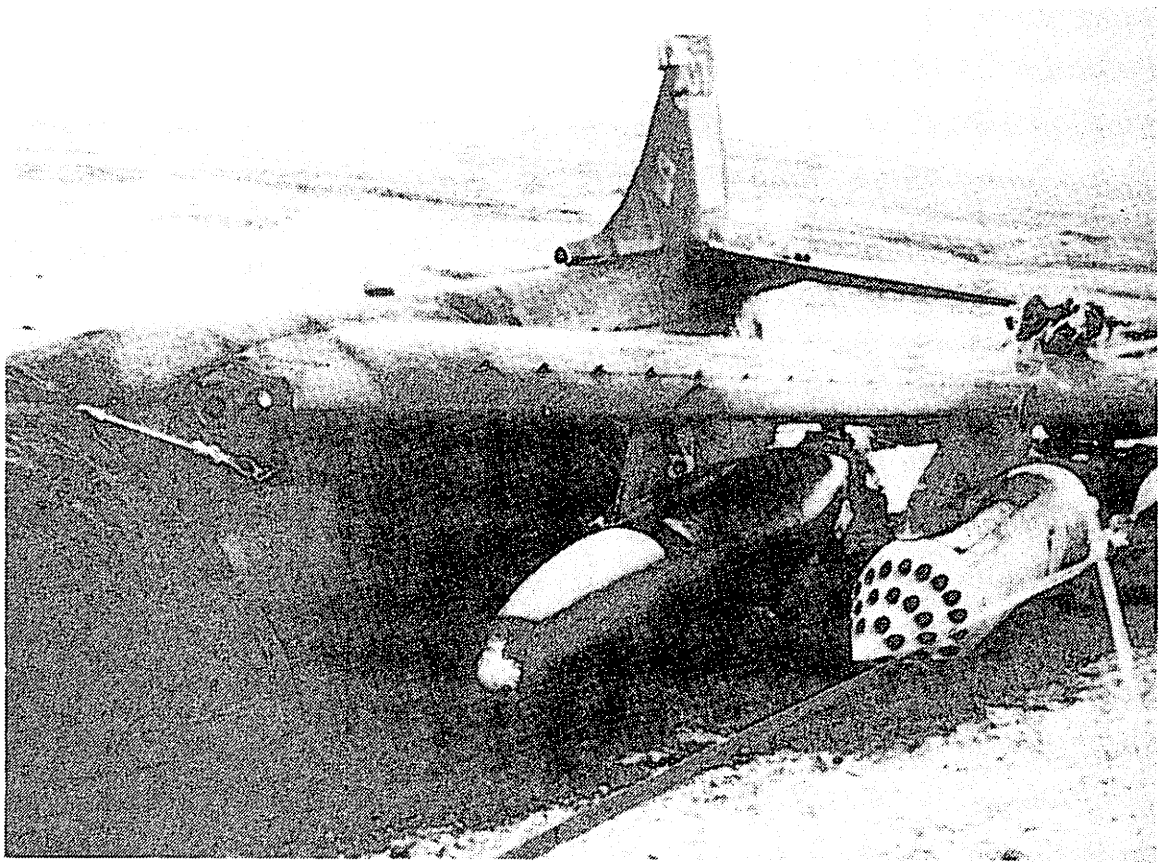
9.4. Heavy work! Ground crew refuelling a Victor.



9.5. 'Don't fret, chief, it's even worse inside'. Engineering problems following the disintegration of a Victor HDU.

9.6. The engineers' solution to protecting air assets on the ill-fated ATLANTIC CONVEYOR.

9.7. The congested hangar on HMS HERMES.



9.8. The Cat 4 GR3 on the FOB at Port San Carlos.

CHAPTER 10

SUPPLY SUPPORT ACTIVITIES

SUMMARY OF CONTENTS

ESTABLISHING THE SUPPLY PIPELINE

10.1 Whilst there had been much hectic activity over the weekend of 3/4 April in activating and deploying the Tactical Supply Wing (TSW) to Ascension Island and in assessing fuel requirements and tanker resupply of the Forward Mounting Base(FMB), it was probably the first meeting of the Alert Measures Committee (AMC) on 5 April which registered most forcibly the challenge which was about to face the RAF supply organization. The purpose of the AMC was to consider potential problems, set in train the means of overcoming them, and monitor developments. Using the Government War Book measures as a guide the AMC identified, inter alia, the need for an assessment of critical spares requirements and relative priorities to be accorded aircraft types. Ironically, there was at that stage no supply representation on the AMC but minutes of the meeting passed to the Director General of Supply (DGS(RAF)) provided an early indication of the intensive supply staff action that lay ahead.

TF22 5 Apr
CE2/1/167.1 E1

THE CONTROL ORGANIZATION

10.2 The manning of key supply desks was a first step at MOD and Command HQ levels. The AFOR supply desk was manned at Wg Cdr level around the clock and 24 hr manning of the Joint Service POL Ops Room (JSPOLOR) was instituted on 4 April. The Aircraft Generation Control Room (AGCR) which reported direct to the AMC determined the priority for recovering aircraft from industry and co-ordinated the engineering and supply aspects of aircraft generation. At HQSTC, UK RAOC activated the supply and movements desk in the Contingency Planning and Resource Management (CPRM) cell, though initially only for working hours operation (1). It also requested authority for all items for deployed aircraft and elements of TCW and TSW to be accorded Force Unit Designator (FUD)1 status (2). At the AMC second meeting on 8 April the newly-appointed member, DD S Pol 8(RAF), was able to confirm that there were no insurmountable spares support problems and he produced an inventory of aircraft showing where surpluses to NATO requirements might be expected.

DGS/35U/383 23 Apr
AMSO/19/8/1.1 E55

DofSPol/38/2/2/
1.A E5

DofSPol/37/1/2
7 Apr
DofSPol/38/2/2/1.A
E6

10.3 Cover at air officer level at MOD was provided by DGS(RAF), DofSPol and DofSS in turn, whilst DGS's Crisis Management Cell (CMC) was manned during normal hours with staff being on call at other times. It was not at first felt necessary for Supply Management Branches (SMB) to have other than on-call arrangements for officer cover round-the-clock, but this was reviewed after 25 April when the CMC observed upon the responsiveness of the SMBs outside working hours. Nevertheless,

071640Z Apr
TF 23.1 E68

Notes:

(1) UK RAOC went on to a 24 hr war footing on 18 April and the reinforcement of the supply staff eventually gave rise to the deployment of 5 officers and 12 airmen.

STC Ops ORB Apr

(2) The FUD category was the importance attached to the unit's function by higher authority on a 1 to 4 scale. The urgency of need category was then allocated by the unit supply officer on the scale 1 to 16.

previous experience with NATO exercises such as WINTEX/CIMEX had clearly ensured that supply management procedures were well understood and that desk officers were quickly able to adjust to the demands of the operation - though designed primarily for the NATO context, the system functioned smoothly and flexibly for this out-of-area operation. DofSPol/38/2/2/1.A E32

10.4 But the process was not entirely without difficulties. From 3 April round-the-clock control of activities at HQ RAFSC was based on the Priority Progression Cell(PPC) which served in effect as the Command's supply operations centre throughout the Operation. Following an Australian request that its personnel should not participate in the conflict, HQs were advised on 8 April that no exchange officers were to be employed in flying operations. However, when it was realised that the RAFSC desk responsible for the activities of TSW was filled by an RAAF officer, Defence Secretariat 8 (DS8)'s clarification of the position was sought. The outcome was that on 23 April HQRAFSC reported that control of TSW had been discreetly transferred to another desk. RAFSC ORB Jun TF22 8 Apr DofSPol/38/2/2/1.A E9 151040Z Apr DofSPol/38/2/2/1A E18 TF22 23 Apr DofSPol/38/2/2/1A E41

10.5 The degree of Supply and Movement (S&M) Sqn involvement at station level was inevitably determined by the extent to which the station's units were involved. On stations with deployed detachments there was a marked increase in the number of transactions and in the associated speed of response - changes in operational requirements occasioned urgent engineering work which, in turn, demanded rapid response from S&M Sqns. The need for flexible control of supply activity and co-ordination with varying engineering priorities often prompted the co-location of logistics and engineering plans cells to provide continuous cover. The achievement of numerous modification programmes and the provision of rapid responses to queries from higher formations were undoubtedly facilitated by such cooperation. Waddington ORB Jun

10.6 Supply back-up for the various aircraft detachments was provided by the Mobile Supply Flights (MSF). At Ascension, while the MSFs operated independently, the establishment of a cell to co-ordinate supply activity became essential and a logistics co-ordination officer was appointed from 6 April. Demands on parent units were channelled through this cell which undertook the full range of supply activity up to the delivery of freight to the consignees and the return of repairables to parent units. Demands by MSFs for items not held in Fly Away Packs (FAPs) were placed upon RAF Lyneham Supply Sqn which maintained the inventory, though the surge in demand for A & B Class stores made control increasingly difficult. Moreover, the need for careful co-ordination of demands was to be commented upon by HQ 1 Gp on 15 April when it observed that demands for common-user stores such as accommodation, MT and catering items should be collated to help to reduce the air transport bill. TSW/7000/19/Ops 14 Jun RAF Stafford Report 151635Z Apr STC/6000/29/2 E31

ASSESSMENT OF THE INITIAL SUPPLY POSITION

10.7 The main thrust of supply activity initially involved the issue of aircraft spares for the SHAR, Sea King, Lynx and Wessex and of accommodation stores for HM Ships and STUFT. Efforts were also directed at ensuring continuity of supply for the Task Force and the replenishment of stocks and the supply pipeline. The need

for close liaison between the SMBs, F6(Air) and MODUK(PE) required no emphasis, though the latter felt it important to stress at an early stage that industrial resources should be used to best possible effect by avoiding the issue of conflicting instructions and priorities; it thus announced the appointment of Assistant Director/Aircraft Procurement (Equipment) (AD/AP(E)) as the MODUK(PE) focal point for procurement queries and urged that supply priorities be assessed immediately. At the first meeting of the AMC, the RAF priorities had been established as the ATF Hercules, Nimrod MR Mk1 and Mk2, Victor Tankers and Buccaneer aircraft but, following the MODUK(PE) request and in the light of other possible options, the list was amended to include the Harrier GR3. However, supply branches were also advised that deployed RN aircraft were to be given precedence over RAF aircraft not operationally committed.

061130Z Apr
DDSM4/52/1.AE7
DEngPol/18/26/747
6 Apr
DofSPol/38/2/2/1.A
E4
081145Z Apr
DofSPol/38/2/2/1.A

10.8 Aero engines reserves were considered adequate to support anticipated operations as well as the normal flying programme, with the exception of the Conway 201 engine for the Victor. There had been a dramatic increase in the engine's defect rate from early 1981 which had already prompted a bid to increase the reserve pool by 12 engines, but this had been turned down in favour of robbing in-use aircraft. Thus, to avoid any reduction in the effectiveness of the tanker fleet, Rolls Royce was pressed to accelerate its output to match arisings in excess of the normal 3-4 per month.

DGS/35U/314 22 Apr
DofSPol/38/2/15/1
E3

10.9 The airframe position was generally satisfactory. Significant stocks of spares special to the SHAR and those common to the GR3 had already embarked on RN ships or on replenishment RFAs. They were considered adequate for short to medium-term support but, in the longer term, some shortages were likely; in his first sitrep to the Air Member for Supply and Organisation (AMSO), DGS referred to possible shortages of Harrier wing tips and wing thrust nozzles. Role equipment was in shorter supply and he mentioned specifically the limited stocks of outboard pylons and 330 litre jettison fuel tanks. He also commented on the need for careful monitoring of the use of RAF Germany stocks. Overall, the Harrier spares requirements at both St Athan and Yeovilton were going to place great demands upon British Aerospace (BAe) and, as early as 7 April, MODUK(PE) had acknowledged that BAe would face "extraordinary working arrangements and possible robbing of production line assets".

DGS/35U/314 22 Apr
DofSPol/38/2/15/1
E3
231230Z Apr
DofSPol/38/2/2/1
E37
TF 23.1 E72

10.10 The Vulcan presented a different problem for, at a time when ways of employing it were being hurriedly considered, plans for its disposal were at an advanced stage and had to be halted. By 22 April the possible retention of 24 Vulcans was generating questions of residual supply support, possible no- or low-cost solutions and concern over the lack of current capacity for engine repairs. The supply of weapons was not a problem, however, for a range of bombs was available from contingency reserve stocks which could readily be configured for Vulcan delivery though, as we shall see, the stock position needed careful monitoring.

DGS/35U/314 22 Apr
DofSPol/38/2/15/1
E3
TF 23.6 E74

10.11 Supply support for maritime air operations was assessed as adequate though Jezebel sonobuoy assets were marginal and a surge

in demand would have to be met from war reserve stocks. With an annual training consumption of 12,000 and a scheduled production in 82/83 of only 6000, the position merited the urgent attention of DGS's staff that it was to receive. But overriding all these in its impact upon the build up of the Task Force and in its potential influence upon the RAF's ability to contribute to the campaign was the aviation fuel situation.

DGS/35U/314 22 Apr
DofSPol/38/2/15/1
E3

AVIATION FUEL SUPPLIES

10.12 That fuel was going to be a major influence on RAF operations in the South Atlantic was obvious from the beginning of the Operation. Early assumptions that no bases would be available on the South American mainland indicated that the RAF's contribution would perforce be limited to providing an air supply link to Ascension and assistance to the RN whilst it operated in the vicinity of the Island. Thus, having established the air route through Gibraltar to Ascension and the necessary support facilities, the RAF's task in the first stage was the support of air transport movement through staging posts to Ascension Is and of ATF and MR operations from the island. This was to require the most careful planning of supplies of petrol, oil and lubricants (POL). To this end, the POL Operations Room (POLOR) started 24 hour operations from 4 April and one of its first initiatives was to prompt a D of Ops(RAF) signal to the Base Commander at Wideawake Airfield enquiring about the availability of any special fuel stocks that could be made available to the RAF. Fortunately, the immediate problem was solved by the diversion of a tanker bound elsewhere which had replenished supplies by 10 April.

CAS tape

042307Z Apr
TF13

10.13 The agreement between the British and American Governments under which the US had constructed Wideawake Airfield entitled HMG to operate its military aircraft from the base as long as this did not interfere with rights specifically granted to the US. Under the Host Forces Assistance Agreement between the USAF and RAF we were allowed to draw off fuel to support MP and AT operations as part of SACLANT operational plans but there was some uncertainty that they applied in the current situation. Any US denial of refuelling facilities would have placed the RAF in an impossible position for alternative refuelling arrangements were not operationally feasible. By the second week of the Operation maximum use was already being made of facilities at Dakar, with transport aircraft picking up maximum fuel on both outward and return flights. But replenishment difficulties were expected even there and, more importantly, being almost 2000 miles further from the Falklands it could not be considered as an alternative mounting base. Thus, an adequate supply of aviation fuel at Ascension was vital to support operations, while other factors such as quality assurance and physical distribution were also to have a significant bearing upon day-to-day planning.

DS8 Minute 6 Apr
AMSO 19/8/1 E12/1

DS8 15 Apr
TF 13.2

HIGHER MANAGEMENT OF THE FUEL SITUATION

10.14 A good rapport was quickly established with the US representatives on the island. However, the crucial nature of the island's operational role made it essential that arrangements be controlled at MOD level in conjunction with the US authorities in Washington. Moreover, whilst VCDS(P&L) retained control of the

DofSPol/38/2/13.A
E20

overall logistic support situation, the responsibility for arranging the re-supply of aviation fuel was delegated to the Joint Service POLOR working in liaison with the AFD Supply Desk (DDSPol 10(RAF)). AMC Mtg 28 Apr DofSPol/38/2/2/1.A E48

10.15 As early as 6 April, POLOR was calling for regular updates on fuel offtake and the stocks remaining available to the UK forces and, by 11 April, it was advising HQSTC and Gp HQs that, whereas foreseeable AT and MRR tasks could be sustained, the other operational options being considered would rapidly expend stocks. Whilst urging speedy re-supply to ensure that fuel shortage did not inhibit operations, it went on to explain that it would be necessary to exert utmost economy and the closest co-ordination of operational needs with the supply position. Later that day, MODUK(Air) signalled BDLS Washington expressing concern that despite the maximum use of supplies at Dakar the planned rate of RAF uplift would consume stocks at Ascension in about 7 days and it urgently requested replenishment within that timescale. 110603Z Apr D4/1 E50 111330Z Apr TF3.5 E86

10.16 The State Department's response, pointing out that re-supply might not be possible until 25 April, prompted MOD to bid for the USAF to allow the RAF to use up to 7000 of the 9000m^3 (1m^3 = 225 gall (approx)) currently on the island. Other solutions were also being pursued, however, for on 13 April AFOR confirmed that POLOR together with RN staff were looking into the possibility of acquiring a tanker which, loaded with fuel could be moored off the island, a ploy which did not materialise but which was to be used by a US tanker later in the operation. 120226Z Apr TF13.1 E87 TF23.3 E5

10.17 The uncertain resupply and therefore planning situation was to continue during the period immediately prior to the Victor tanker deployments and through to the early BLACK BUCK sorties. The Victor deployment heralded not only a high rate of flying intensity but was also to include the extensive tasking of aircraft lifting huge quantities of fuel. Thus MOD had to maintain pressure upon the US authorities if it was to be able to mount operations relying heavily upon air-to-air refuelling. Projected consumption for the period 15 to 27 April was: 160755Z Apr TF13.2 E7

Stock available at 15 April	-	4263m^3
Forecast consumption 15-21 April	-	1121m^3
Subsequent daily consumption	-	481m^3

The assumption was that UK supplies would be virtually exhausted by 27 April and so resupply by then was vital. Facilities available at Wideawake Airfield now figured even more importantly in maintaining the RAF's ability to mount air operations.

ESTABLISHED FACILITIES AT WIDEAWAKE AIRFIELD

10.18 The facilities at Wideawake Airfield were controlled for the USAF by Pan Am-contracted civilian personnel. Normal arrangements were that JP-5 was delivered by sea tanker through a pipeline from Georgetown Pier into the major bulk fuel installation (BFI) which was some 3 miles from the airfield. After settling and testing the fuel was then issued to road tankers for delivery to the other small BFI on the airfield. Though the

facilities were augmented during the Operation, there were certain limitations in the system which caused major concern in planning air operations. At Georgetown, for example, the BFI was equipped with a pump and a filter/water separator at the receipt and dispense points. The receipt and dispense lines were common, however, and although each tank could be isolated its fuel could not be issued until the whole pumping operation was complete and the fuel within its lines tested. Thus, pumping operations could take up to 72 hours, depending upon the quantity, prevailing weather conditions and any discharge problems. A further limitation was that only one refueller could be filled at a time and so, with a round trip of 50 minutes from BFI to airfield, the process was a slow one. Added to this was the limitation that, since issues could not be made from the Georgetown BFI whilst tanker delivery was taking place, all usable fuel had to be transferred to alternative tankage for the duration of that operation and there had to be adequate storage to support all flying operations during that 72 hour period. Stafford Report SFD/1040/Org 14 Sep 83

10.19 The movement of fuel from the Georgetown BFI to the airfield tankage and thence to the aircraft was initially carried out by means of five 5000 US Gall USAF refuellers supplemented by four 3000 gall RAF bowsers. To provide added flexibility, CBFSU subsequently requested a further five 3000 gall and two 1000 gall tactical refuellers on 26 April. DofSPol/38/2/13.A E28

10.20 The availability of POL consumables and compressed gases caused occasional concern although, since all detechments deployed with 14 days' supply, the problem was mainly one of identifying replenishment needs. Liquid oxygen and liquid nitrogen (LOX/LIN) production facilities were not always readily available even in some industrialised parts of the world and, with most front-line aircraft dependent upon LOX, the deployment of LOX production equipment for the Falklands and of LOX containers for Ascension Is was initiated by the AMC. Resupply of gases and specialist oils was arranged by HQSTC in conjunction with parent bases. DofSPol/38/2/2/1.A 20 Apr - E24

INCREASING FUEL REQUIREMENTS

10.21 Whilst these facilities proved adequate to support AT and MRR tasks, the fuel requirements generated by the Victor detachment, which was planned to deploy on 18 April, were to intensify the problem of at least keeping capability just ahead of the operational needs. On 18 April, it was reported to the CMC that 2322m^2 were available for Victor operations until resupply on 27 April. However, if use could be made of the USAF reserve of 946m^3 a total of 3268m^3 could be available. The projected flying tasks involved an uptake ranging from 2920m^3 to 3592m^3; thus, in the best case only 598m^3 of the USAF reserve would be required and in the worst there would be a shortfall of 324m^3. DofSPol/106/2/14 DofSPol/38/2/13.A E20 DofSPol/38/2/2/2.A E16

10.22 The replenishment tanker, SEA LIFE CHINA SEA, with 7154m^3 was due to berth at 2200Z on 24 April and the discharge, testing and settling of the fuel was expected to be completed by mid-day on 27 April. The problem of simultaneous discharge and refuelling had therefore to be solved. Besides deploying three additional 30,000 gall pillow tanks, the MOD plan was that before the tanker berthed all aircraft, bowsers, portable fuel tanks and 201120Z Apr TF23/1 E62 DofSPol/106/2/14/1 20 Apr

the two fuel installations were to be filled to capacity. This would allow operations on 25 April to go ahead using the fuel already in the aircraft which would then be re-fuelled from the other stocks for operations on 26/27 April. This miscellany of containers would provide 857m^3 for these 2 days and should have proved adequate since the planned offtake was 543m^3 on 26 April and 98m^3 on 27 April. As a fallback position, however, CBFSU was asked to seek the Base Commander's approval for the interruption of discharge if events made it necessary on those two critical days. DofSPol/38/2/2/2.A E22

10.23 This apparently sound solution was to be jolted on 22 April with the news from Ascension Is that stocks were 907m^3 shorter than expected and not as a result of the previous day's sorties. CBFSU was immediately required to confirm the stock figure of 1044m^3 which, if accurate, would have sustained only those operations projected for 23, 24 and 25 April. POLOR made contact by DSSS and the figure was confirmed as that element made available by the US authorities for UK use. The MOD-Washington link was once again invoked and on 24 April MOD informed CBFSU that the US Dept J4 had reiterated that all US fuel on the island would be made available to the UK, if necessary including the reserve of 900m^3, and that Dept J4 would be advising the Base Authorities to this effect. The tanker discharge was completed slightly ahead of schedule and the stock available from 0700 on 27 April was 6783m^3, a figure which, assuming maximum ATF uplift at staging posts, would be sufficient to cater for the options known to be under consideration up to 10 May (3). By that time the US tanker NATCHEZ would have docked and discharged further supplies. DofSPol/38/2/2/2.A E36 240830Z Apr TF13 DofSPol/38/2/2/2A E44

IMPROVED FUEL FACILITIES

10.24 The availability of fuel was not the end of the matter, however, for once ashore it had to be conveyed by road tanker from the reception tankage at St Catherine's Point to the airfield fuel installations. Before long, the constant heavy refueller traffic had started to break up the road link and on 26 April the CMC was informed of the intention to link the two locations by means of a 3½ mile pipeline and to increase fuel storage at the airfield with two additional pillow tanks. The 6-inch pipeline was to be laid by 40 personnel of 11 Field Sqn RE, an advance party of which would deploy to Ascension on 28 April. The remaining personnel and 100 tons of equipment followed in an airlift by ten Hercules. The pipeline was expected to be constructed in eight to ten days and would have a throughput of 2m^3 (450 gall) per minute, relying upon the effectiveness of booster pumps to propel the fuel uphill. Even at that pace it had to be worked for over 12 hours a day to keep the airfield tanks full. However, an obviously relieved support unit was able to DofSPol/38/2/2/2.A E44 DGS/35U/372 27 Apr

(3) Of the total available to the UK and given the normal pattern of offtake for helicopter, airdrop, Nimrod and AT operations, SRAFO estimated that that would leave sufficient fuel available for 11 Victor long-profile sorties involving Nimrod RV cover. If a Nimrod were tasked with 24 hour ASW support of the Fearless Group to the extent of its range, that would reduce the Victor profiles to 10. 251715Z Apr STC/6000/29/2/Ops.2 E14

report on 10 May that the pipeline was in commission and had taken 133m^3 to fill. DofSPol/38/2/13.A E67

10.25 The completion of the pipeline and the arrival of the resupply tanker on 10 May marked the turning point in the aviation fuel story. Arrangements had been made for the tanker to fill all shore tankage and then to remain alongside, topping up as required until the next tanker arrived. From then on, the fuel situation at Ascension figured less prominently in daily reports by AF Ops and from 23 May was sometimes not even mentioned. The need for careful scrutiny of projected offtakes against projected reserves was unabated, of course, and this was dramatically demonstrated on 20 June when, with the conflict at an end but with no respite in the pace of air operations, a bulk fuel delivery by the USNS POTOMAC was found to be contaminated. Fuel samples were flown urgently to UK for checking at the RAOC Petroleum Laboratory West Moors and at Harefield House Laboratory and special arrangements were made with Washington for the RN ship, the RFA ALVEGA, to transfer 9900m^3 of Avcat into Ascension Island tankage. The problem was eventually identified as disparate fuel analysis procedures but it brought home to all concerned the vital significance of guaranteed fuel supplies, both in terms of quantity and quality, when supporting air operations over vast tracts of the South Atlantic. Nevertheless, despite these arrangements, operations from Ascension Island on the necessary scale would not have been possible but for the availability of refuelling facilities at intermediate staging posts.

18 Gp F540 Jun

DofSPol/106/2/14 21 Jun

TF23/1.11 E114

USE OF STAGING POSTS

10.26 The fuel stock position at RAF Gibraltar was as one would expect in a healthy position at the start of the Operation, and resupply by a Shell tanker of 2682m^3 on 13 April was to provide sufficient fuel for expected offtakes up to early May when further replenishment was due. Resupply actually occurred on 10 May, by which time other considerations were influencing the station's role in the Operation. However, the base was under particularly heavy pressure during the early stages in coping with the build up at Ascension and the reinforcement and re-stocking of HM ships. Fortunately, Gibraltar had been reinforced for Exercise SPRING TRAIN and so was quickly able to convert to 24 hour operation. The short runway was a limitation, however, and it immediately became apparent that if maximum payloads were to be carried to the FMB a further refuelling stop would have to be made available.

RAF Gibraltar ORB Apr

DofSPol/106/2/14/1 10 May

DofSPol/38/2/2/2.A E75

10.27 It was to Dakar in Senegal that MOD turned. After speedy diplomatic exchanges starting on 2 April the first Hercules landed on 5 April on its return to the UK; it had thus required to uplift only minimum fuel at Ascension Island. Thereafter, Dakar became the primary staging post between RAF Gibraltar and Ascension though, even there, an element of uncertainty existed for total reliance had to be placed upon the availability of civil stocks. It so happened that efforts to purchase reserves of fuel against possible contingencies had been made only the previous year but had not been approved; it was fortuitous therefore that stocks were sufficiently high at the outset to meet our needs. By 11 April, the Senegal Govt had agreed to allow all ATF aircraft to stage through Dakar both outbound and inbound and MODUK Air

VCAS 6672 3 Aug
VCAS 7/4.8 E4
30 Sqn ORB Apr

DGS/35U/314 22 Apr
DofSPol/38/2/15/1 E1

required crews to take up maximum fuel so as to minimise the uplift at Ascension. Shell International had agreed to provide up to 500m^3 and this, together with the build up of the ground 110300Z Apr
support detachment which peaked at 140, allowed the ATF planners TF23.2 E44
to devise regular flow patterns through the International Airport.

10.28 There were occasional difficulties and tensions, of course. A fuel contamination report of water in a Hercules fuel tank in mid April was to lead the AT Det Cdr to report that Shell International's fuel filters and water monitors would have revealed any contamination and he suggested that wide temperature 141126Z Apr
variations and consequent condensation were the possible causes. TF23.3 E42
A TSW detachment was nevertheless sent to provide a fuel-blending 231745Z Apr
facility. Another problem arose when the shutdown of part of the TF 6.5 E70
Dakar refinery led to the reduction of the permitted daily 201825Z Apr
take-off to 500m^3 until the end of April. Within two days a TF23/1 E90
sensitive FCO was having to chide MOD for uplifting more than that and to repeat the need to keep within the allotted ration if all the airport's customers were to be satisfied. Frenetic behind-the-scenes negotiations for further supplies were also taking place and were fortunately to succeed for on 24 April MOD 241640Z Apr
was in a position to advise the AT Det Cdr that Mobil Oil would TF23.7 E48
provide an additional 100m^3 daily - the message required him to confirm that Shell were aware of this development.

10.29 MOD subsequently requested the Shell local director to 281510Z Apr
explore the possibility of allowing the RAF a maximum uplift of TF23.8 E91
700m^3 daily. Eventually, he was to agree to a maximum of 072320Z May
600m^3 so long as it averaged only 500m^3. As in the case of TF23.11 E96
Ascension, the fuel supply position now eased and, by the end of May, Shell was advising the AT Det Cdr that 600m^3 could be used 271030Z May
daily up to 15 June - even more could be made available provided TF23.18 E71
adequate warning were given.

10.30 Banjul (Yundum Airport) was never planned as a major source of fuel uplift but it was a valuable bonus to have use of part of its available stock for it supplemented the fuel supply at Dakar during periods of intense uplift. First approaches about the use of facilities were made through the High Commission on 19 April with a signal enquiring about operating conditions and fuel 191700Z Apr
stocks. By 21 April, MOD followed the response with more specific TF23/1.2 E144
questions about runway width, the Load Classification Number and 211121Z Apr
the availability of hardstanding for up to three Victor tankers IG/SASO/7.2 E53
and overnight crew accommodation. Thus, a short but intense period of diplomatic activity must have preceded HQ 1 Gp's signal advising Banjul of the arrival of two waves of 1 Victor and 3 230002Z Apr
Harriers on 24/25 and 25/26 April respectively and of the IG/SASO/7.2 E67
requirement to uplift about 50m^3 of fuel at each wave.

10.31 By 27 April, a routine uplift of about 200m^3 had been established and, even at that stage, the need to expedite resupply 270945Z Apr
was being urged. As an information addressee, Dakar was to follow TF23.8 E44
this up by advising that, if given the go-ahead, they could arrange additional supplies from BP/Shell in 10 to 14 days, though they had also to point out that the limit on the number of 271016Z Apr
stagings - 18 per day - would continue to apply. By early May the TF23.8 E49
resupply situation was causing concern for whilst Banjul was able to confirm that 812m^3 were available for RAF use it also pointed 031204Z May

out that the Shell resupply tanker arrival had slipped back to 22 May. Even such measures as persuading British Caledonian Airways to avoid refuelling at Banjul only marginally delayed the critical point when the available stock dried up - a point which arrived on 14 May when the Gambian Authorities told MOD that the remaining 320m3 of aviation fuel had to be conserved for commercial use and that none was available for UK forces until resupply. DDofSPol 10(RAF) was to observe wryly that this had come about despite constant pressure on Shell International to improve upon the expected resupply date of 22 May. It was not until 31 May that POLOR received news that the quality tests of the newly-arrived fuel had been completed satisfactorily and that 1000m3 were available for UK use.

TF23.10 E28
051054Z May

TF23.11 E7

141310Z May
TF23.14 E48
DofSPol/106/2/14/
14 May
TF23/1.6 E116
310900Z May
TF23.20 E8

10.32 The uncertain political situation in Gambia at the beginning of May and the limitations at Dakar prompted negotiations to use facilities at Freetown as a fallback. On 4 May, the FCO advised MOD that the British Ambassador had appointed British Caledonian Airways as RAF agents, having the staff and expertise to negotiate on the spot and to settle bills locally. In the event, only limited charter flight use was made of these facilities and problems over diplomatic clearance caused staging through Freetown to stop.

041250Z May
TF23.10 E60
291345Z May
TF23/1.8 E197

MOVEMENTS SUPPORT

10.33 The speedy transit of personnel, weapons and stores to the South Atlantic was a critical feature of Operation CORPORATE and its achievement necessitated movements control at a high level within MOD. This was provided by a joint - Service organisation, the Defence Operational Movements Staff (DOMS), which comprised movements specialists of the three Services and members of Government Departments concerned with the requisition of shipping, the chartering of civil aircraft and the use of ports and harbours. RAF movements and air transport operations staff figured prominently within DOMS with the RAF-manned Air Resources Section representing some 70% of the overall DOMS complement. The DOMS Co-ordinating Committee met almost daily throughout the conflict.

DOMS Co-ord Comm
Minutes in
TF23 series

DOMS PROCEDURES

10.34 The transit of stores and equipment was initiated in the first instance by units operating in the South Atlantic. Their demands were filtered through single Service HQs and submitted as consolidated bids for air/sea lift which stated the movements priority, which was normally the latest arrival date, and the call-forward details. DOMS then allocated resources to meet the task and called forward items to be airlifted - in the case of items for ship movement call forward authority was normally delegated to the HQ UK Land Forces or Flag Officer Plymouth. Each Service was responsible for assessing its priority for movement but in the event of a clash of priorities VCDS (P&L) decided.

10.35 Standard airlift procedures were followed whenever possible, though it soon became apparent that, the RN was not familiar with them and that special arrangements would have to be made to cater for what, at the outset, was largely a fleet support

operation; the deployment of an RN logistics team to RAF Lyneham played a significant part in remedying the position.

AIR MOVEMENT CONTROL

10.36 The day-to-day control of air movements tasks was the responsibility of the small movements organisation at HQ 38 Gp, Upavon, which was manned round-the-clock from 2 April. However, the task of keeping movements squadrons aware of immediate activities and future developments was so intense that it had to be bolstered within a couple of weeks. A similar situation developed at MOD where Mov Ops (RAF) had to ask HQ 38 Gp on 15 April for the attachment of 5 NCO movements controllers from 20 April to fulfil shift duties. 51131Z April 38G/55606/65.3 E25

10.37 At first, MODUK informed the major UK headquarters, CINCFLEET, UKLF and STC, that units could make direct telephone bids to the Cargo Allocations Cell (CAC) at HQ 38 Gp for freight space for free flow items (ie, those not requiring DOMS approval)on existing airlift. When further airlift resources were required, the CAC in conjunction with RAF Lyneham was to contact the Joint Movements Staff at DOMS. Such was the pace of telephone requests, however, that on 7 April MOD revised the system so that henceforth only signalled bids would be accepted. The airheads were also under pressure and by 9 April nearly 70,000 lb of free flow cargo had accumulated at RAF Lyneham. The DOMS Controller advised the major headquarters that the backlog had to be cleared by dedicated airlift and put an embargo on free flow until further notice. The message also laid down what items required formal, signalled bids to DOMS. They were grouped into six categories: a. passengers and accompanied freight, b. unit deployments, c. weapons, ammunition, missiles and explosives, d. vehicles, helicopters and boats, e. single items on consolidated loads in excess of 1000 lb or 350 cu ft, f. any item with a critical arrival deadline. In the event the backlog was quickly cleared and DOMS was able to lift the embargo two days later, though the criteria for formal bids remained in being.

42110Z April 38G/55606/65.1 E34

071230Z April Ibid E86

090735Z April 38G/55606/65.2 E17

111445Z April Ibid E52

10.38 As the number of units involved in operations increased it became necessary at intervals to repeat the criteria. Sometimes, however, adjustments to the system were necessary. On 16 April, for example, HQ 38 Gp requested MOD to inform units that there was no need to make prior contact with the 38 Gp CAC for freight not requiring DOMS clearance. It also requested that units providing consignments for use by the RN should channel their bids through CINCFLEET, presumably so that the RN could allocate the relevant priority. Complaints about inadequate freight documentation occasioning delay or even rejection were to cause UK RAOC to introduce standard formats for passenger and freight bid signals. A week later, it initiated a tighter system for the call forward of passengers; bids for single individuals or parties of four or less had to name each one whereas for larger parties only the name of the OC was needed. Movements procedures were by that time becoming well understood and such adjustments as were necessary related to procedures for the free flow of equipment to the airheads and for items to be air dropped to the Task Force.

160845Z April 38G/55606/65.3 E51

STC 211940Z April 38G/55606/65.5 E3

011605Z May 38G/55606/65.8 E49

ADJUSTMENT OF THE FREE FLOW SYSTEM

10.39 We have seen that free flow was introduced as a means of processing stores which did not fall within the categories requiring formal bids for airlift. RAF Lyneham was the designated reception airfield. The guidelines on free flow were repeated at. intervals and with one or two glaring exceptions were followed to the letter By early May, however, it had become apparent from the pattern of free flow items that RAF Brize Norton was outlifting the bulk of this freight and so HQ38 Gp proposed that it should take over the reception arrangements. MOD initially accepted the recommendation but quickly reversed the decision on the grounds that such a pattern might not continue to apply. It nevertheless undertook to monitor the position and on 20 May it announced a streamlining of the system by avoiding the unnecessary handling at Lyneham of VC10 compatible freight. All army/RAF free flow freight was therefore to be sent to the Air Movs Sqn, Brize Norton. Some confusion clearly resulted for a clarifying signal went out next day to the effect that Army/RAF freight destined fors ships of the Task Force was to go to Lyneham - the only free flow Army/RAF freight that wa to be sent to Brize Norton was that earmarked for detachments at Ascension.

MOD 042110 April 38G/55606/65.1 E34
STC 271700Z April 38G/55606/65.6 E80
071240Z May 38G/55606/65.10 E72
072355Z May Ibid E95
201041Z May 38G/55606/65.15 E60
211526Z May 38G/55606/65.16 E22
112338Z May 38G/55606/65.12 E39

10.40 As replenishment tasks intensified the carriage of dangerous air cargo (DAC) became more frequent and, in response to enquiries, UK RAOC advised units that DAC could be free flowed provided it conformed to laid down criteria. Before such items were delivered to the airheads, however, units were to provide F1380 details to HQ 38 Gp.

112338Z May 38G/55606/65.12 E39

RESUPPLY BY AIR DROP

10.41 The movements organisation also prepared for the air dropping of supplies which became a crucial feature of the replenishment system once the Task Force departed from Ascension. On 25 April CINCFLEET promulgated procedures to be followed in notifying air drop requirements. Broadly, they covered information about the consignment, the target ship and the date/time for the drop. Consignments were to be sent to Lyneham where the RNLO party would allocate priorities and liaise with No 47 AD Sqn, RCT, about load packing and preparation.

251520Z April 38G/55606/65.6 E22

10.42 The MAMS detachment at Ascension experienced some difficulties during the early stages of air drop activities. Consignments were sometimes airlifted on the wrong aircraft from the UK and, arriving unidentified at the FMB, missed the airdrop Hercules. The system was therefore improved to ensure that the air despatch party would release consignments only when HQ 38 Gp had allocated a specific flight; moreover, the consignment was to be accompanied by a transit check sheet to make sure that it could be tracked down at every stage of the move. The deployment of a 47 AD Sqn detachment to Ascension also tightened up the system

27115Z April 38G/55606/65.6 E65

though important loads continued to go astray (4). A joint Service meeting at Northwood on 6 May discussed the preparation of air drop sorties and resolved that freight wrapping should be colour-coded and that consignments should be stored in a special compound at RAF Lyneham. UKMAMS would be responsible for the clear marking and despatching of loads on the allocated flights, thus facilitating their preparation for air drop by No 47 AD Sqn at Ascension. Units had to be reminded of these procedures and particularly of the need to mark consignments so that the name of the consignee could not be "obscured, obliterated or removed". On 25 May, the DOMS Co-ordinating Committee decided that before bidding to DOMS for airlift to Ascension units should first establish that the Air Commander, CTF 317, had allocated space on an air drop flight from the FMB. However, most procedural problems associated with air drop tasks had now been resolved and the role became one of the success stories of the Operation.

UKRAOC 221625Z Maye 38G/55606/65.16 E62

DOMS CC Mtg Mins TF23/1.8 E72

ROLE OF THE UK MOBILE AIR MOVEMENTS SQUADRON (UK MAMS)

10.43 On 2 April the UKMAMS (5) had been tasked by HQ 38 Gp with providing a 6-man detachment to travel to Ascension Is; it left RAF Lyneham on Ascot 4742, the first transport aircraft of the airlift. This was the commencement of a task which was to involve the Squadron in three main areas of operation - RAF Lyneham, the FMB at Ascension and Port Stanley in the Falklands.

021645Z April 38G/55606/65/MOVS.1 E5

BASE AIR MOVEMENTS FLIGHT (BAMF)

10.44 BAMF's workload increased dramatically as equipment for deploying units and for the forward loading of the Task Force arrived at Lyneham from all three Services and all parts of the UK. Despite the cancellation of leave, a manpower shortage soon developed and the staff had to be augmented by 25 movements qualified personnel, most of whom came from RAF Support Command resources. Furthermore, to provide a back-up during periods of intense activity, each of the four Base Shifts was required to nominate a six-man reinforcement team during its rest period. When circumstances warranted it these teams were also required to fulfil mobile tasks at other units when freight could not be moved

UK MAMS ORB April

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(4) At this time, many loads were also being lost at sea, sinking before they could be retrieved. Thus, to get round the shortage of waterproof containers the MAMS detachment obtained authority to use passenger lifejackets as flotation collars for air drop loads. The use of locator beacons for air drop operations in bad weather was also introduced. The embarrassing overshipment to Montevideo of boxes containing Harrier modification equipment is described in Chapter 3.

38G 052215Z May 38G/55606/65.10 E5

091901Z May 38G/55606/65.11 E59

(5) The unit was created in the mid-fifties under the aegis of the Air Movements Development Unit at RAF Abingdon to provide a mobile force of specially trained movements personnel to establish or reinforce airheads worldwide. It gained squadron status in 1966 and it later moved to RAF Lyneham where it merged with the Base Air Movements Squadron.

to Lyneham for loading. A case in point was the deployment of Nimrod support equipment from RAF Kinloss on 11/12 April when three aircraft were loaded and one off-loaded. Another team was engaged on 16/17 April in loading a cargo of missiles for transit to Ascension and others followed as further aircraft types were deployed.

10.45 We have seen that during the early stages of the operation most freight despatched by air was of RN origin and destined for RN units. The RN liaison team was therefore positioned at Lyneham to work alongside the UKMAMS staff and cope with the flood of kit and paperwork arriving at the base. As would be expected a good liaison at this working level was quickly established. The loading of VC10s at RAF Brize Norton proceeded without any major problems using the station's Movements Squadron although it had to be reinforced by students of No 1 Air Movements Reinforcement Course in the second half of April. When VC10 aircraft positioned away from base for loading they were supported by UKMAMS teams from Lyneham.

RAF Movements School ORB April

10.46 Whilst these activities were underway the BAMF also had to cope with scheduled and exercise commitments and, in the three months up to the end of June, it loaded 942 outbound aircraft and, by coincidence, unloaded the same number inbound. Some 8171 outbound and 7265 inbound passengers were dealt with and the freight figures were 13,437,321 lbs and 4,142,567 lbs respectively.

UKMAMS MOBILE FLIGHT DETACHMENT AT ASCENSION ISLAND

10.47 The speedy departure of the Task Force required the RAF to air transport many of its supplies to the FMB so that they could be uplifted to the ships while in transit. This had been expected and the six-man detachment led by a flight lieutenant departed at 0001 on 2 April. The team had been briefed to offload up to 13 C-130 Hercules which were being tasked to pre-position the stores and equipment.

10.48 On arrival, the first task was to establish liaison with the US authorities at Wideawake Airfield - the Civil Administrator, the USAF base commander and the Pan-Am manager who was responsible for the operation of the airfield on a contract basis. Despite the existence of this established base, however, facilities at the airhead were rudimentary. The team was accommodated at the USAF domestic site, about 2 miles from the airfield, which also contained such important facilities as the messing halls and the commcen. Working accommodation was a shared office in a wooden hangar alongside the pan and the only handling aid was a Pan-Am 10,000 lb fork lift truck. By 7 April it was clear that the detachment would not be able to cope with the inbound loads and a request for a loader (Condec) by special airlift was actioned immediately by HQ 38 Gp. A second Condec was later sent as the number of movements intensified. Once the freight was unloaded a naval party was responsible for clearing it from the pan area and preparing it for helicopter vertrep to the ships anchored off Georgetown - good liaison was to develop between the two organisations.

070800Z Apr 38G/55606/65.1 E79

211600Z Apr 38G/55606/65.4 E95

10.49 The pressure of movements activity allowed only limited rest periods and careful management had to be exercised to prevent exhaustion in such high ambient temperatures. The arrival of two more teams reinforced the detachment at the end of the first week (6). A routine, if intensive, pattern of activities was to emerge, though one which was punctuated by problems with aircraft handling equipment (ACHE). Although two Condecs and two Henley fork lift trucks were eventually deployed, they were seldom available at the same time because of unserviceability - on such occasions, experience, commonsense and muscle power had to be applied in full measure. The achievement of a steady routine was reflected in a 38 Gp AT Detachment situation report on 20 May which commented on a smooth running day at Wideawake with no aircraft unserviceabilities and few problems with apron congestion. The UK MAMS fork lift was unserviceable for a short period with consequent small loss of backloaded freight because of difficulties in unloading Condecs. Pan Am equipment was borrowed to cover the gap.

UK MAMS ORB June
080930Z April
TF6.2 E6
200500Z May
38G/55606/65.15 E56

10.50 HQ 38 Gp's policy of rotating personnel every 30 days paid dividends since it allowed the detachment to be limited in size on the principle of working personnel very hard for short periods Morale remained high throughout the Operation and by the end of June the detachment had recorded the following statistics.

Aircraft Type	No	Pax In	Cargo In(lb)	Pax Out	Cargo Out(lb)
C130	448	1,644	8,695,235	769	1,987,737
VC10	154	3,761	3,930,041	2,354	462,840
Belfast	20	9	728,903	-	-
DC10	1	-	-	192	3,500
C141	1	-	23,939	-	-
707	2	-	87,942	-	-
	626	5,414	13,466,060	3,315	2,454,077

UK MAMS ORB June

OTHER UK MAMS DETACHMENTS

10.51 Gibraltar's importance as a staging post during the early stages of the Operation required the reinforcement of its movements staff and on 5 April a SNCO and two airmen joined the Movements Flight. A small UK MAMS team of a JNCO and an airman also deployed to Dakar and remained there throughout the conflict. Other short-term detachments were mounted in support of air transport operations and are referred to in Chapter 3 of this Narrative.

UK MAMS ORB Jun

10.52 In addition to these commitments, an enlarged MAMS team of 11, with a flight lieutenant as detachment leader, began to deploy to Port Stanley after the surrender. The advance party of three arrived on 23 June and the remainder on 1 July. The detachment commander worked alongside the Transport and Movements Staff at HQ Land Forces Falkland Islands running the Joint Services Booking Centre. The rest of the detachment handled the ingoing and

(6) As pressure on accommodation grew the enlarged detachment was split up with the third team housed at the hutted/tented camp at English Bay, about 8 miles from the airfield. Shortly afterwards the complete detachment of four teams was located there.

outgoing aircraft, turning round aircraft as quickly as possible with limited handling aids and in severe climatic conditions.

10.53 The proliferation of movements organisations was to place strain upon UK MAMS resources and an additional workload upon the 38 Gp units providing reinforcement manpower. For some months the fourth BAMF shift was disbanded and its 29 personnel were diverted to mobile tasks until replaced by personnel of other units on a HQ 38 Gp controlled allocation.

SUCCESS OF THE MOVEMENTS SYSTEM

10.54 The distance to the conflict zone added hugely to the logistics task. The relative isolation of the Falkland Islands, the lack of convenient staging posts and port facilities and the prevailing weather conditions were factors which forced DOMS into making ad hoc arrangements at successive stages of the Task Force's deployment. Added to this was the difficulty occasioned because few of the deployed units and formations bidding for airlift were established ones with planned air staff tables. Thus, the movements organisation at all levels had to work in fine detail, often dealing with single items and individuals rather than composite loads. The hasty gathering of data and assembly of equipment had to be matched by ingenuity at ramp level, the planning and preparation of loads often proceeding while shipping was being requisitioned and airlift flow patterns were being devised. A special feature of the Operation was the need to complete the equipping of the Task Force during its passage south; it was at this time that the identification of relative priorities was of crucial importance. In the circumstances, DOMS control and co-ordination played an essential part in the successful assembly, deployment and support of the Task Force and proved the value of control at the highest level.

D Mov(RAF)/67/7/1
15 Oct

TACTICAL SUPPLY WING (TSW) ACTIVITIES

10.55 TSW was another element of the supply organisation to play a prominent part in the management of forward facilities. Its operation of fuel installations both on land and at sea, and co-ordination of supply activities generally, was to be a major contribution to the success of RAF operations. TSW was among the first RAF units to be deployed when it left Lyneham at 0400 on 3 April for Ascension and its involvement was to continue until 10 May 83 when the last member of the Dakar detachment was withdrawn. The Wing's task was to provide logistics support for operations and though its role had been limited to meeting the support needs of Priority 1 operations it proved itself capable of fulfilling the special out-of-area demands of Operation CORPORATE. Both cadre and non-cadre (not on current TSW strength) personnel and their equipment were equal to the demands of the task and ensured the essential mobility in the field for which the unit had been established. The TSW story is therefore one of a number of elements deployed under MOD direction to a variety of locations, including ships, and of an involvement which was to stretch the unit's resources to the full.

021645Z Apr
TF 6.1 E8

CE/2/1/16.7 E49

10.56 First indications of TSW involvement were received on 1 April when it was required to deploy 8 personnel and equipment for

MOD 011920Z Apr
RAF Stafford Report

the refuelling of three Hercules aircraft in the Falkland Islands. The team was nominated and being prepared within a couple of hours and on 2 April a full Wing recall was implemented. It was placed on a formal 72 hours notice for deployment on 5 April and, thereafter, elements of the Wing were committed throughout the operation. (MODUK announced on 5 April the allotment of FUD1 status to each of these elements). A total of 131 TSW personnel were deployed with a maximum of 104 away at any time. This section outlines TSW's participation in the conflict and the scale of its involvement. Whilst some attempt has been made to follow a chronological order, this has not always been possible or, indeed, desirable because of the diversity of its tasks and their varied locations.

051543Z Apr TF23.1 E24

MOD 052033Z Apr TF 23.1 E35

ACTIVITIES AT ASCENSION ISLAND

10.57 **Coordination of Supply Support.** As activities at the FMB got under way the careful co-ordination of logistic support was clearly essential. The scale of the RAF build-up was probably not appreciated at the outset but there was an early realization of the need for a central co-ordinating facility; hence, the appointment of a Flt Lt RAF Logistics Co-ordination Officer (LCO) on 6 April and the arrival at Ascension on 8 April of a small team of one WO and two JNCOs to provide the core of a re-supply service. At that stage, its task was seen mainly as the submission of demands to parent units on behalf of the numerous RAF detachments, meeting incoming transport aircraft to extract RAF freight and delivering it to RAF consignees; additionally, there was the highly important task of ensuring the prompt return of repairable items to parent units.

TSW/7000/19/Ops 2 Apr (RAF Stafford Report)

TSW/7000/19/Ops 26 Apr (DofS Pol/ 38/2/13 Pt A E59)

10.58 **Growth of the Task.** The LCO was responsible to the SRAFO for RAF logistics matters generally and so he also represented the other supply personnel who were responsible for the FAPs deployed in support of the Victor, Nimrod, Hercules and VC10 aircraft - a Flt Lt and 2 Sgts for the Victor detachment, a FS and a SAC with the Nimrod detachment and one Sgt supporting the AT detachment. It was soon apparent, however, that the complexity of the role and the responsibility level were such as to require greater experience and it was decided to replace the Flt Lt with a Sqn Ldr, a change which took place on 21 April. Furthermore, the critical influence of the fuel situation had brought about a change of emphasis and the overall task was seen as a threefold one - to control the management of fuel, to co-ordinate the supply activity of deployed units, and to accept accounting responsibility for those RAF stores which were not consigned to individual detachments.

RAFSC/800210/48/WHD Plans 21 Apr CE/2/1/167.1 E77

10.59 **Fuel Management.** As seen in Chap 2 the facilities existing at Ascension at the start of the operation were to prove inadequate for the scale of operations being planned and that the improvement of those facilities was progressively achieved. TSW control of the fuel farm at the airfield included responsibility for the six 30,000 gal pillow tanks that, by early May, were situated in the BFI complex. These, together with the installation of the pipeline from Georgetown to the airfield on 10 May, were significantly to ease the knife-edge tension under which the detachment had operated since 5 April. Nevertheless, TSW's worries did not cease at that stage for the suspicion about the

RAF Stafford Report ACDS(P&L)25 Apr AMSO/19/8/1.1 E50

quality of the USNS POTOMAC's delivery allowed no let-up in the need for meticulous fuel monitoring.

10.60 **Supply Support.** TSW's capacity to provide bare-base supply facilities had diminished over the years because its NATO function had became increasingly directed towards fuel handling and particularly to the rotors-turning refuelling of helicopters at deployed sites. The process was to be reversed during the campaign, however, for besides managing the airfield fuel activity the unit fulfilled the role of a base supply organisation co-ordinating the supply activities of the deployed squadrons and detachments. Their first level support was provided by the Fly-Away Pack (FAP) but as the operation went on their supply needs were to intensify. To achieve a measure of supply co-ordination the cell was co-located with UK MAMS and the RN supply team. The cell's task was processing demands to parent units on behalf of the detachments, meeting incoming transport to extract RAF freight and direct it to ultimate consignees, and returning repairables to parent units. Delivery to consignees sometimes proved impossible, for much equipment arrived without the consignees being clearly indicated. To remedy the problem, HQSTC introduced on 29 April a special marking system for all RAF equipment being despatched to Ascension and, whilst units had later to be reminded of the requirement, the problem was considerably reduced.

TSW/7000/19/Ops
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290945Z Apr
TF23.9 E36
TF23.15 E50

10.61 **Enhancing TSW Facilities.** The intensity of the airlift to the Island was to place great pressure on supply staffs and on 11 May DGS(RAF) reported to AMSO that ACDS(P&L) had advised CBFSU that "the current severe restrictions on personnel numbers must be lifted to permit greater use of the base". He pointed out the additional supply personnel were needed to improve control over the large quantities of equipment being deployed. A major step forward had been the provision on 4 May of a direct VDU link to the Supply Computer Centre (SCC) Hendon which greatly facilitated the progression of stock queries and demands. Linked by Satcom, the terminal also provided direct communication with the parent units of aircraft detachments, though it apparently suffered frequent breakdowns caused variously by heat, dust and voltage fluctuation. Nevertheless, the facility proved a boon in that it enabled TSW to provide POLOR with comprehensive fuel reports, after a period during which CBFSU had insisted on reducing the amount of information passed to MOD and routeing it exclusively through VCDS(P&L) staff. The staff situation eventually improved and by 9 June the supply staff on the island, including those accompanying squadron detachments, totalled 3 officers, 1 WO, SNCOs and 22 cpls and other ranks; the TSW element continued to provide manpower on Ascension until 14 August when all supply manning became a PMC responsibility.

DGS(RAF)/35U/479
AMSO19/8/1.2 E28/5

D/DofPol(RAF)/3
1054/2/C/2876 9 Sep
AMSO 19/8/1.5 E47

D/DAP(RAF)/76 9 Jun
AMSO/19/8/1.3 E49

RAF Stafford Report

DAKAR DETACHMENT

10.62 Despite being an international airport, Dakar's importance as a staging post for the ATF en route to and from Ascension was such that a TSW detachment deployed there to guarantee facilities. During the intensification of operations in the second week of the campaign a water contamination problem arose and on 13 April TSW was alerted to the possible need to provide a fuel blending facility. A second incident on 21 April when a 47 Sqn Hercules lost power on 2 engines and had to divert to Porto Santo, near

TF23/1.2 E170

Madeira, proved decisive and led to the deployment on 24 April of 3 TSW personnel and their blending equipment. The task continued throughout the campaign and it was not until 26 July that 2 of detachment were recalled, one fitter remaining to provide the facility until May 83. 231754Z Apr TF6.5 E70 RAF Stafford Report

PLANNED SUPPORT OF 5 INF BDE

10.63 The decision to deploy 5 Inf Bde gave rise to the mounting of Exercise WELSH FALCON which was a 38 Gp/5 Inf Bde exercise to prepare the brigade and all participating units to a high operational state of readiness. TSW's task in the exercise which lasted from 22 to 29 April was to provide two 2-line refuelling points for 24 hour a day operation from a single, deployed site. In the event, 2 sites were employed and the detachment demonstrated how effectively it could perform simultaneous rotors running refuels (RRRFs) of 33 Sqn's Pumas even though 50% of its manpower were non-cadre. It was therefore with some disappointment that TSW learned on 2 May that the Wessex not the Puma would provide the 5 Inf Bde SH lift and that since only RN Wessex were to be deployed for the operation, TSW support for the brigade would not be required. RAFSC/800210/48/WHD Plans 21 Apr CE(RAF2/1/167.1 E77 AF Ops/TF26 2 May 6/660/1-6 May TF 41.2 E74

REFUELLING THE TASK FORCE

10.64 TSW's acknowledged mobility was to be given added meaning when among its detachments were included a number deployed on ships taken up from trade (STUFT). In addition to the planned tactical fuel support ashore, TSW was tasked with providing on-board refuelling facilities for embarked aircraft. The following ships had TSW detachments:

a. **ATLANTIC CONVEYOR.** TSW was tasked on 17 April to provided refuelling facilities for both Harriers and helicopters and a TSW corporal embarked with 2 sets of kit - one to provide an on-board 5 point pressure/open-line refuelling facility and one to set up a Harrier field site system. The equipment consisted of four 10,000 galls flexible fuel tanks, fourteen Air Portable Fuel Containers (APFCs), two 150 GPM Hamworthy pumps, two filters and five pressure refuelling points and it arrived at Devonport on 19 April. The tanks were installed in metal containers within a frame above the main outer deck and the APFCs were stowed below the containers but were capable of connection to the refuel system. The TSW personnel loading the equipment apparently expressed some misgivings about these ISO containers which did not conform to what had previously been outlined; they considered them to be too narrow, too high and rather fragile and the tanks were therefore filled only with 6000 galls each. In the event, the tanks would never have coped with the South Atlantic weather for even the relative calm during the passage to Ascension proved too rough and the swell generated in the unbaffled tanks caused major spills on 2 occasions; the fuel remaining in the tanks had to be ditched because of the hazard to ship and aircraft. Following TSW/MOD Navy discussions, proprietary 5000 galls flexible tanks with resistant fittings were delivered to Ascension Is to await the arrival of the ships. They were installed in the original containers but with an associated TSW ORB Apr 210958A Apr TF23/1.2 E158 AMSO 19/8/1.3 E9 290825Z Apr TF 23.9 E20 RAF Stafford Report

bulkhead modification and extra restraint in each container to allow personnel to enter it even in the severest South Atlantic conditions. When the ship was hit by an Exocet missile and set on fire, the TSW corporal's initiative in pumping overboard the remaining aviation fuel to reduce the risk of the fire extending resulted in his receiving a CTF 317 Commendation. Fortunately, the RFA FORT AUSTIN carried sufficient additional refuelling equipment to enable the Harriers to operate ashore, but the loss of a 1,890 litre LOX tank could have interfered with operations and it had hurriedly to be replaced.

RAF Stafford Report Annex A

AMSO/19/8/1.3 E9

b. **Other Vessels.** TSW task 29/82 involved the installation and transportation on the Cable Ship IRIS of a flexible fuel tank to provide an on-board refuelling facility. The installation was completed by 29 April and RN personnel were trained in the use of this TSW equipment during the passage to Ascension. However, similar problems to those experienced on the ATLANTIC CONVEYOR were to arise and steel tanks were installed at Ascension. Similar facilities were provided on the TEV RANGATIRA but no refuels were carried out. The RN requested TSW to prepare another facility for the SS ATLANTIC CAUSEWAY on 4 May but this was later changed to the provision of standby equipment which was not in the event required.

AF Ops TF23/1 27 Apr
DofSPol/38/2/2/2.A

HARRIER REFUELLING ASHORE

10.65 TSW's most important task ashore was to provide a Harrier refuelling facility which was capable of refuelling 2 aircraft simultaneously. On 5 May HQSTC had tasked TSW to detail what equipment was needed to support an 8 aircraft Harrier remote field site. TSW had to point-out that the embarked equipment together with the personnel and stores on RFA FORT AUSTIN (7) would be inadequate to cater for such intensive operations. The unit was therefore tasked on 12 May to provide such support and the additional equipment was loaded on the MV CONTENDER BEZANT on 15 May, the extra personnel embarking on the MV ST EDMUND on 19 May. After the loss of the ATLANTIC CONVEYOR the shortfall in equipment was hurriedly made up and despatched on 27 May to link up with the MV TOR CALEDONIA on which it was loaded on 31 May. Notwithstanding the tasking to establish and operate a single Harrier refuelling site, the detachment were eventually to be called upon to operate 2 sites - one at Port San Carlos, the other, the primary site, being at Stanley Airfield.

051412Z May
RAF Stafford Report

D/DofS POL(RAF)/2/1
26 May
TF23.18 E4

a. **Port San Carlos Detachment.** As previously noted a Harrier refuelling detachment left Lyneham on 3 April and flew via Gibraltar to Ascension, where it embarked on the RFA FORT AUSTIN on 6 April. This detachment remained with the RFA throughout April and May. During the San Carlos

(7) The TSW ORB for April stated that the 8 personnel and equipment embarked on the RFA FORT AUSTIN were tasked to provide a 2/3 point pressure refuelling system for ATF aircraft at an unspecified location but were later designated to support a land-based Harrier option.

landings, the FORT AUSTIN was anchored in San Carlos Water and the detachment provided gun teams for the ship's GPMGs and a rifle team for close air defence. It transferred to the RFA FORT GRANGE on the night of 5 June when the FORT AUSTIN was detached to South Georgia but the TSW detachment remained aboard until 26 June when it took over an existing installation which had in the meantime been built by REs and operated by a mix of Army and 18 Sqn personnel. The detachment was understandably dismayed that its expertise had not been utilized during the land battle - it felt that the shortage of rotary-wing assets might have been alleviated had the rapid refuelling capability of helicopters close to the battle area been exploited - aircraft could have spent longer on task and would have had an improved payload to fuel ratio.

b. **Stanley Airfield Detachment.** The officer and 16 other ranks on the MV ST EDMUND manned the TSW detachment at Stanley Airfield from 15 Jun. Priorities were such that the first days after the surrender were spent off-loading helicopters, ferrying No 1(F) Sqn's support equipment ashore and making full use of TSW's experience in marshalling helicopters and handling underslung loads. A TSW domestic site was rapidly developed which was to become the main Supply Sqn area when the advance guard of the squadron arrved at Stanley on 12 July. Further details of the work of this detachment are given in Chapter 12. TSW ORB RAF Stafford Report

PLANNING THE RAF STANLEY SUPPLY SQN

10.66 As with most other elements of the future Falklands Garrison, planning the establishment of the RAF Stanley Supply Sqn had to be initiated soon after the commencement of hostilities. OC Ops Flt, TSW, attended an MOD meeting on 29 April to commence planning for the RAF element of the garrison and this was followed on 9 May by a more specific examination at HQSTC of the supply organization. A further meeting at HQSTC on 11 May looked into the rationalisation of MT, GSE and other common user equipment and concluded with the preparation of Unit Air Staff Tables (UASTs). Joint-Service fuel needs were discussed at an MOD meeting on 14 May at which it was resolved that TSW would undertake all airfield fuel operations and aircraft refuelling and, in separate discussions, it was decided that the Wing would man the RAF Stanley Supply Sqn for 6 months based upon two 3 month detachments.

10.67 It was soon evident, however, that TSW had insufficient manpower to meet the rotation commitment as well as its other Task Force and Priority One NATO commitments and that a crash training programme would be necessary to provide an additional 78 qualified airmen. This number was made up by giving ex-TSW and Field Supply Duties (FSD)-trained airmen from Support Command a 2-week refresher course and the balance a shortened FSD course; the first of the latter courses started on 24 May. TSW/7019/2/1/RE 30 Jul 83 RAF Stafford Report

10.68 In the meantime, HQSTC tasked various units to undertake certain supply actions: stations detaching aircraft were to assemble FAPs to provide initial aircraft spares and to deploy sufficient compressed gases for 60 days stock levels; RAF Benson

was to assemble the MT spares and clothing packs; RAF Scampton was to provide the GSE pack. TSW was to provide the Supply Squadron and movements organisation and would be responsible for storage, fuel dispensing, co-ordinating MSF demands, and arrangements for resupply, control and issue of MT, GSE and common user spares. The packing of equipment for deployment to Stanley commenced on 4 June and the advance party equipment was called forward for loading on MV CEDAR BANK on 16 June. The 6 month commitment was duly completed and the supply and movements functions were gradually handed over for manning by PMC drafting officers. It was on 28 November that the TSW party finally returned to RAF Stafford from the Falklands.

ESCALATING SUPPLY NEEDS

INTENSIFYING ACTIVITIES

10.69 Though early estimates of the RAF's ability to contribute to CORPORATE were restricted largely to air transport support and maritime operations, the examination of other options was urgently pursued. Interest inevitably centred upon the possibilities of the RAF taking direct action against Argentine forces and involved the use of a variety of aircraft types and weapon systems. Revised concepts of operations were devised and these were to lead to intensified logistics activity and, almost invariably, to reduced supply timescales. In this context, the problems of extended transit time, intensified rates of effort and the return of repairables were influential. AS DGS(RAF) was later to point out to ACAS(Pol):

> "Resupply capability has a major influence upon engineering policy which is, in turn, a determinant factor for supply planning, and small changes to the beginning of this chain can have large consequences at the end."

Lessons learnt

10.70 Another important influence upon supply thinking by the end of the third week of the conflict were certain planning assumptions made by the COS Committee. Three broad assumptions were identified as governing logistic and support planning: that the duration of the commitment would be at least 6 months with 25% attrition of naval and maritime air forces, that the land battle would not exceed 30 days but up to a 6 months occupation would follow, and that unit weapon and logistics strengths should return to NATO declared levels as soon as possible. DGS(RAF) elaborated upon this in respect of aircraft committed or planned for the Operation by referring to the likely intensified flying rates and to a vital assumption that bona fide requirements would receive financial approval. Thus, he called for Directors of Supply Management to review the supply position for aero engines, air radio installations, mechanical components and other relevant ranges. They were also required to bring forward repair schedules for equipment likely to be involved so that serviceable pools could be assembled. DCDS(OR) was at the same time initiating single Service reviews by Directors of Admin Plans into what logistic support shortages would exist after a 30-day battle and what sources of resupply would be available.

Minutes of COS Meetings CAS/73/2/4

231743Z Apr DofSPol/38/2/2A E30

D/DORS/58/1 23 Apr DofSPol/38/2/2A E26

REVIEW OF THE LOGISTICS POSITION

10.71 Such a review was timely for there were already indications that the demands of the Operation were beginning to make inroads into stock situations which would possibly interrupt the routine of Priority 1 commitments. On 22 April, for example, HQ RAFSC drew MODUK Air's attention to an Army directive stopping further depot issues of 7.62 mm and 9 mm ammunition for routine training. As a consequence, live weapon training was mainly restricted to the initial training carried out at the RAF College and at the School of Recruit Training, Swinderby. Virtually all range work ceased and the restriction was only relaxed in July. A similar story applied to the Inert Mk 15 1000 lb bomb, for heavy training use had produced a critical shortage. Moreover, with a number of weapon delivery options under examination there was an urgent need to assess future requirements and possible replacement action. Until the position clarified, all non-CORPORATE training with the Mk 15/21 was therefore stopped; fortunately, there was no shortage of 1000 lb (Retarded) bombs.

221630Z Apr DofSPol/38/2/2A E25

RAFSC ORB Apr

DofSPol/38/2/2/1 E35

10.72 A Strike Command analysis of the supply picture was in fact already well under way though its objective was restricted primarily to identifying possible operations limiters. Based upon recent consumption/issue data and known future requirements, the analysis resulted in a significant shopping list of items relating to aircraft and equipment already committed which SMBs were urgently progressing. The analysis was subsequently extended to cover aircraft likely to be involved later in the conflict and the HQ STC assessment was given further in-depth analysis by DD S Pol 8 who concluded that for most aircraft types there were potential "stoppers". Moreover, the pace at which operational options were being explored was to create its own problems for the supply organisation for, as DGS was to observe to AMSO on 28 April:

161600Z Apr DofSPol/38/2/2A E15

281525Z Apr DofSPol/38/2/2A E39

DofSPol/38/2/2/1 E53

> "...in the fluid operational situation pertaining at present the task of identifying future requirements is almost as formidable as ensuring their availability. We are proceeding with both tasks at all possible speed."

AMSO19/8/1.1 E55/10

ACCESS TO WEAPON DISTRIBUTION

10.73 The Supply Automatic Data Processing (ADP) system's value in providing a VDU display of the stock situation and a real-time communications facility was amply demonstrated at this time, though 2 significant gaps in the availability of stock information were becoming apparent. It was a disadvantage, for example, that air stores embarked on HM Ships and STUFT were not VDU-linked. The result was that, not knowing precisely what was embarked, SMBs had difficulty in assessing future Task Force requirements and when replenishment would be necessary. The other shortcoming concerned information about weapon and ammunition availability.

CE/2/1/167.7 E49

10.74 As we have seen, the limited stock position made it essential to exercise the closest control over all assets and this was well illustrated by the Ammunition Supply Depot at 11 MU when on 29 April it reported that a priority demand for Inert 1000 lb bombs for RAF Waddington had occasioned a highly-efficient out-of-hours issue with airlift being arranged through RAF Lyneham. The arrangements eventually proved unnecessary because a

TF23/1 30 Apr DofSPol/38/2/2A E53

simple transfer of stock between Honington and Waddington was arranged, thus allowing an MU replenishment of Honington by road instead of using scarce airlift to Waddington (8). The possibility of arranging rapid access to weapon distribution information by means of ASMA or the Supply Computer Centre was therefore mooted. A variety of methods was soon adopted. Firstly, all operational units were required to report weapon/ammunition assets daily so that any breach of WR or CR holdings could be identified quickly by SMBs. Secondly, the transfer from manual to ADP control was arranged for a large proportion of the weapons range and it was hoped to complete file construction within a few days. For security reasons, holdings of certain weapons were excluded from RAF SCC control and were incorporated instead into the ASMA system which, to facilitate planning, already held details of the main weapons systems. DofSPol/38/2/15 E54 9 May

RETURN OF REPAIRABLES

10.75 The exceptionally long pipeline to the operational area was significant not only in terms of the time it took to get spares where they were needed but also the speed with which unserviceable components could be returned, repaired and made available to the SMB for further allocation. As early as 22 April, DGS drew AMSO's attention to the potential difficulty of having large stocks of repairable stores in the pipeline and the need for as rapid return of unserviceable equipment as possible. DGS/35U/314 22 Apr DofSPol/38/2/15/1 E3

10-76 HQ RAFSC reinforced this point on 23 April by confirming that the Equipment Supply Depots (ESDs) were primed to speed up the turnround of repairables but that the existing system was time-wasting and giving rise to unnecessary journeys. As an example, it cited the delivery of unserviceable Harrier stores from the airhead to 14 MU, Carlisle, when the majority of items were repaired at BAe, Kingston. The Headquarters suggested that use of the 4-72 supply computer link at the UK airheads would expedite matters and followed this up on 28 April by offering to assist with support services at the airheads and proposing that RAF Abingdon be nominated to receive all stores destined for the ESDs, whether on the critical list or not. 230830Z Apr DDSM4/52/1A E42 281030Z Apr DDSM4/52/1A E74/1

10.77 These exceptional receipt procedures were adopted by MODUK Air on 29 April for all RAF-managed stores. They involved the transit of all unserviceables to Abingdon which acted as a clearing house, sending items direct to industrial contractors or to the ESDs as directed by SMBs. The procedure was fully implemented by 5 May and proved highly efficient. 291500Z Apr DDSM4/52/1A E84 HQRAFSC ORB Jun

(8) As required by SM29, 11 MU made its first issues to units and ships on 3 April and these were mainly for POL stores. As the nature of the task ahead became clearer, the SMBs instructions related to conventional weapons and explosives: during April, 91 Priority 01 demands were actioned whereas not one had been received in the previous 3 months. The MU's proximity to ports was an advantage since transit time to ships and reliance on road transport were minimized.

10.78 As the number of defective air stores grew following the start of hostilities, the speedier return of items to the UK received increasing emphasis. Prompt recovery of repairables had of course been urged all along but towards the end of May delay in the return of critical items was beginning to disrupt the SMB's ability to give adequate support to RAF and RN aircraft. AMSO drew HQ 18 Gp and Strike Command attention to pressure on items across the board but specifically referred to helicopter rotor equipment, cold air units for GR3s, LOX containers and converters for the Sea Harrier, and hydraulic pumps for the Sea King. He urged the timely backloading of unserviceable items on ships returning to Ascension and their onward dispatch by air. Northwood conveyed the message to the TF rather more dramatically; it stated that repair cycles for many sea/land equipments, weapons and propulsion items were already at a stand- still because of high usage and low returns. A similar message from HQ STC also mentioned the value of the SMB lists of items that required special handling.

041230Z Jun DDSM4/52/1B E94

041709Z Jun DofSPol/38/2/2/2B E10

041445Z Jun DofSPol/38/2/2/2B E8

10.79 The sea resupply cycle involved approximately 28 days' sailing time and considerable joint engineering and supply effort was necessary to limit the effects of such a potential constraint upon the turn-round of repaired equipment. Fortunately, the campaign was a short one and the repercussions of coping with such a logistics pipeline were never fully felt.

STREAMLINING THE PROCUREMENT PROCESS

10.80 At the other end of the supply process every opportunity was seized to shorten the time between placement of an order and receipt of the equipment. We have seen that MOD UK(PE) had advised MOD UK(Air) about the nomination of a central point for the channelling of demands. It also contacted the Managing Directors of major industrial firms advising them that they would probably be receiving piecemeal requests from various MOD sources for equipment and parts. The Director of Aircraft Production alerted them to advise production branches of such approaches so that the adjustment of any conflicting priorities and the arrangement of any extra contract cover might be made. It was a sensible precaution which served to underpin the system for rapid industrial response in the emergency and was to prove most effective.

061130Z Apr DDSM4/52/1.A E7

161115 2 Apr DDSM4/52/1.A E38

10.81 There was, of course, a relaxation of financial constraints and the simplification of design and specification work so that industry was given clear AFD objectives which were simply stated and rarely amended. Moreover, normal commercial and accounting practices such as obtaining tenders and formal estimates had either to be disregarded or played down.

D Air Plans/2/3/ 1333 11 Jun CE/2/1/167.6 E65

CE/2/1/167.7 E43

10.82 The response throughout industry was understandably enthusiastic and outstanding production schedules were achieved. Clearly, such support, particularly for aircraft involved in the operation, had to be concentrated on urgent, short-term demands at the expense of fulfilling routine and lower priority projects. Two examples from the British Aerospace inventory of AFD activities illustrated the situation; all available effort at the Kingston/Brough Division, for example, was concentrated on top priority demands for Sea Harrier and GR 3 parts, whilst at

DofSP/38/2/2.A E87

Woodford the special production of modification kits for Nimrods and Vulcans brought other activities to a standstill. The priority accorded to Vulcan modification was highlighted on 11 May when MOD UK(Air) advised HQSTC that it had given executive and financial authority for the conversion of 6 Vulcans for the tanker role and that British Aerospace would accept the first two production aircraft that day. 111000 Z May STC/6000/29/2.3 E32

10.83 Modification, production and clearance became almost indivisible activities and, whenever possible, the normal clearance procedures were severely pruned. The adoption of recommendations for "a release for urgent operational purposes" shortened processes when it was not practicable to acquire the evidence needed for normal release. Such releases were only acceptable for operational use over a limited period. Reduced clearance timescales were also achieved by the involvement of the Aeroplane and Armament Experimental Establishment (A&AEE) in contractors' trials; this allowed the progressive pattern of trials to be shortened by proceeding straight to critical conditions and placing greater reliance upon aircrew judgement to provide safe operating envelopes. A&AEE was asked to carry out 110 trials - they involved 17 aircraft and 10 missile types, and it completed flight trials in 10 different locations during the conflict. Here again, the removal of cost restrictions and the facility of working a 7 day week (which in some areas consumed 2½ years of the normal overtime budget) contributed to the exceptional speed of response. CE/2/1/167.7 E43 CE/2/1/167.7 E43

TAKING STOCK

A ROUTINE OF RESUPPLY

10.84 As May set in and the TF Battle Group moved into the TEZ a clearer picture of the supply situation began to emerge. The fuel problem appeared to be easing and the establishment of a regular pattern of air and sea movement of men and materials to Ascension and beyond allowed an opportunity to reflect upon the first month of operations and upon what challenges lay ahead.

10.85 HQSTC had called on its units on 29 April to take stock of the supply situation "now that the show is on the road". It encouraged them to seize the chance to regularize transactions that had been hastily arranged and to ensure that detached units were exercising proper control of equipment. A hint of similar routine developing at RAF Support Command was evident when, on 28 April, the C in C's brief recorded that activity had levelled off though, for some units, short periods of intensive effort continued to arise. It cited in particular 7 MU, Quedgeley's preparation of accommodation stores for RN vessels and STUFT and a tented camp to cater for a garrison force of 3500 personnel. This underlined the often overlooked importance of accommodation stores to operations. At the ESDs, opportunity had been taken to adjust a number of computer programmes to segregate Operation CORPORATE and routine demands and this had speeded up response times to priority demands. Overall, the supply organisation's challenge was becoming one of replenishing reserves, plugging any gaps which could affect the operation and Priority 1 capability, and assisting in planning the support of a future garrison. HQSTC ORB May RAFSC/800210/48/WHL Plan CE/2/1/167.2 E23 HQRAFSC ORB Apr

PROGRESSING SUPPLY SHORTFALLS

10.86 An HQ STC engineering and supply staff survey was completed on 28 April and highlighted potential limiters and items which would require expenditure over and above that already approved. The broad conclusion was that while in the medium term it should be possible to sustain the existing level of support activity the more protracted the operation the greater the pressure on aircraft spares. Supply staffs would increasingly have to contend with extended lead times and the problems of industrial loading as in-service and industrial stocks were absorbed.

28152SZ Apr
TF23/1.4 E27
HQSTC ORB May

10.87 The HQSTC review was discussed by the AMC on 7 May when the urgent resupply of critical items was a prominent issue; DDSPol 8's report on the findings was circulated after the meeting and it arrived at the following conclusions:

TF22 7 May
CE/2/1/167.3 E2

a. **Harrier.** There were no immediate supply support prolems with the RAF Germany Harriers (AD Eng Pol had previously noted the urgent recovery of Harrier equipment positioned at Lossiemouth, Jever and Cold Lake). Main undercarriage units were in extremely short supply, however, and the build-up of serviceable stock was being urgently pursued.

231230 Apr
DofSPol/38/2/2/1.A
E37

b. **Nimrod MK1 and MK2.** Searchwater radar LRUs and the ARI 5986 IFF Interrogator for Nimrods were of particular urgency.

DofSPol/38/2/2/1
7 May
CE/2/1/167.3 E1

c. **Victor.** The Conway 201 engine position was improving with "10 serviceable reserves to cover 7 holes in aircraft leaving a net 3 reserves". It was hoped that pressure on Rolls Royce to raise output would ensure a satisfactory situation in June. Some undercarriage items needed special emphasis but were not viewed as stoppers.

d. **VC10.** Of the holding of 6 fuel simulator units, 4 were subject to contractor modification and the remaining two were unserviceable and needed urgent pre-modification repair.

e. **Weapons.** No difficulties were envisaged with supplies of 20mm and 30mm airborne ammunition since new-buy contract deliveries were to start in May. The possible fit of SNEB to RN and Army Gazelles would call for increased supplies of the 68mm HEAT version of the rocket and of launchers. The planned replacement of the AIM 9G Sidewinder missile by the AIM 9L had caused F6(Air) to resist the replenishment of 9G stocks to War Reserve Levels; however, the purchase of 300 of the new version was approved a little later.

101400Z May
CE/2/1/167.3 E15

DGS/35U/372 27 Apr
CE/2/2/167.2 E12

f. **AVCO Lycoming T55 Chinook Engines.** The major role expected for the support helicopter necessitated an increase in engine reserves. Nine reserves were held but there were 12 "holes" in stored aircraft. Twelve engines were actually on order at the beginning of the conflict with 6 expected to

be delivered in September 82 and 6 in early 83. However, on 10 May it was confirmed that 3 had been delivered and 3 were in transit. Authority to purchase a further 10 engines was given on 13 May but no forecast of likely delivery times was available. This purchase was linked to the formation of a second Chinook squadron and was to create an additional problem. As HQSTC pointed out to MODUK(Air), the enhancement of the FAP for 18 Sqn had been achieved at the expense of 3 out of the existing 21 aircraft and so DD SM 15 was already struggling to improve upon a critical situation in respect of certain hardcore shortages. Expressing concern over possible restrictions on operations and on output from No 240 OCU, AF Ops enquired whether extraordinary action was possible. Carlisle was at that point stung to respond that if it were possible to buy the support helicopter force out of difficulties it would be done - it affirmed that the SMBs had already grasped the nettle firmly. Boeing Vertol proved extremely cooperative in making production line engines available, though the procurement of special UK fit equipment needed constant hastening action.

DofSPol/38/2/20.1 E

141110Z May TF41.3 E29

141415Z May TF41.3 E38

g. **RN Support.** RN aircraft and helicopter activity in the first month of the operation had increased threefold and had taxed available spares resources. Normal peacetime rates were exceeded and UK & US contractors had been requested to accelerate short-term repairs and to meet new production contracts. SHAR role equipment was in special demand and particular effort was applied to the provision of fuel tanks, gun pods and ECM passive warning receivers. Depot stocks of ships' fire-fighting foam were also exhausted; fortunately, urgent requisition led to the delivery of 500 drums on 14 May and this satisfied all needs and left a reserve stock. The ship storing section of 16 MU was also under heavy pressure in meeting the demand for air stores, both for RN ships and STUFT, against the deadlines of ships' "alongside" dates. Similar urgency applied to 7 MU's activity in equipping hospital and casualty ferry ships.

DGS Sitrep 7 May

16 MU ORB

RAFSC ORB Jun

h. **Tanker HDUs.** At the AMC's 11th meeting the high utilisation of HDUs by the Victor fleet was considered. The possibility that shortage might delay the Vulcan and Hercules conversion programmes prompted the AMC to initiate a trawl of all possible sources of HDUs. Though alternative sources were not immediately available - because of a production lead-time of 18 months - it had been resolved by 13 May that 8 of the units set aside for the VC10 programme were to be diverted to equipping 6 Vulcans and 2 Hercules. Meanwhile, Flight Refuelling Ltd undertook a feasibility study into how soon an order could be met if the Service made certain spare parts available.

AMC 11th Mtg CE/2/1/167 E39

DofSPol/38/2/2/2 13A

DofSPol/3/1054 21

i. **AAR Probes.** HQSTC reported that a total of 33 AAR probes were fitted to aircraft or were in the process of being fitted by the middle of May. A measure of the urgency of the programme was provided when, in order to meet Nimrod AAR needs while avoiding de-modification of a Vulcan, the Imperial War Museum agreed to the removal of the probe from its display Vulcan.

MOVEMENT OF EQUIPMENT WITHIN THE UK

10.88 **Road Movement.** The road movement of equipment required careful co-ordination so that maximum use was made of unit MT and, in particular, of the second-level support vehicles of 2 MT Sqn, the London Movements Unit, RAF Abingdon and RAF St Athan. The operation dominated their respective activities and involved 3 distinct phases: HQRAFSC ORB Jun

a. **Phase 1.** The storing of ships and movement of equipment for the first units to deploy were the primary activities of Phase 1 which lasted until approximately 25 April. The transit of support equipment for No 1(F) Sqn, TCW and TSW to the airheads or ports made heavy calls on second-level resources. RAF Waddington noted that its MT mileage in April was 16000 miles above the normal. ASMA 091538E May STC/6000/2/3.1 E38

b. **Phase 2.** Road movements intensified during Phase 2, tasks stemming largely from the movement of RAF units to ports and the 2 airheads, as the build-up of the Ascension base developed. 2 MT Sqn was under particular pressure and was reinforced by the attachment of 15 drivers and the hiring of 6 additional civilian trailers to cope with the increased mileage and the tonnage to be carried. One major task was the ferrying of mainly engineering equipment from RAF Scampton and Benson to Middlesbrough docks for loading on MV MYRMIDON which involved 80 x 40 ft vehicle movements. 2 MT Sqn ORB May HQSTC ORB Jun

c. **Phase 3.** This Phase was essentially concerned with the assembly of the airfield support equipment which was to be shipped to Port Stanley after the ceasefire.

10.89 **Use of the Priority Freight Distribution Service (PFDS).** The PFDS's twice-daily service linking depots and major operational stations was readily converted to 7-day operation from the night of 3/4 April and the level of activity increased steadily. Special route arrangements for PFDS support during the Easter period were announced on 6 April and C Mov O was to stress the need for close liaison between stations to avoid ad hoc runs and to make maximum use of available vehicles for routine and priority freight. By carefully planned backloading through depots, C Mov O RAFSC moved priority loads between depots and operational stations in a matter of hours rather than days though some boosting of the service became necessary so that it could cope with increased demands. HQRAFSC ORB Apr 061500Z Apr DDSM4/52/1A E8

10.90 **The Jetstream Air Shuttle.** The urgency of some consignments, however, was such that even the speed of the PFDS was inadequate to meet ATF dealines; in these circumstances and as the Operation developed, use was made of the Jetstream aircraft of the Multi- Engine Training Sqn (METS) based at RAF Finningley to shuttle high priority freight from operational bases to the airhead. From 11 May, aircraft were made available to UKRAOC for ferrying spare parts and personnel to RAF Brize Norton. Initially, the Sqn was tasked at random but from 28 May a twice-daily shuttle was instituted and by the end of June a total of 336 hours had been flown in support of the operation. The stations primarily involved were Kinloss, Coningsby and Marham, and CPRM tasked the aircraft to commence the shuttle from Kinloss 6 FTS ORB May 082305Z Jun TF23/1.10 E19 090039Z Jun

at 0500Z and 1700Z daily. At a late stage, some friction arose between MODUK(Air) and UKRAOC about the exercise of sole tasking authority but it was quickly settled and account was duly taken of the possible need for DOMS to use the facility. TF23.22 E77

PROCUREMENT FROM THE US

PROCUREMENT PROCEDURES

10.91 Throughout April, negotiations with the State Dept for the supply of US military equipment had had to be guarded so that the US's position as a possible mediator could be preserved. The sensitivity of the situation was exemplified when media leaks about the provision of Stinger missiles and Passive Night Goggles were to cause the Secretary of Defense on 15 April to hold up their release for "face" reasons. At the end of April, however, the supply position eased considerably after President Reagan made public the US's willingness to provide the UK with material aid. The follow-up was the establishment on 3 May of an agreement between the Pentagon and BDS Washington about procurement procedures. The principal features were that existing channels should be used whenever possible and processed through the UK Defence Procurement Office (UK DPO) and BDS. This would ensure that requests speedily reached the right people, used well-established lines of communication and would be actioned with appropriate priority and with reduced risk of security leaks.

03 2130Z May
TF 23/1.4 E157
D/Air(PE) Gen 7 May
DofSPol/38/2/20.1
E25

10.92 Any US reservations about the scale and pace of its assistance with weapons and equipment now disappeared and the effect was immediately to expedite replenishment and the delivery of new-buy purchases. The supply of ordered items was advanced and, where necessary, the quantities made available were increased. Priority was given to spares provision from US sources and immediate loan or purchase of specialised items was facilitated. This applied particularly to guided weapons, EW systems, satellite communications and material support for the repair and upgrading of Port Stanley airfield. It was reported on 3 May that the US Govt had even set up a crisis management organisation to process exceptional UK requests.

D/DofSPol/3/1054
3 May
DofSPol/38/2/15E

10.93 At its meeting on 4 May the COS committee appointed DCDS(OR) as the focal point for processing UK military equipment requirements and called for agreed single Service lists of immediate and longer term needs to be made available by noon on 5 May. Thereafter, DDOR5 or DDOR4 would receive amendments or new requirements and pass them to DCDS(OR). Inevitably, long established liaison channels continued to be used and DCDS(OR) had to take steps to stop single Service amendment of co-ordinated lists - AUS(AS) referred to "corralling the enthusiasts". The point was reinforced by DUS(Air) who stressed the need for financial propriety and to secure value for money. On the other hand, the object was certainly not to hinder the procurement process and he advised Air Force Board colleagues that F6(Air) scrutiny was to be completed within 24 hours; any delay was to be notified to VCAS. To ensure that this would not be necessary DS8 provided out of working hours cover for F6(Air).

ACAS(OR)/2/2/273
6 May
DofSPol/38/2/20.1E5
F6(Air)2/180/664/7
11 May E23
TF47 12 May
DofSPol/38/2/20.1
E10
CE/2/1/167.3 E96

10.94 By mid-May the movement of supplies and particularly of weapons had achieved a scale which gave rise to some Pentagon

speculation that either the UK was using the emergency to build up its NATO stocks or was consuming weapons at a rate which suggested that weapon planning data needed revision. BDS Washington pointed out that there was a sensitivity about possible inroads into US operational stocks and it referred specifically to the release of the first 100 Sidewinders taking 48 hours of intense deliberation before being approved and then only with the Secretary of Defense's agreement.

151730Z - May
DofSPol/38/2/20.1
E15

10.95 In order to meet special deadlines, SMBs sometimes faced potential delays which they were anxious to avoid, with the result that normal procedures and the agreed channels had to be by-passed. In the circumstances prevailing, there were inevitable mix-ups one of which achieved particular notoriety. An urgent request for 30 MJU-7B infra-red flares for use in a trial installation of EW countermeasure equipment in the Nimrod was, on the advice of SM20 Harrogate, made to the Chemring Co of Portsmouth who duly delivered them. What was not known was that the flares came from the US Tracor Co and that a private charter aircraft would be used to move the flares internally in the US, adding considerably to the cost. Financial considerations apart, however, perhaps more worrying was the MOD(PE) observation that such corner cutting could be hazardous where pyrotechnics and explosives were concerned, since there was the possibility of "the carrying aircraft setting itself on fire".

101924Z Jun
DofSPol/38/2/20.1
E44

D/A Arm 18/2/31
17 Jun
DofSPol/38/2/20.1
E46

DEMAND FOR SPECIAL ITEMS

10.96 The US was a major supplier of the special air stores needed to support numerous modification programmes and operational activities. Certain items were to prove specially significant in extending the options open to the UK and their acquisition became notable supply activities.

10.97 **Passive Night Goggles (PNG).** PNGs were among the first special purchases and were intended for support helicopter operations. An initial demand for 20 sets was met on 20 April but they were unfortunately first generation models and unsuitable for the operations envisaged. A second order for 28 Bell and Howell Gen 2 ANVIS and ITT AN/PVS5 goggles was initiated on 23 April, with the rider that, if necessary, the UK DPO should go to the highest State Department level. This order was met on 8 May when the second delivery of 20 arrived at Brize Norton. The many and varied demands for these sensors were such that virtually the whole time of one HQSTC supply staff officer was devoted to tracking down their locations and reallocating them as changing air staff priorities dictated.

TF23/1 21 Apr
DofSPol/38/2/2/2.AE

DD Ops(AT)6/900
21 Apr
Folder D4/2

10.98 **AIM9 Missiles.** Large-scale issues to the RN for the use of deployed SHAR and Harrier GR3s quickly depleted stocks of AIM9G and, with 17% of the UK stock under 3rd line repair in the US or in transit, a critical shortage appeared likely; DD Ops AD drew ACAS Ops' attention to the position on 7 May. Moreover, the decision to despatch 100 AIM 9L with the Harriers deploying in support of 5 Bde brought the UK holding to 254 against the NATO requirement of 1718. Thus, negotiations took place for the diversion to the UK of supplies intended for the Federal Republic

TF23.12 E72
DofSPol/39/2/2/2A E7

of Germany. The plot eventually worked out was to deploy a further 300 AIM9Ls to Ascension, 100 for RN use and 200 for the RAF, and to return all AIM 9Gs to the UK for air defence use. AUS(AS)/89/558 10 May DofSPol/38/2/20.1 E7

10.99 **Sonobuoys.** By early May consumption of sonobuoys had been such that pressure was put on the US to bring forward a production run of 20,000 Jezebel sonobuoys against an existing contract. Subsequent inroads into NATO reserves were not to prove serious although, as the sitrep of 18 May noted, a coincidental build up of tension in the North Atlantic would have necessitated drastic resupply measures. DofSPol/3/1054 18 May DofSPol/38/2/15

10.100 **OMEGA Receivers.** Of all navaids used in the South Atlantic operations, the OMEGA receiver probably played the most prominent part. Fitted to a number of Hercules, Nimrod, Victor and Vulcan aircraft, stocks of the equipment had hurriedly to be purchased under the aegis of DD Ops(Nav). Twenty sets of Litton 211 OMEGA were made available for RAF use at extremely short notice. ACAS(OR)2/2 6 May DofSPol/38/2/20.1 E13

10.101 **AIM45 (Shrike) Missiles.** The requirement for a discreet defence suppression weapon for action against radars at Port Stanley led to a request for the US Shrike missile. A request for one of each of the AIM45A-6 and AIM45A-9 missiles, complete with their launcher units, cockpit equipment and technical manuals for trial installation in the Vulcan was made on 10 May. The US responded by arranging for HQ USAFE to release the missiles from Spangdahlem and by making engineers available to assist in the installation. A signal from Ops(EW) to HQ USAF Washington on 21 May acknowledged the US Government's great help and rapid response to the RAF's endeavour to fit the missile to the Vulcan. 101400 Z May DofSPol/38/2/20.1 E8 161545 Z May STC/6000/29/2/2/Ops E33 210815 Z May TF52.2 E17

THE NEED TO PLAY DOWN US INVOLVEMENT

10.102 The scale of US assistance and media interest in future operational plans inevitably aroused speculation which caused the US authorities some unease. On 22 May BDS Washington drew MODUK's attention to American disquiet about press leaks and enquiries about US assistance to the UK. In discussions at ambassadorial and ministerial level, the US authorities were anxious that UK agencies should not be drawn into discussion and should play down direct US involvement. This was a sensitive period for the BDS, coinciding as it did with the San Carlos landings, and it had already remonstrated for a second time over direct approaches by Ops branches about equipment availability, referring to the confusion caused by left hand/right hand enquiries. US reservations about its assistance to the UK being revealed indiscreetly could well have been further reinforced by such illustrations of organisational laxity. Thus, the channelling of enquiries and bids was tightened up to avoid further embarrassment and the caution was to persist well beyond the ceasefire. 1G/SASO/7.4 E27 TF 23/1 21 May DofSPol/38/2/2.A E91

PREPARATIONS FOR LONG-TERM SUPPORT

10.103 Though a degree of routine resupply had been achieved by early May it was still essential to maintain the cross-flow of information between supply and engineering staffs. Events were moving quickly and new options continued to be explored. In addition to the exchange of views provided at AMC meetings, the necessary co- ordination at policy level was obtained by D Eng Pol(RAF) attending DGS's meetings of Directors and by D of S Pol(RAF)'s presence at CE's meetings of Engineer Authorities. Longer term issues were receiving much attention and achieving major policy significance - among them were the possible Vulcan run-on, the support for the future Falklands Garrison and, linked to that, the development of Port Stanley airfield.

POSSIBLE VULCAN RUN-ON

10.104 There were no immediate supply support problems associated with the proposed run-on of three 8 AE Vulcan squadrons to the end of 1982 though some repair contracts would have to be reopened. On the other hand, the possibility of extending the run-on for up to 5 years with 10 tanker and 10 MRR variants and 4 for the OCU DGS/35U
was viewed more apprehensively. Re-activation of 4th line repair DofSPol/38/2/1
contracts and extensive re-tooling would be necessary and would generate significant and costly support problems. A note of caution was injected into deliberations by VCAS on 12 May. He DGS/35U/510
emphasised that consideration of a run-on beyond Operation DofSPol/38/2/1
CORPORATE was only a feasibility study and that no discussions with industry were to take place. Meanwhile, S Pol 38 had stopped disposal of surplus aircraft and when hostilities ceased the current holdings were 35 airworthy aircraft and 13 hulks.

FALKLAND GARRISON SUPPORT

10.105 At its meeting on 11 May the COS Committee considered the problem of logistic support for any future Falkland Islands garrison. These deliberations were followed on 18 May by a DofSPol/38/2/15/2.A
statement of the logistic planning assumptions. The key feature E1
of the air plan was the transfer of the air defence role from the Harrier to the F4 Phantom, the Air Staff hoping to deploy the F4 on 1 July. With only 6 weeks to go urgent preparatory action was needed to assemble the 60 day initial support and CSMO, HQSTC was to oversee the preparations, keeping Harrogate informed. As in the case of the Vulcan run-on, however, the point was stressed by the Air Staff that no irrevocable commitments were to be entered into at that stage.

10.106 Staff tables for the support of the flying task were prepared and showed a requirement for about 1000 men, 92 vehicles and 630 tons of equipment. In addition, due account would need to DofSPol/38/2/15/2.1
be taken of the task of shipping radars and the RAF Regiment air E1
defence element. The examination of engineering and supply implications was based upon the following assumptions: units would deploy with 60 days initial stock and, thereafter, there would be a 45 day replenishment cycle; a limited weekly airlift capacity, eventually settled at 200,000 lbs, would be available DofSPol/3/1054 21 A
but sea transport would have to be relied upon for bulk TF23/
replenishment; since there was at that stage no firm commitment on implementation of garrison plans, procurement bids would have to

be made on the basis of maintaining the tactical deployment roles of the aircraft involved.

10.107 By 9 June, STC units had virtually completed the assembly of enhanced 45-day FAPs using station resources backed by depot and contractor supplies. Those items which were not available at parent units were being assembled "centrally" - all MT at RAF Benson, GSE at RAF Scampton and administrative support equipment at RAF Hullavington. Accommodation and storage plans for the garrison administration were to be based upon a mix of Portakabins, ISO containers and tents; the smaller 10ft ISO container was selected as being well within the lifting capacity of the Chinook, thus facilitating deployment on arrival at the Falklands. One hundred and four ISO containers were already positioned at STC units and 65 Portakabins had been obtained through the Director of Quartering (RAF).

DofSPol/3/1054
9 Jun
DofSPol/38/2/15/1
E22

10.108 These preparations had coincided with a DGS review, undertaken at AMSO's behest, of the repercussions of deploying 12 Harrier GR3s upon our capability to support the remainder of the Harrier force. In addition to the equipment already en route, we have already seen that 60 days' stocks were necessary for Garrison support. HQSTC and RAF Wittering identified 93 critical items, 16 of which were repairables. 64 of the items could be met from depot or unit stocks but the remaining 29 would have to be made up by robbing. Wittering's stock of 16 aircraft and Gutersloh's 35 would have to bear the brunt leaving MOD(PE)'s 3 aircraft intact. The Delegated Engineering Authority, RAF Germany, was subsequently tasked with modifying 6 aircraft to the same standard as those already deployed for carrier operations, the target being to embark them on HMS ILLUSTRIOUS in mid-July. At this stage, the possibility arose that use might be made of a BAe private venture production of 8 aircraft to meet an expected Indian order which had been delayed. Delivery timescales were such, however, that the offer was not taken up during the conflict.

DofSPol/3/1054
18 May
DofSPol/38/2/15/1
E15

DofSPol/3/1054
1 Jun
DofSPol/38/2/15/1
E17

PORT STANLEY RUNWAY

10.109 The lengthening and strengthening of Port Stanley airfield was essential if operations by heavy jet aircraft were to be undertaken. In the short term, the enhancement could be achieved only by the use of the US AM-2 system which was based upon 12 feet by 2 feet aluminium panels which were interlocked in brickwork fashion across the aircraft's line of travel. Designed for the construction of expeditionary runways, the matting could be obtained only from the US Marine Corps' contingency stock. Behind the scenes negotiations for the purchase of 150,000 sqn yds were complicated and involved not only the terms and conditions under which lease of the equipment could be agreed but also the Secretary of Defense's approval. The US stipulated tight conditions relating to depreciation, consummation of sale if the material was unpacked, and a deadline for its return to Yorktown, the Naval Weapons Station in Virginia, before agreeing to its release.

D Air Plans/2/3/2.2
TF46.2 E18

CAS/73/2/1.20 E42

10.110 Though the DOMS meeting on 20 May had been advised that it would be 21 days before the matting would be available for collection, once the approval was given the US authorities acted speedily and the MV CEDAR BANK started to move the 4320 tons load on 1 June. The Royal Engineers eventually commenced the final

DOMS 34 20 May
TF23.16 E1
240901Z May
CAS/73/2/1.20 E

stage of a lengthy process when they started laying the AM-2 matting on 19 August, the climax of which was the arrival of the first Phantom F-4 air defence aircraft on 17 October.

IMPLICATIONS OF THE LOSS OF THE ATLANTIC CONVEYOR

10.111 The container ship ATLANTIC CONVEYOR had already delivered to the Task Force its complement of additional Sea Harriers and Harrier GR3s, and the first of its Chinook helicopters had disembarked, when it was severely damaged just before sunset on 25 May. Furious fires made the retrieval of stores impossible before it sank under tow on 27 May.

10.112 The logistics implications of the loss were dismaying. Most significant for the RAF were the loss of the FAP support for 6 Harrier GR3s, the loss of 3 Chinooks and the associated FAP and the loss of TSW's tactical refuelling equipment. Hardly less significant was the loss of ground servicing equipment, 30% of the Task Force's stock of BL 755 cluster bomb units (CBU) and 450 tons of construction equipment for the Harrier FOB. DofSPol/38/2/2/1 27 May TF23/1.8 E117

10.113 The replacement of lost GR3 stores could only be achieved by making further inroads into the Harrier special task stores held in RAF Germany; urgent action to replace these stores had therefore to be initiated. Fortunately, whilst the loss of the CBUs could have inhibited Harrier operations, replacements were readily available from the UK without detriment to war reserves stocks. VCDS(PRL)/127/3/2 26 May CAS/73/2/1.16 E53

10.114 The 5 Chinooks had deployed with greatly enhanced tactical FAPs, the equipment having been hurriedly obtained from MOD PE and 240 OCU and by robbing some of 18 Sqn's aircraft remaining at RAF Odiham. The station had had to supplement the two 5 AE packs with the complete unit holding of turn round spares. Chapter 3 has shown how the loss of these aircraft and stores had serious repercussions upon the mobility of the ground forces. To make good the loss the most urgent procurement action with the Boeing Vertol company and the use of MOD(PE) fleet assets became necessary; further robbing of Odiham and RAF Germany aircraft spares helped to make up a 3 aircraft FAP for 60 days' operations in the South Atlantic. DofOps/6/660/1 26 TF41 E11

10.115 The lost TSW refuelling equipment comprised four 10,000 gallon pillow tanks, 14 air portable fuel cells and pumping equipment. Fortunately, sufficient spare refuelling equipment was available on the RFA FORT AUSTIN to support operations in the short term but the LOX position was not so felicitous. The loss of the 1890 litre LOX tank required urgent replacement action and priority transportation so as to maintain the necessary scale of operations. DofSPol/38/2/2/1 26 May

10.116 The speed of response to the emergency was such that the AFOR supply desk was able to report to D of Ops(RAF) in its situation report of 1 June that replacement Harrier, Chinook and TSW equipment would be loaded on the TOR CALEDONIA at Ascension Island that day and that the vessel would probably depart for the South Atlantic on 2/3 June. A logistics low point had thus been satisfactorily countered though not, admittedly, without some penalty on operations within the theatre or upon the RAF's ability DofSPol/3/701 1 Jun

to fulfil wider commitments had they arisen. The setback once again emphasised the importance of dispersing key stores as a general principle of logistics.

FINAL STAGES

10.117 It would be an exaggeration to claim that the process of logistic replenishment continued uneventfully thereafter until complete repossession of the Falklands was achieved. Maintenance of the supply pipeline was but one aspect of the logistic task and intensive supply staff activity at all levels remained necessary. There was no let-up in the pace of air staff investigations of new options, but DGS (RAF) pointed out on 4 June that future emphasis would be more firmly on garrison planning and that situation reports should be adjusted accordingly. Nevertheless, the challenge of ensuring the availability of stores to meet new or modified programmes demanded continued urgency. Often there was disappointment when, after hectic and successful activity to meet new requirements, it was decided not to pursue an option because of changed Air Staff priorities.

35U/696 4 Jun
DofSPol/38/2/15/1
E18

10.118 Furthermore, the passage of supplies to the Task Force did not always go according to plan. For example, the overshipment of Shrike missile modification equipment for the Harrier GR3 to Montevideo - which is fully explained in Chapter 3 - occasioned not only hectic diplomatic exchange but also intense replacement activity by DD SM 15(RAF). As the supply manager for US-sourced missiles he had to obtain a replacement and make sure that it got the highest priority airlift. Similar urgency applied to the replacement of TCW secure voice equipment which was dropped on 12 June to Army units but which had landed in a minefield and could not be retrieved. Increasing reliance upon airdropping to deliver vital stores to the Task Force, often in bad weather, also gave rise to urgent procurement action, this time for search and rescue beacons (SARBE) which were extensively used for marking the whereabouts of loads. With up to 15 beacons being used on each airdrop sortie and a stock of only 50 remaining in the UK, HQ 38 Gp's call on 10 June for urgent resupply was entirely justified.

TF23/1 7 Jun
DofSPol/38/2/2/2.B
E9

101601Z Jun
DofSPol/38/2/2/2.B
E14

10.119 The supply of radar and communication equipment was a formidable task. By the end of May, SM51(RAF) had been involved with the relocation of four S259 surveillance radars - the first of which was, by then, operational at Ascension - the preparation of shipment for navigation aids and supporting spares packs, and the release of Ground-to-Air Management Radios, Intercomm Systems and Crypto sets. Rapid procurement action had been necessary for all items.

10.120 As the conflict drew to a close, increasing emphasis had to be placed upon the speedy return of unserviceable equipment to the UK. The 28-day Falkland/UK pipeline continued to tax supply managers who were identifying items which required priority return. The supply report of AF Ops on 15 June, for example, cited 2 equipments which highlighted the problem. The Collins 218 radio (ARI 23303) was used solely in the Chinook and comprised 3 receiver units. All spares had been deployed south and the first

DofSPol/3/1054
DofSPol/38/2/15/1
E24

of a new purchase would not be available until mid August. All spares of another item, the Sea Harrier inertial navigation platform, had also been deployed and the rate of unserviceability was increasing. In both cases, replacement would only be possible with prompt return and repair. Thus, though the situation report of 18 June could comment that there were no critical supply problems relating to air operations, a rider added that the longer term support of the Falklands Garrison would require the adjustment of provisioning action and timescales to compensate for the extended lines of communication. DofSPol/3/1054 DofSPol/38/2/15/1 E27

CONTRIBUTION OF THE RAF SUPPLY SYSTEM

10.121 The RAF supply system responded to the crisis with speed and flexibility. Round-the-clock logistic representation in AFOR, the setting-up of DGS(RAF)'s Crisis Management Cell and the meetings of the AFD Alert Measures Committee ensured that operational requirements and the available logistic support were closely identified. The group responsible for decision-making was therefore a small one and, in cooperation with HQSTC, was fully conversant with the operational and engineering aspects of the situation it was supporting.

10.122 Joint-Service management of the movements task was fundamental to the success of the Operation and RAF movements staff played a conspicuous part in coping with the challenge of the extended logistics line. TSW also made a major contribution and was instrumental in establishing the foundations upon which long-term supply arrangements were based.

10.123 Once shortages had been identified, the removal of much financial restraint and the by-passing of many peacetime procedures greatly assisted in speeding-up the acquisition of equipment. In this regard, the response of industry and of civilian staffs was such that projects timed to be in service some years ahead were sometimes cleared in almost as many days.

10.124 The need to recover repairable equipment with the utmost speed from the theatre of operations was not fully appreciated during the initial stages of the operation. As it became clear that it was not always possible to increase assets to make up deficiencies, however, the rapid return of repairables proved essential if the supply system was to cope with the challenge of an 8000 mile supply line.

Annex:
A. Senior Supply Staff Appointments and Officers who served in the South Atlantic.

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SENIOR SUPPLY STAFF APPOINTMENTS AND OFFICERS WHO SERVED IN THE SOUTH ATLANTIC

MINISTRY OF DEFENCE

DGS(RAF)	AVM D I O'Hara to 28 May 82 AVM A R Martindale from 29 May 82
D Mov(RAF)	Air Cdre A Beill to 21 May 82 Air Cdre B Hughes from 22 May 82
DDS	Gp Capt R Smith Gp Capt C W C Heal Wg Cdr C E B Bonser Wg Cdr P B M Richards Wg Cdr C E Upton Wg Cdr J Shearer Wg Cdr B W Ball
OC UKMAMS	Wg Cdr C W C Swaithes
D of S Pol(RAF)	Air Cdre A R Martindale to 25 May 82 Air Cdre A Beill from 26 May 82
DD S Pol 7	Gp Capt G R Pengelly Wg Cdr G L Spurrell Wg Cdr N T Carter
DD S Pol 8	Gp Capt P Clubbe Wg Cdr G M Ferguson Wg Cdr R A P Cox from 26 Apr 82 Sqn Ldr R Springett
DD S Pol 10	Gp Capt E F Banks Wg Cdr P Crotty Wg Cdr G R James Sqn Ldr T Holloway Sqn Ldr J Tasker
D of SS(RAF)	Air Cdre B Hughes to 23 May 82 Air Cdre I D Wilkinson from 24 May 82
DDSS11	Gp Capt C P Baker Wg Cdr N J Tidmus
DDSS12	Gp Capt P J Smith Wg Cdr J K Crowle Wg Cdr R G Davey
DDSS14	Gp Capt V B Howells Wg Cdr D J Woods Wg Cdr M L Cann

D of SM1(RAF)	Air Cdre I D Wilkinson to 21 May 82 Air Cdre J G De'Ath from 22 May 82
A/DD SM14(MS)	Wg Cdr P E Ruston
DDSM1	Gp Capt D M Waller Wg Cdr J D G Dainty Wg Cdr R G V Irish
DDSM2	Gp Capt A C Impey Wg Cdr K F E Mallett Wg Cdr F G Allen Wg Cdr P J Welby
DDSM4	Gp Capt A Wilde Wg Cdr J R W Edwards Wg Cdr J R Davies Wg Cdr J H Martin
DDSM5	Gp Capt R J Wilkinson Wg Cdr A G Lintott Wg Cdr B W Price Wg Cdr T W Watters
DDSM15	Gp Capt J McDonald Wg Cdr R W Pocock Wg Cdr J L Paxton
D of SM2(RAF)	Air Cdre J R Lambert
DDSM3	Gp Capt J J Rogers Wg Cdr M C F Banks Wg Cdr R A McEwen
DDSM6	Gp Capt J A Leggett Wg Cdr K J Carley
DDSM13	Gp Capt F A Spencer Wg Cdr N J Longbone Wg Cdr J H Martin
A/DDSM25	Wg Cdr C F Dixon

HQ STRIKE COMMAND

Cmd Supply and Movements Officer - Gp Capt R N Whittaker

Wg Cdrs D I Dawson
D C Collins
J J Leahy
J M Walker
P D Markey (from 25 April 82)

HQ 38 Gp

Wg Cdr Air Movements - Wg Cdr V D King

HQ RAF SUPPORT COMMAND

Air Cdre Supply and Movements - Air Cdre R E Gladding

Gp Capts P H Elton
J R Bradshaw
J K Craven-Griffiths
Wg Cdrs R F Mills
W R Carr
J F Vella
C S Lim
J I Barrow
J F P Brown
R W B Simons
B G Fuller
D Youdan (from 26 April 82)
R T W Mighall

RECIPIENTS OF THE SOUTH ATLANTIC MEDAL

Wg Cdrs M W Barham*
R Springett
Sqn Ldrs N Campbell
C Cruse
H R Rayner
Flt Lts J L Buchanan
P F R Burch*
N W Cromarty
W E Mahon*
G L Richardson
J Stewart
D L Taylor*
H F Tierney*
R J Young
Fg Offs S G L Baxter
J D Joseph

(*Rosette for service in the Falklands and associated areas)

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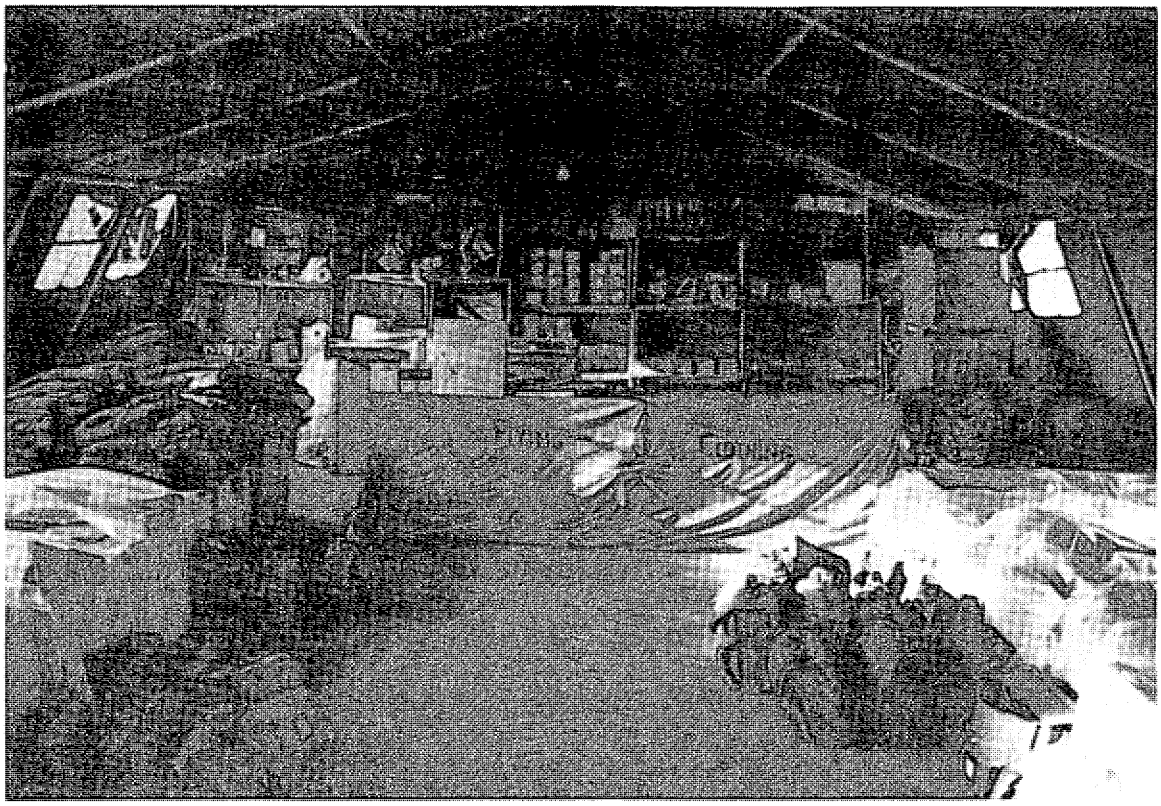
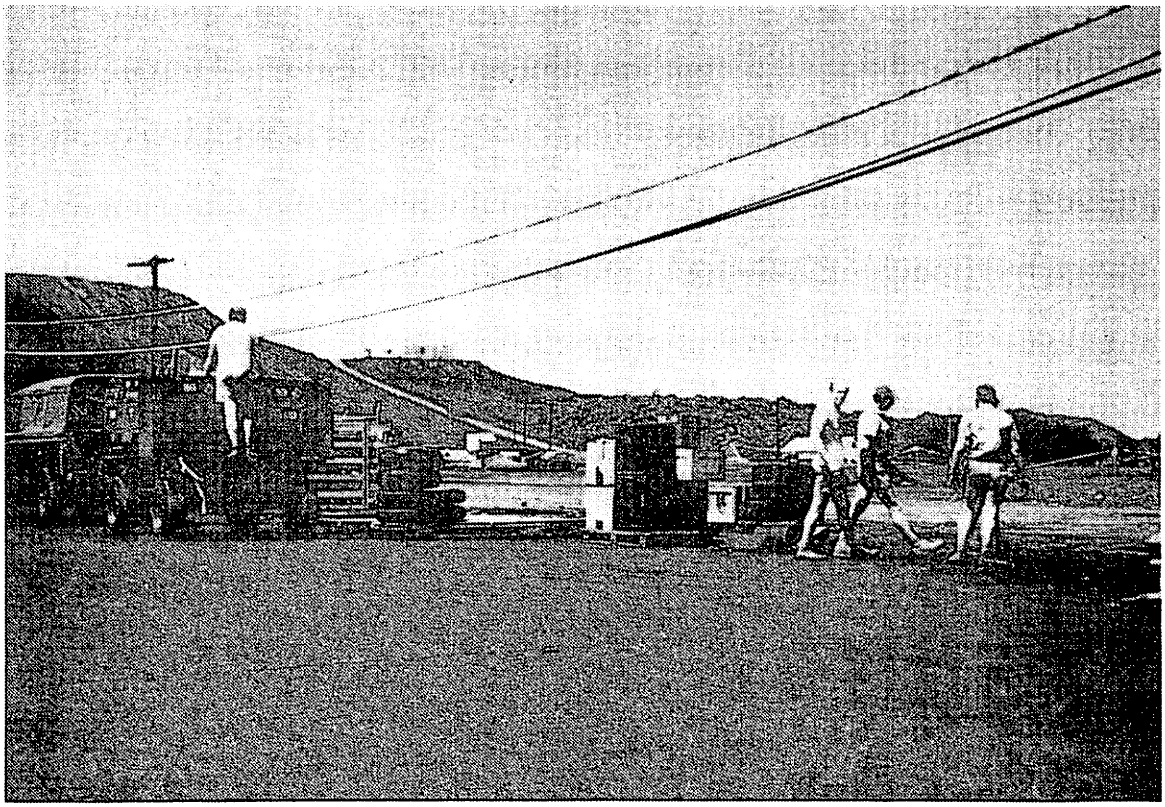
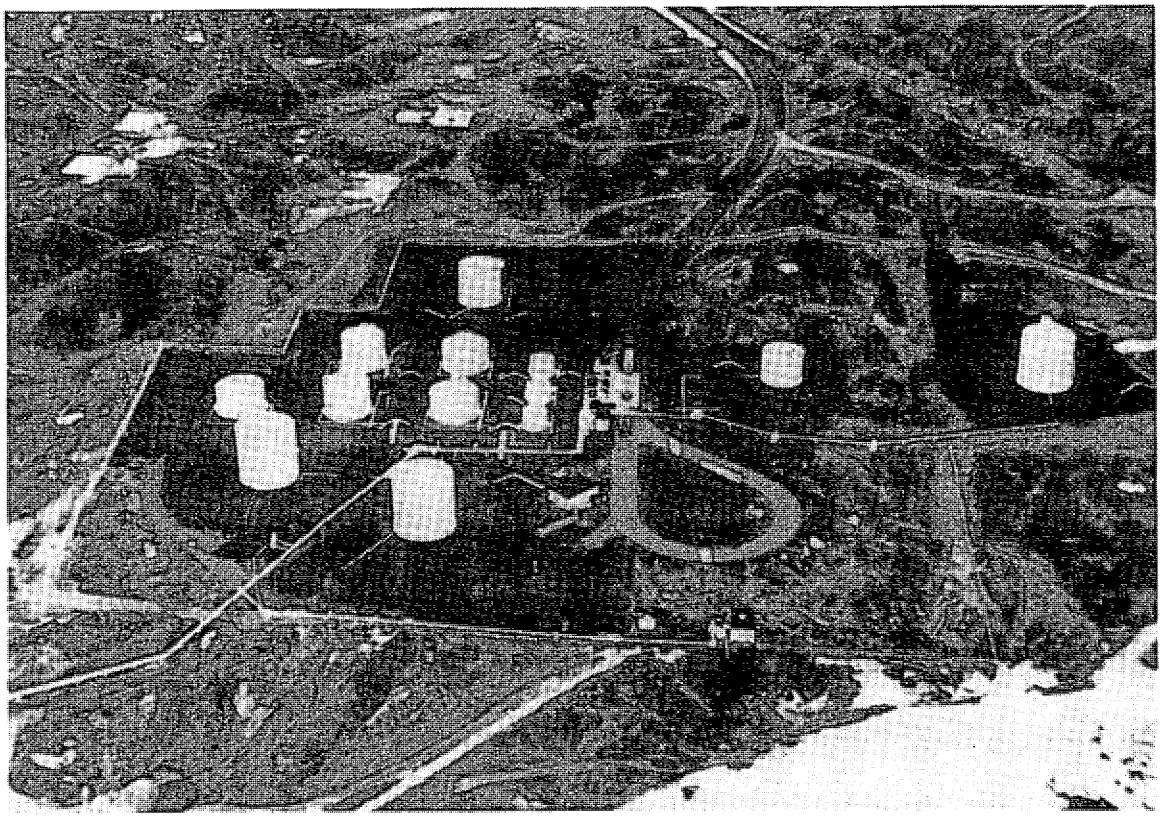


10.1. The Victor Flying Clothing and 'General Stores' at Ascension Island.



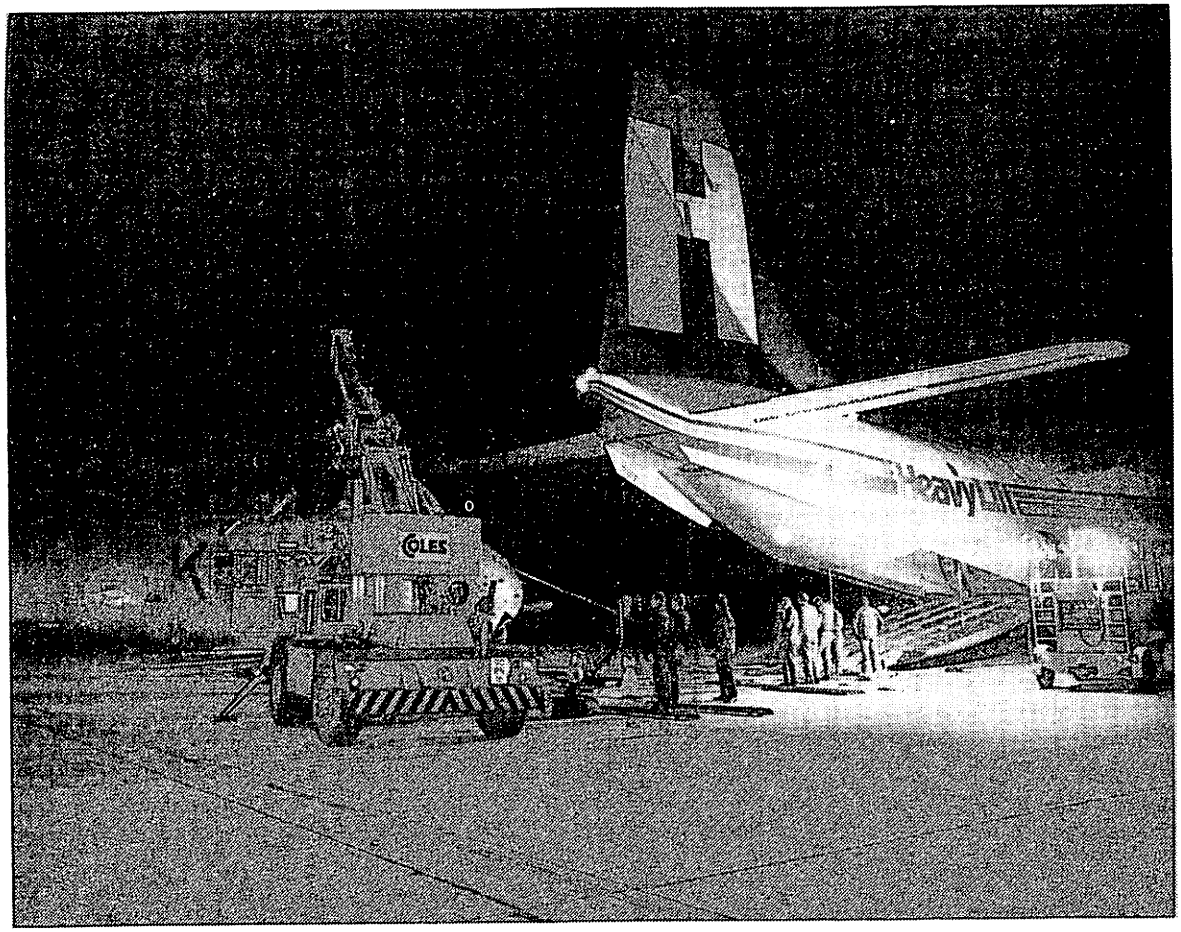
10.2. Unloading Martel ground support equipment on 29 Apr.



10.3. The main BFI on Ascension Island.

10.4. The pipeline from the BFI to the airfield.

10.5. The Pan Am building with stores awaiting air lift to the TF.



10.6. ATUFT! — An example of Aircraft Taken Up From Trade (Heavy Lift Ltd using ex-RAF Belfasts to good effect).

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CHAPTER 11

CATERING, MEDICAL, METEOROLOGICAL AND PERSONNEL MANAGEMENT ACTIVITIES

SUMMARY OF CONTENTS

11.1 **Introduction.** Besides those referred to in Chapters 9 and 10, the RAF deployed other specialist elements to the South Atlantic whose activities merit recording in this Narrative. Catering, medical and meteorological teams provided essential services for the Task Force and their roles are outlined below. In addition, this chapter explains the part played by RAF PMC in facilitating the timely movement of personnel and in maintaining accurate records of their whereabouts during the conflict.

CATERING SUPPORT

DEPLOYMENT OF FIELD CATERING FACILITIES

11.2 The process of loading the Task Force had to be completed at Ascension Island where it was soon obvious that large numbers

of personnel would be required to move the flow of equipment arriving by air and organise the ship-to-ship transfer of loads being switched en route. As the designated Service manager, the RN was broadly responsible for all rations, the Army and RAF having responsibility for water supplies and emergency flying rations respectively. However, to cater for the build-up of personnel and having no field catering facility at its disposal, the RN requested the RAF to make the Mobile Catering Support Unit (MCSU) available. On 6 April C Cat O, HQ STC tasked the unit to provide a detachment and 300 man kitchen; these were called forward by Naval Logistics on Wed 7 April and travelled to Ascension Island via Lyneham and Gibraltar.

D/D Cat(RAF)21/7/1A E5

RAF Hullavington ORB Jun

11.3 This field kitchen was set up at English Bay on 8 April, but, such was the build-up of personnel, it was immediately apparent that a further kitchen would be required. A CinC Fleet signal to HQ STC on 10 April requested MCSU to deploy a further facility for bare base operation from 14 April and this was duly established at Two Boats by that deadline. By now, MCSU had been nominated as the mounting base for all catering support requirements with the RN providing rations, additional cooks and support labour; other catering personnel of the Second Level Support Unit (SLSU) could be called upon and they in fact made up the team which accompanied the second pack-up (1).

101705Z Apr TF 6.2 E.70

STC/3/271/9/Cat 19 Apr DCat(RAF)21/7/1A E6

11.4 It was at this time that the difficulity of providing adequate in-flight catering for the air transport crews within the allowance available began to receive attention. The difficulty arose from a combination of uncertainty about the overflying of Gibraltar, the availability of flight catering facilities at Dakar and the virtual non-availability of rations at Ascension. The need for improved entitlement for crews flying 10 to 13 hour brackets was brought to MOD's attention on 19 April and received a favourable response within 24 hours.

191455Z Apr DCat 21/7/1A E1

11.5 The movement of personnel was now gathering such pace that on 15 April the SRAFO asked MOD for catering reinforcements from MCSU and SLSU sources, the first contingent leaving Lyneham on 16 April. Three days later, HQ STC reported that MCSU had opened 2 kitchens on Ascension, the one at English Camp feeding 350 men and that at Two Boats 170 men, it went on to point out, however, that despite the arrival of further catering reinforcements the equipment on the island would cope only with the current planned deployments. Already, one-third of the RAF's field catering equipment was committed to the operation and, with another third committed as a standby pack to support the Special Safety Organisation (SSO), the Unit had only enough equipment left to cater for about 550 personnel. This capacity would be more than used up if No 1(F) Sqn were to deploy (with up to 400 personnel) and the International Airlift Control Element (IALCE) (for 250

RAF Hullavington ORB Jun

STC/31271/9/CAT 19 Apr D/DCAT/21/7/1.A E6

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(1) The MCSU was a small unit of 24 permanently established personnel, highly trained in the RAF's mobility catering role. The unit was shadow-manned by TG19 personnel serving on STC stations in the UK, to give it a capacity to form up to three SLSUs, each with a capability to feed up to 500 personnel in the field.

personnel) of the ACE Mobile Force were activated as part of the Unit's Priority 1 role.

INITIAL DIFFICULTIES

11.6 The success of these field kitchens owed much to the initiative and energy of the MCSU staff for they encountered a variety of obstacles during the early stages of the deployment. One was the lack of suitable fuel for the petrol burners, with staff finding it impossible to achieve a satisfactory combustion using AVGAS; blockages and fires occurred with disturbing frequency, the latter particularly after the arrival of the SLSU elements who had only limited experience in the operation of petrol burners. The Outfit Field Cooking (OFC) Mk III was designed to be fuelled by CIVGAS or propane gas, and as early as 10 April the detachment bid for the issue of liquid gas, but the request was turned down on the grounds of weight and bulk for airlift. Fortunately, this decision was shortly reversed and, by early May, 40 bottles of liquid petroleum gas were being airlifted weekly whilst the RAOC, West Moors, was studying other compatible fuels.

DCAT/21/7/1.A E9

DGS/35U/619 26 May
DCAT/21/7/1.A E32

11.7 Another early problem was the lack of the RN facilities they had expected to find on the island. The first of the RN cooks and stewards materialised some 4 days into the operation and so the MCSU personnel were initially left to their own resources. The RN catering officer arrived 4 days later and an effective liaison was established, though the turnover among the naval senior ratings and the Army cooks did not serve the interests of continuity. On the other hand, there were many instances of most praiseworthy cooperation, and the staffs of Cable and Wireless and the BBC proved most helpful.

Report by Sgt Simpson MCSU - Jun 82
DCAT21/7/1.A E36

SHORTAGE OF FIELD CATERING EQUIPMENT

11.8 By early May, the equipment position had improved as a result of careful allocation of items to each earmarked pack and the availability of further spares to bring all equipment to serviceable state. This was just as well for between 5 and 7 May the requirement for a field kitchen for Harrier support on the Falklands was identified; the equipment pack and the 22 support staff for a 500 man detachment were assembled at Hullavington and were expected to deploy on 17 May. Moreover, between 8 and 11 May the catering support for the Falklands Garrison was assessed and a UAST for equipment put together - the relevant equipment had been marshalled at Hullavington by 12 May but personnel earmarked for detachment remained at their parent units. The No 1(F) Sqn support party deployed on 19 May and embarked on MV ST EDMUND on 21 May. By that time only 7 MCSU and 16 SLSU personnel were not committed to the operation.

STC/31271/9/Cat
12 May E21

RAF Hullavington
ORB Jun
STC/31271/9/Cat
26 May E30

11.9 In the meantime, C Cat O HQ STC was assessing the implications of operating 3 major field kitchens on the islands, the third being to cater on ships moored close to land for engineering staff accommodated aboard. Virtually all MCSU's equipment would then be committed to Operation CORPORATE and there would be a need to draw on RAFSC's resources for catering staff. He advised MOD that if such options were taken up MCSU

STC/31271/9/Cat
18 May E24

would not be able to meet any of its Priority 1 tasks. HQ RAFSC also were advised that if the SSO were deployed its personnel would have to manage on 24 hour ration packs. Moreover, the loss of field catering equipment on board the ATLANTIC CONVEYOR added to the problem and seriously depleted the already limited resources. The immediate requisitioning of OFC Mk IIIs from the helicopter mobility holding at Odiham and from Lyneham's and Brize Norton's War Reserve gave a short-term improvement but a large-scale replacement of equipment was clearly necessary and was initiated on 15 June.

STC/31271/9/Cat 28 May E33

151400Z Jun DCAT/21/7/1.A E44

MCSU's CONTRIBUTION

11.10 The availability of MCCSU expertise enabled catering support plans to be implemented in an acceptable timescale. The extent of the commitment, however, necessitated the withdrawal of field catering support from a number of exercises and tasks as well as the cancellation of all field catering courses at Hullavington. An immediate post-conflict task, therefore, was to initiate a crash programme to enlarge the pool of qualified cooks for the future rotation of detached personnel and, once the equipment shortfall was made up, to facilitate response to Priority 1 tasks.

DGS(RAF)/35U/841 30 Jun E46

PROVISION OF MEDICAL SERVICES

11.11 The absence of any contingency plan and the early assumption by the Royal Navy of responsibility for the operation caused some initial uncertainty about RAF Medical Service involvement. This mirrored, of course, the absence at the outset of precise concepts of air operations in support of the Task Force. It was on 13 April that a member of DGMS(RAF)'s staff visited MOD Main Building to ascertain the likely ways in which RAF medical assistance would be called upon. Subsequently, medical respresentation on the Alert Measures Committee was approved by D of Ops(RAF). At the early stages there were 3 main areas of concern: the provision of adequate medical support for the growing RAF presence at Ascension Island, aviation medicine factors in high intensity operations, and the challenge of aeromedical evacuation over many thousands of miles.

D Av Med/4/1/1./ E37

MEDICAL SUPPORT AT ASCENSION ISLAND

11.12 Events moved so rapidly that there was initially some uncertainty about responsibility for primary medical care. Though an Aeromed SNCO had arrived at Ascension earlier in April and had provided some information about existing medical facilities on the island, it was the deployment of the Marham Victor detachment with its ground support party that provided the first formal medical cover for British Servicemen and personnel on war-related duties. The party arrived at 0500 on 18 April and included the Marham SMO and a male SEN.

18G/334/4/6.1 E138

11.13 The Pan Am medical staff agreed to accommodate the RAF staff in the Dispensary which had previously been a USAF Medical Centre; this proved a major advantage since the location was central, accessible and telephone linked. Though this had never been the intention, CBFSU soon made clear that he viewed it as a

facility catering for all detachments and all 3 Services. Had this been known the medical element would have been reinforced. As it happened, the use of Pan Am buildings and equipment and the assistance of its 2 "paramedics" made it possible for the small Marham medical contingent to cope with the medical support of the 800-1500 British military personnel on the island, though some environmental health problems were to emerge as activities intensified. Further support was provided by the Georgetown hospital run by Cable and Wireless which made a ward of 9 beds available and these were augmented by camp beds as necessary. The occasional large influx of casualties/patients put pressure on the small staff, however, and RAF medical and catering staff assistance became essential.

11.14 Despite these advantages, the conditions in which the increasing numbers were being accommodated and provided for were basic and had constantly to be reviewed by the medical staff. At Two Boats and English Bay the accommodation was largely tented and the ablutions and toilet facilities required frequent attention. An infestation of flies at the former caused particular concern and recourse to insecticides and mosquito nets until the arrival of an RAF environmental health technician (EHT) led to the tracing of the problem's source. Over-used field latrines, inadequate cesspits and the presence of flies required vigilance on the part of the medical staff and continuous pressure to ensure that the discipline of emptying Elsans, of using insecticides and of moving trench urinals was observed. The hygienic disposal of food waste was another problem until the local pig farmer was persuaded to collect swill daily. STC 071125Z May DAv Med/4/1/1.A E131

11.15 Desalinated sea water was the only water supply on the island and the US and British plants were, on occasions, unable to keep pace with offtake from the million gallon storage tanks. Limiting the use of water and the numbers deployed to the island were the only means of preserving the supply until the arrival of a third plant on 8 May. This eased a situation which, though not severe enough to present a major hygiene problem, had added to the difficulties of mounting the operation from the island. MOD 231429Z Apr TF13 E65

AVIATION MEDICINE

11.16 The air operations mounted from what was in effect a bare base presented problems to both the aircrews and the commanders of the multiple organisations and units based there. The intensive air operations which involved high sortie rates and extended duration flights depended for success upon the aircrews obtaining adequate rest and sleep. The variety of aircraft types and the number of aircraft movements within the confines of a rudimentary base made this difficult and the aviation medicine story centred upon the efforts made to urge the improvement of aircrew accommodation and on the use of drugs approved by the IAM Farnborough.

11.17 **Long Sorties.** The length of operational sorties flown by crews often exceeded previous RAF experience. The frequency of such sorties was to focus attention on the critical interplay between crew-duty and crew-rest times. As early as 10 April SRAFO advised HQ 38 Gp and MODUK (Air) that a proportion of the air transport aircrew were beginning to show signs of extreme fatigue and that he intended to increase rest time to 16 hours and attempt to provide 100630Z Apr TF13 E71

reasonable temporary accommodation for 38 Gp personnel. The PMO HQSTC was consulted about the effects of lengthy sorties/crew duty time and his advice was that such sorties did not present particular hazard provided that pre-flight rest had been adequate. Whilst there could be no question of using stimulant drugs, the use of hypnotic drugs to facilitate pre-flight rest was recommended; crew debrief by the SMO after long sorties was also recommended. 38 Gp/1800/172/19 Cont.1 E5

11.18 **Crew Rest.** As the Task Force moved further south the length of sorties increased and the Victor detachment SMO sought Strike Command advice about crew rest during periods of prolonged flying operations. The advice was that any flight in excess of 15 hours should be preceded and followed by a period of at least 24 hours rest. For flights in excess of 15 hours where extra flight deck crews were on board, off-shift crews should attempt to sleep in flight. Particular emphasis was laid upon the need to limit accumulated flying time to 84 hours in any 14 day period and to 120 hours a month unless it was operationally unavoidable. The importance of comfortable and quiet aircrew rest facilities was also stressed. 271245Z Apr STC/6000/29/2/ Ops 3 E35

11.19 **Use of Drugs.** For the tanker and air transport crews in particular the pattern of one extended sortie every 3 days - a sortie consisting of the loading/briefing/mission/debrief cycle - proved increasingly demanding. Full advantage had to be taken of crew-rest time and, as a result, use was made of the drug TEMAZEPAM. Initially, a 20 mg dose as was prescribed 8 to 10 hours before take-off but with experience the minumum time was reduced to 6 hours before flying without side effects. The drug TRIAZOLAM also proved effective in inducing daytime sleep in aircrew attempting to get rest in the middle of what at one stage was claimed to be the busiest airfield in the world.

11.20 **Aircrew Accommodation.** The aircrews were initially accommodated in USAF barrack blocks which, though over-crowded, provided few hygiene problems. As numbers increased, the overflow was accommodated in bungalows in Georgetown which rapidly became overcrowded with up to 15 to a bungalow. Shift use of the available bedrooms became routine but the over-crowding led to the installation of air-portable modules. These were air-conditioned and sufficiently roomy for the intended occupants though complaints continued about the noisy power generator which emitted a disturbing high-pitched whine. The demand for improved aircrew accommodation was not greeted sympathetically in all quarters but when all factors were taken into account - sorties of up to 24 hours duration many of which were into the Engagement Zone in undefended aircraft - the need to ensure adequate rest facilities was vital and crews were given such priorities for accommodation as were possible.

AEROMEDICAL EVACUATION

11.21 **Facilities at Ascension.** The first recorded aeromedical evacuation activity was a signal from HQSTC to MODUK(Air) on 6 April requesting deployment to Ascension of an aeromedical SNCO for liaison duties. He arrived on 9 April and immediately reported to HQ 38 Gp the good facilities available at the Cable & Wireless Hospital. Its 9 bed capacity and 2 medical officers - one a surgeon - seemed to offer the basis of an 061415Z Apr D AvMed/4/1/1.A E1 091847Z Apr Ibid E 5/1

aeromedical evacuation facility, despite the absence of any UK Service medical facilities. The co-ordination of evacuation activities was the primary consideration at that time and on 21 April 38 Gp advised addressees to channel requests for aeromedical evacuation through the SNCO co-ordinator on the Island, but the scale of the potential problem was to have greater imnpact as the Task Force moved south.

11.22 **Involvement of No 1 Aeromedical Evacuation Sqn (1 AES).** Casualty evacuation over a distance of nearly 8000 miles presented enormous administrative and logistic problems. Numerous transfers from ship to ship, ship to aircraft, airhead to hospital were to take an average of 6 days. Uncertainties about the scale of casualties and the availability of an airhead on the South American mainland added to difficulties about the equipment and manpower needed to support a major evacuation. Following DGMS(RAF) prompting, particularly of the other 2 Services, preparations for the involvement of No 1 AES were highlighted on 23 April when HQ STC was requested to expedite the issue of essential equipment to the unit - this included vehicles, trailers, generators, field anaesthetic outfits and resuscitators. A request for long-flight oxygen therapy equipment followed on 27 April.

STC/31500/123/3/ Med 31 Aug

230835Z Apr D/DAv Med/4/1/1.A E36

11.23 **Casevac Facilities.** It had already been confirmed on 16 April that the Hercules had a full complement of role equipment which, apart from stretchers, was always carried; however, only 2 VC10s could be equipped for the role, each carrying 66 stretchers and 14 passengers. By the end of April, possible difficulties in using RAF aircraft for evacuation from neutral countries were to prompt exploration of the use of civil wide-bodied aircraft. No 1 AES was put on 72 hours notice to move to Ascension on 26 April to oversee the reception and care of battle casualties from hospital ships before they emplaned on casevac aircraft; as a consequence, its surgical capability was enhanced on 6 May by the addition of 9 medical, nursing and ancillary staff to C Flight (Surgical Team).

270945Z Apr Ibid E57

CE 2/1/167.1 E38

CE 2/1/167.2 E86

11.24 **Arrangements in the UK.** The importance of aeromedical evacuation arrangements was already more widely recognised and at the end of April the Principal Medical Officer, RAFSC, had been tasked with the co-ordination of reception and distribution arrangements at the airheads and at the joint Army/RAF Wroughton Hospital. From the latter, they would be transferred to other Service hospitals under single service arrangements; to this end, the SMO at Ascension was asked on 17 May to ensure that patients were despatched with adequate clinical documentation. It was later observed that some patients slipped through by emplaning direct from their ships but, overall, the system worked smoothly. At the UK end, arrangements for receiving large numbers of casualties were conveyed to D Med Org(N) and AMD1 by DDHR AvMed(RAF) on 3 June when he also stressed the importance of avoiding an influx of anxious relatives at the receiving hospital. Upon arrival, casualties were moved to the Princess Alexandra Hospital, RAF Wroughton for rest and recovery from the journey prior to dispersal to single service hospitals - Army cases to BMH Woolwich or Aldershot and naval casualties to RNH Haslar. The close co-operation of the RN and RAF medical departments at Northwood and HQ 38 Gp was essential and activities were coordinated by the 38 GP aeromedical cell under the PMO's direction.

AMC Mtg 20 Apr DD SPol/38/2/2/ 1.A E13

CE 2/1/167.2 E53

171515Z May DDAv Med/4/1/1.A E111

181000Z May Ibid E116

DDAv Med/4/1/1.B 3 Jun - E16

STC/31500/123/3/ Med 31 Aug

11.25 **Use of Montevideo.** The Uruguayan Government's agreement to allow Montevideo to be used for POW and casualty exchange greatly simplified and speeded up the casualty evacuation. Once the Uruguayans were satisfied that the rules of the International Red Cross Committee had been strictly adhered to, the transfer of patients from hospital to aircraft went smoothly. The arrangement included the use of RAF VC10s for the transit to RAF Brize Norton via Ascension; the patients were not off-loaded during the 2 hour refuelling stop.

GMS/17/17/1.B
16 Jul E27

11.26 **Deployment of No 1 AES Unnecessary.** No 1 AES was never deployed to Ascension because Montevideo became the forward airhead for casualty evacuation, though many of its personnel were included in the aeromedical teams. The operation did give added emphasis, however, to the provisioning of dedicated equipment and the development, in conjunction with D Med Ludgershall, of UASTs for the support of an RAF mobile surgical team.

11.27 **The Aeromedical Task.** The first major aeromedical task was to casevac 34 walking cases and 16 stretcher patients. Carrying aeromedical stores and a casevac team on the outward leg, Flt No 2645 departed Brize Norton on 5 June for Dakar and Ascension on its way to Montevideo. In general, the arrangements were that the maximum number of patients carried on these flights was 66 with a maximum stretcher fit of 27 per aircraft. All patients had been previously treated on board the hospital ship SS UGANDA and were not released for evacuation until their position had stabilised. Eleven special flights were used to evacuate 565 patients and there were no reports of deterioration in flight. Some 116 other patients had been flown from Ascension in the period up to 1 August but they were casualties who had been shipped there or whose injury/sickness occurred at Ascension. For the major airlifts the aeromedical team consisted of 2 medical officers, 6 flight nursing officers and 8 flight nursing attendants; part of the team rested at Ascension and then relieved the other part for the Ascension to Brize Norton leg of the journey.

041230Z Jun
DAvMed/4/1/1.B
E24

DNS(RAF) Report

COMMENTS ON MEDICAL SUPPORT

11.28 The RAF Medical Service was not consulted about the medical aspects of the operation at the earlier stage of planning. The result was initial uncertainty about responsibilities for general medical care on both Ascension and the re-taken Falklands and for evacuation arrangements from the forward mounting base. Initially, there was a lack of a point of contact into the AFOR and, until such contact was established, medical support had to be planned in isolation from operational arrangements. However, once areas of medical responsibility were clearly defined the respective Services were able to identify medical needs and proffer appropriate solutions. The availability of established, though limited, facilities at Ascension was an invaluable asset and both the Pan Am dispensary and the Cable and Wireless hospital were extensively used by the Victor Detachment medical officer and his staff.

11.29 The intensity of sustained tanker, air transport and maritime operations made great demands upon aircrews. Aviation medicine advice on crew scheduling, crew augmentation, rest and recovery was to contribute significantly to the success of those operations. The concept of judicious use of drug therapy to enable

crews involved in highly intensive operations and long duration flights to obtain adequate rest was validated and conclusively proved under active conditions.

11.30 Aeromedical evacuation procedures showed themselves to be capable of coping with large numbers over long distances, though the use of Montevideo as a casevac mounting base greatly simplified the problem. For that reason No 1 AES was not deployed but individual members played an important part in providing in-flight care for casualties and no cases of in-flight deterioration were reported. Finally, though not a single Service responsibility, the medical supply organisation's contribution to the operation received applause from all 3 Services.

METEOROLOGIAL SUPPORT

11.31 Weather conditions during the advancing Southern winter would clearly have strong influence upon the timing and effectiveness of military operations and they were to be particularly significant in the planning of air operations in the South Atlantic. Reliable and comprehensive meteorological information was a prerequisite when mounting major support missions out of Ascension Island. They could be critically affected by inclement weather 24 hours ahead or beyond and vital short range missions from the Task Force might be precluded. Thus, an early initiative by AF Ops was on 2 April to enlist the Meteorological Office's assistance in providing the necessary meteorological support. D/MetO 6/6/29 28 Feb 83

11.32 A notable feature of the conditions in the "Roaring Forties" was of course the rapidity with which the weather could deteriorate (or improve) and the problem this created was exacerbated by lack of meteorological data over the area. Naturally, the Argentine suppressed meteorological data from her airfields and, with little other information from surface sources, much reliance had to be placed upon data from orbiting and geostationary weather satellites. Preparations were as it happens already at an advanced stage at the Meteorological Office at Bracknell for the introduction of an operational global model which would facilitate the issue of southern hemisphere analyses and forecast charts (the facility was originally to be introduced on 3 August 1982). Thus, when the AF Ops request was received a basis was already available for the preparation of numerical forecasts for the region. A weekend of hectic programming followed the request and resulted in the issue of twice-daily computer forecasts up to 5 days ahead. This emergency suite of programmes was operational on 4 April and proved so well constructed that little use had to be made of the US global forecasting material made available later in the conflict. 191815S Apr TF29.1 E58

PROVISION OF METEOROLOGICAL SERVICES AT ASCENSION ISLAND

11.33 That same day, AF Ops placed a Mobile Meteorological Unit (MMU) on 24-hour standby for deployment to Ascension and it departed

it departed from RAF Lyneham on 8 April. (2) The MMU comprised 2 forecasters and 2 support staff and their equipment and they wore uniform for the duration of the deployment. The Unit deployed initially to English Bay at the extreme north of the island and some 7 miles from the airfield. This remoteness from the aircrew customers, coupled with interference with meteorological radio communications from a nearly transmitter complex, led to the subsequent re-siting of the unit at Wideawake Airfield where it became fully operational on 12 April.

11.34 Its tasks included the interpretation of Automatic Picture Transmission (APT) of satellite data and, from 12 May, the Unit was additionally equipped with Geostationary Satellite reception facilities obtained from the US. Furthermore, a special Operation CORPORATE cell was established on 16 April at the Bracknell HQ to provide a UK link and this was manned continuously by a team of senior forecasters in the Central Forecasting Office. The MMU's main function, however, was to provide meteorological support for air operations launched from Ascension and from 19 April the Unit received the twice-daily issue of the forecast winds and temperatures for the South Atlantic; other recipients were the AF Ops Room, CTF 317 at Northwood and HQSTC.

D/MetO 6/6/29
28 Feb 83

191655S Apr
TF29.1 E56

D/MetO 6/6/29
28 Feb 83

11.35 Another development before the end of April was the compilation of a special twice-daily weather report which, however, deliberately gave no hint of expected developments. It was introduced so as to counter media speculation which in some circumstances could have provided a security hazard. The report was to be used as the only authorised Meteorological Office release for the media.

291100Z Apr
TF 29.2 E37

11.36 During May, apart from the routine support of air operations and the enhancement of systems by means of access to US data and materials, routine reports on upper winds and temperatures were compiled daily by the MMU based upon data from returning aircraft. CBFSU expressed reservations about such reports because there was the possibility of compromising aircraft operations since they followed essentially the same track each day. Nevertheless, MOD insisted that the reports be forwarded to Bracknell by 1500 hours daily since the information was urgently required and would in any case be protected by the classification SECRET UK Eyes 'B'.

TF 29.4 E79

METEOROLOGICAL SERVICES FOR THE FALKLAND ISLANDS

11.37 On 4 June MODUK Air requested the Meteorological Office to nominate 4 officers to staff the MMU it was proposing to deploy to the Falkland Island. Such out of area activities were beginning to take their toll, however, and by 18 June, and just before the MMU embarked on SS RANGATIRA, the Meteorological Office was having to

041550 Jun
TF 29.5 E46

(2) The Mobile Meteorological Unit was formed in the early 1960s as part of the RAF Tactical Communications Wing. A pool of 20 officer volunteers drawn from Headquarters Branches and outstations held Class CC (Civil Component) Commissions in the RAF Reserve of Officers. The role of the Unit was to deploy at very short notice within the NATO area and it was accordingly equipped with its own air-portable accommodation, meteorological instrumentation and communication equipment.

point out that it was experiencing difficulty in maintaining meteorological services for the RAF in both the UK and RAF Germany because up to 15 staff were deployed on Operation CORPORATE duties. This pressure on meteorological services was to continue well into 1983.

11.38 However, as the major threat receded, the Meteorological Office could reflect on a high standard of meteorological support for RAF operations achieved largely from the use of data from the global model and orbiting and geostationary weather satellites. Weather satellite imagery and improved reception of international meteorological radio telegraph and facsimile broadcasts were later to be enhanced by forecasts of winds and temperatures at several upper levels from the Meteorological Office's latest computer model. By such means, the RAF's exacting demands - especially in relation to air-to-air refuelling operations - were successfully met by the deployed MMUs.

THE PERSONNEL MANAGEMENT CENTRE(PMC) AND MANPOWER CONTROL

THE MANPOWER REPORTING SYSTEM

11.39 Exercise WINTEX 81 had highlighted possible problems of manpower control during transition to war and certain improvements in reinforcement planning had already been initiated when Operation CORPORATE began. The improvements largely concerned the availability of accurate, up-to-date information so as to meet ad hoc requests for additional manpower; the first step had been the creation of the Emergency Manpower Operations Centre (EMOC) and operating instructions had fortunately been despatched to units just before the crisis began. The introduction of the Emergency Manpower Information System (EMIS) was planned for 82/83 following the introduction of the first computer terminals at PMC, HQ STC and HQ RAFG. DGPM/10/4 3 Mar DPM(ADP)/41/4/ 2.E E14

11.40 **Activation of EMOC and EMIS.** Though EMIS had not been installed when the operation began, the complexity and urgency of personnel deployments made it necessary to hasten its introduction. HQ STC, in particular, was finding it difficult to keep track of personnel and, though on-line links from PMC to the two UK Commands were not at first considered necesary because AF Ops was initiating the operational tasking and not the HQs, a limited form of the system was introduced on 7 April at HQ STC's behest and EMOC was fully manned from that time. Early problems arose because some units failed to notify EMOC of deployments, sometimes because they themselves were in the dark about the ultimate destinations of personnel. These teething troubles were soon resolved, however, and on 9 April EMOC was in a position to introduce a daily manpower report to AF Ops. Excluding unit moves, the volume of individual movements was not high initially - about 250 were recorded up to 14 April - and EMIS, which was designed to process up to 500 movements per hour, had no difficulty in coping with the task. The information made available to AF Ops provided PMC with an additional bonus by enabling it to monitor units' follow-up action on such matters as pay and allowances. The deployment pace quickened during the second half of April and PMC reported a cumulative total of 1220 movements by 21 April and this had risen to 4500 by mid May. DPM(ADP)/41/4/ 2.E E21

11.41 **Extending the Network.** At the start of the second week of the operation, HQ STC decided that RAF Lyneham should undertake parenting responsibility for all personnel deployed overseas. Linking the station to the PMC computer would give instant access to the records of those out of the country and facilitate maintenance of an up-to-date central record of manpower resources. HQ 38 Gp accordingly requested the installation of the necessary equipment on 14 April and the task was completed by International Computers Limited (ICL) and British Telecom within 24 hours. Since P Staff and the CPRM at HQSTC were responsible for the control of deployed manpower, it followed suit on 18 April using hired terminal equipment. HQ RAFSC and HQ RAF Germany were added to the network later when increasing numbers of their personnel became involved in the operation.

D of CC/MIS/10/6
1/9 28 Apr
DPM(ADP)/41//4/
2.E E43

11.42 **Implementation at Unit Level.** At unit level the manpower reporting procedure was simple with units passing details of individual and unit moves direct to EMOC. Nevertheless, there were difficulties about the exact locations of personnel afloat and the lack of information about ship-to-ship movements was of particular concern when casualty reporting arrangements were being finalised. The difficulties were eventually resolved, however, and by the end of May over 6000 RAF movements had been reported; the total was to rise to nearly 10000 by the ceasfire. This build-up was accompanied by an increasing awareness of the sensitivity of the EMIS database. The need for security protection became obvious and resulted in the installation of encryption/decryption devices in terminals away from RAF Innsworth and the provision of fibre optic links within PMC.

DPM(ADP)/41/4
2.E E98

PM(ADP)/41/4/2E
18 May E57

11.43 **Effectiveness of the Reinforcement Scheme.** Under DPM(Airmen)'s direction the Emergency Reinforcement Scheme (ERS) provided effective support for deployed RAF forces in UK, Ascension Island and en-route to the Falklands. Where the volume of required reinforcements exceeded the ERS capacity, personnel earmarked under the Transition to War Draft Scheme (TTWDS) were used to meet the shortfall. The existence of these two rehearsed reinforcement schemes did much to facilitate the support of operations. Moreover, whilst the installation of ADP equipment accelerated the identification of specialist skills it often fell to the experienced drafters working round the clock in DPM(Airmen)'s Trade Cells to produce the answers. Thus, despite uncertainties about final destinations and personnel equipment requirements, requests from HQSTC for ad hoc reinforcements were invariably satisfied.

D/Air Sec/10/25
2 Sep 86

CASUALTY CONTROL

11.44 **Use of Single Service Procedures.** The RAF Central Casualty Section (CCS) was part of Air Records 9(RAF) in the MOD. AR9 normally dealt with routine casualty management whereas the CCS was activated only in the event of an aircraft loss or incidents involving multiple casualties. Head of AR9 would decide whether or not full or partial activation of the CCS should take place. It was planned that, upon receipt of information about casualties, CTF 317 would notify single Service sections which would then implement their well tried and understood procedures.

OAR(RAF)/15/1/4
22 Apr TF34.1
E19
VCDS(P&L)/1/14/2
23 May TF34.2 E4

11.45 **A Database for the CCS.** The section needed to have accurate details of the whereabouts of individuals engaged in forward zones, and, since AR9 was not computer-linked to the personnel

records held at PMC Gloucester, it had to institute an EMIS-type database in London using a word processor (3). Thus, the CCS was not really geared for dealing with casualty management in conflict situations and the existence of two sets of personnel records could have presented problems; however a DPM(ADP) check on 5 June confirmed that the CCS database was 100% accurate on known information. Arrangements were also made for copies of EMIS nominal rolls to be delivered to the CCS at regular intervals.

11.46 **Need for an Ascension Island Terminal.** As the Task Force neared the Falkland Islands the EMOC became increasingly concerned about the accuracy of its own information. The EMIS relied heavily upon information from the UK units deploying personnel. The losing unit would have to know the final destination and ETA of its personnel when it reported movements to EMOC and that was difficult with such large-scale transhipment at Ascension Island and further re-deployment taking place south of the Island. PMC could not be confident about the accuracy of its own information therefore, and so it had to rely upon material fed back from the Task Force. Thus, at PMC's request HQSTC submitted a bid to MODUK (Air) on 21 May for the provision of an EMIS terminal at Ascension. This was not possible before the end of the conflict and there was some doubt that the necessary operating staff could in any case have been accommodated. Meanwhile, use was made of the ASMA facility to provide updates on personnel matters, particularly those relating to casualty evacuation. The facility coped adequately with the additional task though it might not have continued that way had operations been more protracted and intensive.

TF23.15 18 May
E40

210033Z May
DASB Folder C10

EVALUATION OF SUPPORT ACTIVITIES

11.47 The crisis required overriding priority to be allocated to the operation in certain support activities. In the absence of contingency plans to forestall or counter an Argentine invasion there were no plans for the specialist support of Task Force operations; at the outset it was unclear what form any RAF operations and therefore support activities might take. Thus, initially there was uncertainty about the extent to which support operations needed to be coordinated at an inter-Service level. Once initiated, however, the RAF's catering, medical and meteorological services were able to contribute significantly to the Operation's success.

11.48 MCSU's specialised field catering facilities proved invaluable at Ascension and, during the post-conflict period, in the Falklands. As to the medical aspect, despite some early lack of coordination in the planning of medical support, the effective RAF facilities provided at Ascension, the careful monitoring and treatment of aircrews flying at intensive rates and the efficient and sensitive aeromedical evacuation of casualties from Montevideo contributed greatly to the success story and reflected much credit on the personnel involved. The remoteness of the operational area and the

(3) Just before this Narrative went to print AHB(RAF) received the AR9 records and logs covering Operation CORPORATE activities. They confirm how difficult it was to keep track of individuals and illustrate the care taken to ensure the accuracy of personnel records.

lack of real-time meteorological observations posed serious problems for air operations. Despite these disadvantages, however, the MMU provided planners with adequate and sufficiently accurate information to enable them to plan the most complicated operations. Finally, personnel management staffs overcame difficulties stemming from inadequate and insecure links and met manning and reinforcement requests within the necessary deadlines; the emergency did, however, confirm how necessary it was to establish the EMIS as soon as possible.

Annex

A. Senior Medical, Personnel and Catering Staff Appointments

SENIOR MEDICAL, PERSONNEL AND CATERING STAFF APPOINTMENTS AND OFFICER RECIPIENTS OF THE SOUTH ATLANTIC MEDAL

Director General of RAF Medical Services Air Mshl D W Atkinson

Air Cdres D G M Hills
P L Maybury

Gp Capts D B A L Davies
M A Pallister
A T Johnson
J S Hall

Wg Cdrs R Chapple
P L Hickey
C J Sharples
J C R Wardle

Director of Dental Services AVM D A R Lean

Gp Capt N D Lavender

Director of Nursing Services Air Cdre I J Harris

Gp Capt S M Firth
Wg Cdr R A L Partington

HQ STRIKE COMMAND

PMO AVM J G Donald
Air Cdre G Livingstone
Gp Capt R P Saundby
Wg Cdrs E J Goodman
J A Baird
C Dent O Gp Capt P L Cumming

HQ RAF SUPPORT COMMAND

PMO AVM R A Riseley - Prichard
Gp Capt I G Currie
Wg Cdrs W E Browne
J N Mitchell
W B Russell
D F Cameron
G Leaver
C Dent O Air Cdre G T Crook
Nursing Gp Capt A A Read

SENIOR PERSONNEL STAFF APPOINTMENTS

DGPM(RAF)	AVM L W Phipps
DP(Air)	Air Cdre K F Sanderson Gp Capt A J Whitlock Gp Capt J M Charlesworth Gp Capt B M Burley
DP(Gnd)	Air Cdre T R Morgan Gp Capt D J Read Gp Capt D King Gp Capt C G H Pierce
DPM (Airman)	Air Cdre B W Opie Gp Capt D Lambton Gp Capt W F Hughes Gp Capt J B Thorne
DPM(ADP)	Air Cdre A J Leggett Gp Capt J F Boon Gp Capt F Brown

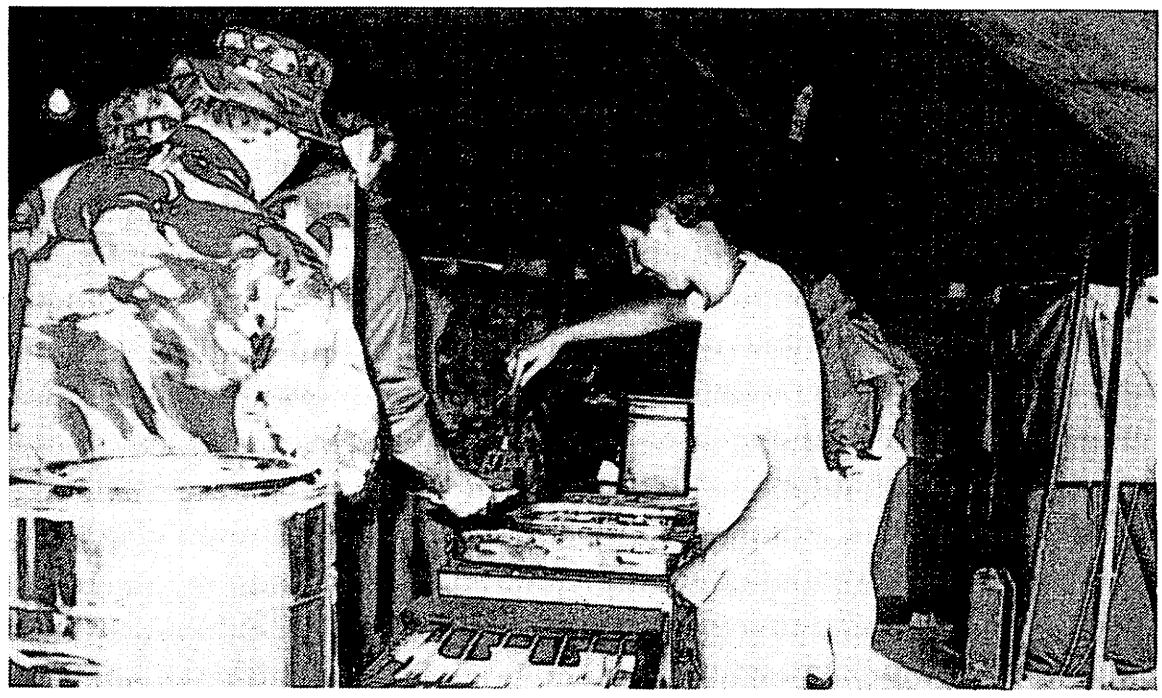
SENIOR CATERING STAFF APPOINTMENTS

D Cat(RAF)	Gp Capt R I Lawrenson (to 13 Jun) Gp Capt D J Harrison (from 14 Jun)
HQSTC(C Cat O)	Gp Capt D J Harrison (to 30 May) Gp Capt B D Jones (from 1 Jun)
HQRAFSC (C Cat O)	Wg Cdr B J Greenwood

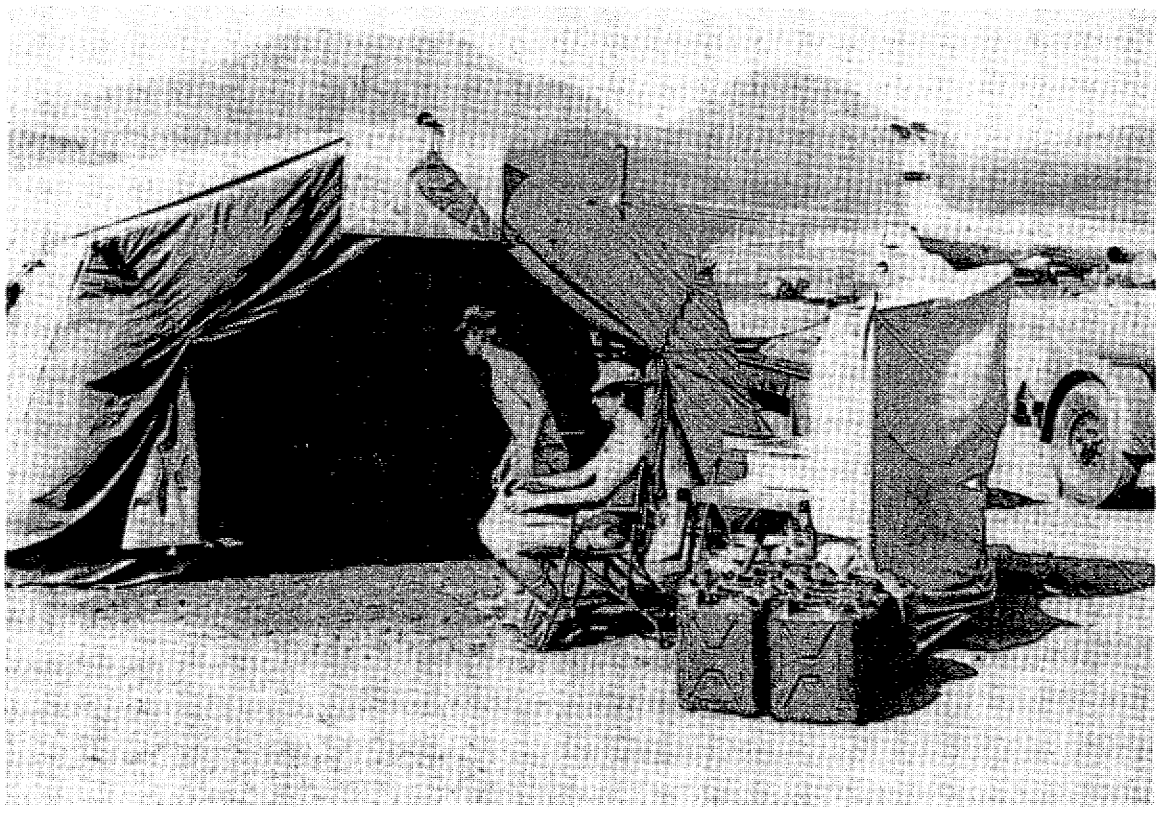
RECIPIENTS OF THE SOUTH ATLANTIC MEDAL

(*Rosette for service in the Falklands and associated areas)

Wg Cdr P K L Coles* (Medical)
Sqn Ldr R F Dorling (Medical)
Sqn Ldr J Griffiths (Dental)*
Flt Lt J R Poulter (PMRAFNS)*



11.1. 'They also served' — Catering staff in Tent City, Ascension Island.



11.2. On dispersal catering facilities provided by MCSU.

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CHAPTER 12

THE POST SURRENDER PHASE

SUMMARY OF CONTENTS

12.1. In the immediate aftermath of the Argentine surrender, conditions around Stanley were chaotic. There was no water or electricity in the town, and weapons and ammunition of all types littered the streets. In the outer Port Stanley area, RN and army artillery gunfire had pock-marked the ground and many of the dead lying in the area were dismembered. In the town, the smells were appalling and quite inescapable. Ammunition sparkled and crackled in sundry fires, and Argentine prisoners huddled in groups. Elsewhere, farm fences were down and sheep and cattle had strayed. Other animals had walked into mined areas and were badly mutilated. Some farmers were cut off by minefields and others were too scared to move; moreover, it was still winter time but fuel supplies were low, as many peat stocks were in mined areas or had been stolen by the Argentines.

RAFLO informal report

12.2. Argentine military intentions following surrender were not clear, nor did they become so, and as a result it was to be November before it was decided precisely what equipment each Service would maintain in the Falklands Garrison. However, there was little doubt about the RAF's immediate task: it was to build an operational airfield capable of handling the aircraft needed to defend the Islands against further attack. Ultimately, a range of Air Defence (AD)

radars and communications infrastructure, with all the logistic support and technical expertise which such a system entails, would be needed to defend the Falklands. On 15 June, however, the immediate priority was to render Port Stanley Airfield usable.

172145Z Jun
TF 3.28 E6

12.3. In the words of RAF Stanley Engineering Staff, writing later, "It is hard to imagine the initial scenes of desolation on the airfield". When recaptured, it was a total mud shambles littered with the debris of war. The runway itself was in fair condition, having been patched by the Royal Engineers (RE) using AM2 matting acquired from aircraft parking areas built by the Argentines. The whole area, however, was strewn with loose ammunition and weapons, discarded Argentine rations and equipment, countless large oildrums and enormous quantities of rubbish. Various damaged aircraft lay abandoned: among these were 6 Pucaras, 3 Aero Macchis, 3 Cessnas, 1 Islander and a UH1 helicopter, which was later repaired and shipped home. No 1(F) Sqn were encamped on a hillock north of the runway, with other support units camped to the south. Airfield AD was being provided by fire units of No 9 (Plassey) AD Battery (Rapier). Mines and unexploded ordnance were a major hazard and any area outside the immediate confines of the airfield was unsafe, especially the beaches, which were known to be mined. As if this were not enough, there were about 10,000 Argentine prisoners of war milling about on the airfield, squatting in groups, and rendering an assessment of the state of the runway or remaining buildings extremely difficult. Moreover, access to the airfield was made near-impossible not only by the state of the roads, but also by the file of prisoners of war stretching the entire 7 kilometres back into Stanley.

RAF Stanley ORB

Personal Diary Sgt Gardner

RAFLO informal report

12.4. Of the general airfield infrastructure, 2 small hangars existed: one of corrugated metal, known as the Islander hangar, which had most of its metal missing or swinging in the wind, but which was being used by RAF Engineers, and an Argentine food storage hangar which was being dismantled. The Air Traffic Control (ATC) terminal building was intact but had no windows left. At that time, flying consisted of No 1 Sqn Harrier training flights, and RN as well as No 18 Sqn helicopters operating to various supply points. The Harriers were holding Quick Re-action Alert (QRA) which, along with No 9 AD Battery, constituted the Falkland's land-based AD. The arrival of personnel and equipment, which would eventually turn this chaotic panorama into a viable operational airfield, was nearly a month away. Therefore, the initial decisions on redevelopment had to be taken by those in situ as the war ended, relying upon whatever resources, human and materiel, they could lay their hands on to do the work.

RAF Stanley ORB

CLEARANCE OF PORT STANLEY AIRFIELD

12.5. On 17 June, Wg Cdr F A Trowern, RAF Liaison Officer (RAFLO) to Gen Moore, Commander Land Forces, met with Maj D Reid, RE, to discuss the siting of a Harrier strip for No 1 Sqn and to establish the essential requirements for the

RAF Stanley ORB

airfield to enable the airbridge to and from Ascension Island to open as soon as possible. They decided that the Harrier strip would be positioned to the north of and parallel to the existing runway. The vital C130 link would be capable of operating with only half the runway width available, and it was decided that the northern half would be opened on 24 June and the whole surface by 27 June. On 18 June, the runway was swept by 1,000 Argentine Prisoners of War (POW) under the direction of RM and Para Regt personnel. On the same day, an RAF SNCO recorded in his diary that there was still unexploded ordnance lying all over the airfield, which prevented him from finding a site for a liquid oxygen store, and that there were still 4000 Argentine POWS there. The RE began the first main recce of the damaged north side of the runway and noted 3 craters, between 650 and 820 metres from the eastern end, each over 7 metres wide. In addition, on the northern half alone were over 400 scabs of minor damage. The following day, the southern side recce revealed similar damage, as well as some cratering of the access taxiway to the tower and the aircraft parking area outside the terminal building. No 50 Sqn(RE) started repair work to the northern half on 21 June, and the RAF ensign was hoisted that day for the first time, to coincide with the Royal visit to Wittering for the 40th anniversary of the RAF Regt.

Personal Diary Sgt Gardner

DIO E1

12.6. As the RE at Stanley were working on clearing enough of the existing runway to allow the C130 link with Ascension to be opened up, consideration was being given in London to the longer term development of the airfield. On 23 June, ACAS(Ops) briefed the Chiefs of Staff (COS) on the options. Having assured them that the RAF would be operating Hercules into the airfield the minute it was open, he went on to point out that the requirement was to "Provide a runway that is suitable for regular and unlimited air operations as soon as possible", and that "AM2 matting offers the most suitable and expedient method of achieving that aim".

AMSO 19/8/1.4 E39

PLANNING THE DEVELOPMENT OF THE AIRFIELD

12.7. VCDS (P and L) had issued as far back as 24 April a study on how to develop Port Stanley Airfield. This study explained that the AM2 system was the only type of matting available for the construction of expeditionary runways for jet aircraft. AM2 was built of panels of aluminium, 1-2 inches thick, which interlocked in a brickwork pattern to make runways or taxiways. A joint RE and RAF team had visited the United States and reported that the only source of such matting in the necessary quantity was the US Marine Corps contingency stock. The VCDS study envisaged using the matting to bring the existing 4,100 ft of runway up to Load Classification Number (LCN 45) to support Phantom, Buccaneer and Hercules aircraft, and possibly to extend the runway to 6100 ft for the Nimrod. Meanwhile, on 27 April the Director General of Organisation (DGO) had presented a paper to the COS on the deployment and operation of 12 Phantoms. With the need first to recapture and then repair the airfield, it was considered unlikely that deployment could take place before early June 82, when 4,100 ft of runway with arrester gear would be available. Thus from the early stages it was clear

VCDS(P&L) 127/3/3 24 Apr

that the AD of the Falklands would eventually be based on Phantoms operating out of Port Stanley Airfield. By mid-May, the Air Staff Requirement (ASR) called for a runway length of 7,100 ft and dispersal accommodation for 12 Phantoms, 4 Hercules and 3 Nimrod aircraft, which meant that 155,000 sq metres of AM2 matting was needed (at an estimated cost of $50 million). On 22 May, the COS agreed to obtain the matting as soon as possible; the Secretary of State signalled his American counterpart, Mr Weinberger, the next day and the Pentagon was told to provide AM2 to the UK as a matter of urgency. There had already been considerable US-UK contact on the subject, and a detailed shopping list for the matting and associated dispersal and runway lighting was signalled to Washington on 25 May. One month later, the matting was loaded onto CEDAR BANK and STRATHEWE, which sailed from Southampton on 24 and 28 June respectively.

20 May
TF 47.2 E46

231700Z May
TT 47.2 E47

12.8. Thus when ACAS(Ops) briefed the COS on 23 June on the development of the airfield it was in the knowledge that the vital material for that development would be on its way south the next day. Options other than Stanley had been considered. There were over 30 light landing strips on the Islands, most of which were totally unsuitable for any kind of permanent operation. Goose Green airfield had been considered, and could take a Hercules in an emergency, but it was too short and lacked the loadbearing capacity to merit further long-term development. The San Carlos landing strip was best left undisturbed and retained as a Harrier or helicopter base. Above all, if the AM2 matting were to be laid at any site other than Port Stanley major earthworks would be needed. Moreover, access to any other area would be limited to helicopter lift unless roads were constructed. The alternatives having been thoroughly considered, Port Stanley Airfield was shown to be clearly the best site, and it was of course also furthest away from the threat.

AMSO 19/8/1.4 E39

12.9. The AM2 was due to arrive by 23 July, and the following phases were envisaged for the airfield's development:

a. Phase 1 provided for 4,100 ft of AM2 runway at LCN 45 with parking for 3 large aircraft. This would enable routine Hercules operations to be conducted, but all Hercules flying would have to be suspended during preparation and laying of the matting. The target completion date was 1 August.

b. Phase 2 added rapid rewind arrester gear at each end of the runway. This would enable fast jet aircraft to land, assuming an arrester gear engagement each time, and therefore 3 parking areas for fast jets were envisaged. The target completion date was 8-15 August.

AMSO 19/8/1.4 E39

c. Phase 3 provided for a 2000 ft extension to the west end of the runway, making a total of 6100 ft. There would also be 1 QRA shed and 3 servicing shelters, an emergency Rotary Hydraulic Arrester Gear (RHAG), and

an extra arrester gear system at the eastern end. The completion date was to be 22-31 August.

d. In Phase 4, 500 ft would be added to each end of the runway and an emergency RHAG installed at the western end. The planned completion date for this phase was 30 September and from then on Nimrods would be able to operate from the airfield without restriction.

12.10. ACAS (Ops)' brief went on to outline the ancillary aspects of the airfield's development: mobile airfield aids as well as communications and meteorological facilities would be provided; the aids would include Tactical Air Navigation (Tacan), Ground Controlled Approach (GCA), an AR 1 radar and runway approach lighting. Fuel demands would be met by the MV WALKER, arriving at Port Stanley on 5 July with 28000 cubic metres of Avcat, representing 75 to 90 days' supply at planned rates of effort. Sufficient tankage was already available on the Falklands to cover planned Hercules operations until 1 August. Thereafter, enough fuel would be held ashore to meet planned rates of effort for all aircraft types. Finally, it was emphasized that none of this provision was of a permanent nature. The AM2 would last for 2 years; thereafter, maintenance bills would become excessive. Urgent consideration would have to be given, therefore, to the construction of a permanent runway in the Falklands. Such a project would take 2-3 years to complete and need to begin that year. AMSO 19/8/1.4 E39

THE ESTABLISHMENT OF RAF STANLEY

12.11. This plan for the future development of Port Stanley Airfield had been established in close collaboration with, among others, the Station Commander (Designate) of RAF Stanley, Gp Capt W J Wratten who was the station commander of RAF Coningsby; this was the home of the RAF Phantom Operational Conversion Unit (OCU) and of No 29(F) Sqn, operating Phantoms in the UK Air Defence Region (UKADR). He had previously commanded a Phantom Squadron and was one of the most experienced operators of the aircraft in the RAF. He was, therefore, very highly qualified for what was to become one of the most interesting and demanding commands of his career. He had, since late May, been almost continuously involved in planning the development of the airfield, the establishment of RAF Stanley and the AD of the Falklands. It was at his insistence that it was accepted that to operate Phantoms off the proposed strip would require several sets of arrester systems, and he had held initial meetings with the senior station staff earmarked to deploy south when the war ended. The plan was that they would deploy as an already-formed organisation on board the RANGATIRA. Air Cdre Wratten Interview Wratten Interview

12.12. In the event, Gp Capt Wratten deployed ahead of his staff, on 24 June in the second Hercules to land on the half cleared strip. Stepping out of the aircraft, at 4pm in the Falklands twilight, in appalling weather, he was immediately struck with how totally unprepared he (and by implication,

his staff) had been for the reality. After the initial shock, he began discussion with Wg Cdr Trowern, visited the one remaining building, the ATC tower with no windows left, and took stock of the situation. It was clear that the deployment of personnel in the numbers envisaged back in the UK was impossible. Apart from the immense difficulties of movement, not helped by the need to disinfect one's boots at every step, and the lack of food and water, there just was not enough accommodation, tented or otherwise, available for them. The war-zone atmosphere, the general (and natural) desire of all who had fought the war to get on the next flight home, and the seemingly incredible lack of facilities led the Group Captain to take 2 decisions. First he asked that plans be made to use one of the incoming ships, possibly the TEV RANGATIRA, as a permanent floating accommodation vessel. Secondly, so strongly did he feel that the post-war situation was not fully appreciated by the planners, he decided to take the next flight back to the UK to brief the staffs there on the scale of the problem, and this he did a week later on 29 June. As he departed, his OC Ops, Wg Cdr J H W Davis, and OC Eng Wg, Wg Cdr R J Kyle arrived via the air bridge. With their arrival, RAF Stanley was officially formed on 1 July; the next day, following successful patching of a Vulcan's 10001b bomb crater which was located some 500 metres from the eastern end and measured 84ft by 100 ft, the first Hercules landed using the full width of the runway.

RAF Stanley ORB

DEFERRAL OF THE PHANTOM DEPLOYMENT

12.13. The first official paper, presented by ACDS(Pol), on the Future British Garrison in the Falklands had made no mention whatever of an air component. The Air Staff, however, had then introduced the idea of using a suitable all-weather AD aircraft, and a package of 8 Phantoms was proposed. No 29 Sqn at Coningsby had been chosen and 15 airframes had been identified for modification for Falklands operations. It had been decided that the aircraft needed to be fitted with a chaff dispensing capability and with infra-red decoys IRD). Three aircraft had deployed to Ascension, and by the time of the surrender the remainder of the Squadron was training for the requirements of the Falklands. At Coningsby, the runway had been marked in yellow paint simulating the Port Stanley Airfield 4100 ft strip, including the proposed RHAG positions, and Precision Approach Path Indicators (PAPIs) had been installed to allow pilots to practise short field landings and roller "bolters" to simulate an unsuccessful arrest. At the same time, much of their flying included low level affiliation designed to be appropriate for the Falklands theatre. While the precise number of Phantom aircraft to be deployed was not determined by CDS until towards the end of the year, initial planning was for 12 aircraft, and it was anticipated that Phantom operations would begin as soon as 4100 ft of AM2-covered runway, equipped with the pre-determined complement of arrester gear systems, was available.

AUS(AS)59/5606 20 May

STC 191055Z Jun

12.14. One of the major questions in Gp Capt Wratten's mind on the long journey back to UK, via the still tenuous air bridge, was whether Phantom operations were viable in the timescale envisaged. There was no doubt that, as a result of the RE's formidable efforts, 4100 ft of AM2 would be ready by early August. However, it was clear that the airfield infrastructure needed to support peacetime Phantom flying would not be available in anything like that timescale. In particular, the dispersal facilities were non-existent and there were no taxiways or access roads on the airfield. As a result, all movement, whether of vehicles or personnel, had to take place up and down the only piece of hard standing which was safe and available, namely, the runway. Moreover, the existence, below the airfield's muddied surface, of a 15 ft sub-layer of wet peat meant that the use of Portakabins for semi-permanent working accommodation would involve extensive foundation shoring-up. It was clear that tents would be the order of the day for the foreseeable future. Moreover, the restoration of the runway itself, both in its initial preparation to receive the AM2 matting and, later on, in the major quarrying operation which would be needed to extend it by 2000 ft, posed serious potential hazards to routine flying operations. It was the Group Captain's view that when 4100 ft of AM2 and the associated arrester gear systems had been installed, it would be feasible to fly Phantom aircraft into Stanley from Ascension in response to a specific new threat. However, he believed that unless such a threat arose it would be more prudent to wait for the completion of the extension to 6100 ft and the improvements in dispersal facilities and supporting accommodation which this stage of development entailed.

Wratten Interview

EARLY EVENTS AT RAF STANLEY

12.15. As a result of Gp Capt Wratten's reservations, and during his discussions at HQSTC, UK Regional Air Operation Centre (UKRAOC) signalled CTF 317 that the "Movement plan for air elements be adjusted to meet revised timescale for availability of Port Stanley Airfield runway for fast-jet operations and to take account of the fact that progress towards the Garrison's steady state .... may have to be slower than was originally anticipated". The message went on to say that "After discussion with Senior RAF Officer Falkland Islands (SRAFOFI) we believe that it would be prudent to delay departure of further personnel until he has had an opportunity to discuss implications of currently proposed force levels with his staff in situ". The Group Captain flew back to the Falklands on 11 July to do just that.

051435Z Jun
TF 30.2 E66

RAF Stanley ORB

12.16. During his absence, life at his embryo RAF station had not been uneventful: a total of 23 Hercules aircraft had been turned round; on 4 July, 6 Harriers of No 1(F)Sqn had landed on the runway after a fly-past, and on 6 July a Harrier was used to clear snow for a Hercules landing; on 10 July, a Hercules landed 20ft short of the runway 26, in high winds and a blizzard, and needed a wheelchange. On the same day as the Stn Cdr returned, the TEV RANGATIRA arrived with

the first elements of RAF Stanley's complement. These included Ops Wg staff who on 12 July carried out a reconnaissance of the airfield before setting up Wg Ops, ATC, a Fire Section and a Meteorological Office. The following day saw the worst incident in Gp Capt Wratten's memory of operations at RAF Stanley: a Harrier accidentally discharged 2 Sidewinder missiles during take-off. There were several serious casualties, ironically mainly among a party of Welsh Guards who were clearing snow at the time, and whose unit had suffered so badly at Fitzroy Creek during the Falklands campaign. In the aftermath of this particularly devastating incident came 2 examples of the exceptionally positive attitudes which involvement in the campaign had engendered: firstly from the Army, when the Gp Capt presented his regrets, who were quick to reassure him that they would get the snow off the runway as soon as they could; secondly, from the young Harrier pilot whose immediate frankness in acknowledging the error which had caused the incident cleared the air and avoided the need for a lengthy and potentially difficult technical investigation, which the unit was not well enough established to conduct.

Idem

Wratten Interview

COMMAND AND CONTROL (C2)

12.17. The maintenance of good working relationships between the Services engaged in the post-war rehabilitation of the Islands was clearly of supreme importance. C2 for the immediate post-war period was that which had been adopted for the campaign itself: CTF 317 was in overall command and a Commander Land Forces Falkland Islands (CLFFI) was established ashore. Responsibility for AD including opcon of the No 1 Sqn Harriers, was with Commander Task Group (CTG) 317.8 afloat. It was intended that the chain of command through CTF 317 to CDS would initially be preserved but, once the re- establishment of civilian administration was well under way, it would be appropriate to appoint a more permanent military commander as Commander British Forces Falkland Islands (CBFFI). This would clear the way, once full civilian administration was restored and a permanent garrison established, for CBFFI to become an independent Garrison Commander accountable to CDS. Meanwhile, the change of control of AD assets to the SRAFOFI would occur on the arrival of the Phantoms for permanent basing on the Islands. The delay in the Phantom deployment proposed by Gp Capt Wratten was not, therefore, very popular with CTG 317.8 whose handover of responsibility, and TG's departure from the Falklands, was affected by it. Nevertheless, the Gp Capt's proposal was fully backed by the Air Commander and accepted by CTF 317. It says much for the quality of senior commanders and staff of the post-war (JHQ) in the Falklands that decisions of such far-reaching effect in the aftermath of an exhausting conflict did not permanently sour relationships. In Gp Capt Wratten's view, the CLFFI, Major General Thorne, and his COS were the ideal pair of officers to handle the difficult task of pulling all the elements together in the post-war situation. The CLFFI's daily conferences were the only workable means of communication among the staff, and through them problems and requirements

CAS 78/8. 1 E32

Wratten Interview

Idem

were resolved and policy established in a generally amicable and professional atmosphere.

OPERATING THE AIRFIELD

12.18. One potential area of disagreement lay in what Gp Capt Wratten described as the changeover from a war zone to a peace-time operation. There were 2 problems. Firstly, most of the units in situ at the end of the war had actually been involved in the fighting; it was a natural inclination on their part to wish to have nothing further to do with the Falklands, and to get onto the next aircraft or ship back to the UK. The last thing most of them wanted to become involved in was the reconstruction of the Islands. Secondly, among those that did remain there was an equally reasonable tendency to adopt in their approach to the peace the attitudes which had won the war. Thus, for example, the RAF had some difficulty in persuading the REs that their efforts to prepare the runway, and later to extend it, would have to take into account the need to allow routine flying operations to take place in safety. The Gp Capt described the task as trying to re-surface a runway on a typical flying station without closing it or stopping flying, and this comment perhaps illustrates the inherent difficulty of the task facing the officers of the new RAF Stanley. Despite their best efforts, there were occasions when an incoming Hercules on the air bridge had to go round again after 10 hours flying because a lorry had strayed across the runway. More seriously, a Hercules captain reported, on 15 Jul, "Personnel and equipment within 20 feet of wing-tip on touchdown", indicating the thin line between the constant movement of vehicles and the arrival and departure of aircraft, all vying for the same piece of concrete and with nothing like the sophisticated signalling and communication systems associated with normal airfields. Add to this the alarming vagaries of Falklands weather, in which sudden squalls of driving snow and very high winds could arrive with no warning, along with the complete absence of diversion airfields, and it is easy to understand the Stn Cdr's desire to see a slow and measured build-up of flying operations from the airfield.

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1507007 Jul
TF 23.28 E71

12.19. There were 4 RAF mobile teams or organisations which played an essential part in that build-up and in the formation of a normal peacetime organisation at RAF Stanley. The first of these was a small group of Mobile Air Movements staff (MAMS) which had arrived on 26 June to handle the routine Hercules movements which the initial efforts of the REs had done so much to make possible. Interestingly, one of the MAMs staff, MALM Smith, promptly took over the ATC task and was thereafter solely responsible for several weeks for ATC operations, despite being entirely unqualified. There was also, from the beginning, an Air Transport Detachment Commander who lived with his men alongside the runway in tents. However, the main impetus to the station's build-up came with the arrival of the TEV RANGATIRA on 12 July. Among the first to disembark were the Ops Wg staff who set up the Wg Ops cell in the only upstairs room in the terminal building. On 14 July a telephone was installed and temporary

UKMAMS ORB
Apr-Jun

windows were fitted using 3mm picture glass. A makeshift Ops desk was set up using loose wood and 45 gallon oildrums. Over the next month, the room was subdivided into partitions; initially, Wg Ops shared the front room with ATC, while the rear room was prepared for the installation of fixed desks and the ASMA computer link with the UK. During July the windows were eventually fitted with perspex instead of glass because of the danger of their being blown in by the countless controlled explosions caused by rock blasting and mine clearance, the downwash from large helicopters or the high winds.

RAF Stanley ORB

12.20. Also disembarking from the RANGATIRA was a Tactical Air Traffic Control (TACT) team which immediately undertook its own recce of the airfield and took over control of ATC operations. This they did at noon 13 July, just as the Harrier accidentally fired its 2 Sidewinders on the airfield. Both the TACT team and the airfield's embryo Fire Section, which took over with it, found themselves dealing with a particularly horrifying incident. The young men of the Fire Section reacted very creditably in applying first-aid to the injured. Having recovered from this baptism by fire, the TACT team saw its priorities as, firstly, establishing proper control procedures for aircraft; secondly, establishing positive control of personnel and vehicles on the airfield; and finally, clearing the area south of the runway of obstructions, debris and tents to make runway use safer and control of ground movements easier. The RAF Stanley ORB records that "Priority a. was achieved fairly easily". However to cope with priority b., "Three crossing points were established on the runway for vehicles and personnel, where men were detailed to control ..... traffic under the direction of ATC by Storno radio". The ORB also records that "It took considerable effort to educate personnel, both Army and RAF, to use only the designated crossing points and to remain clear of the runway when not cleared to cross". Finally, the ORB reports that "Priority c was soon implemented, and by the end of the first week some semblance of order was established on the airfield". A great step forward indeed for the RAF's newest operational station.

Idem

12.21. The other 2 units which disembarked from the RANGATIRA were the Tactical Communications Wing (TCW), from Brize Norton, and the Mobile Catering Support Unit (MCSU), from Hullavington. TCW had been tasked by MODAIR to deploy communications facilities and navigation aids necessary to establish the airfield. Thus in early July the personnel for all these support units were ashore. However, the rate of build-up of the necessary facilities was governed by the arrival of 2 other ships, the MV STRATHEWE and the CEDAR BANK, which contained their equipment, and which did not arrive until the 3rd week of July. Nevertheless, by the end of that month, the airfield boasted HF and UHF radios, an ATC cabin and tactical runway lighting, vehicles, generators, precision approach radar, a beacon, CADF, an HF Met station, airfield approach radar, ship to shore communications, and fire services. The month also saw the arrival of

TAC ATC REPORT/
RAF Stanley ORB

reinforcements for Tactical Supply Wing (TSW), which gradually took over refuelling for all ground and air operations and provided supply assistance for all RAF units in the Falklands. The TSW report for the period notes that "Containers of RAF equipment started to arrive on the airfield delivered by Chinook helicopters", and that "Dealing with them was arduous and slow because there was not enough ground handling equipment". RAF Stanley ORB

AIR DEFENCE

12.22. As well as command of RAF Stanley, one of the main tasks included in Gp Capt Wratten's directive was to recommend a concept of operations for AD of the islands. 18G/335/4/6/4/Ops E99 While the airfield was beginning to prepare for the operation of Phantoms, progress was also being made in the establishment of the Falkland Islands Air Defence Ground Environment (FIADGE), integral features of which were AD radars and a Control and Reporting System (CRS). The only air transportable radar available to the RAF was the S259, and it had been decided before the war ended to deploy one S259, with associated personnel. TF 16 Pt 1 E25 However, experience during the war had shown that more than one radar would be needed to provide 24 hr cover in a high threat area, and eventually a 18G/335/4/41/Ops E17 second S259 was earmarked for deployment. The S259 had severe limitations: it could operate in winds only up to 35Kts, provide only 2 control positions, and had no heightfinder. As a result, MOD also decided to buy a Marconi S600 radar, which would introduce a Sector Operations facility into the FIADGE, with a CRS capability ashore. FIADGE ORB Dec However, this equipment could not be set up until December and in the interim it became necessary to consider using the 2 AD radars left on the islands by the Argentines. Of these, the TPS 43 was not run up because no instruction manuals were available, but it did prove possible to operate the Type 44 and on 23 June it detected a Hercules on its secondary radar at a distance of 200nm. Even with the TPS 44, there remained many faults and the Westinghouse Company, when approached for assistance, was reluctant to get involved in what it regarded as a war zone. The USAF did, however, authorise direct MOD/USAFE contact to arrange for RAF technicians to be TF75 Pt 1 E50 trained on the equipment in Germany, and by mid-July this was being done. It was also thought that the USAF could eventually help with spares for the TPS 43.

12.23. By the beginning of July, both S259 radars had arrived and were positioned, with the 2 captured Argentine radars, at the Canopus Hill area of the airfield. It was intended to put the first S259 on Mount Kent and the second on Mount Alice, awaiting the arrival of the S600 which would then deploy to the Mount Kent area and become the Sector Operations Centre (SOC). Thus, at the end of July, early warning for the Falklands was being provided by RN picket ships stationed off West Falkland. Command and control was Wratten Interview being exercised afloat by CTG 317.8, and of the two S259s the only serviceable one (the other having been storm-damaged in transit) was deployed at Stanley. Further improvement in the CRS capability had to wait until 24 August when the

Argentine TPS 44 was rendered fully serviceable and deployed to San Carlos. 18G/335/4/6/4/Ops E87

THE SITUATION AT THE END OF JULY

12.24. The end of July was a significant period in the establishment of RAF Stanley. The personnel and equipment needed for the task, albeit at minimal level, were in situ and the unit possessed an administrative system and a command structure. Personnel were fed by MCSU and accommodated aboard the RANGATIRA and, apart from the minor debilitations of a local stomach infection known highly appropriately as "Galtieri's revenge", were coping extremely well with the challenges of life in the South Atlantic. Operationally, the best summary of the situation on the airfield was contained in the RAF Stanley ORB for the end of the month:

> "The main problems in operating at RAF Stanley were caused by the limited parking space and absence of taxiways, the restrictions placed on large helicopters such as Chinooks and Sea Kings because of their down-wash, foreign object damage (FOD), controlled explosions by Explosive Ordnance Disposal (EOD) teams on bomb clearance duties around the airfield, quarry blasting by the REs within 200 yds of the threshold of runway 08, and the changeable weather and frequent high winds. It must have sounded to some as though the war had never ended. Helicopter down-wash was a problem because it kept lifting the Harrier strip which, apart from inhibiting Harrier operations, was also dangerous to personnel on the ground. One RE was knocked out by a loose section of AM2 matting lifted by a passing helicopter and received a hair-line fracture of the skull. FOD was a constant problem, especially near the AM2 patches on the runway, around which the asphalt was prone to breaking up in sizeable chunks. On one occasion, a 6ft beam of wood was found on the runway. The runway was often the only means for vehicles to traverse the airfield and mud was inevitably dragged onto it. Consequently, the TAC ATC team acquired a runway sweeper, on loan from the Army Air Corps (AAC), which was often seen being driven by a controller trying to reduce the FOD hazard. The kind of problems are perhaps characterised by the events of 28 July when, during a series of snowstorms and winds gusting over 60 kts, several helicopters put down on the airfield until the weather passed. Meanwhile, a C130 was orbiting just out to sea looking for a gap in the weather in order to land on the runway and thus avoid diverting back to Ascension. The runway, which was closed to vehicles at the time, had an Army bulldozer on it which had not been cleared. To complicate matters, No1(F) Sqn portable hangars were collapsing in the high winds causing damage to 4 aircraft, and it was necessary to move the Harriers across the runway to the only aircraft parking area outside the tower in order to prevent further damage. Moreover, the only space for the Harriers was the slot awaiting the arrival of the

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TAC ATC REPORT
RAF Stanley ORB

C130. This would eventually necessitate the landing C130 waiting on the runway, with engines running, while another C130 taxied out for take-off to make space".

This extract from the station's ORB is a lengthy but eloquent testament to the fact that routine operations at Stanley might have taken on a peacetime flavour, but they were far from normal by UK standards. Further on, the same document describes the weather conditions as varying between the

"Barely acceptable to positively bloody"

as efforts were made to set up the supply complex and Petrol Oil and Lubricants (POL) store.

12.25. The early development of RAF Stanley was now complete in that the station had made the transition from war to peace as far as the local area was concerned. The beginnings of the infrastructure associated in most people's minds with an operational air force base were evident. The post-war arrivals had acclimatised to the rugged nature of their working environment, and indeed had learned to shrug off the kind of flu and gastric-type ailments which back in the UK would have laid them low for days. Externally, the threat from the Argentine still officially existed, but a semblance of an AD system had been installed and was routinely exercised. August saw much continuing progress: detailed establishments and call-forward plans were prepared; more weapons were delivered and the stock of off-loaded equipment was growing. Improvements to the servicing capability for MT vehicles, and for ground equipment in general, were continually being made; a new Explosives Storage Area (ESA) was being constructed and an air-to-air missile servicing facility was in the course of development. During the same period, the link with the HQSTC computerised ASMA system was installed in Eng Ops and the final stages of the communications and navaids installation was well under way. Moreover, against all odds a very respectable 2nd-line aircraft mechanical repair and servicing bays organisation had been set up. Throughout the period routine flying continued, consisting of Harrier training, endless helicopter to-ing and fro-ing and 2 Hercules movements daily, the last supported by a complement of 2 ground engineering personnel, which surely qualified it as the most cost-effective detachment in the RAF at the time. With all these developments gathering pace, the stage was set for the final and most important phase in the post-war construction of RAF operational capability on the Falklands: the improvements to the runway and the deployment of No 29(F)Sqn Phantoms to RAF Stanley.

RAF Stanley ORB

PREPARATIONS FOR THE DEPLOYMENT OF THE PHANTOMS

12.26. The 29(F) Sqn ORB records that at the beginning of August 35 personnel together with ground equipment were deployed from Coningsby to the Falklands by sea to prepare for the arrival of their Phantoms once the extension to the runway and development of facilities at RAF Stanley were

29 Sqn ORB

complete. The laying of 4100ft of AM2 matting on the original surface, the first stage of refurbishmnt, began on 15 August, and since the runway could not remain in use while this work was being done the transport flights from Ascension had to be stopped. In the rush to achieve the maximum possible resupply before the air bridge closed, 13 August had seen the largest number of Hercules at RAF Stanley in any day since the station was formed: one Hercules departed and 4 others were turned round. Altogether, by the time the runway closed, the airfield had supported a total of 77 Hercules landings since its recapture.(1)

RAF Stanley ORB

12.27. On 29 July No 50 Field Squadron (Construction) had carried out an AM2 matting trial to check that it would lay over the runway's existing camber. They were also experiencing problems with draining the RHAG pits. Once the work began in earnest on 15 August, the first task was to prepare the runway for mat-laying; this work was complete by 19 August and the REs started laying the matting on the runway at 0600 hrs that day. The Stanley ORB records that they were forced to abandon their task at midnight on 20 August owing to freezing temperatures and a 50Kt blizzard, and at that stage snow was also making it difficult for them to see the guide lines. Despite these setbacks, the laying of 4100ft of AM2 covering the existing runway was completed on 26 August. On 27 August, the runway's tri-directional side lights and centreline bi-directional lights were switched on and were serviceable. The next day, ATC's ARI search radar was switched on and it too was serviceable, but 2 Hercules recovering to the airfield had to turn back to Ascension because of the weather. Finally, on 29 August, the first Hercules landed on the new surface and the pilot reported no significant handling problems. At this stage, with 4100ft and one set of arrestor gear available it would have been possible to fly in Phantoms had there been an immediate threat to the islands. The 3 Phantoms which had previously been deployed at Ascension had been pulled back to the UK on 20 July for modification in the ALE 40 fit so that they would be ready when needed.

Idem

29 Sqn ORB

12.28. The 29 Sqn ground-crew party, led by a Warrant Officer, had now arrived at Stanley.. Their first shock was their living accommodation on board the RANGATIRA. One of their subsequent letters home gives some useful insights into the situation at that time: "Built as a ferry for use between North and South Islands of New Zealand, RANGATIRA spent the last few years as an accommodation ship in the North of Scotland and served oil rigs and construction teams. Conditions on board are cramped. Built for 4-600 overnight passengers, there are over 1000 troops and airmen on board. Two berth cabins house 3 or even 4 men, extra bunks having been squeezed in. There is no room for kit-bags; they are stood in the passageways padlocked to

Idem

(1) While the runway was closed, Hercules from Ascension carried out several mail-snatch sorties, enabling film and mail to be recovered quickly from the garrison.

47 Sqn ORB Aug

handrails". The writer later mentions the daily routine: "Reveille is at 0600 hrs, and we go ashore, to a quay in Port Stanley, at 0730, by landing craft. From there to RAF Stanley by 4-tonner ..... the area more than 50 or 100 yards back from the roads is still uncleared of mines, grenades and various booby traps .... the base area looks like a chaotic sea of mud, rubbish and confusion at first sight. But every day one can see improvements. The REs have earned everyone's praise for the speed of building the runway, Hercules' dispersals and other essential services. They work 24 hrs a day, 7 days a week".

12.29. For RAF Stanley the work continued unabated into September with the REs moving straight on to the task of extending the runway by 2000 ft to give it the capability to receive the waiting Phantoms. By 22 September, aggregate had been laid to 1000 ft on the south side and 975 ft on the north. The work was progressing well in excellent weather, and AM2 matting was laid over the first 100 ft. However, the REs' rock crusher was now giving some trouble. The original runway repairs had required little crushed rock, but much more was needed for the western extension. First estimates had suggested a figure of 25,000 tons, but in the event more was used. Progress was therefore totally dependent on access to the quarry and the performance of the crusher, but unfortunately, the amount of rock needed was beginning to abrade the crusher's teeth and also entailed the reopening of another old quarry which was filled with water and ammunition. Finally, when the weather froze the rock drills were affected by ice which retarded progress. Nonetheless, the extension was 60% complete by the end of September. Work also started during the month on the north west dispersal and the eventual site of the Phantom QRA and line hangar, and the existing airfield apron was overlaid and widened. On the runway itself, the east 800 ft, 3000 ft and 3100 ft RHAGs were installed, and the anchorages for the 550 ft west and 2700 ft east RHAGs were constructed.

RAF Stanley ORB

"The Beginning of Rehabilitation" Lt Col IEVERS RE Ascension/Stanley Folder

12.30. Engineering Wing also reported good progress in its preparations for the arrival of the Phantoms. The arrival of the MV NORLAND saw an increase in manpower and a changeover for some sections. Plans were in hand for the establishment of a second LOX plant and the move of the ESA to its new site was complete; good armament safety distances had been achieved at the site and all small arms were now ashore and properly racked in 10 ft containers. By the end of September all the Phantom role equipment had arrived, including Skyflash (AIM). The ground equipment requirement for the station was considerable: not only were there shortly to be 5 different types of aircraft operating from the airfield, but there was also a huge complement of generators. Aircraft and equipment servicing, especially in the conditions which usually prevailed, put an enormous strain on the unit's manpower resources. A bid was made to HQSTC for 39 more tradesmen, and it was believed that a reduction in the numbers was unlikely to be possible until a military power station could be built, thus reducing the dependence upon portable generators. The maintenance of MT serviceability

RAF Stanley ORB

was a struggle, not least because the road to and from Stanley was badly breaking up. However, the Islander hangar had been completely reclad and an excellent MT stores facility set up in it. The station had a complement of 100 vehicles. Communications had continued to improve; the Commcen had been completely rewired and a manual telephone system was in operation. ASMA was working only intermittently with faults both at the UK end, and locally with its aerial dishes blowing over in the wind. Supply Sqn was having difficulty in maintaining aviation fuel stocks, despite having commissioned a second Bulk Fuel Installation (BFI) on Canopus Hill. This took longer than expected, and on one occasion the unit fell below its minimum reserve level. Shortly afterwards one of the tanks split releasing 22000 gallons of AVCAT into the mud. However, just before the Phantoms were due to deploy a ship-to-shore pipeline was installed and the GA WALKER tanker began to pump fuel ashore, which removed the supply problem.

Idem

LIVING CONDITIONS

12.31. Throughout the period, the number of RAF personnel in the Falklands continued to grow. From a handful at the end of the war, the figure reached 700 in July, and increased again with the arrival of the NORLAND. As has been evidenced so far, it was an unusual posting; there was little to do but work and sleep, and the shift arrangements reflected this. From the beginning the Station Commander insisted that anything other than total commitment to the task from the RAF personnel at Stanley could not be tolerated. The discipline would have to be very tight, and conditions which back in the UK would be scarely workable had to be accepted with a good grace. In particular, the operation could not afford failures by personnel to obey the rules or to carry out properly the tasks allocated to them. Equally, the unit could not accept the kind of preoccupation with domestic or personal worries which were part of the fabric of routine Service life on RAF stations everywhere else. The distance and isolation helped in this latter respect, of course, and in spite of the demands, or perhaps because of them, morale was not a problem, though occasionally someone had to return to the UK because domestic pressure was making life in the Falklands intolerable. The climate, of course, did not make things easier - not least when, following a fire in a tent caused by an Aladdin paraffin stove, in which one person was lucky to survive, it became necessary to ban all overnight use of such heaters. This meant quite simply that many people could not sleep for cold, but there was no immediate alternative and those affected had no choice but to accept the situation and do the best they could to keep warm. In general, people reacted extremely well to the rigours of the climate and the demands of the reconstruction workload. As time went by they were increasingly spurred on by the progress they were making towards the immediate objective, the advent of 29 Sqn's Phantoms.

Wratten Interview

RAF Stanley ORB
Wratten interview

THE PHANTOMS ARRIVE

12.32. In October, growing attention was focussed on the development of procedures for alerting and operating the assets in readiness for the arrival of the Phantoms. HMS ILLUSTRIOUS still held the QRA commitment with its Sea Harriers, but RAF Stanley Ops Wg was now controlling its own shore-based GR3s and the 37 Squadron Rapiers.(2) Most exercises therefore involved coordination between the station and the Fleet. On 4 October a pre-planned Air Defence Exercise (ADEX) was conducted to test the reaction of land-based aircraft to Sea Harriers acting as targets. The targets were detected at 180nm and intercepted at 60nm to the west of Port Stanley Airfield. The unit ORB records that the exercise brought to light a number of problems, mainly connected with communications. A similar exercise was conducted on 11 October but the scramble was vetoed by OC Ops as the weather was unsuitable for recovery. This occurrence illustrated the unique problems of supervising flying at RAF Stanley: without diversions, and with little or no warning of weather deteriorations which could be extreme in character, great care had to be continually exercised in the control of flying. Gp Capt Wratten was acutely aware that the Argentine could conceivably launch aircraft to probe the FIADGE and, if they chose their weather carefully, could generate a QRA scramble from which it might not be possible to recover the aircraft. He therefore decreed that, throughout the period of work-up of the FIADGE's air assets, authority to scramble aircraft would be confined to either his OC Ops or himself; he recognised that, in certain circumstances, it might be preferable to keep aircraft on the ground, whatever the threat. The diversion problem was not, of course, as acute for the Harrier as it would be for the Phantom, which is what the Gp Capt had primarily in mind.

RAF Stanley ORB

Wratten interview

12.33. The ADEXs in October prepared the FIADGE for the integration of the Phantom and set the pattern for the operation of the aircraft as the mainstay of the AD of the Falklands. Meanwhile at RAF Stanley, the REs had completed the North West dispersal and 2 QRA hangars and assembled 3 portable cabins for QRA personnel. As to the runway, the Stanley ORB records that:

RAF Stanley ORB

> "The final piece in the jigsaw of AM2 matting was laid on 14 October by Maj Gen THORNE, CLFFI, and Cpl JACKSON of 50 Sqn RE. The simple ceremony was watched by R Adm RAEFFEL, (FOF3), Gp Capt WRATTEN and Col BROWNSON (Commander, RE). In attendance were soldiers from 50 Sqn RE, commanded by Maj J Harrison, who had built the extension".

12.34. The stage was now set. On 17 October, Wg Cdr I Macfadyen, OC 29 Sqn, with Sqn Ldr Simpson as his navigator

(2) No 63 Sqn, RAF Regiment had handed over responsibility for the Rapier defence of RAF Stanley to No 37 Sqn in September.

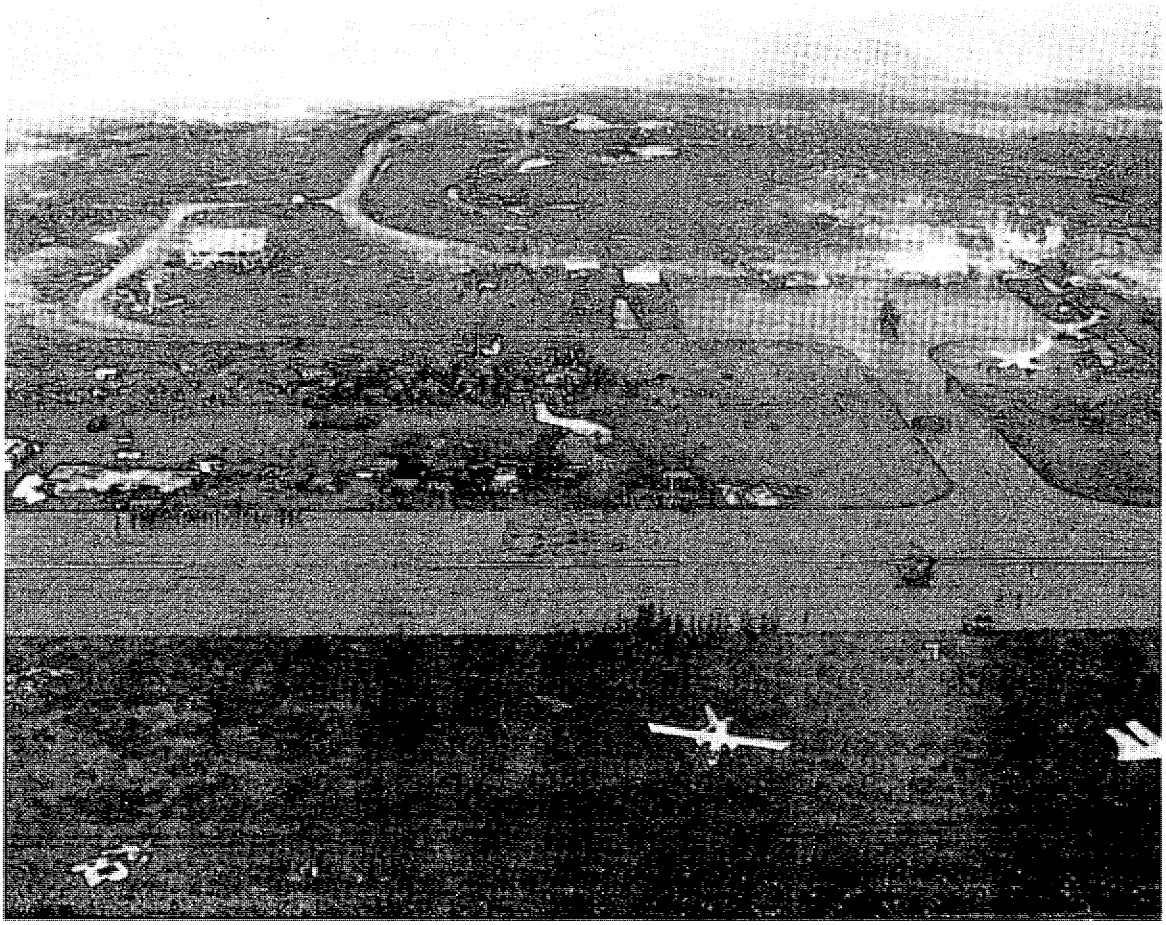
flew the first Phantom to the Falklands. The Sqn ORB records that

> "The sortie south from Ascension took some 8 hours 45 minutes with 11 refuelling brackets - and almost a thousand miles unaccompanied".

The world's press had assembled in advance to film the aircraft's arrester-gear landing. Right on time, the Phantom appeared, flying low and fast, escorted by 2 Sea Harriers, running in to break at RAF Stanley. The Wg Cdr then proceeded to give an impressive display of noise and manoeuvre which was, according to the Sqn's ORB, exactly what the locals wanted. Certainly, for Gp Capt Wratten it was the best moment of his tour of duty in the Islands. The aircraft landed, and in the best traditions of the RAF's loneliest outpost, it was immediately given a "hot" turnround, fully armed and launched with another crew on a local patrol mission.

Wratten interview

12.35. With the arrival of the first Phantom, soon to be followed by others, the end of a remarkable phase in the reconstruction of the Falklands was reached; it had been remarkable for the challenges faced by the personnel involved, for the hazards and rigours of the environment in which they found themselves and for the way in which they created normality and order from war and chaos. To have established an RAF Station operating a sophisticated air defence aircraft in a formally structured FIADGE, all in the space of a few months, ranks with much which was achieved in the war which had preceded it. In the context of the long-term future defence of the Falklands it was in many ways as vital as the war itself.



12.1. General view of the shambles that was Stanley airfield after the cease-fire — a combination of wreckage, prisoners and craters.

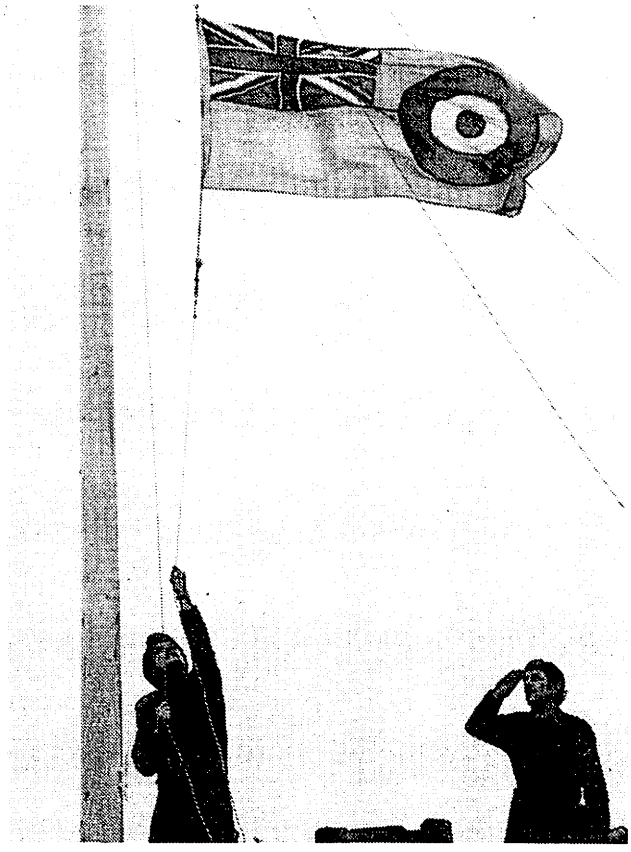
12.2. Hercules on finals about to land along a line of wrecked Argentine Pucara aircraft — one of the first flights of the 'airbridge'.

12.3/4. Not the Somme or the Antarctic! — just Stanley airfield after recapture (MOD planners described it as a 'temperate zone').

12.5. Harriers on dispersal.

12.6. An RAF Regt Warrant Officer and an Argentine Tiger Cat SAM launcher at Sapper Hill. The Tiger Cat is now displayed at the RAF Regt Museum at RAF Catterick.

12.7. Just some of the 'nasties' found on Stanley airfield.



12.8. The grand finale — the RAF Ensign is raised over Stanley airfield.

GLOSSARY OF TERMS AND ABBREVIATIONS

AAA	- Anti Aircraft Artillery
AAAD	- All Arms Air Defence
AAC	- Army Air Corps
A&AEE	- Aeroplane and Armament Experimental Establishment
AAM	- Air-to-Air Missile (see also AIM)
AAPP	- Auxiliary Air Power Pack
AAR	- Air-to-Air Refuelling
AARI	- Air-to-Air Refuelling Instructor
AARCTM	- Air-to-Air Refuelling Combined Tasking Memorandum
ABDR	- Aircraft Battle Damage Repair
ACAS(Ops)	- Assistant Chief of the Air Staff (Operations)
ACDS(Ops)	- Assistant Chief of the Defence Staff (Operations)
AD	- Air Defence
ADC	- Air Defence Centre
ADES	- Avionic Direct Exchange Scheme
AEDIT	- Aircraft Engineering Development and Investigation Team
AES	- Aeromedical Evacuation Squadron
AES	- Air Engineering Squadron
ADEX	- Air Defence Exercise
ADIZ	- Air Defence Identification Zone
AEOP	- Air Electronics Operator
AFB	- Air Force Base
AFD	- Air Force Department
AFEWC	- Air Force Electronic Warfare Center (USA)
AFOR	- Air Force Operations Room
AFTH	- Air Force Target Heading
AGCR	- Aircraft Generation Control Room
AGI	- Auxiliary General Intelligence (Soviet)
AIM(9)	- Air Interception Missile (Sidewinder)
ALM	- Air Loadmaster
ALO	- Air Liaison Officer
AMC	- Alert Measures Committee
AM2	- Aluminium 2 (Matting)
AMRAAM	- Advanced Medium Range Air-to-Air Missile
AMRAD	- Automatic Message Routeing and Distribution
AMSO	- Air Member for Supply and Organization
AOA	- Amphibious Operations Area
AOB	- Air Order of Battle
AOC	- Air Officer Commanding
AOC in C	- Air Officer Commanding in Chief
AOG	- Aircraft on Ground
APAWS	- Air Portable Avionics Work Shop
APFC	- Air Portable Fuel Container
APU	- Auxiliary Power Unit
ARI	- Airborne Radio/Radar Installation
ARM	- Anti Radiation Missile
ASF	- Aircraft Servicing Flight
ASL	- Above Sea Level
ASM	- Air to Surface Missile/Anti Ship Missile
ASMA	- Air Staff Management Aid
ASR	- Air Sea Rescue
ASR	- Air Staff Requirement
ASRA	- Air Sea Rescue Apparatus
ASW	- Anti Submarine Warfare
AT	- Air Transport
ATF	- Air Transport Force
ATAC	- Air Transport Allocation Committee

ATC	- Air Traffic Control
ATL	- Above Target Level
ATM	- Air Task Message
AUS(DS)	- Assistant Under Secretary (Defence Staff)
AUW	- All Up Weight
BAID	- Liquid Oxygen(Lox) (Portable Production Plant)
BDE	- Brigade
BFI	- Bulk Fuel Installation
BFSU	- British Forces Support Unit
BJSCO	- British Joint Services Communications Organisation
C3	- Command, Control and Communications
CA	- Controller of Aircraft
CAC	- Cargo Allocation Cell
CAH	- Carrier Assault Helicopter
CAP	- Combat Air Patrol
CAS	- Chief of the Air Staff
CAS	- Close Air Support
CBFSU	- Commander British Forces Support Unit
CBGLO	- Carrier Borne Ground Liaison Officer
CBU	- Cluster Bomb Unit
CCA	- Carrier Controlled Approach
CCTF	- Commander Combined Task Force
CDA	- Central Distribution Agency
CDS	- Chief of the Defence Staff
CDT	- Crew Duty Time
CE	- Chief Engineer (RAF)
CEDIT	- Command Engineering Development and Investigation Team
CEP	- Circular Error of Probability
CFMO	- Command Flight Medical Officer
CINCFLEET	- Commander in Chief Fleet
CLFFI	- Commander Land Forces Falkland Islands
CLOT	- Chinook Liaison Officer to Task Group
CMC	- Crisis Management Cell (in DGS(RAF)'s organization)
COMAW	- Commodore Amphibious Warfare
COS	- Chief(s) of Staff
COSSEC	- Chiefs of Staff Secretariat
CPRM	- Contingency Planning and Resources Management Cell (UK RAOC)
CRS	- Control and Reporting System
CS	- Chief Scientist
CSDE	- Central Servicing Development Establishment
CTF	- Commander Task Force
CTG	- Commander Task Group
CTTO	- Central Tactics and Trials Organization
CVBG	- Aircraft Carrier Battle Group
CVS	- Anti Submarine Warfare Aircraft Carrier
CVL	- Light Aircraft Carrier
CWD	- Conventional Weapons Delivery
CWP	- Contractors Working Party
DACT	- Dissimilar Air Combat Training
DADC	- Duty Air Defence Controller
DAP	- Director of Administrative Plans
DAS	- Defence Accommodation Stores
DAW	- Department of Air Warfare
DCN	- Defence Communications Net
DD Eng Pol	- Deputy Director of Engineering Policy
DD Ops (EW&R)	- Deputy Director of Operations (Electronic Warfare and Reconnaissance)

DD Ops(M)	- Deputy Director of Operations (Maritime)
DEA	- Delegated Engineering Authority
DF	- Direction Finding
DGO(RAF)	- Director General of Organization
DGS(RAF)	- Director General of Supply
DIG	- Delivery Indicator Group
DIS	- Directorate of Intelligence Services
DMCC	- Defence Movements Co-Ordination Committee
DMO	- Director of Military Operations
DNAW	- Director of Naval Warfare
DOC	- Defence Operations Centre
DOE	- Defence Operations Executive
DOMS	- Defence Operations Movements Staff
DofOps(S)	- Director of Operations (Strike)
DofQ	- Director of Quartering
DRACONE	- Towed Flexible Fuel Barge
DS	- Defence Secretariat
DSSS	- Defence Secure Speech System
DSTI	- Directorate of Scientific and Technical Intelligence
DUKW	- Amphibious Landing Vehicle
DZ	- Dropping Zone
EARS	- ESD ADP Replacement System
ECAC	- Electromagnetic Compatibility Center (USA)
ECM	- Electronic Counter Measures
ECCM	- Electronic Counter Counter Measures
EDD	- Engineering Design Division (RAF SEE)
EEI	- Electrical Engineering Instruction
EFHE	- Emergency Fuel Handling Equipment
EMC	- Electromatic Compatability
EMCON	- Emission Control
EMIS	- Emergency Manning Information System
EMOC	- Emergency Manning Operations Centre
EOB	- Electronic Order of Battle
EOD	- Explosive Ordnance Disposal
ERHAG	- Emergency Rotary Hydraulic Arrester Gear
ERS	- Emergency Reinforcement Scheme
ERV	- Electronic Repair Vehicle
ESA	- Explosive Storage Area
ESD	- Equipment Supply Depot
ESM	- Electronic Support Measures
ESMAPP	- ESM Audio Pulse Print
EW	- Electronic Warfare
EWAU	- Electronic Warfare Avionic Unit
EWC	- Electronic Warfare Center (USAF)
EWDB	- Electronic Warfare Data Base
EWOSE	- Electronic Warfare Operational Support Establishment
EWTR	- Electronic Warfare Training Range
FAA	- Fleet Air Arm
FAC	- Forward Air Controller
FAP	- Fly Away Pack
FCO	- Foreign and Commonwealth Office
FCR	- Fire Control Radar
FEBA	- Forward Edge of the Battle Area
FEWSG	- Fleet Electronic Warfare Support Group
FI	- Fatigue Index
FIADGE	- Falkland Islands Air Defence Ground Environment
FIR	- Flight Information Region

FINRAE	- Ferranti Inertial Navigation Reference and Alignment Equipment
FIST	- Falkland Islands Study Team
FL	- Flight Level
FLIR	- Forward Looking Infra Red
FLOT	- Forward Line of Own Troops
FMB	- Forward Mounting Base
FOB	- Forward Operating Base
FRC	- Flight Reference Cards
FRT	- Forward Repair Teams
FSCC	- Fire Support Co-Ordination Centre
FTS	- Fatigue Test Specimen
FTS	- Flying Training School
FUD	- Force Unit Designator
GASR	- General and Air Staff Requirement
GASO	- Group Air Staff Orders
GCA	- Ground Controlled Approach
GCHQ	- Government Communications Headquarters
GD	- Ground Defence
GDOC	- Ground Defence Operations Centre
GE	- Ground Engineer
GLO	- Ground Liaison Officer
GP	- Group
GPI	- Ground Position Indicator
GPMG	- General Purpose Machine Gun
GPU	- Ground Power Unit
GTC	- Gas Turbine Compressor
GWB	- Government War Book
HACLS	- Harpoon Aircraft Control Launch System
HALO	- Harrier Air Liaison Officer
HARS	- Heading and Altitude Reference System
HDU	- Hose Drum Unit
HIFR	- Helicopter In-Flight Refuelling
HRU	- Heading Reference Unit
HUD	- Head Up Display
IAS	- Indicated Air Speed
ICL	- Immediate Contact Link
IDA	- Installation Design Authority
IFF	- Identification Friend or Foe
IMC	- Instrument Meteorological Conditions
INAS	- Inertial Navigation and Attack System
INF	- Infantry
INS	- Inertial Navigation System
IR	- Infra Red
IRCC	- International Red Cross Committee
IRD	- IR Decoy
IRF	- Immediate Readiness Force
IRLS	- Infra Red Line Scan
ITP	- Instruction to Proceed
JATE	- Joint Air Transport Establishment
JHSU	- Joint Helicopter Support Unit
JIC	- Joint Intelligence Committee
JOC	- Joint Operations Centre
JPTL	- Jet Pipe Temperature Limiter
JSIW	- Joint Services Intelligence Wing
JTP	- Joint Theatre Plans
JTIDS	- Joint Tactical Information Distribution System
KTS	- Knots
LCG	- Load Classification Group

LCN	- Load Classification Number
LGB	- Laser Guided Bomb
LOA	- Letter of Acceptance
LOX	- Liquid Oxygen
LLAD	- Low Level Air Defence
LRMTS	- Laser Range/Marker Targetting System
LRU	- Launcher Release/Line Replacement Unit
LSH	- Light Support Helicopter
LSJ	- Life Saving Jacket
LSL	- Landing Ship Logistic
LTM	- Laser Target Marker
LTS	- Long Term Storage
MAOT	- Mobile Air Operations Team
MARTSU	- Mobile Aircraft Repair Transport and Salvage Unit
MAW	- Missile Approach Warning
MCR	- Monthly Component Reports
MCSU	- Mobile Catering Support Unit
MET	- Meteorology
MEZ	- Missile Engagement Zone
MMU	- Mobile Meteorological Unit
MOD	- Ministry of Defence
MOD PE	- MOD Procurement Executive
MODWB	- MOD War Book
MOS	- Military Operating Standards
MOU	- Memorandum of Understanding
MP	- Maritime Patrol
MRR	- Maritime Radar Reconnaissance
MR	- Maritime Reconnaissance
MSF	- Mobile Supply Flight
MSH	- Medium Support Helicopter
MSS	- Mobile Servicing Squadron
MTI	- Moving Target Indicator
MTU	- Magnetic Tape Unit
MU	- Maintenance Unit
MV	- Motor Vessel
NATIU	- Naval Technical Investigation Unit
NATS	- National Air Traffic Service
NBS	- Navigation and Bombing System
ND	- Naval Department
NDB	- Nuclear Depth Bomb
NI	- Northern Ireland
NMS	- Nautical Miles
NMSU	- Nimrod Major Servicing Unit
NVG	- Night Vision Goggles
OAS	- Offensive Air Support
OCU	- Operational Conversion Unit
ODM	- Operating Data Manual
OD/SA	- Overseas and Defence Committee/South Atlantic
OEG	- Operational Evaluation Group
OPS	- Operations
ORB	- Operations Record Book
OS	- Offensive Support
OTR	- Operational Turn-Round
PAN-AM	- Pan-American Airlines
PAPI	- Precision Approach Path Indicators
PAR	- Precision Approach Radar
PEACE RAPID	- USA Project Codeword for Material Support

PFDS	- Priority Freight Distribution Service
PLT	- Production Lead Time
PMC	- Personnel Management Centre
PMO	- Principal Medical Officer
PNG	- Passive Night Goggles
PNR	- Point of No Return
POL	- Petrol Oil and Lubricants
POLOR	- Pol Operations Room
POW	- Prisoners of War
PR	- Photo Reconnaissance
PRF	- Pulse Repetition Frequency
PSCS	- Personnel Services Computer System
QFI	- Qualified Flying Instructor
QRA	- Quick Reaction Alert
QRF	- Quick Reaction Force
QWI	- Qualified Weapons Instructor
RADALT	- Radar Altimeter
RAE	- Royal Aircraft Establishment
RAF ASUPU	- RAF Armament Support Unit
RAFSC	- RAF Support Command
RAOC	- Regional Air Operations Centre
RAS	- Replenishment at Sea
RAT	- Ram Air Turbine
RATT	- Radio Automatic Tele-Type
RCS	- Radar Cross Section
RCT	- Royal Corps of Transport
RE	- Royal Engineers
REU	- Radio Engineering Unit
RFA	- Royal Fleet Auxiliary
RHAG	- Rotary Hydraulic Arrester Gear
RNAS	- Royal Naval Air Station
ROA	- Radius of Action
ROE	- Rules of Engagement
ROV	- Radio Operator Voice
ROWPUS	- Reverse Osmosis Water Purification Units
RPC	- Rapair Policy Committee
RRRF	- Rotors Running Refuelling
RSRE	- Royal Signals Research Establishment
RV	- Rendezvous
RWR	- Radar Warning Receiver
SACC	- Supporting Arms Coordination Centre
SACEUR	- Supreme Allied Commander Europe
SAM	- Surface to Air Missile
SAR	- Search and Rescue
SARBE	- Search and Rescue Beacon
SAS	- Special Air Service
SATCOM	- Satellite Communications
SBS	- Special Boat Squadron
SD	- Service Deviation
SECCOS	- Secretary to Chiefs of Staff
SEM	- Service Engineered Modification
SEZ	- Selected Engagement Zone
SF	- Special Forces
SH	- Support Helicopters
SHAR	- Sea Harrier
SITA	- International Civilian Air Traffic Communications Network
SLIR	- Sideways Looking Infra-Red

SLSU	- Second Level Support Unit
SMA	- Signal Message Address
SMB	- Supply Management Branch
SME	- Squadron Maintenance Equipment
SOC	- Sector Operations Centre
SOG	- Special Operations Group
SOP	- Standard Operating Procedures
SOS	- Short of Stock (Items)
SofS	- Secretary of State
SPC	- Standard Priority Code
SPS	- Standard Priority System (DOMS)
SPT	- Standard Pipeline Time
SQN	- Squadron
SRAFO	- Senior RAF Officer
SRIM	- Service Radio Installation Modification
SSALTS	- Sidewinder Simulator and Launcher Test Set
STC	- Strike Command
STF	- Special Trials Fit
STOVL	- Short Take-Off and Landing
STUFT	- Ships Taken up from Trade
SU	- Signals Unit
TACAN	- Tactical Air Navigation (Equipment)
TACC	- Tactical Air Coordination Centre
TACP	- Tactical Air Control Party
TAP	- Terminal Approach Procedures
TAR	- Tactical Air Request
TARDIS	- Transportable Air Radio Defect (Diagnosis) Investigation System
TASMO	- Tactical Air Support of Maritime Operations
TBC	- Tail Brake Parachute
TCW	- Tactical Communications Wing
TEV	- Turbo Electric Vessel
TEZ	- Total Exclusion Zone
TF	- Task Force
TG	- Task Group
TI	- Trial Installation
TIFT	- Technical Intelligence Field Team
TOT	- Time on Task
TOW	- Take-Off Weight
TPC	- Tape Production Centre
TRT	- Turn Round Time
TS	- Transport Support
TSW	- Tactical Supply Wing
TTW	- Transition to War
UAST	- Unit Air Staff Table
UDF	- Ultra High Frequency Direction Finding
UK ADR	- UK Air Defence Region
UK DPO	- UK Defence Procurement Office (Washington)
UKLF	- UK Land Forces
UKMAMS	- UK Mobile Air Movements Squadron
UKZE	- UK Zone Exchange
ULL	- Ultra Low Level
UTM	- Universal Transverse Mercator (Co-Ordinates)
UXB	- Unexploded Bomb
VCAS	- Vice Chief of the Air Staff
VCDS	- Vice Chief of the Defence Staff
VDU	- Visual Display Unit
VERTREP	- Vertical Re-Supply/Replenishment

VTOL	- Vertical Take-Off and Landing
VSTOL	- Vertical/Short Take-Off and Landing
WMR	- War Maintenance Reserve
WRS	- War Reserve Stock

RAF UNITS DEPLOYED IN WHOLE OR PART TO THE SOUTH ATLANTIC DURING OPERATION CORPORATE

UNIT		OFFICER COMMANDING/DETACHMENT COMMANDER
1(F) Squadron	Harrier GR3	Wing Commander P T SQUIRE, DFC, AFC, RAF
Detachments of:		
10 Squadron	VC10	Wing Commander O G BUNN, MBE, RAF
18 Squadron	Chinook HC1	Squadron Leader R U LANGWORTHY, DFC, AFC, RAF
24 Squadron	Hercules C1	Squadron Leader M J KEMPSTER, RAF (4-17 Apr 82)
30 Squadron	Hercules C1	Squadron Leader J R D MORLEY, RAF (18 Apr-11 May 82)
47 Squadron	Hercules C1	Squadron Leader N C L HUDSON, BA, RAF
70 Squadron	Hercules C1	(12 May-23 Jul 82)
29 Squadron	Phantom FGR2	Squadron Leader R W D TROTTER, RAF
42 Squadron	Nimrod Mk 1	Wing Commander D L BAUGH, OBE, RAF
44 Squadron	Vulcan B2	
50 Squadron	Vulcan B2	Squadron Leader A C MONTGOMERY, RAF
101 Squadron	Vulcan B2	
55 Squadron	Victor K2	Wing Commander D W MAURICE-JONES, RAF (18-21 Apr 82)
57 Squadron	Victor K2	Wing Commander A W BOWMAN, MBE, RAF (22 Apr 82)
120 Squadron	Nimrod Mk 2	
201 Squadron	Nimrod Mk 2	Wing Commander D EMMERSON, AFC, RAF
206 Squadron	Nimrod Mk 2	
202 Squadron	SAR Sea King	Flight Lieutenant M J CARYLE, RAF

Royal Air Force Regiment

3 (Regiment)	Wing Headquarters Unit	Wing Commander T T WALLIS, RAF
15 (Regiment)	Squadron Detachment Field Squadron	
63 (Regiment)	Squadron (Rapier)	Squadron Leader I P G LOUGHBOROUGH, RAF

Support Units
Tactical Communications Wing
Tactical Supply Wing
No 1 Explosive Ordnance Disposal Unit
38 Group Mobile Air Operations Team

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RAF SQUADRONS AWARDED THE BATTLE HONOUR "SOUTH ATLANTIC 1982"

No 1(F) Squadron	Harrier
No 18 Squadron	Chinook
No 42 Squadron	Nimrod
No 44 Squadron	Vulcan
No 47 Squadron	Hercules
No 50 Squadron	Vulcan
No 51 Squadron	Nimrod
No 55 Squadron	Victor
No 57 Squadron	Victor
No 63 Squadron RAF Regiment	Rapier
No 70 Squadron	Hercules
No 101 Squadron	Vulcan
No 120 Squadron	Nimrod
No 201 Squadron	Nimrod
No 206 Squadron	Nimrod

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260/82. HONOURS FOR THE SOUTH ATLANTIC OPERATION

[D/S10(Air)/70/38]

The following awards were announced in the *London Gazette* on 11 October 1982:

DISTINGUISHED SERVICE CROSS

Flight Lieutenant David Henry Spencer Morgan,
5200931, Royal Air Force, 899 Naval Air Squadron

The Sea Harrier pilots of 800 and 899 Naval Air Squadrons embarked in HMS HERMES have shown great courage in the air battle over and around the Falkland Islands which started at the end of April and continued throughout May. They were required to fly sortie after sortie, sometimes as many as four per day, often in appalling weather conditions, but remained steadfast and determined under continuous stress and constant danger. Their contribution enabled the Task Force to gain air superiority and thus almost certainly saved many lives which would otherwise have been lost in enemy air attacks. Flight Lieutenant Morgan has flown 50 operational sorties. During one sortie, he attacked a Puma helicopter with guns causing it to crash into a hill and, on a separate occasion, he and his wing man attacked and destroyed an entire formation of four Mirages, Flight Lieutenant Morgan himself shooting down two enemy aircraft.

DISTINGUISHED FLYING CROSS

Wing Commander Peter Ted Squire AFC
608512, Royal Air Force

Six GR3 Harriers from 1(F) Squadron embarked in HMS HERMES on 18 May 1982, and a further four replacement aircraft were flown direct from Ascension Island to HMS HERMES' deck 3500 miles away. During the re-invasion phase of the Falklands operations, 1(F) Squadron flew from the ship in a wide variety of bombing, PR and rocket attacks on targets ashore in the Falkland Islands in support of ground forces, usually at low level against defended targets. Wing Commander Squire led his squadron with great courage from the front flying 24 attack sorties. He flew many daring missions, but of particular note was an attack at low level with rockets on targets at Port Stanley airfield in the face of heavy anti-aircraft fire when both he and his wing man returned damaged. Also a bombing attack on an HQ position when, on approach, a bullet passed through his cockpit which temporarily distracted him, but he quickly found an alternative target and bombed that instead. During overshoot Wing Commander Squire's aircraft suffered engine failure and was damaged during crash landing at the forward operating base ashore on 9 June 1982, but he continued flying after his return to the ship with unabated zeal. Wing Commander Squire has shown outstanding valour and steadiness under enemy fire, and has led by brave example.

Squadron Leader Richard Ulric Langworthy AFC
3516433, Royal Air Force

Squadron Leader Langworthy was on board MV NORLAND and latterly HMS FEARLESS anchored in San Carlos Water during the period 21 to 26 May 1982. On 25 May, MV ATLANTIC CONVEYOR was hit and destroyed by an enemy attack. All of No 18 Squadron's assets, less one Chinook helicopter, were destroyed. This remaining aircraft ZA 718 was flown to San Carlos Water. A small detachment under the command of Squadron Leader Langworthy was put ashore on 27 May to operate this one aircraft in support of land and sea operations. The detachment possessed no field deployment equipment and operated initially from 'fox holes'. Permanent accommodation and messing were subsequently established at Port San Carlos settlement. Despite a total lack of aircraft spares, ZA 718 was flown continuously in support of the battle from 27 May until the ceasefire. On 30 May, Squadron Leader Langworthy was briefed to move 3 × 105 mm light guns (two internal plus one external), 85 men and 22 tonnes of ammunition to Mount Kent. The move was to take place at night using Passive Night Goggles Techniques. The intelligence briefing was vague, but it was assessed that the enemy was in position on Mount Kent and additionally had company positions at Estancia House. The first load of 3 × 105 mm light guns plus 22 men took 2½ hours to load. The transit proved uneventful despite severe snow showers in the area. The drop point briefed as a flat plateau, proved to be a sloping rock river with flattish areas and adjacent deep gullies. Full operation of the rear cabin ramp proved difficult over such terrain and the off-loading took 40 minutes. This was achieved without lights and further complicated by intercom failure on the aircraft. While not directly engaged by enemy fire, the general area in which the aircraft had landed was subject to fire. On completion of the off-loading the aircraft was recovered in appalling weather conditions of heavy snow. The aircraft radio altimeter failed and the aircraft struck the sea causing some minor damage. Squadron Leader Langworthy recovered the situation and the aircraft was recovered to its operating base without further mishap.

Squadron Leader Calum Neil McDougall
3144488, Royal Air Force

When the Falkland Islands crisis arose Squadron Leader McDougall and his crew were earmarked for special training for operations in the South Atlantic but could not be fully converted immediately because of a shortage of in-flight refuelling aircraft. While awaiting conversion Squadron Leader McDougall made a significant contribution to the enhancement of the Vulcan's capability when he captained the aircraft test flying new external weapons mountings and anti-radiation missiles. Shortly afterwards his crew deployed to Ascension Island and on both 31 May and 3 June 1982 he flew operational sorties against targets in East Falkland. The first sortie took the crew well beyond their previous experience in long distance flight and it was the first live missile firing by a Vulcan in a combat environment. To achieve accurate delivery of the weapon, Squadron Leader McDougall had to fly his aircraft with great precision in a complex night manoeuvre. Squadron Leader McDougall's exceptional skill and determination ensured complete accuracy in performing this manoeuvre and the radar shut down shortly thereafter, consistent with a successful hit. On the second sortie, the enemy thwarted Squadron Leader McDougall's initial attacks by turning off the target radar whenever he approached. Despite his very long range from base and the fact that his fuel reserves were critical, Squadron Leader McDougall persisted for more than 25 minutes in his attempts to acquire a target by descending the aircraft towards the enemy defences. Eventually, he succeeded in provoking the enemy into switching on a radar which was briefed as the secondary target and he was then able to fire his missiles successfully at the target. The crew then made a successful rendezvous with the Victor tanker on the return journey to Ascension Island but the refuelling probe of Squadron Leader McDougall's aircraft broke as he was making contact, so preventing the transfer of any fuel. There was no alternative but to divert the aircraft to Brazil and Squadron Leader McDougall showed courage and calmness of the highest order in preparing his aircraft and crew for the landing at an unplanned foreign airbase. Throughout this period of the flight, his aircraft captaincy was faultless and he showed the ability to make instant decisions in the first emergency of this kind during the South Atlantic hostilities. He was thus largely responsible for the eventual safe return of his aircraft and crew. Throughout his involvement in the South Atlantic Operations Squadron Leader McDougall displayed qualities of leadership and coolness which were a magnificent example to others. His fearlessness under operational conditions, and his zeal and dogged determination through long hours of a most demanding flight in a potentially dangerous environment are thoroughly deserving of significant recognition.

Squadron Leader Jeremy John Pook
608507, Royal Air Force

Squadron Leader Pook of 1(F) Squadron had been nominated mission leader throughout the invasion phase, conducting 23 attack sorties. He led missions on 21 and 27 May 1982 which destroyed probably four Argentinian helicopters, Squadron Leader Pook personally destroying probably two Pumas on the ground despite SA and SAM defences. He also led two successful attacks on Goose Green in the face of very heavy anti-aircraft fire, the second against a large calibre gun which was destroyed causing heavy casualties; this helped 2 Para Regt obtain the surrender of the troops in that area. On 30 May 1982, Squadron Leader Pook's Harrier was hit while attacking a gun position on Mount Harriet. He nevertheless pressed home his attack but, as a result of system damage to his aircraft, he had to eject over the sea 30 nm from HMS HERMES when returning. His determination was undiminished by the experience and he has continued to display considerable courage and great professionalism.

Flight Lieutenant William Francis Martin Withers
2607689, Royal Air Force

On 30 April 1982, two Vulcan B2 aircraft were prepared to fly from Ascension Island on the first bombing mission against Port Stanley airfield in the Falkland Islands. At 2253 hours, Flight Lieutenant Withers, captain of the reserve aircraft took off last in a stream of two Vulcans and ten Victors. Within minutes, the primary Vulcan became unserviceable, leaving Flight Lieutenant Withers' aircraft to conduct the mission. Throughout the 3400 mile outward leg of this unique operation, the formation encountered severe weather conditions which, combined with a major failure in one of the tanker aircraft, made night air-to-air refuelling particularly difficult, and resulted in the Vulcan approaching the target area with less fuel than planned. Although knowing that he had insufficient fuel for any diversion should his home-bound rendezvous with a tanker fail, Flight Lieutenant Withers continued his descent to the target area. Major problems were then experienced with the aircraft radar which, if not resolved, would have resulted in aborting the attack since precise bombing was required to achieve success and avoid civilian casualties. After overcoming these problems, successfully jamming the enemy radar and confusing the defences, all the bombs were released and the runway and airfield facilities severely damaged. During the return flight fuel reserves became very low allowing no margin for error on the part of Flight Lieutenant Withers or any member of his crew. Nevertheless, despite having been airborne for over 12 hours the refuelling contact with the tanker was successfully carried out and the aircraft recovered safely to Ascension Island. This was the longest in-flight refuelled bombing operation ever carried out by a Royal Air Force aircraft and covered a distance of 6800 miles and lasted over 16 hours. Throughout, both captain and crew were faced with several serious problems and difficult decisions affecting the success of the operation which they overcame with skill, courage and resolve. In so doing, Flight Lieutenant Withers displayed qualities of leadership, determination and presence of mind which were an inspiration to his crew. Moreover, through his exemplary airmanship and skill the use of Port Stanley airfield was temporarily denied to the enemy.

AIR FORCE CROSS

Wing Commander David Emmerson
4230086, Royal Air Force

Wing Commander Emmerson commands No 206 Squadron based at Royal Air Force Kinloss. Between 21 April 1982 and 6 June 1982, he was detached to Ascension Island to command a force of Nimrod aircraft deployed in support of Operation Corporate. On arrival at Ascension Island, Wing Commander Emmerson found little in the way of a support organization. However, during his period in command the detachment doubled in size and air-to-air refuelling capability was introduced for Nimrod aircraft to operate both within the total exclusion zone and close to the Argentinian coast, and new weapons including air-to-air missiles were received into service. Throughout the period of expansion Wing Commander Emmerson displayed exceptional zeal and patience over long hours or abnormally demanding duties. He not only prepared his crews for operations close to the Argentinian coast and within range of fighter aircraft, but also displayed exceptional leadership and a great sense of courage by captaining each sortie which broke new ground as new equipments, capabilities and techniques were introduced. He never tasked a crew to fly an operation which he himself had not already flown and he displayed outstanding leadership and skill in completing each mission successfully regardless of the potential risks to his aircraft and crew. In the course of ten operational sorties Wing Commander Emmerson was captain of the Nimrod which supported the first Vulcan attack on Port Stanley airfield on 1 May. He led the first crew to operate within air defence radar and fighter range of the Argentinian bases of Puerto Belgrano and Commodoro Rivadavia. The latter sortie was conducted in daylight in an environment of a considerable risk to aircraft and crew. Another of his operational sorties was to provide surface surveillance in support of Task Groups overnight on the 20/21 May to cover the amphibious landings on East Falkland involving a flight of 19 hours and 7200 nautical miles. Throughout the period of the Falkland campaign, Wing Commander Emmerson displayed courage and coolness which were a magnificent example to others. While proving himself an outstanding leader of his crews through personal example, unselfish determination and skill, he ensured the achievement of the military aims of his commander in the employment of the Nimrod.

Squadron Leader Robert Tuxford
608997, Royal Air Force

Squadron Leader Tuxford was captain of a Victor K2 tanker supporting the first Vulcan bombing raid on Port Stanley airfield, Falkland Islands. During the night of 30 April 1982, Squadron Leader Tuxford's aircraft was tasked with passing fuel to another Victor K2 which, in turn, was to transfer fuel to a Vulcan en route to the target. However, during the refuelling manoeuvre, the Victor flew into violent thunderstorms and suffered turbulence so severe that the receiving probe was broken from the Victor aircraft. Immediately, the aircraft reversed roles and Squadron Leader Tuxford took-on the fuel load. However, the delay resulted in the fuel transfer being completed further from Ascension Island than planned and Squadron Leader Tuxford's aircraft did not receive all the fuel required to complete the mission. Nevertheless, in the full knowledge that his aircraft would run out of fuel some 400 nautical miles south of Ascension Island on its return and in spite of the obvious risk, Squadron Leader Tuxford transferred the full amount required by the Vulcan to complete its bombing mission. Moreover, at that time he was not able to seek assistance from Ascension Island because, to have broken radio silence would have jeopardized the safety of the Vulcan en route to its target. His determination and courage were rewarded however, when, after the Vulcan cleared the target area, a reserve tanker was successfully scrambled from Ascension Island and Squadron Leader Tuxford's aircraft made a safe recovery. Squadron Leader Tuxford's selfless devotion to duty ensured the success of the Vulcan mission and was in the finest traditions of the Royal Air Force.

Flight Lieutenant Harold Currie Burgoyne
8020990, Royal Air Force

Flight Lieutenant Burgoyne, of the Special Forces Flight of No 47 Squadron, Royal Air Force Lyneham has outstanding skill and experience as a Hercules pilot and was specially selected as one of the first captains to train in air-to-air refuelling which was hitherto undeveloped for Hercules aircraft. At the outset of Operation Corporate Flight Lieutenant Burgoyne was tasked with intensive training for clandestine operations, for which he was also required to undertake comprehensive mission planning. This demanding phase which was disrupted by frequent changes in operational requirements, offered no respite and placed Flight Lieutenant Burgoyne under considerable pressure; he reacted with flexibility, dedication and tactical ability of the highest order. Subsequently, on 12 May 1982, Flight Lieutenant Burgoyne and his crew deployed to Ascension Island to be the first air-to-air refuelling crew engaged in Hercules long-range airdrops and on 16 May 1982 he took off from Ascension Island on the first of these missions into the Falkland Islands' total exclusion zone. Air refuelling his aircraft on the outbound leg of 2100 miles from Ascension Island, Flight Lieutenant Burgoyne went on to airdrop 1000 pounds of vital stores and eight parachutists to HMS ANTELOPE before returning to Ascension Island in a total flight time of 24 hours 5 minutes over 6300 nautical miles. Throughout, Flight Lieutenant Burgoyne showed exceptional skill, dedication and leadership, and with quiet yet dogged determination he inspired his crew and ensured the successful accomplishment of an extremely arduous and difficult task in an unarmed and defenceless aircraft under considerable threat of attack by enemy fighters and missiles. He went on to establish a pattern of operations and helped to refine the techniques for subsequent long-range airdrops. He remained at Ascension Island and himself flew four further long-range airdrop missions into the total exclusion zone. After the surrender of Argentinian forces, he was selected to fly the first sorties to carry an operational payload into Port Stanley airfield, when he had the honour of carrying the former governor, Mr Hunt. By his pioneering spirit, courage and outstanding professionalism in the highest traditions of a fighting Service, Flight Lieutenant Burgoyne has brought great credit to himself and to the Royal Air Force.

QUEEN'S GALLANTRY MEDAL

Flight Lieutenant Alan James Swan
685685, Royal Air Force

Flight Lieutenant Swan is Officer Commanding No 1 Explosive Ordnance Disposal Unit at the Royal Air Force Armament Support Unit, Royal Air Force Wittering, and commanded the eleven man bomb disposal unit which served in the Falkland Islands throughout the recent conflict. On 27 May 1982, there was an air attack on the Ajax Bay refrigeration plant, which housed the Commando Logistics Hospital. The attack resulted in 31 casualties, and two unexploded bombs were found adjacent to the operating theatre. The hospital could not be evacuated because of continual operations on the wounded, nor could the bombs be defused. Having advised the hospital staff that it was unlikely that the bombs would detonate if they were not disturbed, although being mindful of the possibility that they might be fitted with long delay fuses, Flight Lieutenant Swan decided to remain billeted in the hospital to reassure the patients and staff by his presence. In the same attack, the hospital helicopter landing strip was showered with unexploded ordnance which had been damaged by bomb explosions and fire. With complete disregard for his own safety, Flight Lieutenant Swan personally led the manual clearance of ordnance which was in an extremely dangerous condition and made the strip available for further operations. At Goose Green settlement, on 4 June 1982, a quantity of napalm had to be removed from the centre of the village. The napalm was weeping and in a dangerous condition. It was stored on steel-runnered sledges with the attendant risk of an explosion should a spark be struck. Undeterred by the obvious danger, Flight Lieutenant Swan with the assistance of Flight Sergeant Knights, moved the napalm to an area where it could be destroyed safely. On 6 June 1982, a 1000 pound unexploded Argentinian bomb, of the same type that had previously killed an Army disposal expert, was found in the vicinity of brigade headquarters at Darwin. The bomb was too close to the headquarters to be dealt with by demolition. Regardless of the imminent danger to his own life, Flight Lieutenant Swan defused the bomb and the headquarters continued in operation without interruption. Throughout the campaign, Flight Lieutenant Swan displayed qualities of leadership, courage and coolness which were a magnificent example to others.

K8000244, Flight Sergeant Brian William Jopling
Royal Air Force

Flight Sergeant Jopling is an air loadmaster employed since October 1981 as a crewman on No 18 Squadron, Royal Air Force Odiham. On 25 May 1982 he was on board the MV ATLANTIC CONVEYOR in the South Atlantic as part of the 18 Squadron deployment in support of Operation Corporate. During the late afternoon, the ship was attacked and hit by an Exocet missile. Flight Sergeant Jopling was manning an air defence machine gun position on the bridge during the attack. The missile started a fire on the ship which rapidly spread out of control and the decision was taken to abandon the stricken vessel. Flight Sergeant Jopling was among the last to leave the bridge and, as he descended towards the main deck, he was enveloped by thick black smoke. He rapidly donned his respirator and led several people onwards in a human chain but, realising that it would be impossible for the others to survive without respirators, he had to retreat. He eventually found an alternative path within the ship and led his party of survivors to the main deck where they climbed over the side and entered the water prior to boarding a liferaft. The liferaft Flight Sergeant Jopling selected was one of the few remaining and was overcrowded; he, together with several others, was unable to board it. The sea was very cold and night had fallen, adding to the difficulties. The liferaft was still attached to the ship and was being buffeted against the ship's side as the ship rolled. Realising the danger this represented to the liferaft and its occupants, Flight Sergeant Jopling made his way around the liferaft and, despite being struck several times by the ship, eventually managed to sever the lines holding the liferaft to the blazing hulk. As the occupants of the liferaft became more organized, other survivors were gradually brought on board. Flight Sergeant Jopling appreciated that as he was wearing aircrew survival equipment, he was better placed than other survivors in the water. He therefore elected to remain in the sea, encouraging and helping men to hold on to the liferaft; only when he had ensured that there were no more survivors in the water, did he allow himself to be dragged, exhausted, aboard. He was in the water for between one and two hours in extremely hazardous conditions. Flight Sergeant Jopling acted in the finest traditions of the Royal Air Force and his selfless conduct undoubtedly saved many lives.

MENTION IN DESPATCHES

SQUADRON LEADERS

J G Elliott (608743)
R D Iveson (4233414)

FLIGHT LIEUTENANTS

E H Ball (5201241)
M W J Hare (5202373)
G C Graham (8026356)
A T Jones (593549)
I Mortimer (5202579)
H Prior (4160477)
R J Russell AFC (2485566)
R D Wright (8021320)

FLYING OFFICERS

C Miller (8027110)
P L Taylor (2624527)

FLIGHT SERGEANT

FO681327 Knights D W

CORPORAL

R8086882 Tomlinson A D

QUEEN'S COMMENDATION FOR VALUABLE SERVICE IN THE AIR

SQUADRON LEADER

E F Wallis MBE (2524523)

FLIGHT LIEUTENANTS

M E Beer (4231811)
J D Cunningham (687875)
J N Keable (4175018)
M M MacLeod (8025506)
G D Rees (8020929)
R L Rowley (8025695)

FLIGHT SERGEANT

E8083447 Sloan S E

QUEEN'S COMMENDATION FOR BRAVE CONDUCT

JUNIOR TECHNICIAN

L8171807 Thorne A

SENIOR AIRCRAFTMAN

P8183010 Soppett-Moss K J

CB (MILITARY DIVISION)

Air Vice-Marshal G A Chesworth OBE DFC
Air Vice-Marshal K W Hayr CBE AFC

KBE (MILITARY DIVISION)

Air Marshal Sir John Curtiss KCB

CBE (MILITARY DIVISION)

GROUP CAPTAINS

C E Evans
A F C Hunter OBE AFC
P King OBE
J S B Price ADC

OBE (MILITARY DIVISION)

WING COMMANDERS

A J C Bagnall (608630)
D L Baugh (608336)
P Fry MBE (4181201)
J K Sim AFC (608065)
A P Slinger (4142065)
C J Sturt (607859)
B J Weaver (586716)

SQUADRON LEADER

B S Morris AFC (4232141)

MBE (MILITARY DIVISION)

SQUADRON LEADERS

C G Jefford (4230702)
W F Lloyd (5201496)
D M Niven (2614751)
T Sitch (4232327)
J E Stokes (2591289)

FLIGHT LIEUTENANTS

E M Clinton (2810093) WRAF
J Dungate AFM (3526433)
B T Mason (688869)
P A Room (8021305)

ACTING FLIGHT LIEUTENANT

A Neale (1935031)

WARRANT OFFICER

D P Barker (S0583198)

MASTER AIR LOADMASTER

A D Smith (H4203106)

AIR FORCE CROSS

SQUADRON LEADER

A M Roberts (608719)

BEM (MILITARY DIVISION)

FLIGHT SERGEANTS

A1934496 Bell J H
J0682351 Kenny K

CHIEF TECHNICIANS

T4279043 Kinsella T J
G1960370 Vernon R K

SERGEANTS

D1938217 Coleman J M
X1937225 Tuxford P
G4275084 Vickers J C

CORPORAL

L8093760 Vivian D J

QUEEN'S COMMENDATION FOR VALUABLE SERVICE IN THE AIR

SQUADRON LEADERS

T N Allen (2619498)
G R Barrell (4230442)
A F Banfield (4184573)
J A Brown (689215)
M D Todd (4230987)
(now Wing Commander)

FLIGHT LIEUTENANTS

P Bayer (8024869)
P A Standing (8025461)

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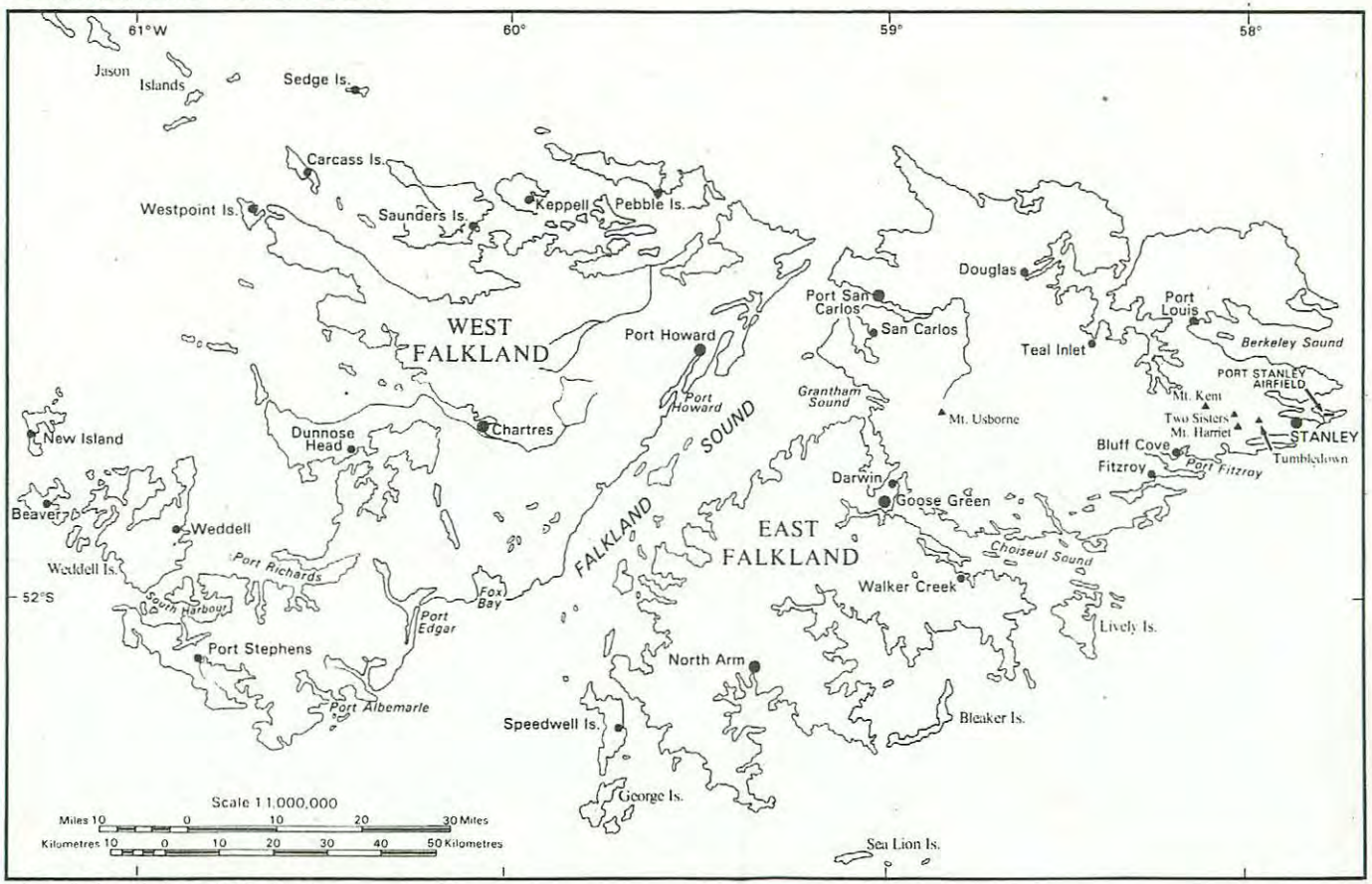
FALKLAND ISLANDS



Prepared by The General Staff Map Section