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ROYAL AIR FORCE

THE ROLE OF THE AIR FORCES IN THE
MALAYAN EMERGENCY

1948 - 1960

By Command of the Defence Council

MINISTRY OF DEFENCE
1969

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R.A.F. NARRATIVE

THE ROLE OF THE AIR FORCES IN THE CAMPAIGN AGAINST THE TERRORISTS IN MALAYA (OPERATION FIREDOG) 1948 - 1960

CONTENTS

ABBREVIATIONS

INTRODUCTION

	<u>Page</u>
Geography of Malaya ...	1
Map of Malay Peninsula ...	3

CHAPTER 1. THE EMERGENCY IN MALAYA, 1948 - 1960

<i>2</i> The Opposing Forces ...	4
Origins of the Communist threat ...	4
Strength and organisation of the Communist Terrorists .	7
Strength and organisation of the Security Forces ...	10
Command and control of the Anti-terrorist campaign ...	14
<i>2</i> The Campaign against the Communist Terrorists ..	16
The Briggs Plan ...	16
Measures taken by the Civil Administration ...	17
Military Plan of action ...	25
Summary of the campaign against the Terrorists ..	27
Results of the Emergency and the lessons to be learnt from it ...	50

CHAPTER 2. THE ORGANISATION AND OPERATION OF THE AIR FORCES IN MALAYA

Commitments of the Air Forces .	53
Strength of the Air Forces ...	54
Aircraft serviceability .	56
Flying conditions and aircraft accidents ..	58
Deployment of the Air Forces ..	59
Command and control of the Air Forces ...	62

CHAPTER 3. OFFENSIVE AIR SUPPORT IN THE MALAYAN CAMPAIGN

Limitations of offensive air support ...	70
Aims of offensive air support: 'Pinpoint' and .. harassing attacks ...	72
Immediate air support ...	74
Offensive air support aircraft ...	76
<i>#</i> Air weapons.. ...	89
Planning and initiation of airstrikes ...	95
Target clearance ..	97
Target briefing and navigation ...	99
Target identification and marking techniques ...	101
<i>1-1</i> Airstrike techniques ...	105
Summary of offensive air support operations ...	107
Results of offensive air support ...	129

CHAPTER 4. AIR TRANSPORT IN THE MALAYAN CAMPAIGN

Aims of air transport: medium and short range transport commitments ...	134
<i>2</i> Medium Range Transport Roles ...	135
<i>(a)</i> Medium range transport aircraft ...	135
<i>(b)</i> Supply dropping ...	138
Planning and initiation of supply drops ...	138
Techniques of supply drops ...	140
Summary of supply drop operations ...	142
<i>(c)</i> Paratrooping ...	152
Techniques of paratrooping ...	152
Summary of paratrooping operations ...	153
<i>(d)</i> Communications ...	153
Summary of communications by medium range transport aircraft ...	153

RESTRICTED

CHAPTER 4 contd.

	Page
24. Short range Transport Roles	163
(a) Communications by light aircraft	163
Airstrips suitable for light aircraft	163
No. 656 Squadron, Austers: deployment and summary of operations	164
No. 267 Squadron, Pioneers and Pembrokes: deployment and summary of operations	168
(b) Communications by helicopter	174
The role of the helicopter and the principles governing its employment	175
Helicopters employed	178
Build-up of the helicopter force and its deployment	181
Summary of casualty evacuation operations by helicopter	186
Summary of communications operations by helicopter	190
Summary of trooplifting operations by helicopter ..	192
Summary of crop-spraying operations by helicopter .	199
MA. Air Transport Support Forces and the Psychological Warfare Campaign	202
The role of the air forces	202
Techniques of leaflet drops and loudhailing operations .	203
Planning and initiation of leaflet drops and loudhailing operations	205
Summary of leaflet drops and loudhailing operations ...	206
Results of the air forces contribution to the psychological warfare campaign	214

CHAPTER 5. AIR RECONNAISSANCE IN THE MALAYAN CAMPAIGN

Intelligence and air reconnaissance	217
n. Photographic Reconnaissance	217
Photographic reconnaissance aircraft	217
Techniques of photographic reconnaissance: strategic and tactical reconnaissance	219
Summary of photographic reconnaissance operations ...	225
MA. Visual Reconnaissance	227
Visual reconnaissance aircraft	227
Techniques of visual reconnaissance	227
Maritime reconnaissance	230
Summary of visual reconnaissance operations	231
Results of aerial reconnaissance	236

CHAPTER 6. LOCALLY RECRUITED AIR FORCE UNITS IN THE MALAYAN CAMPAIGN

The Malayan Auxiliary Air Force	238
The Royal Malayan Air Force	242
The R.A.F. (Malaya)	243
The R.A.F. Regiment (Malaya)	244

CHAPTER 7. SUMMARY OF THE AIR FORCES CONTRIBUTION TO OPERATION 'PIREDOG'

Introduction	257
The role of the air forces in the Malayan Emergency ...	258
The control of air force operations	258
Deployment of air forces in Malaya	259
Offensive air support	260
Air transport support	262
Air reconnaissance	266

RESTRICTED

RESTRICTED

ANNEXES

~~XXXXXXXXXX~~

- A. ~~X~~ The Communist Terrorist Organisation - Strength by States, 1948 - 1960.
- B. ~~II~~ Malayan Races Liberation Army (M.R.L.A.) - Chain of Command
- C. ~~III~~ Example of the composition of a M.R.L.A. Regiment
- D. ~~IV~~ Map of M.R.L.A. dispositions at 31 August 1951
- E. ~~V~~ Ground Forces Order of Battle, 1948 - 1957
- F. ~~VI~~ Emergency Command Structure
- G. ~~VII~~ Officers administering the Government and the Armed Forces in Malaya during the Emergency
- H. ~~VIII~~ Emergency Statistics - Annual, 1948 - 1960
- J. ~~X~~ Emergency Statistics - Monthly Averages, 1948 - 1960
- K. ~~XI~~ Map of 'White Areas' in Malaya, 1955 - 1959
- L. ~~XII~~ Air Forces Order of Battle, 1948 - 1960
- M. ~~XIII~~ Squadrons available for Operation 'FireDog', 1948 - 1960
- N. ~~XIII~~ Monthly Aircraft Serviceability, 1949 - 1952 (In percentages)
- O. ~~XIV~~ Aircraft Accidents in Malaya, 1948 - 1951
- P. ~~XV~~ Air Force Chain of Command, Malaya, 1 July 1951
- Q. ~~XVI~~ Airfields in Malaya, 1955
- ~~XVII~~ Map of Airfields in Malaya
- R. ~~XVIII~~ Operation 'FireDog', Air Effort - Annual, 1948 - 1960
- S. ~~XIX~~ Operation 'FireDog', Air Effort - Monthly Averages, 1948 - 1960
- T. ~~XX~~ Operation 'FireDog', Offensive Air Support, 1948 - 1960
- U. ~~XXI~~ Operation 'FireDog', Medium Range Transport Support, (Air Supply), 1948 - 1960
- V. ~~XXII~~ Operation 'FireDog', Short Range Transport Support, (Auster), 1954 - 1958
- W. ~~XXIII~~ Operation 'FireDog', Short Range Transport Support, (Pioneer), 1954 - 1960
- X. ~~XXIV~~ Operation 'FireDog', Short Range Transport Support, (Helicopter), 1950 - 1960
- Y. ~~XXV~~ Operation 'FireDog', Support for Psychological Warfare Campaign, 1948 - 1960
- Z. ~~XXVI~~ Operation 'FireDog', Photographic Reconnaissance, 1948 - 1958

MAIN SOURCES OF INFORMATION
REFERENCES
INDEX

RESTRICTED

RESTRICTED

ILLUSTRATIONS

Facing Page

- ✓ 1. Large cone centred jungle leaves in which rain and dew accumulate to provide drinking water
- ✓ 2. A temporary shelter made from a waterproof cape in a jungle clearing
- ✓ 3. Three Brigands pass by jungle clad hills on their way to attack a target in South Malaya
- ✓ 4. Men of R.A.F. Regiment (Malaya) go into action
- ✓ 5. Servicing a Beaufighter
- ✓ 6. Feeding belted ammunition in the ammunition tanks of a Vampire
- ✓ 7. The strike leader of a Hornet squadron briefing his pilots before taking off on an airstrike
- ✓ 8. Pilots being briefed by the Army Liaison Officer at Butterworth, North Malaya. The aircrew tent is an attap (dried palm leaf) roofed hut
- ✓ 9. Heavily equipped paratroops on the way to a dropping zone in a Dakota
- ✓ 10. Stowing supplies in a Dakota to be dropped by parachute to a remote police outpost in North Johore
- ✓ 11. A W.R.A.F. operations clerk helps a navigator in the Flight Planning Section at R.A.F. Changi
- ✓ 12. A W.R.A.F. operating theatre technician prepares for an operation at the R.A.F. Hospital Changi
- ✓ 13. A Sycamore alights near a military hospital while ambulance and crew wait to receive a wounded passenger
- ✓ 14. A casualty being evacuated by Dragonfly to Ipoh hospital
- ✓ 15. A Sycamore of No. 19⁴ Squadron alighting in the "well" of a jungle clearing to pick up a casualty
- ✓ 16. A Dragonfly on a jungle casualty evacuation sortie
- ✓ 17. Two Spitfires (Mark PR 19) of No. 81 Squadron on one of their last operational photographic reconnaissance sorties in Malaya
- ✓ 18. Mosquito RG 314 of No. 81 Squadron made the last operational flight by a Mosquito on 21 December 1955
- ✓ 19. R.A.F. Regiment (Malaya) patrol searching the shallow waters of a mangrove swamp which may conceal native boats used for carrying food to terrorists

RESTRICTED

RESTRICTED

ILLUSTRATIONS

Facing Page

- ✓ 20. Signallers of the R.A.F. Regiment (Malaya) with mobile sets being briefed before an exercise
- ✓ 21. A Sunderland of No. 205 Squadron flying over Singapore harbour on 15 May 1959
- ✓ 22. ~~R.A.A.F.~~ ^{of No. 1 (RAAF) Squadron} Lincolns, taxiing into dispersal after air strike on bandit escape routes

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ABBREVIATIONS

The use of abbreviations has been avoided as far as possible but some have had to be used, especially in the appendices and the following explanation is provided to clarify their meaning.

A.C.C.	Aircraft Control Centre
A.C.F.E.	Air Command, Far East
A.H.Q. (M)	Air Headquarters, Malaya
A.I.S.	Aeronautical Inspection Service
A.M.	Air Ministry
	Air Marshal
A.M.E.S.	Air Ministry Experimental Station
A.O.C.	Air Officer Commanding
A.O.P.	Air Observation Post
A.P.C.	Armament Practice Camp
A.P.I.S.	Army Photographic Interpretation Centre
A.V.M.	Air Vice Marshal
B.	Bomber
C.T.	Communist Terrorist
C.T.O.	Communist Terrorist Organisation
D.C.M.	District Committee Member
Det.	Detachment
D.F./G.A.	Day Fighter/Ground Attack
D.O.(M)	Director of Operations (Malaya)
D.W.E.C.	District War Executive Committee
F.	Fighter
F.B.	Fighter Bomber
F.E.	Far East
F.E.A.F.	Far East Air Force
F.E.C.S.	Far East Communication Squadron
F.E.F.B.W.	Far East Flying Boat Wing
F.E.T.W.	Far East Transport Wing
F.R.	Forest Reserve Fighter Reconnaissance
G.H.Q.	General Headquarters
G.O.C.	General Officer Commanding
H.A.A.	Heavy Anti-Aircraft Anti-Aircraft
H/C	Helicopter

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H.E.	High Explosive
H.Q.	Headquarters
J.A.P.I.C.	Joint Air Photographic Intelligence Centre
J.O.C.	Joint Operations Centre
L.A.A.	Light Anti-Aircraft
L.B.	Light Bomber
L.L.	Light Liaison
L.R./G.R.	Long Range/General Reconnaissance
L.Z.	Landing Zone
M.A.A.F.	Malayan Auxiliary Air Force
M.B.	Medium Bomber
M.C.P.	Malayan Communist Party
M.P.A.J.A.	Malayan Peoples' Anti-Japanese Army
M.R.	Maritime Reconnaissance
M.R.L.A.	Malayan Races' Liberation Party
M.R./TPT.	Medium Range Transport
N/A.W.F.	Night/All Weather Fighter
O.C.A.J.A.	Overseas Chinese Anti-Japanese Army
O.R.S.	Operational Research Section
P.R.	Photographic Reconnaissance
P.W.	Psychological Warfare
R.A.F.	Royal Air Force
R.A.A.F.	Royal Australian Air Force
R.A.S.C.	Royal Army Service Corps
R.M.A.F.	Royal Malayan Air Force
R.N.A.S.	Royal Naval Air Station Station
R.N.Z.A.F.	Royal New Zealand Air Force
Recce	Reconnaissance
R/P	Rocket Projectile
SACEUR	Supreme Allied Commander Europe
S.A.P.	Semi-Armour Piercing
S.A.S.	Special Air Service
S.C.M.	State Committee Member
S.E.P.	Surrendered Enemy Personnel
S.F.	Security Forces
S.R./TPT	Short Range Transport

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S.W.E.C. State War Executive Committee
T.D.P. Target Director Post
U.E. Unit ~~Requirement~~ Equipment
V.H.F. Very High Frequency
V.R. Visual Reconnaissance

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INTRODUCTION

The aim of this narrative is to summarize the part played by the air forces in the campaign against the Communist terrorists in Malaya between 1948 and 1960. Chapter One deals with the rise of the Communist threat in Malaya and the measures that were taken by the Federal Government to counter it and concludes with a brief chronological summary of the military campaign. This summary of the Emergency serves as a background to the analysis of the various roles that were played by the air forces during the campaign that is contained in the remaining chapters of the narrative.

Geography of Malaya*

In 1952 the Federation of Malaya covered an area of 53,240 square miles, a little larger than England, and was 400 miles from north to south with a maximum width of 200 miles. It was a country ideally suited to the techniques of guerrilla warfare, with a spinal range of mountains that rises to over 7,000 feet and four-fifths of its area covered by jungle, whose topmost storey provides an almost unbroken canopy at an average height of 150 feet from the ground and whose lower layers ~~are~~^{are} so dense that visibility ~~is~~^{is} limited to 25 yards or less in most places. The remaining one fifth of the country comprises rubber and coconut palm plantations, tin mines, rice fields, native villages and towns. In 1952 there were 5,337,000 inhabitants of Malaya, of whom 2,631,000 were Malays, 2,044,000 were Chinese and 586,000 were of Indian or Pakistani stock. The population was widely dispersed, mostly down the western littoral of the country and included 1½ million Chinese who had no citizenship rights, of whom half a million were squatters, and 100,000 indigenous aborigine Malays who lived in remote parts of the jungle on the lower slopes of the

* ~~N.B.~~ At the beginning of the Emergency Malaya consisted of two separate political entities, the Federation of Malaya (i.e. the Malay Peninsula) and the Colony of Singapore (i.e. Singapore Island). In this narrative, except where otherwise stated, the mention of 'Malaya' refers only to the Federation of Malaya.

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central mountain range. Both these groups were an easy prey to intimidation by the terrorists and the former provided most of the recruits to their ranks.

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CHAPTER III

THE EMERGENCY IN MALAYA 1948 - 1960

~~IIIIII~~ The Opposing Forces

(1)

Origins of the Communist threat in Malaya

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Communist infiltration in South-East Asia began in the early 1920's with the establishment at Shanghai of a Far Eastern Bureau of the Comintern, Russia's organisation for the dissemination of Communism abroad. After six years of preparatory work by Chinese agents the Malayan Communist Party was formed in 1929 with the intention of overthrowing the Malayan Administration and establishing a Communist controlled Democratic Republic. From its inception the M.C.P. was a subversive organisation whose revolutionary aims met with little response among the Malays but which did succeed in penetrating the schools and craft guilds of the Hainanese section of the Chinese community. During the late 1920's and the early 1930's the M.C.P. increased its hold on certain sections of the labour force and, by 1937, despite being declared illegal, the party was strong enough to foment a serious wave of strikes with the intention of crippling the economy of the country. In the same year a truce was called in China between the ruling Kuomintang party and the Chinese Communist Party in order to present a united front against the Japanese invader. This enabled the M.C.P., under the disguise of patriotism, to increase its strength by forming anti-Japanese groups amongst the Chinese and the Malays who were not otherwise interested in Communism. Early in 1940 the Kuomintang faction in Malaya, realising that it was being engulfed^{b.} the M.C.P., withdrew its support. By then, however, the Communists had acquired an experienced underground organisation with several thousand members which was capable of fomenting serious anti-British strikes and demonstrations.

When the Japanese invasion of the Malay Peninsula became imminent late in 1941 it was considered necessary to establish a network of subversive agents who would work for the Allied cause in the event of

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the country being overrun. In the light of later events it is ironical that the only organisation capable of carrying out this task was the M.C.P. and, despite some misgivings, expediency prevailed and 200 of their members retired into the jungle under British instructors after the fall of Singapore to serve as the mainspring of the resistance movement. (2)

This band formed the nucleus of the Malayan Peoples' Anti-Japanese Army, a guerrilla formation which received arms and ammunition from the Allies in order to harass the enemy's supply lines in return for providing intelligence concerning Japanese movements. After some initial aggression the M.P.A.J.A. was forced on to the defensive and became hard pressed to maintain its existence. However, when the British re-established contact with the peninsula in February 1943, this force still provided the only effective instrument of strengthening internal resistance to the Japanese. British officers of Force 136, a specialist group of ex-residents of Malaya that had been raised in Ceylon, were infiltrated into the country to co-ordinate further supplies of arms to the M.P.A.J.A. and to direct their (3)

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activities in order to assist the Allied invasion forces. The utility of this force was hampered during the last two years of the war, however, by the trial of strength which took place between the M.P.A.J.A. and a rival organisation, the Overseas Chinese Anti-Japanese Army which the Kuomintang had organised under the direction of the Chinese Nationalist Government. (4) By the time the Japanese capitulated the O.C.A.J.A. had been driven into a salient in Northern Perak and resistance activities over the remainder of the peninsula were directed by the M.P.A.J.A., a highly organised and well-armed force of about 4,000 guerrillas and 6,000 ancillary personnel that was deployed in seven independent groups which operated from three to five separate jungle camps. (5)

After the Japanese surrender the M.P.A.J.A. was kept in being by the occupation forces for a further six months in order to afford some control over the disorderly elements that were scattered throughout the country, but it was finally disbanded in December 1945. At this

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point the M.C.P., which had been willing to co-operate with the British during the Japanese occupation, revived its original aim of overthrowing the administration and establishing a Communist state in Malaya. All members of resistance movements were required to come forward and surrender their arms for a gratuity and a promise of rehabilitation in civil employment and, although some 6,000 did so and the majority of the arms issued by Force 136 were recovered, several hundred armed guerrillas remained in the jungle as the nucleus of a clandestine military force under the control of the M.C.P. This force afforded a serious threat to the stability of Malaya but the swift establishment of a British Military Administration frustrated any attempt at a coup d'état by the Communists. The M.C.P., therefore, reverted to a policy of apparent co-operation with the authorities while furthering their revolutionary aims by covert means such as fomenting labour unrest and infiltrating public organisations, by means of which they hoped to paralyse the country's economy and undermine the authority of the Government. However, by the beginning of 1948 it was clear that public support for their movement had not materialised and that they could not succeed in disrupting the administration by peaceful means alone. Therefore, following instructions propagated at the Russian sponsored conference of the World Federation of Democratic Youth at Calcutta in February 1948, (6) the M.C.P. embarked on a more violent programme of labour unrest and demonstrations. When these were aborted by rigorous Government prohibitions their campaign took a more vicious turn with the outbreak of a planned series of murders and sabotage during the first week of June 1948 that was extravagantly acclaimed in the Communist press throughout the world as the spontaneous expression of the suppressed peoples of South-East Asia arising from beneath the yoke of British Imperialism. By mid-June 1948 the scale of insurrection throughout the newly-created Federation of Malaya called for the strongest counter-measures and Emergency Powers were invoked by the Federal Government on 16 June and the military authorities were called in to assist the civil administration in restoring law and order.

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Having openly committed itself to armed resistance against the Government the M.C.P. adopted a three-stage strategic plan; firstly to cause terror and economic chaos in rural areas by a programme of assassination and sabotage with the aim of undermining confidence in the administration, secondly to 'liberate' selected rural areas and establish local Communist administration there to serve as the nucleus for the third and final phase of the rebellion during which the urban areas would be 'liberated' and a Communist Republic declared. The M.C.P. estimated that six months would suffice to complete each of these stages and that two years at the most would see Malaya transformed into a Communist state. In the event the measures that were taken by the Government and the Security Forces during the twelve year campaign against the Communist terrorists prevented them from completing even the first stage of their plan, which underwent progressive modification as the M.C.P. were compelled to recognise the failure of its attempt to seize the country by force until finally it was abandoned altogether.

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Strength and organisation of the Communist Terrorists

~~Strength and organisation of the Communist Terrorists~~

(C.T.O.)

The Communist Terrorist Organisation_h in Malaya consisted of two main branches, the military and the civilian, whose activities were controlled and co-ordinated by the political body of the M.C.P. The M.C.P. was organised on a state basis with an orthodox Communist chain of command from the Central Executive Committee, which only met at intervals of a year or so, through the State Committees, which met every six months, the District Committees, which met every two or three months and selected and co-ordinated all terrorist attacks within their area, to the branch and sub-branch committees, whose members were attached to and exercised political control over the smallest military units. Between the Central Executive Committee and the State Committees were three 'Bureaux' that were responsible for co-ordinating the M.C.P.'s policy in the North, Centre and South of Malaya. One of these, in Central Malaya, was abolished in 1952 owing to the elimination of an increasing number of terrorists who were responsible for executive control.

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The field army of the insurgents was formed out of veterans of the M.P.A.J.A. and was restyled the Malayan ^{Races} Peoples' Liberation Army on 1 February 1949 in order to elicit popular support for their cause under the guise of nationalism. (9) This force was divided into ten regiments that were deployed approximately on a state basis (see ^{Appendix IV (10)} ~~Annex D~~), each of which contained between 200 and 500 terrorists divided between four or five companies and ten or twelve platoons. In addition an Independent Platoon of 60 or 70 terrorists (11) was attached to each regiment. The strongest regiments were deployed in the western states of Malaya where the main inhabited areas were located. At the beginning of the Emergency this insurgent army numbered about 2,500 with a further 600 organised into highly mobile 'killer' squads as the spearhead of the initial campaign of assassination and violence. By 1951 the strength of the M.R.L.A. had reached its maximum of about 8,000, after which it fell to less than 5,000 in 1953, less than 3,000 in 1955, to a final total of about 500 at the end of the Emergency in 1960. Losses were partly offset by recruiting during the early years of the insurrection and altogether some 11,000 terrorists were eliminated during the Emergency. 95 per cent of the armed terrorists were Chinese, the majority of whom were born in China and owed little allegiance to the country of their adoption, with Indians and a few extremist Malays comprising the remaining 5 per cent.

At the start of the Malayan campaign there were only a few huttled camps in the jungle fringes and many of the insurgents lived in their own houses in the districts from which they were recruited and were difficult to distinguish from the innocent local populace. By 1951, however, almost all the M.R.L.A. lived in well camouflaged and guarded camps in relatively inaccessible parts of the jungle. Here they were trained in the arts of guerrilla warfare and became familiar with the use of standard firearms and even automatic weapons and explosives. The supply of arms and ammunition, however, was a constant factor limiting recruitment to their forces, although it did not interfere

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with their activities to any great extent. The legacy of the Japanese occupation provided them with sufficient arms for their initial requirements but, as the campaign progressed, their armouries dwindled as arms captured from the Security Forces or leaked from ordnance stores failed to replace those that were lost. Nevertheless, by practising stringent economies the number of terrorists who were armed remained at about 75 per cent of their total number ^{although} most of the ammunition which they carried, ~~was~~ was old and unreliable. ~~only the five rounds~~ ^{in any engagement} ~~with the Security Forces each terrorist used only the five rounds that~~ ~~had been acquired relatively recently~~ ~~any engagement with the Security Forces~~ ~~had been acquired relatively recently~~. At no time in the Emergency were the M.R.L.A. able to organise external supply lines for the replenishment of arms or recruits, partly as a result of the Security Forces' blockade of the borders and partly because the Chinese Communists were involved in the Korean War during the period when the terrorists held the initiative in Malaya and were thus in no position to help. This isolation of the Malayan insurrection from external aid was a major factor in its ultimate defeat.

The insurgent army could not have survived without the assistance of the underground 'Masses Organisation', with whom they were linked by the civilian branch of the C.T.O., the 'Min Yuen' or 'Peoples' Movement'. The 'Min Yuen' provided the M.R.L.A. with food, funds, clothing, medical supplies, recruits and intelligence concerning the movements of the Security Forces, all of which they levied from the populace partly by extortion or intimidation, as well as being responsible for the dissemination of Communist propaganda amongst the unfortunate villagers on whom they battered. They were deployed in a static district and branch organisation and in general played a non-combative role. During 1952, however, a number of the 'Min Yuen' were armed as their contact with the populace made them the chief target for the Security Forces and, when the maintenance of their essential service eventually made it necessary to draft members of the M.R.L.A. into this body, it became increasingly difficult to distinguish them

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from the real insurgent army. Many of the 'Min Yuen' were enrolled in ancillary units of this army such as the 'Local Defence Corps', 'Self Protection Corps', 'Armed Work Forces' or 'District Units', whose only difference from the M.R.L.A. was that they were under the control of District and not State Committees of the M.C.P. (12) By September 1957 it was estimated that only 200 of the remaining 1,830 terrorists were still serving in the M.R.L.A. (13) No figures are available of the strength of the 'masses organisation' on which the 'Min Yuen' relied, since many gave only casual or unwilling support to the Communist cause, but it is probable that at the height of the Emergency in 1951 over one million of the Chinese population were at least potential supporters of the M.C.P. and adopted a passive attitude of non-co-operation with the Security Forces until the dwindling fortunes of the terrorists and the realisation that the forces of law and order could offer them adequate protection from intimidation inspired a change of heart.

Strength and organisation of the Security Forces (14)

~~Strength and organisation of the Security Forces~~

Deployed against the C.T.O. was a composite force, drawn from the various branches of the civilian and military services, which contained about 9,000 Police and ten infantry battalions at the start of the campaign but was then rapidly expanded until it included 67,000 Police, 300,000 Home Guards and 23 infantry battalions at the height of the Emergency in 1951.

PP 5

While the main task of the military forces was the destruction of the insurgent army, the main commitment of the Federal Police was to protect the local populace from intimidation by the terrorists and it is some indication of the difficulties ^{which this} entailed that the strength of the Regular Police rose from 9,000 at the start of the Emergency to 16,814 in January 1951 and a maximum of 24,427 in January 1954. From 1950 onwards this total included the Special Field Force, numbering 2,915 in January 1957, which included trained Jungle Companies for active operations against the terrorists, for patrolling across the Thailand border and for manning the deep jungle forts that were

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established after 1952. In addition to the Regular Police a Special Constabulary, comprised mostly of Malays, was raised in each state to guard plantations, mines and other vital installations and to enforce food control regulations. The strength of this force rose from 10,000 in August 1948 to a maximum of 44,878 in January 1952, after which their establishment was reduced to 23,857 by the end of 1955 and their role was changed from static defence duties to active patrolling by five to six hundred Area Security Units and 40 to 50 Special Squads which operated outside their own localities. All Police units, Regular and Special, were controlled from the Federal Police Headquarters at Kuala Lumpur through State, District and Circle Headquarters, each of which included operational, C.I.D. and Special Branch Staffs.

As well as a force of up to 50,000 full time Police, various local part-time units were raised to relieve the Regular Police from duties which did not require special qualifications and also to identify the local populace with the anti-terrorist campaign. In 1949 Kampong Guards, armed with shotguns, were formed to defend Malay villages against terrorist attacks and, together with the Auxiliary Police that were formed in urban areas for traffic control and ^{similar} ~~other~~ duties, they totalled 47,000 by the end of 1950. In September 1951 the Chinese Home Guard was formed to carry out similar duties, especially in resettled areas, and their strength had risen to 30,000 by the end of the year. Following the reorganisation of civil defence in July 1951 the Kampong Guards and the Chinese Home Guard were amalgamated into a composite Home Guard with a maximum strength of 300,000. Thereafter greater selectivity and improved training weeded out the unreliable members, who were largely responsible for the loss of shotguns to the terrorists, and the strength of the Home Guard fell to 152,000 in 1955 and continued to decline with the removal of Emergency restrictions from certain areas. In 1956 8,500 Home Guards were relieved of the static defence duties for which they had been formed and were organised into operational platoons for active

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patrolling against the terrorists outside their parent states. Other non-military units that were employed by the Security Forces during the Malayan campaign were the Civil Liaison Corps, a body of Europeans and Chinese with local knowledge whose members were attached to Army units in order to facilitate contact with the local populace, and the Special Operations Volunteer Force, a uniformed force of ex-terrorists that was formed in 1953 and deployed in ten platoons for operations against selected targets under Police Special Branch direction. (15)

Complementary to the civilian security services was a composite military force in which infantry was the predominant arm. The number of battalions that were available for anti-terrorist operations in Malaya rose from ten at the start of the Emergency to 26 in June 1950 after which it dropped to 21 in August 1957. The strength of each battalion and the number of battalions in each brigade varied according to the needs of each state but, by the end of 1951, all British battalions contained five companies and approximately 1,000 men (16) and the total strength of the Army in Malaya had increased from 10,000 in June 1948 to a maximum of 30,000 of whom half were non-operational. The provision of troops for this force was a truly Commonwealth effort as, among the units serving in Malaya at the end of 1955, were six British, six Gurkha, seven Malay, one Fijian, one African and one Australian battalion, besides a New Zealand Squadron of the Special Air Service Regiment. (17) Supporting the infantry at various stages during the campaign were two Armoured Car Regiments, each containing up to six Squadrons, one or two Field Batteries and one Field Regiment of Artillery, two Field Engineer Regiments, one Commando Brigade, three Squadrons of the 22nd Special Air Service Regiment and one Squadron of the Parachute Regiment. (18)

As with the Police, the control of the Army in Malaya was decentralised along geographical lines. The four Sub-Districts that existed in Malaya and Singapore in 1948 were reorganised into three Districts in November 1949; South Malaya District, responsible for

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operations in Johore, Negri Sembilan, Malacca and Selangor, Malaya District, responsible for operations in Pahang, and North Malaya District, responsible for operations in Perak, Kedah and Perlis, Kelantan, Province Wellesley and Penang. (19) After the success of anti-bandit operations in Central Malaya in 1956, only North and South Malaya Districts were left to control operations against the bulk of the remaining terrorists in Perak and Johore. (20) Within each District a Brigade Headquarters, commanding a number of battalions, was normally located at Police Headquarters in each state capital, while Battalion Headquarters were located with Police District Headquarters at the administrative centre of each Civil District and Company Headquarters with each Police Circle Headquarters. This decentralisation of control to company or even platoon level was designed to ensure that there existed a framework of troops in support of the Police throughout the Federation, onto which reinforcements could be superimposed when necessary, and was well suited to a campaign against an enemy that was deployed along similar lines.

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Operating in concert with the ground forces was a composite force of aircraft provided by the R.A.F., the R.A.A.F., the R.N.Z.A.F., and the local Auxiliary and national Air Forces, as well as ^{the Navy and} the Army. The strength of the air forces that were available for operations in support of the ground forces against the terrorists increased from three Fighter, four Medium Range Transport, one Photographic Reconnaissance and one Flying Boat Squadron in July 1948 to a maximum potential in July 1954 of two Medium Bomber, three Fighter, three Flying Boat, three Medium Range Transport, four equivalent Short Range Transport and one Photographic Reconnaissance Squadron, with a combined establishment of 166 aircraft. (21) In addition to these air forces various units of the Royal Navy operated in conjunction with the Royal Malayan Navy in intercepting illegal seaborne traffic and carrying out several bombardments of shore targets, while one squadron of naval helicopters carried out the major part of the trooplifting commitment between 1954 and 1956. (22)

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Command and control of the anti-terrorist campaign ~~Malaya~~
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The primary task of the military forces in Malaya during the Emergency was to assist the government in restoring law and order and to this end their activities were closely co-ordinated with those of the Police to enforce the regulations that were devised by the civil administration to end the insurrection and prevent its recurrence. Not the least successful manifestation of this co-operation between the military and civil authorities was the joint system of control that was developed to meet the exigencies of the campaign against the terrorists. Before April 1950 the campaign was controlled by the Commissioner of Police, advised by members of the three Armed Services, but he had insufficient powers to ensure its effective direction and in that month Lt. General Sir Harold Briggs was appointed Director of Operations to co-ordinate, on behalf of the High Commissioner, the activities of all the Security Forces, to enforce the administrative measures that were considered necessary to deal with the situation and to allot his resources accordingly. The instrument of his direction was the Federal War Council, whose members included the Chief Secretary of the Federation, the General and Air Officers Commanding in Malaya, the Commissioner of Police and the Secretary for Defence. In November 1950, in order to simplify procedure and to create a greater sense of urgency in the campaign against the terrorists, the High Commissioner agreed to preside over the War Council, which thus assumed overriding powers on all matters affecting the Emergency. In order to associate responsible opinion in Malaya with the conduct of the Emergency, representatives of the Malay, Chinese and Planters' Associations were added to this council while, in November 1951, the original Armed Services and Government members formed a Director of Operations Committee to handle detailed operational planning.

General Sir Robert Lockhart succeeded General Briggs as Director of Operations on 3 December 1951 but, following the murder of the High Commissioner Sir Henry Gurney by the terrorists, General Sir Gerald Templer was appointed Director of Operations and High

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Commissioner on 7 February 1952 and thus became responsible for all Government activities including the conduct of the Emergency. Under his administration, which lasted until April 1954, the Director of Operation's Committee remained responsible for directing the campaign against the terrorists while the Federal Executive Council, successor to the Federal War Council, served as the Cabinet to ensure that every activity of the Government was bent on ending the Emergency. At State or Settlement and District levels, War Executive Councils, containing influential members of the local community as well as local military and police commanders, had been set up in September 1950 and continued to prosecute and co-ordinate the campaign against the terrorists according to the priorities established by the Director of Operation's Committee. In January 1955 wider racial representation was also provided on these local war councils and Operations Sub-Committees were formed to handle the daily conduct of anti-terrorist operations.

In March 1956, as part of the agreed sequence for the progressive handover of responsibilities to the Federal Government prior to Independence on 31 August 1957, the Minister for Internal Defence and Security became responsible to the Federal Executive Council for the overall direction of the Emergency, for which purpose an Emergency Operations Council was formed that contained various Ministers representing the Malay, Chinese and Indian communities as well as Service and Police Chiefs. When Independence was achieved the Director of Operations became responsible to this council, and not to the British Government, for the conduct of the anti-terrorist campaign and this system of control was maintained until the end of the Emergency.

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Introduction The Campaign against the Communist Terrorists

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Introduction. The Briggs Plan

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When the Emergency was declared in June 1948 the Federation of Malaya had only been in existence for four months and the Government was ill-prepared to deal with the threat of the Communist terrorists, the magnitude of which was not at first appreciated as its impact was felt mainly in rural areas and not in the centres of administration. Deficiencies in the constitution, in the command structure of the armed forces, in the civil administration and in the Police were gradually rectified as the seriousness of the insurrection was realised, but it was not until the end of 1950 that the British Government were fully convinced of the gravity of the situation and accorded to the Federal Government the full degree of financial and military support without which real progress against the terrorist threat was not possible.

Improvements in the strength and organisation of the Administration and the Security Forces were of little use, however, without an overall plan to direct their operations in the offensive against the terrorists. Such a plan was propounded by General Briggs, the first Director of Operations, in April 1950. This plan, on which the campaign was largely fought and won, was two-pronged, combining civil ^{and} military action with the intention of destroying the terrorists and preventing a recurrence of their activities. It was designed to exploit the fact that the C.T.O. could not exist without receiving money, supplies and recruits from the local population and could not operate effectively without information from them. Its primary aim was, therefore, to cut off the C.T.O. from the populace and this depended on the Administration's success in controlling and protecting vulnerable sections of the community, especially in isolated areas, in eradicating Communist cells from the populated areas and in controlling the supply and distribution of vital commodities to prevent them from getting into terrorist hands. Once effective control had been established over the populace and their confidence in the

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Government's ability to control the situation had been restored then a military offensive could be launched in order to seek out and destroy the armed element of the C.T.O.

Measures taken by the Civil Administration ⁽²⁵⁾ ~~in the~~

~~Emergency Regulations Bill~~ 1257

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Various measures were taken by the Federal Government in order to control the population and to separate the terrorists from their source of supplies and information, most of which were invoked under the Emergency Regulations Bill that was passed on 5 July 1948 and periodically revised thereafter. Heavy penalties were imposed for assisting the terrorists and wide and diverse powers were given to the Government, including the right to issue detention orders, declare protected or prohibited areas, to seize property, control movement on the roads, disperse assemblies, impose curfews and to control businesses and the distribution of food. Many of these edicts were rescinded or modified after 1953 as the situation improved but the Emergency Regulations Bill remained in force throughout the Emergency as the basis for all the important measures that were taken by the Administration to combat the terrorist threat.

The most notable contribution that was made towards the severance of communications between the terrorists and their supporters amongst the local inhabitants was the resettlement of a large part of the Chinese squatter population. The assistance which they gave to the Communist cause was recognised as early as December 1948 and during 1949 various regulations were promulgated which empowered State or Settlement authorities to resettle squatter communities in areas that could be satisfactorily administered and policed. During the first nine months of 1949 6,343 persons were detained under this regulation, of which 1,226 were released to live in places where they would be free from terrorist intimidation. ⁽²⁶⁾ With the appointment of General Briggs as Director of Operations in 1950 the problem of resettlement was tackled with increased energy and by the end of that year 117,198 persons had been moved into 140 New Villages, most of which were protected by barbed wire and perimeter lights and defended

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by the Malay Police and the Chinese Home Guard. By the end of 1951 385,000 persons had been resettled in 429 New Villages and a year later there were 509 such settlements with a population of 461,822. In the space of two years nearly half a million Chinese squatters had been brought under effective administrative control and the Communist terrorists had been virtually cut off from their major source of support. The cost of the resettlement programme was high, over 41 million dollars, (27) and it inevitably suffered from the urgency with which it was carried out. At first discontent was rife amongst those who had been forcibly resettled and they were extremely susceptible to Communist infiltration. The Government made great efforts, however, to develop a proper community spirit in the New Villages and the provision of social amenities, education facilities and the solution of the problem of land tenure helped to improve the lot of their inhabitants and fostered their conversion to the Government's cause which was a major factor in bringing the Emergency to a successful conclusion.

As resettlement progressed the terrorists turned their attention to scattered labour lines on isolated rubber estates and tin mines, which provided an easy target for intimidation. From January 1951 onwards, therefore, these lines were regrouped and brought within defended perimeters under the protection of the Auxiliary Police, while restrictions on the hours and places of work were imposed in order to afford some protection to the labour force during the hours of daylight.

One of the Police Special Branch's strongest weapons against the 'Masses Organisation' on which the C.T.O. depended was the regulation that was enacted early in the Emergency which gave them the power to arrest and detain a person for up to two years without trial, a law that was strengthened in January 1949 when the Government was empowered to detain whole villages that were known to be consorting with the terrorists. By the end of 1949 detention centres had been established (28) at seven places in the Federation and 5,575 persons had been detained.

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By the end of 1950, 9,035 persons were under detention, but this number declined to 2,234 by the end of 1953 as popular support for the terrorists dwindled. At the end of 1955 less than 1,000 persons were detained, by which time the general limitation of detention periods to six months had taken much of the sting out of this measure.

As it was felt that many of the detainees were victims of circumstance, whose legitimate desire for self-government had been exploited by the Communists, Rehabilitation Centres were opened at Taiping, Morib near Kluang, Majeedi near Johore Bahru and Telok Mas between 1949 and 1952, (29) in order to provide vocational training for male and female Chinese and Malay detainees with the aim of re-educating them for unconditional release into a free and democratic society.

Further relief to the problem of accommodating detainees was provided by the Emergency Regulation that was gazetted in November 1948, which made provision for the deportation of undesirable persons with their consent. 9,062 detainees and their dependants were (30) deported to China during 1949 and a further 460 to India. Some difficulty was then encountered, however, in reaching agreement with the receiving countries, especially with China where repatriation to the mainland was interrupted altogether in 1950 with the southward advance of the Communists in that country. By November 1950, however, limited disembarkation was resumed through the port of Swatow and a record number of 7,099 Chinese were repatriated during 1951, together with 73 Indians. A further 5,277 persons were repatriated during 1952 but the numbers fell thereafter to under 1,000 in 1954 and the practice of deportation had virtually ceased by the end of 1956. By September 1957 a total of 12,190 persons had been deported and a (31) further 2,717 had been repatriated at their own request.

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Besides the Chinese squatters, another section of the populace that was subject to Communist intimidation were the 60,000 aborigines who inhabited remote jungle areas of the central mountain range, especially in Perak, Pahang and Kelantan. From 1952 onwards the

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terrorists withdrew into these remote areas in order to conserve their dwindling strength and their exploitation of these primitive people intensified as they compelled them to provide porters, guides, couriers, purchasing agents, a labour force for cultivating their vegetable plots and an intelligence screen against the approach of Security Force patrols. As it was considered impolitic as well as impracticable to resettle these aboriginal jungle dwellers, a plan was put into effect in 1955 to bring them under Government control and protection in their own habitat. Eleven deep jungle forts were established, manned by the Police Field Force, which served as centres of administration as well as medical and trading centres and bases for offensive operations by the Security Forces. (32) An intelligence service, using aborigines was formed and some of them were enrolled as Auxiliary Police. So effective were these measures that it was estimated that only 300 or 400 aborigines were still under terrorist domination at the end of 1956. (33)

Insert
Figs 182

Other Emergency measures that were taken by the Government to underline the schism between the terrorists and their supporters amongst the civilian population were National Registration, which was completed by April 1949 and helped in identifying terrorists and hindering their movement by public transport, and the power of excluding any person from a Police District by an order signed by the officer in charge of that district.

The terrorists proved most vulnerable, however, through their supply organisation. Their chief weakness lay in their inability to live off the natural food products of the jungle, which were scarce and did not form a balanced diet. Jungle cultivations were susceptible to discovery and destruction from the air and were never developed enough to make the terrorists self-sufficient. Food had to be obtained from the populated areas, therefore, as well as money, clothing, medicines, printing materials and other items essential to the terrorists' campaign, and it was the supply points between the centres of population and the jungle fringes that provided the most prolific killing grounds for the Security Forces. In order to restrict

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Figs 192

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and identify these supply points an intensive food-denial campaign was put into effect in June 1951 when resettlement and the regrouping of labour had progressed far enough to justify its application. The control of food and essential supplies was carried out at District level and its main features were the strict rationing of rice, enforced by ration cards, the declaration of Food Restricted and Prohibited Areas, the control and protection of restricted articles while in transit, the licensing of shops entitled to sell them and the limitation and careful accounting of their stock. After 1953 this programme was combined with a sustained military effort to find and destroy terrorist cultivations in the jungle and between them these measures forced the bandits to split into smaller units in order to survive and thereby deprived them of much of their offensive power. Slow but progressive starvation had a cumulative effect on terrorist morale and food denial operations became the basis of all Security Force operations during the last few years of the Emergency. In recognition of the role played by these operations in reducing the terrorists' will to continue the struggle, an Emergency Food Denial Organisation was formed in 1956 to supervise this campaign throughout the Federation.

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Besides helping to starve out the terrorists the food denial programme also elicited vital intelligence material as it increased the chances of identifying ^{the} terrorists food suppliers and pressure could be brought against them to become informers or police agents. Information gathered in this way was of vital importance for knowledge of terrorist locations and movements was the key to the whole offensive campaign against them. At the beginning of the Emergency, however, the intelligence services in Malaya were in a poor state. The Malayan Security Service had suffered losses during the Japanese occupation that had not been made up, the Police were undermanned and not mobile, poor telephonic communications hindered the transmission of information and a dearth of trained interpreters prevented the exploitation of such terrorists and Communist literature that ~~was~~ ^{were}

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captured. Worst of all, in view of the lack of police protection in the face of terrorist intimidation, no information about the insurgents was forthcoming from the public.

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On his appointment as Director of Operations in April 1950, General Briggs realised that intelligence was the prerequisite of all successful anti-terrorist operations and in May of that year he established a Federal Joint Intelligence Advisory Committee to examine means of strengthening intelligence and Police Special Branch techniques. In August 1950 a Director of Intelligence Services was appointed to co-ordinate the various intelligence agencies of the Security Forces and the Civil Departments, to supervise the collation, evaluation and dissemination of both strategic and tactical information and to advise the Director of Operations on Emergency intelligence matters. By 1953 the Director of Intelligence Services was co-ordinating the work of the Federal Intelligence Committee and the Combined Intelligence Staff, which included representatives of the Police, the Armed Services and the civil Administration, the Police Special Branch, with officers at Federal, Contingent, Circle and District Headquarters who advised the Government on all subversive activities and produced operational intelligence for the Security Forces, and special Military Intelligence Officers who worked at all levels in liaison with the Police Special Branch.

The main sources of information about terrorist locations were police agents, normally former Communist supporters who remained in touch with the terrorists, informers, usually members of the public reporting suspicious movements, reconnaissance by the ground forces and by aircraft searching for terrorist camps, food dumps and courier routes, and surrendered enemy personnel, who proved surprisingly willing to give information. Not the least important factor in the successful outcome of the campaign against the terrorists was the fact that, quite early in the Emergency, the Police Special Branch knew the names and identities of all of them and also their

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approximate spheres of operation. The flow of information concerning their detailed movements, however, depended primarily on the current successes achieved by the Security Forces, both in killing terrorists and in protecting the public from their deprivations. It was important therefore, to disseminate news of these successes to both the public and the terrorists in order to raise the morale of the former and to undermine that of the latter. This task was the responsibility of the Information and Psychological Warfare Services.

At the start of the Emergency information and directives to the public were disseminated through the Emergency Publicity Committee of the Department of Public Relations but, in June 1950, this task, as well as that of propaganda against the terrorists, was taken over by the Emergency Information Services at Federal Police Headquarters in Kuala Lumpur, with representatives at State or Settlement and District levels. In October 1952 the Emergency Information Service was separated from the Director of Operations Staff and placed under the Director General of Information Services. In March 1954, however, responsibility for the psychological offensive against the terrorists was reinvested with that part of the Director of Operations Staff known as the Psychological Warfare Section, while the Director of Information Services became responsible to the Home Affairs Department of the Government for disseminating Emergency propaganda and information to the public.

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Propaganda was conveyed to the terrorists either directly, through the media of leaflets, Information Services newspapers and broadcast messages, all of which were distributed on the ground as well as from the air, or indirectly by hearsay from the general public. Advice, exhortation, directives and general information on Emergency matters that were aimed at the public were promulgated in posters, leaflets, newspapers, Press communiques, touring loudspeaker vans, Radio Malaya programmes, films and aerial and ground broadcasts. Leaflets and broadcasts were prepared in simple vernacular languages for

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distribution to the scattered native villages and estates where the majority of the plural society of Malaya lived and some impression of the effort that was put into the information and propaganda services is given by the fact that the number of leaflets that were distributed by all methods rose from 30 million in 1948 to 53 million in 1950, to 77 million in 1953 and to over 100 million in every year between 1954 and 1957. (36)

The 12 mobile public address and cinema units that addressed $1\frac{1}{2}$ million people in 1948 were expanded to a fleet of 91 units by 1953, whose combined messages reached an audience of over one million people every month.

The importance of the contribution made by the propaganda and information services to the successful outcome of the campaign cannot be underestimated. In the long run only the people of Malaya themselves could have defeated Communism and that is the reason why the Emergency remained largely a civil campaign to elicit the support of the uncommitted masses. The crux of the problem lay in winning the confidence and loyalty of the bulk of the Chinese population and to stimulate amongst them a positive reaction against Communism. The formation of the Malayan Chinese Association in February 1949 went some way towards rallying Chinese support for the Government's cause and by the middle of 1951 it was clear that the cumulative effect of Security Force measures had increased public confidence in them, with a resultant improvement in co-operation and an increase in the flow of information concerning terrorist whereabouts. Continuous efforts were made to foster the public's support for the anti-terrorist campaign through such means as the 'Anti Bandit Month' of February 1950 and the formation of the Home Guard and other self-protection units. In 1955 Good Citizen Committees were formed in many villages and the public anti-Communist rallies which they organised assured the populace that it was safe to give information to the authorities and also helped to convince both the terrorists and the people that Communism was a lost cause in Malaya. The preliminary to the final collapse of a terrorist unit in any locality was usually the realisation that they had lost all public support and it was at this

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guard duties and such jungle patrols as were undertaken were not subject to any overall design and generally proved fruitless. It is true that two carefully planned and methodical sequences of military operations were undertaken to restore order in parts of Johore during 1949⁽³⁸⁾ but the success which they achieved was only temporary as the machinery of civil administration was not yet adequate to prevent a resurgence of terrorist activity.

Under the Briggs Plan that was initiated on 1 June 1950, however, steps were taken to enhance the strength and efficiency of the Police and civil administration in order to consolidate the gains achieved by military action. So far unco-ordinated military operations, largely dictated by the unpredictable activities of the insurgents, had yielded little permanent results, but now an overall military plan was devised to rectify this situation. Under this plan the minimum number of troops that were necessary to guarantee security against terrorist attacks were deployed in close conjunction with the Police in populated areas throughout the Federation. Onto this defensive framework the surplus military forces were superimposed in selected areas to dominate the jungle up to five hours journey from potential terrorist supply areas, thus forcing them to run this gauntlet if they wished to remain active in these areas. Either they would do so and face elimination or they would be forced to move on to another locality. In this way it was planned to eradicate the terrorist threat progressively throughout the country by starting 'area domination' operations in Johore on 1 June 1950 and then working steadily northwards. It was hoped to clear Johore of all terrorists by 1 November 1950 and to start clearing up operations in Negri Sembilan and Malacca on 1 August 1950 and in South West Pahang on 1 September 1950.⁽³⁹⁾ To this end ^{six} of the 19 infantry battalions⁽⁴⁰⁾ then in Malaya were deployed in Johore in May 1950, but the terrorists' foothold in that state proved too firm and hopes of a quick victory over them were too sanguine. The programme of military operations had to be revised and in the end Malaya was cleared of the terrorist threat from the central states outwards, Johore not being

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declared 'White' until the end of 1958. Nevertheless, with certain modifications, the policy of clearing each State or Settlement in turn of the Communist menace remained the overall strategic plan for the remainder of the campaign and, since the M.R.L.A. regiments were deployed largely on a State basis, it proved well suited to local conditions.

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The usual technique for offensive operations against the terrorists was to mount a pre-planned combined operation which involved constant patrolling, with full aerial support, in order to keep the enemy on the move and force him to split up into small groups that were more susceptible to ambush, while associated food denial measures compelled him to make contact with the civilian population and increased his chances of encountering a Security Force patrol. Within the area of one of these large scale operations each battalion was allotted a particular locality and these were divided in turn between its constituent companies, of which two platoons were operational at any time and the third was held in reserve. (41) During 1951 and 1952 most of these operations lasted for a maximum of two or three months but experience showed that merely beating through an area once or twice in the hope of driving the enemy into ambushes on the far side had little chance of success as the areas were too large and the cover too thick. Besides which, food control measures had to be maintained for at least three months to have any real effect and so, from the middle of 1953 onwards, an era of protracted operations, each of which lasted from six months to a year or more, was inaugurated which ultimately proved successful in systematically eradicating the terrorist units.

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Summary of the campaign against the terrorists ~~XXXXXXXXXX~~

The course of the twelve year campaign against the terrorists in Malaya was influenced by the changing policy of the M.C.P., by Government counter-measures and Security Force operations and by the effect of these developments and Communist fortunes elsewhere in Asia on the attitude of the public. The statistical information that is

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Annexes H & J ~~VIII and IX~~

14 collated and represented in ~~Appendices~~ gives details of the number of terrorist inspired incidents, the number of contacts made between the Security Forces and the terrorists and the number of casualties that were inflicted on both sides and provides a fair picture of the general trend of the campaign and the relative successes of the opposing forces.

The fluctuating fortunes of the terrorists and the Security Forces during the Emergency fell roughly into four periods; firstly from June 1948 to October 1949, when the initial Communist attempt to seize power in Malaya was checked and they withdrew into the jungle to re-organize their forces for a prolonged war; secondly from October 1949 to August 1951, when the terrorists, encouraged by Communist successes all over Asia, launched a second offensive which brought the level of violence to a peak in 1951; thirdly from August 1951 to July 1954, when the counter-measures that were instigated by the Director of Operations appointed in 1950 began to take effect, the back of the revolt was broken, the terrorists lost over half their strength and the remnant was compelled to retire to deep jungle hideouts in order to survive; fourthly from July 1954 to July 1960 when, the crisis being over, the strength of the terrorists dwindled steadily before Security Force pressure, as did the number of incidents, contacts and casualties to both sides, until the point was reached when the Emergency could be declared over.

15 At the start of the Emergency the initiative lay entirely with the terrorists as the Malayan Government and the Security Forces were ill-equipped to deal with a situation whose gravity was not fully appreciated. During the first few months of the campaign, therefore, the Security Forces were largely committed to the task of stabilising civilian morale and affording some degree of protection to the public and to essential utilities and industrial installations. Despite their efforts, however, the terrorist inspired incident rate averaged 212 a month until the end of 1948, by which time they had killed and wounded over 900 people for the loss of 700 of their own number. However, despite the static role played by most of the Security Forces

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during this period, a few limited offensive operations were mounted against the terrorists. In May and June 1948, prior to the declaration of the Emergency, Operations 'Pepper' and 'Haystack' were launched in the North Perak valley against the remnants of the anti-Communist O.C.A.J.A., a Kuomintang faction now calling themselves the Malayan Overseas Chinese Self-Protection Corps who had taken the law into their own hands because of the lack of Government protection against the Communists in that area. ⁽⁴³⁾ Further south, during July and August 1948 'Shawforce' and the 'Ferret Forces', small independent units ⁽⁴⁴⁾ formed largely from Malay and Gurkha regiments, were sent out against the Communist terrorists in Perak but achieved little success owing to the lack of information about their location. These operations did, however, give the ground forces experience of jungle operations while the air support that was provided for these patrols introduced the air forces to most of the techniques of their commitments throughout the remainder of the campaign.

By the end of 1948 the measures taken by the civil administration were beginning to have an effect and the Security Forces had been reinforced to the point where the Police could take over many of the static defence duties and release the Army for jungle operations against the terrorists. The initial object of the insurgents, to subvert the Government by a reign of terror and establish a 'liberated' area in Pahang by 3 August 1948, ⁽⁴⁵⁾ had been decisively defeated and sanguine hopes were expressed that the situation could soon be brought under control. The M.C.P. leaders, however, remained unshaken by these reverses and the problem of eliminating the forces which they controlled was rendered infinitely more difficult when they withdrew into the jungle and, from April to October 1949, set about reorganising their army and its supply force for a protracted guerrilla campaign, leaving behind small 'killer' squads in the populated areas to continue their policy of terrorism, intimidation and extortion and to occupy the attention of the Security Forces.

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This withdrawal of the terrorists into the jungle was reflected in a marked decline in the rate of the incidents which they inspired from an average of 50 a week at the end of 1948 to 26 a week from mid-February to December 1949. The nature of terrorist attacks also changed as they showed a marked reluctance to attack targets that were well guarded or where they were deprived of the element of surprise and the total number of casualties which they inflicted on the civilian population during the whole of 1949 was less than during the first six months of the campaign. In contrast, the Security Forces were able to take limited offensive actions as their numbers increased and their organisation improved and during 1949 they succeeded in killing 618 terrorists, mostly in Pahang and Northern Selangor, for the loss of 229 of their own number. In the Cameron Highlands area of North West Pahang and the neighbouring parts of Perak and Selangor, Operation 'Gargoyle' was launched in January 1949 ⁽⁴⁶⁾ and was followed by a series of operations from April to July, 'Ramillies', 'Blenheim', 'Spitfire' and 'Sarong', against the 300 or more terrorists associated with the 5th Regiment M.R.L.A. in this region. The terrorists fled before the advancing columns of the Security Forces but their escape northwards was blocked by Operations 'Pintail', 'Widgeon', 'Pathfinder' and 'Overall' which were mounted in Perak and Kedah between July and September 1949. Meanwhile Operations 'Triangle', 'Snow White', 'Lemon' and 'Plunder' had been mounted further south in South West Pahang, Northern Negri Sembilan and Selangor between ~~July~~ ^{April} and September 1949, particularly against the 1st Regiment M.R.L.A., during which a notable success was achieved with the elimination of 37 out of 45 terrorists in the Kuala Langat Forest Reserve of South Selangor in April, largely owing to the use of offensive air support. ⁽⁴⁷⁾ Further south Operations 'Constellation' and 'Leo' were mounted against the 3rd Regiment M.R.L.A., in North West Johore and Malacca in September and October 1949, during which 32 terrorists were killed, 23 were captured and a further 28 surrendered. While these operations were in progress in Central and Southern Malaya Operations 'Holiday' and 'Pussycat'

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were launched in the extreme north, on the borders of Kedah and Perlis with Thailand, in conjunction with the Thai Police, in order to prevent infiltration across the border and to flush the terrorists out of this area.

While these operations were being launched against the armed terrorists, operations such as Operation 'London' in Selangor were designed to increase the pressure on their 'Min Yuen' support force and a further attempt to win the support of the uncommitted Chinese populace was made in February 1949 with the formation of the Malayan Chinese Association. (48) To counteract their waning influence the insurgents adopted the title of the M.R.L.A. on 1 February 1949 in order to disguise their insurrection as a nationalist movement and, to foster the impression that it included all races, the 10th Regiment was formed of dissident Malays in Pahang. (49) This unit, however, was so harried by the Security Forces that it had virtually disintegrated by the end of the year and the rebellion continued as it had started to be based almost entirely on the alien Chinese element of the population.

By 6 September 1949 the pressure of Security Force operations and the progress made in the control of the dissident element of the population by detention, repatriation and re-education made it appear that the revolt was under control and the first surrender terms were offered to the terrorists. At first this offer achieved notable results and 116 of the 216 terrorists who surrendered during 1949 did so under its terms. (50) It soon became clear, however, that these were only the waverers who regretted taking to the jungle in the first place and the surrender rate soon fell to a low level as the bulk of the M.R.L.A. remained intact, training and reorganising. Optimistic hopes of a quick termination to the Emergency were dampened and public confidence in its outcome was not enhanced by Communist successes in China, Korea and Indo-China in 1949 and 1950 and the subsequent recognition of Mao Tse-tung by Britain and of Ho Chi Minh by Russia. The Communist star in Asia appeared to be waxing strongly, providing

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a considerable fillip to the morale of the M.R.L.A. and giving serious food for thought to the Chinese community of Malaya who began to show a marked reluctance to co-operate with the authorities in case they jeopardised their safety under a future Communist Government.

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This deterioration in the Emergency situation marked the advent of its second phase, which witnessed the peak of terrorist activity and which began when they launched a second offensive in October 1949 with considerably more forethought and skill than in June 1948. The incident rate rose sharply to an average of over 500 a month throughout 1950 and the number of civilian and military casualties also increased to nearly 200 a month - figures that were three times the number recorded during 1949. The situation appeared to be getting out of hand and it was clear that urgent action was needed by both civilian and military authorities to stem the tide. This was forthcoming with the appointment of General Briggs as Director of Operations in April 1950 to co-ordinate the efforts of the civilian and military authorities and to ensure that the maximum effort was afforded to anti-terrorist operations. He realised that there was no quick or easy way to end the Emergency and that it was not sufficient to eliminate the terrorists as replacements were readily available. It was necessary to break their morale and to isolate them from their supply lines, notably the 'Min Yuen'. To this end the programme of resettling the Chinese squatter population was intensified and the effect of the extension of effective administration to outlying communities was immediately apparent in the increased amount of intelligence information that was received by the Police Special Branch. To rouse the populace from its apathetic attitude towards the prosecution of the Emergency an 'Anti-Bandit Month' was held in February 1950, during which civilians took over many of the normal duties of the Police and released them for active operations against the terrorists, and the Government Information and Propaganda services were expanded.

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In the military sphere the bulk of the Security Forces were withdrawn from fruitless jungle patrols to protect the towns and villages and to dominate the ground between them and the jungle fringes in which

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the terrorists would be compelled to contact their supporters for essential supplies. The arrival of two more infantry brigades and offensive aircraft reinforcements ⁽⁵²⁾ enabled the Security Forces to concentrate in Johore in the latter half of 1950 while retaining a defensive framework throughout the Federation and several combined food denial and offensive patrolling operations were mounted in that state, notably Operation 'Modassin', which had achieved 30 terrorist eliminations by the beginning of August, Operation 'Asbab', during which 62 'Min Yuen' were arrested in the Yong Peng area, where 25 terrorists had been killed by a patrol of the 1/2 Gurkha Rifles during Operation 'Thor' in January, and Operations 'Kohat', 'Jackal' and 'Letter', which were mounted between October and December 1950 and seriously disrupted the 6th Company of the 4th Regiment M.R.L.A. Further north at least 30 terrorists were eliminated during Operations 'Thandiani', 'Baxaul' and 'Butlin', which were mounted in the Jerantut and Sungei Sembing areas of Pahang between January and April 1950, while two notably successful operations were carried out on the borders of Negri Sembilan, Selangor and Pahang in April and October 1950 - Operation 'Jackpot', ⁽⁵³⁾ during which 29 members of the 2nd Regiment M.R.L.A. were killed, 10 were captured, 15 surrendered and 74 of their agents were arrested, and Operation 'Autumn Double', during which 11 terrorists were killed and 17 of their camps destroyed. No results were forthcoming from Operation 'Foxhound' in this area in August 1950, however, and a similar lack of contact with the terrorists rewarded a series of Operations, 'Carp', 'Albamarle', 'Rabbit' and 'Cleaver II', which were mounted against the 5th Regiment M.R.L.A. in Perak between April and November 1950, although five terrorists were killed in an airstrike south west of Tapah during Operation 'Hotspur' in October 1950. Operation 'Rose' against elements of the 8th Regiment M.R.L.A. in the Kulim area of Kedah in September also proved abortive but three operations on the eastern side of the Federation during 1950, 'Walkover' and 'Trek' in Trengganu and 'Kota' in Kelantan succeeded in their object of destroying isolated terrorist cultivation plots and establishing the local Home Guard.

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By the end of 1950 Security Force pressure had forced the terrorists to split into smaller groups for survival and the incident rate had been reduced by nearly 200 a month. The terrorists, despite killing nearly 1,000 civilian and military personnel during the year, lost over 800 of their own forces. The improvements in the Emergency situation that were caused by the measures introduced under the Briggs Plan continued into 1951 and, with the receipt of additional intelligence material, the Security Forces increased their rate of contact with the terrorists to more than double the rate of 1950 and the number of eliminations rose accordingly. Realising their danger the terrorists launched an all-out offensive of violence and intimidation in order to disrupt the Briggs Plan. The incident rate rose to 606 a month in June 1951, the highest for the whole Emergency, and only fell below 500 a month on one occasion during the year. However, most of this outburst of violence was represented by 'nuisance' attacks against 'soft' or undefended targets that were designed to intimidate the local populace and the number of civilian casualties in 1951 actually showed a slight decrease over the previous year. In general the terrorists continued to avoid contact with the Security Forces as far as possible but, especially in North Johore and North Perak, they began concentrating in large gangs again towards the end of the year and adopted more aggressive tactics, including several well-planned attacks on ground patrols. In one ambush they killed 11 members of the 1st Battalion The Queen's Own Royal West Kent Regiment for the loss of only six of their own number. (55) Altogether the Security Forces suffered 505 killed and 663 wounded during 1951, an increase of over 50 per cent on the casualties suffered during 1950. In return, however they achieved a similar increase in terrorist eliminations, killing 1,025, wounding 650 and capturing a further 121.

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Many of these eliminations were achieved by combined police and military action in the jungle fringe areas, which testified to the tactical success of the 'framework' deployment of the Security Forces under the Briggs Plan. With the formation of Police Jungle Companies,

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however, the Army was able to hand over their commitment in the whole of Kelantan and the Kuantan area of East Pahang in March and July 1951 in order to concentrate on combined operations in South West Pahang, Selangor and Negri Sembilan. Operations 'Kick Off', 'Cathedral' and 'Hustle' had failed to make contact with the terrorists in this area in January 1951 but 6 members of 24 Company, the 6th Regiment M.R.L.A. were killed during Operation 'Stymie' in the Raub area of Pahang in February and another ^{six} from the 28th Company of the same Regiment were killed near Temerloh in March during Operation 'Sabai'. During Operations 'Valetta', 'Mantrap' and 'Tansing' in the Rawang and Bentong areas of Selangor and Pahang in February and March six terrorists had been killed and the remainder of a gang of 250 or more had been dispersed. Further pressure was put on the terrorists in the Labis area of Johore during Operations 'Dagger' and 'Target' in March and in the same month, during Operation 'Prosaic' in South East Pahang, the Special Air Service were used for the first time in the campaign for deep jungle operations. Between June and August 1951 a general intensification of effort was made in North West Johore and Negri Sembilan and Operations 'Warbler', 'Grasshopper' and 'Sedge' were mounted to clear this area and drive the terrorists northwards. (56) Towards the end of 1951 12 terrorists were killed in the Bentong area of South West Pahang during Operation 'Mahakal' and a further ^{seven} members of ^{the} 24th and ^{the} 30th Companies, 6th Regiment M.R.L.A., were eliminated during Operation 'Pursuit', which was mounted after the murder of the High Commissioner Sir Henry Gurney near Raub on 6 October. (57) While a concentrated effort was being made against the C.T.O. in South West Pahang, Negri Sembilan and North West Johore, the remaining military operations of 1951 were mainly directed against elements of the 5th Regiment M.R.L.A. in the Tapah and Ipoh areas of Southern and Central Perak. Following Operation 'Gallows' in January a series of operations was launched in this area throughout the year, 'Rumble', 'Rainbow', 'Redskin', 'Raven', 'Rever', 'Mermaid' and 'Marker' being followed between August and December by 'Sludge', 'Rebel' and 'Springtide', during all of which 14 terrorists were killed, 33 were

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captured, 4 surrendered, 38 of their camps were destroyed and the supply organisation of the local C.T.O. was seriously disrupted. (58)

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The first eight months of 1951 witnessed the zenith of the Emergency in Malaya, with the peak of terrorist violence and the widespread expectation of the wholesale occupation of South East Asia by the Communists. Credit is due to the civil and military administration and to the local populace who bore the brunt of the terrorist attack, for preventing the situation from getting out of hand while at the same time creating the conditions which enabled ultimate victory to be achieved. Nevertheless, although the terrorists lost nearly 30 per cent of their total casualties to date between January and August 1951, (59) most of these were made good by further recruitment and, with the backing of a widely supported 'Min Yuen', they looked capable of continuing their insurrection indefinitely. The third phase of the Emergency, which opened in August 1951, began, therefore, with a call for renewed vigour in the prosecution of the campaign against the terrorists. With the appointment of General Sir Gerald Templer as High Commissioner and Director of Operations in February 1952 the civil and military administration was unified for the first time and, under his forceful direction, such complacency as remained in Government departments was swept away and priority was given to reorganising and training the Police and to improving the intelligence and information services. By this time the main aspects of the Briggs Plan had begun to mature, nearly half a million squatters had been resettled into New Villages, the policy of deportation of undesirables was being implemented and Security Force operations were being effectively co-ordinated with food denial measures. These developments combined with the fact that the Communists were being held in Korea and Indo-China, led to an upsurge in public confidence in the outcome of the campaign which was reflected in an increase in the flow of information from them about terrorist locations, with a resultant rise in the contact rate achieved by the Security Forces to a peak for the whole Emergency.

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As the initiative passed to the Security Forces the terrorists, realising their increasing isolation from the main body of the populace on whom they relied for recruits and supplies, became markedly less aggressive and their efforts were turned increasingly towards subversion and ensuring the survival of their remaining forces. Following instructions published in the Cominform Journal, to the effect that Communist Parties in Colonial territories should follow the Chinese revolutionary model and confine their attacks to military or para-military targets while increasing their efforts to infiltrate and subvert labour and other organisations, ⁽⁶⁰⁾ the Central Politburo of the M.C.P. issued a directive in October 1951 which decried aggressive incidents that were likely to alienate the public, such as attacks on ⁽⁶¹⁾ railways or damage to the people's means of livelihood. In addition a significant proportion of the M.R.L.A. was withdrawn to build up its strength in deep jungle bases, where cultivation plots were to be laid out in an attempt to lessen their dependence on the local population. The effects of this directive were evident by the end of 1952 and the incident rate, which had averaged 507 a month during 1951, fell to 194 a month from July to December 1952. Attacks on estates and mines fell from 138 in February 1952 to 10 in December of that year, while the number of rubber trees that were slashed by the ⁽⁶²⁾ terrorists decreased from 70,000 to 600 a month during the same period. As the terrorists withdrew into the deep jungle the number of civilian and military casualties which they inflicted fell from 200 a month in mid-1951 to 30 in December 1952. Even so, despite the increasing difficulty of making contact with them, the Security Forces managed to eliminate slightly more of the terrorists during 1952 than they had in 1951 and the final figure for the year of 1,094 killed included a significant number with the rank of Branch Committee Member of the M.C.P. or above.

The 'framework' deployment of the military forces was continued throughout 1952 but combined 'search and destroy' and food denial operations in specific areas were stepped up, especially in the most

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densely populated states of West Central Malaya. Operation 'Broderick' was launched against the 39th Independent Platoon of the 5th Regiment M.R.L.A. in the Kroh Chikus Forest Reserve area of South Perak in January, followed by Operations 'Puma' and 'League' in the Cameron Highlands area of North West Pahang in February and April, 'Techchi' and 'Noah' in the Triang and Bentong areas of South West Pahang in January and February and 'Hive' and 'Hammer' in the Seremban and Kuala Langat areas of North West Negeri Sembilan and South West Selangor in August and October 1952. At least 30 terrorists were eliminated during these operations, the C.T.O. in South Selangor was seriously disrupted and several hundred aborigines were rescued from terrorist domination. Outside this area notable operations in 1952 included operation 'Helsby' against the Headquarters of the 12th Regiment M.R.L.A. in the Belum Valley area of Northern Perak in February, during which paratroops were used for the first time during the campaign, (63) Operation 'Pancake' in January, against 5 Platoon, the 8th Regiment M.R.L.A. in Kedah, and Operation 'Habitual' between May and August 1952, which seriously weakened the supply organisation of the 7th Regiment M.R.L.A. in the Kuantan area of East Pahang. (64) Largely as a result of the elimination of ranking terrorists during these operations the higher command of the M.C.P. passed to two 'Bureaux' in the north and south of Malaya in place of the three previously maintained.

The marked improvement in the Emergency situation that was evident in 1952 continued throughout 1953, which was a year of steady progress against the background of increasing security and the improved morale of the civilian population. The growing feeling that the forces of law and order had the situation under control was fostered by public relations operations, such as Operations 'Question', 'Service' and 'Ginger', which were designed to improve the public's attitude towards the Police and the Emergency measures that were still considered necessary and to encourage them to give information of terrorist movements. The rate of terrorist inspired incidents fell from a monthly average of 310 in 1952 to 99 in 1953, while the number of casualties

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sustained by the Security Forces fell from an average of 22 a month to 8 a month. The number of terrorists that were killed also fell, from 104 to 81 a month, as the contact rate declined but there was a steady increase in the number who surrendered, with an average of 31 a month during the year. (65)

The reduction in the terrorist threat during 1953 enabled the Army to hand over its 'framework' responsibilities in many areas to the increasingly efficient Police force and to concentrate for offensive operations against the terrorists in specific localities. The original plan to clear the Federation from the south northwards was proving impracticable, however, and it was decided to attack the terrorists where they were weakest, in the central states of Malacca, Pahang, Negri Sembilan and Selangor. (66)

Thus a wedge could be driven between the main terrorist forces in the north and the south of the country and the Police and Home Guard could be left to maintain security in these areas while the bulk of the Army was freed to deal with the most recalcitrant targets in Johore and Perak. To this end several large scale combined operations were launched in Pahang and the neighbouring states during 1953, including Operations 'Cato', 'Matador', and 'Sword' against the 6th Regiment M.R.L.A. in the Raub, Mentakab and Bentong areas of South West Pahang between March and July, Operations 'Wellington II' and 'Maze' against the 1st Regiment M.R.L.A. in the Port Swettenham and Kuala Lumpur districts of Selangor between April and December, Operation 'Valiant' against the 5th Regiment M.R.L.A. in the Cameron Highlands area of North West Pahang in October, (67) Operation 'Screw' in the Tapah area of Perak, Operations 'Commodore' and 'Cornwall' against the 3rd and 4th Regiments M.R.L.A. in the Kluang and Segamat areas of Northern Johore in January and June and Operation 'Ibex' against the 7th Regiment M.R.L.A. in the Kuantan area of East Pahang in August 1953. At least 75 terrorists were killed during these operations, 12 during Operation 'Commodore' and 36 during Operation 'Sword' alone, during the last of which 106 terrorist camps were also found in what was one of the most successful combined operations to date. (68)

These operations seriously weakened the C.T.O. in the central states of Malaya and by the end of the year

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it was possible to lift Emergency restrictions from a large part of Malacca, which became the first 'White' area. Apart from these major operations greater attention was turned towards depriving the terrorists of the support of the local aboriginal population during 1953 and the number of forts in the deep jungles of Perak, Pahang and Kelantan was increased to seven during the year. (69)

By the middle of 1954 the average number of civilian and military personnel killed each month was 35, in contrast to 188 during 1951, over 7,500 terrorists had been eliminated and only 3,500 still remained at large in the jungle. These survivors, however, represented the core of the M.R.L.A. and the nature of the terrain in the jungle-clad spinal range to which they had retreated ensured that they were becoming increasingly difficult to locate and that they could not be entirely prevented from attacking targets close to the jungle, particularly where Security Force pressure had been temporarily relaxed. The monthly rate of terrorist inspired incidents was only reduced by 10, from 99 to 89, during 1954, while the number of terrorist eliminations achieved by the Security Forces fell from an average of 81 to 77 a month and the number of terrorists who surrendered during the year was only 210 - 162 less than in 1953. Consequently, the final phase of the Emergency, the protracted attrition of the remnants of the C.T.O. opened in July 1954, soon after Lt. General Sir Geoffrey Bourne had replaced General Templer as Director of Operations, with the pronouncement of a new tactical plan that was designed to overcome the dangers of a stalemate in the campaign. (70)

Greater responsibility for local security was given to the Police and Home Guard while the Army was employed more offensively by occupying and dominating jungle areas for considerable periods until the local C.T.O. was either eliminated or driven from the area. Such protracted operations relied heavily on air support, especially that of the troop-carrying helicopter force that had recently arrived in the theatre, and reflected the degree of confidence that the Army had developed in the air forces by this time.

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As in the previous year, most of the combined operations that were mounted during 1954 were concentrated in the central states of Malaya in order to isolate the main bodies of terrorists in Southern Johore and Northern Perak. The most important operations of the year were (71) 'Galway', 'Inland' and 'Termite' against the 5th Regiment M.R.L.A. in the Ipoh and Sungei Siput areas of Southern Perak, 'Hawk' and 'Apollo' against the 6th Regiment M.R.L.A. in the Raub and Kuala Lipis areas of Pahang, 'Jekyll' against the 2nd Regiment M.R.L.A. in the Bahau area of Negri Sembilan and 'Kitchener' and 'Ajax' against the 4th Regiment in the Rangan and Kulai areas of Johore. 243 terrorists were eliminated during these operations and the high proportion of surrenders included in this number was evidence of the declining morale of the insurgents in the face of this offensive against their rest and training areas in deep jungle. During April 1954, however, it became clear that the terrorist leaders were inflicting strict disciplinary action and security measures on the rank and file of the C.T.O. in order to discourage them from defecting and were also undertaking more aggressive action against selected targets in order to raise their morale. Coupled with Communist successes in Indo-China and at the Geneva Peace Conference, these measures led to a temporary improvement in terrorist resistance and at the end of 1954 over 3,000 seasoned terrorists were still at large in the jungle.

Nevertheless, by the beginning of 1955, nearly one-third of the population of Malaya lived in 'White' areas that were free from Emergency restrictions (72) and the terrorist threat had been reduced to little more than an annoyance to the well-being of the country. Civilian and Security Force casualties during 1955 were reduced to 12 and 15 a month respectively, in contrast to 86 and 102 during the peak months of the Emergency in 1951, and the terrorist inspired incident rate of 65 a month was only 13 per cent of the 1951 rate. Throughout the year the terrorists maintained their policy of avoiding contact with the Security Forces and only 665 eliminations were made in 564 contacts, compared with 926 eliminations in 993 contacts during 1954. (73)

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During 1955 the Security Forces' policy of concentrating against the weakest terrorist targets by 'area domination' operations was intensified and their efforts were rewarded by a conspicuous success in Pahang, where a series of intensive food denial operations, Operations 'Rooster' in the Kuala Lipis area, 'Huntsman' in the Raub area and 'Latimer North', 'Latimer South' and 'Asp' in the Temerloh and Triang areas, resulted in the decimation of the 6th Regiment M.R.L.A. and the disintegration of the local G.T.O. and its supporting 'Min Yuen' cell. (74) Over 130 terrorists were eliminated, one of the three deep jungle bases which the terrorists had been trying to establish was disrupted and the whole state was cleared of terrorists by the end of the year, except for the Temerloh and Cameron Highlands area. A second more localised victory was achieved by Operation 'Nassau' in South Selangor with the destruction of a gang of 50 terrorists in the Kuala Langat area (75) and the net result of these successes was the creation of a large 'White' area in Central Malaya which contained nearly half the total population of the country. (76) A wedge had been driven between the main terrorist concentrations and the severance of the main courier routes between the Northern Bureau of the M.C.P., by now relatively safe in their base in the Betong salient of Southern Thailand, and the Southern Bureau ensured that the latter operated autonomously from now on. These successes in Central Malaya enabled the Security Forces to concentrate on extending the breach in the terrorists' ranks to the south and west against the South Malaya Bureau and to this end priority was given to operations in South West Pahang and North East Negri Sembilan towards the end of 1955, although Operation 'Shark', which had been launched against the 26th Independent Platoon M.R.L.A. in the Sungei Siput area of Perak in September 1954, continued throughout 1955 and had achieved 35 terrorist eliminations by the end of the year.

Meanwhile, however, the setbacks suffered by the terrorists and the holding of the first Federal elections as the first stage in the transition from Colonial rule to Independence, which deprived them of their strongest propaganda line, had persuaded the M.C.P. leaders to attempt to negotiate a peace settlement. The newly elected Alliance

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22 Party refused to negotiate but, in recognition of the changed situation, they declared an Amnesty on 9 September 1955 and agreed to meet Chin Peng, the Secretary General of the M.C.P. to clarify the surrender terms which they now offered. (77)

23 Restrictions on Security Force actions were imposed in view of this Amnesty but were lifted again on 21 November as the terrorists were taking advantage of them to prove that they were still a force to be reckoned with before the Peace Talks were held at Baling in Northern Kedah on 28 and 29 December 1955. At these talks Chin Peng demanded recognition of the M.C.P. and the release of all those terrorists who surrendered without detention or further investigation. The Chief Minister of the Federation, Tunku Abdul Rahman, rejected these demands, which amounted to a licence for the M.C.P. to continue their subversive aims unopposed, and Chin Peng retired to the jungle declaring that the terrorists would fight on to the last man rather than accept the Amnesty surrender terms. Terrorist activity, lulled during the 'wait and see' period that had overshadowed the abortive Peace Talks, broke out again, especially in Johore where the remaining terrorists in that state proved increasingly intransigent in the absence of any higher direction.

It was clear by now that the M.C.P. had lost the shooting war and, with Independence guaranteed, they could no longer play on the nationalist sympathies of the populace. The party's only hope lay, therefore, in leaving the jungle under some form of guarantee that it would be allowed to remain in existence and to this end they launched a 'peace offensive' early in 1956 in an attempt to lay the blame for the continuing Emergency on the Federal Government. This appeal met with some sympathy, especially amongst the Chinese element of the populace, and the Government was compelled to step up their counter-propaganda offensive in order to bolster civilian interest in maintaining that pressure against the terrorists which was essential if they were to be prevented from reorganising and rebuilding their strength and remaining as a malignant cancer in the body of the country. For, by 1956, most

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of the waverers amongst the terrorists had been eliminated and those that remained were well disciplined and virtually immune to propaganda appeals. Inspired by Mao Tse-tung's 20 year wait for power in China they were determined to avoid contact with the Security Forces and sit it out in the jungle until external Communist aid or a further opportunity for leading a popular revolution presented itself. Their morale, which had been severely shaken by their leaders failure at the Baling talks, was now stiffened by intensive indoctrination based on the claim that Chin Peng had in fact achieved a moral victory at the talks and that the eyes of the world had been focused on their plight.

As a result of this propaganda a 'wait and see' attitude was engendered amongst the terrorists and the surrender rate fell from an average of 21 a month during 1955 to 12 a month during 1956, while the incident rate showed a similar decline from 63 to 39 a month. However, despite their continuing evasive tactics and the law of diminishing returns which made the remaining terrorists increasingly difficult to contact, a total of 473 were eliminated during 1956, 20 per cent of their remaining strength, and only 2,063 remained at the end of the year. A major success was achieved in April 1956 with the elimination of Yeong Kwo, the Deputy Secretary General of the M.C.P. and the principal architect of the party's political offensive, by a patrol of the Rifle Brigade near Semenyeh in Selangor, (78) while virtually the whole of the 7th Independent Platoon M.R.L.A. was wiped out by an airstrike during Operation 'Kingly Pile' in February. (79) Other major operations that were mounted during the year followed the usual pattern of a protracted period, during which intelligence material was garnered, followed by a period of strict food control from which additional information became available for exploitation by Security Force patrols and ambushes. Each operation, supported when necessary by offensive and air transport support, lasted for six to nine months or more and most were mounted in adjoining areas and continued into 1957. The most important were Operations 'Shark North' and 'Shark South' in the Ipoh, Sungei Siput and Cameron Highlands area of Perak, 'Gages North'

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and 'Gabes South' in the Perak and Kelantan border area, 'Bonanza' in Southern Selangor, 'Latimer South' and 'Enter' against the South Malayan Bureau of the M.C.P. in the Bahau and Rompin area of North and North East Negri Sembilan and 'Huckster' and 'Tartan Rock' in the Kluang and Kulai areas of Johore. (80) Over 200 of the remaining 2,500 terrorists were eliminated during these operations.

In accordance with the general plan to project the successes gained in Central Malaya northwards through Selangor and into Southern Perak and southwards into North Johore, priority for military operations had been switched to Selangor and Negri Sembilan in July 1956 and although neither state was completely clear of terrorists by the end of the year a further eight areas, containing a quarter of a million people, were declared 'White' and Emergency restrictions had been relaxed in areas covering over half the Federation and containing over half its population. (81)

In certain selected areas that did not yet justify the designation 'White' a new policy of handing over to the people the responsibility of denying support to the terrorists was introduced in April 1956 and bore fruit in October of that year when the inhabitants of two Malay villages took the law into their own hands and turned over seven terrorists to the authorities. (82) Good Citizens' Committees were also encouraged in the New Villages to rally public support to the Government's anti-terrorist campaign for it was becoming increasingly important to counteract the tendency towards complacency in the conduct of the Emergency if the surviving terrorists were not to come out of the jungle when Independence was declared in 1957 under the banner of a victory against imperialism. The ranks of the M.R.L.A. may have been decimated but the real strength of the M.C.P. lay in the fact that 170 of its leaders still remained in the jungle and the C.T.O. in Johore, Perak and Kedah was still relatively intact and well supported by the local Chinese.

On 1 January 1957, therefore, military priorities were switched from the unrewarding targets offered by the few remaining terrorists in Negri Sembilan and Selangor to the larger concentrations in Southern

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Perak and Northern Johore. Operation 'Latimer South' in the Bahau and Rompin area of Negri Sembilan was continued throughout 1957 largely by the Police while the Army concentrated on Operations 'Shark North', 'Shark South' and 'Chieftan' in the Ipoh, Cameron Highlands and Tapah area of Perak and Operations 'Cobble', 'Shoe' and 'Huckster' in the Gemas, Segamat and Kluang areas of Johore with the aim of creating a 'White' area from Tapah in the north to Kluang in the south before Independence Day on 31 August 1957. ⁽⁸³⁾ This target was largely achieved as, by the date set, the last platoon of the M.R.L.A. in Selangor and Negri Sembilan had been destroyed, Central Selangor had been declared 'White', to complete a 'White' belt from coast to coast across the Federation, and in July 1957, for the first time in any month of the Emergency, not one person, military or civilian, was killed by the terrorists and no major incident occurred. On Independence Day some 1,830 terrorists remained at large, of whom 550 were located in the Thailand border area, including 450 actually in Thailand and to all intents and purposes out of reach of the Security Forces, 500 in Central Perak and 500 in Southern Johore. ⁽⁸⁴⁾

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As 'Merdeka' Day approached the Federal Government came under some pressure to come to terms with the remaining terrorists but recognised the dangers of forsaking the position so painstakingly gained and declared that the Emergency would continue in the hope that it could be terminated by the first anniversary of Independence Day. For political reasons, however, it was thought desirable to gradually diminish the number of Commonwealth troops that were engaged on anti-terrorist operations, to restrict their use as far as possible to operations in Southern Johore and Northern Perak and to avoid bringing them into direct contact with populace. ⁽⁸⁵⁾ Coupled with the 'Malayanisation' of the civil administration and the diversion of the Police effort to internal security duties, these developments were reflected in an inevitable reduction in the tempo of the campaign and in the efficiency with which it was managed. Terrorist eliminations fell to 15 during September 1957, the lowest monthly total of the Emergency to date, and the total for the whole of 1957 was only 394.

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By this time one-third of the remaining terrorists were located in Southern Thailand, where they were determined to lie dormant until the Malayan Government was deluded into thinking that they were no longer a threat to the internal security of the country and would negotiate peace on the M.C.P.'s terms. As the threat which they represented could not be ended solely by a shooting war the psychological warfare effort was stepped up in order to persuade them to surrender. New surrender terms were offered in connection with Independence and several terrorists took advantage of them, but their effect was nullified to some extent by a new peace overture from Chin Peng which encouraged a resurgence of the terrorists 'wait and see' policy. However, as the loss of public support after Independence and the effect of continuing Security Force pressure was brought home to them, a feeling of frustration was engendered amongst the terrorists and the number of surrenders increased. The extension of the 'Merdeka' offer to 30 April 1958, and subsequently to 31 July 1958, paid dividends and the surrender rate rose to the highest level since the Emergency began. Altogether 478 of the 650 terrorists who were eliminated during 1958 gave themselves up. (86) Satisfaction was tempered, however, by evidence that many of these had surrendered in order to further Communist aims through subversion, by obtaining voting rights in preparation for overt political action, and the Federal Police had to proscribe several societies that were clearly Communist front organisations. Nevertheless, the majority of those that surrendered had been genuinely persuaded that their cause was no longer worthwhile through intensive combined operations and associated propaganda offensives.

Priority for military operations during 1958 was given to Central Perak and Southern and Eastern Johore, while mopping up operations in Negri Sembilan, Southern Pahang, Selangor and Southern Perak were to be completed as a secondary task. In the Tapah area of Southern Perak Operation 'Chieftain', launched in 1957, ended in November 1958 with

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only 10 terrorists still at large there to be dealt with by the Police Field Force and the area was declared 'White' soon afterwards. In the central part of Perak all known terrorists, 61 in number, were eliminated during Operation 'Bintang', leaving those that had fled to the north east, between Ipoh and Grik, to be dealt with by Operation 'Ginger'. In Selangor, food denial operations, allied to systematic shelling and bombing by the Army and the R.A.F., encouraged the surrender of 27 terrorists in one month in the Sekinchang Swamp area and the remaining terrorists were flushed out of the Rasa area and either surrendered or fled northwards. (87) In Negri Sembilan the area of Operation 'Latimer South' was frozen for most of the year for Police Special Branch operations, which eliminated all but two of the terrorists in the state by the end of the year. The greatest success of 1958, however, was achieved in Johore where 130 terrorists were persuaded to surrender in the northern part of the state, largely through appeals by the former State Committee Member Hor Lung, and the area was declared 'White' in September. (88) All semblance of

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political or operational control of the terrorists in the southern half of the Federation ceased with the destruction of the South Malaya Bureau and, after the South Johore Regional Committee had disintegrated in the Operation 'Tiger' area of Southern Johore and the 9th Independent Platoon M.R.L.A. had been eliminated during Operation 'Badak' in the eastern part of the state, Johore was finally declared 'White' on New Year's Eve 1958. (89) These large scale defections in Johore also persuaded the Malacca/Johore Border Committee of the M.C.P. to give up the struggle and Malacca was also declared 'White' before the end of 1958.

The charted strength of the C.T.O. stood at 868 at the end of 1958, including 485 in Southern Thailand, 300 in Kedah and North Perak and a number of small but determined bands in Pahang. (90) It was clear that, despite the Chief Minister's aim to end the Emergency by the first anniversary of Independence, military operations to eliminate these remnants would have to continue into 1959. As the Emergency moved towards the end of its ^{tenth} ~~thirteenth~~ year, therefore, intensive

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efforts were made to break the morale of the remaining terrorists through psychological warfare techniques in order to avoid the prospect of the stalemate which the dwindling rate of contacts and eliminations presaged. Whenever minimal intelligence material became available Security Force operations were mounted but few successes were forthcoming. In April 1959, however, the Operation 'Ginger' area of Central Perak was turned over to the Police Special Branch and in August 1959 priority was given to mopping up operations in the Operation 'Seladang' area of Central Pahang. (91) These were successfully completed and the final phase of the military campaign was directed against the remaining terrorists in Operations 'Brooklyn' and 'Bamboo', which were mounted near the borders of Kedah and Perak with Thailand. (92)

By the middle of 1960 it was clear that, in view of the equivocal attitude of the Thai Government, there was little that could be done about the 500 terrorists who had withdrawn to the relative sanctuary of the Be'ong salient, strategically situated just outside Malay territory between Kedah and Northern Perak. Here, under their leader Chin Peng, the remnants of the fighting arm of the M.C.P. were to be kept in being as a continuing threat to the security of Malaya, awaiting the day when political and racial difficulties, fostered by subversion, would create conditions under which the armed conflict could be renewed. Federal troops and police would have to maintain patrols along the northern borders of Malaya for an indefinite period in order to prevent armed infiltration from Southern Thailand. This residual threat could not be overcome solely by military means, however, but only by a reformed public opinion and growing prosperity, reinforced by effective and enlightened administration, and this could best be assured by dispensing with the outstanding burden of Emergency regulations. On 31 July 1960, therefore, the Emergency in Malaya was finally declared over.

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Results of the Emergency ~~XXXXXXXXXX~~ and the lessons to be learnt from it. (93)

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The Communist insurrection in Malaya was mounted by a relatively small number of armed terrorists which the combined forces of the military and civil administration took twelve years to finally defeat. The disproportionate effort required to combat guerrilla forces in a jungle theatre is shown by the fact that the M.R.L.A. contained a military force (excluding the police and Home Guard on normal watch and ward duties) whose numerical strength varied between five and twelve times their own. Some impression of the achievement of the terrorists is given by the fact that the incident rate was not reduced below 100 a month for over five years and that, in the nine years that preceded Independence in Malaya, they killed 2,461 civilians and wounded 1,383 others - seven out of every ten thousand people in the country. (94)

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During this period the total cost of the Emergency exceeded £700 million, of which the United Kingdom provided £520 million, and much of the revenue of the Federation was diverted into providing the balance. (95) The vital rubber and tin industries of Malaya suffered both from physical damage to their plant and from the virtual cessation of new development and for the first three years of the Emergency the C.T.O. was a very real threat to the security and economic recovery of the Federation from the depredations of the Second World War. If the Communists in China had not been pre-occupied with their own revolution and the conflict in Korea and Indo-China the prospects of the M.C.P. would have been good, but the failure to elicit any external aid for their cause ensured that its tenuous position in the Federation became increasingly precarious and ultimately untenable.

The reduction in the terrorist threat to life and property in Malaya was the first measure of the success of the Security Forces during the Emergency. In 1951 nearly 100 military and civilian lives were lost every month, but this figure had been reduced to three by Independence Day on 31 August 1957, by which time the Security Forces had killed and captured 7,643 terrorists and persuaded a further 1,938 to surrender at a cost to themselves of 1,851 killed and 2,526

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(96) wounded. These results were achieved in some of the most difficult terrain in the world in which to hunt down an enemy, whose primary aim after 1952 was to avoid contact with the Security Forces, and they were the reward of countless hours of jungle patrolling or lying in ambush. By 1955 it was estimated that any member of the Security Forces could expect to complete 1,000 hours of patrolling or 300 hours lying in ambush before he encountered one terrorist. (97)

The most significant achievement of the Security Forces, however, was not the actual number of terrorists whom they eliminated but the halt which they called to the advance of World Communism, which seemed to be rapidly engulfing South East Asia between 1948 and 1951. Amidst a population that was over half Chinese sufficient confidence was generated in the central government throughout these years to contain the terrorist threat and to enable it to be decisively defeated once the tide had begun to turn against Communism in Asia. Besides encouraging resistance to the Communists throughout South East Asia, the defeat of the terrorists in Malaya also prevented them from dominating a strategic area that lies across the main routes between Europe and Australasia and which contains the largest single source of rubber and tin in the world.

During the course of twelve years many lessons were learnt about the conduct of the campaign against the terrorists in Malaya, several of which, if applied earlier, would have had a decisive effect upon its course and duration and which are equally applicable to future insurrections of a similar nature. In retrospect it is clear that the seriousness of the terrorist threat to the internal security of Malaya was not appreciated early enough and that there was an unfortunate delay in implementing measures to counteract it. There was an obvious failure to create and maintain an adequate Police intelligence system before the outbreak of violence, which must have recognised the signs of incipient revolt and provided information on which to base counter-measures. Greater attention should have been applied to the Police Special Branch from the start of the Emergency as it was through this department that information which led to the great majority of contacts with the terrorists was ultimately derived.

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Guerrilla forces depend on the support of certain sections of the population and a major lesson of the Malayan Emergency was the necessity of grouping these elements so that they could be effectively controlled and protected and their co-operation won by effective government and intensive propaganda. Once the security and loyalty of the people on whom the terrorists depended had been guaranteed, Security Force operations could be directed towards eliminating the insurgents. The Malayan Campaign proved, however, that operations by large numbers of troops met with little success in jungle areas and that most successes were achieved by companies or platoons that were familiar with the terrain and were acting on specific information provided by the Police Special Branch. It is some indication of the importance of acclimatising military forces to the exigencies of jungle warfare in this type of campaign that the most successful of all the units of the Commonwealth Forces that were employed during the Emergency were the Fijians and the East Africans (with an average of 1.13 kills per contact between 1953 and 1955), followed by the Gurkhas and then the British and Malays together (with averages of 1.00 and .68 kills per contact during the same period).⁽⁹⁸⁾

The interdependence of both the military and the civilian arms of the Security Forces during the Malayan Campaign underlined the fact that responsibility for counter-insurgency measures was indivisible. The Emergency was essentially the responsibility of the civil administration, who called upon the military to assist them in restoring law and order, but it is clear in retrospect that it was only directed with maximum efficiency between 1952 and 1954 when the posts of High Commissioner and Director of Operations were combined and there was no dichotomy of interest between civil and military measures and appointments which could have led to a reduction in the impetus behind the prosecution of the campaign.

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CHAPTER 2

THE ORGANISATION AND OPERATION OF THE AIR FORCES IN MALAYA

~~IN THE CAMPAIGN AGAINST THE~~
~~COMMUNIST TERRORISTS~~

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Commitments of the Air Forces

Throughout the twelve years of the Malayan campaign the R.A.F. and associated units of the Commonwealth Air Forces were entrusted with rendering such assistance as they could to the security forces in the fight against the Communist terrorists. This support proved invaluable and took many different forms. Offensive air support, although problematical in the prevailing conditions, was provided when required and was occasionally used with decisive effect and great economy of force. The most important contribution of the air forces to the successful prosecution of the campaign, however, was the provision of transport support, which incorporated trooplifting, supply dropping, casualty evacuation and liaison missions, and which considerably increased the mobility and flexibility of the ground forces and effected a great saving in infantry manpower. In addition, such unusual tasks as crop spraying, leaflet dropping and loud-hailing were carried out by the transport forces and contributed largely to the success of the food denial and psychological warfare campaigns. Finally, but by no means of least importance, the visual and photographic reconnaissance that was carried out by the air forces made an important contribution to the basic intelligence material upon which the elimination of the terrorists relied. As well as the air effort, the R.A.F. also took an active part in the campaign on the ground and the efforts of the R.A.F. Regiment (Malaya) were greatly appreciated by the ground forces with whom they served.

Throughout the Emergency the activities of the air forces were necessarily concentrated against the Communist terrorists but it should be remembered that this was not their only commitment. The primary function of the offensive support force remained the air defence of the Federation of Malaya, the Colony of Singapore, North Borneo and Sarawak and even its maritime role in co-operation with the Royal Navy took

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precedence over the campaign against the terrorists. Similarly, the transport squadrons in Malaya were primarily responsible for maintaining scheduled air services within the area of the Far East Command, which involved regular flights between Singapore, Hong Kong, Saigon, Negombo, Labuan and ^{etc} ~~London~~ ~~Kuala Lumpur~~ besides the provision of staging and maintenance facilities for the trunk routes flown by Transport Command, while photo reconnaissance aircraft had a permanent commitment on behalf of the Survey Department of the Colonial Office. Group Headquarters was responsible for the direction of the air effort against the terrorists but also had its normal peace time tasks to fulfil, which included operational, general service and professional training, the preparation of long term defence schemes in accordance with Overseas Defence Committee instructions, the establishment of a raid reporting and control system and the administration of the Malayan Auxiliary Air Force (M.A.A.F.) and the Malayan Air Training Corps (M.A.T.C.). These commitments occupied a considerable amount of time at A.H.Q. Malaya and ensured that the aircraft under its command were withdrawn from 'Firedog' operations to carry out training in their primary role as often as was commensurate with providing the support required by the ground forces and that only a proportion of the total air forces in Malaya was engaged on anti-terrorist operations at any time. (1)

Strength of the Air Forces ~~XXXXXXXXXX~~

Details of the air forces that were employed in the campaign against the terrorists in Malaya from 1948 to 1960 are given in ~~Appendix~~ ^{Annex L} (2) ~~of Orders of Battle in Appendix XI~~, while the size and deployment of individual units are discussed under the roles which they performed.

Throughout the campaign there were never more than 15 full squadrons in Malaya to carry out the peacetime roles of the command as well as the heavy commitment of Operation 'Firedog'. In general the campaign was fought on a shoestring from the air point of view, with an increase in strength during the early 1950's and a decrease after 1955, and at no time were the air forces in Malaya adequate to meet all the demands that were made on them satisfactorily.

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In the offensive support role, the two fighter squadrons, one light bomber squadron and, if misemployed, one flying boat squadron that were available at the beginning of the Emergency were increased to a maximum force of two medium bomber, two light bomber, two fighter and two flying boat squadrons during 1950. By 1953 two medium bomber, three fighter and two flying boat squadrons were available; by 1956 there were one medium bomber, one light bomber and three fighter squadrons and during the last eighteen months of the campaign there were three light bomber squadrons and three fighter squadrons in Malaya, most of which, however, belonged to the Commonwealth Strategic Reserve and were not employed on Emergency operations.

The commitment for medium range transport aircraft during the campaign was borne almost entirely by four R.A.F. squadrons, including the Far East Communication Squadron, which were reinforced by elements of a R.A.A.F. squadron and a R.N.Z.A.F. squadron between 1950 and 1952 and between 1955 and 1960. For most of the campaign only one of these squadrons at a time was employed in the important task of air supply while the remainder were engaged in maintaining scheduled communication flights and special flights which arose from the Emergency. Invaluable work in the air transport role was also provided by one short range transport squadron of the R.A.F. from 1954 onwards while a squadron of Austers operated under R.A.F. and Army auspices throughout the campaign. Helicopters proved to be the most important innovation that was made in the air transport role during the campaign but there were never enough to meet all the demands that were made on them. In 1950 there was only one flight of helicopters in Malaya and although reinforcements brought the strength up to two squadrons by 1953, one of which belonged to the Royal Navy, and to three squadrons by 1955, one of these was disestablished at the end of 1957 and another in 1959.

Finally, one squadron operated in the photo^{graphic} reconnaissance role throughout the campaign, while the few remaining aircraft in the theatre, that were attached to station flights, the Armament Practice Camp and

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the M.A.A.F., were occasionally used on Emergency operations although they generally were maintained solely for training purposes.

(30) The main characteristic of the air forces in Malaya during the Emergency was the variety of its component parts. The air forces of the United Kingdom, Australia and New Zealand were represented by an average of over a dozen different types of aircraft at any one time, few of which were present throughout the Emergency as obsolete types were gradually replaced under re-equipment programmes. During the first two years of the campaign, Lincolns, Sunderlands, Beaufighters, Brigands, Spitfires, Tempests, Mosquitos, Yorks, Dakotas, Ansons, Devons, Austers, Harvards and Tiger Moths were flown in support of Operation 'Firedog' while the flypast at Kuala Lumpur on 1 August 1960 that marked its ending included Canberras, Sabres, Meteors, Seahawks, Valettas, Bristol Freighters, Beverleys, Pioneers, Austers and Sycamores. (3) To this list can be added Hornets, Venoms, Vampires, Shackletons, Hastings, Pembrokes, Chipmunks, Whirlwinds and Dragonflies which were also flown during the interim period on anti-terrorist operations.

(31) Despite the number of aircraft types that were flown on Emergency operations the squadrons that operated them showed a notable continuity. The Far East Communication Squadron and two of the three other medium range transport squadrons served throughout the Emergency and the remaining one was only withdrawn at the end of 1957 after more than ten years of operations in Malaya. An Australian medium bomber squadron bore the brunt of offensive operations from 1950 to 1958, while two R.A.F. fighter squadrons served in Malaya virtually throughout the campaign, as did the photo^{graphic} reconnaissance squadron and the Auster squadron.

Aircraft Serviceability

The variety of aircraft types that were flown by these squadrons, many of which were obsolete, created servicing problems that were exacerbated by the extreme climate and primitive conditions under which

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most of them were forced to operate on the Malayan mainland, and also by the logistical difficulty of reinforcing, re-equipping and providing an adequate spares backing for a command 6,000 miles from its source of supply. In this last respect, medium bomber detachments from the United Kingdom had to return home for second line servicing after 150 hours flying time, over half of which was expended in transit, while convoy escorts and spares backing at staging posts en route had to be provided for fighter reinforcements. (4)

The operation of new types for the first time in the Far East was usually reflected in a decline in the serviceability rate - a trend that was especially noticeable after the introduction of jet aircraft in 1951. On the other hand the aircraft which they replaced were obsolete and could not have been maintained at an acceptable rate of serviceability for much longer. The average serviceability rate for Beaufighters and Spitfires had fallen to about 35 per cent and 50 per cent respectively in the year before their withdrawal. Their replacements, Brigands, Tempests, Hornets and Vampires, achieved an average serviceability rate of 50-60 per cent but this could not be maintained when they were replaced in turn by Venoms. Lincoln medium bombers were notably reliable, with a monthly serviceability rate nearly always in excess of 70 per cent - considerably higher than that of their Canberra replacements. Similarly, an average of over 75 per cent of the ageing Dakotas were serviceable at any time right up to their replacement in ^{1951 and} 1952 by Valettas, which could not manage a serviceability rate of more than 55 per cent for some time afterwards. Austers and Sunderlands proved fairly reliable, with average serviceability rates of 60-65 per cent, while light helicopters picked up from about 50 per cent for Dragonflies during their experimental stage from 1950 to 1952 to 60-65 per cent for Sycamores during the peak of their operations from 1955 to 1957. Naval S.55 medium helicopters were also fairly reliable, until four years of continuous operation in Malayan conditions took their toll, but reasonable maintenance of their R.A.F. counterpart, the Whirlwind, was only achieved by a quite disproportionate effort and, even so, averaged only 41 per cent in 1956. (5)

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Flying conditions and aircraft accidents ~~XXXXXXXXXX~~

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Average serviceability rates of about 50 per cent may not appear remarkable but they were comparatively high for aircraft that were operated for much of the time at their maximum capabilities under extreme climatic conditions. Uncertain weather, especially the rapid build up of cumulus cloud and sudden, violent tropical storms, was a constant hazard to flying in Malaya, while the broken terrain and paucity of navigational aids and alternative landing fields considerably increased the dangers that faced aircrews in this theatre. Several fatalities were caused by collision with the ground on low-flying airstrike or supply dropping missions and it was difficult to judge the deceptively steep rise and fall of the broken terrain once the horizon had been lost by descending below the level of the surrounding hills. This danger was accentuated by the need to concentrate on the search for target areas in the monotonous jungle cover, when only fleeting attention could be given to the attitude of the aircraft. To combat this danger instructions were given to aircrews to refer to their instruments and re-orientate themselves from a datum such as the horizon (6) whenever possible.

Accidents that were caused by pilot error became fewer as the campaign progressed and aircrews became more experienced but even in 1956 four fatal accidents on supply dropping missions could still be attributed in some measure to this cause. The accident rate attributable to structural failures in aircraft was also reduced as time went by and obsolete types were replaced. In the first nine months of 1951 ten of the twelve fatalities amongst R.A.F. aircrews in Malaya were caused by defects in Brigands or their armament, but during the next 18 months only four fatal accidents could be attributed to similar causes and during 1957 only one accident was caused by a technical failure. (7) Between 1955 and 1958 there were just over 30 major accidents each year in Malaya, of which an average of three each year proved fatal. Aircraft in the Malayan command, however, flew 60,000 or more hours in every year during this period and the accident rate

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fell from 6.4 per 10,000 flying hours in 1955 to 4.7 in 1958 - a rate which compared favourably with other commands and was reasonably good for a group that was operating a wide variety of aircraft under far from ideal conditions. (8)

Deployment of the Air Forces ~~XXXXXXXXXX~~

At the outbreak of the Emergency, the R.A.F. was unprepared for any commitment on the mainland of Malaya. During the period of retrenchment after the Second World War experiments had proved that Malaya could be reinforced by detachments from units in the United Kingdom* and, as economy measures, the garrison force had been reduced and the last wartime R.A.F. station on the mainland, at Kuala Lumpur, had been closed down at the beginning of May 1949, (9) leaving the airfield at Butterworth near Penang as the last R.A.F. foothold in the Federation. When the Emergency was declared in June 1948 all the R.A.F. squadrons that were available for assisting the Army and Police in restoring law and order were deployed entirely on Singapore Island at the three R.A.F. stations of Changi, Tengah and Sembawang and the Maintenance Base at Seletar. (32)

From 12 April to 9 May 1948 a small R.A.F. task force operated from the airstrip at Taiping in support of Operation 'Haystack' in Northern Perak. (10) It soon became apparent, however, that in order to implement the full plan for restoring law and order the R.A.F. would be required to play a significant role in the campaign and, if this was to be effective, a forward base would have to be formed in the Federation of Malaya. Following a meeting between the A.O.C. Malaya and the Officer Administering the Government an R.A.F. task force was established at the civil airport at Kuala Lumpur by the end of the first week in July 1948 and was renamed R.A.F. Kuala Lumpur on 20 September 1948. (11) The choice of Kuala Lumpur was inspired by the

* Six Lincolns of No. 97 (Straits Settlements) Squadron had flown to R.A.F. Tengah in April 1948 (Operation 'Red Lion II') to gain experience in dealing with the problems of reinforcing the A.C.F.E. from the United Kingdom in times of emergency.

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tactical advantage of operating from a base centrally situated in Malaya and by the proximity of the seat of Government of the Federation and of the Army and Police headquarters, with which close co-operation was expected.

Kuala Lumpur was the main centre of flying operations against the terrorists throughout the Emergency but, as ground force operations moved further north, it became necessary to transfer part of the offensive support force to Butterworth in 1950 and R.A.F. and R.A.A.F. aircraft flew from this base in support of the Army and Police in Northern Malaya for the remainder of the campaign.

Meanwhile, on 16 January 1950, Sembawang had been handed back to the Royal Navy on the expiration of its two year lease ⁽¹²⁾ and in the same year the decision was taken to concentrate all offensive support aircraft at Tengah and all the transport forces at Changi. ⁽¹³⁾ Tengah, with a runway length of 6,000 feet and capable of taking aircraft with an all up weight of 105,000 lb., ⁽¹⁴⁾ was the only station able to accommodate the medium bomber forces that arrived in the theatre in 1950 and armament dumps were accordingly developed there while stores and servicing facilities for the transport support force were developed at Changi. It was from these two main R.A.F. stations on Singapore Island that temporary or permanent detachments of both offensive and transport support aircraft were maintained at Kuala Lumpur or Butterworth on the mainland throughout the Emergency. The Maintenance Base at Seletar was the base of the Far East flying boat force throughout this period.

Besides Kuala Lumpur and Butterworth there were a number of less important airfields in the Federation of Malaya, such as Taiping and Ipoh, and it is conceivable that in the type of campaign that prevailed, with a number of local actions being mounted simultaneously, that there could have been some tactical advantage in deploying small detachments of aircraft to operate from these at Brigade level. In fact, Taiping was used by a small task force for one month prior to the outbreak of the Emergency in 1948 but the airfield was waterlogged for two hours

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every day and was quite unsuitable for offensive aircraft. (15) Towards the end of the campaign steps were taken to improve the airfields at Alor Star, Gong Kedah, Payar Lebar and Kuantan to meet future strategic requirements, (16) but the expense of improving airfields such as these and the difficulties that would have arisen from decentralizing administrative and servicing facilities ensured that the air forces involved in the Malayan campaign were concentrated as much as possible on the two R.A.F. stations in the Federation and the three on Singapore Island. By 1955, however, there were 11 airfields located throughout the Federation on which medium range transport aircraft could land if the occasion demanded (17) and these played a vital role in the air transportation of troops and stores that was necessary in a country where surface communications, especially from East to West and down the eastern coast, were quite inadequate.

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Even more important in establishing communication links with operational areas was the network of grass airstrips, suitable for light aircraft only, that covered the whole of the Federation. By 1955 there were 72 of these strips, (18) most of which were located west of the central spinal ridge of Malaya in the states of Perak, Selangor, Pahang, Negri Sembilan and Johore where the main operational areas lay. Six of these were rough strips adjacent to the police forts that had been established in deep jungle areas to protect the aboriginal populations from exploitation by the terrorists, and could be used by Pioneer aircraft only. A further 28 could take Austers in addition to Pioneers and the remainder could also be used by Beavers.

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In addition to these light aircraft strips numerous temporary helicopter 'pads' were cleared in the jungle by the ground forces, especially after 1952 when trooplifting into jungle areas became one of the major commitments of the air transport force. By the end of the Emergency hundreds of natural or artificial helicopter landing zones throughout the Federation were recorded at the A.H.Q. in Kuala Lumpur.

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62

Command and Control of the Air Forces ~~in Malaya~~

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Overall control of R.A.F. units in the Far East during the campaign was exercised by the C.-in-C., Air Command Far East (A.C.F.E.) (19) (redesignated Far East Air Force on 1 June 1949), while operational and administrative control was carried out by the A.O's.C. of the three territorial regions of Malaya, Hong Kong and Ceylon. The C.s-in-C. of the three services in the Far East were collectively responsible to the Chiefs of Staff and their committee was responsible for all matters affecting the employment of British armed forces in the region. Together with the Governor General of the Malayan Union they formed the British Defence Co-ordination Committee (Far East) which was concerned with strategic issues and the co-ordination of all civil and military matters that had any bearing on the defence of South-East Asia. (20)

Below the C.s-in-C., the A.O.C. Malaya, the Rear-Admiral Malaya and the G.O's.C. of Malaya and of Singapore sat with the High Commissioners of the Federation of Malaya and the Governor of Singapore on a local defence committee and, without them, on a local inter-service committee that was concerned with military matters relating to the defence of Malaya and Singapore. In addition to these duties the A.O.C. Malaya also acted as adviser on air matters to the Governors of Borneo and Sarawak. (21)

At the start of the campaign against the terrorists the command organisation of the R.A.F. in Malaya was not properly organised to meet the demands that were immediately made on it. The suggestion put forward in 1948 that A.H.Q. Malaya should be disbanded and its duties taken over by H.Q., A.C.F.E. had been forestalled as it was felt that Britain should show some proof of its intention to defend Malaya, especially as the R.A.F. was now regarded as the first line of defence in the area. (22) R.A.F. Kuala Lumpur had been closed down, however, and the limited forces that were available were concentrated entirely on Singapore Island. Such detachments as had been undertaken since the end of the war to such places as Car Nicobar and Kuching had been

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limited in size and mounted with plenty of warning. The problem of setting up a task force on the Malayan mainland at short notice, therefore, revealed serious deficiencies in the preparations made by A.H.Q. Malaya for a mobile campaign and strained its resources to the utmost. (23)

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With the establishment of a task force at Kuala Lumpur it was appreciated that control of the rear and forward elements of the R.A.F. in Malaya and Singapore could not be effectively exercised by the Main A.H.Q. at Changi. Consequently, an Advanced A.H.Q. was established at Kuala Lumpur on 6 July 1948, not as part of the task force on the airfield but alongside the Army H.Q., Malaya District, in the town itself. (24) A joint operations and intelligence centre was also set up at Army H.Q., which included staff from all three services, the police and some civilian liaison officers.

In view of the importance of close and continuous contact with Government officials and service commanders at this early stage of the campaign, the A.O.C. Malaya, Air Vice-Marshal A.C. Sanderson, made the Advanced A.H.Q. at Kuala Lumpur his base for the remainder of his tour, (25) visiting the Rear A.H.Q. at Changi when occasion demanded. His successor, Air Vice-Marshal F.J. Mellersh, continued this arrangement for some time but returned to Changi in the middle of 1949 as the situation in the Federation had become more stabilized by then and a great deal of work was accumulating at the Rear A.H.Q. in connection with the basic administration of the R.A.F. in the area and its organisation for its primary role of air defence. In response to his request a Group Captain was established as his representative at the Advanced A.H.Q. Kuala Lumpur and took over control of the aircraft based there in October 1949. (26)

Until November 1949 the air forces operating in support of Operation 'Firedog' were under the direction of two A.H.Q.s. Squadrons based on Singapore Island were controlled by the Rear A.H.Q. in support

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of the Army in Johore Sub-District but, since only two of the offensive support squadrons located there (Nos 28 and ~~No~~ 60 (Spitfire) Squadrons) played any part in anti-terrorist operations at that stage in the campaign, their control was delegated to the officer commanding their base at Sembawang. In the Federation aircraft based at Kuala Lumpur operated under the control of the Advanced A.H.Q., on behalf of the Army in Northern and Central Malaya. Since the commitments of the R.A.F. extended beyond Emergency operations Rear A.H.Q. were notified of all operational orders that were issued by Advanced A.H.Q. so that they could allocate their resources accordingly. All air support at this time was provided by personal arrangement between the G.O.C. of the Malaya and Singapore Districts and the A.O.C. Malaya or his representative at Kuala Lumpur and the officer commanding R.A.F. Sembawang. There was little co-ordination between the two areas of operation except on the few occasions when a greater air effort was required for operations in Southern Johore than could be provided by Sembawang, when requests for reinforcements were relayed to Kuala Lumpur by the Operations Control Room at Rear A.H.Q., Changi - an arrangement that on occasions worked in the opposite direction.

On 1 May 1949 the division which had hitherto existed in the system of Army command in Malaya was rectified when Johore Sub-District passed from the control of the G.O.C. Singapore District to that of the G.O.C. Malaya District. (27) All military operations in connection with the Emergency were now directed from Kuala Lumpur and the logical parallel on the air side was for the Advanced A.H.Q. to be given operational control of all aircraft operating against the terrorists under the general direction of Rear A.H.Q. This step was duly taken on 1 November 1949. (28)

On 1 April 1952 No. 230 Group (redesignated A.H.Q. Singapore on 16 February 1953) was formed to take over the administration of all R.A.F. units in Singapore Island except Tengah, including Changi, and its satellites at Car Nicobar and Labuan, and Seletar. (29) A.H.Q.

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Malaya retained full operational and administrative control of Tengah on Singapore Island and Kuala Lumpur and Butterworth on the mainland as well as operational control of those parts of the Far East Flying Boat Wing at Seletar and the Far East Transport Wing at Changi that were allocated to Operation 'Firedog' tasks. The main purpose of this division of responsibilities was to relieve the A.O.C. Malaya of all extraneous duties so that he could transfer his headquarters to Kuala Lumpur and concentrate solely on Emergency matters. The proliferation of the links in the chain of command back to H.Q., F.E.A.F., however, only exacerbated existing difficulties and meant that, in effect, the Director of Operations responsible for all Emergency matters had now to deal with two A.O.C.s. The A.O.C. Malaya was directly concerned with the operational efficiency of the Far East Flying Boat and Transport Wings yet their station requirements were now the responsibility of No. 230 Group, their unit establishment and the allocation of their tasks was decided by H.Q., F.E.A.F. and Transport Command retained some control over their training programme through their Examining Teams. Similarly, the A.O.C. Malaya was responsible for air supply operations in support of the ground forces in Malaya and also for the air defence of Borneo yet in the one case the packing of parachutes at Changi and in the other the R.A.F. station at Labuan were both under the control of No. 230 Group. (30)

At least one of these difficulties was sorted out when the Far East Flying Boat Wing was placed under the administrative control of the A.O.C. Malaya on 27 April 1953 (31) but the fact remained that the transference of long-term planning duties to H.Q., F.E.A.F. and of much of the administrative work on Singapore Island to H.Q. No. 230 Group did not leave enough work to justify the maintenance of the Rear A.H.Q. Malaya. Its amalgamation with H.Q., F.E.A.F. was considered too unwieldy and impolitic but, on the other hand, the relatively minor role of the R.A.F. in the campaign against the terrorists hardly justified the establishment of a complete A.H.Q. alongside the Army H.Q. at Kuala Lumpur, especially as the latter only issued general

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directives whose application was worked out by co-operation between the Army and the Police at State level. Such planning as was necessary between the Army and the R.A.F. for Emergency operations was carried out quite adequately by the Land/Air Operations Room at the Advanced A.H.Q. in Kuala Lumpur.

Nevertheless, following the decision to concentrate operations against the terrorists at their weakest point in Central Malaya, the proposal to move the Rear A.H.Q. from Changi to Kuala Lumpur was revived and, after some delay owing to accommodation difficulties, this move was carried out on 15 February 1954, ⁽³²⁾ thus completing a cycle as A.H.Q. Malaya had left Kuala Lumpur for Changi in 1946. However, while the Air Control Centre, which controlled all aircraft while they were airborne over the Federation of Malaya, and the Administrative, Technical and Signals Staffs were located at the Rear A.H.Q. on the airfield at Kuala Lumpur, the Air Staff was located at the Advanced A.H.Q., which now became the Main A.H.Q. Malaya and continued to operate from the Army H.Q. in the town itself. Here a Joint Operations Centre was set up which represented the final evolution in the joint system of command and control exercised by the ground and air forces during the Emergency and which was the keystone of the inter-service co-operation on which the campaign was fought and won. For the first time in the Emergency centralised control and joint planning of all operations was exercised by a small, efficient unit that co-ordinated all bids for air support from police, army or civilian authorities. Since the A.O.C. Malaya was a member of the Director of Operations Committee as well as in control of the Joint Operations Centre, he could make a close appraisal of the tactical requirements for the daily conduct of air operations against the terrorists and could allocate his small forces most effectively between them and the other commitments of the R.A.F. in the theatre. Simple operational orders were issued by the Joint Operations Centre to the officers commanding the stations concerned, whether on Singapore Island or in the Federation, who then allocated specific aircraft and briefed aircrews for each operation. The final execution of these orders in this type of campaign, however,

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placed a high degree of responsibility on the initiative of individual aircraft captains, which was unusual in a period of inflationary command systems.

(37) As long as planning for joint operations required some form of Joint Operations Centre at H.Q. Malaya Command, it was not possible to achieve complete unification of the two A.H.Q.s at Kuala Lumpur but this dichotomy became more apparent as the offensive support role of the R.A.F. in the campaign decreased and increasing emphasis was placed on the development of an efficient air defence organisation and the completion of planning for wartime operations. All branches except the Operations and Intelligence Staff were moved from H.Q. Malaya Command to the A.H.Q. at R.A.F. Kuala Lumpur on 5 April 1957 and the Joint Operations Centre followed when the Army H.Q. moved to Seremban on 1 July 1957. (33) By now the R.A.F. contribution to Operation 'Firedog' was increasingly dominated by air supply operations and, in January 1957, the post of Officer Commanding the Air Supply Force had been established at Kuala Lumpur to ensure the supervision of operational (34) procedures and training in this role.

When Malaya became independent on 31 August 1957 the conduct of Emergency operations and the maintenance of law and order became the exclusive responsibility of the Governments of Malaya and Singapore but, at their request, the Governments of the United Kingdom, Australia and New Zealand agreed to give such assistance as was practicable in the light of their total commitments. (35) The A.O.C. Malaya, as commander of the Commonwealth Air Forces, was responsible to their governments through the C.-in-C., F.E.A.F. but he now took his operational directions relating to the Emergency from the Federation's own Director of Emergency Operations. The campaign was controlled by the Emergency Operations Council through the Operations Sub-Committee and the A.O.C. Malaya was a member of both, although he usually delegated his membership of the latter to the officer commanding R.A.F. Kuala Lumpur. In principle the Overseas Commonwealth Forces in Malaya were

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68

employed after Independence only when suitable Federation forces were not available. In effect, this meant that the Commonwealth Air Forces continued to provide all the air support that was needed. (36)

With the achievement of Independence by the Federation of Malaya, however, it became politically embarrassing for the A.O.C. Malaya to retain his title - a title that became even more inappropriate when it was finally decided to rectify the unequal division of responsibility in the area by disbanding A.H.Q. Singapore and transferring all its flying units to the command of A.H.Q. Malaya. (37) On Independence Day, 31 August 1957, therefore, A.H.Q. Malaya became H.Q. No. 22⁴ Group (38) an appropriate title since No. 22⁴ Group had been formed originally at Singapore in 1941 and, after the Burma campaign, had taken part in the liberation of Malaya and Singapore and had received the surrender of the Japanese at Kuala Lumpur (under its commanding officer the Earl of Bandon who was the current C.-in-C., F.E.A.F. in 1957) before becoming A.H.Q. Malaya in October 1945.

No. 22⁴ Group continued to control the R.A.F. Stations at Tengah, Kuala Lumpur and Butterworth and took over control of Changi from A.H.Q. Singapore on 11 November 1957. (39) On 1 January 1958 A.H.Q. Singapore was dissolved and its last remaining responsibility, the R.A.F. Maintenance Base at Seletar, was transferred to the control of H.Q., F.E.A.F. (40) No. 22⁴ Group continued to control R.A.F. Butterworth (41) but, on 1 July 1958, it was transferred to the R.A.A.F. and became the headquarters of the R.A.A.F. command that had been established at Changi a month earlier to administer a fighter and a bomber wing as part of the Commonwealth Strategic Reserve. (42) This command replaced No. 90 (Composite) Wing R.A.A.F. that had administered Australian air forces in Malaya since June 1950.

R.A.F. Kuala Lumpur continued as the last R.A.F. station in Malaya but its transfer to the embryonic Royal Malaysian Air Force (R.M.A.F.) was heralded on 1 April 1959 when H.Q. No. 22⁴ Group moved back to Singapore Island after five years in the Federation to concentrate on the primary task of training the Strategic Reserve. (43) The R.A.F.

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Maintenance Base at Seletar became the new Group Headquarters on 3 April 1959 and was renamed R.A.F. Station Seletar on 1 August 1959 since units were now deployed there that were not associated with maintenance duties. ⁽⁴⁴⁾ It was not until 1 November 1960, however, that the administrative control of this base was transferred from H.Q., F.E.A.F. to H.Q. No. 22⁴ Group in exchange for that of Changi. ⁽⁴⁵⁾

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Coincident with the move of H.Q. No. 22⁴ Group from Kuala Lumpur, No. 22⁴ Group 'Firedog' Transport Support Force had been formed there on 1 April 1959 to carry out the remaining transport duties in the campaign under the direction of the commanding officer of the station until the R.M.A.F. was able to take over this commitment. ⁽⁴⁶⁾ The Joint Operations Centre continued to operate at Kuala Lumpur but, on 30 June 1960, it was handed over to the R.M.A.F. who assumed operational control of all Commonwealth transport aircraft flying in support of Operation 'Firedog' on 1 July 1960. ⁽⁴⁷⁾ At the same time the Air Control Centre at Kuala Lumpur closed down and some of its Signals facilities were transferred to R.A.A.F. Butterworth as the 'Firedog' Air Reporting Section to carry out surveillance of all Commonwealth aircraft still participating in the campaign on behalf of H.Q., F.E.A.F. Finally, on 1 October 1960, two months after the Emergency had been declared over, R.A.F. Kuala Lumpur, the nexus of air operations against the terrorists throughout the twelve years of the campaign, was handed over to the R.M.A.F. ⁽⁴⁸⁾

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CHAPTER 3

OFFENSIVE AIR SUPPORT IN THE MALAYAN CAMPAIGN

The limitations of offensive air support ~~was~~

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The mounting of air strikes against the enemy and his supply routes is one of the major roles of air forces in support of ~~the~~ ground forces in a conventional war. The Malayan campaign, however, was not a conventional war and local conditions prevented the air forces from adopting their traditional role in policing a semi-civilised country, those of regional interdiction and the inverted blockade. (1) Instead they were called upon to fight a campaign in a theatre in which they had little experience of offensive air support and in which all the advantages appeared to lie with the enemy - all that is except the absence of ground or air opposition which prevailed throughout the campaign.

Successful airstrikes normally depend on a number of factors, including high grade intelligence information giving the exact location of an identifiable target, an accurate method of pinpointing this target and an attacking force capable of accurate navigation to the target and carrying a weapon suitable for its destruction. In Malaya all these conditions were problematical. In the dense jungle that covers 80 per cent of a country the size of England and Wales less than 10,000 terrorists operated in gangs normally less than 100 strong and afforded, at least in the later stages of the campaign, a highly mobile fleeting target that was effectively screened from the air. (2) These terrorists were the only legitimate target, but they were difficult to discriminate from innocent inhabitants of jungle areas, they retained the initiative in the timing and location of their attacks and were not necessarily dependant on permanent and vulnerable bases, while their intelligence and warning systems often appeared more ~~effective~~ ^{effective} than those of the ground forces that opposed them. By 1951 they had become increasingly sensitive to all forms of air attack and were taking the necessary precautions to protect themselves, including the screening of temporary camps from the air, the posting of air-raid sentries and, less commonly,

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the digging of deep shelters and slit trenches in areas where they hoped to remain undisturbed for long periods. In any case, the cover of the jungle trees and undergrowth, especially in secondary jungle, provided a natural air-raid protection. Direct casualties from aerial bombardment were, therefore, at the best fortuitous and the destruction of their temporary 'bashes' was hardly more than an inconvenience to the terrorists.

(39) Besides the absence of clearly defined targets the inevitable delays that occurred, while the necessary preliminaries to all airstrike action in the campaign were carried out, prejudiced the element of surprise on which most successful attacks depend and also prevented an attack from being made at the optimum psychological moment. Over all lay the hazard of local weather conditions that could, and did, frustrate many airstrike missions and which ensured that, before the advent of radar target marking techniques in 1955, offensive air support could only be guaranteed in the mid-morning period after the dispersal of the early morning ground fog or thin stratus and before the rapid build up of cumulus around mid-day which generally developed into storms that frequently lasted well into the night. This limitation in the time factor severely restricted the scope of associated ground operations on which the offensive air support force was normally entirely dependent for employment. (3)

(40) Under these conditions the characteristics of most airstrike aircraft, speed of action, surprise, accurate hitting power and mobility could not be exploited to the full and, since there was a general lack of information about the results of their action, their obvious limitations in this type of campaign ensured that offensive air support was only provided amidst conflicting views of its purpose and value and that constant thought was given to the evolution of tactics designed to improve the effectiveness of the air weapon.

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The aims of offensive air support ~~is~~: 'Pinpoint' and harassing attacks

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The basic intention of all airstrikes in the Malayan campaign was to kill as many terrorists as possible and to this end two main types of offensive air action were employed; those that were mounted against pinpoint targets, such as a terrorist camp, and those against an area of jungle that was reliably reported to contain a number of terrorists. The emphasis on these two main types of attack changed as the campaign progressed. In 1948, before the terrorists fully appreciated their danger from air attack, camps for 200-300 were commonly to be found in clearings in the jungle and provided excellent pinpoint targets. (4) It was unfortunate that at this time the potential of the offensive air support force was not fully appreciated by military commanders. By early 1949 the terrorists had become sensitive to the dangers of air attack and adopted elaborate camouflage techniques which rendered the detection of their camps from the air extremely difficult. Attacks were therefore carried out on the basis of area targets that averaged 1,000 yards square, or line targets up to 6,000 yards in length, with the intention of achieving the indirect elimination of the terrorists by 'flushing' them out of the target area into prepared ground ambushes, by 'softening up' an area before the ground forces entered it, by upsetting the sentry organisation of the terrorists and splitting them into smaller, more vulnerable groups and by creating 'stop-lines' or offensively patrolled corridors 100 yards wide that were strategically deployed to direct the terrorists' line of retreat. (5) Because progress through the jungle was slow it was possible to contain the terrorists within a limited area by sustained harassing operations from the air until the ground forces arrived. In this type of attack direct kills by airstrike action were considered in the nature of a bonus. The main drawback to 'flushing' attacks, however, was that they demanded close co-operation with the ground forces and the placing of ambushes even as far away as six miles from a terrorist camp invariably excited their suspicion and was enough to make them disperse from the target area. The R.A.F. did not always appreciate

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the need for these ground 'stops' and considered that unsupported airstrikes would be more effective provided they were given a clearly defined area of jungle as a target. (6)

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During the latter part of 1952 and early 1953 the bombing of large areas of jungle with small numbers of aircraft was considered wasteful and uneconomic and a change in policy occurred. An improvement in intelligence reports, derived from information given by surrendered terrorists, as the initiative in the campaign swung towards the security forces, offered an increasing number of pinpoint targets and the main offensive effort by all available aircraft was directed against these. (7)

The implementation of this policy, however, coincided with, and therefore clearly influenced, a marked decline in the number of terrorist surrenders and the general policy governing offensive air support was changed yet again. While still not accepting the validity of indiscriminate area bombardment, airstrikes were no longer directed solely against pinpoint targets and large-scale harassing operations were again undertaken in conjunction with food denial operations in jungle areas that were known to contain terrorists. (8)

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By 1954 the impending introduction of new aircraft into the theatre and the necessity of concentrating on their primary task of training for air defence, coupled with the lack of evidence about the effectiveness of airstrike action, ensured that airstrikes were limited solely to a harassing role except when first rate target intelligence relating to pinpoint or small area targets was available. (9)

The depletion of war-time bomb stocks and the resultant economies in weapon expenditure, however, made it necessary to abandon large scale harassing operations in favour of concentrated attacks that were mounted only on reliable information. (10)

The greater accuracy of bombing which this policy required was achieved by improved target location and marking techniques and it was possible to revive, during 1955 and 1956, the principle that airstrikes were designed primarily to kill rather than to harass the enemy. However, the paucity of target intelligence at this stage in the campaign, as the

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size of the terrorist forces was gradually whittled down, made the acquisition of an accurate aiming point increasingly rare and from 1956 to the end of the Emergency the air forces had to resign themselves once more to a harassing role. This decision was unwelcome in some quarters since this type of attack was considered of doubtful value and a misuse of offensive air power⁽¹¹⁾ and, during 1958, a further decline in target information and the replacement of the last piston-engined aircraft in the airstrike force by jets made it necessary to economise still further in expensive harassing operations and offensive air support to the ground forces ceased altogether in August 1959.

Immediate air support

While the merits of pinpoint or harassing airstrikes provided scope for debate throughout the campaign, the air forces were reluctantly forced to accept, although not until 1952, that one of their major roles in conventional warfare, that of immediate close support action, was impracticable in the conditions that prevailed in the Malayan campaign.⁽¹²⁾ This form of air support is only of value against an enemy whose position is accurately known and who is anxious to retain the ground he occupies and neither of these conditions applied to the terrorists in Malaya. Their strength lay in concealment and mobility and every one of their operations was planned with the intention of avoiding contact with the security forces. When contacts did occur the ensuing engagement was a brief, fleeting affair and the time factor seldom, if ever, permitted strike aircraft to be brought over the target before it ceased to exist. Information that was received about possible terrorist locations was usually inaccurate and had to be checked on the ground, which resulted either in an immediate engagement or the dispersal of the enemy. If contact was not made with the terrorists the information remained too inaccurate to be justifiably offered as a basis for airstrike action. Even if aircraft had been in the air on immediate call, after the 'cab-rank' principle developed in the Second World War, the necessary task of ascertaining the position of any security forces or civilians in the area extended the reaction time to

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(13) a request for air support until it was ineffective. Besides, ground to air communications were reduced to 25 per cent of their normal efficiency in jungle conditions and the current Army 62 wireless set weighed 150 lb. (a ten man load for jungle patrols) and needed a tree aerial which took time to erect. (14) The alternative use of a control car to call up air support was generally impracticable as it could not get right into the contact area. Moreover, as several ground operations were undertaken simultaneously throughout the Federation, the number of patrols that might contact a terrorist gang at any one time ran into hundreds and it was as impracticable for the air forces to provide continuous standby patrols for all of them as it was for them to delay an engagement. The number of potential contacts in the period 1 to 20 May 1952, for example, came to over 2,000 and in the 145 actual contacts that were made direct air assistance was of possible value on only one occasion. (15) In any case, the dangers of disseminating the responsibility for calling up offensive air support to the company or platoon level on which the ground campaign was fought hardly need stressing in view of their fluid tactical deployment.

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Thus, although ground attack aircraft were maintained in a good state of readiness* and could be airborne within 30 minutes of the receipt of a call for airstrike action, (16) the normal chain of communication from platoon or company through battalion and brigade to the Joint Operations Centre at Kuala Lumpur ensured that the quickest response to a bid for an airstrike was about 3½ to 4 hours and that most offensive air support was provided as part of pre-planned operations. One form of immediate air support action that was practised effectively, however, was in the defensive role of providing air cover for road convoys, which was a regular commitment and undoubtedly forestalled many attempted ambushes.

* At the start of the campaign airstrike aircraft were kept at a readiness state of four hours, which had been reduced to one hour by 1950 (largely owing to the introduction of standing orders for the relief of Police posts under attack). At the height of the campaign in 1951 and 1952 four fighters and two light bombers were on immediate call, as was one medium bomber in 1954 and 1955 - after which readiness states were generally relaxed to four hours or more.

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whole squadron to the Middle East Air Force. The strength of the air striking force in Malaya was maintained, however, by the arrival of the remainder of No. 45 (Beaufighter) Squadron at Kuala Lumpur on 16 May 1949, while the loss of No. 28 (Spitfire) Squadron, which had been transferred to Hong Kong five days earlier, was offset by the arrival of No. 33 (Tempest) Squadron on board H.M.S. Ocean at Seletar on 8 August 1949 and the increase of the Spitfire strength of No. 60 Squadron from eight to seventeen aircraft on 15 August. (21) No. 205 (Sunderland) Squadron was transferred from Ceylon to Seletar on 3 September 1949, (22) bringing the total airstrike force that was available after 15 months of the Emergency to ten Sunderlands, seventeen Spitfires, sixteen Tempests and eight Beaufighters. The Beaufighters were withdrawn from service at the end of 1949, No. 45 Squadron being re-equipped with eight Brigands on 6 December, (23) while a further eight Brigands of No. 84 Squadron arrived at Tengah on indefinite detachment from M.E.A.F. on 9 April 1950 (Operation 'Tireless'). (24)

On 20 March 1950 a new phase in offensive air operations against the terrorists in Malaya opened with the arrival of eight Lincolns of No. 57 Squadron at Tengah (Operation 'Musgrave'). (25) By this time a virtual stalemate had been reached in combined operations against the terrorists and the qualified optimism, based on the mistaken belief that the type of air attack being provided was sufficient to achieve its aim, had evaporated. It was clear to the A.O.C. Malaya that the current air effort was not enough to achieve positive results and that there was a clear necessity for a greater striking force in order to attain the necessary density of bomb pattern over the increased target areas that were resulting from less accurate target information. Since the terrorists rapidly dispersed under air attack a heavy initial blow was essential and this could best be achieved by a formation of medium bombers. It was stressed that many of the sceptical opinions that had been propounded on the value of airstrike action were based on the light attacks so far carried out by small numbers of fighters and light bombers. By 1950 there was some evidence that the physical results

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78

of airstrikes were better than could be assessed and that they were having a considerable effect in harassing the enemy and increasing the chances of driving them into contact with the security forces. The advent of improved navigational aids and target marking techniques opened the possibility of mounting sustained attacks round the clock and, as it was considered vital not only to maintain the existing pressure on the terrorists but to take exceptional measures to prevent the situation from worsening, a request was made for at least twelve or sixteen medium bombers. (26)

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In Whitehall this request was met by opposing counsels. The former C.-in-C., F.E.A.F., Air Marshal H.P. Lloyd, considered that heavy saturation bombing was not the answer to the problem of attacking the terrorists in the jungle owing to the lack of positive aiming points and the absence of any sort of bomb-line for the protection of the security forces in the vicinity of an airstrike. He considered that the existing resources of strike aircraft and weapons in the theatre were adequate to deal with the available fleeting targets that were far more vulnerable to quick precision attacks than to heavy blast bombing. Bomber Command stressed the prejudicial effects on their training programme that any reinforcement of the air forces in Malaya with medium bombers would have, quite apart from the considerable logistical

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problems that would have to be faced in the supply and maintenance of such a force in a theatre where there were no spare parts and servicing facilities were quite inadequate. (28)

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Faced with these opposing viewpoints the Air Ministry agreed that eight Lincolns should be detached to Malaya from Bomber Command for a period of two months, which was later extended to four and then to six months (Operation 'Musgrave'). (29)

At the request of both the Colonial and the Foreign Offices an attempt was made to play down their arrival for fear of the adverse propaganda their use would provoke, especially if they should prove ineffective. (30)

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No. 57 Squadron arrived at Tengah on 20 March 1950 and was succeeded by detachments of eight Lincolns from No. 100 Squadron on 10 July and from No. 61 Squadron on 1 December. (31) Meanwhile, representations had been made to the Australian government that the campaign in Malaya was not merely a matter of the internal security of a British colony but an active front in the cold war against Communism. (32) This appeal elicited a welcome response in the form of a further six Lincolns of No. 1 (R.A.A.F.) Squadron which arrived at Tengah on June 1950 and were to be the mainstay of the offensive air support operations for the next eight years. All the medium bombers that arrived in 1950 were operated from Tengah as this was the only station with adequate facilities for them. (33) The inconvenience of this deployment for airstrike operations against the terrorists in Northern Malaya was offset to some extent by the fact that these bombers were always flown in support of pre-planned operations when a quick reaction time was not essential. Tengah had become the main base for all the airstrike forces in the theatre after the return of Sembawang to the Royal Navy on 16 January 1950 (34) and it was ^{from} here that detachments of light bombers and fighters were maintained at Kuala Lumpur, between 1948 and 1952, and at Butterworth, from May 1950 until the end of the Emergency, to provide immediate air support in Northern Malaya if required. Any further deployment of small airstrike forces to minor airfields was ruled out by the difficulties of providing servicing and administrative facilities and would in any case, have offered little advantage since all parts of Malaya were within an hour's flying time from either Tengah, Kuala Lumpur or Butterworth and the necessity of quick reaction to provide immediate air support became progressively less as the campaign developed.

After two years of the Emergency the airstrike force reached its maximum strength of sixteen Spitfires, sixteen Tempests, sixteen Brigands, fourteen Lincolns and ten Sunderlands. The situation in the second half of 1950 became less satisfactory, however, as the war in

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80

Korea necessitated the departure of No. 209 Sunderland Squadron to Iwakuni in Japan on 9 October and the five Sunderlands of No. 205 Squadron was left to maintain the flying-boat commitment in the Malayan campaign for the next two years. ⁽³⁵⁾ The loss of No. 209 Squadron was potential rather than actual, however, as the type of action for which they were best suited was rare at this stage of the campaign. More serious was the departure of No. 61 (Lincoln) Squadron without relief ⁽³⁶⁾ when its tour ended on 29 March 1951. Towards the end of 1950 the Air Ministry had been subjected to further pressure from Bomber Command to end the detachment of part of their force to the Far East since they had been reduced to six Lincoln Squadrons in the United Kingdom and were concerned about maintaining their commitment to N.A.T.O. during ⁽³⁷⁾ the coming period of conversion to Washingtons and then to Canberras. Moreover, airstrikes against indeterminate and undefended targets in Malaya were no training for a bomber force, especially with regard to night and blind bombing techniques. Concern was also expressed over the heavy expenditure on air weapons that was occasioned by the Lincoln force in Malaya. ⁽³⁸⁾ Between March 1950 and February 1951 £1,357,500 had been spent on 1,000 lb. and 500 lb. bombs alone in the theatre and the estimated future cost of £2 million pounds per annum on air weapons was equivalent to the cost of 100 fully equipped Vampire fighters. ⁽³⁹⁾ There was also a serious shortage of 1,000 lb. bombs in the theatre and a surplus of 500 lb. bombs that were suitable for arming lighter aircraft. Under these circumstances some definite proof was required that the results achieved by the medium bomber force in Malaya was commensurate with the effort involved and, since none was forthcoming, the Lincolns of Bomber Command were withdrawn as an unnecessary luxury, much to the regret of the A.O.C. Malaya. ⁽⁴⁰⁾

The conflicting views that were put forward over the efficacy of the Lincolns that were detached from Bomber Command to Malaya was a prime example of prosecuting a cold war while at the same time preparing for a hot war with inadequate resources to carry out both

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satisfactorily. There is no doubt that, as the Air Ministry and Bomber Command feared, heavy airstrikes against the terrorists in Malaya during 1951 were being used largely through lack of any alternative method of harassing and killing the enemy and to this extent they justified themselves to the local commanders who were concerned with maintaining the offensive until the local administration was capable of carrying out the necessary civil measures. To observers in Whitehall, however, concerned as they were with wider issues and imbued with an increasing belief in an ultimate political and economic solution to the Emergency, the temptation was to reduce airstrike action to the minimum commensurate with maintaining the status quo, especially as any exaggeration of its efficacy against the terrorists might have created a demand for its increase at the expense of further ground force action. (41)

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Part of the reduction in the airstrike potential caused by the termination of the Lincoln detachment from Bomber Command was offset by increasing the establishments of No. 1 (R.A.A.F.) Squadron from six to eight Lincolns and of No. 45 and No. 84 Squadrons from eight to ten Brigands each. (42) However, as two of the fighter squadrons in the command underwent re-equipment at about this time there was a marked reduction in the availability of strike aircraft for anti-terrorist operations. The last fourteen Spitfires in service with the R.A.F. were withdrawn from No. 60 Squadron in December 1950 and January 1951, having carried out over 1,800 operational sorties against the terrorists and were replaced by Vampire V's. (43) The whole squadron was out of line from 2 January to 26 April 1951 for training in its primary role of air defence, after which it helped to maintain the fighter detachment at Butterworth but was otherwise available for 'Firedog' operations only to a limited extent for the remainder of the campaign. The Tempests of No. 33 Squadron, the last in service with the R.A.F., had also become a wasting asset by 1950 due to low serviceability and they were replaced by Hornets early in 1951. (44) Conversion of this squadron was undertaken gradually so that while the last flight did not

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finish operations with Tempests until June 1951 the first flight was flying Hornets by July and the whole squadron was operational at Butterworth by August, although only at three-quarter strength. Despite this re-equipment programme the serviceability rate of the airstrike force was maintained at 60.7 per cent throughout the period January to August 1951 but its potential was considerably reduced when the use of guns on Brigands was prohibited after the aircraft had been grounded for a spell for examination. (45) Soon afterwards Vampires experienced trouble with their ammunition chute doors and the guns of the Hornets were restricted when it was found that ejected links were damaging the tailplanes. Finally the bomb carriers of both Vampires and Hornets developed faults that required modifications in their design. (46)

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The reduction in the airstrike potential became so acute that for short periods in December 1949 and in January and November 1950, Harvard communication aircraft of Station Flights and the training element of fighter squadrons were fitted with bomb carriers and pressed into service as dive bombers. (47) Further relief was provided from the end of July to mid-September 1950 by twelve Seafires of No. 800 (R.N.) Squadron and eighteen Fireflies of No. 827 (R.N.) Squadron from H.M.S. Triumph, which were made available for operations against the terrorists in Malaya. (48) The assistance of these aircraft proved welcome to both services and naval strike aircraft from carrier groups that were cruising in Malayan waters were used subsequently in the campaign when the opportunity arose, including those from H.M.S. Glory in October 1952 and those from H.M.S. Warrior in September 1954.

By the end of 1951 the airstrike force that was available for 'Firedog' operations consisted of eight Lincolns, twenty Brigands, sixteen Hornets, sixteen Vampires and ten Sunderlands (No. 88 (Sunderland) Squadron having returned temporarily from Hong Kong) (49) The re-equipment programme started in 1951 continued throughout 1952, however, with a deleterious effect on the availability of operational

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strike aircraft. No. 45 Squadron was withdrawn from operations on 31 January 1952 for conversion from Brigands to Hornets, returning in June at half strength, while No. 60 Squadron exchanged their Vampire V's for Vampire IX's on 24 March. (50) At the end of December 1952 the Brigands of No. 84 Squadron had to be grounded because of structural failure *was reduced to a cadre basis* and the squadron was ~~disbanded~~ on 1 February 1953. Its number plate was transferred to M.E.A.F. on 20 February 1953. (51) ~~leaving~~ *Eight* Lincolns, thirty-two Hornets, sixteen Vampires and nine ~~Sunderlands~~ *were left* to carry out offensive support operations against the terrorists.

Throughout 1952 the Air Staff in London had continued to be concerned with economising in the airstrike effort that was being expended in Malaya and the A.O.C., Malaya, was exhorted to consider all reductions that could be achieved without altering the course of the campaign so that squadrons could concentrate on training for their primary theatre role and on other commitments such as 'showing the flag' in other parts of the Far East. During 1953, however, full scale combined operations were planned in the hope of terminating the campaign and, in order to increase the available offensive air support, additional medium bomber reinforcements were requested to supplement No. 1 (R.A.A.F.) Squadron. (52) The Air Ministry readily agreed and plans were mooted to send the Lincoln squadron that was normally sent on a training cycle to the Middle East during the winter months (Operation 'Sunray') or even the complete wing of twenty-four aircraft that were available to reinforce the Middle East in an Emergency (Operation 'Alacrity'). (53) However, for administrative reasons and because of the unpredictability of future operations against the terrorists, it was important to have one squadron standing by in Malaya at all times and on 1 September 1953 No. 83 Squadron arrived at Tengah from Hemswell to reintroduce the Bomber Command detachment of medium bombers that were to form part of the airstrike force in Malaya for the next three years. (54) Between September 1953 and March 1955 detachments of eight Lincolns (Operation 'Bold') from Nos. 83, 7 and 148 Squadrons were deployed at Tengah for tours of three to five months,

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after which this commitment was taken over until August 1956 by detachments of six or eight Canberras from Nos. 101, 617, 12 and 9 Squadrons (55) (Operation 'Mileage') that operated from Butterworth.

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The two medium bomber, three fighter and two Sunderland squadrons that constituted the offensive air support force at the end of 1953 continued to operate throughout 1954 and 1955, although with some change in their constituent aircraft in the latter year. At the beginning of 1955 Nos. 205 and 209 Squadrons were amalgamated at Seletar with the eight remaining Sunderlands (56) and soon afterwards the Vampires of No. 60 Squadron at Tengah were exchanged for Venoms. (57)
On 31 March 1955 Nos. 33 and 45 Squadrons were amalgamated with a total strength of twenty Hornets and the combined squadron began retraining with sixteen Vampires soon afterwards, prior to its re-equipment with sixteen Venoms in October 1955 when it was renumbered No. 45 Squadron (58) and operated from Butterworth. The total number of fighter squadrons was brought up to three again with the arrival at Tengah from Cyprus of the sixteen Venoms of No. 14 (R.N.Z.A.F.) Squadron in April and May 1955 (59) and the year ended with the replacement of Lincolns by Canberras in the Bomber Command detachment and its transfer from Tengah to Butterworth. This detachment ended in September 1956 since its maintenance was prejudicing Bomber Command's commitments to SACEUR (60) but smaller detachments were sent to Malaya in its place for periods of two weeks every three months that were timed to coincide with any major operations against the terrorists. (61)

The airstrike force of one Lincoln, three Venom and one Sunderland squadron that was available for Operation 'Firedog' at the end of 1956 was retained throughout most of 1957, although No. 45 (Venom) Squadron returned from Butterworth to Tengah on 15 November to re-equip with Canberras. (62) During 1958, however, the reduced commitment in the offensive air support role in the campaign against the terrorists was reflected in a run-down in the available forces. During 1954 and 1955 the value of airstrike action in carrying the war to the diminishing number of hardcore terrorists had achieved wide recognition

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which culminated in the directive that it was to be employed whenever ground force action could not be mounted quickly or easily. (63) From 1956 onwards, however, the continuing lack of evidence of the results achieved for a high expenditure on air weapons and the need to concentrate on primary training roles ensured that offensive air support was reduced to the minimum. Strict selection and careful categorisation of targets submitted by the ground forces was exercised and full support was provided only if there was a reasonable chance of furthering their aims and only if there was a high probability that terrorists were present. (64)

As part of the gradual reduction in airstrike forces Sunderlands were employed for the last time on 'Firedog' operations in March 1958, prior to the re-equipment of the combined No. 205/209 Squadron with Shackletons that concentrated solely on their maritime rescue and reconnaissance roles, (65) while on 1 September 1958 the medium bomber commitment ceased with the departure of No. 1 (R.A.A.F.) Squadron to Australia. (66) The potential airstrike force received considerable reinforcements in the second half of 1958 with the build up of the Commonwealth Strategic Reserve in Malaya but only a small part of this force was actually required for the remaining offensive air support commitments in Operation 'Firedog'. The Venoms of No. 14 (R.N.Z.A.F.) Squadron were replaced at Tengah by the Canberras of No. 75 (R.N.Z.A.F.) Squadron on 1 July 1958, while Nos. 2(B) and 3(F) Squadrons of the R.A.A.F., equipped with Canberras and Sabres respectively, arrived at Butterworth on 11 November, where a small detachment of Bomber Command Valiants was also deployed for short periods of two weeks at three monthly intervals (Operation 'Profiteer'). (67) The arrival of these forces at Butterworth restored the ability of the air forces to respond quickly to bids for strike action in Northern Malaya, that had been affected by the withdrawal of No. 45 Squadron to Tengah in November 1957, but such action was hardly ever required at this stage in the campaign. By the end of 1958 three light bomber and two fighter squadrons were deployed in the Malayan theatre but demands for air-strike action of any kind had declined so much that No. 45 Squadron

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was released from all operational commitments on 29 September 1958, shortly after celebrating the tenth anniversary of its first sortie against the terrorists, and only one of the remaining Canberra squadrons was kept in operational readiness at any one time. (68) A further Sabre squadron, No. 77(F) R.A.A.F., arrived at Butterworth on 1 February 1959 and the Venoms of No. 60 Squadron at Tengah were replaced by Meteor night fighters on 1 October 1959. (69) By then, however, the offensive support role of the air forces in the campaign against the terrorists in Malaya had ended.

Most of the strike squadrons that participated in the twelve year campaign in Malaya achieved long records of service in the theatre, even though most underwent re-equipment during this period. The brunt of the offensive air support from June 1950 to September 1958 was borne by the Lincolns of No. 1 (R.A.A.F.) Squadron, ^{while, in the light bomber role, the Beaufighters and Brigands of No. 84 Squadron served until} ~~while, in the light bomber role, the Beaufighters and Brigands of No. 84 Squadron served from the~~ 1 February 1953. ~~When this squadron was reduced to a cadre basis, start of the campaign until the end of 1959, with a short interval and its number plate was transferred to M.E.A.F. on 20 February 1955 during 1949.~~ Similarly, aircraft of No. 45 Squadron arrived in Malaya in August 1948 and were still there when the Emergency ended in July 1960 although the squadron had exchanged their Beaufighters in turn for Brigands, Hornets, Venoms and finally Canberras in the intervening period. The most notable record, however, was achieved by No. 60 Squadron, whose Spitfires opened the campaign in June 1948 and were replaced in turn by Vampires and then by Venoms which operated against the terrorists until they were replaced by Meteor night fighters in the final few months of the Emergency. Even the Sunderlands of Nos. 205 and 209 Squadrons, despite the commitments of the Far East Flying Boat Wing in Hong Kong and Korea, were available when required for all except the final two years of the campaign.

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While the potential offensive air support force was provided by six or seven squadrons throughout most of the Emergency, not all of their aircraft were available for operations against the terrorists at any one time. Medium bombers on detachment from Bomber Command had only between 75 and 120 flying hours left in the theatre on arrival (70)

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and had to be employed sparingly, while fighter and light bomber squadrons were temporarily withdrawn from 'Firelog' operations at intervals for training in their primary role, notably at the Armament Practice Camp that operated at Butterworth between the beginning of (71) 1949 and 1956. Except for Lincolns, poor serviceability amongst

strike aircraft was common in Malayan conditions and Nos. 33 and 60 Squadrons, with only 10 of their 33 aircraft available in June 1951, (72) were not untypical of the general state of affairs at that time.

The introduction of jet aircraft into the theatre tended to exacerbate the difficulties of maintaining an adequate rate of serviceability and they generally proved to be less suitable for their required tasks than were the obsolete types which they replaced.

The range, endurance and bomb load capacity of the Lincoln for example, proved well suited to fulfilling commitments in the medium bomber role. With full tanks (2,850 gallons) they had an endurance of eleven hours at 180 knots and, armed with fourteen 1,000 lb. bombs and able to fly in a close 'vic' formation of five aircraft in most weather conditions, they could deliver a high concentration of bombs (73) anywhere in the Federation of Malaya at any time of the day or night.

Throughout the whole of 1950 the serviceability rate of the Bomber Command Lincoln detachment only twice fell below 75 per cent. (74) In contrast, Canberras, which took over the bombing offensive in 1955, were too elaborate for the task they were required to carry out. They carried half the bomb load of Lincolns and their cruising speed of 250 knots at the optimum bombing height required more elaborate navigational aids and made map-reading impracticable and visual bomb-aiming difficult. The pilot had a poorer visibility than in a

Lincoln and the Canberra could not be flown at night or in close formation and could not be employed in a strafing role. They suffered, in common with all jet aircraft in the tropics, from a serious limitation in their endurance at low level, which precluded the possibility of postponing or delaying an airstrike once they were airborne. This was a serious disadvantage in the uncertain weather

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conditions of Malaya, especially in 1958 when Canberras were operating in the northern part of the country far from their parent base at Tengah near Singapore, and was reflected in an increase in the rate of abortive airstrikes when they replaced Lincolns. When flown at their normal speed at low altitudes the swirl vanes of Canberra engines suffered badly from metal fatigue in the hot, turbulent air which also made flying conditions difficult for their pilots. For those Canberras that were not fitted with Godfrey air coolers, sun canopies, cooling trollies and external compressed air supplies had to be employed to combat the danger of loss of bodyweight through sweating (75) which could amount to as much as 3 lb. per sortie.

Both from the point of view of maintenance and flying conditions Lincolns were preferable to Canberras in the type of campaign that prevailed in Malaya and the advantages of the older, piston-engined types of aircraft were underlined by the Sunderland flying boats, whose great endurance, low speed, concentrated fire-power and ability to carry three hundred and sixty 20 lb. fragmentation bombs proved of great value during sustained harassing operations when accuracy was not of paramount importance. (76) Similar advantages of older types were apparent in comparing the performances of the fighter and fighter bomber aircraft that were employed during the Malayan campaign. The Spitfires that were used during the early months had a relatively low fire-power and range, between 290 and 360 miles at 200 knots according to their armament, and, since they were virtually obsolete at that time, they afforded serious problems of maintenance. (77) Their Tempest and Hornet replacements, however, were well suited to their task, providing a stable firing platform for a reasonable weight of rocket and cannon fire, and, with ranges of up to 500 miles, they were capable of loitering at low level for some time until they could attack small, pinpoint targets with the minimum of compromise in relatively poor weather conditions. (78) Brigands, with a bomb load of 2,000 lb., had similar capabilities although the lack of a bomb-sight attachment made low-level attacks essential for the sake of

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accuracy but exposed them to a slight risk of being hit by fragments from the explosion of their own bombs. ⁽⁷⁹⁾ Eventually, however, Tempests, Hornets and Brigands became obsolete and difficult to maintain and were replaced by Vampires and Venoms which suffered from similar disadvantages to Canberras in the Malayan theatre. Their speed was not essential in view of the lack of opposition and only made low-level attacks over broken terrain more difficult. At low altitudes the range over which they could operate was considerably restricted and their limited endurance ensured that they had little freedom of action in a country where there were few diversionary airfields and virtually no fighter navigational or control systems. The accuracy and the weight of the bomb pattern which they were capable of delivering were inadequate for the demands of the Malayan campaign while the effect of the humid conditions on their refined electronics systems created serious problems of serviceability. Thus, although Venoms had a fixed life of 750 hours, only one in three attained this figure while their average serviceability throughout 1957 was only 58 per cent. ⁽⁸⁰⁾ Finally, the stress of flying jet aircraft in Malayan conditions ensured that Sabre pilots could only fly one sortie a day in contrast to the two or three that were frequently flown by the pilots of Tempests or Hornets.

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Air weapons ~~was the subject of a report by the Scientific Advisory Branch of the Air Ministry.~~

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The debatable question of the overall strength of the offensive air support force used in the Malayan campaign and of its component types of aircraft affected, and was affected by, the type and number of weapons they were capable of delivering. Exigencies of expense, availability and effectiveness were constant factors in the debate over aircraft armament which continued throughout the campaign and many of the answers to the problem of devising the most suitable weapons were provided by the armoury tests that were held at the Song Song Island bombing range in May 1951 under the auspices of the Scientific Advisory Branch ^{is the} of the Air Ministry. ⁽⁸¹⁾ ~~Details of their findings and of the total number of weapons of various types that were~~

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~~expended throughout the campaign are collated in Appendix~~. These tests evaluated the 'mean area of effectiveness' of each weapon - a calculation based on the chances of hitting a small target in an arbitrary area of 1,000 square feet of jungle. Thus if one weapon gave a 20 per cent chance of achieving a 'kill' it contributed 200 square feet to the 'mean area of effectiveness' of the total weapon load. In order to equate various weapon loads the number of sorties by different types of aircraft that were needed to achieve a 'mean area of effectiveness' of one million square feet was calculated.

The largest weapon that was employed during the Malayan campaign was the 4,000 lb. H.E. bomb but its blast effect in jungle terrain was not proportional to its size and it achieved an unfortunate political connotation when it was introduced in 1950 that hindered its employment. (82) It could not be dropped without express permission of the High Commissioner for the Federation of Malaya and was, in fact, not used until May 1953 during Operation 'Commodore' in Johore. Very few of these bombs were dropped during the remainder of the campaign. The 1,000 lb. H.E. nose-fused bomb, with a 'mean area of effectiveness' of 75,000 square feet, proved to be the most effective weapon that was employed during the campaign because of its efficiency and also because of the great total weight that could be delivered by one medium bomber against a pinpoint target. 1,000 lb. bombs were first used when medium bombers were introduced into the campaign in 1950 and their expenditure ceased with the withdrawal of these aircraft in 1958. The 500 lb. H.E. nose-fused bomb, with a 'mean area of effectiveness' of 15,000 square feet, that was introduced into the campaign in August 1948 was the air weapon most commonly used after the 1,000 lb. bomb, its reduced effectiveness being offset to some extent by the great number of explosions that was achieved for each bomb load, which was of value during harassing operations against area targets. Even more effective in the harassing role was the 20 lb. fragmentation bomb, with a 'mean area of effectiveness' of 1,000 square feet that was introduced

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into the campaign early in 1949. The noise of its detonation was not appreciably less than that of a 500 lb. bomb and as the recipient got sixteen instead of one it effect on morale, if not its lethal power, was greater - although it could also be claimed that a large number of small bombs gave a greater chance of killing the enemy in ill-defined jungle targets than did one large bomb. The 20 lb. bomb was, therefore a weapon of great potential value but as the Sunderland alone was capable of carrying sufficient quantities to justify its employment, it was not used in great quantities and none were dropped after these aircraft were withdrawn in 1958. Similarly, 350 lb. clusters of 19 lb. fragmentation bombs, with a 'mean area of effectiveness' of 27,500 square feet, were more effective than 500 lb. bombs but they were only introduced into the campaign in 1951 and were in such short supply that they were rarely used thereafter. (83)

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The question of whether bombs were fused at the nose or tail was of great importance in the Malayan campaign since it determined whether they exploded at ground level or at 150 feet or more at tree top height.

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Nose fused bombs that burst at an average height of 50-75 feet were found to be potentially the most effective, achieving the greatest spread of fragmentation and blast, while tail fused bombs penetrated the ground before exploding and dissipated much of their energy in forming a six feet deep crater which directed most of their blast effect upwards. The 'mean area of effectiveness' of nose and tail fused 1,000 lb. bombs was 75,000 and 6,000 square feet respectively and that of 500 lb. bombs was 15,000 and 3,000 square feet. It was clear that tail fused bombs should not have been used when the main object was to kill the enemy but were permissible if it was decided that the noise of explosions at ground level would have a greater psychological effect on them. Up until October 1950 the No. 44 nose pistol was in general use on bombs used in the Malayan campaign but it was then proscribed by both the R.A.F. and the R.A.A.F. for lack of a positive safety device and bombs were armed with the No. 65 tail pistol instead. An immediate and marked fall in the number of casualties attributable to airstrike action underlined the superiority of nose

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fusing and the situation did not improve until this practice was re-introduced. Most bombs were then fused at both nose and tail to ensure that they did explode* but tail fuses were dispensed with in (84) 1953 because of expense. In addition to the usual nose and tail fuses, V.T. fuse No. 906 Mk.I was developed in 1954 to function at certain pre-set heights above the ground irrespective of the height or (85) the speed at which the bomb was released. Short delayed action fuses were developed in 1950 as instantaneous explosions had caused serious damage to low-flying Brigand aircraft and bombs whose ignition was delayed for six, twelve or even thirty-six hours were used successfully thereafter, especially during prolonged harassing (86) operations.

Besides bombs, rocket projectiles, with a 'mean area of effectiveness' of 1,500 square feet, were used during the Malayan campaign, mainly by ground attack aircraft, but they had little lethal effect since the semi-armour piercing capability of their 60 lb. head combined with soft-skinned target buildings to carry them into the ground before exploding and dissipated much of their effect. When there was a definite aiming point, however, they were more accurate than bombing from a medium height and, according to surrendered terrorists, strafing with rockets and 20 mm. cannon shells was greatly feared and had a marked effect. .5 and .303 ammunition on the other hand were relatively useless in jungle terrain, with 'mean areas of effectiveness' of four square feet or less, and their expenditure decreased significantly in the later stages of the campaign and virtually ceased after (87) 1956.

Apart from the conventional explosive weapons that were used during the Malayan campaign the Operational Research Section of A.H.Q.

* The number of unexploded bombs amounted to 2 per cent of the total number dropped by 1958 and ground force patrols were locating them at a rate of approximately one each week. In March 1957 a joint Army and R.A.F. bomb disposal unit was formed at Kuala Lumpur, under the control of A.H.Q. No. 224 Group. Teams consisted of an R.A.F. N.C.O. with one or two engineers from 50 Gurkha Field Engineer Regiment, Royal Engineers. During 1957 they demolished fourteen H.E. bombs, fourteen H.E. bomb clusters, thirteen rocket projectiles and eight Army missiles.

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93

Malaya experimented with various other devices to find the most effective weapons against jungle targets. During 1950 napalm, or jellified petroleum, in 200 lb. canisters exploded by a static line, was tried out but its fire raising effect proved extremely localised in green jungle and its expense outweighed any transitory effect that it might have had on enemy morale - an effect that was quickly lost as the limitations of the weapon was realised by the recipients. (88)

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Similar trials employing depth charges as a weapon in jungle warfare (89)

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came to nothing but smoke bombs were used successfully on a few occasions when limited force was required, as for example when recalcitrant Sakai aborigines needed persuading to move into new resettlement areas in the Sungei Yum and Sungei Plus areas of Perak in September 1950. (90) Nothing came of a proposal that was put forward in March 1950 to use a non-lethal gas or spray that would penetrate the jungle ceiling and cause unconsciousness for 48 hours, thus immobilising the terrorists for long enough to enable security force patrols to eliminate them without causing permanent damage to innocent inhabitants. (91) A toxic spray* was, however, used with great effect against the jungle cultivation upon which the terrorists largely relied for sustenance after their withdrawal into deep jungle areas in 1954. (92) Finally, when the cost of weapon expenditure began to cause concern in 1954, 'screamers' such as empty beer bottles were occasionally employed during continuous harassing operations and, when interspersed with lethal bombardments, the alarming noise which they made proved quite effective in inducing surrenders while achieving a considerable saving in cost. (93)

The total number of air weapons that was expended during the Malayan campaign showed a sharp increase in 1950 and 1951 with the arrival of medium bombers in the theatre, followed by a gradual decline

* See under 'Crop Spraying' in Chapter 4.

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in 1952 and 1953, a slight recovery in the expenditure of the heavier weapons in 1954 and 1955 with the re-introduction of medium bombers and then a rapid decline as offensive air support became increasingly redundant in the overall campaign. In the peak year of 1951 over five thousand 1,000 lb. bombs were dropped as well as over fourteen thousand 500 lb. bombs, thirty-four thousand 20 lb. bombs, twenty thousand rocket projectiles, sixty thousand rounds of 20 mm. cannon shell, five hundred and fifty thousand rounds of .5 ammunition and (94) seven hundred thousand rounds of .303 ammunition.

Since 1,000 lb. bombs cost £125 each in 1951 and 500 lb. bombs, 20 lb. bombs and 60 lb. rocket projectiles cost £56, £4 10s and £18 10s respectively, the cost of arming the offensive air support force for operations against the terrorists was considerable while, in addition to their armament, the cost of each Lincoln and Brigand sortie was £750 and £200. (95) In 1952 alone £7,247,236 was expended on flying operations in support of Operation 'Firedog' of which £1,842,387 represented the cost of air weapons. (96) It was important, therefore, that the cost of air weapons as well as their efficiency should be taken into account when arming aircraft for airstrikes against the terrorists and in this respect the Lincoln armed with 1,000 lb. nose fused bombs proved most economical. In order to achieve a 'mean area of effectiveness' of one million square feet it required only one Lincoln, armed with fourteen 1,000 lb. nose fused bombs, at a total cost of £2,500, while eighteen sorties were required by Lincolns armed with tail fused 1,000 lb. bombs at a total cost of £32,000. To achieve the same effect sixteen Brigands armed with four 500 lb. nose fused bombs were required, at a total cost of £7,000, or thirty three Hornets each armed with two 500 lb. nose fused bombs. If tail fused bombs were used by Brigands or Hornets 80 and 160 sorties respectively were required to achieve the same effect at the exorbitant cost of (97) £35,000 or more. It is not surprising, therefore, that Lincoln bombers armed with 1,000 lb. nose fused bombs bore the brunt of the aerial offensive against the terrorists.

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Planning and initiation of airstrikes

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Preceding all airstrikes against the terrorists in Malaya was a considerable amount of planning and preparation which inevitably wasted a good deal of time between the receipt of a request for airstrike action and the final delivery of the attack. Time, however, was not normally of the essence in this campaign and these preparations were inevitable since the air forces were acting entirely in support of the civil power in a subordinate role to the ground forces, upon whom they relied entirely for employment.

The prerequisite of all successful airstrike action was reliable intelligence information, without which neither ground nor aerial reconnaissance was likely to locate possible targets without detection. Reports from all branches of the security forces about possible terrorist locations were carefully graded but actual knowledge of enemy camps and concentrations came invariably from informers, usually captured or surrendered terrorists. Unfortunately, owing to the low mentality of the majority of these informers and their inability to read maps or assess distances accurately, much of this target information was unreliable and aircraft were often despatched on abortive missions as a result. In general there was a tendency to overgrade the reliability of information received from informers but, since they were the main source of target intelligence, there was little alternative. (98) When attempts were made to verify such information by investigation on the ground the terrorists were frequently forewarned of an impending air attack and rapidly dispersed from the target area. Since the air forces were largely reliant on the ground forces for target intelligence it is not surprising that, especially during the early years of the campaign, they considered that they were given neither enough of this information nor (99) sufficient time to act decisively upon it. To remedy this situation, and to make ground force commanders more aware of the potential of airstrike action, R.A.F. Intelligence officers were attached to State Police Headquarters and were also sent on ground

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force patrols to encourage a greater exploitation of the available offensive air support. As the campaign developed it was recognised that opportunities for immediate air support were extremely rare, but a greater degree of understanding was achieved between the ground and air forces in the planning of large scale combined operations. At first airstrikes had been arranged on an ad hoc basis by personal agreement between the Army and Air Force commanders but, after November 1949, they were ordered through the combined Land/Air Operations Room at G.H.Q. Malaya District, Kuala Lumpur, which became the nucleus of the Joint Operations Centre that evolved in its final form in 1954. (100)

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The overall offensive campaign against the terrorists was planned by the Director of Operations Committee after 1950 and was executed at State and Settlement level by the local War Executive Committees. The Police and Army commanders on these committees channelled all requests for air support into the Joint Operations Centre or its predecessor, where the A.O.C. Malaya allocated his resources according to the priorities decided by the Director of Operations Committee of which he was a member. This channelling of a request for air support, from Company or Police Circle through District or Battalion and Brigade or State Police Headquarters, to a central controlling organisation at Kuala Lumpur was not the quickest method of laying on airstrikes and when there was a possibility that immediate air support might be required Air Support Signals Units were detached to operational areas to pass requests from ground patrols or reconnaissance aircraft directly to the airfield concerned so that briefing could be carried out while permission for the strike was obtained from the Joint Operations Centre. (101)

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Apart from these instances, experience had proved by 1955 that, in certain circumstances and subject to certain provisos, airstrikes were often mounted more quickly and more effectively when requests were passed direct to the R.A.F. stations, where all the necessary planning was carried out. Where the ground forces were unable to mount operations against the terrorists and the air

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forces alone were able to maintain pressure against them the procedures of Operation 'Thermos' were adopted whereby the officers commanding R.A.F. Tengah and Butterworth were given the responsibility of planning and conducting airstrike operations in clearly defined areas for a limited period of time. (102) Similarly, under the dictates of Operation 'Smash Hit', certain Army units on specified operations were authorised to request offensive air support direct from the R.A.F. stations concerned without prior permission from the Joint Operations Centre for limited periods of up to four days. (103) These refinements in procedure, however, did not invalidate the principle that the command and control of all airstrike operations was carried out by the Joint Operations Centre, since the duty officer there had to be notified before any airstrike mounted under these contingencies could be carried out.

Target clearance

The overriding control of airstrike action by a single, central authority was exercised mainly because of the necessity of obtaining clearance to attack a specified target area. This was an indispensable preliminary in operations against a militant communist element whose strength represented only a small fraction of the total population and were just as liable to be present in populated areas as were innocent civilians. Even when airstrike operations were mounted in the densely forested, inaccessible and sparsely populated regions of Kelantan and Northern Pahang, care had to be taken, for political reasons, not to inflict casualties on the aboriginal Sakais, even if they were known to be actively aiding and abetting the terrorists - albeit under duress. Furthermore, the constant activity of ground force patrols and their lack of direct signals links with attacking aircraft required some safeguards to ensure their safety from airstrike action. As a general rule no troops, civilians or habitations were allowed within 3,000 yards of the target along the undershoot and overshoot lines of attack or within 2,000 yards of the flanks, although when

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more refined target location devices were introduced in 1956 the area of this arbitrary safety zone was reduced to a minimum of 2,000 by 1,000 yards for bomb attacks and 500 yards square for strafing attacks by fighters. (104)

The necessity of these stringent safety precautions was underlined by the harmful propaganda that followed the few unfortunate incidents that did occur, which far outweighed the value of eliminating a few terrorists. On 7 February 1950 faulty clearance procedures resulted in a Beaufighter attack being made close to a settlement at Kulai in Johore and a school was damaged and five civilians were wounded. (105)

In November of the same year a combination of bad weather and faulty bomb loading techniques caused a Lincoln on a sortie against a terrorist position near Rawang in Central Selangor to unload its bombs 600 yards short of the edge of the target, killing 12 civilians and injuring 26 others. (106)

The dangers faced by ground forces in the vicinity of an airstrike, even when safety precautions were observed, was exemplified in August 1953 when the premature release of a six bomb stick from a Canberra, due to an electrical failure in the release mechanism, caused the deaths of one British officer and seven other ranks in the Tasak Bera area of Pahang. (107)

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It was clearly necessary to obtain clearance of a target area before taking airstrike action but there is no doubt that the element of surprise that is inherent in all successful air attacks was seriously prejudiced as a result. The inevitable delay that occurred while the position of innocent civilians was ascertained and those that were in the danger area were physically removed was often enough to alarm the terrorists and give them the opportunity of dispersing. Clearance to attack had also to be obtained from the police in case the target area was reserved for a Special Branch operation and even when strike aircraft arrived over the target they were not allowed to attack unless the aiming point could be clearly identified, while any targets of opportunity that presented themselves outside the briefed area had to be ignored. In addition to the precautions taken against

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inflicting unnecessary casualties, great concern was taken to avoid damaging civilian property because of the liability of paying heavy compensation. An absolute embargo was placed on all airstrikes against inhabited or cultivated areas, except identified terrorist plots, while rubber estates, reputed to be worth £10 per tree, carried the threat of court martial if hit and other areas of jungle were protected in case bomb splinters damaged local sawmills when the timber was cut. (108)

Not unnaturally the air forces chafed at these restrictions which often resulted in complete negation of their efforts and prevented the most effective use of the air weapon. It was even suggested that, apart from a general warning, police clearance of an area should be dispensed with since the population should learn that to be in the same area as Communist terrorists was to risk air attack without any prospect of compensation. (109) This suggestion was put forward in 1951 when the air forces in Malaya were growing impatient with the impediments to successful airstrike action which they faced and was coupled with demand for increased participation in the collation of intelligence material in order to determine potential airstrike targets and for experiments to improve ground to air communications in order to enhance the prospects of providing immediate air support. In retrospect it is fortunate that these recommendations were not acted upon for the restrictions on airstrike action, although irksome, were essential in a campaign in which the battle for the minds and loyalties of the civilian population was of equal, if not greater, importance than the infliction of a few casualties on the enemy.

Target briefing and navigation

After clearance to attack had been received by the Joint Operations Centre briefing for airstrikes was carried out, almost invariably from aerial photographs since maps of Malaya were insufficient and inaccurate. In order to facilitate briefing, areas where terrorist activity was common were given code-names (such as 'Hawk', 'Dagger', 'Kuda' for the Selangor, Segamat and Southern Kelantan/Northern Pahang areas) and these

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were further subdivided into target designations relating to specific map references or recognisable points. Operation 'Vulture' for example referred to the area in Johore and Negri Sembilan bounded by the Kuala Langat Forest Reserve, Gemas, Triang, Seremban and Semenyeh and contained targets designated by the names of flowers - Violet, Phlox, Sunflower, Daisy, Pansy, Lily, Iris and Rose. Code-names such as 'Blowpipe' and 'Bluetit' referred to prearranged briefs for air-strikes mounted to relieve police posts at Kampongs Aur and Bala while further standing orders under the comprehensive code-name of Operation 'Medal' were prepared for operations mounted in support of various jungle forts in case of attack by terrorists.

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Navigation to the target area was mainly achieved by dead reckoning with the aid of aerial photographs as target folders. Throughout an ^{attack} airstrike aircraft were in communication with the Air Control Centre Malaya either directly or through a series of forward relay stations at Fraser's Hill, Brinchang and Kedah Peak. direction finding network service employing Eureka Mk.7 beacons was inaugurated at Kuala Lumpur in 1954 and a second station was opened at Kuantan in June 1957 to facilitate the control of fighter aircraft in Northern Malaya. A plan to extend this network by erecting a further station at Guncong Batu Brinchang was abandoned in November 1957 when it became clear that future requirements for its use would not justify the cost.

Arriving in the target area, local control of airstrike action was often provided at the start of the campaign through ground to air communications from an Army Contact Car ('Rover Joe'), a technique which had been used successfully in conjunction with fighter aircraft during the closing stages of the Second World War. In order to co-ordinate large scale attacks that were carried out under 'Rover' control a Dakota was generally used as an airborne control point to receive target information from the ground, call up the attacking forces, assess the weather conditions, brief the aircrews and mark the

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target. This technique was frequently employed in 1948 and 1949 but, since the terrain nearly always prevented the contact car from reaching the position of a clash with the terrorists and immediate air support proved impracticable, it was used on less than 20 per cent of all airstrikes by 1951 and nearly all attacks from then onwards were carried out by aircraft with no direct communications links with the ground forces.

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Target identification and marking techniques

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The second prerequisite of a successful airstrike, after accurate intelligence information, was an accurate method of pinpointing the target in a country where map-reading by the ground forces was difficult and where an error of 100 yards in the aiming point could nullify any effect an airstrike might have. At the start of the campaign targets were identified visually in relation to a salient topographical feature or a lighter patch on an aerial photograph. As pilots became experienced in flying over Malaya they acquired a remarkable knowledge of the jungle terrain and could navigate by the light patches in the jungle cover that were associated with the dead vegetation caused by previous bomb explosions. Detailed landmarks in the jungle were rare, however, and as it was possible to lose sight of salient features such as a river bend several times during a bombing run it was frequently necessary to circle the target area to make even the most provisional identification of the aiming point. This practice compromised the element of surprise in the attack and enabled the terrorists to disperse while cumulative errors in accuracy were inevitable since only the strike leader identified the target and the remaining aircraft bombed or strafed on the bomb bursts of their predecessor.

The solution to this problem lay in the development of target marking techniques and in the practice of carrying out bombing runs from an established datum point some distance from the target on the basis of a fixed bearing and flying time to the bomb release point. Pilots of Auster aircraft, normally familiar with the target area and

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flying at low level, were able to mark the most inconspicuous targets with a high degree of accuracy. The recognised drill was for the pilot of the marker plane to contact the attacking force at a rendezvous some twenty miles from the target and then proceed to the 'gate' position close to the target but still far enough away to avoid any loss of security. The strike leader then counted out the minutes to release time and the Auster left its position to be over the target $1\frac{1}{2}$ minutes before the appointed moment. Marking was carried out by phosphorous grenades or reconnaissance flares and as soon as the Auster had left the target area the strike force bombed visually on this aiming point. This technique was occasionally used at night and was the general practice for all airstrikes between the end of 1951 and 1955. Its disadvantages lay mainly in the time-lag between marking and bombing which, although seldom more than $1\frac{1}{2}$ minutes, often allowed the terrorists to take cover or to escape from the target area.

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The second technique employed on airstrikes required an identifiable datum point from which to calculate the bearing and distance of the target. At the start of the campaign natural features were chosen as identification points but as these were rare in the featureless jungle artificial methods such as smoke signals, balloons and ground marker flares were increasingly employed from 1950 onwards. During daylight raids, however, the blanketing effect of the jungle canopy meant that an Auster target marking plane often had to be used as well to identify the ground flares and mark the target for the strike force. For night strikes two searchlights were set up, one pointing at 45° towards the target to provide the correct bearing and the other pointing vertically to act as the datum from which to commence a timed bombing run. Searchlights were more visible than flares in broken country or jungle and were used with success on a number of occasions, but their employment was dependant on clear weather conditions and reasonable access routes to the target area for the requisite 3-ton trucks.

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(57) The great advantage of ground datum markers placed within 400-700 yards of the target was the elimination of the errors of location that were inherent in ground force patrols' assessment of their true position in featureless, ill-mapped jungle terrain. Most, however, suffered from the disadvantages of weight and bulkiness of the equipment involved and exposed the manning party to the risk of ambush by the terrorists. To overcome these difficulties delayed action ground marker flares were developed in 1956 to enable ground patrols to retire to a safe distance from the target and also to time their ignition to coincide with an airstrike mounted at night when there was a greater chance of the terrorists being present. (119) Even more ingenious was 'Lodestone', a small radio transmitter developed by the Operational Research Staff in 1957 which emitted a continuous signal at a pre-set frequency for 24 hours. (120) An Auster could fix the position of this signal within 100 yards at a distance of 5,000 yards, beyond audibility range on the ground, and could then receive target directions from the ground patrol which had retired from the target area. However, since static terrorist camps were rare and well guarded by this time, the placing of 'Lodestone' within the optimum distance of 300 yards from the target demanded a coincidence of luck and skill that rarely occurred - only once during 1958 in fact. In any case, from the middle of 1956 onwards airstrikes were mounted employing the most successful target location device that was developed during the campaign - the Target Director Post. This was a self-supporting mobile radar unit which provided a narrow beam passing over the target down which attacking aircraft flew until they received a signal to bomb at a distance from the transmitter calculated on the basis of airspeed, bomb ballistics, height, stick length and slant ranges. (121) The advantages of this technique over target or datum marking methods was that sustained airstrikes could be mounted with a high degree of accuracy by day or by night under all conditions of weather and surface visibility while still preserving the element of complete surprise. Satisfactory control was afforded between 6,000

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and 25,000 yards but, used in conjunction with a timed run from the limit of the radar beam, an average radial error of 175 yards could be achieved at a range of 40,000 yards. (122)

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The only disadvantage in using radar control rather than ground datums was its greater reliance on the accuracy of the initial target location. Only two Target Director Posts, however, were needed in Malaya to put any target within one hundred miles of the equipment and although they were normally deployed for several weeks at a time in areas where major operations were planned they could be readily moved to within twenty miles of the target area for special operations.

The first Target Director Post was established at Kluang in Johore for operational trials on 9 June 1956, equipped with an Army A.A. G.L. Radar No. 3 Mk.7 and staffed largely with R.A.F. personnel. (123) No. 2 (Army) Target Director Post, staffed with Army personnel, was formed on 18 March 1957 and by June of that year both units were deployed at their administrative bases in Ipoh and Simpang Rengam to provide coverage for Northern and Southern Malaya. (124) By then thirty-one suitable sites had been surveyed in the main operational areas and both units were ready to deploy at short notice. (125) The No. 1 (R.A.F.) Unit moved from Ipoh to Butterworth in October 1958, partly to take advantage of the facilities offered by the Song Song Island bombing range, while the No. 2 (Army) Unit was deployed on Singapore Island. (126) Both units, however, were idle for long periods throughout 1958 owing to the lack of suitable targets and with the cessation of hostilities in the southern part of the Federation of Malaya only one unit was required to cover the remaining operations. This commitment was accepted entirely by the Army until October 1959, when the Target Director Post ceased to exist as an operational unit. (127) The fact was that such a refined method of target location was developed too late to have any marked effect on the course of the campaign. By 1957 the increasing alertness of the remaining terrorists ensured that only the most stealthy and unobtrusive methods had any chance of enabling a surprise attack to

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be made and the appearance of a radar unit or a ground datum party was sufficient to alarm them. By the time of their disestablishment in 1957 the Operational Research Section of the Director of Operations Staff were already turning to the field of applied science, including the use of autolycus and infra-red apparatus to detect camp fires, in an attempt to outwit the remaining terrorists and to provide suitable target information. (128) There is no doubt, however, that had the target marking techniques that were available in 1957 been available at the start of the campaign when pinpoint targets were more frequent, airstrike action at that time would have been far more effective than it was.

Airstrike techniques

Even after the introduction of refined target location devices the tactics of weapon delivery by airstrike aircraft in the Malayan campaign were conditioned by the unavoidable inaccuracy of the aiming point as well as the need to preserve the element of surprise. Except when a visible pinpoint, such as an enemy camp, was available it was the general practice to lay down the largest possible bomb pattern in order to cover anticipated errors in target location. As the terrorists rapidly dispersed at the sound of approaching aircraft it was also important to concentrate the maximum effort into the initial blow, since aircraft arriving after the first wave were unlikely to achieve any significant results, while the inevitable loss of accuracy coincident with medium or high level bombing had to be accepted in order to preserve the element of surprise for as long as possible. (129) The timing of air attacks was also important since they were likely to be most effective at night when the terrorists were in camp. If airstrikes were made close to dawn the ground forces were able to enter the area of the bomb pattern before survivors could remove their wounded comrades and important documents or equipment. (130) This plan of attack was most favoured by Army commanders but it had to be balanced against the fact that the maximum airstrike forces could not be employed during the hours of darkness and the Army were

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persuaded to accept the principle that the timing of each airstrike should be decided according to the importance of the target. (131)

Clearly it was more important to concentrate the maximum available force against the possible location of a terrorist leader than it was for harassing an area target that might or might not contain a number of less important terrorists.

Finally, techniques of weapon delivery were necessarily determined by the aircraft employed. In the absence of any opposition the conventional roles of fighters, fighter bombers and medium bombers, whether it was air defence, tactical or strategic bombing, did not apply and all were employed in either a close support or tactical bombing role and differed only in the weight of weapons they were capable of carrying and in the methods of their delivery. A formation of Lincolns armed with 1,000 lb. bombs could bring down the greatest weight of weapons in the shortest possible time against a pinpoint or small area target but since these were not supposed to exceed 500 yards square by 1954, they could be hit effectively without using the maximum available effort. (132)

At the start of the campaign airstrikes were mounted by individual fighter and fighter bomber aircraft using rockets and small anti-personnel bombs of doubtful killing power. After the introduction of medium bombers in 1950, however, a heavier weight of attack could be brought to bear and tactics could be varied. For daylight attacks when the maximum effort was required it was usual for a formation of six to ten Lincolns, flying in 'vics' of three or five at about 6,000 feet, to open the attack with high explosive bombs. (133) Initially Lincolns were flown with a 75-yard separation but, as errors in range proved to be rare, the stick length was reduced to 50 yards to obtain greater lethality in a normal target area of 600 by 400 yards. (134)

When Canberras replaced Lincolns, however, additional safety precautions meant that the average length of bomb patterns had to be reduced from 650 yards with a 50 yard spacing to 375 yards with a 75 yards spacing. (135)

During 1950 and 1951 medium bombers were usually

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59 followed over the target by fighter bombers attacking from a low-level with bombs and rockets while fighters strafed possible escape routes from the target area with rocket and cannon fire. Protracted and haphazard blasting of the area by Sunderlands armed with small anti-personnel bombs was then carried out during the 24 or 48 hours following a major airstrike in order to harass the survivors and (136) create the greatest feeling of anxiety and uncertainty.

Apart from concentrated daylight attacks various elements of the airstrike force were also used independently. As a result of extensive training No. 1 (R.A.A.F.) Squadron were able to fly five Lincolns in 'vic' formation on bright moonlit nights, although on dark nights their formations were reduced to three aircraft, while their Canberra replacements were normally flown in line astern with intervals (137) of two or three minutes during night strikes. Apart from medium and light bombers, Sunderlands were also used independently at night, although almost exclusively in a harassing role. Fighter attacks were also mounted independently at dawn or dusk to catch the terrorists leaving or returning to camp and to leave the day free for operational training, but they were only really effective when a visual aiming point was available, which rarely happened after 1954.

60 Summary of offensive ^{air} support operations
Chronological account of the offensive air support provided by
the air forces during the Malayan campaign

In the following paragraphs a summary is given of the development of offensive air support during the Malayan campaign, including accounts of some of the major airstrikes that were carried out. Statistical details of the number of strikes and sorties that were flown in each month of the campaign are collated in ^{Annex T} ~~Appendix XX~~.

At the start of the campaign airstrikes were carried out on an opportunity basis whenever suitable information became available. This was rare, however, and the ground force commanders were generally unaware of the potentialities of airstrike action or were reluctant to call for it, even though it frequently offered the best chance of bringing pressure to bear on the terrorists. The idea of inter-

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related close support in the campaign was still in its infancy and most strikes were mounted mainly as a declaration of intention to restore civilian morale and to show the terrorists that they were not inviolable. The first strike of the campaign took place on 6 July 1948 when two Spitfires of No. 60 Squadron attacked and virtually destroyed a terrorist camp near Ayer Karah in Perak but nine days elapsed before the next strike was mounted, by three Spitfires of the same squadron, against a group of huts located in mountainous country near Bentong in Pahang. (138) On the following day, 16 July 1948, a strike was mounted against a hut near Telok Anson in Central Perak which was surrounded by swamp and was not readily accessible from the ground. Ten terrorists were killed and a clear demonstration was given of the correct use of the air weapon. On 22 July 1948 a strike was mounted in support of a road convoy of The Malay Regiment at Sungai Yu which was on its way to relieve a police post at Gua Musang that had been captured by the terrorists. This action illustrated the value of immediate air support by fighter aircraft and, owing largely to the advocacy of the A.O.C. Malaya and the salesmanship of itinerant R.A.F. liaison officers, demands for airstrike action increased and offensive support operations rose to a peak in August 1948. Most strikes during July and August were flown in support of 'Shawforce' which was operating in the Pulai valley of Northern Perak and the speed with which they were mounted from the advanced base at Kuala Lumpur was greatly appreciated by the ground forces. Towards the end of these operations, however, the accidental release of a rocket on the ground, due to faulty wiring in the ageing Spitfires, caused the death of a civilian in the village of Salak South and a complete embargo was placed on the carriage of bombs and rockets in these aircraft. The offensive potential of the air forces was maintained, however, by the dispatch of two Beaufighters of No. 84 Squadron from Tengah. Their armament was equivalent to four Spitfires and one low-grade, unconfirmed report of their first attack, on a camp north of Batu Melintang on the border between Kelantan and Thailand on 12 August 1948, credited them with killing 30 terrorists. This

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strike was one of a series that were mounted near the frontier with Thailand to intimidate two bodies of 600 terrorists that were reported to be massing the other side of the border. (139) With the arrival of three more aircraft of No. 45 Squadron from Ceylon on 12 August, five Beaufighters were located at Kuala Lumpur for one week, before those of No. 84 Squadron left for the Middle East. During this period four strikes were mounted, that on 17 August near Bentong in Pahang, which involved five Beaufighters and five Spitfires, being the heaviest to date in the campaign although it eliminated only one terrorist.

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By now the terrorists were beginning to realise the effectiveness of airstrike action and pinpoint attacks against visible targets were gradually replaced by attacks on area targets covering the approximate location of camouflaged terrorist camps or concentrations. The arrival of Beaufighters at Kuala Lumpur, however, meant that it was possible to harass the terrorists still further by attacking them at night. The first planned night strike of the campaign, against a target near Kuala Krai in Kelantan, was aborted on 19 August owing to weather conditions but a successful strike was carried out on the night of the 22/23 August on a target north of Parit in Perak. No further night strikes were to be carried out until June 1950 but the feasibility of such operations, at least under moonlit conditions, had been proved and further experiments showed that flares could be successfully employed to illuminate the target area on darker nights.

After the peak in August 1948 the tempo of offensive air support operations declined towards the end of November 1948, in which month only five strikes were mounted. This decline was considered at the time to be due to the loss of contact with the terrorist forces as they split into smaller groups for operations in populated areas, but was in fact due to their withdrawal into the jungle for a period of recuperation after their failure to establish a 'liberated' area in Southern Kelantan. With the decline in airstrike activity the Spitfires at Kuala Lumpur returned to Sembawang but the introduction of drastic Government measures, including plans for resettlement and deportation,

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(61) resulted in an increased flow of information concerning terrorist locations and a corresponding increase^e in airstrike activity. No. 60 (Spitfire) Squadron returned to Kuala Lumpur, leaving No. 28 Squadron to support ground force operations in Southern Johore. Twenty strikes were carried out in December 1948, bringing the total since the campaign began to 84, with an average of fourteen per month.

1948 closed with the revival of an earlier demand by the Advanced A.H.Q. Malaya at Kuala Lumpur to be allowed to mount an air attack without the preliminary siting of ground force ambushes which might prejudice the element of surprise. A compromise was arranged whereby troop movements preceding the strike were disguised and the first attack along these lines was carried out by four Spitfires and three Beaufighters on 21 December on a target near Bruas in Perak, albeit with no significant results. On 28 February 1949, however, a similar airstrike, the largest in the campaign so far, was carried out by four Beaufighters and eight Spitfires (the latter carrying 20 lb. fragmentation bombs for the first time) on a target near Mengkuang in South Pahang. Ground forces were impeded from following up the strike by the extensive fires which it started but subsequent intelligence revealed that at least 15 terrorists had been killed during this combined operation, at least nine of which had died as a direct result of the airstrike. This was one of the most successful airstrikes of the entire campaign and there is no doubt that one of the main reasons for its success was the complete surprise occasioned by the absence of troop movements in the area before the attack.

However, the tempo of airstrike activity during the first few months of 1949 showed little increase over the monthly average for 1948 as the ground forces still preferred to tackle potential targets themselves, thus denying the air forces many eminently suitable targets. A change in this so-called 'flat-foot and Kukri' complex became apparent however, after Beaufighters of No. 45 Squadron and Spitfires of No. 60 Squadron mounted six strikes in twelve days during April 1949 against a

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target in the Kuala Langat Forest Reserve area of Southern Selangor. The cumulative effect of these attacks was responsible for 37 out of the 45 eliminations that were achieved and the ability of the air forces to play a major offensive role in the campaign, with no support from the ground forces other than the provision of intelligence, could no longer be ignored. (140)

Demands for air co-operation steadily increased and 84 strikes were flown in the period from May to July 1949 compared with the 42 that were flown in the first four months of the same year. In May 1949 four terrorists were killed as a direct result of two strikes mounted in support of Operation 'Pussycat' in the Kaki-Bukit area near the border of Perlis with Thailand.

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Although demands for airstrike action slackened off in August and September 1949 they revived, as a result of an increased flow of information from surrendered terrorists, to such an extent that they exceeded the potential of the air forces in Malaya for the first time in the campaign, despite the arrival of No. 33 (Tempest) Squadron in August, and selection of the most suitable targets had to be made. On 21 October the largest strike to date, involving 62 sorties by Spitfires, Beaufighters, Tempests and Sunderlands of the R.A.F. and Fireflies and Seafires of the R.N., was carried out against a target south-east of Gemas in Negri Sembilan and during the last two months of 1949, 62 strikes, involving 388 sorties, were flown against targets throughout western and central Malaya, especially in Northern Selangor and adjoining parts of Pahang. (141)

By the end of 1949 over 300 airstrikes had been mounted against the terrorists with a monthly average of seventeen.

The increase of airstrike activity at the end of 1949 continued into 1950 and 58 strikes, involving over 300 sorties, were carried out in January - the highest monthly total of the Emergency so far. Forty-one sorties by aircraft of the R.A.F. and R.N. were flown against targets in Negri Sembilan on 1 and 2 January alone. (142)

On 7 February, however, a setback occurred when a strike was mounted too near a squatter settlement near Kulai in Johore and the exaggerated

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Communist propaganda that followed the resultant wounding of five civilians caused the Federal Police to issue orders to avoid the repetition of such an incident which resulted in the virtual cessation of police requests for offensive air support. The overall airstrike effort for March 1950 was reduced by over 50 per cent in comparison with the previous month and it was only after representations were made by the Advanced A.H.Q. Malaya that these orders were clarified and the upward trend in airstrike activity was resumed. Despite this setback, however, nearly as many strikes were flown in the first four months of 1950 as in the whole of the first year of the campaign.

The offensive potential of the air forces in Malaya was considerably enhanced by the arrival of Lincolns and Brigands at the end of March and the beginning of April 1950 which enabled a greater weight of weapons to be concentrated against the more extensive targets that resulted from increasingly unreliable information. Despite the concern of Advanced A.H.Q. Malaya to improve the technique for attacking opportunity targets by extending the practice of maintaining aircraft on an immediate call basis, the majority of airstrikes continued to be mounted against pre-planned area or pinpoint targets as part of combined operations with the ground forces. Operation 'Jackpot' mounted between 15 March and early May 1950 was a typical example of one of these operations. The objective was the 2nd Regiment M.R.L.A. that was located in South-Eastern Selangor and Northern Negri Sembilan and contained about 260 terrorists under the notorious Ldeu Kon Kim. During the initial harassing operations, that were designed to drive the terrorists into two killing areas, three heavy airstrikes were carried out on the 14th, 15th and 16th April, which involved 98 sorties by Lincolns, Brigands, Spitfires, a Sunderland and a Dakota acting as an airborne tactical headquarters. Between 27 April and 30 May five more airstrikes, involving 108 sorties, were mounted during the closing stages of an operation that achieved a final tally of 44 terrorist eliminations.

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(62) The arrival of medium bombers in Malaya led to a revival of night attacks, first held in August 1948, when six Lincolns attacked a jungle area near the Sungkai-Tapah road in the Trolok area of Perak on the night of 23/24 July, using twin searchlights to provide a datum. (143)

(63) On their return from this and subsequent night strikes reconnaissance flares were dropped on selected targets, which had a considerable effect on the incident rate by discouraging terrorists from attacking estates and mines and from ambushing railways, especially in the neighbourhood of Kluang, Segamat and Gemas in Johore and Negri Sembilan. Lincolns of No. 57 Squadron had carried out their first operation on 26 March against a target in the 'Three Thousand Acre' jungle in Negri Sembilan (144) and on 26 July No. 1 (R.A.A.F.) Squadron went into action for the first time in the campaign against a target in the Kulai-Kota Tinggi area of Southern Johore. (145) These reinforcements to the offensive air support force enabled the number of airstrikes to be stepped up to a record monthly total of 106 in September 1950, involving 504 sorties, which was nearly one third more than the previous record month. By the end of December 1950 687 strikes had been flown during the year with an average of 69 a month - more than ~~three~~ ^{four} times the monthly average for 1949.

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Heavy rainstorms and floods curtailed security force action in January 1951 and there was a corresponding decline in airstrike action, but terrorist reaction to the Briggs Plan in the following month led to a recrudescence of violence in Johore, Negri Sembilan and Malacca and a series of combined operations was mounted to counteract this threat. During Operation 'Letter', in the Penggerang Peninsular of Southern Johore, spasmodic bombing and strafing over a long period caused the terrorist organisation located there to split up and disperse. During the subsequent Operation 'Rumble', mounted from 10-24 February 1951 in the Kroh-Chikus and Bikam Forest Reserves of Southern Perak, 117 sorties were flown in the offensive air support role, the largest effort yet put into this area, and contributed significantly to the final tally achieved by the security forces of three terrorists killed

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63 and 23 surrendered. As a result of the success of Operation 'Rumble' a series of minor operations, 'Rainbow', 'Raven' and 'Rover', were mounted in Southern Perak up to the end of July 1951 with the limited aim of stirring up the terrorists and forcing them to keep on the move. Demands for offensive air support were continuous throughout these operations and resulted either in an increase in the rate of terrorist eliminations or a decrease in the incident rate, while the boost it gave to civilian morale was reflected in an increased flow of information from this source.

In March 1951 the Lincolns of No. 61 Squadron left Malaya without relief after a four months tour during which they had participated in 97 airstrikes and flown 282 sorties on which their aircraft had dropped over two thousand 1,000 lb. and 500 lb. bombs. An immediate drop in the tonnage of bombs dropped was apparent, only one hundred and eighteen 1,000 lb. bombs being dropped in May and June 1951 compared with 996 in March and April, and a high strike and sortie rate was necessary to compensate for the loss of the Lincolns with aircraft carrying lighter weapons. Towards the end of March 1951 bombing and strafing attacks in the dense and hilly jungle terrain between Karak and Temerloh in Pahang during Operation 'Sabai' caused the complete migration of a terrorist unit and enabled Gurkha ground patrols to kill six of them. On 16 June as part of the Briggs Plan to clear Malaya of terrorists from the south northwards the largest combined operation of the Emergency so far, Operation 'Warbler', was mounted in Johore and the air forces were employed to harass the terrorists by denying them river crossings, escape routes and assembly areas and by attacking clearings and camps beyond the immediate reach of the ground forces. During the first week of this operation 242 sorties were flown by strike aircraft and the air effort was maintained at a varying intensity over a period of two months during which 145 airstrikes, involving 610 sorties, were carried out. The temporary grounding of Brigands following an accident and the limitation in the range of the Vampires with which No. 60 Squadron had recently been re-equipped, threw

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a severe strain on the air forces and when Operation 'Grasshopper' was launched on 27 June to deny the borders of Northern Johore to terrorists who had escaped from the area of Operation 'Warbler', numerous requests for immediate airstrike action could not be met, especially as three other operations, 'Raven', 'Marker' and 'Langkap', were in progress at the same time in other parts of the Federation. However, all requests that were supported by good information were accepted and carried out. Eighty-one sorties were flown in support of Operation 'Grasshopper', with no tangible results, and when Operation 'Sedge', the third and final stage of operations in the three southern states of Malaya, was launched in the Bahau area of Negri Sembilan on 12 July 1951, a further 61 sorties were flown against pre-selected targets by strike aircraft. Altogether 118 airstrikes were mounted in June 1951 and 153 in July, the latter being easily the highest number mounted in any one month of the campaign as September 1950, with 106 airstrikes was the only other month when more than 100 strikes were achieved. Many of these strikes were night attacks which had become a regular commitment since their re-introduction in June 1950 with the aim of dispelling any illusions the terrorists might have that they were immune from attack after dark. Between January and August 1951, 47 strikes, involving 88 Lincoln sorties mainly by No. 1 (R.A.A.F.) Squadron, were carried out at night, over half of them against targets in Perak.

On 14 August 1951 a notable airstrike was carried out by Hornets, Brigands and Vampires near Sitiawan in South-Western Perak which succeeded in flushing out a strong element of the 8th Regiment Malayan Races Liberation Army (M.R.L.A.) that ground forces engaged in Operation 'Sludge' had been prevented from approaching in secrecy because of the nature of the terrain. The following month, on 12 September, a similar strike was launched by three Brigands against a terrorist camp located in the Ulu Bernam swamp area of Kuala Selangor that was inaccessible except across open water and on 8 November a further strike was mounted against this camp on receipt of information that it was still occupied. Fourteen Brigands, eight Hornets, four Lincolns and one Sunderland succeeded in almost obliterating the camp

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64 and although floods prevented troops from following up this strike to assess the damage a further convincing demonstration had been given of the ability of airstrike action to carry the offensive to the terrorists in places where ground forces could not reach.

Following the murder of the High Commissioner for the Federation of Malaya, Sir Henry Gurney, on 6 October 1951 on the Kuala Kubu Bahru to the Gap road, Operation 'Pursuit' was mounted to catch the terrorists responsible and the air forces were used to cut off their retreat and drive them into contact with the ground patrols. Extensive use was made of Lincolns and Sunderlands to maintain an air blockade along a line 5,000 yards long and three miles to the east of the scene of the ambush and offensive air support continued throughout the operation, which closed on 21 November with a disappointing tally of only seven terrorist eliminations. Similarly, few definite results were achieved by the offensive air support given to Operation 'Substitution' that was mounted near Muar in Johore from 4 to 13 December 1951, although it did enable the army unit that was operating in the area to be relieved without interruption from terrorist activity.

65 Little tangible results accrued from airstrike effort throughout the final months of 1951 and its effect continued to be prejudiced, as it had since the beginning of the campaign, by the necessity for target clearance and identification. Demands, however, continued at a high level and on 30 December 1951 the 1,000th airstrike of the year was flown, making this year the most active in the campaign from the point of view of offensive air support. Over 4,500 sorties were flown on 1,002 airstrikes during 1951 - an average of 84 a month or nearly three a day that was nearly half as much again as the next most active years of 1950 and 1952.

The tempo of airstrike activity remained fairly high throughout 1952, with an average of 56 strikes flown every month, but some change was apparent in their objectives. At the beginning of the year harassing attacks against area targets over 2,000 yards square were general but the steady improvement in the quantity and quality of intelligence material as terrorist cultivation plots were spotted by

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photographic and visual reconnaissance planes and further information was elicited from surrendered terrorists, resulted in an increase in the number of pinpoint targets. The air forces as a result were required to provide more accurate bombing methods and the development of target marking techniques by Auster aircraft was an important step in this direction, although inaccuracies of target maps and the distortions inherent in aerial photographs frequently caused targets to be missed by the vital 200 or 300 yards. This concentration on fewer but more accurately located targets was reflected in the trend of offensive air support operations towards days of little or no activity interspersed with an occasional maximum effort.

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One of the biggest efforts made during 1952 by the airstrike forces was during Operation 'Puma' in mid-February when an attack was initiated solely by the air forces, with no ground forces involved at all, for the first time during the campaign. The target area lay in Western Pahang around the rivers Enchek, Jelai-Kechil and Lenjang - a mountainous area of thick, primary jungle, fast-flowing streams and peaks over 6,000 feet in height. Up to 400 terrorists were estimated to be hiding in the area behind a protective screen of 300 aboriginal Sakai that ruled out any chance of a surprise attack on foot. It was decided, therefore, that the attack should be mounted solely by the air forces and between 13 and 15 February, eighteen Lincoln sorties were flown, followed by thirty-five Brigand sorties during the following three days. One hundred and thirty-two 1,000 lb. bombs, two hundred and sixteen 500 lb. bombs and 6,800 rounds of 20 mm. cannon ammunition were expended on these sorties and considerable damage was caused but, as it was impossible for ground forces to follow up these strikes, no further information of its results became available.

End of
Gallery //

In the latter half of February and the beginning of March 1952 several airstrikes were flown in support of Operation 'Helsby' in the remote upper reaches of the Sungei Perak/Belum area of Northern Perak, six miles south of the border with Thailand. Although no positive results were achieved terrorist activity in the area was suppressed for some time and subsequent periodic strikes helped to deter its

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recrudescence. In the second half of 1952 strikes were flown in support of Operation 'Habitual' in the Kuantan area of East Pahang and South Trengganu, Operation 'Hive' in the Seremban area of Negri Sembilan and Operation 'Hammer' in the Kuala Langat area of Selangor. By the end of 1952 nearly 700 targets had been attacked during the year on just over 4,000 offensive sorties and over 4,000 tons of bombs, 10,000 rockets and 2 million rounds of ammunition had been expended.

During the first six months of 1953, however, offensive air support was reduced to a new low level and only 114 strikes, involving 852 sorties, were mounted, in contrast to the 364 strikes, involving 1,551 sorties, that had been mounted during the corresponding period of 1952. This reduction was entirely due to the policy of directing the main offensive air support against a few pinpoint targets and avoiding the bombing of large areas of jungle with small numbers of aircraft that was now considered to be uneconomical. (146)

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Some harassing strikes in support of long-term food denial operations were still carried out, however, and very occasionally the opportunity arose for mounting Hornet and Vampire attacks in close support of troops in contact with the enemy. One of the operations that was supported during the first half of 1953 was Operation 'Commodore' that was mounted at the end of May against a possible venue of a Johore State Committee meeting North-East of Kluang. (p47) Nearly all the Lincolns, Vampires and Hornets that were available bombed and strafed the target area on 24 and 26 May during an operation that lasted for sixteen days and resulted in the elimination of nine terrorists and twelve of their camps.

In June 1953 offensive air support reached its nadir for the year when only five airstrikes were mounted, the lowest monthly total since the first month of the campaign. In July 1953, however, the policy of restricting airstrikes to heavy attacks against pinpoint targets was revised when the decline in the terrorist surrender rate over the preceding months proved that it was affected by prolonged harassing

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119

66 attacks from the air over wide areas. Although indiscriminate area bombardment was not accepted large scale harassing operations were re-introduced in areas where terrorists were known to be located. (148)

As a result of this change in policy there was an immediate increase in the scale of offensive air support and in the last six months of 1953 one hundred and eighty-four airstrikes were mounted and the number of sorties flown during the first half of the year was almost doubled. By the end of the year 298 airstrikes had been mounted but the monthly average of twenty-five was less than half that of 1952.

The arrival of No. 83 (Lincoln) Squadron in September 1953, in response to the Director of Operations call for a new offensive to end the Emergency, doubled the medium bomber force that was available and up to fourteen Lincolns could be provided on the few occasions when a maximum effort was required. The tonnage of bombs dropped showed a marked increase with the arrival of these reinforcements and the intensification of airstrike effort - five hundred and eighty-two 1,000 lb. bombs and twelve hundred and forty-two 500 lb. bombs being dropped in November 1953 in contrast to the twelve 1,000 lb. bombs and one hundred and four 500 lb. bombs that were dropped in March of the same year. (149)

On one of these intensive airstrikes in November 1953, seven Lincolns of No. 1 (R.A.A.F.) Squadron succeeded in killing three of Chin Peng's bodyguard and wounding three others although the Secretary-General of the Malayan Communist Party (M.C.P.) himself escaped injury. (150)

On another occasion an example of the results that could be obtained by these relatively massive attacks that were carried out in the second half of 1953 was provided by the 145 aborigines who appealed for Government protection after one such strike, providing the security forces with valuable information while depriving the terrorists of an intelligence screen and a supply and maintenance organisation by their defection. (151)

The latter part of 1953 also saw the introduction of a new phase of protracted combined operations that were carried out over a period of a year or more, instead of the one or two months of previous operations, in order to extract the maximum results and clear the

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country systematically state by state of the terrorist threat. The first of these operations was Operation 'Sword', mounted in an area of 100 square miles in the Bongsu Forest Reserve area of Southern Kedah (152) from July 1953 to March 1954. A series of fairly large jungle areas, including all known terrorist camps, were chosen as targets and throughout the first week of the operation Lincolns, Sunderlands and Hornets bombed and strafed them during the hours of daylight while ~~intermittent~~ ^{intermittent} field artillery and mortar fire maintained the offensive at night. During this week 37 Lincoln, 237 Hornet and seven Sunderland sorties were flown and since Butterworth was only 30 miles away No. 33 Squadron was able to maintain its Hornets over the target area constantly during the hours of daylight. This display of concentrated air power had an excellent effect on the morale of the ground troops and during the following fortnight eleven terrorists were killed and four surrendered. Harassing airstrikes were provided when required for the remainder of the operation and made a notable contribution to the disintegration of the discipline and morale of the terrorist organisation. By the end of Operation 'Sword' 36 terrorists had been killed, 19 had been captured or had surrendered and 106 of their camps had been destroyed, which made it one of the most effective operations of the whole campaign.

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At the beginning of 1954 the tempo of airstrike activity showed a slight increase, the 61 strikes that were mounted in March alone being the largest monthly total since August 1952. Most of these were harassing attacks except in the few cases of pinpoint or small area targets that were known to contain a reasonable concentration of terrorists. Towards the end of the year, however, improvements in target marking techniques by day and by night made it possible to achieve greater success in operations designed primarily to kill the terrorists and some increase in the number of pinpoint attacks that were carried out occurred which, together with attempts to economise in airstrike action, reduced the average monthly total of airstrikes to about 25. Lincolns bombing in patterns or individually provided

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the main effort with Hornets acting in a supporting role. The success of this technique was evident during the offensive air operations that were mounted in July 1954 in support of Operation 'Eclipse' in the deep jungle of Kedah, when Lincolns attacked the main targets while Austers marked pinpoint targets close by which were immediately attacked by Hornets. (153) Support was also given to Operations 'Kitchener', 'Hawk' and 'Jekyll' in Johore, Pahang and Negri Sembilan (154) during the first half of 1954 and, in July, Operation 'Termite' was launched. This was the most comprehensive combined operation to date in the campaign and involved a maximum effort by Lincoln and Hornet aircraft against terrorist base areas in the Kinta and Raia valleys east of Ipoh. (155) Two suspected main camps were bombed simultaneously by two formations of five Lincolns and secondary targets were bombed and strafed by Lincolns and Hornets for a period of three days. By the end of the operation in November 1954, thirteen terrorists had been killed, one had surrendered and 181 camps had been found and destroyed. In September 1954 the first attempt was made to bomb a pinpoint target by night, in this case a camp in the Jelai Gemas Forest Reserve in Kedah. (156) Ground flares were used to provide a sighting datum and all bombs fell within 100 yards of the camp, killing at least one terrorist. The State Committee member in the Kedah area was said to be so impressed with the accuracy of airstrikes at this time that he was convinced that there was a traitor in his party. Another night attack in the Kuala Pilah area of Negri Sembilan, however, achieved no result as the ground liaison officer had placed datum flares on the basis of an inaccurate 1" map - an incident which underlined the necessity of using aerial photographs when planning airstrikes in the Malayan campaign. (157)

In addition to the operations already mentioned, offensive air support during 1954 was also provided for a series of protracted operations such as Operation 'Sword', which finished in March 1954. Operation 'Ajax' in the Kulai area of Johore began in August 1954 and continued into 1955 while in September and December 1954 Operations

' Shark'

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'Shark' and 'Latimer North' and 'Latimer South' were started in the Sungei Siput area of Perak and the Temerloh and Triang areas of

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North-Eastern Negri Sembilan and South Pahang, which were to last throughout 1955 and into 1956. (158)

By the end of 1954 four hundred and twenty-six airstrikes had been mounted during the year, with a monthly average of 36 - nearly half as much again as in 1953 and a figure that was not to be exceeded during the remaining five and a half years of the Emergency.

End of
Gallery 12

1955 began with a marked increase in airstrike activity, the 458 sorties that were flown on 65 strikes in January being the greatest number flown in any one month for over two years. However the replacement of Lincolns by Canberras, using production bombs as stock-piles in the theatre had been depleted, meant that economies were made as far as possible in target selection. When Venoms replaced Hornets in April and October 1955 more time had to be spent on training in their primary role of air defence and further efforts were made to reduce the amount of offensive air support that was given to the ground forces. The monthly average of airstrikes flown against the terrorists was reduced to less than 30 by the middle of 1955 - none of which achieved any significant results. In April 1955, for example, 200 terrorists were reported to be in the Bukit Resam Ambat area on the borders of Negri Sembilan and Selangor and since the nature of the terrain and the presence of an aboriginal security screen prevented ground forces from approaching them in secrecy, Operation 'Beehive' comprising an air attack mounted in conjunction with an airborne follow-up was launched. (159) Eleven Lincolns, four Canberras and twelve Hornets bombed and strafed the target area on 4 April 1955 but paratroops found no trace of any terrorists and the operation merely underlined the dangers of mounting a large scale operation on the uncorroborated report of one aborigine.

On 9 September 1955 an Amnesty was declared in the campaign against the terrorists and an embargo was placed on all offensive air operations which was maintained for the rest of the month, all of

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October and most of November. The terrorists, however, took advantage of this respite and, following an attack on Kea Farm New Village in the Cameron Highlands area of Northern Pahang on 20 November, restrictions on the use of offensive air support were relaxed, although ground force action was still curtailed. (161)

On 25 November Canberras of No. 12 Squadron based at Butterworth attacked camps in the Taiping area of Perak and three days later Operation 'Saturation' was launched following reports that Yang Kwo, the Vice Secretary-General of the M.C.P. and Ah Ho, State Committee Secretary of the Johore Secretariat, were encamped on a hill south-west of Simpang Pertang New Village in Negri Sembilan. (162)

While five battalions of troops attempted to seal off the area, Lincolns and Canberras began a systematic and intensive bombardment of the target, during which seven hundred and fifty-two 1,000 lb. bombs were dropped in the course of ten days, but with no significant results. Despite the Amnesty, 300 airstrikes were flown during 1955 - the monthly average of 25 equalling the corresponding figure for 1953 but representing a reduction of one third over that for 1954.

Airstrike action at the beginning of 1956 continued to show the gradual decline that had been apparent at the end of the previous year but, on 6 February the Director of Operations, concerned at the paucity of kills achieved by the ground forces against the remaining hard-core terrorists, issued a directive that air attacks should have priority against all identified camps where conditions were suitable for an experimental period of two months. (163)

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Shortly afterwards, on 21 February, the air forces achieved their first major success in their offensive campaign when Goh Peng Tuan, the notorious commander of the 7th Independent Platoon M.R.L.A., and thirteen other terrorists were eliminated during the course of an airstrike against a camp near Kluang in Central Johore. This operation, 'Kingly Pile', took months to prepare and the target was the only camp that was attacked during the whole campaign that was definitely known to be occupied at the time. The attack was carried out by seven Lincolns of No. 1 (R.A.A.F.)

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Squadron bombing on a time and distance to run basis from a ground marker, followed by four Canberras of No. 12 Squadron bombing on a smoke marker dropped by an Auster. Two 1,000 lb. bombs straddled the camp with an interval of 80 yards that was designed to produce sufficient concussion to kill all life between them - which it did. In fact, although only fourteen bodies were identifiable and were allowed as kills, up to eight others had been completely disintegrated by the force of the explosions. (164)

The elimination of this gang was a severe blow to the terrorist organisation in Johore and exemplified the dividends that could accrue from offensive air support when the target location was accurately identified. Largely as a result of this operation the Director of Operations permanently enforced, on 23 April 1956, the directive giving the airstrike forces priority of action against those camps which had been located with sufficient accuracy to make them acceptable for air attack and which were known to be probably occupied at the time. However, apart from June 1956, the busiest month of the year with a total of 22 airstrikes, offensive air support showed a persistent, if fluctuating, decline throughout 1956. In terms of weapon expenditure the offensive air support that was provided in 1956 was less than one quarter of that provided in 1951. This decline was attributed to the fact that Army Commanders were using the loopholes provided by their directive to retain potential airstrike targets for ground force action, but in fact high grade intelligence on which air attacks could have been mounted was becoming extremely rare by this time. Most strikes continued to be mounted against Grade Four targets, that is areas of 1,000-2,000 yards square which were believed to contain some terrorists. Even when pinpoint targets were available the intelligence was not reliable and no kills were confirmed as a direct result of bombing action, despite the development of delayed action ground marker flares and radar target location devices. (165)

Apart from Operation 'Kingly Pile', most airstrike missions in 1956 were flown in support of protracted combined operations such as 'Shark', North and South, in the Sungei Siput and Cameron Highlands area

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125

of Perak and North Pahang, 'Latimer', North and South, and 'Enter' in North and North-East Negri Sembilan and South Pahang - all of which series (166) of operations had begun at the end of 1954 and continued into 1957.

69 During December 1956 only three airstrikes were mounted, bringing the total for the year to 129 - the average of twelve a month being less than half that of the previous year.

During 1957 the trend towards a reduction in offensive air support action was confirmed. As the strength of the terrorists gradually declined and they turned increasingly to the defensive by avoiding all contact with the security forces, information leading to worthwhile targets became rarer. Most contacts with the terrorists were achieved by patrolling or prepared ambushes and necessitated immediate action by the ground forces. It was anticipated that the dwindling flow of precise target information that was being given to the air forces might dry up altogether and they had to accept that their remaining task lay mainly in the harassing role, which accounted for 55 per cent of the airstrike activity in 1957 in comparison with 28½ per cent in 1956. In some quarters this was considered a ^{misuse} ~~misuse~~ of air power but, since the activity of the ground forces had become largely ineffective in many parts of the Federation, harassing air attacks alone could exert the additional pressure required to increase their chances of making contact with the terrorists. Moreover, in view of the Prime Minister of the Federation's determination to use all available methods to end the Emergency by August 1958, the first anniversary of Independence, it was generally accepted that the high cost of mounting harassing airstrikes for no material result was justified.

70 The most important target that became available in January 1957 was a pinpoint thought to be a camp of Chan Tai Chee, a District Committee Member of the Southern District of Selangor, and seven of his attendant terrorists. (167) Four Lincolns of No. 1 (R.A.A.F.) Squadron dropped fourteen 1,000 lb bombs on 19 January under the control of a Target Director Post but most of them fell 600 yards from the aiming point owing to poor formation flying which caused the radar operator to lock on to a

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126

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straggler and misdirect the main force. During February 1957 no airstrikes at all were mounted, the first time in the Emergency, except during the Amnesty in October 1955, that the air forces had not contributed offensively to the campaign in any one month. Airstrike activity continued at a low ebb during March and April 1957, those missions that were flown being mainly in support of Operations 'Shark' and 'Latimer' but with no appreciable results. In May 1957, however, the receipt of the one accurate pinpoint target in the whole year resulted in a successful airstrike which, in conjunction with ground force operations, virtually destroyed the 3rd Independent Platoon M.R.L.A. under its notorious commander Teng Fook Loong in a camp seven miles North-West of Klawang in Negri Sembilan. Some 545,000 lb. of bombs had already been dropped on the supposed camping site of this platoon at the end of 1956 and the beginning of 1957 but lack of accurate pinpoints had nullified their effect. At the beginning of May 1957 five Lincolns of No. 1 (R.A.A.F.) Squadron and twelve Venoms of No. 60 (R.A.F.) Squadron and No. 14 (R.N.Z.A.F.) Squadron dropped a further 94,000 lb. of bombs but, although information leading to this attack was good, it was not accurate enough as the aiming point proved to be 250 yards from the terrorist camp. On 15 May, however, further information was received about this terrorist gang and 70,000 lb. of bombs were dropped by five Lincolns of No. 1 (R.A.A.F.) Squadron during a night strike in the Jelebu district of Negri Sembilan. Four terrorists were killed, including Teng Fook Loong and his wife, and continuous harassing by the air forces from May to October was partly responsible for the surrender of the remaining members of the 3rd Independent Platoon M.R.L.A. in the neighbourhood of Seremban in Negri Sembilan.

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After this successful operation the offensive support provided by the air forces was limited to occasional harassing attacks which achieved little except keeping the terrorists on the move and further lowering their morale. Between 12 and 14 November 1957 Lincolns dropped fifty-six 1,000 lb. bombs during the hours of daylight and a Sunderland dropped one hundred and ninety 20 lb. bombs at night as part

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127

of a combined operation against a terrorist concentration in the Kroh-Chikus Forest Reserve in Perak and ten days later one hundred and thirty 500 lb. bombs were dropped by Lincolns and Sunderlands in the Tanjong Tualang area of Perak to exploit information gleaned from two terrorists who had surrendered as a result of an airstrike on 18 August 1957.

70 Terrorist morale was known to be low in this area and it was hoped that these attacks would finally persuade them to surrender, but there is no evidence that they had any effect. By the end of 1957 only 48 airstrikes had been mounted during the entire year, involving 383 sorties which was little more than one third of the offensive air support provided in 1956 and less than half the monthly totals achieved at the height of the campaign in 1950 and 1951.

71 During 1958 demands for offensive air support continued to decline as the few remaining terrorists became even more elusive. Static camps were practically unknown by now except along the border of Malaya with Thailand and, even when good target intelligence became available, it was often best exploited by Police Special Branch and military operations, while the shrinkage of 'black' areas where Emergency regulations still prevailed made it increasingly difficult to obtain clearance for airstrike action. Moreover, during March 1958 Sunderlands were withdrawn from 'Firelog' operations and when the last Lincolns were replaced by Canberras in September the expense of mounting harassing operations with jet aircraft for at the best debatable results became a more weighty consideration. It was generally agreed that such operations could now only be relied upon to induce terrorist movement and rarely caused them to surrender, although they continued to be useful when terrorists were located beyond the reach of the ground forces. Therefore, although sufficient aircraft were maintained throughout 1958 to meet all likely demands, the majority underwent training in their primary theatre role and economies were made in such harassing operations as were undertaken by limiting the target areas to 800-900 yards square and by putting a minimum of six 500 lb. bombs into each area of 1,000 yards square in the shortest possible time.

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Altogether 47 airstrikes were mounted during 1958, the same number as in the previous year, but the departure of the last medium bomber squadron was reflected in a marked increase in the number of sorties that were flown by aircraft with a lighter armament. Fifteen attacks were made on accurately known targets during the year but no results were achieved as the camps were probably unoccupied at the time. Thirty-one harassing attacks were made, including a series mounted in the Ipoh/Chemor area of Perak in March and in the Parit Forest Reserve in the same state during Operation 'Bintang', which ended in September 1958 with a tally of 61 terrorist eliminations, at least five of which had surrendered as a result of a near miss during a bombing attack. This was an unusual occurrence since the terrorists had become rather disdainful of airstrikes by now, believing that their chances of being hit were remote. In fact, by the end of 1958 it was clear that if offensive air support were completely denied to the ground forces for the remaining duration of Operation 'Firedog' its progress would not be greatly affected.

Despite the insignificant rate of kills achieved by airstrikes, however, there was no disposition on the part of the ground forces to dispense with this form of support. Nevertheless, as the terrorist forces shrank to proportions where they constituted little more than a harassing element in the community and the hard core remnant retreated to comparative immunity beyond the Thailand border, it became necessary to review the policy of providing offensive air support solely in order to carry the offensive to the enemy when ground force patrols proved ineffective. By the beginning of 1959 the returns were no longer worth the effort and airstrike action was drastically reduced. No strikes at all took place during the first seven months of the year but, in August, several terrorist camps east of Bentong in Northern Pahang were spotted by Auster reconnaissance aircraft and, as there were no troops available in this area, two targets were bombed on 13 August by Canberras of Nos. 2 (R.A.A.F.), 45 (R.A.F.) and 75 (R.N.Z.A.F.) Squadrons, under the control of a Target Director Post, while a formation of Sabres from Nos. 3 and 77 (R.A.A.F.) Squadrons at

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/ Butterworth

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 Butterworth strafed pinpoint's that had been marked by an Auster. Four days later, on 17 August 1959, a target on the northern slopes of Bukit Tapah in Perak was attacked by Canberras and the offensive air support provided during the Malayan campaign came to an end, even though the Emergency continued for a further eleven months. (168)

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~~Results of offensive air support~~

The contribution made by offensive air support to the elimination of the Communist terrorists in the Malayan campaign cannot be evaluated solely in terms of the material results for any estimate of the number of casualties inflicted and the physical damage caused by the immense expenditure of bombs, ammunition and flying effort would suggest that airstrike action in this type of campaign was simply not worthwhile. For example, the eight Lincolns of No. 1 (R.A.A.F.) Squadron dropped 17,500 short tons of bombs between 1950 and 1958, over half the total tonnage of bombs that was dropped during the entire campaign, and were credited with killing only sixteen terrorists and destroying twenty to thirty of their camps. (169) In toto some 35,000 short tons of bombs were dropped during the course of 4,067 airstrikes in the campaign and expenditure on armament alone exceeded £1½ million a year at the height of the Emergency. (170)

In return for this effort several factors conspired to prevent an accurate assessment of the results it achieved. At the beginning of the campaign it was felt that the ground forces attached too little importance to the value of ascertaining the effects of individual airstrikes but exigencies of time and terrain frequently prevented them from following up an attack. In any case, assessment of the casualties inflicted by airstrike action was impeded by the terrorists' practice of removing their dead and wounded from the scene of attack. For the sake of morale the rank and file of the terrorists were forbidden to discuss their own casualties amongst themselves and, since most of them were of low intelligence anyway, little information about the results of airstrikes could be gleaned from those that surrendered or were captured. Few reports were ever received of terrorists who died as a result of wounds sustained during air attacks even though there must have been a

72
number of these in view of the rigorous conditions under which they existed in the jungle and the shortage of drugs and medical supplies. Lack of information, therefore, renders any figures of casualties inflicted by airstrike action during the Malayan campaign of dubious value but some idea of the scale of achievement is given by the few statistics that are available.

During the first fifteen months of the campaign high grade intelligence reports credited airstrike action with the deaths of 98 terrorists and the wounding of 22 others, while a further 51 had been killed and 38 wounded according to less reliable information. (171)
During this period the security forces as a whole killed nearly 1,000 terrorists. One year later 126 deaths by airstrike action had been confirmed, with a further 141 unconfirmed, out of the total number of 1,641 terrorists that had been killed by the end of 1950. (172) Air-strike action was, therefore, credited with less than 10 per cent of terrorist deaths and even this estimate was almost certainly too high and was considerably reduced as the campaign progressed.

It is not surprising that few kills were achieved by airstrike action since it was inevitable that much of the air effort was wasted against an enemy who could not be seen from the air and whose exact location was rarely known even by the ground forces. Accuracy in target location and bomb aiming was essential since bomb damage was slight in jungle terrain and the effect of blast was rapidly dissipated by the trees. If a bomb missed the target by 100 yards its effect was largely nullified and in the majority of cases the inaccuracies of initial intelligence and available maps and the distortions inherent in aerial photographs ensured that this is what happened.

Airstrike action, however, was only one aspect of the offensive that was maintained against the terrorists and formed an integral part of the combined operations carried out by the security forces. Its effects, therefore, cannot be studied in isolation and the contribution it made to the successful outcome of the Emergency was not limited

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solely to the physical results which it achieved. By delaying the withdrawal of terrorists along certain escape routes and driving them towards prepared ambushes airstrikes considerably increased the ground forces' chances of making contact with the enemy. By harassing the terrorists into moving into fresh base areas where they were not at first known or feared, a useful increase in information was frequently elicited from the local populace, while the disruption of the terrorists' camp and command organisation and their need to establish new sources of food, information and money considerably weakened their offensive potential. Aerial bombardment also contributed significantly to the elimination of the terrorists by inducing surrenders. The average terrorist was of low intelligence, which was further dulled by the monotony and hardships of his existence in the jungle and, at least during the first half of the campaign, he was frequently demoralised by an attack to which he had no answer but to hide. The effect of airstrikes on terrorist morale was cumulative and many captured or surrendered enemy personnel testified to their efficacy in causing panic and abandonment of camps, leaving behind valuable intelligence material. Airstrikes also had a decisive effect on the morale of the native populace by encouraging them to resist terrorist exploitation and to co-operate with the security forces.

It is impossible to assess accurately the indirect effect that offensive air support had on the terrorist elimination rate but it was by no means inconsiderable. By the end of 1950 police interrogation had revealed that thirty-two terrorists had surrendered and twelve had been captured as a direct result of airstrike action (173) while the efficacy of combined ground and air operations was exemplified on 19 June 1952 when a group of terrorists were attacked by Hornets near Ipoh in Perak and all were killed by a patrol of The Malay Regiment (174) while endeavouring to escape from the target area. In 1952, the A.O.C. Malaya decided that the success of airstrike operations could only be properly evaluated in terms of the successes achieved by the security forces being supported at the time. On an arbitrary basis all airstrikes that had occurred within ten miles of the elimination of

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a terrorist in the preceding 28 days were considered and the results suggested that airstrikes assisted the ground forces in achieving as much as 30 per cent of their eliminations. (175)

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Such evidence provides sufficient justification for providing offensive air support to the ground forces in the Malayan campaign but a more telling argument in its favour is provided by those who criticised it most. At various times throughout the campaign it was claimed that airstrike action was being used to maintain the offensive against the terrorists for want of a better alternative. (176) Certainly by 1957 ground force patrols were proving largely ineffective and the terrorists would have been able to evade them indefinitely if they had not been subjected to the additional pressure of airstrike action which, by making some areas untenable, reduced the size of the area that remained to be searched. Therefore, although it was expensive and misemployed to some extent, air power frequently performed tasks which the ground forces were unable to carry out for themselves and thus played an important part in bringing the Emergency to a successful conclusion. Moreover, if further justification were needed, the effectiveness of the air effort was even more apparent when the number of men required to maintain and operate the offensive air forces is set against the number of security force personnel that were deployed on the ground. The provision of liberal offensive air support may have achieved few spectacular results but, viewed against the vast effort expended on deploying the security forces in the field, it is clear that any action that was likely to shorten the Emergency by one day was worthwhile as it achieved savings in every sphere of operations against the terrorists.

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The value of offensive air support in the Malayan campaign can be readily substantiated but whether the most effective use was made of the limited resources that were available is more debatable. At the start of the campaign large terrorist groups were located close to villages in the jungle fringes and provided far better targets than occurred later on, but inaccurate maps and poor intelligence, prevented them from being exploited to the full. If a greater effort had been put

74

into improving these drawbacks at this stage, and if the target location and marking devices that were developed in the later stages of the campaign had been available at this time, offensive air support would have been more successful than it was in eliminating the terrorist threat. As more effective target marking techniques were evolved offensive air support became more effective and even with a reduced effort the casualties inflicted by aerial attack increased. Between 1956 and 1958 about thirty terrorists were killed during airstrikes and on two occasions when an accurate target location was obtained and aircraft were guided on to it, fourteen out of sixteen and eight out of twelve of the terrorists present were killed. (177) Target information, however, was rarely so good and for the greater part of the campaign offensive air support was provided in a harassing role over area targets. In retrospect the systematic bombing of map squares 1,000 yards square did not achieve much and a reaction against this technique had set in by 1955. At the beginning of the campaign, however, when information was scarce, it was the only method of attempting some offensive air action. Nevertheless, continuous pressure by small numbers of aircraft tended to build up a disregard for the threat which they constituted and towards the end of the campaign spasmodic but concentrated attacks were favoured to keep the terrorists in a constant state of apprehension. It was the harassing role of the air forces that received most criticism from those concerned with economising in offensive air support but the testimonies of captured or surrendered terrorists bore witness to the effect it had and the fall in the surrender rate after the cessation of area bombardments in 1953 substantiated their claims. Throughout the campaign it was essential to maintain pressure on the terrorists and in many cases this could be achieved with decisive effect and economy of force by offensive airstrike action. Definite limitations were imposed on such action in this type of campaign, however, and in the final analysis it had to be accepted that the cost of air operations and the effort expended bore little relation to the primitive character ^{and} the numerical weakness of the forces attacked in what was, after all, essentially a police operation.

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134

CHAPTER 4

AIR TRANSPORT SUPPORT IN THE MALAYAN CAMPAIGN

Aims of air transport support: medium and short range transport commitments ~~XXXXXXXXXX~~

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The most important role played by the R.A.F. in the campaign against the terrorists in Malaya was the provision of air transport support, which had the threefold aim of enhancing the mobility and flexibility of the ground forces, by enabling them to concentrate rapidly against targets anywhere in the Federation, of sustaining operations in deep jungle for long periods, by supplying patrols and evacuating casualties, and of providing communications facilities for commanders and their staffs in the field. The poor surface communications of Malaya made it certain that, without the support of the air transport forces, the ground campaign would have been substantially prolonged and its outcome seriously prejudiced.

The various commitments of the air transport forces in Malaya ranged from flying over scheduled trunk routes to vertical take-off operations in deep jungle and required a wide variety of aircraft. These fell into two categories, medium range and short range transport aircraft, although their role overlapped to some extent. The carriage of freight and personnel on supply dropping and paratrooping operations and on communication flights between major airfields was the primary task of medium range transport aircraft while the carriage of troops and freight into and out of jungle landing zones and commitments in the light liaison role were carried out mainly by short range transport aircraft.

The air transport support force was the largest element of the air forces that were employed in the campaign against the terrorists, with up to eight squadrons incorporating fifteen different types of aircraft operating throughout most of the Emergency. (1) Most of these aircraft were operated from their main base at Changi, from where they were detached at intervals to supplement the small force at Kuala Lumpur

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136

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were received in the Far East for tropical trials, and the re-equipment (8)
of this squadron was completed by 1 April 1951. No. 52 Squadron
completed its conversion to Valettas by September of that year, at the
cost of withdrawing completely from operational commitments, while
conversion of the Dakota elements of the Far East Communications (9)
Squadron, and No. 110 Squadron was completed during November 1951.
On 30 November 1951, however, the air transport support force was
depleted with the withdrawal of the Dakota flight of No. 41 (R.N.Z.A.F.)
Squadron for re-equipment in New Zealand, (10) but the four Dakotas of
No. 38 (R.A.A.F.) Squadron remained in Malaya and helped to compensate
for the reduced serviceability which the other transport squadrons
were experiencing with the Valettas. (11) They took over from No. 110
Squadron for their first tour of duty at Kuala Lumpur in November 1951
but were withdrawn from operations a year later pending their return
(12)
to Australia.

At the beginning of 1953 one of the four Valettas of the Far East
Communications Squadron was replaced by a Hastings to enhance the
provision of long range transport services both within and outside the
Far East theatre and in June 1955 a further element was introduced into
the transport forces in Malaya with the arrival of four Bristol
Freighters of No. 41 R.N.Z.A.F. Squadron. (13) These aircraft were
incorporated into the Far East Transport Wing and were employed on
transport support operations until the end of the campaign, forming (14)
part of the detachment at Kuala Lumpur from November 1957 onwards.

During 1957 the contribution of the medium range transport force
to the improvement in the Emergency situation precluded any reduction
in its strength but a greater concentration on its normal theatre role
was heralded by the addition of a further Hastings to the Far East
Communications Squadron and by the replacement of the eight Valettas
of No. 48 Squadron by eight Hastings on 1 May 1957. (15) On
31 December 1957, however, No. 110 Squadron was disbanded, having
served continuously in Malaya for over ten years, and two of its (16)
remaining Valettas were added to the complement of No. 52 Squadron.
Throughout 1958 the medium range transport commitments were met by the

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137

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Bristol Freighters of No. 41 (R.N.Z.A.F.) Squadron and the Hastings and Valettas of Nos. 48, 52 and the Far East Communications Squadron. During 1959 four Beverleys were added to the establishment of eight Hastings in No. 48 Squadron and two of the Valettas of No. 52 Squadron were replaced by Dakotas. (17) By this time, however, the remaining transport commitment in direct support of the campaign against the terrorists was met by the three Valettas of No. 52 Squadron and the Bristol Freighter of No. 41 (R.N.Z.A.F.) Squadron which comprised the Air Support Force at Kuala Lumpur. (18)

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Of the medium range transport aircraft that were employed during the campaign in Malaya, the Dakota and the Valetta were ideally suited for operations in the local environment. Both were capable of being manoeuvred in confined spaces, which was essential on operations over mountainous jungle terrain. Even in bad weather they demonstrated their ability to drop supplies on almost any dropping zone and remarkably few missions were aborted during the entire campaign. Of the two aircraft the Valetta was the most suitable as the Dakota had a low angle of climb, which made escape from narrow valleys hazardous, and the disadvantage of a poor forward and downward visibility which impeded the accuracy of supply drops. The serviceability rate of the Dakota, however, compared favourably with that of the Valetta. Between September 1951 and February 1952 84 per cent of the Dakota force was serviceable at any one time, compared with only 55 per cent of the Valetta force. (19)

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There was little to choose between Dakotas and Valettas and Bristol Freighters, which also had a high serviceability rate, but the four-engined Beverleys that were tried out in Malaya during the later stages of the campaign proved unsuitable for operations in the prevailing conditions as they could not descend into small valleys, unload their cargoes and escape by turning in a tight circle. Contrary to expectations, however, Hastings aircraft proved successful in a tactical air supply role in Malaya. The position of the

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138

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navigator in the nose of the aircraft enabled supply drops into small jungle dropping zones to be carried out extremely accurately, while the double doors in the Mark I version enabled four packs to be ejected simultaneously. With a maximum payload of 9,000 lb., compared with the 4,000 lb. of the Dakota, the Hastings had considerable advantages as an air supply aircraft but, unfortunately, its wide turning circle made it unsuitable for operations over mountainous terrain and it was not used much during the later stages of the campaign when this capability became essential. (20)

Medium range transport roles (b) Supply Dropping

Of the three major roles played by medium range transport aircraft during the Malayan campaign, supply dropping was the most important in carrying the offensive to the enemy and ensuring his ultimate defeat. Without air supply the depth of penetration of security force patrols into the jungle would have been limited by the amount of supplies which they could carry and beyond a range of five or ten miles from the jungle fringes the terrorists would have been free from molestation. Under such circumstances the security forces would have been reduced to holding a series of more or less isolated defended areas, leaving the terrorists free to operate at will over the rest of the Federation. As it happened security force patrols were able to penetrate the jungle as deeply as they wished and to remain there for periods of up to three months if necessary, instead of the four days to which they would have been limited without air supply.

Planning and initiation of supply drops ~~in Malaya~~

Requests for air supply were radioed from jungle patrols to Army or Police District Headquarters who passed them on to the Joint Operations Centre at Kuala Lumpur for confirmation and the allocation of tasks. At the same time details of requirements were passed to the depot of No. 55 Air Despatch Company R.A.S.C. at Kuala Lumpur, who were responsible for packing the supplies, attaching their parachutes and also for providing personnel to act as air despatchers. Supplies were normally prepared in 200 lb. packs and generally consisted of the rations, clothing, ammunition and medical equipment (21)

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that were necessary to maintain patrols in the field, as well as demands from individual patrols members for N.A.A.F.I. supplies, (22) including beer, cigarettes and hairdressings. Care was taken however, to impress on the ground forces the necessity of limiting their requests to those that could be transported by no other means, or only at the cost of considerable time and effort, for it was easy in a country like Malaya to fall into the habit of calling on air transport aircraft for every individual requirement when these could have been made available by other methods with good planning and administration.

Air supply, however, was usually the only available method of supplying jungle patrols with heavy items such as assault boats, marine engines, wireless sets and batteries and demands for heavy and awkward loads increased when permanent forts were erected in deep jungle from 1953 onwards. Amongst items that were successfully dropped on the sites of these forts were barbed wire, screw pickets, water pumps, battery charging engines and earth augurs, as well as grass seeds for sowing the forts' airstrips and roofing felt, nails, hammers and other building materials and tools to supplement local supplies. On various occasions a tractor, equipped with disc harrows, rooters, earth scoops and grader blades, a caterpillar angle bulldozer and a railway system complete with lines and tipper trucks were successfully dropped in parts for assembly on the ground. In March 1957 55,530 lb. of equipment were dropped into Fort Chabai to repair the fort's airstrip and it was not unusual for over 70,000 lb. of supplies to be dropped during the first month of a fort's establishment. Thereafter, stores for the fort's shop, including gifts for the local aboriginal populace, ammunition, rations and clothing kept the average monthly weight of supplies that were dropped to each fort at not less than 20,000 lb. until eventually some of this commitment was taken over by short range transport aircraft using the adjacent airstrip. To improve the amenities of these isolated forts armchairs and other furniture were dropped while chickens, ducks and goats were parachuted

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in to vary the diets of the garrison and several rat infested forts
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requested and received cats by the same method.

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The parachutes that were attached to supply packs were an expensive item of equipment since less than half were recovered and less than half of these were fit for renovation and re-issue. The average operational load of each parachute was 270 lb. which approached the maximum weight and bulk of the load that could be handled by the R.A.S.C. despatchers in the air. Since the operational load of the 'Irvin' parachute, costing £15 each, was limited to 180 lb., the more expensive 'R' type parachute, costing £32 each, was generally used, although at little more than half its maximum capacity of 450 lb. Only towards the end of the campaign, in August 1958, was the 'Utility' type of parachute developed which provided adequate support at a cost of £21 to £26 each, which, with an annual consumption of 18,000 parachutes in Malaya, represented a considerable financial saving in comparison with the 'R' type parachute.
(24)

Techniques of supply drops ~~XXXXXXXXXX~~

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The main problem faced by aircrews on supply drop missions in Malaya was the location and identification of dropping zones in featureless primary jungle, a task which required accurate navigation and visual reconnaissance, often in bad weather, from inadequate maps or aerial photographs and one that had to be learned from scratch by pilots who had been employed almost entirely on route flying before the campaign against the terrorists began. The selection of dropping zones was the responsibility of the ground patrol commander and although an attempt was made to find some clearing or a patch of clearable secondary jungle, they seldom afforded the minimum desirable qualifications of size and visibility from the air. Most were mere holes in the jungle canopy ten yards in radius and on several occasions supply drops were made with no visual contact between the air supply aircraft and the ground. Pilots of these aircraft were briefed with the estimated map reference of the dropping zone before take off but the limited horizons of ground patrols ensured that they had only an approximate idea of their true location. As soon as the approaching

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141

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aircraft was heard, therefore, a smoke grenade was fired to identify the dropping zone and coloured smoke signals and panels were used to provide an aiming point during the run-up. Radio communication between the air and the ground was normally good and the pilot awaited confirmation that the packs were recoverable before leaving the area. (25)

Once over the dropping zone, however, there was little margin for error and as most were located amidst trees 200 feet high, often on the lee side of a hill, or were surrounded by swamp, it was generally extremely difficult, if not impossible, to recover supplies that missed the aiming point by as little as fifty yards. Since the flight path over the target areas was invariably at a height of under 300 feet and over dangerous terrain in uncertain weather conditions that were subject to rapid fluctuations in wind speed and direction, the fact that less than 1½ per cent of all the supplies that were dropped during the entire campaign were lost is sufficient tribute to the high degree of skill that was acquired by the aircrews and despatchers that were employed on these operations. (26)

Four or five separate supply drops were usually carried out during the course of one 2½ hour sortie and these missions placed a severe strain on aircrews in the Malayan environment. Over 3 lb. in bodyweight was commonly lost through perspiration on each sortie and fatigue was a serious problem. The casualty rate amongst supply dropping crews was four times as high as that of the infantry whom they maintained and could only be justified by the necessity of their work. (27)

While weather conditions usually prevented supply drops before mid-morning or early afternoon and frequently caused the last part of a ground patrol's day to be wasted in waiting to receive them, the main disadvantage of air supply was in compromising the security on which ground force operations depended. It was impossible to carry out supply drops surreptitiously as the position of the terrorists was unknown and they were able, therefore, to deduce the line of advance of a security force patrol from the noise made by an aircraft on a regular series of re-supply missions and take appropriate evasive

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142

action. As early as January 1949 an occupied terrorist camp was located during Operation 'Gargoyle' in Perak but was evacuated before contact could be made with the terrorists solely because the presence of the security force patrol was given away by a supply drop. (28)

After this incident deceptive techniques, involving flying a regular sortie pattern over an area for some time before a supply drop, were evolved in order to convince the terrorists that this was a scheduled transport route, but the effort was never available to make much use of this practice. (29)

The threat to the element of concealment and surprise which supply drops afforded is shown by those units, especially the Gurkhas, which received larger ~~amounts of supplies~~ ^{amounts of supplies} than normal at longer intervals, using porters to carry them, which achieved a higher rate of terrorist eliminations as a result. (30)

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Summary of supply drop operations ~~XXXXXXXXXXXXXXXXXXXX~~

Details of the number of supply drops and the weight of supplies delivered in this manner during the campaign are given in Annex U ~~Appendix XXI~~ (31)

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Unlike airstrike action the peak of air supply activity was reached in 1955 which coincided, not with the maximum terrorist offensive, but with the commitment of the maximum number of troops to deep jungle patrolling in an effort to eliminate the remaining hard-core units. Some idea of the development and the scale of air supply operations during the campaign is shown by the fact that just over 60,000 lb. of supplies were dropped during the first six months of the Emergency while twelve times that amount were dropped in a single month in 1954.

The first supply drops of the campaign were carried out before the Emergency was declared, in support of Operation 'Haystack' in Northern Perak. One Dakota of No. 110 Squadron was positioned as part of the R.A.F. task force at Taiping on 12 April 1948 and carried out its first supply drop on 25 April. (32) Thereafter supply drops were made every three days until the task force was withdrawn on 27 May, after the Emergency had been declared, and a new task force established at Kuala Lumpur. (33) Altogether 222 containers were dropped on fifteen supply drops during Operation 'Haystack'. Throughout June and July 1948 occasional small supply drops to security force

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143

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patrols were carried out by Dakotas of No. 110 Squadron from Kuala Lumpur (34) but it was not until the withdrawal of the terrorists into the jungle after their initial offensive and the advent of trained jungle troops that the real value of air supply was appreciated by the Army. The police, however, were quick to realise that air supply provided the best method of maintaining remote posts in such states as Kelantan and Kedah and during July and early August 1948 two such posts at Batu Melintang and Gua Musang in North Kelantan were supplied almost entirely from the air. (35) With the start of operations by 'Shawforce' in Pahang and Kelantan in August 1948 and the simultaneous redeployment of troops throughout the Federation, air supply operations rose to a peak that was not reached again until January 1949. Fourteen supply drops to 'Shawforce' were carried out in 26 days by Dakotas of No. 110 Squadron and by the end of August 1948 they had dropped 30,080 lb. of supplies since starting their tour of duty at Kuala Lumpur. (36) During September 1948, however, there was a marked decline in the number of supply drop operations, the total weight of supplies dropped during the month being only 6,000 lb., most of which went to outlying police posts and the long range 'Ferret' groups that were operating in remote parts of Perak.

On 12 November 1948 No. 110 Squadron lost their commanding officer near Serendah in Selangor in the second crash that had occurred so far on supply drop missions and soon afterwards they were relieved at Kuala Lumpur by No. 52 Squadron. (37) This Squadron dropped nearly 20,000 lb. of supplies before the end of the year, by which time 62,000 lb. had been dropped on 41 missions since the outbreak of the Emergency. During the single month of January 1949, however, 35,920 lb. of supplies were dropped on fifteen missions during a single week from the 22nd to the 29th, as a result of the expansion of the police forces which enabled larger military forces to be deployed on jungle operations. Operation 'Gargoyle' was mounted by the 2nd Gurkha ^{Rifles} ~~Regiment~~ on the borders of Perak, Pahang and Kelantan in January 1949 and in February Operation 'Holiday' was mounted in conjunction with the Thai police on the northern borders of Kedah and

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144

Perlis to bring the total weight of supplies that were dropped during the first two months of 1949 to 110,020 lb. The increased demand for air supply continued with Operation 'Nawab' in central Kedah in March and a total of 156,000 lb. was delivered on 80 supply drops during the first three months of the year - more than twice as much as during the previous six months. These operations were carried out with a negligible loss of supplies and confirmed that air supply enabled troops, in whatever numbers, to operate in the jungle as an integral force.

From April to July 1949 68 Dakota sorties were flown in support of Operations 'Ramillies', 'Blenheim', 'Spitfire' and 'Sarong', which were mounted against more than 300 terrorists of the 5th Regiment M.R.L.A. in North Pahang and Kelantan and a monthly record to date of 223,653 lb. of supplies dropped was achieved during June 1949. Further operations, 'Snow White' and 'Daniel' in Pahang and Negri Sembilan, 'Pintail' and 'Widgeon' in Perak, 'Pathfinder' and 'Overall' in Kedah, 'Lemon' and 'Plunder' in Selangor and 'Leo' in Johore continued the demand for air supply during the remainder of 1949. During October 1949 the eight Dakotas of No. 48 Squadron, who had taken over from No. 52 Squadron at Kuala Lumpur, dropped over 400,000 lb. of supplies during 200 sorties over 206 dropping zones - figures which were seven times the monthly average since the Emergency began and which were not surpassed until the height of the campaign in January 1951.

The pattern of air supply operations continued throughout 1950 with permanent commitments to police posts and larger supply drops to ground forces operating in jungle areas on pre-planned operations. April provided the peak activity of the year, with 70 sorties flown in support of Operation 'Carp' in the area east of Ipoh in Perak and 52 sorties in support of Operation 'Jackpot' in Negri Sembilan and South Selangor against the 2nd Regiment M.R.L.A. During the second half of 1950 between 300,000 and 400,000 lb. of supplies were dropped each month and the total for the whole year of nearly 3½ million lb. was nearly twice as high as that for 1949 and thirty times the monthly

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145

(81) average for the first few months of the campaign. This tempo continued throughout the first few months of 1951 and the weekly record figure was broken in the last week of January when 132,000 lb. were dropped over 78 separate dropping zones. Over 400,000 lb. of supplies were dropped during each of the first five months of 1951, with a record monthly total to date of 479,780 lb. in February. Such totals were not attained again until the end of 1953.

On 19 July 1951 the Dakotas of No. 41 (R.N.Z.A.F.) Squadron and No. 38 (R.A.A.F.) Squadron completed their first tour of duty at Kuala Lumpur, having dropped 916,632 lb. of supplies in three months of intensive activity, and were relieved by No. 110 Squadron who were starting their third operational tour. (41) With this changeover, however, the monthly supply drop commitment fell to under 150,000 lb, partly as a result of the progressive reduction and final termination of supplies provided on behalf of the Social Welfare Department, as it was feared that some of these were finding their way into terrorist hands, but mainly because of the redeployment of troops in accordance with the Director of Operation's Directive No. 15, dated 7 August 1951. (42) This order limited 'Battle Zones' to the 'Outer Circle' of isolated mines and estates, which could be readily supplied by road, and reduced the scope of jungle patrols, although not ruling them out entirely. As a result, with the exception of the monthly commitment of about 3,000 lb. to permanent police posts in Johore that was undertaken by transport aircraft based at Changi, the weight of supplies dropped to operational units declined steadily from 136,000 lb. in September 1951 to 64,000 lb. in December of that year. Nevertheless, the total weight of supplies that were dropped during 1951 amounted to nearly 3½ million lb. and was only slightly less than the total achieved in the previous year.

In January 1952 the severance of land communications, owing to extensive flooding throughout the Federation, resulted in an increase in the weight of supplies that were dropped in that month to 219,830 lb. while the mounting of Operation 'Helsby' in February close to the

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146

borders of Perak with Thailand, caused a further increase in demand and a monthly figure of 306,511 lb. (43) During this operation

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Valettas were used for the first time on supply drop missions in Malaya and throughout the remainder of 1951 they shared a monthly supply dropping commitment of nearly 250,000 lb. with the remaining Dakotas of the transport support force. Over 70 per cent of these supplies went into jungle clearings while the remainder went to the thirteen police posts whose supply by road was either impossible or entailed too great a diversion of troops for escort duties. (44)

During the first half of 1953 the volume of supplies dropped by air showed a considerable increase to an ~~the~~ average of 12,000 lb. a day in May and June owing to the construction of a number of permanent police forts in deep jungle areas whose only means of supply was by air and which required certain items of heavy equipment during the construction phase. This increased demand continued throughout the second half of the year with the advent of protracted ground force operations that were designed to clear the Federation systematically of the terrorist threat. From July 1953 to March 1954 two battalions of infantry were almost continuously deployed on Operation 'Sword' in the Bongsu Forest Reserve of Southern Kedah, while a further four battalions were deployed in the deep jungle of North West Pahang on Operation 'Valiant' from October to December 1953. (45) These forces were entirely dependent on air supply and in the latter case the appallingly difficult terrain of the operational area posed severe problems for the aircrews of the transport planes involved. Most of the dropping zones were at heights of 4,000 to 5,000 feet and were surrounded by cloud-enveloped peaks rising to 7,000 feet. Under such conditions several sorties were often required to deliver one load of supplies but, despite these difficulties the ground forces were kept supplied throughout the entire operation.

The mounting of several other operations in different parts of the Federation at the same time as Operation 'Valiant' meant that the Valettas of the Far East Transport Wing had to deal with more than

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147

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double their normal supply drop commitment during November 1953 and extra aircraft had to be deployed from Changi to Kuala Lumpur while No. 55 Air Despatch Company was reinforced from other R.A.S.C. companies in Malaya. ⁽⁴⁶⁾ In this one month 728,647 lb. of supplies were dropped, a total that was not surpassed until March 1955 and the second highest monthly total of the entire campaign. By the end of 1953 nearly 4½ million pounds of supplies had been dropped during the course of the year - 30 per cent more than in 1952.

During 1954 the air supply commitment continued to increase as the terrorists completed their withdrawal into deep jungle areas and security force patrols were sent after them. The construction of jungle forts progressed and necessitated dropping further heavy equipment as well as the normal monthly commitment of 20,000 lb. of supplies to the seven that were already operational. From an average of 290,000 lb. a month during the first quarter of 1953 the air supply commitment rose to 450,000 lb. a month during the first quarter of 1954. To meet this demand No. 55 Air Despatch Company R.A.S.C. was re-established with two complete air supply platoons and plans were laid for deploying up to fourteen Valettas at Kuala Lumpur during special operations. ⁽⁴⁷⁾ In July 1954 Operation 'Termite', the largest combined operation of the campaign, was launched in Northern Perak and the air supply force of six Valettas from Kuala Lumpur dropped 27,000 lb. of supplies on the first two days of the operation into three dropping zones that had been prepared by paratroops of the 22⁽⁴⁸⁾ Special Air Service Regiment. During the first week of this operation 58,787 lb. of supplies were dropped in difficult mountainous country and helped to raise the monthly total for July 1954 to 653,413 lb. The second half of 1954 showed no slackening of the demand for air supply and Operations 'Hawk' and 'Apollo' in the Raub and Kuala Lipis areas of Pahang and 'Ajax' in the Kulai area of Johore ⁽⁴⁹⁾ helped to raise the monthly average weight of supplies dropped from July to December 1954 to over 650,000 lb, with a maximum of 724,230 lb. in November. The total amount of supplies dropped during 1954 amounted to nearly 6.8 million lb. - over 40 per cent more

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148

than in 1953 and the second highest annual total of the campaign.

(83) The policy of deploying troops on protracted operations in deep jungle continued throughout 1955 and the numbers thus engaged reached a peak for the entire Emergency. The resulting air supply commitment placed a heavy burden on the resources of the Valetta force at Kuala Lumpur and the advent of four Bristol Freighters of No. 41 (R.N.Z.A.F.) Squadron into the Far East Transport Wing provided welcome reinforcements. (50)

Apart from Operations 'Apollo' and 'Shark' in Pahang and Perak, which had begun during the second half of 1954, a further series of large scale operations, 'Latimer North' and 'Latimer South' and 'Nassau', were mounted in South Pahang, North East Negri Sembilan and the Kuala Langat area of Selangor during 1955 (51) and helped to raise the monthly average weight of supplies dropped to 650,000 lb. on over 170 sorties. The final total for the whole year, nearly 7.8 million lb, was a record for the whole Emergency and represented an increase of 16 per cent over the amount dropped in the previous year. The record weight of supplies dropped in any single month of the Emergency was achieved in March 1955 when 808,035 lb. were dropped during 218 sorties - a greater volume than had been dropped during the entire first year of the campaign.

Throughout 1956 the security forces remained fully extended on anti-terrorist operations, carrying out major sweeps during Operations 'Shark' in the Sungai Siput area of Perak, 'Gages' in the deep jungle of the Perak and Kelantan border area and 'Bonanza' in South Selangor, (52) as well as routine patrolling and food-denial operations in all areas where Emergency restrictions still prevailed. In addition the paratrooping operations of the 22nd Special Air Service Regiment, designed to prevent the establishment of terrorist camps in deep jungle were extended during 1956 and they required continuous re-supply from the air. Just over 6 million lb. of supplies were dropped during the year, with a monthly average of 500,000 lb. on 130 sorties - a decrease of over 20 per cent on the effort expended in the previous year.

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Several of the ground force operations that were started during 1956 continued into 1957, including Operations 'Huckster' in the Kluang area of Johore, 'Latimer North', 'Latimer South' and 'Enter' in North and North East Negri Sembilan and 'Gages' in Perak and Kelantan, while the air supply of certain jungle forts remained a regular commitment. The monthly weight of supplies dropped continued at a fairly high level, averaging nearly 400,000 lb, but the final figure for the year of 4.8 million lb. represented a decrease of 20 per cent over the amount dropped during 1956 and was 40 per cent less than the total achieved in the peak year of 1955. Nevertheless, although by the beginning of 1958 offensive air support could have been dispensed with without affecting the remaining course of the campaign, the successful prosecution of ground force operations against the remaining terrorists demanded a continuing effort from the air supply force of three Valettas and one Bristol Freighter at Kuala Lumpur and the addition of a further Bristol Freighter to this force during the bad weather of the final months of 1957 was of great value in meeting this commitment. (53)

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During 1958 the dispersal of the main bodies of troops to the North and South of the Federation for operations in Perak and Johore resulted in the comparative isolation of the main air transport base at Kuala Lumpur from operational areas, but the endurance of the Valettas and Bristol Freighters proved equal to the increased length of sortie that was required of them. However, as the ground battle moved further away from lines of communication and deeper into the jungle demands for air supply increased, while the re-arming of certain artillery units with 4.2 inch mortars in place of 25 pounder field guns added a new requirement for occasional heavy air drops of mortar ammunition. Furthermore, throughout the second half of 1958, Pioneers were withdrawn from fort supply work, owing to their poor serviceability, and this commitment was added to the burden already carried by the Valettas of the air supply force. Thus, although the planned task for the force during 1958 had been to (54)

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drop 400,000 lb. of supplies each month during the course of 100 sorties of 3½ to 4 hours duration, (57) these figures were exceeded in all but two months of the year and the final total of over 5.3 million lb. represented an increase of 17 per cent on the effort expended in 1957. Late in August 1958 a large scale offensive, Operation 'Tiger', was (58) launched against the South Johore Regional Committee of the M.C.P. and helped to increase the weight of supplies dropped in that and the following month to over 500,000 lb. - the highest monthly totals for eighteen months and amounts that were not to be exceeded during the remainder of the campaign.

By the beginning of 1959 anti-terrorist operations were concentrated almost entirely in Northern Malaya and fewer ground patrols were deployed on jungle patrols, but their deeper penetration into remote and difficult terrain ensured that there was little reduction in the air supply commitment during the early months of the year. Some slackening in demand was apparent towards the middle of 1959, however, when the monthly task fell to under 250,000 lb, largely because Operation 'Seladang' was mounted in an area of Pahang where good ground communications obviated the necessity for extensive air supply. (59) In October 1959, however, Operation 'Bamboo' was launched in a less accessible part of Perak and the air supply effort increased accordingly. (60) However, some relief was granted to the strained resources of the air supply force at Kuala Lumpur at this time by the advent of the R.M.A.F. to full operational strength and as their Pioneers gradually took over the re-supply of jungle forts it was possible to consider some reduction in this force since the Valettas were showing the effect of continuous operation and were affording serious maintenance problems. (61) In fact, by the end of December 1959 it became clear that the normal air supply commitment of about 225,000 lb. a month could no longer be met and, although this form of support had been taken for granted by the ground forces for several years and no limit had been placed on it, Brigade Headquarters were warned that a temporary reduction in effort was inevitable and that they should prune their bids accordingly. (62) During January and

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151

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February 1960 the 28th Commonwealth Infantry Brigade, operating in the Operation 'Bamboo' area of Perak, showed considerable ingenuity in re-supplying its troops without overtaxing the resources of the air supply force and the total amount of supplies dropped fell to 217,000 lb. a month. This temporary respite enabled the Valetta force to regain its normal effectiveness and restrictions on their support were lifted. During March and April 1960 nearly 500,000 lb. of supplies were dropped, mainly in the Operation 'Bamboo' area, but the withdrawal of the 1st ^{Battalion The Royal} Australian Regiment for redeployment in May was reflected in a reduction in the demand for air supply. In June 1960, however, the 3rd East Anglian Regiment was redeployed in inaccessible (63) country in Perak and the air supply commitment rose again to over 200,000 lb. a month. In July 1960 No. 52 Squadron was transferred from

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Kuala Lumpur to R.A.A.F. Butterworth near Penang and the saving in flying time to the main operational areas in Perak which this move effected resulted in an increase in their supply dropping capacity. During July, the last official month of the Emergency, 251,728 lb. of supplies were dropped, including 30,485 lb. by Pioneers of the R.M.A.F., but the campaign continued for several months afterwards and the deployment of security forces in the border areas of Northern Perak necessitated an average supply drop commitment of over 200,000 lb. a month for the remainder of 1960.

For twelve years air transport supply was the major contribution of the air forces in Malaya to the successful prosecution of the campaign against the Communist terrorists. Without its assistance in maintaining troops in the jungle and re-supplying remote police posts, much of the effort made by the security forces would have been nullified and it would have been impossible to maintain that pressure on the terrorists which led to their virtual elimination. It is not possible to assess the contribution made by air supply to the successes achieved by the ground forces in definitive terms, although some attempt to do so was made towards the end of 1952 when a calculation was made using the arbitrary parameter of any supply drop

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152

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that had occurred within ten miles and the preceding 28 days of the
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elimination of any terrorist. This analysis suggested that,
during the last six months of 1952, air supply directly assisted
security forces in achieving between 15 per cent and 18 per cent of
their eliminations. The extended patrolling time of the ground
forces in jungle terrain, which depended largely on air supply,
clearly had a direct bearing on the terrorist elimination rate,
therefore, but it also had an important indirect influence in harrying
the terrorists and forcing them to retire to comparatively inaccessible
areas ~~for~~ in order to survive, thereby reducing their offensive
potential to the stage where it constituted little more than a nuisance
to the welfare and security of the country.

Medium range transport roles (c) Paratrooping

Besides increasing the mobility of the ground forces in Malaya by
air supply, medium range transport aircraft also helped to increase
the flexibility of their operations by carrying paratroops. With the
partial withdrawal of the terrorists into deep jungle late in 1951 and
early in 1952 some means of introducing troops swiftly into these
areas, without betraying their presence to the effective aboriginal
intelligence screen that invariably surrounded terrorist concen-
trations, was clearly required. The solution to this problem was
provided by the air transport support forces which, using medium range
aircraft in a paratrooping role and troop-carrying helicopters, not
only preserved some of that element of surprise on which successful
attacks on the terrorists depended, but also obviated the need for
prolonged and exhausting jungle treks which so reduced the offensive
potential of the security forces.

Techniques of paratrooping ~~with discussion~~

The problems of mounting paratroop operations in Malaya were
greater than in most theatres of war. The rugged central spine of
the country, to the foothills of which the terrorists had largely
withdrawn by the end of 1952, was almost completely covered by
primary jungle comprising trees that rose to heights of 200 feet or
more and which formed an almost impenetrable canopy. Besides

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of 'B' Squadron 22nd Special Air Service Regiment were dropped in the remote upper reaches of the Sungei Perak, some six miles from the Thailand border. (69) The dropping zone consisted of easily located 'padi' between two jungle covered massifs which rose to 4,000 feet, but high ground to the north meant that the four Dakotas employed on this operation had to make a tight circuit with a sharp descent to the dropping height and then an immediate sharp climbing turn to port to pull out of the valley. There was a rapidly increasing east wind over the dropping zone, which was accentuated by the funnel-like configuration of the valley, and this, combined with a natural reluctance to undershoot near a fast flowing river, ensured that all but four of the paratroops overshot the dropping zone. 44 troops landed in trees up to 150 in height but sustained only light casualties and, as they were each equipped with 100 feet of rope, they rapidly concentrated for the attack on the terrorist target. This operation provided the first proof that parachuting into primary jungle was feasible under operational conditions in the Malayan campaign. Considerable thought and training was therefore devoted to developing and improving paratrooping techniques, which culminated in November 1952 with a completely successful operational drop of ten men into deep jungle near Pasir Puteh in the Kuala Krai district of Kelantan during Operation 'Copley'. (70) The success of this operation led to an increased demand for paratrooping operations and, under the arrangements made for Operation 'Firebrigade' in February 1953, fifteen paratroops of the 22nd Special Air Service Regiment, elements of No. 55 Air Despatch Company R.A.S.C. and one Valetta and its crew of the Far East Transport Wing were held in readiness at Kuala Lumpur to provide an immediate striking force. (71)

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After Operation 'Sword' in South Kedah in July 1953 (72) no more large scale paratroop drops were carried out until July 1954, during which period improvements were made to the abseil gear then in use. On 8 July 1954, however, 180 paratroops of 'A', 'B' and 'D' Squadrons of the 22nd Special Air Service Regiment were dropped from Valettas

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of the Far East Transport Wing into the Kinta and Raia valleys east of Ipoh in Perak during Operation 'Termite'.⁽⁷³⁾ Having landed on targets previously marked with smoke candles by an Auster of No 1907 Flight No. 656 Squadron, the paratroops cut dropping zones into which heavy supplies were dropped by re-supply aircraft. These included mechanical saws and explosives for the preparation of helicopter 'pads', into which non-paratrooping forces were flown. Although a disappointing total of only fifteen terrorist eliminations resulted from this operation it underlined the role that paratroops could play in combined operations in jungle territory. Since helicopters were scarce, their use was precluded at certain altitudes and it was not always possible to provide landing zones for them, it was felt that there was a need for additional paratrooping forces to ensure flexibility in the overall conduct of the campaign. Plans were accordingly laid for establishing a fourth squadron of the 22nd Special Air Service Regiment and for training four more paratroop companies, one Malay and three Gurkha, while standing orders were prepared for reinforcing jungle forts by paratroops in case of emergency (Operation 'Medal') and for the provision of a Valetta and a jungle rescue team to stand by at one hour's notice at Changi in case an aircraft ditched in the jungle.⁽⁷⁴⁾

However, few opportunities occurred for major paratrooping operations against the terrorists after 1954 as the helicopter force in Malaya was expanded and proved capable of introducing a greater number of less specialised troops into the jungle more quickly and with less risk of personal injury. When paratroops were employed on combined operations, they were usually the precursors of troop-lifting helicopters. In fact, helicopters were also used for paratrooping operations, besides medium range transport aircraft, when it was necessary to achieve an accurate drop into a small target area - operations for which their ability to hover at about 750 feet above ground level, the absence of slipstream and their double exits made them especially suitable.

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During 1956 the techniques of paratrooping into tree top dropping zones was not used once and there were only a few occasions when paratroop drops were called for over open ground. In June 1957 33 troops of the 22nd Special Air Service Regiment were dropped into an area of primary jungle in Perak (75) and a few other practice drops were successfully carried out. During 1958, however, there were only two calls for paratroop operations. In January a visiting R.A.F. Beverley was used to drop troops into difficult jungle swamp in Perak and in June a routine training drop was diverted onto an open dropping zone on Penang Island as part of a show of force against the local terrorists. (76) There were no further operational paratroop operations during the campaign but the medium range transport aircraft of the air forces in Malaya continued to provide aircraft whenever needed for training purposes.

Medium range transport roles (d) Communications

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In addition to their air supply commitment and the provision of aircraft for paratrooping operations, the medium range transport aircraft force in Malaya played an important part in the redeployment of ground forces against the terrorists by transporting personnel and freight between the main airfields of mainland Malaya and Singapore Island. At the start of the campaign there were not enough troops or police to combat the terrorist threat at all potential danger points and, in a country so poor in surface communications as Malaya, the transport services that were provided by the air forces were of vital importance in reinforcing threatened areas with the minimum of delay. Lateral communications from east to west of the country were particularly poor and airlifts from Ipoh or Taiping to Kota Bahru or from Kuala Lumpur to Kuantan were of particular value in reinforcing the remoter parts of Kelantan, Trengganu and Pahang. Furthermore, although transport between many areas in the Federation was possible overland it often entailed delay and the provision of heavy escorts and air transport proved quicker and more economical. As the campaign progressed, air transport support in a medium range communications role became a regular commitment and airfields that were

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capable of accommodating the Dakotas and Valettas of the Far East Transport Wing were developed throughout the Federation. By 1955 there were seventeen of these airfields (see ^{Annex Q} Appendices ~~XVI~~ and ~~XVII~~), five of them on Singapore Island, three in Perak, two in Kelantan and one each in Kedah, Province Wellesley, Johore, Selangor, Trengganu, Pahang and Negri Sembilan. ⁽⁷⁷⁾ All of these airfields were within 2½ hours flying time by medium range transport aircraft from Kuala Lumpur.

In addition to special flights between airfields within the Federation of Malaya, the medium range transport aircraft that were based at Changi were also responsible for maintaining scheduled courier services and flying special missions on demand throughout the command area of the Far East Air Force, to places as far apart as Ceylon, Hong Kong, Saigon, ^{wa} Iwakumi in Japan, Rangoon, Clark Field in the Philippines, Kuching in Borneo and Australia. ⁽⁷⁸⁾ Regular scheduled services were also provided within the Malayan theatre and by September 1950 weekly return flights were made from Changi to Butterworth and on to Car Nicobar in the Indian Ocean and from Changi to Labuan in North Borneo, while twice-weekly flights were made from Changi to Kuala Lumpur and thrice-weekly flights from Changi to Saigon and Hong Kong. ⁽⁷⁹⁾ Besides these scheduled passenger flights, weekly return ambulance flights between Changi and Kuala Lumpur, Ipoh and Taiping and between Changi and Labuan were inaugurated late in 1950 to transfer casualties from local British Military Hospitals to Singapore for evacuation to the United Kingdom along the trunk route services provided by the Hastings aircraft of the Far East Casualty Evacuation Service. ⁽⁸⁰⁾ The internal casualty evacuation service within Malaya catered for both stretcher and sitting cases and its aircraft, initially Dakotas and subsequently Valettas, were fully equipped and staffed for their air ambulance role and considerably facilitated the repatriation of casualties sustained in operational areas. In addition to this regular commitment in support of the Malayan campaign, several ambulance flights were flown by the Far East Transport Wing during 1950 and 1951 between Changi, Hong Kong and

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Iwakuni in Japan as one stage in the repatriation of those wounded in
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the Korean War.

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Scheduled and unscheduled communications flights constituted the main commitment of those medium range transport aircraft of the Far East Air Force that were not on detachment at Changi for air supply and other duties, but even the latter aircraft were called upon to carry out numerous sorties in this role when the occasion demanded.

89

Summary of communications operations by medium range transport aircraft

Between 1951 and 1954 the Air Movements Section, F.E.A.F. handled about 2,000 tons of freight and 20-30,000 passengers a year, figures which rose to over 6,000 tons of freight and an average of nearly
(82)
70,000 passengers a year between 1956 and 1960. Over half of this effort was expended in direct support of the campaign against the terrorists in Malaya.

At the start of the campaign before the expansion of the security forces eased the shortage of manpower, the rapid reinforcement of threatened areas was of particular importance and the services of medium range transport aircraft were in constant demand for the carriage of passengers and freight. During Operation 'Haystack' in Northern Perak in May 1948 Dakotas transported one squadron of the R.A.F. Regiment to Taiping and soon afterwards two platoons of the Malay Regiment were
(83)
flown from Changi to Kuantan. Valuable experience was gained in moving large numbers of troops by Dakota aircraft and when the operations of 'Shawforce' in Perak in August 1948 required the large scale redeploy-
(84)
ment of troops to the north of the Federation, these aircraft were equal to the demands that were made on their services. By the end of August 1948 Dakotas of No.110 Squadron at Kuala Lumpur, besides dropping over 30,000 lb. of supplies, had airlifted 421 passengers and nearly 47,000 lb. of freight since their tour of duty had begun in June. A notable example of the economy of effort combined with maximum achievement that could be obtained by the judicious use of the limited medium range transport force that was available occurred on 11 August 1948. Two companies of the Malay Regiment were airlifted across the Federation from Butterworth to Kota Bharu, from where 85 Police recruits were

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transported to Kuala Lumpur. In addition two large contingents of naval personnel were airlifted from Singapore to Penang to provide a total of 365 passengers carried on one day by four Dakotas, two of them from the task force at Kuala Lumpur and two from the main transport force at Changi. Out of a total of 38 flying hours by these aircraft only 9 were unproductive and the overall task represented a saving of 6,150 man hours of travelling by surface communications. (85)

This operation was typical of the communication tasks that were undertaken by medium range transport aircraft throughout the campaign in Malaya.

By September 1948 most of the available trained forces had been deployed and only 220 passengers and 19,000 lb. of freight were transported by No. 110 Squadron at Kuala Lumpur. However, the arrival of further troop reinforcements after November 1948 and the deployment of military units on jungle operations was reflected in a marked increase in airlift operations. Operations 'Gargoyle' and 'Holiday', which were mounted early in 1949 against the terrorist organisation in Perak, Kelantan and Pahang, (86) caused an increase in the number of passengers that were carried by No. 52 Squadron at Kuala Lumpur from 200 in January to just under 1,000 in February, while the amount of freight transported by this squadron during the same period increased from 20,000 lb. to 60,000 lb. Meanwhile, aircraft based at Changi had been carrying out special communications flights and courier services both within and outside the Federation and the total number of passengers carried by medium range transport aircraft in the Malayan theatre during February 1949 had increased to 1,770 - twice as many as the average number that were airlifted in each of the previous seven months of the campaign. For the remainder of 1949 the average number of passengers carried by these aircraft remained at over 800 a month, while freight was transported at an average rate of 60,000 lb. a month. (87)

By July 1950 two of the medium range transport squadrons in Malaya had each achieved 60,000 ton miles in one month, although not all were in direct support of the campaign against the terrorists.

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On 6 September 1950 the first airlift by Dakota of casualties sustained in the Malayan theatre took place, when 36 soldiers were flown from Kuala Lumpur to Changi. (88) Altogether 166 casualties were airlifted on internal services within Malaya during September 1950 and, although as many as 214 were flown on these flights during March 1951, the average number remained at about 130 a month for the next four years. Meanwhile, on 13 September 1950 the first casualty evacuation flight by Hastings from Changi to the United Kingdom took place and the aeromedical services of the medium range transport aircraft of the Far East Air Force were further extended in the same month with occasional flights to Hong Kong and Japan. (89) In addition to the inauguration of these aeromedical flights, scheduled courier and special flights within the Far East theatre had increased to nearly 150 a month by the end of 1950. On those flights that were made to or from Seletar, Tengah, Changi, Butterworth and Kuala Lumpur, most of which were directly concerned with Emergency tasks, an average of 800 passengers, 60,000 lb. of freight and 4,000 lb. of mail were flown during each month of 1950. (90)

and 1952
During 1951 the Dakotas of the medium range transport force underwent progressive replacement by Valettas but, despite this conversion programme ~~and continuous demands for air supply operations, scheduled communications and special flights in support of the campaign against the terrorists were maintained.~~ and continuous demands for air supply operations, scheduled communications and special flights in support of the campaign against the terrorists were maintained. The monthly average of passengers carried increased to over 1,000 while the amount of freight that was transported within the Federation showed a marked increase to over 400,000 lb. a month. Notable operations during the year included the carriage of over 200 personnel of the 3rd Battalion, The Malay Regiment, together with 70 policemen and their equipment, between Kluang, Kota Bahru and Kuala Lumpur in December, and of 120 officers and troopers of the 22nd Special Air Service Regiment from Kuala Lumpur to Kota Bahru in support of operation 'Helsby' in February. (91) Regular flights were made throughout the year to Kuching in North Borneo to ferry Dyak trackers to Malaya for use in jungle operations and, during the whole year, over 16,000

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161

passengers and 4 million lb. of freight were transported by medium range transport aircraft in support of the campaign.

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During 1953 the withdrawal of the terrorists to deep jungle and the increasing efficiency of the Federal Police enabled troops to be concentrated for offensive action in Malacca, Pahang, Negri Sembilan and Selangor, with the intention that civilian security forces should subsequently take over responsibility for these states, thereby freeing the bulk of the Army for operations in Perak and Johore. This operational plan required a large scale redeployment of forces and the number of passengers carried by medium range transport aircraft within the Federation averaged over 2,000 a month throughout the year, while the amount of freight transported continued at the rate of over 400,000 lb. a month. 1954 witnessed a further improvement in the general Emergency situation and the partial withdrawal of troops from Kelantan, Eastern Pahang and Western Perak ensured that there was no reduction in the communications commitment of ^{the} Valetta force in Malaya. In fact, the positioning of troops for a series of operations in Perak and Johore, in addition to their regular commitments, resulted in an increase of over 50 per cent in the number of passengers that were carried by this force during 1954 in comparison with the previous year.

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During 1955 large parts of Kelantan, Trengganu and Pahang were declared 'white' and over half the remaining military forces that were deployed in these areas at the beginning of the year were concentrated in other areas where they were most needed before its end. A typical trooplifting operation was carried out in September when four rifle companies of one battalion were flown by Valettas from Kuala Lumpur to Kluang for further redeployment by helicopter. (92) Throughout 1955 the monthly trooplifting task achieved by the medium range transport force was consistently higher than in the previous year and the annual total represented an increase of over 100 per cent. 1955 proved to be the year in which this force achieved its maximum effort in a communication role but, even so, the number of sorties that were flown in meeting this task amounted to less than 25 per cent of those that were flown on air supply missions.

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During 1956 and 1957 the amount of freight that was carried by the medium range transport force in Malaya increased to nearly three times the amount that was transported during 1953 and 1954 but the number of passengers that was carried declined as the areas free from Emergency restrictions expanded and troops were concentrated in the North and the South of the Federation for operations against the remaining terrorists. The total effort in the medium range communications role was halved during this period, which was fortunate as, by the beginning of 1958, the serviceability of the Valettas was giving cause for concern and it was only with difficulty that the air supply force at Kuala Lumpur was maintained at three aircraft. ⁽⁹³⁾ Priority was given to supply drop operations and some communications commitments of those Valettas that were based at Changi were postponed or cancelled. Even so, the number of troops that were carried by these aircraft during 1958 showed a slight increase over the number carried during 1957 and a similar increase was apparent during the following year. Even during the last few months of the Emergency in 1960 medium range transport aircraft continued to provide scheduled services within the Federation while the gradual withdrawal of troops from operational areas as the campaign drew to its close necessitated a number of special trooping flights. The final totals of the number of passengers and the amount of freight that were transported during the year were nearly twice as high as the corresponding figures for 1954.

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91 II. Short Range Transport Roles ~~XXXXXXXXXX~~

Short range transport roles (a) Communications by light aircraft

Throughout the campaign medium range transport aircraft played an important role in the carriage of freight and the deployment of troops throughout the Federation. There were, however, only seventeen airfields that were capable of operating these aircraft and most of those were located in the populous coastal regions, especially on the western littoral, and were some distance from the deep jungle areas of the spinal ridge where the main offensive against the terrorists was mounted after the initial defensive stage of the campaign. There was an obvious need, therefore, for aircraft that could establish communications within those areas where medium range aircraft could not operate and this fact, combined with the necessity of aerial reconnaissance as a remedy for the lacuna in intelligence of the terrorists' locations, ensured that a build up in the strength of the light aircraft force in Malaya came high on a list of priorities.

92 Airstrips suitable for light aircraft ~~XXXXXXXXXX~~

The main problem in establishing light aircraft communications in remote parts of Malaya before the introduction of helicopters, was the shortage of suitable airstrips. A number of temporary grass airstrips had been constructed during the Second World War and these were developed and augmented during the course of the campaign until they formed a fairly extensive network throughout the Federation (see Annex Q Appendices ~~XVI and XVII~~). In August 1951 there were 50 airstrips in Malaya that were suitable for light aircraft only, and by May 1955 there were 68, of which 33 could accommodate Auster, Pioneer and Beaver aircraft, 28 could accommodate only Austers and Pioneers and the remaining seven were attached to jungle forts and were suitable only for Pioneer aircraft. (94) Of these 68 light aircraft strips, eight of which were suitable for use only in an emergency, there were eighteen in Pahang, eleven in Johore, ten in Perak, nine in Selangor, six in Negri Sembilan, five in Trengganu, three in Kelantan, three in Kedah, two in Malacca and one on Singapore Island.

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164

No. 656 Squadron, Austers; deployment and summary of operations

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Throughout the campaign the main commitment in a short range communications and light liaison role was undertaken by the Austers of No. 656 (AOP/LL) Squadron operating under the joint aegis of the R.A.F. and the Army. In June 1948 there was only one Auster flight in the Far East, No. 1914 Flight at Sembawang which was equipped with five aircraft. (95) On the outbreak of the Emergency it became evident that communications would play a vital role in the campaign and an immediate request was made by the Army for the support of a squadron of five flights of Austers to be deployed at strategic points throughout the Federation. No. 1914 Flight was, therefore, transformed into No. 656 Squadron, consisting of three reconnaissance flights and one communications flight which were equipped with the 28 Austers that had been lying crated at Seletar when the Emergency began and which were rapidly assembled by the R.A.F. (96) Personnel for the existing R.A.F. flight and the new communications flight were provided by the R.A.F. while the remaining flights were manned by the Army. The total complement of No. 656 Squadron on its formation on 1 July 1948, with an Army major as the commanding officer and an R.A.F. flight lieutenant as the adjutant, was 25 Army officers, 4 R.A.F. officers, one R.A.F. N.C.O. pilot, 68 Army other ranks and 36 R.A.F. other ranks. (97)

Operational control of the constituent flights of the squadron was delegated to the Army units to which they were affiliated and their functional control to the squadron commanding officer, but the A.O.C. (Malaya) retained overall control of their flying activities through the joint Army/R.A.F. Operations Room, later the Joint Operations Centre, at Kuala Lumpur and also provided the normal administrative services given to other lodger units. (98)

On 7 July 1948 the R.A.F. Communications Flight of No. 656 Squadron moved to Kuala Lumpur in support of the task force there while the three Army flights were deployed in the north, centre and south of the Federation - No. 1902 Flight at Taiping in Perak, in the command area of North Malaya District, No. 1903 Flight at Seremban in Negri Sembilan in the Central Malaya District and No. 1914 Flight at

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Kluang in Johore in the Johore Sub-District. On 28 August 1948 a further flight, No. 1907, was detached to Headquarters Malaya District at Kuala Lumpur to join the R.A.F. Communications Flight which was (100) disbanded on 1 September 1948, leaving No. 656 Squadron with four operational flights, Nos. 1902, 1903, 1907 and 1914. Early in 1949 the Headquarters of No. 656 Squadron was moved to Changi and No. 1903 (101) Flight was detached to R.A.F. Kai Tak in Hong Kong, leaving only three operational flights in Malaya. In July 1950, however, seven more Austers were added to the complement of No. 656 Squadron and a further flight, No. 1911, was formed at Changi. The four flights of the squadron then in Malaya, Nos. 1902, 1907, 1914 and 1911, were each equipped with five Austers and were detached to Brigade Area Headquarters at Taiping, Seremban, and Temerloh, with one flight at Sembawang and two aircraft at the Advanced Squadron Headquarters at (102) Kuala Lumpur. This deployment was maintained for most of the Emergency but individual flights were moved around between Brigade areas, largely in order that over-familiarity with a particular region should not blunt the visual reconnaissance ability of their pilots. On 2 May 1951 No. 1907 Flight at Seremban and No. 1911 Flight at Sembawang exchanged locations, while No. 1914 Flight moved from (103) Temerloh to new Brigade Headquarters at Benta near Kuala Lipis. Six weeks later No. 1914 Flight at Benta and No. 1911 Flight at Seremban exchanged locations and on 14 March 1952 there was a further redeployment with No. 1914 Flight moving to Taiping, No. 1902 Flight to (104) Benta, No. 1911 Flight to Seremban and No. 1907 Flight to Sembawang.

In May 1952 the functional designation of No. 656 Squadron was altered from its Air Observation Post role as the communications commitments of its aircraft attained equality of importance with visual reconnaissance. Nos. 1902 and 1914 Flights retained their Air Observation Post functions but Nos. 1907 and 1911 Flights became Light (105) Liaison units. At the end of 1952 the four flights of No. 656 Squadron in Malaya were redeployed yet again, No. 1911 Flight to Taiping, No. 1907 Flight to Benta, No. 1914 Flight to Seremban and (106) No. 1902 Flight to Sembawang. Early in 1953 No. 1902 Flight

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166

moved to Taiping, No. 1907 Flight to Sembawang and No. 1911 Flight to Benta, while No. 1914 Flight remained at Sembawang. In October (107)

of that year a further Auster was added to each flight, bringing the squadron's complement to 26 Auster VI's and VII's, and a further exchange of locations took place - No. 1914 Flight moving to Taiping, No. 1907 Flight to Benta, No. 1911 Flight to Seremban and No. 1902 Flight to Sembawang. (108)

Early in 1954 a further Auster VII was added to each flight, bringing the squadron's establishment up to 31 aircraft and Nos. 1914 and 1907 Flights at Taiping and Benta exchanged locations. (109)

In August 1955 Nos. 1914 and 1911 Flights at Benta and Seremban exchanged locations and in the following year No. 1911 Flight moved to Sembawang, while Nos. 1902 and 1914 Flights were transferred to two new locations at Ipoh and Port Dickson respectively as ground forces were redeployed for operations against the remaining terrorists. (110)

During 1957 the complement of No. 656 Squadron was reduced to 26 aircraft with the deletion of one Auster from each flight and the Headquarters' Unit at Kuala Lumpur and No. 1914 Flight returned to Seremban from Port Dickson. (111)

On 1 ^{September 1957} ~~August 1958~~ a major change in the status of No. 656 Squadron occurred when the R.A.F. surrendered all interest in its organisation and control to the newly formed Army Air Corps. Up until this time the R.A.F. had provided the Adjutant and all the servicing personnel of the squadron while the Army had provided the Commanding Officer, the pilots, signallers, transport drivers and general duties personnel. Now No. 656 (Air Observation Post/Light Liaison) Squadron became No. 656 (Light Aircraft) Squadron, Army Air Corps and the responsibility for all first and second line servicing was handed over to the Army. However, as the squadron continued to rely on the R.A.F. for technical advice and experienced supervisors, this transfer of (112)

responsibility was effected without any loss of operational efficiency and did not cause any inconvenience to the ground forces engaged in the campaign against the terrorists. Coincident with this change in its status a fifth flight, No. 16 Reconnaissance Flight was added to the squadron and stationed at its Kuala Lumpur Headquarters, while the (113)

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167

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existing four flights, now redesignated Nos. 2 and 14 Reconnaissance Flights and Nos. 7 and 11 Liaison Flights, Army Air Corps, continued to be deployed at Ipoh, Seremban, Taiping and Sembawang (with a small detachment at Kluang), under the operational command of the 1st and 2nd Federal Infantry Brigades, the ~~the~~ Commonwealth Infantry Brigade (114) and the 63rd, 99th and 26th Brigades. In June 1958 No. 2 Reconnaissance Flight took over responsibility for operations on the Thai border from No. 7 Flight at Taiping, which necessitated maintaining a small detachment at Alor Star, but the deployment of the other flights of No. 656 Squadron remained constant until the end of the campaign. (115)

No. 656 was the first squadron to contribute operationally to the campaign against the terrorists and the only unit to operate continuously throughout the twelve years of the Emergency. For the whole of this time they flew only Auster aircraft, whose characteristics of a short take-off, slow flying speed and economy of operation made it an admirable aircraft for the reconnaissance and light liaison duties which were its main commitments in Malaya. At the start of the campaign the provision of spares for these aircraft was a problem and each flight was only allowed 150 flying hours a month until the situation improved. (116) After this restriction had been lifted the Auster V's and VI's, with which the squadron was equipped for most of the campaign, maintained a high rate of serviceability, with an average of over 75 per cent. (117) The operational and technical performance of the Auster IX's that were introduced into Malaya in 1956 were most disappointing, however, and an abnormal number of defects in these aircraft imposed a heavy burden on their maintenance personnel. (118)

The Austers of No. 656 Squadron were the most versatile of all the aircraft that were employed in the Malayan campaign for, in addition to their main commitment of providing liaison flights for Army commanders and their staffs and other miscellaneous flights in a communications role, they carried out visual reconnaissance of terrorist concentrations and numerous other tasks, including small tactical supply

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168

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drops when the use of medium range transport aircraft was uneconomical, leaflet drops, casualty evacuation flights and target marking for air-strikes. Statistical evidence of the variety of these tasks and their relative importance is given in ~~Appendix XXII~~ ^{Annex V (119)}. Sorties made in a communications and transport role by No. 656 Squadron accounted for nearly half its total commitment and the number of such sorties increased from just over 200 a month at the beginning of 1949 to nearly 1,000 a month at the height of the campaign in 1953 and 1954. Each one of these flights lasted for approximately one hour. Towards the end of 1955 the total commitment of No. 656 Squadron was reduced as other short range transport aircraft became available and for the remainder of the campaign Austers flew an average of 1,200 sorties a month, of which half were in a communications role.

No. 267 Squadron, Pioneers and Pembrokes; deployment and summary of operations

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Although Austers proved their worth in a light liaison role throughout the campaign against the terrorists they suffered from the severe limitation of an inability to carry more than one passenger, in addition to the pilot, with reasonable safety over the type of terrain that was encountered in Malaya. If military commanders wished to be accompanied by one or more of their staff officers on visits to operational areas a separate Auster had to be provided for each member of the party. Such demands were uneconomical and placed a severe strain on the resources of No. 656 Squadron since its constituent flights were located at widely dispersed points in the Federation, which made reinforcement impracticable. Since it was either uneconomical or impossible to divert helicopters or Valettas for communications tasks between light aircraft strips there was an obvious need for an intermediate type of aircraft to bridge the gap between the Auster and medium range transport aircraft. Enquiries were made about the Canadian De Havilland Beaver, which had been introduced by the Federal Government for operation by Malayan Airways, but these proved abortive as the necessary dollar funds were not available and the requirement did not merit the services of the United States Aid Scheme. ⁽¹²⁰⁾ The final choice, therefore, fell on the single- / engined

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169

engined Prestwick Pioneer, which could carry four passengers or 600 to 800 lb. of freight in addition to the pilot and yet was capable of operating from nearly all the improvised light aircraft strips in
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(95) Malaya. In fact, the take-off and landing characteristics of the Pioneer were better than those of the Auster and this aircraft effected considerable economies not only in maintaining communications between light aircraft strips but also by serving as an alternative to medium range transport aircraft when they were operated below their maximum capacity between the main airfields of Malaya and Singapore.

Pioneers carried out a variety of useful tasks during the Malayan campaign including the carriage of staff officers, the replacement of a limited number of personnel at forward airstrips and the evacuation from them of stretcher borne or sitting casualties, the transportation of freight and the dropping of limited quantities of supplies to jungle patrols. Their most important task, however, was the supply and maintenance of the garrisons of those police forts that were established in the deep jungle and swamp of Central Malaya, mainly in South Pahang and North Johore, from 1953 onwards. These forts served as strategic centres from which the indigenous aboriginal inhabitants of these areas, on whom the terrorists relied for support and security, could be controlled and protected and from where offensive patrols
(122) could be mounted. By 1953 nine of these forts were in operation and, as few were accessible by ground communications, their survival depended on air supply. At first they were maintained by supply dropping aircraft but experiments showed that landing light aircraft provided the most economic method of fulfilling this commitment as well as utilising the available force of Pioneers to its optimum. One of the first tasks that was carried out at the site of a proposed fort, therefore, was the construction of an airstrip that was suitable for operating Pioneers. Three such airstrips had been completed by November 1954 and by the end of 1956 seven jungle forts were similarly equipped. These airstrips had to be at least 150 yards in length and 20 yards wide, with maximum longitudinal and lateral slope of 1 in 50 and 1 in 100 and a normal approach angle of not more than 5 degrees in

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170

(123)
jungle terrain. Even so, despite the 25 knot landing speed of the Pioneer, flights into and out of these strips were often hazardous as they were commonly located in valleys surrounded by primary jungle and the climate and the altitude caused a reduction in engine performance which ensured that these aircraft were operated close to the limits of their performance and that their operational load had to be reduced from four passengers to two on some flights.

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The first Pioneer arrived for service in Malaya at the beginning of 1953 and by October of that year there were three in service with No. 1311 Transport Flight of No. 303 Helicopter Wing at Seletar, which (124) became the Support Flight of No. 267 Squadron on 15 February 1954.

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Two more single-engined Pioneers arrived at the end of 1954 but production was slow and the full force of ten Pioneers, providing a flight of eight aircraft with two in reserve, did not become operational until the middle of 1957. (125)

Twin-engined Pioneers were introduced in 1959 and by the end of that year five twin-engined and nine single-engined Pioneers were in service ~~in Malaya.~~ in Malaya. (126) All of these aircraft were stationed at Kuala Lumpur as part of the air transport force there as it proved impracticable to deploy detachments at forward bases away from their main supply base and the location of police reinforcements.

While four or six of ^{the} Pioneers were reserved for fort supply work the remainder were available for alternative operations in a communications role. Details of the operational effort of this force are given in ~~Appendix XIII~~ Annex W (127) By the end of 1954, after a full year of operations with the three Pioneers then available, over 1,000 passengers and 100,000 lb. of freight had been transported on over 1,200 sorties and this small force had proved its value as an integral part of the air transport support forces in Malaya. In July 1954 these three Pioneers carried out 223 sorties, during which they transported 286 passengers, 26,530 lb. of freight and six casualties - figures that were not exceeded until April 1955. By the middle of 1955 the Support Flight of No. 267 Squadron was regularly carrying over 500 passengers, 30,000 lb. of freight and ten casualties into and out of jungle

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171

airstrips every month on an average of over 400 sorties, each of which lasted about 40 minutes. During the whole of 1955 Pioneers completed 2,763 hours of flying on 4,691 sorties and carried 5,393 passengers, 358,648 lb. of freight and 113 casualties - nearly four times the totals achieved in the previous year. The commitment of the Pioneer force continued to increase during 1956 and 700 passengers, half of whom were troops, and 100,000 lb. of freight were regularly transported on over 600 sorties every month. By the end of 1956 nearly 8,000 passengers and over one million lb. of freight had been carried on 7,527 sorties during the year - an increase in operational effort of 60 per cent over that of 1955. This proved to be the peak effort of the Pioneer force during the Malayan campaign but its commitment was only slightly reduced during 1957, in which year two more forts were added to their routine food supply schedules which now included weekly visits to eight out of the ten jungle forts that were in existence at that time.

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Although the serviceability record of No. 267 Squadron's Pioneers was generally good, they began to show signs of wear towards the end of 1957 as it had never been envisaged in calculating the life of these aircraft that the intensity of their operations would demand over 1,000 landings in arduous conditions by each aircraft every year. Nevertheless, although the availability of single-engined Pioneers dropped for a few days on a number of occasions towards the end of 1957 they maintained an average serviceability rate of 63 per cent during the whole year. (128) Throughout 1958, however, airframe weaknesses were reflected in a low rate of serviceability and all but two of the remaining Pioneers were withdrawn from service during the first quarter of the year for an extensive modification programme which unfortunately shifted the centre of gravity of these aircraft towards the nose and necessitated a reduction in the maximum permissible loading weight. (130) The number of sorties flown by Pioneers of No. 267 Squadron fell from 532 in January 1958 to 16 in April 1958 and during the second half of the year averaged only 275 a month, which was less than half the average monthly effort of the previous year. However, by practising

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172

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strict economy measures, all essential Pioneer commitments were met during 1958 and a total of 3,609 passengers, 509,948 lb. of freight and 43 casualties were carried during the course of 3,271 sorties. In December 1958, however, two of the remaining single-engined Pioneers were withdrawn from commitments in support of the campaign against the terrorists and were allotted solely to pilot training operations which were falling seriously behind schedule. (131) A considerable strain was

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thrown on the remaining single-engined Pioneers of the short range transport squadron (which had been renumbered from No. 267 to No. 209 Squadron on 1 November 1958), (132) but these had been restored to a serviceability rate of 80 per cent by the beginning of 1959 (133) after the structural alterations of the previous year, and were able to transport a monthly average of over 50,000 lb. of freight and nearly 200 passengers.

Welcome relief was provided, however, with the build-up of the R.M.A.F. contribution to air transport operations in support of the campaign against the terrorists. By May 1959 one R.M.A.F. single-engined Pioneer had been committed to scheduled fort supply tasks and one R.M.A.F. twin-engined Pioneer was occasionally used for the carriage of staff officers. (134) During July 1959 Pioneers of the R.M.A.F. transported 15,372 lb. of freight and 122 passengers in comparison with the task of 27,031 lb. of freight and 201 passengers that was completed by the Pioneers of No. 209 Squadron. The primary task of the R.M.A.F. Pioneers was the supply of jungle forts and this commitment was slightly reduced when Forts Brook and Dixon were re-supplied by foot as part of the plan to make these forts independent of air supply. (135) In August 1959 the R.M.A.F. received a further three aircraft, one twin-engined and two single-engined Pioneers (136) and, although their contribution to the campaign in this and the following month was relatively small as their pilots were undergoing training, their commitment was increased in October and November 1959, during which months they transported 46,395 lb. of freight and 308 passengers compared with the 46,781 lb. of freight and 310 passengers / that

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173

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that were carried by Pioneers of No. 209 Squadron. On 1 October 1959 No. 209 Squadron had been transferred to Seletar to concentrate on flying training and although three single-engined Pioneers were left at Kuala Lumpur to help the R.M.A.F. with the reduced task of providing transport support for the ground forces operating in Perak, this detachment was also redeployed to the new squadron base on 1 April 1960. Nevertheless, although the R.M.A.F. had taken over responsibility for the supply of the jungle forts, the Pioneers of No. 209 Squadron continued to give some assistance when this task proved beyond the resources of the embryo national air force. The task of the Pioneers increased with the build-up of the 28th Commonwealth Brigade in Perak during February and March 1960 and the commitment of nearly 80,000 lb. of freight and over 400 passengers was shared almost equally between the R.M.A.F. and No. 209 Squadron. In April and May 1960 R.M.A.F. Pioneers carried 45,617 lb. of freight and 408 passengers in comparison with the 2,897 lb. of freight and two passengers that were transported by No. 209 Squadron but in the final two months of the campaign the R.A.F. Pioneers were still required to carry out 20 per cent of the total Pioneer commitment. In October and November 1960, four months after the Emergency had been declared over, Pioneers of No. 209 Squadron transported 18,944 lb. of freight and 342 passengers in comparison with the 13,968 lb. of freight and 137 passengers that were carried by the Pioneers of the R.M.A.F., and they continued to provide assistance for several months afterwards.

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From their introduction in 1953 until the end of the Emergency Pioneers gave valuable support in the short range transport role, carrying over two million lb. of freight and 20,000 passengers in the three peak years of their operation from 1955 to 1957. Their main commitment was the resupply of jungle forts and it was only when the requirements of these garrisons had been met that they could be spared for operations in a communications role between the main airfields and the light aircraft strips of the Federation. There was, therefore, an additional requirement for at least one six or eight seater aircraft at any particular time for the carriage of staff officers and other

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officials. In 1954 this requirement was met by chartering Beaver aircraft from the Federation's air services or by using the two Devon aircraft that were attached to the Far East Communications Squadron at (138) Changi. On the formation of No. 267 Squadron at Kuala Lumpur, however, a Communications Flight of two Pembrokes and two Austers was added to the Support Flight of Pioneers. (139) Pembrokes formed the basis of this flight for the next five years, assisted by two or three Harvards in 1955 and 1956 and by two Pioneers in 1957. (140) A third Pembroke was attached to this flight in 1956 and two more were added (141) in the following year. The flight was finally disbanded on 1 October 1959 when its aircraft were attached to the Station Flight at (142) Kuala Lumpur and to the Group Practice Flight at Seletar.

The Pembroke was a good aircraft for operations in a communications role in Malaya but the reduction of its maximum seating capacity from eight to six, which arose from the need to reposition the dinghy and safety equipment for Air/Sea Rescue operations at the rear bulkhead, (143) was a serious disadvantage and on occasions necessitated the use of two aircraft where one would normally have sufficed. Moreover, during 1958 the Pembrokes in Malaya experienced a low serviceability rate which was aggravated by the supply of engines that could not be fitted to (144) these aircraft without extensive modifications to the airframe. However, by restricting their operational use, all priority commitments were carried out and 571 passengers and 2,730 lb. of freight were transported on 355 sorties during the year. Throughout their period of operation in Malaya the Pembrokes of the Communications Flight of No. 267 Squadron carried an average of 20 passengers on as many sorties each month, which was less than 5 per cent of the task carried out by Pioneers of the Support Flight of this Squadron but was nevertheless a significant contribution in the short range transport support role.

Short range transport roles (b) Communications by helicopter

Both the Austers of No. 656 Squadron and the Pioneers and Pembrokes of No. 267 (later 209) Squadron provided valuable communication links between the main airfields of Malaya and the network of grass airstrips in outlying districts but their task was limited

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mainly to the carriage of staff officers and a small amount of freight, together with regular police reinforcements of jungle forts. Moreover, the terrain ensured that the airstrips that were capable of handling these light aircraft were limited in number and too widely dispersed to assist in the rapid tactical deployment of troops that was necessary to counteract the terrorist threat in a campaign where operational areas could not be foretold with accuracy. The problem of moving troops into areas that were inaccessible or difficult to reach by surface communications was solved partly by the use of paratrooping techniques but mainly by the advent of helicopters, which was certainly the most significant contribution that was made by the short range air transport forces in Malaya to the successful outcome of the campaign and also the major development in the techniques of combined operations between ground and air forces that occurred during the 1950's.

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The role of the helicopter ~~in the Malayan campaign~~ and the principles governing its employment

The introduction of helicopters into Malaya came at a crucial point in the campaign against the terrorists and marked a turning point in the fortunes of the security forces. Previously it had been difficult for these forces, operating from static defensive positions, to achieve a rapid concentration of troops before the terrorists had time to disperse, or to mount a surprise attack on them by avoiding ambushes and the screen of aborigines or Min Yuen supporters which were usually interposed between the terrorists and the probable line of any attack. Outlying estates were difficult to reinforce at short notice and casualties, prisoners or vital intelligence material could not be evacuated from jungle areas without entailing arduous and uneconomic escort duties. When the decision was taken in 1953 to employ more troops on deep jungle operations in an attempt to carry the offensive to the terrorists and to eliminate their leaders, without whom the command structure of the M.R.L.A. would crumble, it became even more necessary to increase the mobility of the security forces so that they could penetrate jungle areas quickly and retain some element of surprise in order to nullify the advantages held by the terrorists in fighting over terrain that was ideally suited to their evasive tactics. If air

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supply gave the ground forces sustenance in inhospitable country, trooplifting and casualty evacuation by helicopter gave them mobility in tactical areas and allowed their commanders more flexibility in planning offensive operations against the terrorists. Together these two aspects of air transport support radically increased the effectiveness of security force operations and multiplied the number of personnel that were engaged on active jungle patrolling by a factor of not less than four. (145) With a rate of advance of 800 to 1,000 yards an hour in jungle terrain, even under the most favourable conditions, trooplifting by helicopter frequently converted ten days of unproductive marching into active patrolling and, by eliminating the inevitable delay and fatigue that was inherent in arduous jungle treks, they enabled troops to arrive fresh in their operational areas and considerably increased their fighting efficiency as a result. Air supply enabled troops to remain on patrol for two or three weeks at a time and the evacuation of the sick or wounded by helicopter from jungle landing zones obviated the necessity of abandoning a patrol or of seriously weakening its strength by providing escorts back to base camps.

Jungle operations usually developed into a series of fluid company or platoon actions and helicopters also provided a valuable liaison service for battalion commanders and their staff who wished to co-ordinate and control their troops and to reconnoitre the terrain over which they would have to operate. Among the variety of other tasks for which helicopters were well suited in the Malayan campaign were the dropping of limited quantities of supplies when accuracy was of paramount importance, target marking for airstrike aircraft and the destruction of jungle cultivations by aerial spraying.

It was virtually axiomatic, however, that there were never enough helicopters in Malaya to meet the demands that were made for their services and their commitments had to be limited according to a fairly rigid set of priorities, of which the tactical deployment of troops and the evacuation of casualties from the jungle were the most important tasks. The medium and the light helicopters that were employed during the Malayan campaign cost £73 and £53 an hour

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177

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respectively to operate, compared with the £35 and £15 an hour which it cost to operate Pioneer and Auster light aircraft (146) and this economic fact ensured that helicopters were never used when alternative methods of transport were available unless there were clear and overriding operational advantages to be gained. Whenever possible the tactical deployment of troops was carried out by surface communications or by fixed-wing aircraft since a helicopter operation which involved 1½ hours of unproductive flying time for a task lasting ten minutes was only justified when it saved several days of marching and not a journey of 40 minutes by road. Although it was tempting to use helicopters for liaison tasks, in most cases they would have achieved only a small saving at a disproportionately high cost and were used, therefore, only on operations of the highest priority such as the carriage of live or dead terrorists, guides, informers and other sources of intelligence material recover^{ed} during the course of operations, whose rapid assessment by intelligence officers was considered important. In addition the visits of staff officers and the regular visits to jungle forts by doctors and state officials were also carried out by helicopter before the advent of the Pioneer provided alternative means of transport. The ability of the helicopter to fly slowly over the ground also made them more effective than Austers for aerial reconnaissance and on a few occasions this consideration outweighed the high operating cost and shortage of numbers which usually precluded their use for such tasks.

To carry out trooplefting operations with a small number of helicopters it was essential to strike a balance between the principle of economy of force and the need to achieve a rapid build-up of troops in an operational area. Thus only a few helicopters were needed to lift a large body of troops provided that the sortie links were kept to a minimum. For example, 25 medium helicopters were required in the Malayan campaign to lift 100 men at one time but only eight were required if each helicopter made three trips. Although the operation would have taken five times as long it was more economical since the proportion of unproductive positioning time to trooplefting increased with the number of aircraft employed, while the fact that jungle

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landing zones could usually take only one helicopter at a time was a limiting factor on the speed of operations regardless of the number of aircraft that were employed. The use of eight medium helicopters at one time during Operation 'Commodore' in May 1953, the first large scale helicopter operation of the campaign proved unwieldy and it was considered that five helicopters using reserve pilots would have been more efficacious. (147) This operation showed that a radius of fifteen miles was the best compromise between the air forces' desire to shorten the flying distance and preserve the effort of their helicopters and the ground forces' natural inclination to mount operations some distance from the target area in order to minimise the risk of a security leakage. Flying twelve to fifteen round trips of 30 miles each a medium helicopter could move 60 to 70 troops each day and could keep up this effort for three or four days in succession. This operation also proved that troops who were totally unfamiliar with helicopters could operate with them after only ten minutes briefing and that emplaning and deplaning by jumping from a height of six feet, climbing down ropes or nets from a height of fifteen feet or being winched down from 100 feet could be carried out without prior rehearsal. (148)

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Helicopters ^{employed} ~~employed in transport support roles during the Malayan campaign~~

The helicopters that were employed in transport support roles during the Malayan campaign were the Dragonfly (S.51) and Sycamore light helicopters and the Whirlwind and the S.55 medium helicopters. The former pair were used primarily for casualty evacuation and liaison flights and the latter for trooplifting, but neither were used exclusively in these roles. When these helicopters were first introduced into Malaya they were still in an experimental stage and the exigencies of high temperature and humidity, uncertain weather conditions, high altitudes, mountainous terrain and the steep angle of entry and exit into jungle clearings, irrespective of wind direction, which they encountered ensured that they were invariably flown close to their operational limits and that their performance was considerably less efficient than in the United Kingdom. It is sufficient tribute to the skill of their pilots that both medium and light helicopters had

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179

a comparatively low accident record throughout their period of operation in the campaign against the terrorists in Malaya.

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The Dragonfly or S.51 light helicopter had a cruising speed of 70 knots at 80 degrees Fahrenheit and 75 per cent humidity ^{di} in still air and an endurance of three hours at this speed, which gave it a maximum operational range of 225 miles and a safety radius of 90 miles from its base. (149) It could carry 400 lb. or two passengers or two sitting or one stretcher borne case in a casualty evacuation role and, with an all up weight of 5,450 lb., it had a ceiling of 12,000 feet. It was not, however, an ideal aircraft for use in Malayan conditions because, quite apart from its maintenance record (it had a serviceability rate of less than 40 per cent between July 1953 and March 1954,) (150) it was tiring to fly for long periods, the problems of control made navigation difficult and it frequently required a jump take-off to escape from jungle clearings, while the poor downward visibility from the Pilot's seat made a vertical descent a manoeuvre of considerable delicacy in a confined space. Its replacement as a light helicopter in Malaya, the Bristol Sycamore which was introduced in 1955, carried one extra passenger or stretcher case or 200 lb. of freight and had a much better rate of serviceability - an average of 63 per cent throughout 1957. (151) With an external net it could deal with awkward loads up to 500 lb. in weight and, after 1957, it was proved capable of trooplifting operations and eventually replaced the Whirlwind medium helicopter in this role without much loss in operational efficiency. The droop of its main rotor at low revolutions, however, required more stringent conditions than for some other helicopters in the preparation of landing zones.

The medium helicopter which bore the brunt of trooping operations in the Malayan campaign was the American S.55, which had a cruising speed of 60 knots in still air and a range of 100 miles with a payload of 1,000 lb. into large landing zones, or of 70 miles with a payload of 500 lb. into small jungle clearings. (152) With an ideal operational range of 20 miles in Malayan conditions an S.55 could carry five

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fully equipped troops with five days rations, or a 3" mortar and its crew of three and 24 mortar bombs, or three stretcher cases and two walking wounded, or ten 100 lb. boxes of stores, or fifteen 65 lb. free-drop ration bales or 800 lb. in a large crate slung in an external net. Its serviceability rate was generally good - averaging 90 per cent of the unit establishment between July 1953 and March 1954. (153)

Unfortunately the British version of the S.55, the Whirlwind Mk.IV was a poor over-heavy copy of the original and when it was first introduced into Malaya in 1955 it could carry only three troops and could not operate economically above 3,000 feet. (154)

101 Removal of all unnecessary equipment reduced its overall weight by 350 lb. and enabled an extra passenger to be carried, but these aircraft proved difficult to maintain and continually absorbed a disproportionately large part of the technical manpower that was available. During 1956 the average serviceability rate of the Whirlwinds operating in Malaya was only 41 per cent and since the lifted components of this aircraft were never in good supply there was rarely a time when one or more aircraft were not grounded for lack of some spare part and the whole Whirlwind force was out of line four times during 1957 for technical reasons. (155)

107 The poor standard of the Whirlwind's overhauled Pratt and Whitney engines caused concern and resulted in a reduction of its life from 400 to 200 hours between overhauls, which doubled the servicing costs on engine replacements. (156)

It was largely because of this mechanical unreliability that the proportion of Sycamores in the helicopter force in Malaya was increased at the expense of Whirlwinds towards the end of the campaign.

Experience in the Malayan campaign showed that the salient features of the ideal helicopter for jungle operations were a single rotor configuration, a power plant of about 1,200 h.p., stable landing gear comprising four wheels with brakes, good ground clearance underneath the fuselage and the main and tail rotors, a large centre of gravity range, the ability to hover up to heights of 6,000 feet and a range of 400 miles with full tanks and a normal load in still air. (157)

The S.55 came nearest to fulfilling these requirements but a more powerful

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181

helicopter, such as the Wessex S.58, with a seating capacity of ten or twelve troops instead of five or six, would have greatly improved the speed and efficiency of trooplifting operations. These aircraft, however, were only just coming into service when the campaign ended.

The use of any helicopter larger than the Wessex S.58 was impracticable in Malayan conditions as it would have necessitated unrealistically exacting requirements in the preparation of landing zones. As it was the preparation of helicopter 'pads' always constituted a major problem in the Malayan jungle and even with the aid of plastic explosive and power saws it was difficult to completely clear the requisite area and it was often necessary for troops to embark and disembark from a hovering aircraft by means of a knotted rope or net. Even the S.55 had a main rotor clearance of only 10½ inches and the minimum requirements of any helicopter landing zone was a level and firm area 30 yards in diameter that was cleared to the ground, with a perimeter ten yards wide that was cut to two feet from the ground and an approach path not less than 40 yards wide or steeper than 30 degrees. The maximum angle of approach was reduced to 20 degrees at 3,000 feet and 10 degrees at 4,000 feet, while a clear run in was required above 5,000 feet. All helicopter landing zones varied a little according to the number of aircraft they could accommodate at once, the altitude or their approach angle and a careful record was kept at the Joint Operations Centre at Kuala Lumpur of the characteristic features of all known natural or artificial helicopter landing zones in Malaya. By the end of the campaign this list included the location of several hundred sites scattered throughout the Federation.

The Build-up of the helicopter force ~~in Malaya~~ and its deployment

The first helicopters to be introduced into Malaya were three S.51 Dragonflies which formed the Far East Casualty Air Evacuation Flight that was established at Seletar on 1 April 1950 and which moved to Changi on 22 May 1950. Such was the demand for the services of this unit that further Dragonflies were added to its establishment in March, May and June 1952 to bring its complement up to five aircraft. The total loss of one S.51, however, and the unserviceability of the others, virtually eliminated this unit as an effective force and the

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- 182 -

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flight was disestablished on 2 February 1953.

In October 1952 it was decided to form a Short Range Transport Squadron to be known as No. 194 Squadron. Its role would be to carry out casualty evacuation, tactical movement of troops, tactical reconnaissance and search and rescue operations. For these tasks the

squadron was to be equipped with nine U.E. plus three I.R.

Dragonfly III/IV aircraft and was to absorb the Casualty Evacuation Flight.

No. 194 Squadron was eventually formed at ^(Royal Naval Air Station) R.N.A.S. Sembawang on 2 February 1953 coincidentally with the disbanding of the Casualty Evacuation Flight at Changi. On 8th January 1953 No. 848 ^{Naval Air} ~~R.A.F.~~

Squadron* arrived in Malaya and was located at R.N.A.S. Sembawang. It was equipped with ten S.55 medium helicopters that had arrived in the ferry carrier H.M.S. Perseus of which four were held in Reserve.

No. 303 (Helicopter) Wing was formed at R.N.A.S. Sembawang on 2 February 1953 to co-ordinate and control the activities of No. 194 Squadron and No. 848 ^{Naval Air} ~~R.A.F.~~ Squadron. A detachment of three S.55's and two

S.51's was deployed at Kuala Lumpur to carry out tactical troop movements and casualty evacuation in North and Central Malaya while the remaining three operational S.55's and two S.51's remained at Sembawang. Control of the entire helicopter force was vested in the Advanced A.H.Q. (Malaya) but was decentralised to Air Control Teams that were attached to Army formation headquarters during large scale operations. On 1 May 1953

No. 303 (Helicopter) Wing moved from Sembawang to Kuala Lumpur and on 15 February 1954 it was disbanded and its constituent squadrons, No. 194 (R.A.F.) and No. 848 ^(Naval Air) ~~R.A.F.~~ became part of the flying wing at R.A.F. Kuala Lumpur. (169)

By the beginning of 1954 the wastage rate of the Dragonfly helicopters of No. 194 Squadron had become so acute that they were progressively replaced by Sycamore HAR.14 helicopters. Even so, it became increasingly apparent that the helicopter force in Malaya was insufficient to meet the legitimate demands that were made on it. Operation 'Valiant' in North West Pahang at the end of 1953 had

* No. 848 ^{Naval Air} Squadron was formed at R.N.A.S. Gosport on 29 October 1952.

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183

103

shown the effects of sustained operations on the serviceability rate of a small helicopter force while its centralisation at Kuala Lumpur for maintenance reasons meant that many hours were lost in positioning time and that the average delay between the receipt of a message for helicopter assistance and their arrival at the pick-up point was twelve hours. (171)

By the beginning of 1954 a crucial point had been reached in the campaign and in the Director of Operation's Report for that year it was emphasised that pressure had to be maintained on the terrorists as their strength and morale declined and as security force intelligence improved if the current stalemate, which had arisen after the terrorists' withdrawal into deep jungle, was to be broken. (172)

To do this it was estimated that enough medium helicopters were required to lift two infantry companies in different parts of the Federation on any one day and to lift periodically the Federal Reserve Battalion of four infantry companies. (173)

By the beginning of 1955 medium helicopter support would be required to start one deep jungle operation every month and to finish another, to provide reliefs for two operations in progress, to carry out 21 area domination operations and to provide six airlifts of 90 men each against opportunity targets. In addition, up to five jungle forts required regular relief every six months and eight required monthly visits by teams of administrators. The task of the light helicopter force was estimated at two casualty evacuations, three communication and two tactical reconnaissance or crop spraying sorties every day. (174)

For these commitments a minimum of ten medium and ten light helicopters was required at any time, which necessitated an establishment of fourteen medium and fourteen light helicopters, with four of each in reserve. (175)

104

In fact there were nominally only ten S.55s and twelve S.51s in Malaya in mid-1954 and these were showing signs of nearly two years of continuous operation. The nadir of their serviceability came on the 28 August 1954 when only one S.55 and one S.51 were available for operations and the situation was further aggravated by the prospect of a hiatus between the planned withdrawal of No. 848 ~~RAF~~ ^(Naval Air) Squadron in August 1954 and the arrival of R.A.F. replacements in December 1954 and

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(176) January 1955. Fortunately the tour of duty of No. 848 ^{Naval Air} Squadron was extended to April 1955 and the arrival of two Sycamores, nine R.A.F. Whirlwinds of No. 155 Squadron and five ~~R.A.F.~~ ^{Naval} Whirlwinds in H.M.S. Glory on 18 October 1954 ensured that there was a daily availability of fourteen light helicopters and nine medium helicopters by the end of the year. (177) The Pioneers that had recently arrived in the Malayan theatre complemented the task of the Dragonflies and Sycamores and helped to meet the estimated requirement for light helicopters but the poor performance of the R.A.F. Whirlwinds meant that only the equivalent carrying capacity of six S.55s was available to meet the daily requirement of ten S.55 medium helicopters. (178) Negotiations with the U.S. Government for fifteen more S.55s to be provided during 1955, either on loan or under the mutual aid programme, proved abortive (179) but the situation was rectified by improving the capacity of the R.A.F. Whirlwinds and by retaining the services of the S.55s of No. 848 ~~R.A.F.~~ ^{Naval Air} Squadron for the remainder of their useful lives - which proved to be until 10 December 1956, when a series of accidents impelled their withdrawal after an exacting tour of nearly four years in Malaya. (180)

By the end of 1955 the establishment of seventeen Whirlwinds, with three in reserve, and eleven Sycamores and Dragonflies, with three in reserve, was sufficient to meet all reasonable demands for helicopter support and the improvement in their availability had permitted a greater degree of decentralisation in order to provide a reserve in brigade areas for mounting attacks against opportunity targets. Previously small detachments of helicopters had been confined to the support of pre-planned operations and were limited to specified periods. On 9 May 1955, however, three medium and one light helicopter were deployed at Kluang in Johore in support of the 17th Gurkha Infantry Division, one light helicopter was positioned at Ipoh in Perak in support of the 1st Federal Infantry Division and another light helicopter was located at Benta in Pahang in support of the 18th

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Independent Infantry Brigade in order to cover operations in the South,
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North and centre of Malaya. These detachments remained under the

operational control of the Joint Operations Centre at Kuala Lumpur.

In March 1956 the medium helicopter force was again redeployed to
facilitate second line servicing and improve their availability. The
Whirlwind detachment of No. 155 Squadron was withdrawn from Kluang to
Kuala Lumpur, while No. 848 ^{Naval Air} Squadron was moved from Kuala Lumpur to its
maintenance base at Sembawang, from where it maintained the Kluang
detachment to meet requirements for medium helicopter support in South
(182)
Malaya.

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With the disestablishment of No. 848 ^{Naval Air} Squadron at the end of 1956
seventeen Whirlwinds of No. 155 Squadron and fourteen Sycamores of
No. 194 Squadron were left to meet all demands for helicopter support
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in Malaya. Fortunately these became less as the Emergency

situation improved, which was provident as the Whirlwinds gave
considerable technical trouble during 1957, that finally led to a
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recommendation that they should be progressively replaced by Sycamores.
The conversion programme began to take effect with the deletion of four
Whirlwinds from the establishment of No. 155 Squadron on 1 December
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1957 but it was temporarily interrupted in November 1958 by a
defect in the main rotor blade of the Sycamore helicopter which caused
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the grounding of these aircraft for some time. Considerable

strain was then thrown upon the limited resources of the remaining
helicopter force when the positioning time from Kuala Lumpur was
increased with the dispersal of the main troop concentrations to the
north and south of the Federation after the central areas had been
declared free of Emergency restrictions. Recourse was made, therefore,
to detachments of three Sycamores at Ipoh in Perak and of three
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Whirlwinds at Seletar on Singapore Island. The problems of

maintenance and administration which this deployment caused were
exacerbated, however, when the F.E.A.F. was downgraded in priority for
helicopter spares in favour of the M.E.A.F. and the Joint Operations
Centre was compelled to reject all bids for helicopter support which
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could be met by other means.

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by the three Dragonflies which formed the Far East Casualty Air
Evacuation Flight on 1 April 1950. (196) The increase in terrorist
activity during the first part of 1950 had underlined the need for the
expeditious evacuation of casualties from operational areas and, because
of the mountainous terrain and poor surface communications that were
subject to terrorist ambushes, this was only practicable by air in most
cases. Casualties were lifted from jungle clearings and flown
directly to the nearest British Military hospital at Singapore, Kuala
Lumpur (Kinrara), Kluang or Taiping, or to medical receiving stations
at Penang, Sungei Patani, Ipoh, the Cameron Highlands and Seremban, or
to the nearest airfield or road and rail communications centre for
transport to the nearest surgical unit and from there to the main
British Military Hospital at Singapore. (197)

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Apart from battle injuries, the casualties that were evacuated by
helicopter from the jungle during the Malayan campaign suffered from
many and varied complaints, including snake bites, fever, dysentery,
jaundice and appendicitis, and many of these would certainly have proved
fatal if the sufferer had not received treatment quickly, while in
other cases survival would have been problematical in view of the long
and arduous journeys out of the jungle that would have had to be under-
taken on foot if air evacuation had not been available. (198)

The first casualty to be evacuated by helicopter during the
Malayan campaign was lifted on 6 June 1950 when a wounded policeman
was flown from an isolated police station in Southern Johore and taken
to Johore Hospital, where the saving of his life was attributed to his
speedy admission. (199) On 15 June 1950 the first military casualty
to be evacuated by helicopter was flown to R.A.F. Changi from Segamat
airstrip, which had been rendered unserviceable for conventional
aircraft by heavy rain, and on 20 June a Gurkha soldier with toothache
was evacuated from the jungle near Kluang in Johore. (200) By the end
of 1950 26 casualties had been evacuated from the Malayan jungle by
helicopter and, although the number of evacuations was not particularly

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high, the realisation that they were never out of reach of timely medical aid afforded a great fillip to the morale of the security forces and removed their fear of becoming a casualty and thus a burden on the remainder of the patrol. A typical example of the work of the small Casualty Air Evacuation Flight occurred on 13 October 1950 when four members of a patrol of the 1st Worcestershire Regiment, including two stretcher cases, were evacuated to Segamat airstrip from a clearing to the East North East in one hour and 45 minutes. After a 35 mile road journey to the British Military Hospital at Kluang one of the casualties was treated for gangrene and undoubtedly owed his life to his speedy evacuation by helicopter. (201)

Throughout 1951 casualty evacuations by helicopter continued at a rate of four or five a month, with a total of 55 for the whole year. On 25 October 1951 one Dragonfly was lost in attempting to fly out of a small clearing in deep primary jungle but the addition of three more Dragonflies to the Casualty Air Evacuation Flight in the first half of 1952 made it possible to evacuate a greater number of casualties from the jungle and also to detach one helicopter to the vicinity of prolonged ground force operations while the remainder maintained one helicopter at permanent standby at Changi to answer calls from anywhere in the Federation. (202) In February and March 1952 alone, 44 casualties were lifted out of the jungle, mostly from the Belum valley of Northern Perak during Operation 'Halsby', to bring the total number of evacuations that had been carried out by the Casualty Evacuation Flight since its inauguration a year earlier to over 100. During the whole of 1952 168 casualties were evacuated by helicopter to bring the overall total to date to 257. Although the number of casualties which occurred among the ground forces declined during 1952, three times as many were evacuated by helicopter during that year as had been during 1951, which indicated their growing dependence on this form of air transport support. Most of these evacuations involved casualties due to sickness or accident as a result of prolonged periods spent in the jungle but battle casualties continued at a steady rate of four or five a month while, on one

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106 occasion, helicopters were used to convey the seriously injured (204) survivors of a train crash in a remote part of Kelantan.

107 The advent of No. 194 Squadron's Dragonflies and No. 848 Squadron's S.55s at the beginning of 1953 considerably increased the capabilities of the helicopter force in Malaya and the number of casualties that were evacuated from the jungle rose accordingly. From four evacuations in January 1953 the number of evacuations rose steadily to 85 in November of that year, when both S.55s and S.51s were flying several sorties daily in support of Operation 'Valiant' in the deep jungle of North West Pahang. (205) As this operation progressed dysentery, scrub typhus and other jungle diseases proliferated and caused most of the casualties that required evacuation by helicopter. By the end of 1953 S.55s had carried out 280 evacuations in 318 hours of flying during the year while S.51s had flown 213 casualties in 199 hours of flying. Of these 493 casualties, 10.5 per cent were wounded, 9.5 per cent had suffered accidents, 10.5 per cent had foot diseases and 59 per cent were suffering from fever or other illnesses. (206)

During 1954 743 casualties were evacuated by helicopter in the Malayan theatre, nearly 50 per cent more than in 1953 - 30 per cent of which were flown in S.55s of No. 848 Squadron and the remainder in the S.51s and Sycamores of No. 194 Squadron. In the following year, 1955, a total of 793 helicopter evacuations were carried out in Malaya with never less than 40 in any one month, of which 33 $\frac{1}{4}$ were carried by medium helicopters of Nos. 848 and 155 Squadrons and 459 by the light helicopters of No. 194 Squadron. 1955 proved to be the peak year for casualty evacuation by helicopter during the Malayan campaign but over 600 casualties were flown out of jungle areas in each of the next three years. However, the proportion of casualties evacuated by medium helicopters fell from 40 per cent in 1955 to less than 30 per cent in 1956. During 1956 the light helicopters of No. 194 Squadron carried nearly 500 casualties, including their 1,500th since their arrival in Malaya, while the S.55s of No. 848 Squadron were finally withdrawn at the end of the year after evacuating 764 casualties during their four

/ year

year tour in the theatre. During 1957 the medium helicopters of No. 155 Squadron carried out only 15 per cent of the total number of casualty evacuations but in 1958 their contribution rose to nearly 30 per cent of the 733 casualties that were evacuated by helicopter during the year and, after the Sycamores of No. 194 Squadron had been grounded at the end of April 1959, they completed the remaining task in this role until the end of the campaign.

107 Despite the reduction in the number of helicopters that were available for casualty evacuation work towards the end of the Emergency they were able to meet this commitment as the number of casualties suffered by the security forces showed a marked decline and less than 300 wounded or sick personnel were carried by helicopter during 1959 and 1960 - well under half the number that were evacuated during the peak years of 1954 to 1957. When the Emergency ended in July 1960 ten years had elapsed since the inauguration of the Casualty Air Evacuation Service in Malaya, during which period helicopters of the R.A.F. and the Royal Navy had transported almost exactly 5,000 casualties and saved numerous lives in the process.

Summary of communications operations by helicopter ~~XXXXXXXXXX~~
~~XXXXXXXXXX~~

With the formation of No. 194 Squadron ~~XXXXXXXXXX~~ orders restricting the employment of the light helicopter force in Malaya were rescinded and they became available for tasks in a communications role provided that sufficient aircraft were retained for their primary commitment of casualty evacuation. (207) From the beginning of 1954

108 to their final withdrawal from operations in mid-1959 the Dragonflies and later the Sycamores of No. 194 Squadron regularly transported between 150 and 300 passengers every month on communications flights. At the beginning of this period the S.55s and Whirlwinds of Nos. 848 and 155 Squadrons carried rather more than half this number of passengers each month, but the withdrawal of the former at the end of 1956 reduced the contribution of medium helicopters to the communications commitment to less than 15 per cent of the total task. However, after mechanical failures beset the remaining Sycamores at

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191

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the end of 1958, R.A.F. Whirlwinds carried out the remaining task of transporting about 50 passengers each month until the end of the Emergency. During the whole campaign about 12,500 passengers were carried by medium helicopters and a further 6,500 by light helicopters.

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In addition to the transportation of passengers during the Malayan campaign, helicopters were also used to carry freight into jungle landing zones when supply drops were impracticable. Notable commitments in this role included the carriage of the heavy construction equipment that was flown into the sites of jungle forts for clearing the land and preparing light aircraft strips. For the carriage of freight the Whirlwind and S.55 medium helicopters, with their greater capacity, were preferable to light helicopters and, with the withdrawal of No. 848 Squadron at the end of 1956, they carried out 75 per cent of this commitment. During 1954 medium helicopters transported nearly 165,000 lb. of freight and light helicopters a further 80,000 lb, while in 1955 their combined task more than doubled to nearly 600,000 lb. During 1956, however, the total freight carrying commitment of the helicopter force in Malaya fell by 25 per cent and a greater proportion of the task was carried out by light helicopters, especially after the withdrawal of No. 848 Squadron at the end of the year. The Sycamores of No. 194 Squadron carried over 75 per cent of the 415,000 lb. of freight that was transported by helicopter during 1957 and well over half of the 630,000 lb. that was carried during 1958, which proved to be the highest annual total for any single year of the campaign. After the withdrawal of the Sycamores from operational service in Malaya in 1959 the amount of freight that was transported by the remaining Whirlwinds fell to an average of 10,000 lb. and the 200,000 lb. that were carried during the last eighteen months of the campaign represented little more than the monthly totals of June and July 1958.

During the course of eight years of operations in a transport and communications role in Malaya helicopters carried about 19,000 passengers and 2½ million lb. of freight, which can be compared with the 16,000 passengers and nearly 3½ million lb. of freight that were carried by R.A.F. and R.M.A.F. Pioneers and the 500,000 passengers and 80

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million lb. of freight that were carried by medium range transport aircraft in the Malayan theatre during the same period.

Summary of trooplifting operations by helicopter ~~XXXXXXXXXX~~

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It was not, however, the carriage of passengers, freight or wounded personnel that represented the most important contribution of the helicopter force to the successful conclusion of the Malayan campaign, but the transportation of troops in operational areas, which was the most significant development in air transport support that occurred during the Emergency. During 1952, when there were only a few S.51 helicopters of the Far East Casualty Air Evacuation Flight in Malaya, two events focused attention on the potentialities of helicopters for trooplifting operations. In February 1952 a patrol of fourteen men of the ^{Battalion The} 1st Cameronians was successfully evacuated from a swamp in the Ulu Bernam area of North West Selangor when rising water threatened to cut them off (208) and, in March 1952, several army commanders, civilian administrators, doctors and sick and aged evacuees were flown into and out of the Belum area of Northern Pahang during the course of Operation 'Helsby'. (209) Without helicopters these operations would have involved days of arduous travelling through difficult jungle terrain with heavy escorts and the obvious application of this lesson to the problem of the tactical deployment of troops was primarily responsible for the subsequent demand for helicopter reinforcements in Malaya. The advent of the S.55s of No. 848 Squadron at the beginning of 1953 had a pronounced effect on the conduct of air transport support in Malaya and trooplifting into and out of operational areas became the main preoccupation of the Air Operations room at Kuala Lumpur.

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No. 848 Squadron carried out its first operational trooplift on 16 February 1953 during Operation 'Wellington II', when three S.55s lifted twelve men of the ^{Battalion The} 1st Worcestershire Regiment and a surrendered terrorist into a small peninsula south of Port Swettenham in Selangor in an attempt to capture a local District Committee member of the M.G.P. (210) Previous attempts to approach this terrorist hideout had failed because of the security screen which surrounded it and, although this particular operation also failed in its main objective, it did

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prove that troops could be lifted by helicopter at short notice without any previous experience of this form of air transport support. Over 300 trooplifting sorties were flown by helicopter during the next two months and the largest effort of this role that was made during 1953 occurred on 24 May when Operation 'Commodore' was mounted North East of Kluang in Johore in an attempt to capture the State Committee of the M.C.P. (211)

Following an airstrike and a paratroop drop into adjacent jungle, 564 troops were lifted over a distance of nine miles into a jungle landing zone by eight S.55s of No. 848 Squadron during the course of seven hours, in a move that would have taken at least two days on foot. At first no contact was made with the terrorists but on 25 May further information was received and another trooplift was carried out from the original landing zone into a new area where nine terrorists were killed and twelve of their camps were destroyed. During this fourteen day operation eight S.55s lifted a total of 1,623 troops and 35,000 lb. of stores on 415 sorties while two S.51s carried out a further 94 sorties on reconnaissance and communications flights. Altogether 1,902 troops were airlifted by helicopter during May 1953 - a monthly total that was not exceeded until March 1955.

In October 1953 the Central Politburo of the M.C.P. and several terrorist camps were located in an area of deep jungle in North West Pahang and four battalions of troops were deployed on the offensive in Operation 'Valiant' in an attempt to destroy them. (212) Movement on foot was virtually impossible over any distance in this type of country and the operation relied heavily on helicopter support. The operation began with an airlift of one battalion of 500 troops over a distance of nineteen miles into two small jungle landing zones and thereafter companies of the remaining battalions engaged in the operation were deployed and redeployed almost entirely by S.55 helicopters, while the poor wireless communications in the broken terrain of the operational area forced brigade and battalion commanders to rely heavily on S.51 helicopters for liaison purposes. Over 2,700 troops were positioned by helicopter in Malaya during October and November 1953 to bring the total for the year to nearly 12,000 troops in 1,700

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hours of flying by S.55 helicopters, which represented over half the total operational effort of No. 848 Squadron.

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The strain of continuous operations made itself felt on the serviceability rate of both medium and light helicopters at the end of 1953 and their operational effort was accordingly reduced in the first few months of 1954. Nevertheless, when Operation 'Termite', the largest combined operation of the Emergency, was mounted in Perak in July 1954, most of the troops involved were flown by helicopter into landing zones that had been previously prepared by paratroops of the 22nd Special Air Service Regiment. (213) From May to September 1954 an average of over 1,000 troops a month were flown by the S.55s of No. 848 Squadron on 2,448 sorties, each of which averaged 40 minutes in duration. Towards the end of the year the problems of maintaining these helicopters again became acute as they had to bear the entire trooplifting commitment until the R.A.F. Whirlwinds, which began arriving in Malaya in October 1954, were modified to enable them to carry out this role effectively. Nevertheless, during 1954 as a whole, the S.55s of No. 848 Squadron flew over 215,000 miles in transporting more than 10,000 troops in different parts of the Federation. (214)

During 1955 the unit establishment of No. 155 Squadron was increased to seventeen Whirlwinds and this expansion in the helicopter force in Malaya doubled its trooplifting capacity. Monthly trooplifting totals rose from 1,285 troops in January 1955 (73 of whom were carried by light helicopters) to 3,461 in July 1955 - the highest figure to date in the Emergency. The monthly average number of troops lifted into or out of the jungle by helicopter during the whole of 1955 was 2,250, compared with 735 in 1954, and the annual total came to nearly 28,000 troops - nearly three times the number that were lifted in the previous year. 43 per cent of all the troops that were positioned by helicopter during 1955 were transported by the S.55s of No. 848 Squadron during the course of 2,413 hours of flying, which represented a slight increase in their effort of the previous year. One notable trooplifting operation

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~~operation~~ that was carried out during 1955 occurred three weeks after the Amnesty was declared in September, when two infantry battalions (215) were moved from central Malaya to Johore. Having been assembled at Kluang by medium range transport aircraft and rail, one complete battalion and two companies of the other were deployed in their operational areas entirely by helicopter and in the course of two days nearly 600 troops were positioned by helicopter at a distance of over 150 miles from their former locations. This operation showed the advantages that could accrue from a combination of medium and short range air transport support.

During 1956 No. 848 Squadron was redeployed to Sembawang and operated mainly in Johore, (216) a move which, combined with the re-organisation of the technical wing at Kuala Lumpur, achieved a marked improvement in the daily availability of medium helicopters and enabled them to meet the continuing commitment of lifting an average of over 2,200 troops a month throughout the year. The final total of 25,700 troops lifted by helicopter during 1956 was the equivalent of positioning every soldier in Malaya by helicopter at least once during the year. Notable operations that were supported by trooplifting helicopters during the year were Operations 'Latimer South' and 'Enter' in North and North East Negri Sembilan, 'Huckster' in the Kluang area of Johore and 'Bonanza' in South Selangor. (217) These operations achieved the elimination of over 150 terrorists towards the end of the year and were continued into 1957, with medium helicopters providing a valuable service in deploying and relieving troops in operational areas. The trooplifting capacity of the medium helicopter force in Malaya was reduced, however, with the withdrawal of No. 848 Squadron at the end of 1956 after it had transported over 45,000 troops and passengers during its four year tour of duty in Malaya. (218)

Sycamores of No. 194 Squadron took over part of the trooplifting commitment during 1957 but the main effort was provided by the seventeen Whirlwinds of No. 155 Squadron. The Whirlwinds proved technically unreliable, however, and were out of line four times during the year, including nearly the whole of February. During this month troop-

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lifting operations were restricted to the most urgent requests and the monthly total of 454 troops transported by helicopter was the lowest for over two years. By May 1957, however, the trooplifting commitment had risen again to over 2,000 a month, of which 10 per cent were carried by light helicopters. Altogether 16,862 troops were carried by Whirlwind medium helicopters during 1957 and a further 2,867 by Sycamore light helicopters - a decrease of 20 per cent in comparison with the task completed in the previous year.

The reduction in the trooplifting commitment of the helicopter force in Malaya during 1957 was partly due to the lower intensity of security force operations, as the area free from Emergency restrictions expanded, and also to the concentration of troops in limited areas of the north and south of the Federation on protracted operations against the remaining terrorists, which required only routine reliefs rather than frequent tactical deployment by helicopter. Fortunately this trend continued throughout 1958 as both Whirlwind and Sycamore helicopters suffered severe operational limitations owing to poor serviceability during the year. In the second half of 1958 maximum productive utilisation of the small number of helicopters that was available was achieved by small detachments of three Sycamores and three Whirlwinds at Ipoh and Seletar respectively (219) and, by exercising the strictest control over their use through the Joint Operations Centre, all the most important operational trooplifting requests were met with a minimum amount of disruption to the plans of ground force commanders. In fact the task achieved by this force during the year was remarkable and the final total of 26,867 troops that were carried by helicopter during 1958 was only just below the figure for the record year of 1955. A notable achievement in 1958 was recorded during Operation 'Tiger' in South Johore when an intensive drive was launched by the 63rd and 99th Brigades against the Regional Committee of the M.C.P. and its supporting District Committees. (220) In support of this operation the detachment of Whirlwinds at Seletar flew over 600 troops into the area in late

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197

August 1958 and a further 1,600 troops were deployed there during October. During the latter month 4,133 fully equipped troops were ferried into and out of jungle landing zones in North and South Malaya, which constituted a record for any one month of the campaign. Of these troops, 60 per cent were transported by light helicopters as the policy of replacing the Whirlwinds with Sycamores had begun to take effect. This conversion programme was halted by the unserviceability of the Sycamores at the end of 1958 and ground force operations had to be restricted as the supply of light helicopters was reduced to only one or two a day. Nevertheless, by the end of the year Sycamores had carried nearly 8,000 troops in the preceding twelve months - nearly 30 per cent of the total number of troops that were transported by helicopter during 1958.

At the beginning of 1959 the rundown in the strength of the Whirlwind Squadron, No. 155, led to some curtailment of trooplifting operations but an average of nearly 2,000 troops was still transported each month and on one occasion in February 1959 two medium helicopters carried 230 troops over a distance of nine miles in under four hours. After the Sycamores of No. 194 Squadron had finally been grounded in April 1959 only five Whirlwinds of the newly formed No. 110 Squadron remained to carry out the residual trooplifting commitment of the campaign and the monthly total of troops carried by helicopter fell to less than 200. In October 1959, however, Operation 'Bamboo' was mounted in Perak and demands for trooplifting operations increased fourfold. No task of this size had been expected of the helicopter force in Malaya since Operation 'Tiger' in the previous year but, by practising rigid economies in the use of their aircraft and by enjoining the Commonwealth Brigade to prune its bids for helicopter support to the minimum, all the important operational tasks were carried out and over 1,600 troops were lifted during the months of October and November 1959. Fortunately, little trooplifting support was required for Operation 'Seladang' that was in progress in Pahang at the same time as surface communications in the operational area

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138

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were adequate. By the end of 1959 nearly 5,400 troops had been transported by helicopter during the year, less than 30 per cent of the number carried during 1958 and the lowest annual total since this type of transport support began in 1953. Nevertheless, the task carried out by each individual aircraft was higher than it had ever been and the five remaining operational Whirlwinds in the theatre continued to carry over 500 troops a month throughout the first half of 1960. By July 1960, the last month of the Emergency, the redeployment of the ^{Battalion The} 1st Royal Australian Regiment and the ^{Battalion} 1st/3rd East Anglian Regiment in the Operation 'Bamboo' area of Perak had been completed (224) and the monthly average number of troops that were transported by helicopter fell to 350. It rose again to over 600 a month towards the end of 1960, however, as ground force operations were continued against the terrorists in the Thailand border area and regular reliefs were provided for troops patrolling this region.

By the end of 1960 over 6,000 troops had been transported by helicopter in Malaya during the year, more than in 1959, and the total number of troops lifted by helicopter during the entire campaign had exceeded 110,000, of which 90 per cent had been flown in Whirlwind and S.55 medium helicopters. This effort may be compared with the 19,000 troops that were carried by one flight of Pioneers during the same period. It is not possible, however, to compare the relative merits of the helicopter and the Pioneer in the Malayan campaign as the former enabled operations to be carried out which the latter could not have assisted and this fact, despite the expense of operating helicopters, was a powerful military argument for their employment. Moreover, analysis of the operational effort of both Pioneers and helicopters during 1955 and 1956 showed that under a short term policy the use of the former produced little savings in operational costs. This was because Pioneers had to complete 1,320 hours of flying before the difference between their operating costs and those of helicopters equalled the cost of building an airstrip at the jungle forts whose supply was the Pioneers' main function. (225) Once these airstrips were completed, however, Pioneer aircraft proved their worth as they were cheap and

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113
success of the Briggs' Plan and the disruption of the terrorists' established methods of food supply ensured that food production became the most important factor affecting their ability to survive. They were compelled, therefore, to deploy a large proportion of their forces in remote jungle areas in order to cultivate the food that was necessary for their survival, with the aim of stockpiling the produce and building up dumps of complementary and essential foodstuffs. Jungle cultivations as established by the terrorists were small in size and screened by jungle vegetation, except from the air, while the aborigines who were frequently pressed into service as an additional labour force on these plots also provided an intelligence screen which made it almost impossible to approach them on foot undetected.

Occasionally ground forces were employed to destroy terrorist cultivations in secondary jungle, during the course of either routine or special operations, but this method was an uneconomic use of manpower and the troops involved generally showed signs of physical and mental deterioration on arduous patrols which offered little or no chance of contacting the enemy. It was realised, therefore, that aerial attack offered the best means of destroying these cultivation plots and, since high explosive and fire bombs proved ineffective in this role, a scheme for the use of chemical sprays was propounded. (227) At first sodium

arsenite was used with effect but it was poisonous and the danger which it afforded to the lives of the indigenous population of the jungle was politically unacceptable. (228) Imperial Chemical Industries

suggested the use of Fernoxone but the toxic spray that eventually proved the most efficacious was a mixture of trioxene and diesolene, which formed a non-poisonous herbicide that killed all types of vegetation and rendered the ground unusable for a period. (229)

The spotting and location of jungle cultivations was carried out by Austers of No. 656 Squadron and became an increasing commitment of these aircraft when the terrorists' cultivation programme got under way in 1952. When a number of these cultivations had been plotted a spraying operation was mounted, using both light and medium helicopters.

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The first of these operations was Operation 'Cyclone I', which was (230)
mounted on 31 August 1953 in the Kluang and Labis area of Johore.

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Ten cultivations, all fairly close together, had been located in the Mar Okil Forest Reserve and, after they had been marked by Austers, they were strafed by pairs of Hornets to eliminate any ground resistance. Two S.55s and one S.51 helicopter were then flown into the area from Kluang and, although they operated in pairs for safety's sake, they managed to deal with twenty cultivations on the first day of the operation. As the remaining cultivations were more scattered the daily achievement of this small helicopter force was reduced but, after the two S.55s had carried out spraying operations for one and a half days and the S.51 for a further two days, some thirty cultivations had been dealt with and one terrorist had been killed during associated ground force operations. One of the lessons learnt from this operation was that Auster reconnaissance aircraft were an essential part of the crop spraying force as it was difficult to spot a series of terrorist cultivations from a helicopter once it had descended to a low level to carry out its task.

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The second crop spraying operation, Operation 'Cyclone II', was carried out soon after the first and, by the end of 1953, 88 terrorist cultivations had been effectively destroyed from the air during the course of 48 hours of flying by S.51 helicopters and 15 (232)
hours of flying by S.55s.

By February 1954 a total of five crop (233)
spraying operations had been carried out but a temporary reduction in the available helicopter force put an end to these operations for some months. They had commenced again, however, before

the end of 1954, using Whirlwind helicopters, but thereafter they remained in abeyance for most of the remainder of the campaign through lack of sufficient aircraft both for spraying and for the tactical reconnaissance of ~~mounted at infrequent intervals whenever sufficient helicopters could be spared from their primary tasks.~~ terrorist cultivations.

As part of the general food-denial campaign that was carried out against the terrorists, crop spraying operations ~~played an important~~ ^{helped to} ~~role in rendering~~ terrorist camps in deep jungle zones untenable, thereby forcing their inhabitants to contact their supporters amongst the civil population in order to obtain essential supplies and

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thus increasing the security forces' chances of contacting them. However, even more effective than aerial spraying of cultivation plots in persuading the terrorists to leave their jungle hideouts were the arts of psychological warfare, which provided a further example of the employment of the air transport support forces, both medium and short range aircraft, in a quasi-offensive role.

III. Air Transport Support Forces and the Psychological Warfare Campaign in Malaya

The role of the air forces in the psychological warfare campaign

114 Under the direction of the Psychological Warfare Department of the Director of Operation's Staff and the Emergency Information Services, the main aims of the 'war of words' that was inaugurated during the Malayan campaign were to induce surrenders amongst the terrorists, by breaking their morale and causing disaffection within their ranks, and to win the battle for the minds and loyalties of the uncommitted populace in face of the propaganda offensive that was launched by the communists. The main problem faced in this unconventional warfare was that of communication with an elusive enemy whose primary tactic was to avoid contact with the security forces. The local populace was indoctrinated through the media of the press, radio, films and itinerant information teams and the local 'Min Yuen' and other Communist sympathisers could be relied upon to relay some of the information thus disseminated to the terrorists in the jungle. A more direct method of contacting the terrorists was required, however, and the problem was largely solved by the use of printed leaflets and broadcast recordings. 115 The air forces were merely one of the agencies for the delivery of both tactical and strategic messages that were devised by the Psychological Warfare Department but, especially when the terrorists withdrew into deep jungle areas, the dropping of leaflets and the broadcast of messages from the air was often the only means of making contact with them and without these means of disseminating propaganda much of the effect of the psychological warfare campaign would have been nullified.

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Techniques of leaflet drops and loudhailing operations ~~XXXXXXXXXX~~

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At the start of the Emergency the technique of loudhailing from the air had not been developed and the role of the air forces in the psychological warfare campaign was limited to dropping leaflets. These were usually despatched from supply-dropping aircraft of the medium range transport force and occasionally by bombers of the offensive support force as the conclusion to an airstrike. As on supply drops, No. 55 Air Despatch Company of the R.A.S.C. provided the despatching personnel on leaflet dropping sorties and, with loads of up to 800,000 leaflets in Dakota or Valetta aircraft, it was found that a good distribution was achieved over an area 1,000 yards square by despatching 5,000 leaflets at a time at the end of a static line. (234) If accurate drops of a limited quantity of leaflets into small pinpoint targets were required, usually when the need to exploit a success achieved by the security forces necessitated a quick reaction, then Austers of No. 656 Squadron and occasionally Harvards of the M.A.A.F. (235) were employed on leaflet dropping missions.

The technique of broadcasting recorded messages from aircraft was not introduced into the Malayan campaign until October 1952 when General Templer, the Director of Operations, borrowed a U.S. Army Dakota for experimental purposes. (236) As a result of these experiments, two Valettas of ~~Headquarters F.E.A.F.~~ ^{Headquarters F.E.A.F.} were fitted with broadcasting equipment and began operations early in 1953. (237) However, since an excessive amount of engine noise was transmitted over the broadcasting system of these Valettas, ~~they were~~ ^{they were} replaced by ~~the~~ ^{the} Dakotas in December 1953 and ^{March 1954.} The Dakota, although obsolete in the R.A.F. by that time, was more suited for a loudhailing role than the Valetta as its engine noise was less, thus improving the tone and clarity of the broadcasts, and also because its lower cruising speed enabled the broadcasting time on each sortie to be increased. In January 1954 an Auster was equipped with a broadcasting unit for loudhailing missions over small targets on the fringes of the jungle or adjacent to roads, where accuracy was important and where the employment of the Dakota or the Valetta was uneconomical. (239) In the following

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204

month a further loudhailing Auster was added to 'C' Flight No. 267 Squadron but the remaining Valetta crashed on the slopes of Mt. Ophir in North West Johore on 23 February 1954 and the flight was left with one Dakota and two Austers to carry out its broadcasting task. (240)

In March 1954 a second Dakota was acquired and with the arrival of a third Dakota in January 1955 the Voice Flight of No. 267 Squadron attained its maximum complement of three Dakotas and two Austers. (241)

115 For most of the campaign this flight operated from Kuala Lumpur but on November 1958 No. 267 Squadron was renumbered No. 209 Squadron (242)

and the Voice Flight, consisting of three Dakotas, was detached to the civil airfield at Bayan Lepas, Penang on 19 January 1959 to carry out the residual loudhailing commitment in support of ground force operations in Northern Perak and Kedah. (243)

116 The cessation of anti-terrorist operations in Johore at the end of 1958 and the concentration of ground force activity in the mountainous regions of Northern Malaya resulted in the disestablishment of the Auster element of this flight as the extra load of loudhailing equipment that was carried by these aircraft rendered them suitable for broadcasting operations only over relatively flat terrain at low altitudes while, for reasons of safety, they could not venture too far from lines of communication. The Voice Flight continued to operate from Penang until the end of the Emergency, although its two remaining Dakotas were transferred from No. 209 to No. 52 Squadron on 2 November 1959. (244) (245)

The broadcasting component that was fitted to the loudhailing Dakotas consisted of a diesel generator which powered four modified 'Tannoy' loudspeakers that were mounted under the aircraft and offset to the port side. (246) Loudhailing Dakotas normally operated at heights of 2,500 to 3,000 feet over the target area and in good weather conditions a broadcast message could be heard up to 2,500 yards below and to the port of the aircraft. Normally a straight course was followed over the target area with 2,000 yards between flight paths in order to ensure full coverage but a pinpoint target could be circled to give continuous ground reception. Auster loudhailing aircraft were

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205

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fitted with a smaller power unit and one loudspeaker was fitted under each wing, which gave clear audibility up to 1,000 or 1,500 yards below and to the port of the aircraft. (247) Flying at 40 to 45 knots a

message broadcast from an Auster could be heard for considerable periods and was usually repeated three or four times in normal weather conditions. In April 1954 a modification consisting of an endless loop tape, was introduced into the recording equipment that was installed in the 'Voice' Auster which dispensed with the need to carry a 'voice' operator, (248) thus effecting a considerable saving in weight and improving the aircraft's flying time.

Planning and initiation of leaflet drops and loudhailing operations

Requests for loudhailing or leaflet dropping sorties emanated through police channels, such as the 'Voice Area Committees' at State headquarters, and were passed on to the Joint Operations Centre at Kuala Lumpur where decisions were taken on the missions to be flown in accordance with the dictates of target priority and aircraft availability. The Duty Operations Officer at the Joint Operations Centre checked that the mission did not conflict with an airstrike and that flying conditions were suitable if an aerial broadcast was to be made and then the Duty Controller issued the operational orders and passed details of the flight to the Air Control Centre, Malaya. (249)

The average interval between the receipt of a bid for a broadcasting operation and the take off time was about four hours between 1954 and 1957, but after that date the Director of Operations Staff solved the technical problem of producing tapes of a satisfactory quality in operational areas and the average delay was cut to one or two hours, with a consequent improvement in the psychological impact of tactical 'voice' missions. (250) Requests for loudhailing flights were

co-ordinated so that as many bids as possible were fulfilled on one sortie but requests were invariably made for a series of broadcasts over a particular area for a period of three or four days in order to achieve the maximum psychological effect.

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206

Summary of leaflet drops and loudhailing operations ~~XXXXXXXXXX~~
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Details of the effort made by the air forces in assisting the psychological warfare campaign in Malaya are collated in ^{Annex Y (251)} ~~appendix XXV~~.

Throughout the campaign leaflets remained the chief medium for disseminating information and propaganda to the terrorists in the jungle and, in common with the general trend of transport support operations, the maximum effort in terms of the number of leaflets dropped increased to a peak in 1955 and thereafter decreased as the residual terrorist threat was eliminated, although the maximum number of leaflet dropping sorties was actually flown in 1951.

Few leaflets were dropped during the first few months of the campaign as the psychological offensive was still in its infancy. During July and August 1948 several sorties were flown over Perak, Southern Selangor and Southern Johore, but a total of less than 100 leaflet dropping sorties were flown during the first nine months of the campaign. Most of the leaflets that were dropped at this time were of a strategic nature to inform the local populace of the state of the Emergency. The monthly average of ten leaflet dropping sorties was maintained from April 1949 to December 1950, during which period 12,520,000 leaflets were dropped on 229 sorties. Notable amongst the tasks that were carried out in this period was the dropping of over one million leaflets over known terrorist concentrations to announce the first surrender terms of the Emergency that were issued on 6 September 1949. (252)

During the second half of 1950 tactical leaflets were developed with the employment of surrendered terrorists to make direct appeals to their former comrades, in order to encourage their defection, and numerous leaflet dropping sorties were carried out in support of ground force operations as a result. As the Briggs' Plan got under way in 1951 a greater effort was directed at advertising rewards for informers and propaganda efforts were stepped up against youths who had fled into the jungle to escape the Manpower Regulations of the Government. (253)

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207

117

Both of these developments increased the demands made on the air forces for leaflet dropping missions and during the first nine months of 1951, which coincided with the peak of terrorist activity, 261 missions were flown and the average sortie rate and number of leaflets dropped trebled in comparison with the previous two years. A notable achievement was recorded in June 1951, during the course of which month 2½ million leaflets were dropped on 106 sorties, mostly in support of Operation 'Warbler' in Johore (254) - the maximum number of leaflet dropping sorties that were flown in any one month of the campaign.)

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From September 1951 to February 1952 a further 1,633,000 leaflets were dropped on 237 sorties by Dakotas and offensive support aircraft over Johore, Perak, Selangor, Negri Sembilan, Kelantan and Pahang, most of which contained safe conduct passes and details of the rewards that were offered for information concerning terrorist locations. (255)

In the second half of 1952 the average number of leaflet dropping sorties fell to less than ten a month, most of which were carried out by Valettas of No. 52 Squadron, although the monthly totals of leaflets dropped remained at over one million. A notable effort was made in August 1952 when 3,276,000 leaflets were dropped by No. 52 Squadron, mostly in the Operation 'Habitual' area near Kuantan in Eastern Pahang. (256)

118

During 1953, as a result of further evidence from surrendered enemy personnel that the terrorists were susceptible to propaganda, the leaflet dropping commitment of the air forces gradually rose from an average of eleven sorties a month in the first half of the year to 23 in the second half. During the whole of 1953 over sixty million leaflets were dropped, more than five times as many as in the previous year, with a maximum monthly effort in October when 19,536,000 leaflets were dropped on 51 sorties. Included in the total for this month were fifteen million leaflets bearing a message from a surrendered ranking terrorist which were distributed by Lincolns of No. 1 (R.A.A.F.) and No. 83 (R.A.F.) Squadron during Operation 'Bison 1'. (257)

This operation was supported by the two loudhailing Valettas that had

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208

118

begun operations earlier in the year and which flew an average of fifty sorties a month during the second half of 1953 as surrendered terrorists confirmed that it was the advice of broadcast messages, allied to one of the millions of leaflets that now festooned the jungle, which finally convinced them that their cause was no longer worth the sacrifices involved.

During 1954 the commitment of the air forces in the psychological warfare campaign continued at a high level. Valettas of the Far East Transport Wing from their base at Kuala Lumpur and Austers of No. 656 Squadron flew 146 strategic and 182 tactical leaflet dropping missions (258) during the year, during which they dropped over sixty million leaflets. Half of these leaflets were distributed by light aircraft on pinpoint targets and terrorist cultivation plots in deep jungle areas. The highest monthly total of the year was achieved in November when 7,220,000 leaflets were dropped during thirty supply drop sorties over operational areas throughout the Federation. Throughout 1954 the loudhailing unit of one or two Dakotas and two Austers also carried the psychological offensive to the terrorists during tactical missions that were designed to exploit the elimination of any terrorist as soon as possible after the event. Over 600 loudhailing sorties were flown during the year, nearly two thirds of them by Dakotas and the remainder by Austers. Dakota loudhailing missions involved sorties which averaged just over one hour in duration while those flown by Austers lasted for an average of just over forty minutes. (259) The maximum loudhailing effort of 1954 occurred in August when 89 sorties were carried out in thirteen days over 400 targets throughout the Federation in a special operation which proclaimed the peace agreement in Indo China. (260)

1955 witnessed the peak of activity in the psychological warfare campaign and the contribution made by the air forces doubled in comparison with the previous year with the delivery of 141 million leaflets on 365 leaflet dropping sorties and of 906 hours of broadcasting from the air during the course of the 922 sorties that were

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209

118

flown to meet 2,111 requests for loudhailing support. The declaration of the Amnesty on 9 September 1955 heralded the largest leaflet dropping operations of the Emergency and within the following seven days, 21 million leaflets were dropped by Valettas over jungle areas to inform the terrorists of the surrender terms, while a further six million tactical leaflets were dropped to inform them of the location of 'safe areas' and surrender points. (261) Voice aircraft were committed to the initial publicity of the Amnesty terms over special areas but their major contribution to the operation was made when requests from District War Executive Committees began to arrive at the Joint Operations Centre for special messages to be broadcast over specific areas where terrorist groups were known to be hiding. (262) Between 9 and 21 September the three Dakotas and two Austers of the Voice Flight of No. 267 Squadron carried out 106 sorties in answering these requests as promptly as possible and in one case a message was broadcast over the Raub area of Johore within three hours and fifty minutes of the surrender of the District Committee member of the M.C.P., Miew Pak. (263)

119

When the prospect of peace talks became a reality all forms of anti-terrorist propaganda were curtailed and the number of leaflets that were dropped from the air fell from over 29 million in September 1955 to under five million in each of the last three months of the year, although nearly 100 tactical loudhailing sorties were still required during this period. However, the failure of the Baling talks in December 1955 and the announcement of the end of the Amnesty on 8 February 1956 were given wide publicity and 20,685,000 leaflets were dropped between 2 and 12 January during Operation 'Hebrides'. (264) From 18 to 20 January a further 9,720,000 leaflets were dropped during Operation 'Tasmania' (265) to stress the end of the Amnesty and to draw the attention of the terrorists to the approaching Chinese New Year, with its associated thoughts of family reunion and anticipation of the future. The psychological warfare campaign, however, suffered to some extent from the aftermath of the abortive peace talks and the leaflet dropping commitment of the air forces fell to four or five million a month between February and October 1955 and less than 50 'voice'

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210

119

sorties were carried out each month during this period. In November 1956, however, Government efforts to counteract the terrorists' 'wait and see' policy by emphasising the determination to fight on after Independence until militant and subversive Communism in Malaya was completely destroyed, resulted in 9,500,000 leaflets being distributed from the air during Operation 'Iceland', (266) which brought the monthly total to over fifteen million leaflets and the total for the whole of 1956 to just over 100 million - the second highest total of the Emergency. Thirteen million of these leaflets had been delivered by Austers of No. 656 Squadron and the remainder were dropped during the 333 leaflet dropping sorties that were flown by the Valettas of Nos. 48, 52 and 110 Squadrons and the Bristol Freighters of No. 41 R.N.Z.A.F. Squadron.

'Voice' operations also increased to an average of over 75 sorties a month towards the end of 1956 and the 2,246 requests for loudhailing missions that were met during the year, as well as the 309 hours of flying achieved by the Voice Flight of No. 267 Squadron in this role during August 1956, represented the maximum annual and monthly effort of the whole Emergency, although the 766 hours of broadcasting that were carried out during the year were less than the 906 hours achieved in 1955. 1,761 of the 2,295 hours of flying that was expended on 'voice' operations during 1956 were accredited to the three loudhailing Dakotas and the remainder to the two Austers of the Voice Flight of No. 267 Squadron. (267) Much of this loudhailing was concerned with the

tactical exploitation of specific terrorist eliminations, such as the killing of Ah Ho, the South Malayan Bureau Representative and State Committee Secretary of the M.C.P. in Negri Sembilan, on 11 October, (268)

Meanwhile the strategic policy of underlining the high terrorist elimination rate and the disintegration of their organisation continued unabated.

The main aspects of the psychological warfare campaign continued throughout 1957 but the reduction in the number of terrorists that remained in the jungle meant that there were fewer eliminations to exploit and both the number of leaflets dropped and the number of

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211

'voice' broadcasts that were made showed a marked decrease over the totals that were achieved in 1956. Altogether just under 87½ million leaflets were dropped during 1957, including 20 million during Operation 'Greenland I' (269) which was mounted a few days after Independence was declared on 31 August to give details of the new 'Merdeka' offer of surrender terms that were to apply until the end of the year. During this operation 8,320,000 leaflets were dropped by Valettas of the air transport support force at Kuala Lumpur between 7 and 9 September, while Austers of No. 656 Squadron delivered a further 3,600,000 leaflets during the same period. Towards the end of 1957 it was decided to extend the closing date of the 'Merdeka' peace offer until 30 April 1958 and a further leaflet dropping operation 'Greenland II', (270) was mounted, during which Valettas and Austers dropped 12,950,000 leaflets between 17 and 21 December 1957.

'Voice' broadcasts during 1957 occupied ~~707~~ 707 hours in meeting 1,801 requests, which represented a slight reduction in effort compared with the previous year and was over 20 per cent less than the task carried out during 1955. This reduction was partly due to aircraft unserviceability, which was becoming an increasing problem and was responsible for the abortion of 105 sorties during the year, (271) but was mainly a result of the lack of exploitable incidents, of which there were only sixteen during February 1957 (272) - less than half the monthly average of 1955. A slight intensification of 'voice' broadcasting occurred in May 1957 when the elimination of Teng Fook Loong was followed by 35 sorties over Negri Sembilan in order to induce the remainder of the 3rd Independent Platoon M.R.L.A. to surrender, (273) while the elimination of Ah Futt, the State Committee Secretary of the M.C.P. for Selangor, and the withdrawal of the Armed Work Force from South Kedah and Province Wellesley shortly afterwards, were followed by similar intensive propaganda activity. (274) During Operation 'Duffle' in July 1957 (275) 'voice' aircraft were used for the first time during the Emergency in conjunction with offensive air support when a broadcast was made immediately after the bombs had been released in order to persuade the recipients to surrender before worse befell them.

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212

120

As the number of terrorists decreased and contact between those that remained and the ground forces became increasingly rare, it was envisaged that psychological warfare, by means of air-dropped leaflets and aerial broadcasts, would play a greater part in combined operations than hitherto and no reduction in effort on the part of the air forces acting in this role was expected during 1958. (276) In the event slightly more than 86 million leaflets were dropped during 1958, almost as many as in 1957, of which 43 million were used to exploit specific successes achieved by the security forces and the remainder were strategic leaflets used to announce general developments in the campaign and to prosecute the long-term anti-communist offensive. (277) The increase in the number of terrorist eliminations had a cumulative effect, however, which combined with the fact that a high proportion were achieved by the Police Special Branch in Northern Johore and Southern Perak, and were not immediately publicised for fear of prejudicing the outcome of their operations, (278) to ensure that the tactical loudhailing task was considerably reduced during 1958. Furthermore, in order to conserve the limited flying time that was left to the ageing 'voice' Dakotas, the average number of broadcasts that were made over each target area was reduced from five to three (279) and the broadcasting time on each sortie was reduced even further as ground force operations were mounted further away from Kuala Lumpur and involved additional positioning time. Altogether 503 hours of aerial broadcasting were completed in 1958, 30 per cent less than in 1957, while the proportion of broadcasting time to total flying time fell to less than 25 per cent by the end of the year.

In a strategic role the success of the 'Merdeka' peace offer resulted in its extension to 31 July 1958 and details of this development were disseminated by Operation 'Greenland III', (280) during which 8,500,000 leaflets were dropped and numerous aerial broadcasts were made over areas where the remaining terrorists were located. In addition some 2½ million leaflets were dropped regularly each month as part of the general anti-communist propaganda offensive. (281) Tactical leaflet operations that were mounted during 1958 included Operation

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213

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'Elba' and Operation 'St. Helena', during which 15½ million leaflets were dropped to announce the collapse of the M.C.P. in Southern Perak and Northern Johore and the surrender of State Committee Member Hor Lung, while the leaflet dropping and loudhailing support that was given to Operations 'Ginger', 'Bintang' and 'Chieftain' in Perak and to Operations 'Leo' and 'Tiger' in Selangor and Johore materially assisted their successful conclusion. In particular, a large number of terrorists surrendered as a direct result of hearing aerial broadcasts in the Operation 'Bintang' area of Central Perak, while a further 33 terrorists were eliminated in the Operation 'Leo' area of Selangor primarily as a result of similar efforts.

By the beginning of 1959 ground force operations were largely concentrated in Central Kedah and particularly in Northern Perak and opportunities for the tactical exploitation of individual successes had become rare. With the closure of operations in Johore Austers were considered unsuitable for loudhailing missions in the mountainous regions of Northern Perak and the remaining commitment in this role was carried out by a detachment of two Dakotas of No. 209 Squadron from their base at Bayan Lepas on Penang Island. By ensuring that the acceptance of bids for aerial broadcasting was governed by factors of operational justification rather than aircraft availability, all important commitments were met despite the low serviceability of these obsolete and ageing aircraft and their temperamental loudhailing equipment. A total of 200 hours of aerial broadcasting were carried out during 1959, less than 50 per cent of the task completed in 1958, while the 40 million leaflets that were dropped during the year represented a similar decrease in effort. By the end of 1959 opportunities for the tactical exploitation of terrorist eliminations had dwindled almost to nothing and the situation was exacerbated by the delays that were involved in obtaining clearance to operate 'voice' or leaflet dropping aircraft over Thai territory. This difficulty destroyed the utility of any tactical message, which depended primarily on a quick reaction to information received for any

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214

121

success it might achieve, while the relative sanctuary that was offered by crossing the border nullified the pressure maintained on the terrorists by the security forces which was necessary for obtaining any significant results from a psychological offensive. Consequently, apart from inducing the last remaining terrorists in Selangor to surrender after the elimination of State Committee Member Hoong Poh, almost all leaflet dropping and loudhailing operations during the last few months of the Emergency were concerned with the delivery of strategic messages to isolated groups of terrorists in Northern Perak exhorting them to avail themselves of existing surrender terms. This commitment continued even after the Emergency had been officially declared over and five to ten hours of aerial broadcasting and nearly 1½ million leaflets were still being delivered from the air each month at the end of 1960. (287)

During the entire Malayan campaign nearly 500 million leaflets were dropped on more than 2,500 sorties and nearly 4,000 hours of aerial broadcasting were completed on a further 4,500 sorties by aircraft of the air transport support forces.

Results of the air forces' contribution to the psychological warfare campaign

122

The main aims of the psychological warfare campaign in Malaya were ~~to persuade~~ ^{to} persuade the terrorists to surrender and, by so doing, to disrupt their organisation and to spread disaffection amongst their former comrades, and ~~to encourage~~ ^{to encourage} the civil population to oppose them. The chief instruments of this campaign were the printed leaflet and the broadcast message and it is sufficient to note that without the assistance of the air forces in the delivery of these media of communication much of the effort that was put into the psychological warfare campaign would have proved abortive.

The success of the secondary aim of this campaign, although less spectacular, was made apparent in Penang in 1951 when air dropped leaflets advertising rewards for information about terrorist locations resulted in a fivefold increase in the amount of intelligence material

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122

that was volunteered to the police. With regard to the offensive that was mounted against the morale and loyalties of the terrorists, the sole yardstick for measuring its success lay in the number of terrorists whose decision to surrender was influenced in some measure by this subversive campaign. Although the exact number who were thus persuaded will never be known, it undoubtedly represented a large percentage of those who surrendered while the doubt and suspicion and the dislocation of plans which this constant psychological harrying engendered amongst the remaining terrorists seriously weakened their offensive potential and played an important part in bringing the Emergency to a successful conclusion. In any battle for the minds and loyalties of men, however, it is not to be expected that quick or spectacular results will be forthcoming and it was not until the number of terrorist surrenders reached the proportions of a major defeat from 1955 onwards that the full effects of the long and patient psychological offensive could be appreciated. Thus in 1959 130 terrorists in Johore and Negri Sembilan were persuaded to give themselves up to the Police Special Branch by messages emanating from their erstwhile leader, Hor Lung, who had agreed to work for the Psychological Warfare Department. Nevertheless, even as early as 1949 48 of the 207 terrorists who surrendered between September and December of that year in response to the Government's offer of surrender terms, did so after reading leaflets that had been dropped from the air and by 1953 most of the terrorists who wished to surrender availed themselves of the safe conduct passes that were attached to these documents. Similarly, the statements of surrendered enemy personnel provide plentiful evidence of the persuasiveness of aerial broadcasts in influencing their decision to defect. During the first two months of regular 'voice' operations in May and June 1953, eight terrorists came out of the jungle as a result of hearing aerial broadcasts and others claimed to have been partly persuaded by them. By 1955 70 per cent of all surrendered terrorists who had heard one of these aerial broadcasts stated that it had influenced their decision and in many cases it was the major factor involved. The statement of just one surrendered terrorist serves to summarise the effectiveness of leaflet

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216

dropping and aerial broadcasting in encouraging defection from the
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Communist cause:

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"After the attack on our cultivation area we fled to another area where we saw many Government propaganda leaflets and safe conduct passes. I picked up some of the leaflets intending to use them when coming out to surrender. A few days later we heard voices coming from an aeroplane calling on us all to surrender and offering good treatment. We all agreed to this suggestion."

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AIR RECONNAISSANCE IN THE MALAYAN CAMPAIGN

Intelligence and air reconnaissance

123
In the Malayan campaign the key to the success of combined operations against an elusive enemy operating in relatively featureless jungle terrain was the provision of reliable information about his location and movements. Sources of this basic intelligence were many and varied but one of the most important was aerial reconnaissance - the third major role played by the air forces in the campaign against the terrorists after the provision of offensive and transport support and one on which the other two were largely dependent.

After the Second World War intelligence establishments throughout the Far East Command had been scaled down and at the start of the Emergency there was a dearth of information about Malaya and its inhabitants which the development of aerial reconnaissance went a long way towards solving. In the absence of this information there was no such thing as the target intelligence which would be expected to exist in a normal campaign and operations against the terrorists had to be mounted on an ad hoc basis by sifting and screening numerous reports from all branches of the security forces, including those based on aerial reconnaissance. Not only was aerial reconnaissance a profitable source of basic intelligence but it also played an important part in confirming and pinpointing targets which had been reported, usually inaccurately, by police informers and other agents. Aerial reconnaissance was a constant commitment of the air forces throughout the campaign and comprised two well defined roles - photographic and visual reconnaissance.

W. Photographic Reconnaissance

Photographic Reconnaissance Aircraft

Almost the entire photographic reconnaissance (P.R.) commitment of the campaign was undertaken by aircraft of No. 81 Squadron, one of the few squadrons to serve throughout the Emergency without relief and the only unit of its kind in the Far East. In February 1948 No. 81 Squadron, equipped with nine Mosquitos and two Spitfires, was

RESTRICTED

218

was transferred from Changi to Tengah and in May of that year one of the Spitfires was attached to the small R.A.F. task force that was operating from Taiping in support of police operations in Northern

(1) Perak. When the Emergency was declared in June 1948 it was planned to place a detachment of Mosquitos from No. 81 Squadron with the R.A.F. task force at Kuala Lumpur but, owing to the difficulties of maintaining these aircraft under field conditions in the tropics and the tactical nature of the photography required, it was decided to send a small detachment of two Spitfires instead. (2) In June 1949

123 a further Spitfire was converted to the photographic reconnaissance role and joined this detachment at Kuala Lumpur. (3) On 20 March

124 1950 this detachment of three Spitfires from No. 81 Squadron was transferred as a separate flight to No. 60 Squadron at Tengah and on the same day the nine Mosquitos and one Anson that remained in No. 81 Squadron were transferred from Tengah to their new base at Seletar. (4)

Normally the P.R. Spitfires of No. 60 Squadron were limited to operations within 150 miles of Tengah and all other reconnaissance missions were flown by the Mosquitos of No. 81 Squadron at Seletar, but urgent tasks that the aircraft of either squadron were unable to fulfil in their own operational areas were passed on to the other squadron. The Spitfires of No. 60 Squadron were briefed at Tengah but landed at Seletar for de-briefing, except when they flew missions in Northern Malaya ~~that they operated~~ from the advanced base at Kuala Lumpur. (5)

On 21 November 1950, after only eight months in operation, the dichotomy in the photographic reconnaissance forces was remedied when the three P.R. Spitfires of No. 60 Squadron were transferred to No. 81 Squadron at Seletar, bringing its total strength to nine Mosquitos, five Spitfires and one Anson as two more Spitfires had just been delivered. (6) The aircraft of No. 81 Squadron, however, were already beginning to show signs of their advancing age and it became clear that re-equipment was essential if the increased operational effort was to be maintained. It was not until the end of 1953, however, that the five P.R. Spitfires of No. 81 Squadron were replaced by five P.R.

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/ Meteors

Meteors and one training Meteor and the six surviving Mosquitos were not finally withdrawn from service until the end of 1955. (7) With their departure the total strength of No. 81 Squadron fell from fifteen to six aircraft but a further P.R. Meteor and four P.R. Pembrokes were added to its establishment in 1956. (8) On 1 February 1958 three of these Pembrokes were withdrawn and two months later No. 81 Squadron, armed with five P.R. Meteors and two training Meteors and one P.R. Pembroke, was transferred from Seletar back to Tengah, where it remained for the remainder of the campaign although temporary detachments were sent to Kuala Lumpur on various occasions. (9) By 1959 No. 81 Squadron was reduced to only three P.R. Meteors and one training Meteor but the Squadron was brought up to strength again in October of that year with the arrival of three P.R. Canberras and one training Canberra. (10)

124

No. 81 Squadron bore the brunt of the photographic reconnaissance commitment throughout the campaign but some assistance was provided towards the end by temporary detachments of P.R. Canberras from No. 3 Group Bomber Command. (Operation Planter's Punch) Four Canberras of No. 542 Squadron arrived at Changi in May 1955 and were replaced at three monthly intervals by similar detachments, reduced to two aircraft on 14 June 1956, of Nos. 540, 82 and 58 Squadrons. (11) These detachments ceased as a regular commitment with the return of No. 58 Squadron to the United Kingdom in October 1956 but Bomber Command continued to provide two P.R. Canberras in the Far East for periods of two months twice a year, usually from January to March and from July to September, for the remainder of the campaign.

Techniques of Photographic Reconnaissance, Strategic and Tactical Reconnaissance

Photographic reconnaissance from the air was undertaken during the Malayan campaign in both a strategic and tactical role, the object of the former being the revision of existing maps and the provision of new maps of areas that had not been previously surveyed while the latter involved direct support of the security forces through the medium of large scale aerial photographs both for initial intelligence and for briefing purposes.

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220

In the strategic role the aerial survey of Malaya's 51,000 square miles was completed by the R.A.F. in three stages. (12) The initial commitment was undertaken in 1945 on behalf of the Colonial Office Survey Department in order to revise the incomplete map coverage of the country but, owing to the small size of the force engaged on this task and other urgent commitments within the theatre, progress was slow and intermittent and by 1948 a total of only 16,460 square miles had been photographed and no revised maps had yet been produced. When the Emergency was declared in June of that year this revision programme had to be accelerated and a start made on the photography of areas for which no one inch to one mile maps existed. At that time the only available maps on which to plan operations against the terrorists were reprints of pre-war issues on a one inch to one mile scale which, although tolerably accurate, covered only the populated areas of Western Malaya. The only available maps of those areas in Northern and Central Malaya where operations against the terrorists were undertaken at that time were a few of pre-war vintage on a scale of 2½ inches to one mile, on which the most important ground features were located with some degree of accuracy but others, including even rivers, were misplaced or omitted altogether and large areas were still marked 'unexplored'. These maps were virtually useless for the ground force operations that were mounted in difficult jungle country during the early stages of the campaign and it was essential that revised or completely new maps of the main operational areas at an adequate scale should be produced as quickly as possible. This second phase of the aerial survey of Malaya was completed by September 1950 with a coverage of 23,590 square miles of Malaya and about 7,000 square miles of Southern Thailand. The final stage of the overall programme was then undertaken by No. 81 Squadron, which entailed photographing the remainder of Malaya at a scale of 2½ inches to one mile and, by August 1952, a total of 13,740 square miles had been covered and the aerial survey of the entire country was virtually complete.

125

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As a result of this photographic survey of Malaya No. 2 Air Survey Liaison Section (the Army unit working in co-operation with No. 81 Squadron) produced, by the beginning of 1953, 129 new Air Reconnaissance Maps at a scale of one inch to one mile and fourteen new quarter inch to a mile maps which were of inestimable value in planning and mounting the offensive against the terrorists during the later stages of the campaign.

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The production of new or revised one inch to one mile maps of Malaya was a considerable help to jungle patrols but there was still a need for tactical air photographs on a larger scale to provide both initial intelligence of the location of terrorists hideouts and to assist in the briefing of ground and air forces in difficult jungle areas. For example, a survey photograph at a scale of $1\frac{1}{2}$ inches to one mile could reveal a clearing but not the presence of terrorists while a tactical photograph taken at a scale of 1 : 10,000 could reveal that the clearing contained newly cultivated vegetable plots and expert interpretation could determine whether or not these were of Chinese origin. Similarly, a survey photograph might show a ground patrol that a swamp area lay between them and their objective but was not detailed enough to indicate the easiest way through it. Intelligent use of tactical air photographs at a scale of 1 : 10,000 could save ground force patrols hours of marching and enable them to surround an area where an incident had occurred before the enemy had time to disperse.

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Tactical air photography had been carried out since the start of the Emergency but only on a limited scale and as occasion demanded. By 1951, however, its value was fully appreciated as it was found that even recently revised one inch to one mile maps were no longer fully effective aids for ground force patrols. As the programme for the resettlement of squatters got under way the site of former villages reverted to swamp and secondary jungle within six months while, within the same period, new rubber estates could be developed and the terrorists could clear cultivation plots from virgin jungle and produce crops of tapioca from them. It was clear that systematic tactical photography of the whole country on a scale which gave adequate

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RESTRICTED

222

126

information of tracks, cultivation plots and temporary camps was the only effective method of recording the changing face of the jungle. This task, which entailed flying over 800 'mosaics' each measuring 10,000 by 20,000 yards at a scale of 1 : 10,000, was accepted by No. 81 Squadron in October 1951 and was virtually completed during the course of the next two years. By this time, of course, earlier 'mosaics' were out of date and had to be revised while demands for the special coverage of particular operational areas, both before and after ground and air attacks, helped to maintain the demand for tactical photographic reconnaissance throughout the remainder of the Emergency.

The co-ordination of tactical photographic 'mosaics' was not easy since it was difficult to pinpoint an aircraft's position accurately over areas of comparatively featureless jungle and aircrews also had to contend with the normal hazards of bad weather in Malaya which often rendered photographic reconnaissance virtually impossible. A further problem arose in consideration of the height from which these tactical air photographs were taken, and therefore their scale, which necessitated reconciling two conflicting requirements. On the one hand these photographs had to show a minimum amount of detail while, on the other hand, it was necessary to avoid arousing the terrorists' suspicions that they had been located. The Malayan People's Anti-Japanese Army (M.P.A.J.A.) had learnt about the capabilities of aerial reconnaissance from British liaison officers during the Second World War and experiments at Kuala Lumpur in 1948 had shown that, under ideal conditions, aircraft could be heard, if not seen, up to a height of 15,000 feet. Unfortunately, photographs taken from 16,000 feet with a twenty foot focal length camera only achieved a scale of 1 : 10,000. Photographs produced at a scale of 1 : 5,000 or even 1 : 8,000 gave so much more detail that the problem of interpretation was both more accurate and more rapid. (14)

During the early part of the campaign, therefore, it was a case of assessing on each particular sortie whether it was wise to risk compromising the security of a possible ground or air attack in order

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to have the advantages of a large scale photograph or to remain undetected and accept the limitations of a smaller scale. Fortunately, by the time that the R.A.F. accepted tactical photographic reconnaissance as a regular commitment on a systematic basis in 1951, the standard of photographic interpretation had increased so much through the acquisition of local knowledge that a scale of 1 : 10,000 was acceptable in most cases. Vertical photographs on a scale of 1 : 5,000, as well as close-up obliques, were still produced, however, for special operations when conditions of terrain and weather permitted.

126 Photographs 'mosaics' at a scale of 1 : 10,000 and measuring three feet by two feet were annotated with datum points and, in the absence of target maps, became essential tools for the planning and briefing of operations mounted by both the ground and air forces. For the sake of convenience, smaller annotated 'mosaics', measuring twenty inches by fourteen inches, were produced for use in the field. These photographs served as basic operational maps and enabled patrol commanders to acquire an accurate knowledge of the type of terrain over which they had to operate. As they became more experienced they were able to memorise complete operations, in the various aspects of attacks and sweeps, and also recognise the best locations for the preparation of ambushes, by the security forces or the terrorists, entirely from these photographs. Similarly, the variations in light and shade that were apparent on air photographs proved invaluable to aircrews in fixing their exact location over featureless jungle terrain. (15)

127 One difficulty that arose when locating targets from large-scale photographs that had been taken from low-flying aircraft was the distortion caused by the deeply dissected terrain. To overcome this difficulty pinpoints were first located on small scale survey photographs, on which the distortion was less marked, and these were transferred to tactical photographs by cross reference with salient features of the landscape. This work was a small part of the task carried out by No. 103 Army Photographic Interpretation Section (A.P.I.S.) at H.Q., Malaya District and Joint Air Photographic

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127

Intelligence Centres (J.A.P.I.C.(F.E.)) at R.A.F. Kuala Lumpur, (16) Seletar, Tengah and Butterworth, whose meticulous preparations and interpretation of the air photographs taken by No. 81 Squadron was largely responsible for their successful operational application. When the Emergency was declared there was a dearth of trained intelligence officers in Air Command Far East (A.C.F.E.) and General Duties officers were transferred from Changi to carry out this task at Kuala Lumpur. (17) By September 1948, however, five trained intelligence officers had been attached to the Advanced A.H.Q. and they became the nucleus of the joint Army and R.A.F. photographic interpretation units that operated with considerable success throughout the remainder of the campaign. Since terrorists camps, at least after the opening stages of the campaign, were seldom identifiable from an air photograph alone unless a certain amount of local information was available, these units also sifted evidence from all branches of the security forces and cross-examined police informers and surrendered enemy personnel with the aid of air photographs. By this method it was often possible to pinpoint a concealed terrorist camp, of which there was no trace in the photograph, by reference to salient topographical features in the vicinity. This type of work required time and patience in dealing with illiterate informants through the medium of interpreters and the situation was exacerbated by the backlog of prints that tended to accumulate as the maximum use had to be made of the limited periods of weather that were fine enough for aerial photography. In some operations, however, time was of the essence and the work of photographic production and interpretation centres often had to be delivered to operational units within 48 hours. On one occasion, in 1954, a certain area was photographed and the prints delivered to a unit 350 miles from Changi on the same day, (18) but normally photographic reconnaissance tasks took from fourteen to thirty days from the receipt of a demand to the final delivery of the prints. Some idea of the amount of work undertaken by these units is given by the fact that in the six months from April to September 1954 No. 103 A.P.I.S. and the J.A.P.I.C.(F.E.) detachment at Kuala Lumpur interpreted the results

RESTRICTED

226

similar monthly effort since half of their sorties were aborted by bad weather.

The tempo of photographic reconnaissance operations remained fairly constant until the end of 1950, although the monthly output of photographic prints increased from 22,000 in April 1949 to 83,000 in December 1950. (23)

The acceptance of the 'Firedog Mosaic' commitment in October 1951, however, resulted in a marked increase in the operational effort of No. 81 Squadron and, since over 75 per cent of its aircraft potential was occupied in this task, few Mosquitos could be spared for work on the Malayan Survey. (24)

The average monthly effort rose to over 80 sorties and by the end of June 1952 over 700 sorties had been flown on the block cover of the Federation of Malaya, 415 of them, covering 280 tactical areas, in the five months between September 1951 and February 1952. (25)

128

Demands had been flown on a priority basis so that all areas where incidents had occurred, or were likely to occur, had been photographed by the middle of 1952.

Despite difficulties in maintaining the ageing Spitfires in a serviceable condition, the sortie rate of No. 81 Squadron increased to a maximum for the whole Emergency in 1953, with an average of over 100 a month, of which only one-third, however, produced satisfactory results. (26)

During 1954 Mosquitos and Meteors of this squadron shared the average monthly task of about 70 sorties almost equally but Mosquitos carried out only 10 per cent of a similar commitment during 1955 and went out of service at the end of the year. (27)

By this time the increasing use of elaborate camouflage techniques by the terrorists had reduced the amount of intelligence material that could be gleaned from tactical photographic reconnaissance and most of the effort of No. 81 Squadron was directed towards obtaining the topographical cover, at a scale of 1 : 20,000, that was required for mounting and conducting ground force operations, and also the photographs at a scale of 1 : 10,000 that were taken of all target areas after airstrikes that were carried out after September 1953. (28)

Meteors of No. 81 Squadron met this commitment with about 50 sorties each month from 1956 to the beginning of 1959, with a slight fall in effort towards the end of the

RESTRICTED

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128

campaign, while occasional photographic reconnaissance flights were made by the Pembroke that were attached to the squadron in 1956. (29)

Visual Reconnaissance

129

Visual Reconnaissance Aircraft

Even more important than photographic reconnaissance in locating terrorist hideouts was the visual reconnaissance which was the main commitment of the twenty to thirty Austers that were operated by No. 656 Squadron throughout the Emergency. The formation of this squadron, and the deployment of its component flights at Brigade level throughout the Federation of Malaya, has been discussed under the section dealing with its communications role. (30) In addition to these Austers, which were jointly operated by the Army and the R.A.F., airstrike and medium range transport aircraft were sometimes employed on visual reconnaissance missions, especially at the beginning of the campaign, while Sunderland flying boats of Nos. 88, 205 and 209 Squadrons based at Seletar undertook coastal patrols in co-operation with the Royal Navy as a regular commitment.

Techniques of Visual Reconnaissance

The visual reconnaissance that was undertaken by the Austers of No. 656 Squadron took various forms, the most important of which was the routine and systematic searching for terrorist camps and other signs of their presence in order to remedy the general lack of information about their whereabouts that was the biggest single drawback to security force operations. Each Brigade area, covering some 150 by 60 miles, was allotted one flight of five or six Austers and as the pilots gained experience they acquired an intimate knowledge of a particular area and were able to spot any variant in the current picture that was maintained on a master map at flight headquarters. (31) Care was taken, however, to exchange the locations of individual flights at intervals so that over-familiarity with one particular area should not lead to any oversight being made. (32) Even so, visual reconnaissance in the conditions that prevailed in Malaya required considerable luck as well as constant vigilance for hours on end, sometimes in cloud and torrential rain, over broken and precipitous terrain where no possible landing grounds existed. To achieve the

RESTRICTED
228

best results most visual reconnaissance was carried out before 1400 hours if possible, after which the clouding over of the sun made it impossible to see objects on the jungle floor. The difficulties inherent in visual reconnaissance are shown by the fact that in 1955 it required an average of nine hours of systematic searching to produce one 'find'.
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Despite the Auster's low airspeed of only 80 knots it was virtually impossible to spot terrorist camps unless they were located in relatively open clearings. By 1950, however, most camps were located under the jungle canopy or, if they were in small clearings, they were effectively concealed from the air and became visible only when they had been vacated and their camouflage of fresh, green leaves had been dried and bleached.
(34)

Auster pilots were, therefore, advised not to waste their time looking for terrorist camps but to concentrate on other tell-tale signs of their activity such as tracks that had no apparently legitimate reason, circular water holes, smoke from cooking fires and clothes that were hung out to dry. Main terrorist camps were frequently located near prominent landmarks, such as unusual tree or rock formations, which therefore merited special attention, while staging camps that were used on the night before or after an incident were often to be found in the 'belukar' or zone of secondary, scrub jungle close to inhabited areas.
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At the beginning of the campaign there was a tendency for visual reconnaissance to be carried out from a height that was too low to cover a sufficiently large area on each sortie and, by 1951, Auster pilots were advised to use binoculars from a height of 3,000 feet in order to scan the ground and to descend for a closer look at any suspicious sign.
(36)

The height at which Auster pilots on reconnaissance missions flew was an important consideration since it was necessary to achieve the most effective coverage of an area without compromising the security of subsequent ground or air operations by their presence. By 1953 the terrorists had become extremely conscious of aerial surveillance and were liable to move away from an area if they thought that they had been spotted from an Auster

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RESTRICTED

229

130

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aircraft on the assumption that it heralded the presence of ground forces or imminent airstrike action, ⁽³⁷⁾ Care had to be taken, therefore, not to circle suspected enemy locations in order to obtain confirmation of their presence while deception tactics, designed to make it appear that reconnaissance Austers were engaged on regular communications tasks, had to be employed if necessary. By this time, however, the terrorists had begun their withdrawal into the deep jungle of the spinal ridge of Malaya and routine reconnaissance flights to locate the cultivation plots on which they depended for survival became an increasing commitment of No. 656 Squadron. In order to have any chance of spotting the small, brown patches in the green jungle that denoted a terrorist cultivation plot it was usually necessary for Auster pilots to fly below 1,000 feet, which exposed them to a danger that was virtually unknown during the Malayan campaign. Aircraft were usually immune from attack from any quarter but so efficacious was the work of Austers in the food denial campaign that the M.C.P. departed from its usual policy of evasion in 1954 and issued a directive that they were to be engaged with small arms and light automatic fire whenever possible. There is only one recorded occasion, however, when this directive was implemented and no damage was caused to either the aircraft or its pilot. ⁽³⁸⁾

Apart from the systematic searching for signs of terrorist activity, Austers of No. 656 Squadron were employed in various other reconnaissance roles. Owing to the difficulty which ground force patrols had in fixing their location exactly and in maintaining ground communications in jungle terrain, Austers were frequently employed in a contact reconnaissance role to guide them to their objective. When they were contacted by wireless ground patrols put up smoke markers whose grid references and the bearings and distances to their objectives were then worked out and passed on to them by Auster pilots. As well as acting as an airborne signals link, Austers also carried out passenger reconnaissance to give company or platoon commanders a general appreciation of their operational areas while, on a few occasions, they were also able to operate in their primary role of

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230

130

providing an air observation post for directing artillery fire, both from field batteries and from naval guns. (39) Artillery observation was difficult in jungle conditions, however, as individual explosions were difficult to spot and the irregular format of the tree tops hindered the accurate adjustment of gunsights. Austers of No. 656 Squadron also carried out a limited amount of photographic reconnaissance, usually of an urgent nature as when the ground forces required photographs of an ambush area so that they could position their troops with the minimum amount of ground reconnaissance and possible loss of security. As well as these reconnaissance tasks and their other major commitment in the light liaison role, Austers were also employed on a number of miscellaneous tasks that have already been mentioned under the sections dealing with the provision of offensive and transport support. These included escorting helicopters on casualty evacuation flights and providing their pilots with initial reconnaissance and an airborne signals link with the ground, a limited amount of free-fall supply dropping and target marking and raid reporting during airstrikes. (40)

131

Maritime reconnaissance

Apart from the task undertaken by the Austers of No. 656 Squadron over the mainland of Malaya, the only other regular commitment that was flown by the air forces in the visual reconnaissance role during the Emergency was the patrolling of the coastal waters by aircraft of the Far East Flying Boat Wing. The islands off the East coast of Malaya had always been a medium through which seaborne illegal entries had been made and when the Emergency broke out it was felt that the dangers of this immigration and the smuggling of arms and equipment to the terrorists by sea had greatly increased. (41) Illegal immigrants started from anywhere on the China coast up to as far away as Hainan and crossed the Gulf of Siam in small craft, usually junks, especially during the period of the North-East Monsoon. Reaching the islands off the East coast of Malaya, such as Tioman, during the hours of daylight, they waited on the lee-shore until they could cross to

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131

the mainland under cover of darkness. It was quite impossible for the Royal Navy by themselves to keep watch on all the islands from Kota Bahru in the north to the southern tip of Johore in the south while, on the other hand, aircraft were of little use by themselves since there was nothing that they could do even if they did sight a suspicious vessel. Consequently combined patrols, using one sloop or destroyer and one aircraft, were carried out in selected areas according to a pre-arranged plan based on such intelligence as was available of the likely moves of illegal immigrants. The two types of patrol that were involved were the 'Blue Water' patrol, up to 80 miles out to sea and covering 100 miles of the coast in order to intercept any craft attempting to run direct for the shore, and the 'Coastal and Island' patrol to investigate inlets and anchorages in the Tioman group, the southern tip of the Johore coast and the islands off the North-East coast of Trengganu and Kelantan. (42) At the start of the campaign these patrols were carried out by Dakotas and Beaufighters as well as Sunderlands according to the availability of aircraft but, as the intensity of operations against the terrorists increased, this task was left entirely to the flying boats. By 1951 nine lettered air patrols had been established on the East coast of Malaya but, as the combined efforts of the air forces, the navy and the police kept the dangers of illegal immigration well under control and few attempts, if any, were being made to smuggle arms shipments to the terrorists, this commitment did not involve more than one or two sorties a week for the remainder of the campaign. (43)

Summary of ~~the~~ Visual Reconnaissance ^{Operations} ~~carried out during the~~
~~Malayan Emergency~~

Owing to the lacuna in information about terrorist movements that existed at the beginning of the campaign, visual reconnaissance was the first commitment of the air forces after the Emergency had been declared and involved a considerable proportion of their total flying time. At the end of April 1948 three Austers of No. 1914 Flight were attached to the R.A.F. task force at Taiping that was operating in

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232

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support of Operation 'Haystack' in Northern Perak. They remained there until 27 May 1948 but were only of limited value owing to their pilots' inexperience in flying too low and the poor quality of the maps which they used. (45)

131

When the Emergency was declared in June 1948 it immediately became necessary to improve the intelligence situation and, for this purpose, two Dakotas of No. 52 Squadron were sent from their parent base at Changi to Butterworth to cover the area north of a line from Port Weld to Kota Trengganu as far north as the border with Thailand, while two Dakotas of No. 110 Squadron were sent to Kuala Lumpur to cover central Malaya between this line and another through Port Swettenham and Pekan, leaving the remainder of the Federation

132

south of this line to be covered by Dakotas of No. 48 Squadron operating from Changi. (46)

The first visual reconnaissance patrols of these aircraft were carried out on 28 June 1948 and, on the same day, one Sunderland of No. 209 Squadron was ordered to carry out a daily patrol throughout the hours of daylight along the East coast of Malaya to report any movement of shipping within the harbours and within forty miles of the coast. (47)

Soon afterwards Spitfires of Nos. 28 and 60 Squadrons were ordered to carry out daily patrols of the Pontian Pipeline and Gunong Pulai Reservoir, which were the main sources of the water supply of Singapore and were vulnerable to terrorist attack. (48)

These patrols were carried out throughout the first week of the Emergency and, when the R.A.F. task force was set up at Kuala Lumpur on 3 July 1948 its first week of operations was devoted entirely to reconnaissance flights, with especial attention to the Thailand border area, the east coast between Kelantan and Trengganu and the islands off the coasts of Johore and Pahang. (49)

Two aircrews of No. 110 Squadron were employed solely on the reconnaissance of the Thailand border area and, by combining photographic with visual reconnaissance, they acquired a mass of information by late August and early September from which existing maps were annotated to help the police in preventing infiltration from across the border along the many paths and river valleys in the area. (50)

Until the outbreak of the Emergency all the air forces in the Malayan theatre had been deployed on Singapore Island

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233

and such flights as had been undertaken to airfields on the mainland had been purely transit in nature and few aircrews had any substantial knowledge of the terrain, which poor maps did nothing to remedy. These early reconnaissance flights, therefore, gave aircrews experience in distinguishing the essential features of the Malayan landscape so that they could appreciate the correct significance of any unusual or suspect feature. In fact, during these early days many curious phenomena were reported by aircrews which turned out on investigation to be quite normal features of the environment. Even if few tangible results accrued from these long and tedious sorties, therefore, the visual reconnaissance that was a regular commitment of all types of aircraft in the task force at Kuala Lumpur during the first six months of the campaign provided an invaluable basis for their future operations.

132

By the end of 1948 most of the visual reconnaissance commitment had been taken over by the Austers of No. 656 Squadron as its component flights became operational - even though they were limited to 150 flying hours a month, which was less than 10 per cent of the monthly effort they achieved in 1955. (51) Most of their work at this time was directed towards assisting ground force patrols in the contact reconnaissance role, although they did have some success in plotting terrorist camps. They also observed for one naval bombardment and on one occasion, on 22 September 1948, one Auster of No. 1902 Flight, flying in support of ^{at Battalion} 1/6th Gurkhas in the Rambat area of Perak, actually opened fire with a bren gun against a band of fleeing terrorists. (52)

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Through 1949 and 1950 the visual reconnaissance commitment of No. 656 Squadron continued to increase, although communications flights still occupied the majority of its time. With the introduction of other light aircraft into the theatre in 1951, however, the light liaison role of the squadron became less important and more of its time was devoted to the intensified search for terrorist camps, while the advent of a battery of field artillery in Malaya gave the squadron the opportunity to practise their primary role. (53) Between September 1951 and February 1952 just over 1,578 hours were flown by Austers of

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132

No. 656 Squadron on visual reconnaissance tasks in comparison with the 2,122 hours that were flown on communications sorties and the 1,057 (54) hours on other tasks.

133

During 1952, however, the visual reconnaissance effort of the squadron increased until it occupied over half its total task, particularly after the terrorists began their withdrawal into deep jungle and the spotting of their cultivation plots became of vital tactical importance to the ground forces. Squadron pilots developed a high standard of observation in spotting these plots and cross checks with air photographs showed that they could plot them within two or three hundred yards of their exact position and could also assess accurately the nature of the crops grown on them and the state (55) of their growth.

By the end of 1952 Austers of No. 656 Squadron were regularly exceeding their allotted flying task by over 14 per cent in achieving a monthly average of 1,250 flying hours and a total for the year of 12,240 hours, which represented nearly 600 hours for each one of their aircraft and a flying effort far in excess of any other unit of the R.A.F. in operation at that time. (56) The squadron's task continued to increase throughout 1953 and in October of that year its pilots flew a total of 1,708 hours to complete 50,000 flying hours and over four million miles since their arrival in Malaya in 1948. (57) Some indication of the size of their task can be seen in the fact that they achieved a total of 16,665 flying hours during 1953 out of the total of 37,000 flying hours that was expended on all types of air operations (58) flown in connection with the Emergency. 70 per cent of the squadron's work was now concerned with visual reconnaissance in deep jungle and many successful combined operations were mounted as a (59) result of the numerous camps and cultivation plots which they located.

As with other air operations flown during the Emergency, visual reconnaissance continued to increase throughout 1954 and No. 656 Squadron, now equipped with 31 Austers, flew for 23,752 hours during the year, an average of over 1,800 hours a month, of which two-thirds (60) were spent on routine reconnaissance over jungle areas. During 1955, however, visual reconnaissance became progressively more

RESTRICTED

235

133

difficult as the terrorists intensified their use of camouflage and partially abandoned their policy of growing food in jungle cultivation plots. The flying effort of No. 656 Squadron, which averaged over 2,000 flying hours a month at the beginning of the year, had fallen to 1,500 hours a month by the end, with a final total of 21,970 hours for the whole year. (61) However, in December 1955, despite this slight decrease in effort compared with 1954 the squadron achieved its 100,000th flying hour since its arrival in Malaya. (62) As well as their normal reconnaissance tasks they had flown over 100 observation sorties in one month during 1955 in support of the guns of the 25th Field Regiment and the 1st Singapore Regiment, Royal Artillery and those of H.M.S. Concord, H.M.S. Comus and H.M.S. Newcastle, which were supporting ground forces in the successful Operation 'Nassau' in the Kuala Langat area of Selangor. (63)

By the end of 1956 only 8,300 of the 19,000 hours that were flown by No. 656 Squadron during the year were concerned with jungle reconnaissance and this task was further restricted during 1957 as the remaining hardcore terrorists became even more elusive and the danger that the presence of an Auster aircraft might compromise a potential target increased. (64) By now the only place where the terrorists could be expected to remain static after scrutiny from a reconnaissance aircraft was on the Thailand side of the Malayan border where they were immune from aerial attack. During 1958 No. 656 Squadron, now part of the Army Air Corps and not a R.A.F. squadron, still achieved over 15,000 flying hours, with a first line strength of 24 aircraft, of which 10,900 hours were flown in direct support of the ground forces. (65) By the end of the year, however, only two flights of No. 656 Squadron were fully occupied on Operation 'Firedog' tasks. Central Malaya, covered by Nos. 14 and 16 Reconnaissance Flights, was relatively quiet and required only an occasional operation of short duration, while in the south of the country the work of No. 11 Liaison Flight came to an end after it had helped security forces to conclude their operations in this region by reporting several cooking fires during its dawn and dusk patrols, as a result of which information several successful

134

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236

134

airstrikes were mounted. On one occasion an Auster of this flight actually saw a small terrorist party which was a rare occurrence at this stage of the campaign. On the Thailand border, however, No. 7 Reconnaissance Flight continued to operate throughout 1958 and into 1959 and produced some valuable 'finds', including occupied terrorist camps, resting places and cultivations. This flight supported ~~the~~ ^{the} 28th Commonwealth Brigade in Operation 'Ginger' and their report of ten terrorist camps in July 1958 provided the basic information for 22 Special Air Service Regiment during Operation 'Boulder' that was mounted east of Grik in Northern Perak. In Southern Perak, operations by No. 2 Reconnaissance Flight were restricted during the early part of 1958 while the Police Special Branch rounded up the remaining terrorists in the area and the flight then took over the Thailand border area from No. 7 Reconnaissance Flight and flew several successful missions from Alor Star in support of ~~the~~ ^{the} 1st and 2nd Federal Infantry Brigades. (66)

By the end of 1958 only half of No. 656 Squadron was still committed to the support of security force operations while the remainder underwent training in their primary theatre role. However, although the overall tempo of visual reconnaissance continued to decline in accordance with the general trend of Emergency operations it remained fairly high right up until the end of the campaign.

The Results of Aerial Reconnaissance ~~in the Malayan Security~~

In providing much of the best, and sometimes the only intelligence of terrorist locations, as well as confirming information received from other sources, aerial reconnaissance made a significant contribution to the successful outcome of the campaign in Malaya. No accurate figures are available of the number of terrorists who were killed, captured or who surrendered during operations in which aerial reconnaissance had a direct bearing but they certainly represented the major proportion of the total number of terrorist eliminations that were achieved by the security forces. The products of photographic reconnaissance were used during nearly all ground and air operations as a matter of course and materially contributed to any success which they had. The part

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237

played by visual reconnaissance in these operations is less easy to define but some idea of its overall contribution can be assessed from the fact that, in the six months between March and August 1955, Austers of No. 656 Squadron located 155 confirmed terrorist camps, 77 possible terrorist camps, 313 terrorist cultivations, 31 re-cultivations, 194 clearings that were probably made by terrorists and 21 aborigine farms that were under terrorist domination. ⁽⁶⁷⁾ During 1956 a further 263 terrorist camps were plotted as a result of the efforts of this squadron, as well as 65 clearings and 112 cultivations of terrorist origin. ⁽⁶⁸⁾ With regard to the number of eliminations that were achieved as an indirect result of the visual reconnaissance provided by No. 656 Squadron, No. 1907 Flight claimed that, during six months operations in Pahang in 1953, 44 terrorists were killed by ground forces acting on information which they had provided. ⁽⁶⁹⁾

134

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238
CHAPTER 6

LOCALLY RECRUITED AIR FORCE UNITS IN THE MALAYAN CAMPAIGN

135

To the role played by the air forces of Great Britain, Australia and New Zealand in the campaign against the terrorists must be added the contribution that was made by those elements of the air forces in Malaya that were recruited locally, which included flying personnel and their ancillary tradesmen and technicians as well as gunners trained in an infantry role for ground defence duties. These belonged to the Malayan Auxiliary Air Force (M.A.A.F.) and its successor the Royal Malayan Air Force (R.M.A.F.), the R.A.F. (Malaya) and the R.A.F. Regiment (Malaya), all of which were developed during the course of the campaign and played supporting roles of varying importance in its successful conclusion.

The Malayan Auxiliary Air Force

At the beginning of 1949 only two regular fighter squadrons were available in the Far Eastern theatre to carry out commitments in the air defence role and these were primarily engaged on tasks connected with the Emergency in Malaya. (1) To augment this force plans were drawn up at a meeting of the Air Council in March 1949 for the formation of three auxiliary fighter squadrons in Malaya, Singapore and Hong Kong which would relieve regular squadrons of at least part of the internal security commitment in time of war and would ensure that some fighter squadrons were permanently in the Far East even if war compelled the withdrawal of regular squadrons. (2) In addition these auxiliary squadrons would act as an outlet for volunteer enthusiasm and would serve as a basis of the air forces which the Far Eastern colonies would need when they achieved independence.

The initial formation of these auxiliary air forces was the responsibility of the Colonial governments concerned and they retained overall administrative control of them. However, since the object of these squadrons were of equal interest to Great Britain their functional control was invested in the local Air Officer Commanding and the Air

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239

135

Ministry agreed to provide the aircraft and spares required on free loan if the local governments would meet the costs of work services, freight charges and the necessary personnel. Some difficulty was experienced in persuading the governments of the Federation of Malaya and the Colony of Singapore to pass the necessary legislation but, after the financial and legal difficulties had been solved and accommodation had been found, ordinances establishing the M.A.A.F. were finally promulgated in May and June 1950 and recruiting and training began in earnest. (3)

136

Under pressure from F.E.A.F. the original policy of the Air Ministry for a Malayan and a Singapore Auxiliary Fighter Squadron was amended and plans were made to create four operational fighter squadrons in the Malayan theatre, supported by three associated fighter control units, within four years of the formation of the M.A.A.F. (4) With the deterioration of the internal situation in Malaya, however, this period was reduced to two years. Recruiting for the Penang and Singapore Fighter Squadrons began at Butterworth and Tengah in May and June 1950 and for their complementary fighter control units in January and October 1951. (5) A third fighter squadron was formed at Kuala Lumpur in December 1951 and plans were advanced for the formation of its associated fighter control unit and for a second fighter squadron on Singapore Island to complete the complement of the M.A.A.F. (6)

The initial plan for the fighter squadrons of the M.A.A.F. was that they should gain experience in flying light aircraft, D.H.82A's (Tiger Moths) and Austers, and then progress to flying Harvards and surplus Spitfires until they were eventually re-equipped with jet aircraft. On their formation the Penang, Singapore and Kuala Lumpur Squadrons were each equipped with four Tiger Moths, to which four Harvards were added during the course of 1951 and 1952, while the Singapore Squadron was also provided with three Spitfires towards the end of 1951. (7) The policy at this time was that all three squadrons should be equipped as soon as possible with eight Spitfires each, as well as two Harvards for training purposes, at an annual cost to the Air Votes of £40,000 and to the Federal Government of £25,000. (8) However, one year after its establishment the Singapore Squadron had only three pilots that were

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240

ready for conversion to flying Spitfires, four who were carrying out advanced training on Harvards and five who were in the ab initio stage of training on Tiger Moths. In the Penang Squadron three pilots were training on Harvards and eight on Tiger Moths and no progress had been made on converting them to flying Spitfires. (9) Experience had already shown that these squadrons were unlikely to be able to cope with anything more than the first line servicing of aircraft and demands were made for the assistance of the R.A.F. for both first and second line servicing which they could ill afford to meet in view of the operational effort required of the regular fighter squadrons at that period of the Emergency. In addition it was clear that, although several of the sixty or so trainees in the fighter control unit at Singapore were preparing for their trade tests for promotion to A.C.1 or S.A.C., none were ever likely to be capable of graduating to even N.C.O. status.

136

In view of this disappointing progress efforts were made towards the end of 1951 and throughout 1952 and 1953 to clarify the future policy of the M.A.A.F. and to obviate a recurrence of the teething troubles which had followed its inception. (10) In March 1953 it was still optimistically hoped that the original aim for the M.A.A.F. would be achieved sometime in 1954 but, as it became clear that none of the pilots under training would be ready to fly Vampires by then, even if these aircraft had been available and the governments of Malaya and Singapore had been willing to finance their operation, the policy of providing auxiliary fighter squadrons for the air defence role was finally abandoned. (11) Apart from an agreement about its eventual replacement by a regular Malayan Air Force no firm policy about the future of the M.A.A.F. was formulated until 1957, but in the interim period the shortage of light aircraft in the theatre for short range transport and visual reconnaissance work encouraged the A.O.C. (Malaya) to employ the M.A.A.F. in these roles on anti-terrorist operations.

With this change in policy plans for the formation of a fighter control unit at Kuala Lumpur and a second fighter squadron at Singapore

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fell into abeyance and the three Spitfires of the existing Singapore Squadron were withdrawn at the end of 1952 and the beginning of 1953, leaving all three squadrons of the M.A.A.F. equipped with four Tiger Moths and four Harvards each. ⁽¹²⁾ Two more Harvards were added to the complement of each squadron in 1954 but these were withdrawn from the Kuala Lumpur and Penang Squadrons in 1955. ⁽¹³⁾ In 1957 the ageing Harvards and Tiger Moths were finally withdrawn from service and were replaced by four Chipmunks in each squadron. ⁽¹⁴⁾ ~~the base of the Singapore Squadron was moved from Tengah to Seletar.~~ ⁽¹⁵⁾ In April 1958

(136)

the base of the Singapore Squadron was moved from Tengah to Seletar. While the role of the M.A.A.F. was being finally clarified as the training of pilots to form the nucleus of the future national air force and the carrying out of light liaison and reconnaissance duties in connection with the Emergency, determined efforts were made to improve the standard of the pilots and to foster the expansion of an efficient force of ground tradesmen. ⁽¹⁶⁾ Between September 1951 and February 1952 the total strength of the M.A.A.F. rose to 290 and before the end of 1952 it had doubled again to 550. ⁽¹⁷⁾ Of these 49 were pilots, of whom 23 were training on Tiger Moths, 26 on Harvards and 12 were beyond 'wings' standard, while 119 airmen had undergone trade tests and had qualified for the rank of ~~sergeant~~ ^{aircraftman 1st class} or higher. ~~During 1953, however, few new recruits volunteered for pilot training and, as most of these were not sufficiently capable, a change in policy from quantity to quality was effected and~~ ^{By the end of 1953} only 16 pilots and 170 tradesmen were left in the M.A.A.F. ⁽¹⁸⁾ The strength of the force remained fairly static from the beginning of 1954 to November 1958 when approval was finally given by the Federal Government that the M.A.A.F. should be disbanded and that the Penang and Kuala Lumpur Wings ^{of the M.A.A.F.} should be disbanded and ~~their aircraft and spares backing~~ ^{incorporated} into the R.M.A.F. ⁽¹⁹⁾

The history of the M.A.A.F. was one of early promise that was unfulfilled because of poor material and the general lack of interest that was shown by the administering governments of Malaya and Singapore. In the final analysis this force of part-time, mainly weekend fliers was

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242

137

more trouble than it was worth to the regular air forces in Malaya for, in return for the considerable drain which they made on the available technical resources, they contributed very little to the campaign against the terrorists. While the Singapore Squadron carried out occasional reconnaissance sorties and dropped leaflets over cultivation plots in Southern Johore, the Kuala Lumpur and Penang Squadrons carried out similar missions in Kedah and Negri Sembilan. During 1952, however, the total number of hours that were flown by all three squadrons was ~~only~~ 130 while, of the 20,000 reconnaissance sorties that were flown in support of Operation 'Firedog' between January 1955 and July 1958, mainly by Austers of No. 656 Squadron, the Singapore, Kuala Lumpur and Penang Squadrons of the M.A.A.F. contributed ~~over~~ 86, 102 and 15 sorties respectively. (20)

The Royal Malayan Air Force

The successor to the M.A.A.F. was the R.M.A.F., the national air force that was established by a bill passed by the Federation of Malaya's Legislative Council in May 1958. It was initially planned that this force should consist of four twin-engined Pioneers, one of them the civil version and the other three the military version, four single-engined Pioneers, four Chipmunks and 120 personnel, of which 50 per cent would be seconded from the R.A.F., 20 per cent would be transferred from the R.A.F. (Malaya) and the remainder would be recruited locally. (21) (22)

The first twin-engined Pioneer for the R.M.A.F. arrived in Malaya in April 1958 and the remaining Pioneers were delivered between January and June 1959. All these aircraft were based at Kuala Lumpur, together with those units of the Commonwealth air forces that still remained in the Firedog Transport Support Force. On 1 July 1960 the Joint Operations Centre was handed over to the R.M.A.F., who thus assumed overall direction of all flying in support of Operation 'Firedog', and on 1 October 1960 the R.A.F. station at Kuala Lumpur was handed over to the R.M.A.F. (23) (24)

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243

From its inception it had been planned that the R.M.A.F. should start operations in the short range transport role in support of Operation 'Firedog' as soon as possible. The R.M.A.F. was able to commence these operations by the beginning of March 1959 and by (25) September of that year the force was working to its full potential. The main commitment of this small force was to relieve the Commonwealth Air Forces of the air supply and maintenance of the jungle forts that were manned by units of the Federal Police. Throughout 1959 these forts were gradually reduced in number to their peacetime establishment and, when the responsibility for their supply was taken over by the R.M.A.F. in September of that year, the task was almost within their capacity. However, the limitation of the flying hours of this force to 90 a month, as well as the shortage of pilots for their single-engined Pioneers and servicing difficulties with their Twin Pioneers, prevented them from fulfilling their entire commitment and for the first few months of 1960 R.A.F. Pioneers of No. 209 Squadron were called upon (26) to assist them. In February 1960 the R.M.A.F. carried out their first operational supply drop to a jungle fort from a Twin Pioneer and from then onwards to the end of the campaign in July of that year they were engaged in transporting troops to jungle forts and dropping supplies and leaflets over Northern Perak from their advanced base at Taiping. (27) In July 1960 Twin Pioneers of the R.M.A.F. dropped 30,485 lb. of supplies but even this valuable contribution did not meet the entire requirement of the police garrisons of the remaining jungle forts and represented only a relatively small proportion of the 251,728 lb. of supplies that were dropped by all units of the air forces in Malaya in this final month of the campaign against the (28) terrorists.

The R.A.F. (Malaya)

Besides the development of local auxiliary air forces to help in the air defence of the Far East and to serve as a nucleus for future national air forces, the Air Council also decided, late in 1947, to recruit local forces into R.A.F. units in the Far Eastern theatre in

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244

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order to ease the shortage of manpower for ground duties. At that time ^{Air Command Far East} (A.C.F.E.) were already employing two to three hundred civilian technicians and, with the memory of the pre-war Singapore Special Training Corps and the government subsidies that were being paid to locally recruited forces of the R.N. (Malaya) and ~~The Malaya~~ Regiment, as well as in the interests of security and discipline, it was decided to incorporate these men into a uniformed force known as the R.A.F. (Malaya). Initial proposals envisaged a ceiling establishment of 1,000 tradesmen in 44 clerical and technical trades, excluding the 790 personnel of the R.A.F. Police Auxiliaries (Malaya) who were also to be transferred to this force. The R.A.F. (Malaya) was to be recruited over a period of four years and employed at the R.A.F. Maintenance Base at Seletar and the R.A.F. Stations at Changi, Tengah and Butterworth. (30) By 1951 the yearly intake of this force amounted to 250 recruits, divided into seven courses, (31) and for the remainder of the Emergency they provided valuable administrative and maintenance services for the air forces in Malaya while, on a few occasions, they even took part in jungle patrols which achieved a number of terrorist eliminations. The most active participation by locally recruited airmen in the campaign against the terrorists, however, was undertaken by the personnel of the R.A.F. Regiment (Malaya).

The R.A.F. Regiment (Malaya)

The ground defence of all R.A.F. installations depends primarily on combatant personnel of the R.A.F. Regiment, a specialist force who are trained for ground combat and are prepared to move by air at short notice. In overseas theatres it has long been the practice to employ local volunteers in this force whenever possible and the R.A.F. Regiment (Malaya) was constituted by an Order in Council signed by King George VI in April 1947 to conform as closely as possible to the R.A.F. Regiment in its structure and function. (32)

At the outbreak of the Emergency the R.A.F. Regiment (Malaya) consisted of only two Rifle Squadrons, No. 91, formed at Kuala Lumpur in January 1948, and No. 92, formed at Kuala Lumpur on 1 April 1948. (33)

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245

Plans for further squadrons were accelerated and No. 93 Squadron was formed on 1 May 1948, No. 94 Squadron on 1 August 1948 and No. 95 Squadron on 1 January 1949. ⁽³⁴⁾ By then the R.A.F. Regiment (Malaya) consisted of five Rifle Squadrons and a Headquarters Staff at its depot at Sembawang, to where it had moved from Kuala Lumpur on 11 May 1948 and from where it moved to Changi on 15 August 1949 when Sembawang was handed back to the Royal Navy. ⁽³⁵⁾ At full strength each squadron contained 180 to 200 officers and men who were divided into five flights, which included four Rifle Flights, armed with bren guns, light machine guns, sten carbines, rifles, light 2" mortars, high explosives and smoke grenades, and a Support Flight, armed with four 3" mortars and additional bren guns for its secondary role as an anti-aircraft flight. All members of the R.A.F. Regiment (Malaya) were fully combatant, the primary trade of the drivers, cooks and storemen at squadron headquarters being that of a gunner. The transport establishment of each squadron contained 15 and 20 cwt. and 3 ton trucks and motor cycles to give mobility, while wireless communications in the field were maintained by walkie-talkie sets with a two to five miles range and a more powerful link to squadron headquarters was provided from a wireless set mounted in the squadron commander's jeep. ⁽³⁶⁾

Recruitment of Malayan citizens for the R.A.F. Regiment (Malaya) was carried out by itinerant teams throughout the Federation and the new recruit was sent to the Regimental Depot at Telok Paku, R.A.F. Changi, for a medical examination and fifteen weeks basic training before posting to a squadron for secondary training or undergoing specialist courses for ancillary tradesmen. At squadron level the recruit was instructed in the uses of firearms under battle conditions at the Pasir Lebar firing range, which included the use of small arms against low-flying aircraft. Regiment gunners were trained not merely as static security guards but as members of a fully mobile fighting force capable of providing screens against an advancing enemy, of sending out fighting and reconnaissance patrols, of counter-attacking

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139

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246

139

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should infiltration occur and of delivering sustained mortar fire on enemy concentrations. Personnel of the R.A.F. Regiment (Malaya) were liable to serve anywhere in the Federation in peacetime and anywhere in the world in times of Emergency. (37) Initially all officers and N.C.O.'s of the Regiment were drawn from the R.A.F. Regiment but gradually these posts were 'Malayanised' and by 1954 all N.C.O.s except Warrant Officers were Malayan, as were six officers of the Regiment. (38)

The standard of ground combat training achieved by the R.A.F. Regiment (Malaya) proved of particular value in the campaign against the terrorists in Malaya. In June 1948 the demands that were made on the Army and the Police for action in patrolling and the provision of guards were legion and it was clearly beyond their capacity to meet all these requests before the strength of the security forces had been augmented. A request was made, therefore, by Headquarters Malaya District for the assistance of the R.A.F. Regiment (Malaya) in an ordinary Army role. No. 91 Squadron, then at Changi, was selected for the task and placed under the command of Headquarters Johore Sub-District at the end of June 1948. (39) This marked the beginning of the R.A.F. Regiment (Malaya)'s active participation in the campaign against the terrorists which, broken only by periods of re-training, lasted for almost the whole of the Emergency. Of the five squadrons in the Regiment three were usually retained for static guard duties in their primary role at R.A.F. airfields in Malaya and Singapore, one was stationed at R.A.F. Kai Tak, Hong Kong and the remaining squadron was employed on anti-terrorist operations under the control of the Army. At a certain stage in the year each squadron in turn was withdrawn from airfield guard duties for training in jungle warfare techniques, including the rehearsal of patrols, ambushes, signals, action to be taken when attacking or being attacked and elementary jungle navigation. (40) Iban trackers from North Borneo were attached to each squadron for tracking purposes since the Malay airman, although he had a fine sense of direction, was only a mediocre tracker and the aboriginal Sakais of Malaya were unreliable. The

140

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247

140

culmination of this period of training came with a jungle tour of four months, which was extended to six months at the beginning of 1954. Personnel of the R.A.F. Regiment (Malaya) showed great enthusiasm for jungle operations and contact with experienced troops provided a fillip to their training and morale. Squadrons of the Regiment, although under functional control of A.H.Q. Malaya, operated under the administrative control and the command of local Army brigade and battalion headquarters and, from 1953 onwards, they were permanently represented on the staff of the Director of Operations, with members on the Combined Emergency Planning Staff, the Psychological Warfare Staff (41) and the Combined Intelligence Staff.

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Just before the outbreak of the Emergency the two squadrons of the R.A.F. Regiment (Malaya) that were in existence, Nos. 91 and 92, were deployed at Changi and Seletar respectively. On 30 April 1948 No. 92 Squadron was flown to Taiping as part of the R.A.F. Task Force that was sent to assist ground forces in Operation 'Haystack' in Northern Perak. (42) The squadron was deployed at Lenggong to carry out general garrison duties and to relieve police units of the duty of occupying disused terrorist camps so that they could concentrate on further searches. For political reasons, however, as a state of Emergency had not yet been declared, No. 92 Squadron was unable to participate in active operations where there was any chance of making contact with hostile forces. The squadron stayed at Taiping until 27 May 1948, when it was transferred to Seletar for airfield defence duties, but provided a flight at Kuala Lumpur on 5 July as part of the R.A.F. Task Force that had been established there. (43) Meanwhile a state of Emergency had been declared and No. 91 Squadron had taken up its field position in the Segamat area of Johore on 23 June, under the control of Johore Sub-District. (44) At the time its duty was defined as 'assisting the police to the limits of its power' and its task consisted mostly of patrolling local rubberestates and neighbouring areas. Within four days of its arrival in their operational area No. 91 Squadron had apprehended a wanted Chinese and, towards the end

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248

of July, following an increase of terrorist activity in the area and reinforcement by two companies of the 1st Battalion ^{The} Seaforth Highlanders, patrols were extended deeper into the jungle and ten suspects were arrested and large quantities of subversive literature and incriminating documents were discovered. (45)

After three weeks in the Segamat area No. 91 Squadron moved to the Kota Tinggi and Mersing areas of Southern Johore where, owing to the extensive river communications, many of their patrols necessitated long waterborne journeys to outlying rubber estates and suspected terrorist locations in the jungle. (46)

140
It was on one of these patrols that the R.A.F. Regiment (Malaya) suffered its first casualty when a British N.C.O. collapsed from heat exhaustion and later died. Extensive patrolling of these areas resulted in the arrest of eight suspects in the first week, one of whom gave information which led to the destruction of a disused terrorist camp. During August 1948 terrorist activity flared up on the Telok Sengat estate bordering the Johore River and the two flights of No. 91 Squadron that were despatched there detained a number of suspects including two of the raiding party. By 4 September 1948 No. 91 Squadron had apprehended and handed over to the military authorities a total of 60 suspected terrorists. (47)

141
On 26 September No. 91 Squadron began the final operation of its operational tour which entailed five days continuous patrolling in deep jungle territory, relying entirely on air supply, during which a Malay corporal opened fire on a band of about thirty terrorists and hit at least three before they were carried off by the remainder. During these patrols the squadron was forcibly reminded of the problems of location that were faced by jungle patrols when they took a wrong track in the Kota Tinggi area and found that the jungle was too thick for signal fires to be visible while the surrounding hills were so full of iron that compasses were useless. (48)

In October 1948, after five months of active patrolling, during which they had set the pattern for future operations by the R.A.F. Regiment (Malaya) in the campaign against the terrorists, No. 91 Squadron was withdrawn to Changi for airfield defence duties. (49)

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249

141

For most of 1949 squadrons of the R.A.F. Regiment (Malaya) were occupied with airfield defence, with No. 91 Squadron at Changi, No. 92 Squadron at Seletar, No. 93 Squadron at Butterworth, No. 94 Squadron at Kuala Lumpur and No. 95 Squadron completing their training at Sembawang (50) in May of that year. In June 1949 No. 91 Squadron was posted to Kai Tak in Hong Kong and was relieved at Changi by No. 92 Squadron which was replaced at Seletar in August by No. 93 Squadron from Butterworth. (51) On 16 August 1949 the Depot of the R.A.F. Regiment (Malaya) moved from Sembawang to Changi and No. 95 Squadron, on completion of its training, moved to Tengah. (52)

When the anti-terrorist drive was intensified at the beginning of 1950 the Federal Government asked whether two squadrons of the R.A.F. Regiment (Malaya) could be spared from their normal duties to take part in security operations in connection with Anti-Bandit Month. No. 94 Squadron was moved from Kuala Lumpur to Rawang in Selangor on 1 March 1950, coming under the operational control of Headquarters Malaya District and the command of the 2nd Battalion The Scots Guards, and No. 95 Squadron moved from Tengah to the Mersing area of North-Eastern Johore and came under the operational control of the South Malaya Sub-District and the command of the 1st Battalion The Seaforth Highlanders. (53) The performance of these two squadrons was such that both the Federal Government and the Army pressed for their continued employment in an operational role after the conclusion of the Anti-Bandit Month and, in the prevailing circumstances, this was agreed upon under the clear understanding that the Federal Government was responsible for the provision of a permanent Auxiliary Police Guard for Kuala Lumpur airfield. Difficulties in connection with this provision led to a consideration of the need to withdraw at least one of the squadrons on active operations but counter arguments from the Government and Army made it clear that both were now regarded as an integral part of the ground forces framework and could not be spared. (54)

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During operations in the Mersing area in which No. 95 Squadron took part thirteen terrorist camps were found and destroyed, eighty suspects were arrested, one wanted terrorist leader was killed and four terrorists were wounded. No. 94 Squadron, operating in the Rawang area where the terrorists were particularly active, killed three terrorists themselves and seven more in concert with other troops, as well as helping to find and destroy twelve large and nineteen small camps and arresting three terrorist agents. (55) No. 94 Squadron was relieved at Rawang by No. 93 Squadron from Seletar on 1 May 1950 and No. 95 Squadron was withdrawn from Mersing for airfield defence duties at Tengah on 31 July 1950. (56) On 12 October 1950 No. 93 Squadron at Rawang was relieved by No. 91 Squadron from Changi and returned to Seletar to take over from No. 94 Squadron which moved to Changi. (57)

142

During 1951 the operational squadrons of the R.A.F. Regiment (Malaya) were deployed under the operational control of No. 18 Brigade in the Rawang and Sungai Besi areas of Selangor. While on detachment in the Rawang area, No. 91 Squadron killed one terrorist, captured another and wounded two others in the Ulu/Simpan area, besides discovering five camps, while its relief, No. 94 Squadron, when it took over the same area in February 1951, was ambushed by a terrorist force which outnumbered it by three to one but fought back to such effect that it killed four terrorists for the loss of five of its own airmen. (58) Altogether No. 94 Squadron made eleven contacts with the terrorists during its tour of duty, killed five of them and destroyed twelve camps for the loss of five of its own force killed and eight wounded. On 17 July 1951 No. 94 Squadron returned to Tengah from Rawang to take over from No. 95 Squadron which took up the Regiment's operational commitment at Sungai Besi. (59) No. 95 Squadron were relieved on 1 December 1951 by No. 92 Squadron and returned to Tengah without loss to themselves and with a tally of three terrorists killed, including one District Committee Member, five wounded, two captured and seventeen camps and twenty-three food dumps found and destroyed. (60)

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251

On 1 April 1952 the R.A.F. Regiment (Malaya) Wing was formed to administer the Headquarters and Depot at Changi and the five squadrons then in existence. (61) By this time all five squadrons had completed at least one, and in most cases two, tours in the jungle and had become as experienced as any other unit in operations against the terrorists. No. 92 Squadron continued to operate in the Sungei Besi area of Selangor until the end of the tour but its relief, No. 91 Squadron, which took over the operational commitment in April 1952, moved to a new area in the Bukit Cherakah Forest Reserve, with a base camp at Bukit Darah. (62) This area, which the squadrons of the R.A.F. Regiment (Malaya) were to remain responsible for until January 1954, proved fairly productive during the early stages of operations there and both No. 91 Squadron and No. 93 Squadron, which took over on 1 September 1952, achieved several kills. (63) After No. 95 Squadron had relieved No. 93 Squadron in June 1953, however, this area became singularly quiet, possibly due to constant patrolling, and remained so when No. 92 Squadron from Seletar took over operational duties on 12 May 1953. (64) When No. 94 Squadron relieved No. 92 Squadron in September 1953, therefore, it was decided to change the location of the Regiment's operational area. The Director of Operations arranged for the Regiment to take over operations in the Kuala Langat Forest Reserve area of Selangor, with base camps at Sepang, Sungei Manggis and Klang. No. 94 Squadron moved from Bukit Darah to Klang on 3 December 1953 and this move soon achieved results as No. 91 Squadron, which took over operations on 5 January 1954, killed two terrorists and wounded four others during the early stages of their six months tour of duty. (65) In July 1954 No. 95 Squadron relieved No. 94 Squadron at Klang but moved on to the Pasangan area of the Kuala Selangor district on 17 November 1954 to take part in Operation 'Inswinger'. (66) This area, north of the Sungei Selangor, is mostly jungle swamp and from an operational aspect contains some of the most difficult terrain in Malaya. Most patrols were carried out through knee or waist deep swamp and camps on 'high' ground were frequently rendered untenable

142

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when the water level rose after rain had fallen. Despite these difficulties No. 95 Squadron located and destroyed three camps and one food dump before they were relieved by No. 92 Squadron in March 1955. (67)

142

In August 1955 No. 93 Squadron took over operational duties from No. 92 Squadron and returned to Rawang in Selangor where the R.A.F. Regiment (Malaya) had last operated from in July 1951. (68) At the end of 1955, however, the Regiment ceased operations against the terrorists while it underwent a period of reorganisation. A new squadron, No. 96, was formed at Changi on 1 January 1956 in the light anti-aircraft role and No. 93 Squadron was converted to a field role. In place of the five rifle squadrons that had existed in 1950 there were now three Field Squadrons, Nos. 91, 93 and 94, and three Light Anti-Aircraft Squadrons, Nos. 92, 95 and 96. (69)

143

The deployment of squadrons of the R.A.F. Regiment (Malaya) on anti-terrorist operations recommenced on 1 July 1956 and from then onwards until they were finally withdrawn in 1959 each squadron was deployed for operational tours of six months. (70) With the concentration of hostilities in the north of the Federation No. 94 Squadron was moved from Butterworth to the Regiment's new operational area in Southern Perak, based on a camp at Slim River, and operated under the control of No. 1 Federal Division. (71) In September 1956 Operation 'Parchment' began, which embraced the whole of Southern Perak and was aimed at the destruction of the terrorist organisation in No. 5 M.C.P. District by methods which included food rationing, the denial of food supplies, ambushes, constant patrolling and the destruction of terrorist cultivations. (72) Phase I, which ended in December 1956, was mainly concerned with the deployment of troops, including No. 94 Squadron R.A.F. Regiment (Malaya), and the general intensification of patrol and ambush activity. Phase II commenced on 1 January 1957 and coincided with the relief of No. 94 by No. 95 Squadron from Tengah, which came under the operational command of the 2nd Battalion The Malay Regiment. The Squadron was given as its main target the Besout Armed

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253

143

Work Cell which was known to exist in the squadron's main area of responsibility due west of the main road from Kuala Lumpur to Ipoh, from Slim River in the south to Sungkai in the north, an area of about 125 square miles which contained numerous 'kampongs', rubber and palm oil estates and swamp and jungle of all types. From 1 January 1957 to the end of the second phase of Operation 'Parchment' on 31 March 1957 forty personnel of No. 95 Squadron were engaged on searching all vehicles and persons entering or leaving factories and estates in this area and numerous irregularities in the carriage of restricted food items were discovered. In addition ambushes were mounted on the approaches to unwired 'kampongs' and one flight was deployed in the jungle to prevent the terrorists from gaining access to their Min Yuen supporters. Flights of No. 95 Squadron took part in several combined operations with the 2nd Battalion The Malay Regiment, following up airstrikes, cordoning villages and carrying out house searches. No contacts were made in this phase of the operation, however, and there were few reports of terrorist movement in the area. Phase III of Operation 'Parchment' began on 1 April 1957 with a change in the deployment of the security forces involved. No. 95 Squadron was placed under the operational command of the 1st Battalion The Rifle Brigade and its commander was given the control of an operational platoon of the Home Guard. Food control measures were reduced on a number of New Villages and only one, Slim River, remained the responsibility of No. 95 Squadron, enabling a further flight to be released for jungle operations. For three months, from April to June 1957, three flights of No. 95 Squadron, as well as elements of the Headquarters Flight, were more or less permanently in the jungle investigating rumours in lieu of specific information received from the Police Special Branch and carrying out combined operations with the Rifle Brigade. In April 1957 a further redeployment placed No. 95 Squadron under the operational command of the 5th Battalion The Malay Regiment and the squadron returned to Tengah on 29 June on its relief by No. 96 Squadron from Changi. (73) Two flights of No. 96 Squadron were employed on jungle operations and one on gate checking.

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254

143 and guard duties at the Slim River New Village but, although five food dumps were discovered, no contacts with the terrorists were made and it was assumed that the Besout Armed Work Cell had been withdrawn to the deep jungle area west of the unit's operational area. No. 96 Squadron was withdrawn from Operation 'Parchment', therefore, on 14 December 1957 and its relief, No. 92 Squadron from Seletar, was deployed in a more active operational area in the Batu Gajah district of Perak. (74) Mean-

144 while the R.A.F. Regiment (Malaya) had made a further contribution to anti-terrorist operations during 1957 by releasing one flight of No. 93 Squadron at Kuala Lumpur for operations in Selangor and one flight of No. 94 Squadron at Butterworth for operations in Kedah. (75) Although there were no large concentrations of terrorists in these areas these flights were useful in maintaining security force pressure where no other units were available.

Throughout 1958 the R.A.F. Regiment (Malaya) continued to provide one complete squadron, as well as one flight from each of the two squadrons based at airfields in the Federation, for anti-terrorist operations in support of the Army, although this contribution was interrupted for a period of four months in the case of the squadron and for two months in the case of one of the Flights to permit reorganisation and retraining of the force. (76) At the squadron level No. 92 Squadron was deployed at Kampar in Perak from 6 January to 15 July 1958, under the operational control of No. 2 Federal Infantry Brigade and the command of the 2nd Battalion The Royal Malay Regiment, and took part in the highly successful Operation 'Bintang' in the area South-West of Ipoh during which all but 17 of the 70 terrorists in the area were eliminated. (77) As well as claiming ten kills themselves, No. 92

Squadron made a valuable contribution to this operation by the constant patrolling and ambushing of courier routes and the destruction of food dumps. No. 93 Squadron from Kuala Lumpur, which took over the squadron commitment at Kampar from No. 92 Squadron on 17 November 1958, had previously provided one flight on a rotational basis for operations in Selangor under the command of the 1st Battalion The Royal Malay

* Granted the prefix 'Royal' on 8 April 1958

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255

144

Regiment from 1 January to 26 September 1958 and had played an important part in reducing the number of terrorists in that state from 59 to 4. On taking over from No. 92 Squadron at Kampar, No. 93 Squadron, under the command of the 3rd Battalion The Royal Malay Regiment, participated in Operation 'Ginger' in the area east of Ipoh and on 20 November 1958 one of its patrols captured a leading terrorist. Apart from the flights provided by No. 93 Squadron for operations in Selangor, No. 94 Squadron also provided one flight on a rotational basis for operations in Central Kedah, under the command of the 6th Battalion The Royal Malay Regiment, until 1 November 1958 when it was withdrawn for retraining. During most of this period the squadron provided the only regular service unit in the area and their constant harassing of the terrorists in conjunction with Police and Home Guard units elicited valuable information on which later ground force operations were planned. (78)

By the beginning of 1959 the terrorist threat in Malaya had virtually been eliminated and it was decided that there was no longer an operational need for six flights of the R.A.F. Regiment (Malaya). Authority was given to reduce their establishment and, following the amalgamation of the Regiment's Wing and its Depot on 1 September 1958, Nos. 92 and 96 Squadrons were disbanded at the beginning of November 1959 and No. 93 on 1 April 1960. (79)

Because of this reduction and the dislocation that arose from frequent postings between individual units it was found impracticable for the remaining squadrons of the R.A.F. Regiment (Malaya) to continue operations against the few remaining terrorists after No. 93 Squadron had returned to ~~Malaya~~ ^{Changi} in ~~March~~ ^{April} 1959 and they were accordingly withdrawn from active service. (80)

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Almost continuously for nearly eleven years, from the initial deployment of No. 91 Squadron at Segamat in Johore on 23 June 1948 to the final withdrawal of No. 93 Squadron from Kampar in Perak ~~March~~ ^{on 1 April} 1959, the R.A.F. Regiment (Malaya) played a valuable, if subsidiary, role in providing extra troops to assist the security forces in the innumerable tasks which arose in combined operations against the terrorists. The Regiment itself benefited from the experience

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256

gained at all levels of active service and, if allowance is made for the small number of their personnel that were engaged on anti-terrorist patrols at any one time and the low priority of many of their operational areas, the material results which they achieved compared favourably with those of other units. By June 1952 the R.A.F. Regiment (Malaya) claimed to have killed sixteen terrorists, wounded thirteen others and captured a further thirty-two, at a cost to themselves of nine killed and thirteen wounded. (81) By December 1954, after five and a half years of participation in the campaign, the Regiment claimed to have killed twenty terrorists, wounded twelve others, captured a further forty-one and to have found and destroyed 262 camps and food dumps, at a cost to themselves of two officers killed, one British and one Malay, and two officers wounded, and eight Malayan airmen killed and two wounded. (82) The esteem in which the contribution of the R.A.F. Regiment (Malaya) to the campaign was held was reflected in the awards made to its personnel at that date, which included one O.B.E., one M.B.E., three British Empire Medals, three Military Medals, forty-two Mentions in Despatches and seven Certificates of Good Conduct. (83) Towards the end of the Emergency, however, in common with the rest of the ground forces, they were compelled to expend a greater effort for less return and in the first nine months of 1958 personnel of the R.A.F. Regiment (Malaya) spent 136,106 man hours in the jungle, laid 386 ambushes by day and 370 by night and made only two contacts with the enemy, wounding only one terrorist, apart from discovering sixteen terrorist camps, eight of their resting places and six of their food dumps. (84)

145

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257

CHAPTER 7

SUMMARY OF THE AIR FORCES CONTRIBUTION TO OPERATION 'FIREDOG'

Introduction

146

During the whole of the Emergency the air forces in the Malayan theatre operated in support of the ground security forces in order to restore law and order to the country and defeat the menace of the Communist terrorists. In considering whether the best use was made of the available air forces and whether these resources were adequate, it should be appreciated that the support of civil and military forces in the enforcement of internal security in Malaya was only the tertiary role of A.H.Q. (Malaya or No. 224 Group) - the Group that was primarily responsible for carrying out 'Firedog' operations. The principal role of this headquarters was air defence against a possible hot war attack by the military forces of China and to this end the main units in the Group were designed as fighter squadrons and a considerable expenditure was diverted into radar equipment. The secondary role of the air forces in Malaya was the support of certain naval units and army field forces and this direct support role also ensured that the equipment allocated to the Group was not necessarily of the type that suited many of the tasks that arose in connection with its internal security role.

However, because the restoration of law and order in Malaya was considered important to the general stability of the area, the Chiefs of Staff temporarily departed from the normal policy for the Malayan Tactical Group and devoted a high proportion of the available manpower and effort to Emergency tasks, besides making certain modifications in their equipment planning in order to provide units that were more suitable for counter-insurgency tasks. Nevertheless, the maintenance of an adequate air defence organisation in the Malayan theatre was always in the background and influenced both the re-equipment and the training programmes of the air forces to the detriment of their efficacy as an anti-terrorist unit.

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The role of the air forces in the Malayan Emergency

The role of the air forces during the Emergency was defined in Emergency Directive No. 2, para. 23 as follows:

'The R.A.F. is also operating in support of the Civil Power. The primary task of the R.A.F. is to operate in conjunction with and in support of the ground forces. This support may include offensive airstrikes (bombing and ground strafing attacks, air supply, visual and photographic reconnaissance, survey photography and inter-communication'.

146
Towards the end of 1953, when A.H.Q. (Malaya) became anxious to carry out independent action against the terrorists and to have a greater say in the tactical application of the overall strategic plan of action, this directive was rewritten as follows:

147
'..... this support may include (i) offensive airstrikes (bombing and ground strafing attacks) (ii) offensive airstrikes in an independent role, with or without follow-up by ground, including airborne, security forces (iii) offensive or tactical air transportation and positioning of airborne or parachute forces (iv) air supply (v) visual air photographic reconnaissance (vi) survey photography (vii) inter-communication'.

Thus was official recognition given to the fact that the air forces could be, and of necessity had to be, used in a more independent role after the terrorists had withdrawn into the deep jungles of central Malaya, thereby reducing the chances of locating and engaging them with ground forces alone.

The control of air force operations

In the type of campaign that prevailed during the Malayan Emergency it was extremely important that there should be the closest possible co-ordination and liaison between the air forces and the ground forces. During the early phases of the campaign air support was called for on an ad hoc basis and was undoubtedly misused to some extent as well as being unable to operate with maximum efficiency.

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At a higher level the location of A.H.Q. (Malaya) at Changi on Singapore Island, remote from the Director of Operations the G.O.C. (Malaya) and the Federal Police Headquarters, was both inefficient and confusing and its move to Kuala Lumpur early in 1954 was long overdue and considerably improved the effective direction of the air forces engaged on Emergency tasks. At a lower level State and District War Executive Committees planned, organised and mounted virtually all operations against the terrorists from 1951 onwards but it was not until 1953 that air force representatives were appointed to the Operations Sub-Committees of the S.W.E.Cs in Kedah, Negri Sembilan, Perak, Pahang and Johore. This representation ensured a more effective use of the air resources by increasing the ground forces' awareness of their potential and by giving the air arm access to potential target information at a time when the withdrawal of the terrorists into jungle hideouts ensured that air action, used independently or in conjunction with airborne or paratroop forces, had the greatest chance of achieving success.

The most notable development in the liaison between the air and ground forces, on which the anti-terrorist campaign was fought and won, was the establishment of a Joint Operations and Intelligence Centre at G.H.Q. (Malaya) in Kuala Lumpur. This centre was manned by a joint Army and R.A.F. staff whose responsibility it was to evaluate all calls for air support and to ensure that the best use was made of the available air effort. The J.O.C. in its final form did not evolve until 1953, but as a control mechanism for combined operations it proved to be a significant evolution in the general direction of anti-terrorist operations.

Deployment of the air forces in Malaya

The location of the air force units that were engaged on Emergency tasks was determined not by tactical considerations but by the availability of airfields. Before 1953 there was no airfield in the Federation of Malaya that was capable of operating either Lincoln medium bombers or jet aircraft and this ensured that nearly all offensive air support was mounted from Singapore Island. This

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148
deployment had certain domestic advantages but suffered from the over-riding disadvantage of remoteness from ^many operational areas. For example, Operation 'Sword', mounted in Kedah in November 1953, absorbed 340 offensive sorties, many of them by Lincolns operating from Tengah whose flying time could have been considerably reduced by having a suitable base in Northern Malaya, which would have enabled one squadron to do the work of two based on Singapore Island. The improvement of the East-West runway at Butterworth provided an adequate base for medium bomber and jet aircraft in Northern Malaya from 1954 onwards and considerably improved the efficiency of their operation.

Although offensive support aircraft suffered to some extent from the paucity of adequate airfields on the mainland of Malaya, there were sufficient airfields to operate medium range transport aircraft with reasonable efficiency while the network of grass airstrips that was developed throughout the Federation proved to be an essential and effective basis for the operation of light communication aircraft.

Offensive air support

From the point of view of offensive air support it is doubtful whether any modern air force has had to operate under more unsatisfactory conditions, from the point of view of targets and information on the results achieved, than that engaged in Emergency operations in Malaya. Offensive air action in terrain dominated by featureless jungle was handicapped by the lack of strategic targets, the absence of firm enemy lines of communication and enemy concentrations or strong points and the difficulty of establishing well demarcated bomb-lines. Target information was rarely adequate to permit the proper use of air striking power whose aims had to be modified with the following objects:

- (a) Driving the terrorists out of their areas into ambushes.
- (b) Moving the terrorists into country suitable for ground operations.
- (c) Dispersing large parties of terrorists and thus reducing their offensive potential.
- (d) Containing large parties of terrorists while ground forces swept an area.

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- (e) Destroying terrorist camps and inflicting casualties.
- (f) Protecting an area or convoy route by air cover or flare dropping.
- (g) Harassing the terrorists and lowering their morale.
- (h) Deceiving the terrorists as to security force intentions and locations.

Most of these aims were achieved by pre-planned operations based on intelligence reports of likely terrorist concentrations. Demands for immediate air support of troops in contact with the enemy were rare, which meant that the delay in mounting airstrikes that was imposed by the deployment of offensive squadrons, the need to obtain police clearance of the target area and the difficulties of navigation and target identification, was largely nullified.

148

The techniques that were developed for harassing attacks and area bombardments were improved throughout the campaign and were as effective as possible under the prevailing conditions. In retrospect the systematic bombardment of map squares achieved little but was justifiable in view of the lack of target intelligence and the inaccuracies of target maps that prevailed at the time. These handicaps were rectified by the increasing efficiency of the Police Special Branch in eliciting information of terrorist locations from surrendered enemy personnel and other informers and by the improvement in the coverage of Malaya by air photographs, both of which enabled 'pinpoint' attacks to be made which showed greater returns for less effort.

149

The most effective offensive support aircraft in use during the Malayan campaign were the Lincoln and the Hornet, both of which had a relatively long endurance and high firepower. Lincolns bore the brunt of the medium bomber tasks while Hornets, being more manoeuvrable and able to attack in conditions of weather and terrain which often rendered attacks by medium bombers abortive, were largely used in a strafing and precision bombing role. Unfortunately the Hornet was obsolete and difficult to maintain by 1953 and its replacement by jet aircraft considerably affected the efficacy of the offensive air

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262

support force. Jet aircraft, whether fighters or light bombers, were too sophisticated for this type of campaign, having neither the range, the endurance or the ability to operate at low level which characterised the older, slower piston-engined aircraft. Sunderlands were also used occasionally in an offensive role but their utility was restricted because of their small bombload. In general, however, the offensive air support force was adequate to meet the tasks required of it as the introduction of jet aircraft into the Malayan theatre coincided with a decline in calls for this type of support.

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149

From this point of view of tangible results the offensive air support provided during the Malayan campaign was hardly worthwhile but the incalculable effects which it had on weakening the terrorists' morale and reducing their ability to mount offensives or withstand security force pressure was considered to be an important factor in preventing the insurgents from progressing beyond the first stage of their campaign to the domination and control of selected areas. In any case, when the terrorists retired to deep jungle areas, air power was frequently the only method of maintaining some pressure against them and was therefore directly instrumental in shortening the duration of the campaign.

Air transport support

In a country like Malaya, with its paucity of surface communications, the need for air transport support is essential and it became the main role of the air forces during the Emergency. Without the mobility that was granted to the ground forces by a combination of air supply, trooplifts, paratroop operations, casualty evacuation and inter-communication by light aircraft, the campaign against the terrorists would have been much longer and considerably more expensive.

Supply dropping. Of the various transport support roles, the tactical air supply of food, medicine, clothing, ammunition and equipment was the most important and, by enabling the ground forces to carry out deep penetration of the jungle and remain on patrol for

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extended periods, it proved to be indispensable to ultimate victory. The total amount of supplies that were dropped during the campaign exceeded 25,000 short tons - a task which required not more than eight medium range transport aircraft daily and usually averaged four. Three R.A.F. transport squadrons took turns in bearing the brunt of the supply dropping commitment and it is a tribute to the skill of all the transport pilots and to the techniques which they evolved that less than $1\frac{1}{2}$ per cent of all the supplies that were dropped were not recovered by the ground forces.

149
Trooplifting. Next in order of importance to air supply in the air transport support role was the trooplifting task of the small helicopter force which gave valuable assistance to the ground forces from 1953 until the end of the campaign. With the arrival of a Naval squadron of S.55 helicopters in Malaya in that year this role assumed increasing importance and gave a long needed flexibility to ground force operations, at a time when a stalemate seemed likely, which was largely responsible for the systematic elimination of the terrorist threat during the later stages of the campaign. In May 1953 1,623 troops and 36,500 lb. of equipment were lifted into jungle landing zones by medium helicopters during ten days of Operation 'Commodore' alone and the value of this type of support was reflected in the subsequent increase in calls upon the available helicopter force. 150
Throughout the campaign, however, demands for helicopters were always greater than the supply and further reinforcements, besides the R.A.F. Whirlwind squadron which arrived in 1955, would have been welcome. However, it should be realised that helicopters were expensive and costly to maintain and operate in Malaya. Jungle operations are the most strenuous type of helicopter operations and afford a severe test of the aircraft and its equipment. Not surprisingly, the small helicopter force in this theatre was beset by recurring technical faults and while additional reinforcements would have helped to maintain a higher rate of serviceability, it is doubtful whether the cost of operating a much larger force would have been justified by the results it might have achieved.

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264

Casualty evacuation. The major role of light helicopters during the campaign was casualty evacuation which assumed great importance in the Malayan theatre because of the difficult terrain over which ground force patrols operated, the need to free them from the task of evacuating their casualties (which frequently meant the abandonment of a patrol) and the need for early treatment of the more serious injuries. Light helicopters proved a fairly adequate answer to most requests for casualty evacuation and gave an immense fillip to the morale of the security forces who were operating in deep jungle areas. However, the limitations on the operation of these aircraft that were imposed by environmental conditions, such as altitude, terrain and turbulence, were all too often not fully appreciated. Nevertheless, light helicopters did as much as could be expected of them in the casualty evacuation role, assisted by medium helicopters when available, and the replacement of the original Dragonflies by Sycamores helped to improve their serviceability rate.

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Paratrooping. Less important than the trooplifting role of the air transport support forces was the paratrooping commitment of the medium range transport squadrons. The problem of mounting paratroop operations in Malaya were considerable but techniques were evolved during the course of the campaign which enabled several successful operations to be carried out. These were of particular value in introducing troops quickly into operational zones while maintaining the element of surprise on which the success of the assault depended. However, although the possibilities of this form of attack were demonstrated, it was seldom employed during the campaign as helicopters proved capable of introducing a greater number of less specialised troops into jungle areas with greater speed and accuracy.

Communications. A minor but important role of the air transport support forces in Malaya was the maintenance of internal communications within the Federation. The route transport operations of the medium range transport force were invaluable in airlifting troops, freight and casualties between the major airfields when rapid deployment was

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considered important, especially over areas where ambushes were likely to occur. For maintaining communications between the numerous light aircraft strips of the Federation, which enabled commanders to move rapidly within their operational areas, the light liaison flights of No. 656 A.O.P. Squadron provided valuable support at the beginning of the campaign. Their strength and capabilities were inadequate for this purpose, however, and in any case they were needed for their primary role of tactical reconnaissance. Helicopters provided some assistance but were specialised aircraft that were only used when no other aircraft was suitable and when they were not required for more urgent tasks. The answer to the problem of maintaining short range communications was provided by the small and hard-worked Pioneer force of No. 267 (later No. 209) Squadron which was introduced into Malaya in 1954 and which performed an invaluable service in ferrying troops, freight, police reinforcements and civil administrators into and out of grass airstrips in remote operational areas, notably those that were constructed adjacent to the deep jungle forts which served as bases for bringing the aboriginal population of Malaya under Government protection.

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Psychological warfare. One of the most useful weapons in the anti-terrorist campaign was psychological warfare, which made a major contribution to the slow erosion and ultimate collapse of the insurgents' morale that presaged their final defeat. Although the effectiveness of this type of warfare depended primarily on the overall military situation on the ground and it was necessarily directed through appeals by the civil government, its efficacy, both in inspiring public and undermining terrorist confidence in the ultimate outcome of the campaign, was largely reliant on the use of air support for the transmission of messages. Medium range transport aircraft dropped nearly 500 million strategic and tactical leaflets during the course of the campaign while two Dakotas and three Austers, after some initial difficulties and the modification and improvement of their equipment, carried out over 4,000 hours of aerial broadcasting.

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266

As in the case of offensive air support the tangible results of this campaign cannot be assessed but the number of terrorists who claimed to have surrendered wholly or partly as a result of hearing or reading one of these messages broadcast from the air fully justified the effort which it entailed.

151

Crop Spraying. After the terrorists withdrew into deep jungle hideouts a food denial campaign was mounted to deny them essential foodstuffs in order to starve them into submission. Part of this campaign was directed against the jungle cultivations on which the terrorists relied heavily for their basic sustenance. Tests proved that crops growing in these jungle clearings could be successfully destroyed by a chemical spray delivered by helicopters. A series of operations mounted in 1953 and 1954 verified this claim but this practice was not extended into a regular commitment as the area where this type of garden clearing was most frequently found coincided with the area inhabited by the aboriginal population of Malaya and it proved difficult to differentiate between their cultivations and those of the terrorists. Moreover, such clearings were not easy to locate and the tactical reconnaissance effort required was not often available owing to the claims of tasks with a higher priority. In any case there was little to be gained from searching for these clearings when the necessary helicopter effort was not available to destroy them and consequently the practice of crop spraying fell into abeyance during the final years of the campaign.

Air Reconnaissance

Visual. Tactical reconnaissance was accepted by the air forces as a regular commitment from the start of the Emergency and was carried out mainly by the Austers of No. 656 A.O.P. Squadron, which devoted 60 per cent of its total effort to this task. For most of the Emergency this squadron was administratively controlled by A.H.Q. (Malaya) but was operationally controlled by the Army formations to which its flights were detached. Because of the state basis of operational planning, combined with the type of anti-terrorist operation and the nature of the enemy's activity, this

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method of control of tactical reconnaissance was acceptable. The

152

total available effort was barely adequate, however, and the aircrew and maintenance staff of No. 656 Squadron were overworked in maintaining an average of nearly 1,500 sorties a month for most of the Emergency. For tactical reconnaissance over jungle areas the helicopter, with its ability to hover, was a superior aircraft to the Auster but was rarely used for this purpose as it was required for more urgent tasks. Nevertheless, tactical reconnaissance proved invaluable in locating terrorist camps and concentrations in featureless jungle and in improving the general intelligence of their movements - the deficiency of which was the greatest hindrance to mounting security force offensives at the start of the campaign.

Photographic. Throughout the campaign photographic reconnaissance was carried out by No. 81 Squadron. Apart from the systematic 'Block Cover' of the country, from which maps at a scale of 1 : 63,360 were prepared which helped to remedy the paucity and inaccuracies of current topographical maps of Malaya, vertical and oblique photographs at a scale of 1 : 10,000 or larger were produced for tactical purposes in specific operational areas. Small mosaics showing target areas were in general use for briefing aircrews while ground force commanders used them as basic operational maps in the field. The photographic reconnaissance effort, and the photographic interpretation by detachments of J.A.P.I.C. (F.E.) and No. 103 A.P.I.S., proved adequate for the provision of up-to-date cover for specific ground and air operations but it should be noted that the value of this type of support during the Malayan campaign was considerably reduced by the nature of the terrain and the use that was made of it by the terrorists in camouflaging their camps and gardens.

End of
Galley
7/3

RESTRICTED

ANNEXES
~~APPENDICES~~

NOTE Certain of the Appendices are incomplete.
This is due to lack of supporting documents giving
the necessary statistical information and is denoted
by blanks in the various columns and by dotted lines
in the graphs.

~~SECRET~~

COMMUNIST TERRORIST ORGANISATION -
STRENGTH BY STATES, 1948 - 1960

APPENDIX I

State	1948 (Jul.)	1949 (Mar.)	1950	1951	1952	1953	1954	1955	1956 (Jan.)	1957 (Jan.)	1957 (Dec.)	1958 (Dec.)	1959 (Sep.)	1960 (Jan.)	1960 (Jul.)	Total Strength of M.C.P. 1947 (Feb.)	
(S. Thailand)									} 295	304	183	485	455	495	488		
Kedah/Perlis	350	520									91	58	53	-	-	-	-
Penang									49	42	40	23	9	4	-	-	535
Kelantan	200	50							147	140	108	8	-	-	-	-	200
Trengganu		120							17	29	22	9	8	8	8	8	250
Perak	500	440							906	778	774	237	155	100	65	-	1,990
Pahang	300	230							139	44	42	34	20	16	3	-	1,920
Selangor	300	580							167	101	59	4	-	-	-	-	2,000
Negeri Sembilan	} 150	210							220	117	55	2	-	-	-	-	795
Malacca										102	59	13	-	-	-	-	-
Johore	500	400							524	452	294	8	4	-	-	-	2,990
(Singapore)	-	-							-	-	-	-	-	-	-	-	965
TOTAL	2,300 ⁺	2,550 ⁺	3,923 [*]	7,292 [*]	5,765 [*]	4,373 [*]	3,402 [*]	2,798	2,566	2,066	1,681	868	704	623	564	-	12,590

* Total figures for 1950 - 1955 inclusive are averages for each year.

+ Estimated totals

M.C.P. = Malayan Communist Party

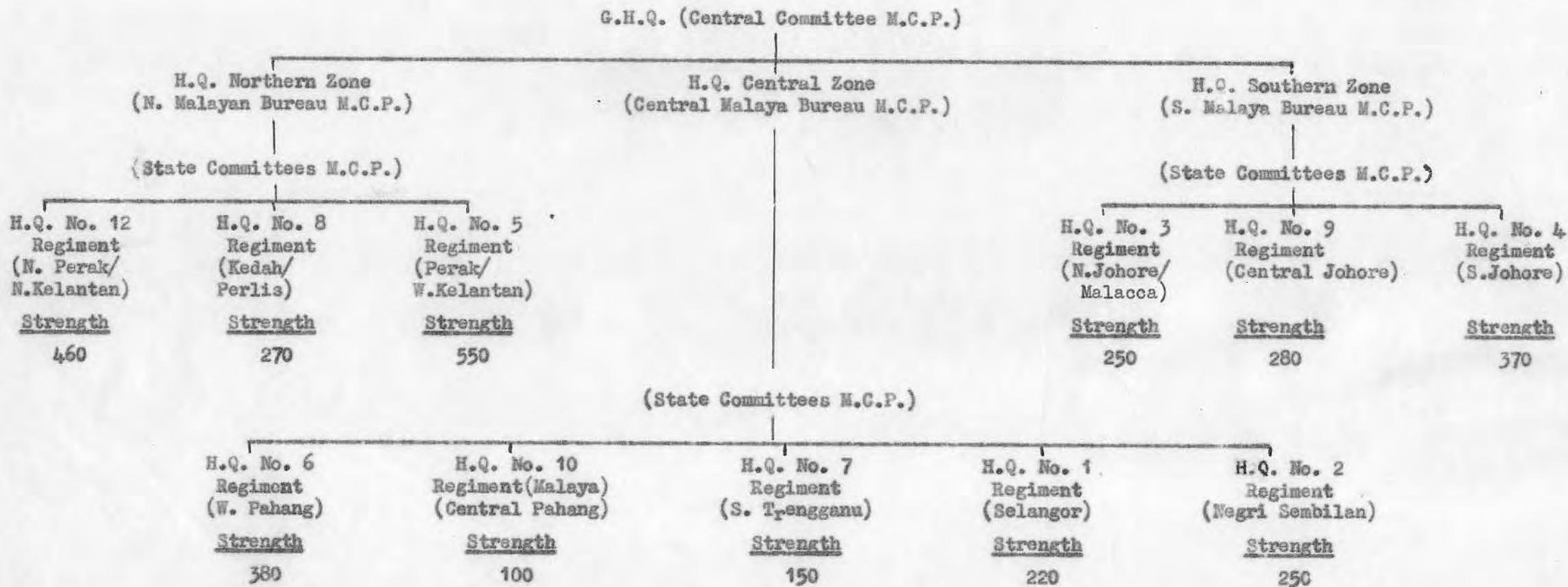
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Annex A

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MALAYAN RACES LIBERATION ARMY - CHAIN OF COMMAND

APPENDIX II



Note: This Order of Battle includes only formations from G.H.Q. level down to Regiment level. The larger Regiments were divided into Military Sub-Districts, Battalions or Companies, while the smaller Regiments were divided into Platoons. The strengths of individual units at the same level varied considerably. Approximate strengths of Regiments shown above were as at ~~30 November 1954.~~ for the period January to August 1951.

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Annex B

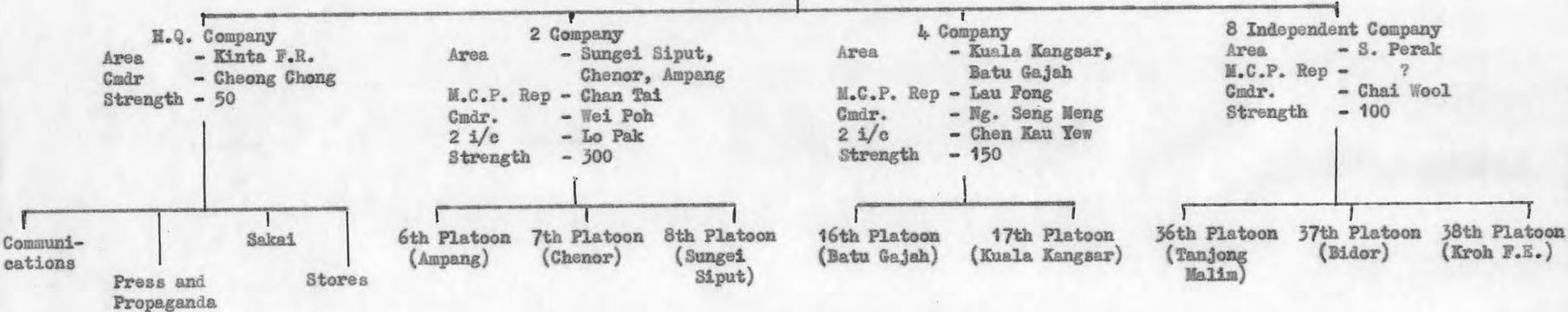
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EXAMPLE OF THE COMPOSITION OF A M.R.L.A.* REGIMENT

APPENDIX III

H.Q. No. 5 Regiment M.R.L.A. (Central and S. Perak)

M.C.P. Rep. - Chong Chor
 Military G.O. - Ah Leo
 2 i/c - Fong Choon Loy
 Military Adviser - Lit Yong



Total approximate strength - 600

* Malayan Races Liberation Army

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Annex C

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Annex D

APPENDIX IV

MAP OF M.R.L.A. DISPOSITIONS

1953

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GROUND FORCES ORDER OF BATTLE, 1948-1957
Strength and Composition of the Army and the Police

APPENDIX V

	June 1948	Jan. 1949	Oct. 1950	Aug. 1951	June 1952	Jan. 1953	June 1954	Jan. 1955	Jan. 1956	Jan. 1957	Aug. 1957
<u>THE ARMY</u>											
Armoured Car Regiments ✓	-	1	2	2	2	2	2	2	2	2	1
Armoured Car Squadrons ✓	-	-	-	-	-	1	1	1	1	1	2
Field Regiments ✓	-	-	-	-	-	-	-	-	1	1	1
Field Batteries ✓	-	-	1	1	1	1	2	2	1	2	2
H.A.A. Batteries ✓	-	-	-	-	-	-	1	1	1	1	1
Field Engineer Regiments ✓	-	-	-	-	-	-	1	2	2	2	2
Infantry Battalions ✓	10	15	19	19	21	23	22	22	23	23	21
Commando Brigade ✓	-	-	1	1	-	-	-	-	-	-	-
Malayan Scouts	-	-	1	1	1	-	-	-	-	-	-
22 S.A.S. Regiment (3 Squadrons) ✓	-	-	-	-	-	1	1	1	1	1	1
N.Z. Squadron S.A.S. Regiment ✓	-	-	-	-	-	-	-	-	1	1	1
Squadron, Parachute Regiment ✓	-	-	-	-	-	-	-	-	1	1	-
<u>THE POLICE</u>	June 1948	Jan. 1949	Jan. 1950	Jan. 1951	Jan. 1952	Jan. 1953	Jan. 1954	Jan. 1955	Jan. 1956	Jan. 1957	Aug. 1957
Regular Police	c.9,000	12,767	16,220	16,814	22,187	36,737	24,427	19,659*	16,840		22,365*
Special Constabulary	-	33,610	29,987	43,475	44,878	33,570	27,208	23,238	23,238		22,409
Home Guard (average strength for year)	-	-	-	200,000	c 250,000	210,000	172,500	152,000	132,000		

* Includes 2,819 and 2,915 Police Field Force

SECRET

EMERGENCY COMMAND STRUCTURE



* Members of State or District Operations Sub-Committees

Note: Before 1 March 1956 Direction went from Director of Ops Committee to Director of Ops Staff and Requests in the Reverse Direction.
 After 1 March 1956 Direction went from Emergency Ops Council to State War Executive Committees and Requests from Director of Ops Staff up to the Emergency Ops Council.

APPENDIX VIIOFFICERS ADMINISTERING THE GOVERNMENT AND ARMED
FORCES IN MALAYA DURING THE EMERGENCY

		<u>Date of Appointment</u>
<u>H.E. The High Commissioner of the Federation of Malaya</u>		
1948	Sir Edward Gent	1 February 1948 - 4 July 1948 (killed)
1948	Sir Henry Gurney	6 October 1948 - 6 October 1951 (killed)
1952	General Sir Gerald Templer	5 February 1952
1954	Sir Donald MacGillivray	31 May 1954
<u>Director of Operations, Malaya</u>		
1950	Lieut General Sir Harold Briggs	1 April 1950
1951	General Sir Rob Lockhart	3 December 1951
1952	General Sir Gerald Templer	5 February 1952
1954	Lieut General Sir Geoffrey Bourne	1 June 1954
1956	Lieut General Sir Roger Bower	19 May 1956
1957	Lieut General Sir James Cassels	17 September 1957
<u>General Officer Commanding, Malaya</u>		
1948	Major General D.A.L. Wade	1 October 1948
1948	Major General C.H. Boucher	- 1948
1950	Major General R.E. Urquhart	27 February 1950
1952	Major General Sir Hugh Stockwell	11 June 1952
1954	Lieut General Sir Geoffrey Bourne	7 April 1954
1956	Lieut General Sir Roger Bower	19 May 1956

The Air Officer Commanding, Air Command Far East
(Far East Air Force after 1 June 1949)

		<u>Date of Appointment</u>
1948	Air Marshal Sir Hugh P. Lloyd	18 November 1947
1949	Air Marshal F.J. Fogarty	26 November 1949
1950	Air Marshal Sir Francis J. Fogarty	26 November 1949
1952	Air Marshal A.C. Sanderson	11 June 1952
1953	Air Marshal Sir A. Clifford Sanderson	11 June 1952
1954	Air Marshal F.J. Fressanges	12 November 1954
1955	Air Marshal Sir Francis J. Fressanges	12 November 1954
1957	Air Marshal The Earl of Bandon	13 July 1957
1960	Air Marshal A.D. Selway	30 June 1960
	Air Marshal Sir Anthony D. Selway	30 June 1960

The Air Officer Commanding, Malaya (No. 224 Group
after 31 August 1957)

1948	Air Vice-Marshal A.C. Sanderson	28 May 1948
1949	Air Vice-Marshal F.J. Mellersh	13 May 1949
1950	Air Vice-Marshal Sir Frank J. Mellersh	13 May 1949
1951	Air Vice-Marshal R.S. Blucke	21 January 1951
1951	Air Commodore J.L.F. Fuller-Good	17 August 1951
1952	Air Vice-Marshal G.H. Mills	14 February 1952
1953	Air Vice-Marshal F.R.W. Scherger	1 January 1953
1955	Air Vice-Marshal W.H. Kyle	14 January 1955
1956	Air Vice-Marshal W.H. Kyle	14 January 1955
1957	Air Vice-Marshal V.E. Hancock	11 June 1957
1959	Air Vice-Marshal R.A. Ramsey Rae	10 June 1959

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EMERGENCY STATISTICS - ANNUAL, 1948 - 1960

APPENDIX VIII

Year	No. of contacts between S.F. & C.T.	No. of C.T. inspired incidents					No. of C.T.s eliminated				No. of S.F. casualties			No. of civilian casualties			
		Total (Major and Minor)	Major	Minor	Thousands of rubber trees slashed	Attacks on Railways	Total	Killed	Captured	Surrendered	Total	Killed	Wounded	Total	Killed	Wounded	Missing
*1948		1,274					693	374	263	56	360	149	211	554	315	149	90
1949		1,442					1,207	619	337	251	476	229	247	694	334	200	160
1950	983	4,739	1,744	2,995			942	648	147	147	889	393	496	1,161	646	409	106
1951	1,911	6,082	2,333	3,749	1,131		1,399	1,077	121	201	1,195	504	691	1,024	533	356	135
1952	1,868	3,727	1,389	2,338	450	29	1,527	1,148	123	256	664	263	401	632	343	158	131
1953	1,407	1,170	258	912	3.74	16	1,392	947	73	372	209	92	117	143	85	15	43
1954	993	1,077	293	784	1.78	18	971	709	51	211	241	87	154	185	97	31	57
1955	565	781	206	575	119.82	13	709	406	54	249	182	79	103	143	62	24	57
1956	486	435	102	333	1.48	12	473	287	52	134	126	47	79	92	30	36	26
1957																	
1958																	
1959																	
+1960																	

* 6 months

+ 7 months

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Annex H

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EMERGENCY STATISTICS - MONTHLY AVERAGES, 1948-1960

APPENDIX IX

Year	No. of contacts between S.F. & C.T.	No. of C.T. inspired incidents					No. of C.T.s eliminated				No. of S.F. casualties			No. of civilian casualties			
		Total (Major and Minor)	Major	Minor	Thousands of rubber trees slashed	Attacks on Railways	Total	Killed	Captured	Surrendered	Total	Killed	Wounded	Total	Killed	Wounded	Missing
*1948		106					115	62	44	9	60	25	35	92	52	25	15
1949		120					100	51	28	21	40	19	21	58	28	17	13
1950	82	395	145	250			78	54	12	12	74	33	41	97	54	34	9
1951	159	506	194	312	94.29		117	90	10	17	100	42	58	86	44	30	12
1952	156	311	116	195	37.62	2.5	127	96	10	21	55	22	33	53	29	13	11
1953	117	97	21	76	.31	1.3	116	79	6	31	18	8	10	12	7	1	4
1954	83	89	24	65	.15	1.5	81	59	4	18	20	7	13	16	8	3	5
1955	47	65	17	48	9.99	1.1	60	34	5	21	16	7	9	12	5	2	5
1956	41	36	8	28	.12	1.0	39	24	4	11	10	4	6	8	3	3	2
1957																	
1958																	
1959																	
+1960																	

* 6 months

+ 7 months

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Annex J

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APPENDIX IX

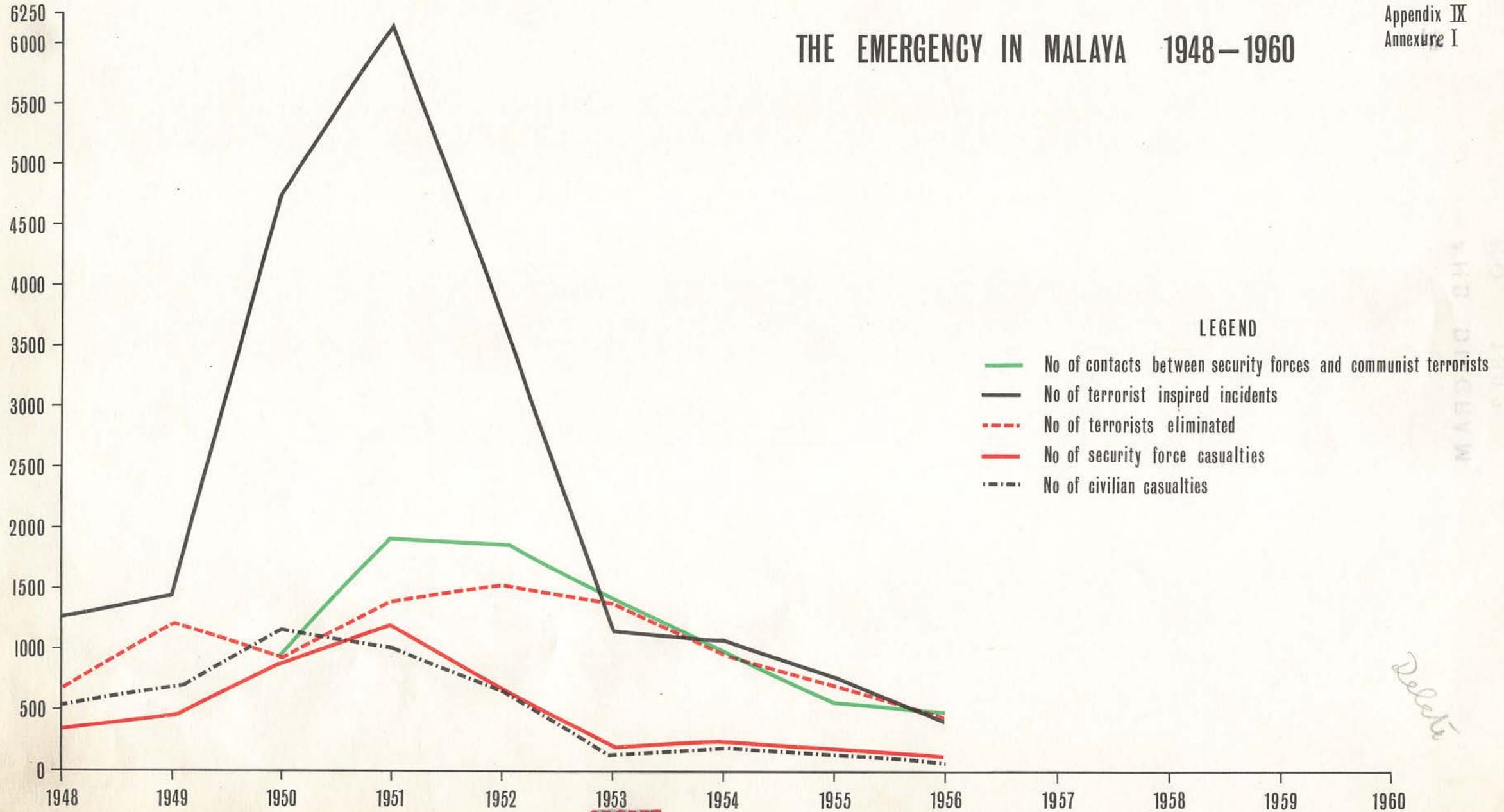
ANNEXURE I

GRAPH OF EMERGENCY STATISTICS

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THE EMERGENCY IN MALAYA 1948-1960

Appendix IX
Annexure I



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Annex K

APPENDIX X

MAP OF WHITE AREAS IN MALAYA 1955 - 1959

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"WHITE" AREAS IN MALAYA 1955 — 1959



SECRET

AIR FORCES ORDER OF BATTLE
SQUADRONS AVAILABLE
1948 - 1960

APPENDIX XI

Type of Support	Type of Aircraft	Jun. 1948	Sept. 1949	Jul. 1950	Aug. 1951	Dec. 1952	Dec. 1953	Dec. 1954	Dec. 1955	Dec. 1956	Dec. 1957	Dec. 1958	Dec. 1959	Jul. 1960
Offensive	Single Engined	1	2	2	1 $\frac{1}{2}$	1	1	1	3	3	2	1	2	3
	Twin Engined	-	1	2	2 $\frac{1}{2}$	3	2	2	1	-	1	2	3	3
	Four Engined	-	-	2	1	1	2	1 $\frac{1}{2}$	-	1	1	-	-	-
	Flying Boat (at call)	1	1	2	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2	1	1	1	-	-	-
Transport	Single Engined	-	-	-	-	-	-	1 Flt	1 Flt	1 Flt	1 Flt	1 Flt	1 Flt	1 Flt
	Twin Engined	1	1	1	1	1	1	Detachment from P.E. Transport Wing equivalent to 1 Flt						
	Light Helicopter	-	-	2 h/c	2 h/c	5 h/c	1	1	1	1	1	1	-	-
	Medium Helicopter	-	-	-	-	-	1	2	2	1	1	1	1 Flt	1 Flt
Communications (including voice aircraft)	Various	1	1	1	1	1	1	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$
Reconnaissance	Various (P.R.)	1	1	1	1	1	1	1	1	1	1	1	1	1
	Auster (V.R.)	1	1	1	1	1	1	1	1	1	1	1	1	1
										(plus M.A.A.F. at call.....)				

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Annex L

~~SECRET~~

SQUADRONS AVAILABLE FOR OPERATION 'FIREDOG' 1948-1960

(operational types only)

Squadron	Role	Aircraft	Maximum Unit Establishment	Location (Detachment)	Period	
					From	To
<u>OFFENSIVE AIR SUPPORT</u>						
1 R.A.A.F.	M.B.	Lincoln B.30A	8	Tengah ✓	16.7.1950	31.6.1958
2 (B) R.A.A.F.	L.B.	Canberra B.1	9	Butterworth	1.7.1958	after 1.7.1960
3 (F) R.A.A.F.	DF/GA	Sabre Mk.32	16	Butterworth	11.11.1958	after 1.7.1960
14 R.N.Z.A.F.	DF/GA	Venom F.B.1	16	Tengah	10.4.1955	1.9.1958
28 R.A.F.	DF/GA-FR	Spitfire XVIII	9	Tengah Sembawang (Kuala Lumpur)	prior to 1.1.48 26.1.1948	26.1.1948 11.5.1949
33 R.A.F. (amalgamated with 45 R.A.F. on 31.3.1955. Number plate to 2nd T.A.F. on 15.10.1955)	DF/GA-FR	Tempest F.2	16	Changi (Kuala Lumpur)	8.8.1949	17.3.1950
		Hornet F.3/4	16	Tengah (Butterworth)	17.3.1950	1.8.1952
				Butterworth	1.8.1952	31.3.1955
45 R.A.F. (amalgamated with 33 R.A.F. on 31.3.1955)	LB-DF/GA	Beaufighter X	8	Kuala Lumpur	1.5.1949	6.12.1949
		Brigand B.1	10	Tengah (Kuala Lumpur)	6.12.1949	31.1.1952
		Hornet F.3	16	"	31.1.1952	31.3.1955
		Venom F.B.1	16	Butterworth	15.10.1955	15.11.1957
		Canberra B.2	8	Tengah	15.11.1957	after 1.7.1960

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APPENDIX XII

Squadron	Role	Aircraft	Maximum Unit Establishment	Location (Detachments)	Period	
					From	To
45/33 R.A.F. (renumbered 45 R.A.F. on 15.10.1955)	DF/GA	Hornet F.3/4	20	Butterworth	31.3.1955	1.6.1955
		Vampire F.B.9	16	"	1.6.1955	15.9.1955
		Venom F.B.1	16	"	15.9.1955	15.10.1955
60 R.A.F.	DF/GA	Spitfire XVIII	17	Tengah	prior to 1.1.1948	26.1.1948
				Sembawang (Kuala Lumpur)	26.1.1948	25.8.1949
				Tengah (Kuala Lumpur)	25.8.1949	1.12.1950) 15.1.1951)
		Vampire F.B.5/9	16	"	1.12.1950) 15.1.1951)	1.5.1955
	N./A.W.F.	Venom F.B.1/4	16	"	1.5.1955	1.10.1959
		Meteor N.F.14	12	Tengah	1.10.1959	after 1.7.1960
75 R.N.Z.A.F.	L.B.	Canberra B.2	8	Tengah	1.7.1958	after 1.7.1960
77 (F) R.A.A.F.	DF/GA	Sabre Mk.32	16	Butterworth	11.2.1959	after 1.7.1960
84 R.A.F. (reduced to cadre basis on 1.2.1953) (disbanded on 20.2.1953) Number plate to M.E.A.F.) Number plate to M.E.A.F. on 20.2.1953	L.B.	Beaufighter X	8	Changi	prior to 1.1.1948	22.3.1948
		Brigand B.1	10	Tengah (Kuala Lumpur)	22.3.1948	11.10.1948
				Tengah (Kuala Lumpur)	9.4.1950	20.2.1953 (on detachment from M.E.A.F.)
88 R.A.F. (disbanded on 1.10.1954)	LR/GR-MR	Sunderland G.R.5	5	Seletar (normally on attachment at Iwakuni, Japan)	1.10.1950 ?	5.4.1954

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APPENDIX XII

- 3 -

Squadron	Role	Aircraft	Maximum Unit Establishment	Location (Detachments)	Period	
					From	To
205 R.A.F. (amalgamated with 209 R.A.F. on 31.12.1954)	LR/GR-MR	Sunderland G.R.5	5	Seletar (Iwakuni, Japan)	15.9.1949	13.12.1954
		Sunderland G.R.5	4	Seletar	1.11.1958	31.5.1959
		Shackleton M.R.1	8	Changi	1.11.1958	after 1.7.1960
209 R.A.F. (amalgamated with 205 R.A.F. on 31.12.1954. Number plate to SR/TPT role F.E.A.F. on 1.11.1958)	LR/GR-MR	Sunderland G.R.5	5	Seletar (Iwakuni, Japan)	prior to 1.1.1948	31.12.1954
205/209 R.A.F. (renumbered 205 R.A.F. on 1.11.1958)	LR/GR-MR	Sunderland G.R.5	8	Seletar	31.12.1954	1.11.1958
		Shackleton M.R.1	2	Changi	26.2.1958	1.11.1958
<u>MALAYAN AUXILIARY AIR FORCE (M.A.A.F.)</u> Malaya/Penang Sqn.	Auxiliary Fighter (changed to L.L./Recce on 3.4.1957)	DH.82A (Tiger Moth)	4	Butterworth	1.3.1950	1/3.1957
	Harvard IIB	4	1.2.1951		1/3.1957	
	Chipmunk	4	1/3.1957		3.4.1957	
Singapore Sqn.		DH.82A (Tiger Moth)	4	Tengah	1.3.1950	27.2.1957
		Harvard II B	6		1.2.1951	27.2.1957
		Spitfire F.24	3		1.7.1951	15.4.1953
		Chipmunk	4		27.2.1957	3.4.1957

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APPENDIX XII

- 4 -

Squadron	Role	Aircraft	Maximum Unit Establishment	Location (Detachments)	Period	
					From	To
Kuala Lumpur Sqn.		DH.82A (Tiger Moth)	4		1.12.1951	1/3.1957
		Harvard II B	4		1.2.1951	1/3.1957
		Chipmunk	4		1/3.1957	3.4.1957
<u>AIR TRANSPORT SUPPORT</u> 38 R.A.A.F.	MR/TPT	Dakota C.47B	4	Changi (Kuala Lumpur)	1.6.1950	30.11.1952
41 R.N.Z.A.F.	MR/TPT	Dakota C.3	5	Changi (Kuala Lumpur)	1.9.1949	30.11.1951
		Bristol Freighter	4	"	1.7.1955	after 1.7.1960
48 R.A.F.	MR/TPT	Dakota C.4	8	Changi (Kuala Lumpur)	prior to 1.1.48	1.4.1951
		Valetta C.1	8	"	1.4.1951	1.5.1957
		Hastings C.1/2	8	"	1.5.1957	after 1.7.1960
		Beverley C.1	4	"	1.6.1959	after 1.7.1960
52 R.A.F.	MR/TPT	Dakota C.4.	8	Changi (Kuala Lumpur)	prior to 1.1.48	3.9.1951
		Valetta C.1	10	"	3.9.1951	1.10.1959
				Kuala Lumpur	1.10.1959	after 1.7.1960
110 R.A.F. (disbanded on 31.12.57. Number plate to SR/TPT role, F.B.A.F. on 3.6.1959)	MR/TPT	Dakota C.4	8	Changi (Kuala Lumpur)	prior to 1.1.48	23.11.1951
		Valetta C.1	8	"	24.10.1951	31.12.1957
	SR/TPT	Whirlwind H.C. HAR4	5	Kuala Lumpur	3.6.1959	1.9.1959
		Sycamore H.C. HRL4	13	Butterworth (Whirlwinds at Kuala Lumpur, Sycamores non-operational at Seletar)	1.9.1959	after 1.7.1960

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RESTRICTED

APPENDIX XII

- 5 -

Squadron	Role	Aircraft	Maximum Unit Establishment	Location (Detachments)	Period	
					From	To
155 R.A.F. (disbanded on 3.6.1959 Aircraft to 194 R.A.F.)	SR/TPT	Whirlwind HC.HAR 2/4	17	Kuala Lumpur (Kluang, Seletar)	1.9.1955	3.6.1959
				Changi (Kuala Lumpur, Butterworth)	6.11.1952	2.2.53
194 R.A.F. (renumbered 110 R.A.F. on 3.6.1959).	SR/TPT	Dragonfly HC.2/4	9	11/11/1952 Sembawang (Kuala Lumpur)	6.11.1952 2.2.1953	2.2.1953 1.5.1953
				Kuala Lumpur (Ipoh, Kluang, Benta)	1.5.1953	1.10.1956
		Sycamore HC.HR 14	14	Kuala Lumpur (Ipoh, Kluang, Benta)	1.4.1954	3.6.1959
209 R.A.F.	SR/TPT	S.E. Pioneer C.C.1	9	Kuala Lumpur	1.11.1958	1.10.1959
				Seletar (Kuala Lumpur)	1.10.1959	after 1.7.1960
		T.E. Pioneer C.C.1	5	Kuala Lumpur	18.3.1959	1.10.1959
				Seletar (Kuala Lumpur)	1.10.1959	after 1.7.1960
		Pembroke C.1	5	Kuala Lumpur	1.11.1958	1.10.1959
				Seletar	1.10.1959	15.12.1959
Dakota C.4	3	Kuala Lumpur (Bayan Lepas)	1.11.1958	1.10.1959		
Auster 6/7	2	Kuala Lumpur	1.11.1958	18.3.1959		

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Squadron	Role	Aircraft	Maximum Unit Establishment	Location (Detachments)	Period	
					From	To
267 R.A.F. (renumbered 209 R.A.F. on 1.11.1958)	SR/TPT	S.E. Pioneer C.C.1 (Support Flight)	8	Kuala Lumpur	15.2.1954	1.11.1958
		Pembroke C.1	5	Kuala Lumpur	15.2.1954	1.11.1958
		Auster 6/7	2		15.2.1954	1.11.1954
		Harvard IIB (Communications Flight)	2		1.11.1954	3.12.1956
		Dakota C.4	3	Kuala Lumpur	20.3.1954	1.11.1958
		Auster 6/7	2		20.3.1954	1.11.1958
848 R.N. AF (withdrawn from operations on 10.12.1956)	SR/TPT	S.55 HC.	10	Sembawang (Kuala Lumpur)	23.1.1953	1.5.1953
				Kuala Lumpur	1.5.1953	26.3.1956
				Sembawang (Kluang)	26.3.1956	12.11.1956
1311 Transport Flight, 303 Helicopter Wing (became Support Flight 267 R.A.F. on 15.2.1954)	SR/TPT	S.E.Pioneer C.C.1	4	Kuala Lumpur	1.9.1953	15.2.1954
H.Q. Far East Transport Wing (1 Flight - became Voice Flight 267 RAF on 15.2.1954)	SR/TPT	Valetta C.1	2	Changi (Kuala Lumpur)	1.7.1953	20.3.1954

RESTRICTED

APPENDIX XII

- 7 -

Squadron	Role	Aircraft	Maximum Unit Establishment	Location (Detachments)	Period	
					From	To
Far East Communications Squadron.	Comm.	Dakota C.4	6	Changi (Kuala Lumpur, Butterworth).	prior to 1.1.1948	16.11.1951
		Valetta C.1/2	4		1.7.1951	after 1.7.1960
		York C.1	1		prior to 1.1.1948	1.12.1956
		Hastings C.1/4	2		1.1.1953	after 1.7.1960
		Devon C.1	2		1.12.1948	15.2.1954
		Pembroke C.1	3		15.4.1954	1.5.1960
		Anson 19	5		Prior to 1.1.1948	16.12.1950
		Harvard IIB	12		Prior to 1.1.1948	3.2.1956
		Auster 6/7	2		1.7.1948	1.12.1956
		Vampire F.B.9	2		1.11.1954	30.9.1958
		Venom F.B.1	1		1. 7.1956	30.9.1958
		Meteor T.7	3		3. 2.1956	16.11.1959
81 R.A.F.	PR.	Spitfire F.18-PR.19	5	Changi	prior to 1.1.1948	1.2.1948
				Tengah (Kuala Lumpur)	1.2.1948	16.3.1950
		Mosquito PR.34/34a	8	Seletar (Kuala Lumpur)	16.3.1950	15.10.1953
				Changi	prior to 1.1.1948	1.2.1948
		Tengah (Kuala Lumpur)	1.2.1948	16.3.1950		
		Seletar (Kuala Lumpur)	16.3.1950	31.12.1955		

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APPENDIX XII

- 8 -

Squadron	Role	Aircraft	Maximum Unit Establishment	Location (Detachments)	Period	
					From	To
81 R.A.F. (Cont.d)		Harvard II B	1	Changi	prior to 1.1.1948	1.2.1948
				Tengah	1.2.1948	1.6.1948
		Anson 19	1	Tengah	31.10.1949	16.3.1950
				Seletar	16.3.1950	1.6.1951
		Meteor PR.10	6	Seletar (Kuala Lumpur)	15.10.1953	1.4.1958
				Tengah	1.4.1958	after 1.7.1960
		Pembroke C(PR)1	4	Seletar	1.12.1955	1.4.1958
				Tengah	1.4.1958	13.1.1960
				Tengah	13.1.1960	after 1.7.60
656 R.A.F. (became 656 Army Air Corps on 1.9.1957)	A.O.P (changed to AOP/LL on 1.5.1952)	Auster 5/6/7/9	31	Sembawang (Kuala Lumpur, Taiping, Seremban, Kluang).	15.7.1948	17.8.1949
				Changi (Kuala Lumpur, Taiping, Seremban, Temerloh, Benta, Sembawang)	17.8.1949	1.8.1951
				Kuala Lumpur (Taiping, Seremban, Temerloh, Benta, Sembawang, Ipoh, Port Dickson).	1.8.1951	after 1.7.1960
M.A.A.F. Penang Sqn. (disbanded on 31.12.1958)	LL/ Recce	Chipmunk	4	Butterworth	3.4.1957	31.12.1958

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APPENDIX XII

- 9 -

Squadron	Role	Aircraft	Maximum Unit Establishment	Location (Detachments)	Period	
					From	To
Kuala Lumpur Sqn. (disbanded on 31.12.1958)		Chipmunk	4	Kuala Lumpur	3.4.1957	31.12.1958
Singapore Sqn.		Chipmunk	4	Tengah Seletar	3.4.1957 1.4.1958	1.4.1958 after 1.7.1960
Casualty Evacuation Flight, F.E.A.F. (absorbed by 194 RAF on 2.2.1953)	SR/TPT	Dragonfly HC.2/4	9	Changi (Kuala Lumpur, Butterworth)	1.5.1950	2.2.1953

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Annex M
App 1

APPENDIX XII
ANNEXURE 1

TEMPORARY DETACHMENTS OF U.K. BASED UNITS
AVAILABLE FOR 'FIREDOG' OPERATIONS

Operation	Squadron No.	Aircraft		Location	Period	
					From	To
'Musgrave'	57	Lincoln 2B (4A)	8	Tengah	20. 3.50	29. 3.51
	100	"	8	"	"	"
	61	"	8	"	"	"
'Bold'	83	Lincoln 2B (4A)	8	Tengah	1. 9.53	1. 3.55
	7	"	8	"	"	"
	148	"	8	"	"	"
'Mileage'	101	Canberra B.6	6/8	Butterworth	1. 3.55	31. 8.56
	617	"	8	"	"	"
	12	"	8	"	"	"
	9	"	8	"	"	"
'Profiteer' *	214	Valiant B.1	2/4	Changi	31.10.57	27. 3.58
	90	and				
	148	Vulcan B.1		Butterworth	6. 6.58	26. 6.60
	& others					
'Planters Punch'	542	Canberra P.R.7	2	Changi	13. 5.55	31.10.59
	540	"	2	"		
	82	"	2/4	"		
	58	"	2/4	"		

* Intermittent detachments of 'V' bombers for 2 weeks every 3 months

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MONTHLY AIRCRAFT SERVICEABILITY - 1949 to 1952 (IN PERCENTAGES)

APPENDIX XIII

Month	Medium Bombers	Light Bombers	Fighters	Medium Range Transports	Austers	Flying Boats	Helicopters
<u>1949</u>							
April	-	42.5	44.7	66.9	58.1	51.3	-
May	-	41.5	50.5	75.7	68.5	51.3	-
June	-	28.4	45.4	69.1	63.7	51.3	-
July	-	38.9	52.2	67.3	56.2	40.6	-
August	-	38.5	44.8	73.2	73.5	36.6	-
September	-	38.2	56.5	68.3	60.2	56.5	-
October	-	33.4	49.1	74.3	76.6	42.3	-
November	-	29.2	50.0	77.3	61.4	50.1	-
December	-	34.8	45.6	73.2	67.9	35.5	-
<u>1950</u>							
January	-	34.9	39.5	68.9	62.3	44.2	-
February	-	46.3	50.0	72.1	62.3	41.9	-
March	61.2	46.9	51.9	72.3	63.8	40.8	-
April	67.0	66.8	46.6	73.1	70.7	44.4	-
May	77.9	58.0	55.2	74.5	66.7	53.1	-
June	83.6	63.9	60.0	65.7	55.0	55.5	-
July	94.3	56.6	55.8	68.5	66.3	67.8	-
August	85.8	59.7	59.1	71.6	67.8	62.0	-
September	85.2	56.8	55.7	71.5	56.4	57.9	-
October	79.6	56.7	54.4	66.8	64.8	60.0	-
November	76.0	54.9	57.5	59.6	64.7	60.1	-
December	81.5	54.2	57.9	71.6	77.7	62.3	-

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Annex 2

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Month	Medium Bombers	Light Bombers	Fighters		Medium Range Transports	Austers	Flying Boats	Helicopters	
<u>1951</u>									
January	78.0	63.4	63.1		64.8	69.9	67.0	37.0	
February	71.2	56.8	57.1		69.1	62.5	57.3	38.8	
March	62.0	51.0	55.7		71.2	63.3	64.5	47.3	
April	68.5	53.5	54.9		81.5	64.0	63.0	64.0	
May	54.7	60.5	48.9		79.4	50.4	64.0	54.0	
June	71.0	67.1	53.9		79.4	60.9	63.1	37.3	
July	66.1	26.9	53.7		75.0	57.9	60.1	57.6	
August	70.1	48.5	53.1		74.2	63.2	63.6	64.1	
September	72.5	49.8	<u>Hornet</u> 57.8	<u>Vampire</u> 46.8	<u>Dakota</u> 68.4	<u>Valetta</u> 51.2	61.7	62.9	52.0
October	65.4	53.4	58.9	70.6	73.5	51.7	71.4	68.7	42.8
November	70.5	56.1	67.3	72.3	88.2	49.0	65.7	63.5	23.0
December	65.3	57.5	57.3	61.9	82.5	54.8	67.4	68.0	40.0
<u>1952</u>									
January	71.7	65.5	59.1	54.5	83.2	58.3	67.0	74.0	65.0
February	81.2	62.1	51.1	54.3	93.5	52.1	61.9	62.7	77.3
March	80.0	60.0	50.0	43.3	-	53.7	51.6	56.5	63.3
April	67.0	59.0	58.3	52.9	-	61.3	55.3	59.9	46.7
May	48.0	64.4	47.6	54.4	-	58.5	70.6	59.3	59.5
June	66.2	50.0	60.0	64.4	-	55.1	68.6	60.9	58.0
July	67.8	48.0	53.1	73.1	-	55.5	74.8	63.5	67.5
August	78.6	51.0	46.3	59.4	-	54.6	75.8	54.7	51.3
September	76.2	51.0	46.3	59.4	-	54.5	75.8	54.7	51.3
October	68.8	35.0	45.8	61.3	-	54.6	75.2	66.2	65.0
November	72.0	43.0	43.0	65.8	-	54.8	80.1	55.9	68.0
December	73.4	34.2	44.4	65.0	-	61.4	78.4	54.6	52.0

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RESTRICTEDAPPENDIX XIVAIRCRAFT ACCIDENTS IN MALAYA 1948 - 1951

Date	Aircraft	Squadron No.	Crash Location	No. of Aircrew Killed
19. 8.48	Dakota KJ.962	110	Near Batu Melintang	5
8.10.48	Spitfire TP.225	60	Near Raub	1
12.11.48	Spitfire TP.231	28	Near Serendah	1
12.11.48	Dakota KM.633	110	Near Rawang	5
11. 2.49	Beaufighter RD.858	45	Near Butterworth	2
27. 7.49	Spitfire TP.223	60		1
7. 9.49	Dakota KN.536	52	Near Ipoh	3
27.10.49	Auster TJ.674	656	Near Temerloh	2
26.11.49	Beaufighter RD.866	45	Durian Tapis, near Seremban	2
17.12.49	Spitfire TP.195	60	Sungei Besi	1
22. 1.50	Spitfire TP.219	60	Kampung Solok near Malacca	1
26. 3.50	Sunderland SZ.573	209	Seletar (exploded during bombing-up)	2
6. 7.50	Brigand RH.850	45	(Kelantan)	3
24. 7.50	Tempest FR.786	33	Klian Intan, near Kroh	1
31. 7.50	Brigand RH.815	84	Cameron Highlands	3

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APPENDIX XIV

- 2 -

Date	Aircraft	Squadron No.	Crash Location	No. of Aircrew Killed
25. 8.50	Dakota KN.630	52	Near Kampong Jendera, Kelantan	12
16.11.50	Tempest PR.895	33	Butterworth	-
11. 1.51	Brigand VS.838	45	Cameron Highlands	3
15. 2.51	Brigand VS.859	45	(Negri Sembilan)	2
1. 6.51	Brigand VS.869	84	Tengah	3
15. 6.51	Brigand VS.857	45	Near Tengah	1
19. 6.51	Brigand RH.881	84		1
10. 8.51	Hornet WB.870	33	Near Bedok	1

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APP 1 to Annex Q

~~APPENDIX XVII~~

MAP OF AIRFIELDS IN MALAYA

AIRFIELDS



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OPERATION 'FIREDOG', AIR EFFORT - ANNUAL, 1948-1960

APPENDIX XVIII

	Jul. 48 to Mar. 49	Apr. 49 to Dec. 50	Jan. 51 to Aug. 51	Sep. 51 to Feb. 52	Mar. 52 to Dec. 52	1953	1954	1955	1956	1957	1958	1959	Jan. to Jul. 60
<u>Offensive Air Support</u>													
No. of Strikes	95	1,017	745	394	551	298	426	300	139	49	47	2	-
No. of sorties	403	6,011	3,278	1,871	3,132	2,303	2,055	1,831	790	373	926	31	-
Weight of bombs (short tons)	78	6,900	4,956	2,727	3,404	3,384	4,491	4,042	1,891	871	1,756	-	-
No. of R/P	1,256	27,169	13,850	8,749	8,008	5,925	4,508	3,096	873	380	345		-
Thousands of rounds of .303, .5, 20 mm.	207	2,371	1,403	848	1,806	1,195	968	668	186	46	111		-
<u>Air Transport Support</u>													
Total No. of sorties	5,784	13,735	6,487	5,205	7,953								
Total No. of troops and passengers	9,639	18,324	10,273	8,660	13,888	19,368	18,228	37,740	37,476	30,648	32,698	9,087	
Total freight (short tons)	423	3,518	1,716	773	1,535								
Supply drop sorties	99	1,581	741	372	791	1,346	2,080	2,065	1,553	1,361	1,265		
Supplies dropped (short tons)	118	2,798	1,423	567	1,246	2,231	3,396	3,888	2,995	2,398	2,671	1,426	696

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Annex R

	Jul. 48 to Mar. 49	Apr. 49 to Dec. 50	Jan. 51 to Aug. 51	Sep. 51 to Feb. 52	Mar. 52 to Dec. 52	1953	1954	1955	1956	1957	1958	Jun. 59 to Jul. 60	Jan. to Jul. 60
<u>Pioneers</u> No. of sorties	-	-	-	-	-	-		4,691	7,527	6,574	3,201	Jan. 59 to Jul. 60	
No. of troops and passengers	-	-	-	-	-	-	1,486	5,393	7,936	6,805	3,607	4,555	
No. of casualties	-	-	-	-	-	-		113		105	43	101	
Freight (short tons)	-	-	-	-	-	-	84	359	1,004	923	509	266	
<u>Helicopters</u> No. of sorties	-	-						21,700	26,324	20,664	23,280	Jan. 59 to Jul. 60	
No. of troops and passengers	-	-				10,098 (May to Dec. only)	11,892	32,294	29,668	22,627	29,453	7,123	
No. of casualties	-	26	40	40	119	518	743	793	696	633	755	309	
Freight (short tons)	-	-				82 (May to Dec. only)	119	351	218	207	314	84	
<u>Psychological warfare</u> No. of leaflets dropping sorties	99	229	261	237	288	184	240	365	333	308	293		
Thousands of leaflets		12,520	11,405	1,633	11,449	61,848	70,799	141,181	95,846	87,988	86,100	40,412	9,898
No. of loudhailing sorties	-	-	-	-	-	327	666	922	776	821	685		

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- 3 -

APPENDIX XVIII

	Jul. 48 to Mar. 49	April 49 to Dec. 50	Jan. 51 to Aug. 51	Sep. 51 to Feb. 52	Mar. 52 to Dec. 52	1953	1954	1955	1956	1957	1958	Jun. 59 to Jul. 60	Jan. to Jul. 60
<u>Psychological Warfare</u> No. of hours of aerial broadcasting	-	-	-	-	-		643	869	763	732	505	197	61
<u>Reconnaissance</u> Total No. of sorties	1,339	3,606	2,199	2,490	5,494			9,116	7,261	6,471	4,639		
Photographic reconnaissance sorties	197	643	710	595	1,102	1,335	945	833	749	710	721		
<u>Austers</u> Total No. of sorties							22,794	22,909	17,156	15,346	15,307		
Visual reconnaissance sorties							9,666	8,283	6,211	5,770	3,918		
Supply drop sorties							762	944	711	697	1,043		
Leaflet drop sorties							747	391	444	615	451		
A.O.P. sorties									118	168	141		
Target marking sorties							88	264	136	130	209		
Communications and miscellaneous sorties							11,531	13,027	9,536	7,966	9,545		

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OPERATION 'FIREDOG' AIR EFFORT - MONTHLY AVERAGES 1948 - 1960

	Jul.1948 to Mar.1949	Apr.1949 to Dec.1950	Jan.1951 to Aug.1951	Sep.1951 to Feb.1952	Mar.1952 to Dec.1952	1953	1954	1955	1956	1957	1958	Jan. 59 to Jul.60	Jan. to Jul. 1960
<u>Offensive Air Support</u> No. of strikes.	10	48	92	65	55	25	35	25	12	4	4	-	-
No. of sorties	44	286	409	311	313	192	171	153	66	31	88	3	-
Wt. of bombs (short tons)	8	328	619	454	340	282	374	329	158	73	146	-	-
Nos. of R/P	139	1,293	1,731	1,458	801	494	375	258	73	32	29	-	-
1000's of rounds of .303, .5, 20 mm.	23	112	175	141	181	100	81	56	15	4	9	-	-
<u>Air Transport Support</u> Total No. of Sorties.	642	654	810	867	795								
Total No. of troops and passengers.	1,071	872	1,284	1,443	1,389	1,614	1,519	3,145	3,123	2,554	2,725	757	
Total freight (Short tons)	47	167	214	128	153								
Supply drop Sorties.	11	75	92	62	79	112	173	172	129	113	105		
Supplies dropped (Short tons)	13	133	177	94	125	186	283	324	250	200	221	119	100
<u>Pioneers</u> No. of Sorties.	-	-	-	-	-	-	-	391	627	548	266	Jan. 59 to Jul. 60	-

RESTRICTED

Annex S

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APPENDIX XIX

- 2 -

	Jul.1948 to Mar.1949	Apr.1949 to Dec.1950	Jan.1951 to Aug.1951	Sep.1951 to Feb.1952	Mar.1952 to Dec.1952	1953	1954	1955	1956	1957	1958	Jun. 59 to Jul. 60	Jan. to Jul.1960
No.of troops and passengers.	-	-	-	-	-	-	124	449	661	567	300	325	
No. of casualties	-	-	-	-	-	-		9		9	4	7	
Freight (Short tons)	-	-	-	-	-	-	7	30	84	77	42	19	
<u>Helicopters</u> No.of sorties.	-	-						1,808	2,194	1,722	1,990	Jun.1959 to Jul.1960	
No.of troops and passengers.	-	-				1,261 (May to Dec.only)	991	2,791	2,472	1,887	2,454	594	
No.of casualties	-	2	3	3	10	43	62	66	58	53	63	24	
Freight (Short Tons).	-	-				10(May to Dec.only)	10	29	18	17	26	7	
<u>Psychological Warfare</u> No.of leaflet dropping sorties	11	10	32	39	29	15	20	30	28	26	24		
1000's of leaflets		596	1,425	272	1,145	5,157	5,900	11,765	7,987	7,332	7,175	3,368	1,414
No.of loud hailing Sorties.	-	-	-	-	-	27	55	77	65	68	57		
No.of hours of aerial broad- casting.	-	-	-	-	-		54	72	64	61	42	16	5

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	Jul.1948 to Mar.1949	Apr.1949 to Dec.1950	Jan.1951 to Aug.1951	Sep.1951 to Feb.1952	Mar.1952 to Dec.1952	1953	1954	1955	1956	1957	1958	1959	Jan.to Jul.1960
<u>Reconnaissance</u>													
Total No. of Sorties.	148	171	274	415	549			770	605	539	387		
Photographic Recon- naissance Sorties.	16	30	89	99	110	111	79	69	62	59	60		
<u>Austers</u>													
Total No. of Sorties.							1,899	1,909	1,430	1,279	1,292		
Visual reconnaissance sorties.							805	690	518	481	326		
Supply drop sorties							63	79	69	58	87		
Leaflet drop sorties.							62	33	37	51	38		
A.O.P. Sorties.									10	14	12		
Target marking sorties							7	22	11	11	17		
Communications and miscellaneous sorties							961	1,086	795	664	796		

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OPERATION 'FIREDOG', OFFENSIVE AIR SUPPORT, 1948-1960

APPENDIX XX

	No. of Strikes	No. of Sorties	1000 lb.	500 lb.	350 lb. Clusters	20 lb.	R/P	20 mm.	.5	.303
<u>1948</u>										
Jul.	10	25								
Aug.	15	64								
Sep.	5	44								
Oct.	8 ✓									
Nov.	12 ✓			47 ✓			141 ✓	8,563 ✓	7,724 ✓	
Dec.	20 ✓			16 ✓		32 ✓	157 ✓	11,645 ✓	13,358 ✓	
<u>1949</u>										
Jan.	8 ✓	28 ✓	-	32 ✓	-	-	87 ✓	10,624 ✓	9,031 ✓	-
Feb.	11 ✓	16 ✓	-	18 ✓	-	132 ✓	69 ✓	7,718 ✓	9,095 ✓	-
25 Mar.	6 ✓	21 ✓ 65	-	8 ✓	-	168 ✓	70 ✓	5,729 ✓	4,687 ✓	
Apr.	17 ✓	56 ✓		3 ✓	-	641 ✓	2 ✓	11,345 ✓	17,679 ✓	
43 May	35 ✓	131 ✓		56 ✓	-	360 ✓	360 ✓	20,616 ✓	15,584 ✓	
Jun.	21 ✓	81 ✓ 288		33 ✓	-	475 ✓	199 ✓	20,203 ✓	15,583 ✓	
Jul.	28 ✓	160 ✓		53 ✓	-	3,723 ✓	347 ✓	26,314 ✓	26,255 ✓	36,000
56 Aug.	10 ✓	68 ✓		86 ✓	-	702 ✓	322 ✓	15,560 ✓	2,850 ✓	12,050
Sep.	18 ✓	73 ✓ 201		46 ✓	-	304 ✓	375 ✓	29,534 ✓	9,155 ✓	2,870

Annex T

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	No. of Strikes	No. of Sorties	1000 lb.	500 lb.	350 lb. Clusters	20 lb.	R/P	20 mm.	.5	.303
<u>1949</u>										
Oct.	18	116								
Nov.	34	185								
Dec.	28	203								
<u>1950</u>										
Jan.	58	258								
Feb.	56	274								
Mar.	40	514	8	137	-	-	567	21,109	27,420	-
Apr.	46	567	70	780	-	1,536	2,384	125,875	102,760	18,350
May	58	411	682	201	-	564	2,156	122,987	53,342	-
Jun.	68	328	1,066	259	-	6,258	1,538	61,551	38,050	46,970
Jul.	58	448	1,184	394	-	615	2,164	100,785	50,670	-
Aug.	81	524	1,091	739	-	804	1,929	109,873	78,657	-
Sep.	106	504	964	1,505	-	626	2,055	126,750	67,527	-
Oct.	88	443	1,212	298	-	235	2,180	121,329	46,181	-
Nov.	78	338	1,305	427	-	323	1,936	84,114	36,339	10,100
Dec.	71	329	635	749	-	395	2,157	96,119	63,663	2,135

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- 3 -

APPENDIX XX

	No. of Strikes	No. of Sorties	1000 lb.	500 lb.	350 lb. Clusters	20 lb.	R/P	20 mm.	.5	.303
<u>1951</u>										
Jan.	83	369	418 ✓	1,710	-	332	1,730	88,118	38,886 ¹	2,135
Feb.	75	392	447 ✓	1,917 ✓	-	592	1,606	98,145	80,927	-
Mar.	92	442	660	2,416	-	-	1,841	8,176	72,211	-
Apr.	65	276 ✓	336	942	-	1,320	1,271	26,142	30,166	34,150
May	89	378	76	1,348	-	3,016	1,907	36,608	39,030	76,050
Jun.	118 ✓	572 ✓	42 ✓	2,049 ✓	14	6,536 ✓	2,418 ✓	119,141 ✓	97,706	132,950
Jul.	153 ✓	473 ✓	230 ✓	887	112	7,004 ✓	1,575	86,776 ✓	71,501 ✓	160,430 ✓
Aug.	71 ✓	332 ✓	611 ✓	492 ✓	174	2,432 ✓	1,421 ✓	31,740 ✓	44,465 ✓	47,900 ✓
Sep.	54 ✓	210 ✓	444 ✓	372 ✓	14	3,298 ✓	784 ✓	18,652 ✓	33,370 ✓	61,700 ✓
Oct.	65 ✓	291 ✓	788 ✓	464	-	4,044 ✓	1,208 ✓	14,210 ✓	45,280 ✓	59,950 ✓
Nov.	85 ✓	471 ✓	584 ✓	1,214 ✓	-	3,676 ✓	2,512 ✓	44,966 ✓	52,914 ✓	87,850 ✓
Dec.	52 ✓	290	444 ✓	498 ✓	70	2,368 ✓	1,688 ✓	36,325 ✓	37,229 ✓	40,800 ✓
<u>1952</u>										
Jan.	46 ✓	281 ✓	300 ✓	602 ✓	134 ✓	1,560 ✓	2,355 ✓	35,852 ✓	38,572 ✓	25,800 ✓
Feb.	74 ✓	308	415 ✓	974 ✓	56 ✓	3,730	202 ✓	70,520 ✓	59,530 ✓	83,819 ✓
Mar.	65 ✓	286	370 ✓	725 ✓	288	3,704 ✓	1,075 ✓	76,800 ✓	77,232 ✓	82,250
Apr.	59 ✓	214	346 ✓	610 ✓	-	1,552 ✓	1,283 ✓	59,330 ✓	62,221 ✓	31,700

1089

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	No. of Strikes	No. of Sorties	1000 lb.	500 lb.	350 lb. Clusters	20 lb.	R/P	20 mm.	-5	-303
<u>1952</u>										
May	47 ✓	1089 201 ✓ 1290	140 ✓	714 ✓	48 ✓	2,305 ✓	353 ✓	63,558 ✓	47,512 ✓	36,610 ✓
Jun.	53	255 1545	52 ✓	1,129 ✓	70 ✓	1,659 ✓	-	83,269 ✓	76,406 ✓	34,000 ✓
Jul.	69	438 1983	34 ✓	1,232 ✓	56 ✓	1,272 ✓	32 ✓	110,607 ✓	68,008 ✓	13,120 ✓
Aug.	71	435 2478	24 ✓	1,438 ✓	23 ✓	1,416 ✓	643 ✓	112,864 ✓	59,396 ✓	31,350 ✓
Sep.	34 ✓	2853 245 3097	94 ✓	878 ✓	-	2,161 ✓	955 ✓	66,559 ✓	38,805 ✓	29,600 ✓
Oct.	56 ✓	344 3440	281 ✓	883 ✓	-	1,792 ✓	1,129 ✓	94,700 ✓	58,038 ✓	27,250 ✓
Nov.	58 ✓	434 3822	198 ✓	877 ✓	-	1,920 ✓	1,627 ✓	147,705 ✓	37,863 ✓	31,650 ✓
Dec.	44 ✓	260 4134	164 ✓	544 ✓	-	2,230 ✓	832 ✓	89,266 ✓	30,680 ✓	35,600 ✓
<u>1953</u>										
Jan.	34 ✓	191 ✓	299 ✓	716 ✓	-	800 ✓	492 ✓	65,688 ✓	37,885 ✓	7,400 ✓
Feb.	32 ✓	211 ✓	244 ✓	590 ✓	-	640 ✓	516 ✓	73,151 ✓	22,585 ✓	12,000 ✓
Mar.	8 ✓	52 ✓	12 ✓	104 ✓	-	160 ✓	184 ✓	19,847 ✓	2,950 ✓	3,000 ✓
Apr.	23	158	315	477	-	1,960	227	32,417	38,640	12,000 ✓
May	12	204	87	180	-	400	669	80,867	7,980	5,100 ✓
Jun.	5	44	48	255	-	160	93	15,307	15,070	300 ✓
Jul.	19	101	247	604	-	160	530	70,582	31,550	2,850 ✓
Aug.	29	157	116	405	-	320	522	57,793	14,050	5,200 ✓

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	No. of Strikes	No. of Sorties	1000 lb.	500 lb.	350 lb. Clusters	20 lb.	R/P	20 mm.	-5	-303
<u>1953</u>										
Sep.	25	209	323	877	-	-	432	42,325	25,633	-
Oct.	37	247	443	522	-	2,400	701	59,776	39,797	43,250
Nov.	33	478	582	1,242	-	4,080	1,072	53,278	65,715	69,170
Dec.	41	241	416	747	-	2,720	487	29,156	69,700	63,460
<u>1954</u>										
Jan.	57	238	552	1,047	-	2,080	428	25,045	51,874	28,428
Feb.	29	108	238	705	-	620	130	10,139	31,057	6,200
Mar.	61	150	206	1,330	-	-	126	13,366	57,303	-
Apr.	30	79	190	680	-	400	64	5,291	41,474	10,000
May	23	143	328	869	-	-	176	17,188	38,796	-
Jun.	25	163	301	766	-	-	292	30,657	35,541	-
Jul.	26	213	589	418	-	1,025	537	28,094	17,585	16,500
Aug.	22	90	236	612	-	-	121	13,697	43,956	-
Sep.	24	171	433	776	-	600	551	28,330	34,677	18,700
Oct.	43	252	328	1,389	-	1,182	521	59,350	57,795	35,550
Nov.	57	298	35	1,742	-	560	627	49,480	47,698	25,000
Dec.	29	150	36	659	-	700	334	24,693	39,565	24,600

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	No. of Strikes	No. of Sorties	1000 lb.	500 lb.	350 lb. Clusters	20 lb.	R/P	20 mm.	.5	.303
<u>1955</u>										
Jan.	65	458	384	1,882	-	1,120	1,160	91,535	84,462	26,500
Feb.	26	115	524	461	-	420	117	14,096	31,875	6,800
Mar.	33	169	860	296	-	-	245	18,142	17,241	-
Apr.	18	140	552	342	-	-	107	22,117	14,757	-
May	20	177	294	718	-	280	345	37,710	16,043	-
Jun.	50	294	376	1,058	-	300	693	84,863	43,349	-
Jul.	31	154	509	590	-	-	117	29,222	34,419	-
Aug.	24	119	626	250	-	-	82	24,365	31,531	-
Sep.	1	4	56	-	-	-	-	-	-	-
Oct.	-	-	-	-	-	-	-	-	-	-
Nov.	5	33	197	56	-	-	-	464	4,480	-
Dec.	27	168	800	52	-	560	230	30,160	4,030	-
<u>1956</u>										
Jan.	13	57	57	122	-	-	138	14,886	8,701	-
Feb.	18	164	871	206	-	-	151	26,743	12,269	-
Mar.	6	38	283	-	-	-	32	5,454	800	-
Apr.	7	31	122	70	-	140	-	-	-	-

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	No. of Strikes	No. of Sorties	1000 lb.	500 lb.	350 lb. Clusters	20 lb.	R/P	20 mm.	.5	.303
<u>1956</u>										
May	10	39	34	112	-	-	-	2,336	2,520	-
June	22	264	427	792	-	690	505	44,081	19,363	-
July	16	38	102	292	-	429	-	1,948	4,140	-
Aug.	7	15	44	63	-	570	-	850	-	-
Sep.	16	64	178	250	-	380	47	5,779	13,549	-
Oct.	13	55	150	280	-	382	-	2,909	9,310	-
Nov.	8	20	126	96	-	760	-	1,212	5,300	-
Dec.	3	15	180	-	-	-	-	3,700	-	-
<u>1957</u>										
Jan.	8	41	284	56	-	380	40	3,316	1,930	-
Feb.	-	-	-	-	-	-	-	-	-	-
Mar.	4	12	8	112	-	-	-	-	-	-
Apr.	3	8	26	70	-	190	-	960	3,380	-
May	4	31	202	-	-	-	-	1,001	-	-
Jun.	2	12	24	-	-	-	-	-	-	-
Jul.	11	107	368	154	-	-	304 ✓	13,201 ✓	-	-
Aug.	1 ✓	5	70 ✓	-	-	-	-	-	-	-

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	No. of Strikes	No. of Sorties	1000 lb.	500 lb.	350 lb. Clusters	20 lb.	R/P	20 mm.	.5	.303
<u>1957</u>										
Sep.	1	14	84	42	-	-	-	-	-	-
Oct.	4 ✓	26	59	112	-	-	36	2,529	-	-
Nov.	8	110	74	432	-	1,032	-	18,375	-	-
Dec.	3	7	6	8	-	190	-	834	-	-
<u>1958</u>										
Jan.	7	141	386	60	-	546	-	32,254	-	-
Feb.	5	23	218	41	-	156	-	-	-	-
Mar.	9	244	194	1,112	-	750	284	29,803	-	-
Apr.	6	209	236	991	-	-	-	31,570	-	-
May	5	108	458	212	-	-	-	13,676	-	-
Jun.	2	37	99	252	-	-	-	2,720	-	-
Jul.	6	75	90	324	-	-	-	-	-	-
Aug.	1	9	8	30	-	-	-	1,060	-	-
Sep.	2	34	138	-	-	-	61	-	-	-
Oct.	1	5	30	-	-	-	-	-	-	-
Nov.	2	18	-	108	-	-	-	-	-	-
Dec.	1	23	16	90	-	-	-	-	-	-

RESTRICTED

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- 9 -

APPENDIX XX

	No. of Strikes	No. of Sorties	1000 lb.	500 lb.	350 lb. Clusters	20 lb.	R/P	20 mm.	.5	.303
<u>1959</u> Aug.	2				-			-	-	-
<u>1960</u>	-	-	-	-	-	-	-	-	-	-

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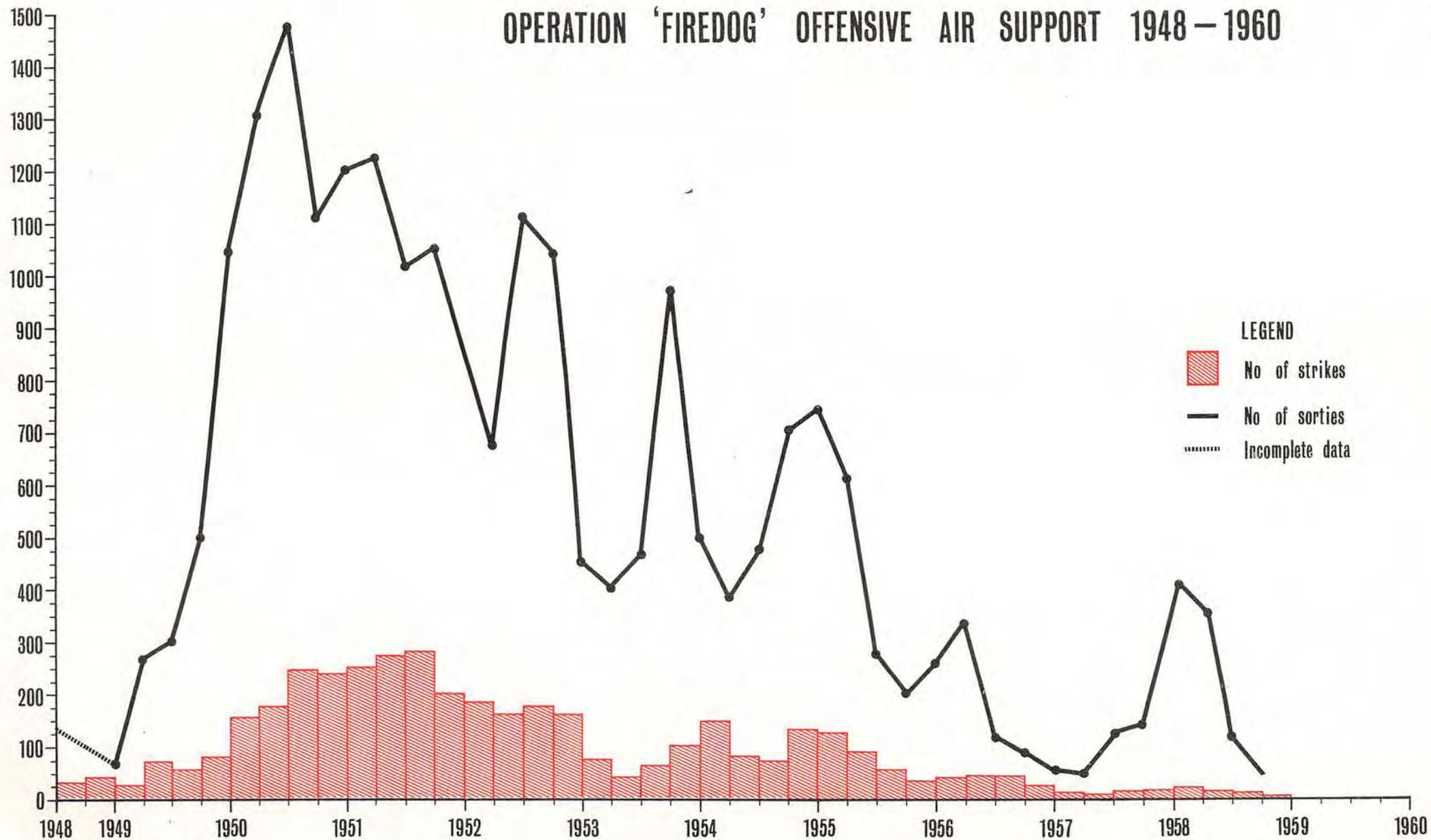
APPENDIX XX

ANNEXURE I

GRAPH OF OFFENSIVE AIR SUPPORT

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OPERATION 'FIREDOG' OFFENSIVE AIR SUPPORT 1948-1960



RESTRICTEDOPERATION 'FIREDOG' - MEDIUM RANGE TRANSPORT SUPPORT (AIR SUPPLY)1948 - 1960

Month	No. of Air Supply Sorties	lbs. of Supplies Wt. dropped (lb.)
<u>1948</u>		
Jul.	3	c. 2,000
Aug.	10	c. 30,500
Sep.	5	c. 6,000
Oct.	3	c. 3,500
Nov.	3	c. 11,500
Dec.	7	c. 9,200
<u>1949</u>		
Jan.	24	41,392
Feb.	29 ✓	29,685
Mar.	26 ✓	56,481 ✓
Apr.	44 ✓	115,910 ✓
May	96 ✓	204,929 ✓
Jun.	70 ✓	223,653 ✓
Jul.	69 ✓	166,558 ✓
Aug.	48 ✓	132,461 ✓
Sep.	75 ✗	227,520 ✓
Oct.	206 ✓	425,385 ✓
Nov.	130 ✓	245,107 ✓
Dec.	58 ✗	175,484 ✗
<u>1950</u>		
Jan.	108 ✓	145,496 ✓
Feb.	71 ✗	133,331 ✗
Mar.	103 ✗	296,362 ✗
Apr.	160	410,155
May	90 ✗	214,512 ✓
Jun.	125	308,368 ✓
Jul.	126 ✗	369,385 ✓
Aug.	126	391,328
Sep.	110	325,852 ✓

RESTRICTED

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Month	No. of Air Supply Sorties	Lbs. of Supplies Wt. dropped (lb.)
<u>1950</u>		
Oct.	122	366,365
Nov.	141	371,037
Dec.	130	392,267
<u>1951</u>		
Jan.	179	468,694
Feb.	165	479,780
Mar.	162	423,753
Apr.	155	421,399
May	159	402,167
Jun.	117 96	317,008 ✓
Jul.	64 74	215,113 ✓
Aug.	52 43	126,870 ✓
Sep.	59 57 53	174,312 175312
Oct.	74 61 60	186,077 184,737
Nov.	50 49 50	145,181 142,682
Dec.	53 42 41	104,385 106 590
<u>1952</u>		
Jan.	84 68 71	219,830 219,740
Feb.	117 91	306,511 ✓
Mar.	69 ✓	248,246 ✓
Apr.	68 63	182,111 ✓
May	66	182,087 ✓
Jun.	68 ✓	194,415 ✓
Jul.	81 ✓	281,985 ✓
Aug.	86 ✓	278,055 ✓
Sep.	94 ✓	300,918 ✓
Oct.	101 ✓	337,144 ✓
Nov.	75 ✓	228,631 ✓
Dec.	79 ✓	252,609 ✓

RESTRICTED

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- 3 -

Month	No. of Air Supply Sorties	lbs. of Supplies Wt. dropped (lb.)
<u>1953</u>		
Jan.	90 ✓	306,199 ✓
Feb.	71 ✓	232,677 ✓
Mar.	95 ✓	326,798 ✓
Apr.	85	279,245 ✓
May	109	383,164 ✓
Jun.	103	322,868 ✓
Jul.	91	313,967 ✓
Aug.	90	283,650 ✓
Sep.	101	303,317 ✓
Oct.	136	464,688 ✓
Nov.	223	752,518 ✓
Dec.	152	492,904 ✓
<u>1954</u>		
Jan.	144 ✓	460,866 ✓
Feb.	123	395,558 ✓
Mar.	159 ✓	497,551 ✓
Apr.	140	459,817 ✓
May	159 ✓	522,118 ✓
Jun.	142 ✓	468,762 ✓
Jul.	197 ✓	653,413 ✓
Aug.	184	613,882 ✓
Sep.	181	613,698 ✓
Oct.	219	721,270 ✓
Nov.	224	724,230 ✓
Dec.	208	661,977 ✓
<u>1955</u>		
Jan.	173 ✓ ✓	600,841 ✓
Feb.	168 ✓ ✓	612,914 ✓
Mar.	218 ✓ ✓	808,035 ✓
Apr.	187 ✓ ✓	673,625 ✓

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- 4 -

Month	No. of Air Supply Sorties	lbs. of Supplies Wt. dropped (lb.)
May	191 ✓✓	687,773 ✓✓
Jun.	189	697,220 ✓
Jul.	184	698,845 ✓
Aug.	162	588,255 ✓
Sep.	154	609,204 ✓
Oct.	164	656,383 ✓
Nov.	147 ✓	613,423 ✓
Dec.	128	530,129 ✓
<u>1956</u>		
Jan.	158 ✓ 187	636,350 ✓✓ 636,650
Feb.	145 ✓ 160	600,037 ✓✓
Mar.	117 129	449,334 ✓ 449,344
Apr.	104 95	404,965 ✓
May	118 ✓✓	373,856 ✓
Jun.	129 130	517,351 ✓
Jul.	128 146	524,086 ✓
Aug.	123 150	479,823 ✓
Sep.	135 168	507,222 ✓
Oct.	158 168	526,152 ✓
Nov.	126 142	442,316 ✓
Dec.	112 132	529,333 ✓
<u>1957</u>		
Jan.	124 149	462,028 ✓
Feb.	115	473,895 ✓
Mar.	130	464,394 ✓
Apr.	119	500,331 ✓
May	120	409,679 ✓
Jun.	93	310,973
Jul.	128	457,818 *
Aug.	107	303,943 *

* Exclusion of Parachutes

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5

Month	No of Air Supply Sorties	Weight Dropped (lb)
<u>1957</u>		
Jul	128	457,818
Aug	107	408,743 (24,800)
Sep	86	311,047 (19,090)
Oct	111	368,853 (22,590)
Nov	112	407,496 (24,470)
Dec	116	331,040 (18,910)
<u>1958</u>		
Jan	105	423,670 (25,260)
Feb	108	409,095 (24,855)
Mar	113	466,752 (27,030)
Apr	92	414,702 (25,400)
May	113	477,792 (29,350)
Jun	84	347,401 (21,020)
Jul	115	489,370
Aug	112	502,930 (31,900)
Sep	114	513,400 (41,430)
Oct	103	468,020 (35,980)
Nov	118	456,545 (33,670)
Dec	88	368,016 (22,735)
<u>1959</u>		
Jan	69	246,698
Feb		216,744
Mar		267,952
Apr		224,707
May		258,649
Jun		190,438
Jul		220,747
Aug		183,045
Sep		197,641
Oct		228,068
Nov		319,940
Dec		297,779
<u>1960</u>		
Jan		217,807
Feb		161,435
Mar		245,000
Apr		232,350
May		199,136
Jun		216,246
July		251,728

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APPENDIX XXI

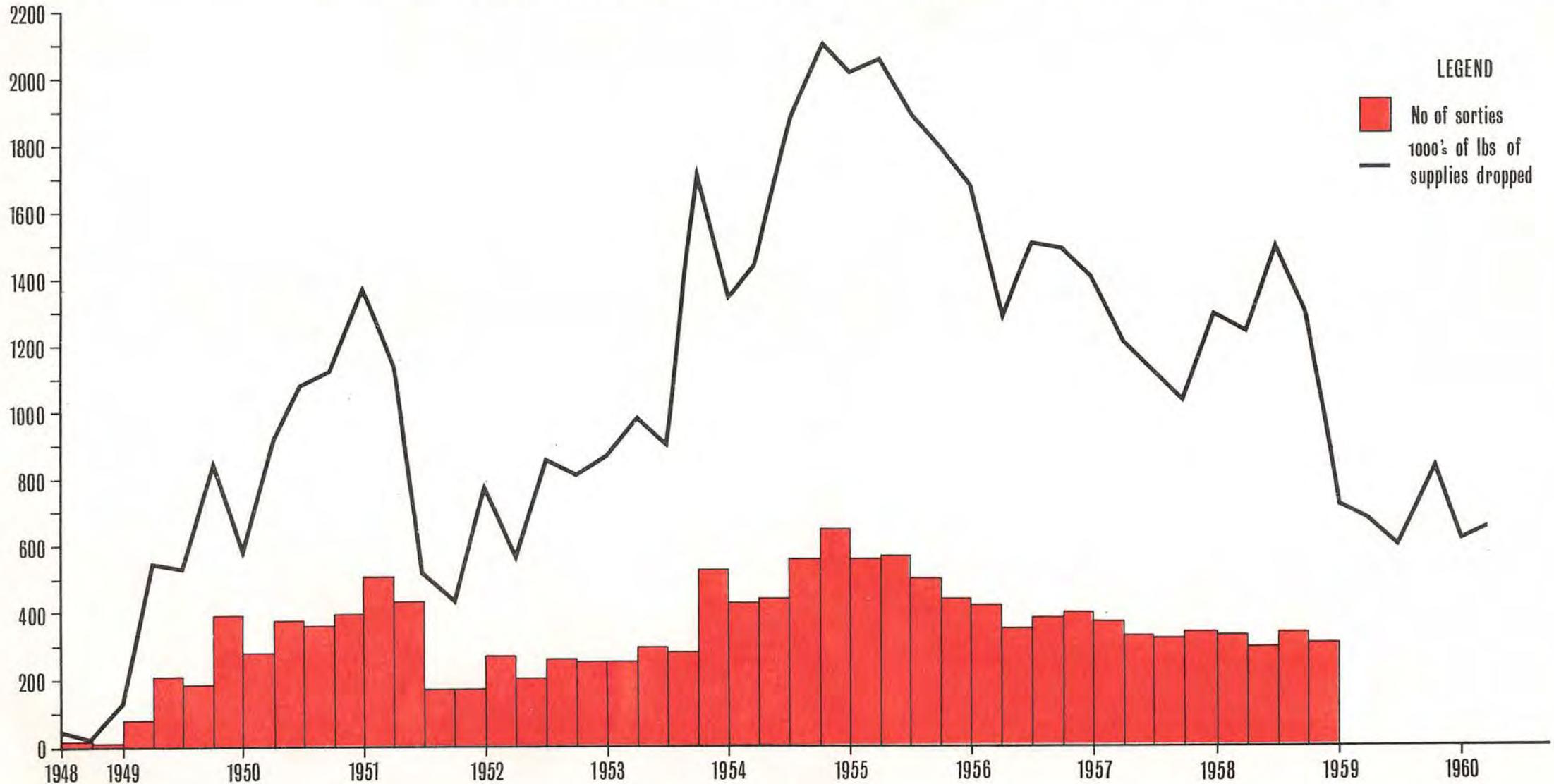
ANNEXURE I

GRAPH OF MEDIUM RANGE TRANSPORT SUPPORT
(AIR SUPPLY)

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OPERATION 'FIREDOG' MEDIUM RANGE TRANSPORT SUPPORT (AIR SUPPLY) 1948 - 1960

3 Monthly totals



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APPENDIX XXII

OPERATION 'FIREDOG' - SHORT RANGE TRANSPORT SUPPORT (AUSTER) 1954-1958

Month	No. of hours	Total No. of sorties	Airstrike: target marking sorties	Visual reconnaissance sorties	Air Observation Post sorties	Supply Dropping sorties	Communication sorties	Leaflet Dropping sorties	Miscellaneous sorties
<u>1954</u>									
Jun.	1827.00 ✓	1821 ✓		691 ✓		41 ✓	644 ✓	70 ✓	375 ✓
Jul.	2065.30 ✓	1839 ✓	50 ✓	926 ✓		38 ✓	547 ✓	68 ✓	210 ✓
Aug.	1793.00 ✓	1853 ✓		879 ✓		53 ✓	546 ✓	17 ✓	358 ✓
Sep.	2154.20 ✓	2192 ✓	24 ✓	976 ✓		38 ✓	578 ✓	60 ✓	516 ✓
Oct.	1856.20 ✓	1925 ✓	9 ✓	727 ✓		78 ✓	665 ✓	45 ✓	401 ✓
Nov.	2147.00 ✓	2330 ✓	1 ✓	935 ✓		99 ✓	838 ✓	58 ✓	399 ✓
Dec.		2318 ✓	4 ✓	1347 ✓		119 ✓	497 ✓	70 ✓	281 ✓
<u>1955</u>									
Jan.	2206.35 ✓	2619 ✓	29 ✓	1469 ✓		82 ✓	571 ✓	49 ✓	419 ✓
Feb.	2067.25	1839 ✓	23 ✓	851 ✓		71 ✓	759 ✓		135 ✓
Mar.	2438.40	2553 ✓	47 ✓	942 ✓		120 ✓	1112 ✓	61 ✓	271 ✓
Apr.	1976.55	2197 ✓	22 ✓	644 ✓		108 ✓	697 ✓	63	663 ✓
May	2185.55	2595 ✓	20 ✓	847 ✓		134 ✓	986 ✓	53 ✓	555 ✓
Jun.	2247.40	2681 ✓	68 ✓	783 ✓		127 ✓	953 ✓	46 ✓	704 ✓
Jul.		1117 ✓	22 ✓	390 ✓		37 ✓	222 ✓	23 ✓	423 ✓

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Annex V

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- 2 -

APPENDIX XXII

Month	No. of hours	Total No. of sorties	Airstrike: target marking sorties	Visual reconnaissance sorties	Air Observation Post sorties	Supply Dropping sorties	Communication sorties	Leaflet Dropping sorties	Miscellaneous sorties
<u>1955</u>									
Aug.	591.15	861 ✓	14 ✓	346 ✓		21 ✓	82 ✓	6 ✓	392 ✓
Sep.	1182.10	1538		310		43	266	86	833
Oct.	1548.40	1520 ✓		645 ✓		75 ✓	723 ✓	36 ✓	41 ✓
Nov.	1698.35	1624		523		76	567	11	547
Dec.	1677.40	1925	19	533	18	50	974	20	311
<u>1956</u>									
Jan.	1663.25	1726	4	715	9		613	44	341
Feb.	1510.20	1443	14	570	20	44	731	9	54
Mar.	1777.10	1878	4	701	15	76	916	23	143
Apr.	1672.05	1679		591	12		858	10	208
May	1754.05	1716		555	14		997	21	129
Jun.	1328.30	1428	37	459	8	118	767	20	19
Jul.	1170.30	1239	23	456	7	81	639	42	7
Aug.	1119.25	1574	7	356	17	84	779	68	263
Sep.	1192.55	1210		452	5	47	622	55	
Oct.	1308.45	1267	19	509	7	99	576	56	1

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- 3 -

APPENDIX XXII

Month	No. of hours	Total No. of sorties	Airstrike: target marking sorties	Visual reconnaissance sorties	Air Observation Post sorties	Supply Dropping sorties	Communication sorties	Leaflet Dropping sorties	Miscellaneous sorties
<u>1956</u>									
Nov.	1102.40	1045	18	459	4	49	431	34	
Dec.	962.05	967	10	388	2	63	442	62	
<u>1957</u>									
Jan.	1289.40	1309	22	491	10	77	687	22	
Feb.	1204.25	1304	13	549	8	61	653	20	
Mar.	1323.15	1353	9	555	16	61	660	55	
Apr.	1097.35	1138	12	441	36	40	567	41	
May	1150.10	1277	27	492	6	48	680	24	
Jun.	1248.35	1397	13	536	14	53	767	14	
Jul.	1172.00	1403	31	519	18	91	711	33	
Aug.	1204.20	1311	3	452	15	32	775	34	
Sep.	1089.55	1355	5	369	15	101	754	111	
Oct.	1200.50	1250	18	519	16	36	584	77	
Nov.	1027.00	1135	15	402	3	59	589	67	
Dec.	1112.40	1155	5	445	11	38	539	117	

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- 4 -

APPENDIX XXII

Month	No. of hours	Total No. of sorties	Airstrikes: target marking sorties	Visual reconnaissance sorties	Air Observation Post sorties	Supply Dropping sorties	Communication sorties	Leaflet Dropping sorties	Miscellaneous
<u>1958</u>									
Jan.	1257.40	1273	19	453	3	52	693	53	
Feb.	1112.50	1018	22	374	15	46	535	26	
Mar.	1138.28	1118	60	433	9	59	548	9	
Apr.	917.20	875	36	280	5	47	453	53	
May	1039.25	993	15	363	24	47	510	34	
June	1209.45	1409	12	369	20	126	867	15	
Jul.		1587	11	340	5	116	806	9	
Aug.	1263.00	1477	1	350	8	73	1018	27	
Sep.	1227.20	1618	8	23	1	128	1366	92	
Oct.	1131.35	1364	15	299	9	164	847	30	
Nov.	1167.00	1503	2	360	18	100	952	71	
Dec.	1112.15	1372	7	274	24	85	950	32	

RESTRICTED

RESTRICTED

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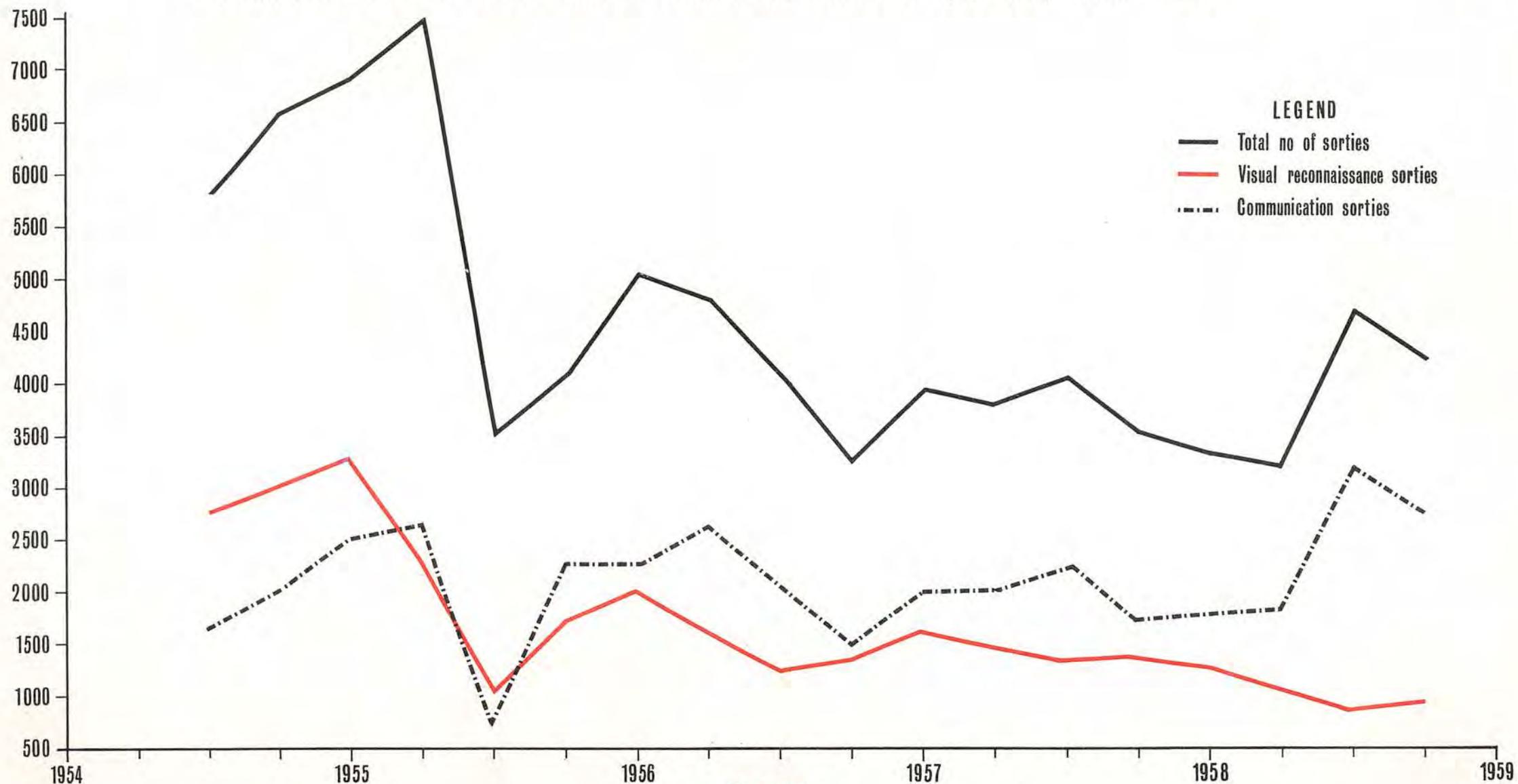
APPENDIX XXII

ANNEXURE I

OPERATION 'PIREDOG' - SHORT RANGE TRANSPORT
SUPPORT (AUSTER)

RESTRICTED

OPERATION 'FIREDOG' SHORT RANGE TRANSPORT SUPPORT (AUSTER) 1945-1958



LEGEND

- Total no of sorties
- Visual reconnaissance sorties
- - - Communication sorties

RESTRICTED

Annex W

APPENDIX XXIII

OPERATION 'FIREDOG', SHORT RANGE TRANSPORT SUPPORT (PIONEER) 1954-1960

Month	Sorties	Hours flown	Troops lifted	Passengers carried	Casualties evacuated	Freight carried (lb.)
<u>1954</u>						
May				93	-	3,380
Jun.	164 ✓			156 ✓	8 ✓	2,830 ✓
Jul.	223 ✓			286 ✓	6 ✓	26,530 ✓
Aug.	124 ✓			161 ✓	4 ✓	6,265 ✓
Sep.	115 ✓			107 ✓	6 ✓	3,035 ✓
Oct.	176 ✓			291 ✓	3 ✓	18,935 ✓
Nov.	139 ✓			172 ✓	-	11,330 ✓
Dec.	181 ✓			240 ✓	5 ✓	11,315 ✓
<u>1955</u>						
Jan.	170 ✓	91.45		256 ✓	8 ✓	14,655 ✓
Feb.	177 ✓			130 ✓	12 ✓	8,190 ✓
Mar.	221 ✓	133		292 ✓	3 ✓	10,440 ✓
Apr.	342 ✓	162		501 ✓	16 ✓	45,152 ✓
May	376 ✓	229		409 ✓	12 ✓	25,510 ✓
Jun.	459 ✓	250		653 ✓	13 ✓	41,061 ✓
Jul.	430 ✓	232		470 ✓	10 ✓	31,825 ✓
Aug.	494 ✓	290		648 ✓	14 ✓	38,015 ✓
Sep.	681 ✓	251		574 ✓	-	23,995 ✓
Oct.	443 ✓	285		504 ✓	15	28,465 ✓
Nov.	532 ✓	304		701 ✓	9 ✓	57,460 ✓
Dec.	366 ✓	256.15		255 ✓	1	33,880 ✓
<u>1956</u>						
Jan.	479 ✓			508 ✓	9 ✓	42,030 ✓
Feb.	482 ✓		268 ✓	269 ✓	4 ✓	54,115 ✓
Mar.	579			616	6	94,556
Apr.	633			623		100,182
May	533		263	284	11	85,355
Jun.	693	434.45	358	354		111,297
Jul.	616	389.05	357	352		78,879
Aug.	806	501.40	348	434		87,191
Sep.	647	391.55	444	363		80,118

RESTRICTED

Month	Sorties	Hours flown	Troops lifted	Passengers carried	Casualties evacuated	Freight carried (lb.)
<u>1956</u>						
Oct.	803	425.00	601	290		101,105
Nov.	606	349.50	286	287		76,084
Dec.	649	358.00	387	244		92,981
<u>1957</u>						
Jan.	686	383.20	344	341	11	91,572
Feb.	490	287.05	330	220	7	59,710
Mar.	568	364.15	232	282	9	83,148
Apr.	523	289.15	388	226	5	58,588
May	689	408.00	402	278	14	85,996
Jun.	559	306.20	214	216	12	87,405
Jul.	608	383.10	467	239	9	89,934
Aug.	418	256.40	289	194	11	50,581
Sep.	433	250.50	272	183	7	72,685
Oct.	531	314.00	353	201	9	74,682
Nov.	688	381.30	530	213	8	112,544
Dec.	381	260.45	221	166	3	56,123
<u>1958</u>						
Jan.	532	331.10	438	146	2	86,355
Feb.	370	214.00	338	127	6	41,112
Mar.	55	33.05	-	38	1	4,326
Apr.	16	16.30	-	12	-	175
May	180	101.10	212	67	6	15,000
Jun.	272	160.50	201	82	8	49,468
Jul.	199	177.00	69	90	3	24,001
Aug.	437	239.55	432	107	5	83,210
Sep.	280	149.00	103	58	3	55,561
Oct.	497	247.05	540	89	4	87,936
Nov.	259	143.05	183	53	5	46,582
Dec.	114	54.05	187	35	-	15,223

RESTRICTED

- 3 -

APPENDIX XXIII

Month	Sorties	Hours flown	Troops lifted	Passengers carried	Casualties evacuated	Freight carried (lb.)
<u>1959</u>						
Jan.						
Feb.						
Mar.						
Apr.						
May						
Jun.			482	78	6	58,132
Jul.			108	93	14	27,031
Aug.			392	91	7	54,790
Sep.			162	68	7	40,862
Oct.			} 213	97	7	46,781
Nov.						
Dec.			} 393	72	9	56,420
<u>1960</u> Jan.						
Feb.			} 358	35	4	37,490
Mar.						
Apr.			} -	2	-	2,897
May						
Jun.			} 79	11	-	5,790
Jul.						

RESTRICTED

RESTRICTED

Delete

APPENDIX XXIII

ANNEXURE I

OPERATION 'FIREDOG' -- SHORT RANGE TRANSPORT SUPPORT

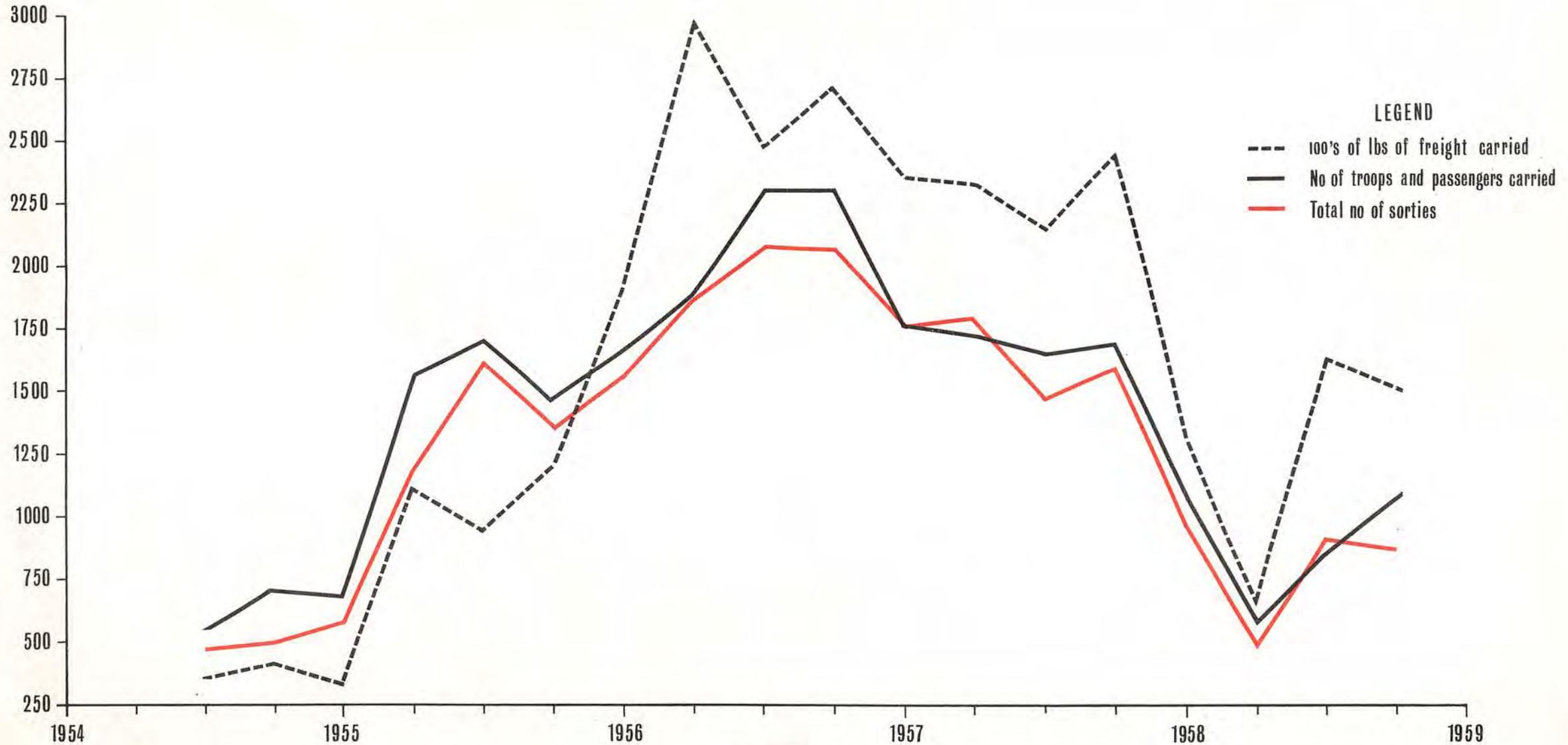
(PIONEER)

(Graph)

RESTRICTED

OPERATION 'FIREDOG' SHORT RANGE TRANSPORT SUPPORT (PIONEER) 1954 - 1958

Appendix XXIII
Annexure I



~~SECRET~~

APPENDIX XXIV

OPERATION 'FIREDOG' SHORT RANGE TRANSPORT SUPPORT (HELICOPTER) 1950-1960

Date	No. of Sorties	No. of Casualties evacuated	No. of Troops lifted	No. of Passengers carried on Communication Flights	Freight Carried (lb)
<u>1950</u>					
June		3	-	-	-
July		4	-	-	-
August		4	-	-	-
September		2	-	-	-
October		1	-	-	-
November		5	-	-	-
December		7	-	-	-
<u>1951</u>					
January		2	-	-	-
February		3	-	-	-
March		12	-	-	-
April		5	-	-	-
May		3	-	-	-
June		3	-	-	-
July		11	-	-	-
August		1	-	-	-
September		9	-	-	-
October		5	-	-	-
November		-	-	-	-
December		1	-	-	-

RESTRICTED

Annex X

~~SECRET~~

Date	No. of Sorties	No. of Casualties evacuated (Sorties in Brackets)	No. of Troops lifted	No. of Passengers carried on Communication Flights	Freight Carried (lb)
<u>1952</u>					
January		2 ✓			
February		23			
March		21 ✓			
April		1 ✓			
May		4 ✓			
June		13 (11) ✓			
July		35 (33) ✓			
August		11 (10) ✓			
September		16 (12) ✓			
October		3 (3) ✓			
November		8 (5) ✓			
December		7 (6) ✓			

RESTRICTED



Date	No. of Sorties	No. of Casualties evacuated (Sorties in Brackets)	No. of Troops lifted	No. of Passengers carried on Communication Flights	Freight Carried (lb)
<u>1953</u>					
January		4 (4) ✓			
February		12 (7) ✓			
March		34 (19) ✓			
April		15 (9) ✓	540 ✓		
May		39 (29) ✓	1,902 ✓		42,160 ✓
June		55 (23) ✓	1,087 ✓		22,504 ✓
July		49 (33) ✓	584 ✓		10,805 ✓
August		59 (39) ✓	786 ✓		12,545 ✓
September		36 (25) ✓	1,674 ✓		24,900 ✓
October		64 (36) ✓	1,613 ✓		15,940 ✓
November		85 (63) ✓	1,155 ✓		21,025 ✓
December		66 (56) ✓	757 ✓		13,940 ✓

RESTRICTED

RESTRICTED

Date	No. of Sorties	No. of Casualties evacuated (Sorties in brackets)		No. of Troops lifted		No. of Passengers carried on Communication Flights		Freight Carried (lb)	
		Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C
<u>1954</u>									
January		53 (34) ✓		914 ✓		149 ✓		8,710 ✓	
February		38 (24) ✓		729 ✓		149 ✓		17,206 ✓	
March		78 ✓		652 ✓		191 ✓		13,040 ✓	
April		62 ✓	10 ✓	- ✓	511 ✓	176 ✓	64 ✓	640 ✓	16,435 ✓
May		51 ✓	31 ✓	- ✓	1,600 ✓	72 ✓	129 ✓	745 ✓	28,860 ✓
June		32 ✓	30 ✓	- ✓	950 ✓	207 ✓	92 ✓	6,105 ✓	35,380 ✓
July		26 ✓	25 ✓	- ✓	950 ✓	194 ✓	62 ✓	3,480 ✓	22,000 ✓
August		20 ✓	40 ✓	- ✓	1,026 ✓	132 ✓	108 ✓	2,145 ✓	5,830 ✓
September		48 ✓	14 ✓	- ✓	480 ✓	149 ✓	82 ✓	6,870 ✓	22,000 ✓
October		45 ✓	17 ✓	- ✓	191 ✓	107 ✓	27 ✓	4,495 ✓	12,940 ✓
November		44 ✓	19 ✓	- ✓	158 ✓	316 ✓	153 ✓	8,495 ✓	9,750 ✓
December		43 ✓	17 ✓	- ✓	668 ✓	236 ✓	238 ✓	2,655 ✓	9,786 ✓

14,584
551

555

551

555

551

555

551

555

RESTRICTED

RESTRICTED

Date	No. of Sorties			No. of Casualties Evacuated			No. of Troops lifted			No. of Passengers carried on Communication Flights			Freight Carried (lb)		
	Light H/C	Medium H/C		Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C		
		(a)	(b)												
<u>1955</u>															
January	303	563	258	48 ✓	8 ✓	73 ✓	1,212 ✓	362 ✓	80 ✓	11,026 ✓	33,168 ✓				
February	264	522	216	18 ✓	20 ✓	-	1,276 ✓	239 ✓	168 ✓	5,980 ✓	35,333 ✓				
March	339	694	669 ✓	34 ✓	34 ✓	-	2,395 ✓	309 ✓	243 ✓	7,590 ✓	65,619 ✓				
April	395	443	359 ✓	47 ✓	11 ✓	-	1,527 ✓	266 ✓	84 ✓	5,670 ✓	37,209 ✓				
May	531	511	820 ✓	54	21 ✓	-	2,168	372	191 ✓	1,290	25,769 ✓				
June	416	593	1,134	54 ✓	(a) 11 ✓ (b) 12 ✓	-	(a) 1,130 ✓ (b) 1,458 ✓	124	(a) 109 ✓ (b) 63 ✓	5,302	(a) 28,714 ✓ (b) 18,790 ✓				
July	635	412	1,391	39	79	-	1,094	2,367	293	19	41	12,780	17,710	36,545 ✓	
August	564	60	1,423	43	12	-	226	2,213	219	4	223	7,705	2,430	33,426 ✓	
September	565	223	861	43	(a) 1 ✓ (b) 5 ✓	-	464	1,293	227	4	93	8,185	30,035	45,881 ✓	
October	503	388	1,395	39	6	19	-	945	2,335	178	16	40	7,755	15,435	5,584 ✓
November	380	522	1,440	36	5	38	-	906	2,448	124	22	38	3,125	21,355	27,134 ✓
December	192	354	1,115	14	22	20	-	458	1,889	79	16	141	3,630	17,785	19,076 ✓

Note: Light H/C = No. 194 Squadron
 Medium H/C: (a) = No. 848 ~~Naval Air~~ Squadron
 (b) = No. 155 Squadron

RESTRICTED

Date	No. of Sorties			No. of Casualties Evacuated			No. of Troops lifted			No. of Passengers Carried on Communication Flights			Freight Carried (lb)		
	Light H/C	Medium H/C (a) (b)		Light H/C	Medium H/C (a) (b)		Light H/C	Medium H/C (a) (b)		Light H/C	Medium H/C (a) (b)		Light H/C	Medium H/C (a) (b)	
1956															
January	431	353	862	41 ✓	12 ✓	5 ✓	-	408	1,227	173	58	74	6,317	8,510	13,237 ✓
February	475	543	1,076	47 ✓	8 ✓	14 ✓	-	581	1,716	154	136	48	5,755	23,269	16,017 ✓
March	457	474	1,084	48	4	20	-	585	1,541	181	67	56	14,047	7,010	18,098 ✓
April	540 ✓	599 ✓	647 ✓	48 ✓	6 ✓	4 ✓	26 ✓	690	937	153 ✓	54 ✓	40 ✓	11,460 ✓	4,635	14,720 ✓
May	508 ✓	256 ✓	388 ✓	25 ✓	1 ✓	3 ✓	- ✓	278 ✓	424 ✓	143 ✓	46 ✓	28 ✓	6,292 ✓	4,720	4,968 ✓
June	648 ✓	963 ✓	1,110 ✓	58	22	8	- ✓	1,234	1,597	197	66 ✓	59 ✓	10,315 ✓	6,615	16,980 ✓
July	549 ✓	629 ✓	638 ✓	37	4	14	6	918	666	147 ✓	43	59 ✓	6,745 ✓	1,116	16,200 ✓
August	729 ✓	833 ✓	1,284 ✓	30	8 ✓	13 ✓	55 ✓	995	1,894	188 ✓	69	66 ✓	14,485 ✓	14,650	22,185 ✓
September	719 ✓	902 ✓	862 ✓	33 ✓	4 ✓	7	-	1,208	1,172	252 ✓	82	53 ✓	14,205 ✓	7,730	14,725 ✓
October	722 ✓	1,276 ✓	1,089 ✓	32 ✓	18 ✓	13 ✓	- ✓	1,422	1,817	229 ✓	125 ✓	48 ✓	9,965 ✓	35,765	11,410 ✓
November	898 ✓	192	1,581 ✓	41 ✓	4 ✓	17 ✓	-	267	2,486	280 ✓	6	65 ✓	13,087 ✓	2,750	25,100 ✓
December	840 ✓	+	1,185	31 ✓	+	21 ✓	86 ✓	+	1,654	278 ✓	+	46 ✓	13,795 ✓	+	22,440 ✓

+ No. 848 ^{Naval Air} ~~(S.M.)~~ Squadron Disbanded

RESTRICTED

RESTRICTED

Date	No. of Sorties		No. of Casualties evacuated		No. of Troops lifted		No. of Passengers carried on Communication Flights		Freight Carried (lb)	
	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C
<u>1957</u>										
January	1,054 ✓	899	48 ✓	3 ✓	177	1,650	290	24	19,675	7,747
February	776	193	46 ✓	1 ✓	160	296	223	5	10,240	2,310
March	841 ✓	613 ✓	58 ✓	4 ✓	13 ✓	890 ✓	296 ✓	21 ✓	16,459 ✓	27,590 ✓
April	856	774	40	8	146	1,385	244	24	13,609	12,645
May	790	1,397	55	27	142	2,177 ✓	213	30	16,970	24,390
June	870	1,620	61	9	250	2,439	218	66	16,890	16,745
July	941	1,529	53	7	371	2,417	219	42	17,340	37,145
August	773 ✓	983 ✓	48 ✓	5 ✓	151 ✓	1,667 ✓	211 ✓	34 ✓	9,770 ✓	30,015 ✓
September	692 ✓	574 ✓	34 ✓	3 ✓	269 ✓	719 ✓	148 ✓	25 ✓	22,745 ✓	29,345 ✓
October	868 ✓	602 ✓	27 ✓	2 ✓	490 ✓	915 ✓	116 ✓	25 ✓	11,325 ✓	6,479 ✓
November	696 ✓	655 ✓	37 ✓	17 ✓	351 ✓	1,042 ✓	160 ✓	28 ✓	10,141 ✓	12,538 ✓
December	855 ✓	812 ✓	29 ✓	10 ✓	370 ✓	1,265 ✓	171 ✓	42 ✓	16,501 ✓	26,330 ✓

RESTRICTED

RESTRICTED

Date	No. of Sorties		No. of Casualties evacuated		No. of Troops lifted		No. of Passengers carried on Communication Flights		Freight Carried (lb)	
	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C
<u>1958</u>	No. 194 SQN	No. 195 SQN								
January	673 ✓	870 ✓	35 ✓	2 ✓	203 ✓	1,275 ✓	156 ✓	53 ✓	10,125 ✓	13,025 ✓
February	811 ✓	804 ✓	30 ✓	5 ✓	393 ✓	1,287 ✓	182 ✓	67 ✓	10,379 ✓	46,639 ✓
March	933 ✓	822 ✓	53 ✓	4 ✓	316 ✓	1,769 ✓	188 ✓	53 ✓	12,740 ✓	26,335 ✓
April	855 ✓	957 ✓	31 ✓	5 ✓	252 ✓	1,427 ✓	243 ✓	94 ✓	19,059 ✓	30,465 ✓
May	1,092 ✓	936 ✓	58 ✓	10 ✓	451 ✓	1,419 ✓	251 ✓	62 ✓	31,720 ✓	30,633 ✓
June	1,190-211 ✓	984 ✓	58 ✓	7 ✓	574 ✓	1,756 ✓	246 ✓	93 ✓	35,903 ✓	55,297 ✓
July	1,538 ✓	1,193 ✓	70 ✓	32 ✓	1,090 ✓	1,727 ✓	183 ✓	103 ✓	18,065 ✓	82,100 ✓
August	1,034 ✓	1,241 ✓	36 ✓	25 ✓	781 ✓	2,069 ✓	150 ✓	68 ✓	15,515 ✓	46,691 ✓
September	966 ✓	1,341 ✓	42 ✓	31 ✓	685 ✓	2,157 ✓	98 ✓	88 ✓	17,985 ✓	33,786 ✓
October	1,448 ✓	1,243 ✓	47 ✓	20 ✓	1,437 ✓	2,156 ✓	65 ✓	45 ✓	18,128 ✓	26,457 ✓
November	489 ✓	744 ✓	31 ✓	42 ✓	288 ✓	1,355 ✓	54 ✓	54 ✓	7,230 ✓	11,635 ✓
December	783 ✓	712 ✓	44 ✓	34 ✓	642 ✓	1,258 ✓	57 ✓	56 ✓	17,078 ✓	12,220 ✓

RESTRICTED

RESTRICTED

Date	No. of Sorties		No. of Casualties evacuated		No. of Troops lifted		No. of Passengers carried on Communication Flights		Freight Carried (lb)	
	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C
<u>1952</u>										
January										
February										
March										
April										
May										
June +	-		-	14	-	133	-	29	-	9,507
July	-		-	33	-	326	-	77	-	12,170
August	-		-	13	-	179	-	35	-	6,128
September	-		-	22	-	157	-	51	-	10,285
October)	-		-	54	-	1,602	-	132	-	38,095
November)										
December)	-		-	57	-	997	-	108	-	45,714
1960)										
January)										

+ 3 June 1959 - No. 194 Squadron merged with No. 155 Squadron to become No. 140 Squadron

RESTRICTED

RESTRICTED

Date	No. of Sorties		No. of Casualties evacuated		No. of Troops lifted		No. of Passengers carried on Communication Flights		Freight Carried (lb)	
	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C	Light H/C	Medium H/C
1960 <u>(contd.)</u>										
February)	-		-	34	-	1,149	-	95	-	13,405
March)										
April)	-		-	39	-	1,192	-	100	-	21,827
May)										
June)	-		-	43	-	695	-	66	-	10,908
July)										

RESTRICTED

RESTRICTED

Debate

APPENDIX XXIV

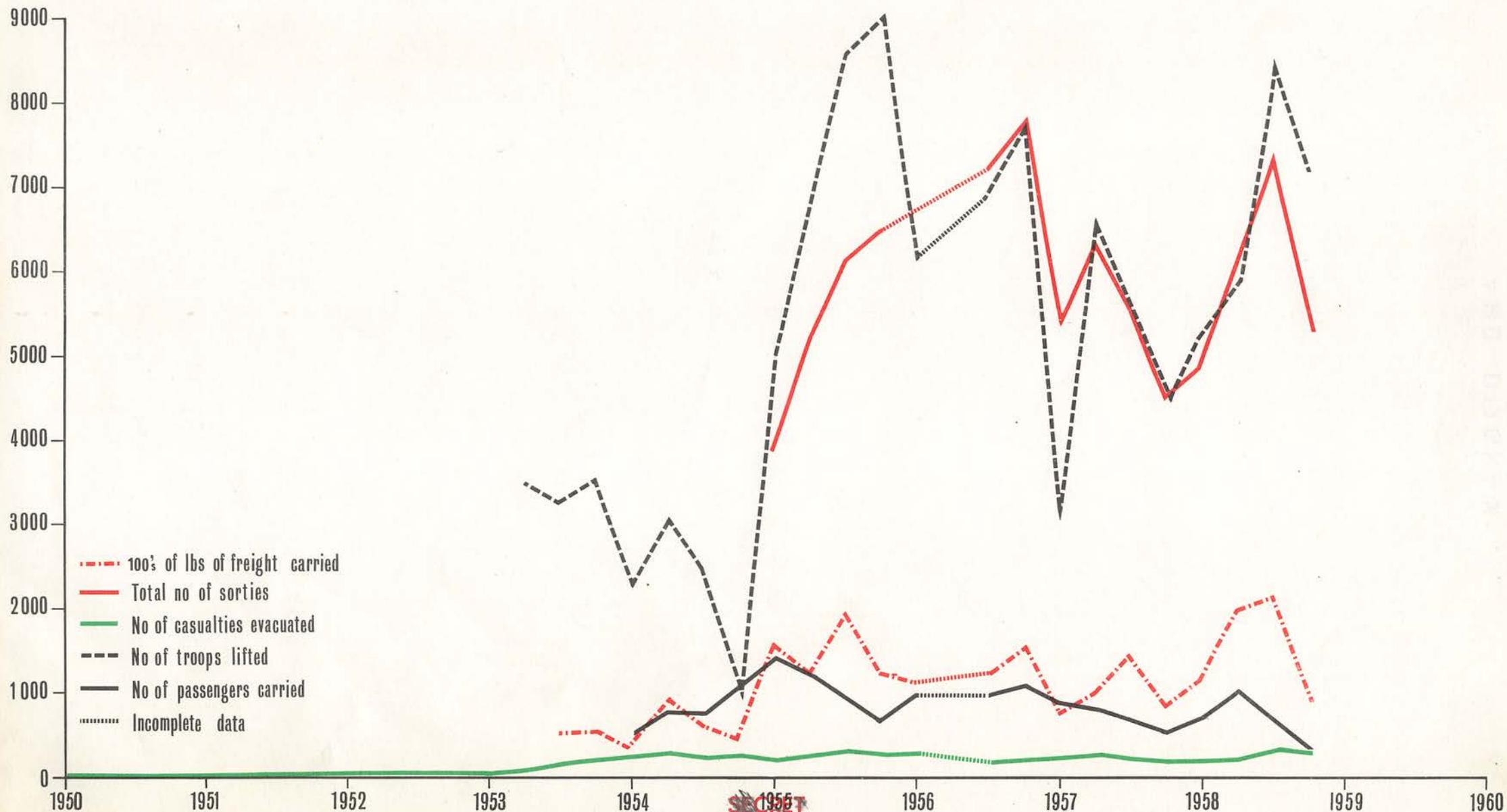
ANNEXURE I

OPERATION 'FIREDOG' - SHORT RANGE
TRANSPORT SUPPORT
(HELICOPTER)

RESTRICTED

OPERATION 'FIREDOG' SHORT RANGE TRANSPORT SUPPORT (HELICOPTER) 1950-1960

Appendix XXIV
Annexure I



RESTRICTED

Annex Y
APPENDIX XXV

OPERATION 'FIREDOG', SUPPORT FOR PSYCHOLOGICAL WARFARE CAMPAIGN, 1948-1960

Month	Thousands of leaflets dropped	No. of leaflet dropping sorties	Month	Thousands of leaflets dropped	No. of leaflet dropping sorties
<u>1948</u>			<u>1950</u>		
Jul.		3	Oct.		6
Aug.		7	Nov.		6
Sep.			Dec.		2
Oct.			<u>1951</u>		
Nov.			Jan.		21
Dec.			Feb.		4
<u>1949</u>			Mar.	3,750	15
Jan.			Apr.	1,500	44
Feb.		1 ✓	May	300	22
Mar.			Jun.	2,250	106
Apr.			Jul.	900	27
May			Aug.		22
Jun.		8	Sep.	750	
Jul.		—	Oct.	500	
Aug.		—	Nov.	55	
Sep.	1,000	32	Dec.	61	
Oct.		8	<u>1952</u>		
Nov.		10	Jan.	500	
Dec.	1,500	10	Feb.	100	
<u>1950</u>			Mar.	400	
Jan.		4	Apr.	1,034	
Feb.		12	May	900	
Mar.		12	Jun.	1,220	6 ✓
Apr.		4	Jul.	760	8 ✓
May	1,404	40	Aug.	3,276	14 ✓
Jun.	4,000	35	Sep.	405 ✓	5 ✓
Jul.	1,000	7	Oct.	778 ✓	7 ✓
Aug.		16	Nov.	1,411 ✓	7 ✓
Sep.		24	Dec.	1,635 ✓	6 ✓

NOTE Leaflets were dropped by aircraft on air supply duties and, on occasion, by aircraft specially detailed. In addition, leaflets were sometimes dropped by offensive aircraft after the conclusion of air strikes.

	Thousands of leaflets dropped	No. of leaflet dropping sorties	No. of loudhailing sorties	No. of hours of broadcasting			
<u>1953</u>							
Jan.	1,380 ✓	5 ✓	-	-			
Feb.	4,426	14 ✓	-	-			
Mar.	3,499 ✓	4 ✓	-	-			
Apr.	4,039 ✓	21 ✓	3				
May	2,600 ✓	11 ✓	19				
Jun.	2,670 ✓	12 ✓	31				
Jul.	3,545 ✓	7 ✓	31	25.17			
Aug.	4,843 ✓	15 ✓	43 ✓	62.20 ✓			
Sep.	5,555 ✓	16 ✓	52 ✓	61.07 ✓			
Oct.	19,536 ✓	51 ✓	52 ✓	55.38 ✓			
Nov.	3,150 ✓	10 ✓	63 ✓	79.21 ✓			
Dec.	6,615	18	33	38.07 ✓			
<u>1954</u>							
Jan.	6,440 ✓	16 ✓	65 ✓	60.50 ✓			
Feb.	4,680 ✓	16 ✓	44 ✓	74.04 ✓			
Mar.	5,714 ✓	16 ✓	32 ✓	44.40 ✓			
Apr.	2,240 ✓	16 ✓	39 ✓	45.20 ✓			
May	3,102 ✓	16 ✓	56 ✓	43.00 ✓			
				<u>Dakota</u>	<u>Auster</u>	<u>Dakota</u>	<u>Auster</u>
Jun.	4,203	22		22	36	26.30	23.15 ✓
Jul.	3,450	14		34	32	49.00	17.50 ✓
Aug.	20,175 ✓	35 ✓		64	25	41.40	15.30 ✓
Sep.	5,945 ✓	27 ✓		28	21	35.40 ✓	15.30 ✓
Oct.	3,270 ✓	15 ✓		34 ✓	11 ✓	34.35 ✓	9.00 ✓
Nov.	7,220 ✓	30 ✓		42	40	36.45	31.10 ✓
Dec.	4,360 ✓	17 ✓		32 ✓	9 ✓	32.50 ✓	7.15 ✓
<u>1955</u>							
Jan.	7,500 ✓	21 ✓		48 ✓	18 ✓	39.55 ✓	14.10 ✓
Feb.	6,965 ✓	28 ✓		31 ✓	20 ✓	34.30 ✓	19.00 ✓
Mar.	7,127 ✓	26 ✓		39 ✓	23 ✓	43.30 ✓	16.10 ✓
Apr.	5,692 ✓	29 ✓		43 ✓	15 ✓	41.09 ✓	10.16 ✓
May	5,835 ✓	24 ✓		58 ✓	15 ✓	62.05 ✓	9.45 ✓

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- 3 -

APPENDIX XXV

	Thousands of leaflets dropped	No. of leaflet dropping sorties	No. of loudhailing sorties		No. of hours of broadcasting	
			Dakota	Auster	Dakota	Auster
<u>1955</u>						
Jun.	27,657 ✓	43 ✓	50 ✓	34 ✓	54.30	32.20
Jul.	29,900 ✓	53 ✓	39 ✓	30 ✓	39.08	23.15
Aug.	8,150 ✓	34 ✓	48 ✓	14 ✓	54.55	8.50
Sep.	29,026 ✓	41 ✓	61 ✓	50 ✓	64.15	35.20
Oct.	4,497 ✓	20 ✓	61 ✓	46 ✓	72.54	30.25
Nov.	4,640 ✓	21 ✓	49 ✓	36 ✓	54.51	22.55
Dec.	4,192	25 ✓	55	39	52.32	33.25

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- 4 -

APPENDIX XXV

	Thousands of leaflets dropped	No. of leaflet dropping sorties		No. of loudhailing sorties		No. of hours of broadcasting		No. of flying hours on loudhailing sorties	
		Valetta	Bristol Freighter	Dakota	Auster	Dakota	Auster	Dakota	Auster
<u>1956</u>									
Jan.	31,880		46	46	31	59.05	18.37		
Feb.	3,726		17	29	13	29.40	7.35		
Mar.	3,976	8	5	9	19	7.00	7.55		
Apr.	4,961	17	3	36	13	34.25	5.20	104.15	20.55
May	3,184	14	1 (Auster)	33	20	42.15	12.55		
Jun.	4,097	34	2	51	21	56.50	16.45	174.45	26.35
Jul.	5,854	29	4	36	32	39.55	26.55	123.25	59.05
Aug.	5,613	30	-	48	47	75.05	47.35	202.05	107.50
Sep.	5,630	24	-	59	21	78.05	13.45	215.05	31.40
Oct.	5,115	28	-	46	27	61.25	18.25	179.05	55.05
Nov.	15,335	39	1	51	19	32.10	7.40	151.55	25.00
Dec.	6,475	22	9	39	31	49.45	14.15	162.00	46.35
<u>1957</u>									
Jan.	6,415	31	-	41	47	45.00	32.20	139.55	72.05
Feb.	4,770	22	-	32	31	37.50	16.55	102.30	48.55
Mar.	4,725	22	-	29	49	31.40	34.55	107.35	88.20

RESTRICTED

	Thousands of leaflets dropped	No. of leaflet dropping sorties		No. of loudhailing sorties		No. of hours of broadcasting		No. of flying hours on loudhailing sorties	
		Valetta	Bristol Freighter	Dakota	Auster	Dakota	Auster	Dakota	Auster
<u>1957</u>									
Apr.	5,910	23	-	15	34	14.30	22.15	43.15	54.55
May	6,105 ✓	34	-	60	23	58.50 ✓	7.50 ✓	198.30	33.00
Jun.	5,827 ✓	32	2 (Auster)	54	13	61.20	7.20	182.15	16.25
Jul.	5,591 ✓	28	-	53	32	65.15 ✓	17.10 ✓	142.00	53.35
Aug.	5,270 ✓	26	-	48 ✓	31 ✓	40.10 ✓	17.20 ✓	150.35	46.45 ✓
Sep.	13,785	25	-	41	20	61.35	11.50	138.50	32.55 ✓
Oct.	9,320	37	-	46	13	46.30	9.25	156.55	27.20 ✓
Nov.	8,495	29	2	48	13	47.00	5.55	159.40	29.40 ✓
Dec.	11,775 ✓	31	4	34	14	28.40	10.55	106.30	37.25 ✓
<u>1958</u>									
Jan.	5,840	19	2	36	23	29.55	17.45	103.40	56.25 ✓
Feb.	6,665	31	1	33	3	19.25	1.20	72.50	10.30 ✓
Mar.	9,710	32	6	45	11	25.50	4.35	104.10	28.50 ✓
Apr.	7,867	22	3	40	14	41.30	10.05	112.55	20.55 ✓
May	9,323	30	9	57	21	41.35	13.30	159.00	37.10 ✓
Jun.	7,205	22	5	36	18	41.15	15.25	115.30	44.40 ✓

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- 6 -

APPENDIX XXV

	Thousands of leaflets dropped	No. of leaflet dropping sorties		No. of loudhailing sorties		No. of hours of broadcasting		No. of flying hours on loudhailing sorties	
		Valetta	Bristol Freighter	Dakota	Auster	Dakota	Auster	Dakota	Auster
<u>1958</u>									
Jul.	9,985	21	4	57	14	21.20	10.15	162.30	21.10
Aug.	9,230	20	6	38	18	41.40	10.35	117.40	34.50 ✓
Sep.	7,065	23	4	50	10	40.30	5.30	147.20	20.45 ✓
Oct.	5,155	13	8	55	16	43.20	11.00	162.45	26.10 ✓
Nov.	4,580	14	3	36	11	26.05	4.10	112.50	16.05 ✓
Dec.	3,475	12	4	40	4	25.10	1.10	111.45	6.50 ✓

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	Thousands of leaflets dropped	No. of leaflet dropping sorties		No. of loudhailing sorties		No. of hours of broadcasting		No. of flying hours on loudhailing sorties	
		Valetta	Bristol Freighter	Dakota	Auster	Dakota	Auster	Dakota	Auster
<u>1959</u>									
Jan.	4,545					33.40			
Feb.	6,072					20.55			
Mar.	5,600					18.00			
Apr.	3,735					10.55			
May	5,200					13.20			
Jun.	3,220					11.45			
Jul.	1,820					15.30			
Aug.	2,675					28.55			
Sep.	1,510					24.45			
Oct.	2,910					12.10			
Nov.	1,695					-			
Dec.	1,430					6.45			
<u>1960</u>									
Jan.	385					2.00			
Feb.)	1,965					30.20			
Mar.)									
Apr.)	5,995					12.25			
May)									
Jun.)	1,553					16.25			
Jul.)									

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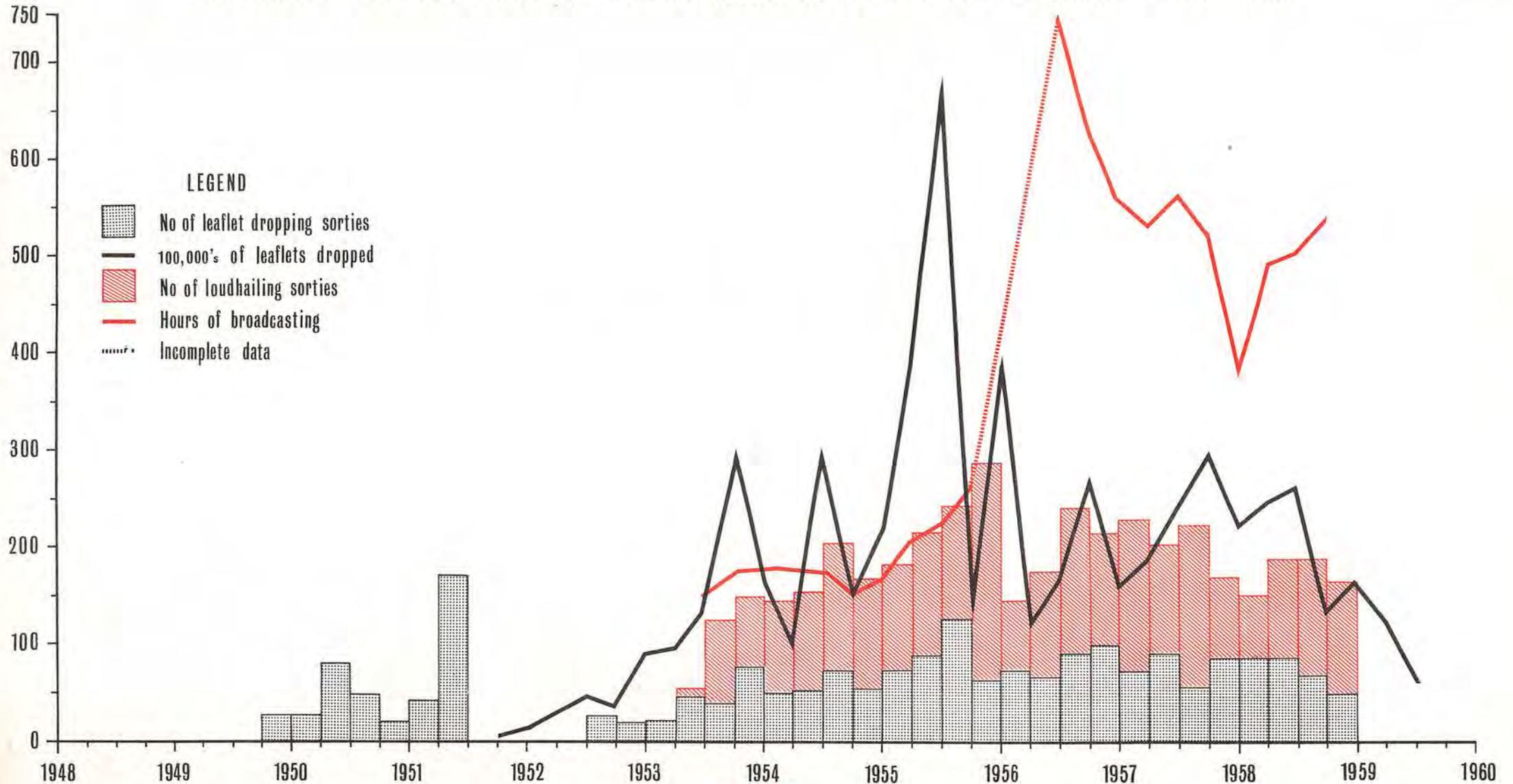
APPENDIX XXV

ANNEXURE I

OPERATION 'FIREDOG' - SUPPORT FOR PSYCHOLOGICAL
WARFARE CAMPAIGN

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OPERATION 'FIREDOG' SUPPORT FOR PSYCHOLOGICAL WARFARE CAMPAIGN 1948-1960



OPERATION 'FIREDOG' PHOTOGRAPHIC RECONNAISSANCE, 1948-1958

Month	Number of Sorties					
	Total	Mosquito	Spitfire	Anson	Meteor	Pembroke
<u>1948</u>						
Jul	62	34	28	-	-	-
Aug	16	9	7	-	-	-
Sep	43	22	21	-	-	-
Oct	46	31	15	-	-	-
Nov	48	31	17	-	-	-
Dec	56	26	30	-	-	-
<u>1949</u>						
Jan	41	24	17	-	-	-
Feb	52	14	38	-	-	-
Mar	58	37	21	-	-	-
Apr	71	39	32	-	-	-
May	56	41	15	-	-	-
Jun	66	37	29	-	-	-
Jul	57	45	12	-	-	-
Aug	64	47	17	-	-	-
Sep	59	33	26	-	-	-
Oct			24	-	-	-
Nov			24	-	-	-
Dec		40		-	-	-
<u>1950</u>						
Jan	54				-	-
Feb	121	57	64	-	-	-
Mar	44	19	25	-	-	-
Apr	13				-	-
May		4			-	-
Jun		15		5	-	-
Jul		51		12	-	-
Aug		78			-	-
Sep		40		5	-	-
Oct		43		11	-	-
Nov		63		6	-	-
Dec		77			-	-

Number of Sorties

Month	Total	Mosquito	Spit fire	Anson	Meteor	Pembroke
<u>1951</u>						
Jan	34				-	-
Feb	54	36	18	-	-	-
Mar	68	45	23	-	-	-
Apr	88	52	31	5	-	-
May	127	82	42	3	-	-
Jun	117	78	31	8	-	-
Jul	127	75	44	8	-	-
Aug	95	69	26	-	-	-
Sep	60	25	35	-	-	-
Oct	104	58	46	-	-	-
Nov	117	65	52	-	-	-
Dec	144	90	54	-	-	-
<u>1952</u>						
Jan	114	66	48	-	-	-
Feb	56	37	19	-	-	-
Mar	128	76	52	-	-	-
Apr	90	68	22	-	-	-
May	93			-	-	-
Jun	56			-	-	-
Jul	71	43	28	-	-	-
Aug	90	57	33	-	-	-
Sep	124	100	24	-	-	-
Oct	126	94	32	-	-	-
Nov	102	82	20	-	-	-
Dec	122	100	22	-	-	-
<u>1953</u>						
Jan	117	97	20	-	-	-
Feb	108	64	44	-	-	-
Mar	103	56	47	-	-	-
Apr	102	62	40	-	-	-
May	94	68	26	-	-	-
Jun	114	97	17	-	-	-
Jul	132	100	32	-	-	-
Aug	77	69	8	-	-	-
Sep	100	85	15	-	-	-
Oct	142	130	12	-	-	-
Nov	132	115	17	-	-	-
Dec	114	97	17	-	-	-

Number of Sorties

Month	Total	Mosquito	Spitfire	Anson	Meteor	Pembroke
<u>1954</u>						
Jan	75			-		-
Feb	130			-		-
Mar	118			-		-
Apr	115	58	-	-	57	-
May	77	42	-	-	35	-
Jun	19	16	-	-	3	-
Jul	66	23	-	-	43	-
Aug	71	41	-	-	30	-
Sep	77	47	-	-	30	-
Oct	56	26	-	-	30	-
Nov	71	18	-	-	53	-
Dec	70	40	-	-	30	-
<u>1955</u>						
Jan	79	22	-	-	57	-
Feb	81	10	-	-	71	-
Mar	115	1	-	-	114	-
Apr	71	-	-	-	71	-
May	62	1	-	-	61	-
Jun	89	6	-	-	83	-
Jul	31	2	-	-	29	-
Aug	47	2	-	-	45	-
Sep	83	8	-	-	75	-
Oct	77	24	-	-	53	-
Nov	45		-	-		-
Dec	53	3	-	-	50	-
<u>1956</u>						
Jan	74	-	-	-	74	-
Feb	72	-	-	-	72	-
Mar	81	-	-	-	81	-
Apr	101	-	-	-	101	-
May	78	-	-	-	78	-
Jun	73	-	-	-	73	-
Jul	59	-	-	-	59	-
Aug	71	-	-	-	71	-
Sep	49	-	-	-	49	-
Oct	127	-	-	-	127	-
Nov	105	-	-	-	105	-
Dec	84	-	-	-	82	2

Number of Sorties						
Month	Total	Mosquito	Spitfire	Anson	Meteor	Pembroke
<u>1957</u>						
Jan	121	-	-	-	94	27
Feb	94	-	-	-	75	19
Mar	92	-	-	-	74	18
Apr	45	-	-	-	30	15
May	47	-	-	-	25	22
Jun	53	-	-	-	53	-
Jul	32	-	-	-	32	-
Aug	50	-	-	-	50	-
Sep	56	-	-	-	56	-
Oct	55	-	-	-	55	-
Nov	45	-	-	-	45	-
Dec	19	-	-	-	19	-
<u>1958</u>						
Jan	96	-	-	-	95	1
Feb	65	-	-	-	65	-
Mar	48	-	-	-	48	-
Apr	42	-	-	-	42	-
May	46	-	-	-	42	4
Jun	66	-	-	-	66	-
Jul	25	-	-	-	25	-
Aug	89	-	-	-	89	-
Sep	62	-	-	-	62	-
Oct	61	-	-	-	59	2
Nov	65	-	-	-	65	-
Dec	60	-	-	-	60	-

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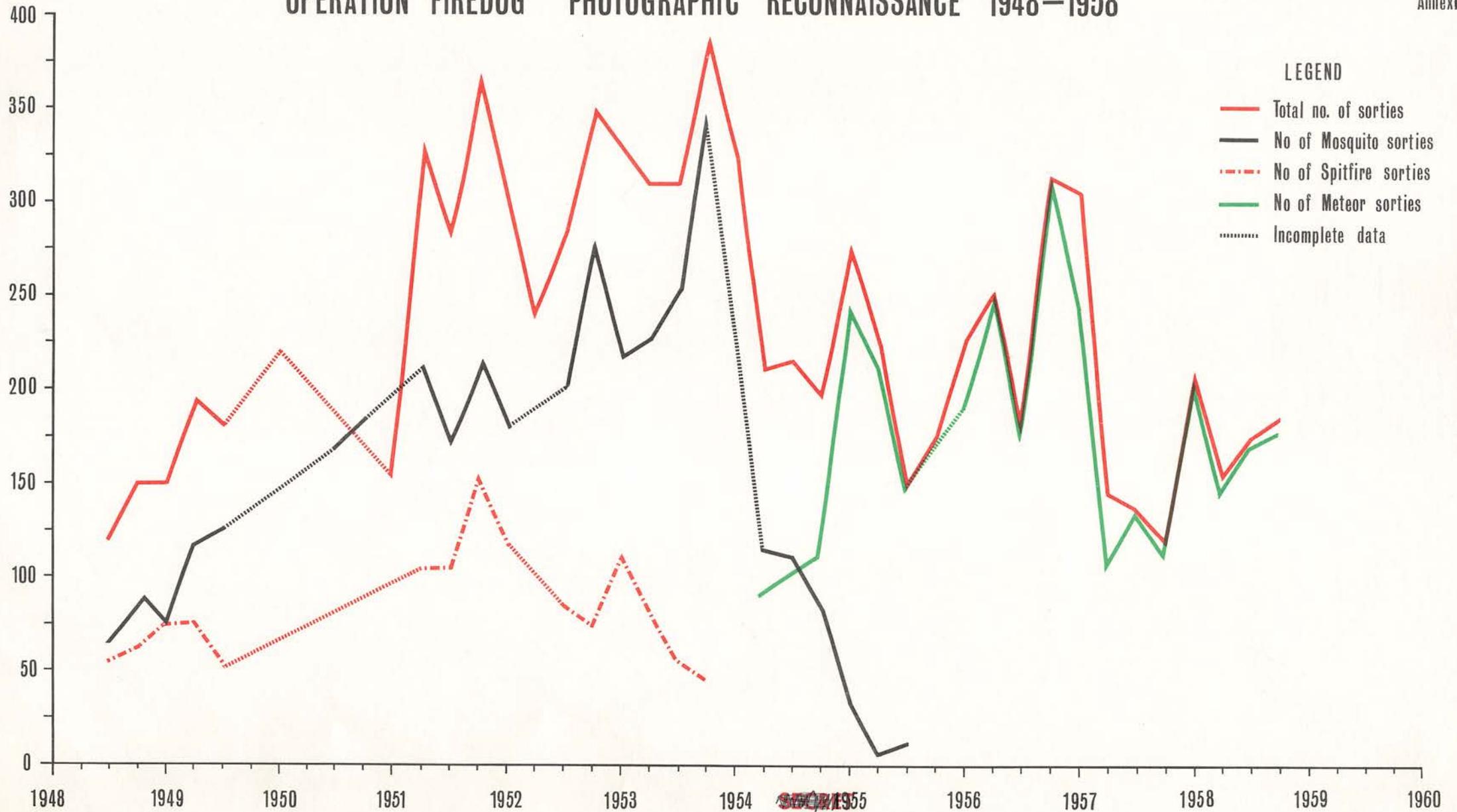
APPENDIX XXVI

OPERATION 'FIREDOG' - PHOTOGRAPHIC RECONNAISSANCE

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OPERATION 'FIREDOG' PHOTOGRAPHIC RECONNAISSANCE 1948-1958

No of sorties



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MAIN SOURCES OF INFORMATION

<u>Abbreviated Title</u>	<u>Description</u>	<u>A.H.B. reference</u>
A.C.F.E. or F.E.A.F./O.R.B.	Operations Record Book, Air Command, Far East or Far East Air Force	
M. or 224 Gp./O.R.B.	Operations Record Book, Air Headquarters Malaya or No. 224 Group	
A.C.F.E. or F.E.A.F./M.I.S.	Monthly Intelligence Summary issued by Air Command, Far East or Far East Air Force	
M./W.S.A.O.	Weekly Summary of Air Operations issued by Air Headquarters, Malaya - (incorporated in S.F./W.I.S. after 19 Apr. 1953)	IIJ. 53/19
S.F./W.I.S.	Weekly Intelligence Summary issued by the Security Forces in Malaya	IIJ. 53/19
A.O.C. (M. or 224 Gp.) Report	Reports on R.A.F. Operations in Malaya issued approximately every year by the Air Officer Commanding, Malaya	IIJ. 53/16/2
F.E.A.F./'Firedog'	Monthly Command Summary of R.A.F. contribution to Operation Firedog, issued by Headquarters, Far East Air Force	Form Stats. 122
F.E.A.F./Opsum	Weekly Summaries of operations in Malaya, from Headquarters Air Command, Far East or Far East Air Force to the Air Ministry	IIJ. 50/140/1-5
F.E.A.F./Air Attachés: Conf.	Report of Annual meeting of Air Attachés in the Far East	
M./Training Summary	Monthly squadron training summaries issued by Air Headquarters Malaya or No. 224 Group	
D.O.(M) Report	Report on the Emergency in Malaya from Apr. 1951 to Nov. 1951 by the Director of Operations, Malaya	IIJ. 53/18/1
D.O.(M) Review	Annual review of the Emergency Situation in Malaya by the Director of Operations, Malaya	IIJ. 53/18/(2-5)
L/A Warfare L.L.	Quarterly Liaison Letters on Land/Air Warfare issued by General Headquarters, Far East Land Forces	IIJ. 50/141/1/1
Malaya/G.O. Report	Annual Reports on the Federation of Malaya issued by the Colonial Office	
C.O.I./Malaya	'The Fight against Communist Terrorism in Malaya', issued by the Central Office of Information in Jun. 1951	

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<u>Abbreviated Title</u>	<u>Description</u>	<u>A.H.B. reference</u>
Rand/'The Malayan Emergency'	Memorandum of the Malayan Emergency issued in Jul. 1963 as part of a symposium on the role of airpower in counter-insurgency and unconventional warfare which was prepared for the United States Air Force Project Rand (Ref. RM-3651-PR)	
M./Formations	List of formations in Malaya during the Emergency prepared by the Air Historical Branch 5.	II/80/41
M./'Musgrave'	Report on Operation 'Musgrave' from Jun. to Dec. 1950	IIJ.53/24/1
A.M./A.C.A.S.(P)	File of the Assistant Chief of Air Staff (Policy) entitled 'Malaya', 11 May 1945 to 24 Sep. 1958	ID6/618/(1-15)
A.M./C.A.S.	Files of the Chief of Air Staff entitled:- 'Malaya, Internal Security', 26 Jun. 1948 to 2 Oct. 1950 'Establishment of Communications Aircraft for Malaya' 23 Jan. 1953 to 13 Jan. 1959	ID3/1697/(1-3) ID3/906/6
A.M./V.C.A.S.	Files of the Vice Chief of Air Staff entitled:- 'Malaya, Internal Security' 15 Nov. 1950 to 16 Dec. 1957 'Malaya, Command Organisation, 14 Nov. 1950 to 15 Dec. 1953 'Malaya, Air Effort' 8 Mar. 1951 to 13 Apr. 1956 'Malaya Emergency, Higher Direction' 29 Jan. 1952 to 15 May 1954 'Malaya, Helicopters' 27 Nov. 1951 to 20 Dec. 1955 'Airfields in Malaya' 2 Jan. 1953 to 18 Oct. 1957 'Deployment of Squadrons in Malaya' 16 Mar. 1951 to 22 Dec. 1955 'Policy in Malaya' 11 May 1945 to 13 Feb. 1951 'Progress Report on Emergency in Malaya' 11 Oct. 1951 to 6 May 1953 'Policy for Employment of Malay Regiment' 22 Nov. 1950 to 9 Dec. 1952 'Malaya, Potential of the Communist Party' 18 Nov. 1950 'Malaya, Political and Economic Background' 15 Nov. 1950 to 14 Nov. 1957 'Far East Policy' 1 Nov. 1951 to 19 Aug. 1958	ID9/621/1(1-5) ID9/621/2(1-2) ID9/621/5(1-2) ID9/621/4(1) ID9/621/12(1-4) ID9/621/14(1-4) ID9/906/4(1-3) ID9/515/(1-5) ID9/621/11(1-2) ID9/621/3(1) ID9/621/6(1) ID9/621/7(1-7) ID9/6/1(1-2)

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A.M./V.C.A.S.

'Operational Requirements -
Helicopters - General'
27 Aug. 1954 to 17 Sep. 1958

IIJ.53/16/2/6 Pt.1

'Aircraft Requirements. Malaya'
5 Jun 1954 to 1 Feb. 1955

IIJ.53/16/2/3

'Role of R.A.F. in the Present
Emergency' 10 Feb. 1953 to 14 Jan. 1954

IIJ.53/16/2/2

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REFERENCES

A.C.A.S.	Assistant Chief of Air Staff
A.C.F.E.	Air Command, Far East
Admin.	Administrative Wing
A.M.	Air Ministry
A.S.	Air Staff
C.A.I.	Command Administrative Instruction
C.A.S.	Chief of Air Staff
C.O.I.	Command Operational Instruction
C.O.I./Malaya	Central Office of Information, Malaya
C.O.M.	Command Organisation Memorandum
C.O.O.	Command Operational Order
C.O.S.	Chiefs of Staff
D. Ops(M)	Director of Operations, Malaya
F.A.R.E.F.	Far East Land Forces
F.E.A.F.	Far East Air Force
F.O.	Foreign Office
G.A.I.	Group Administrative Instruction
G.O.I.	Group Operational Instruction
G.O.M.	Group Organisation Memorandum
G.O.O.	Group Operational Order
G.S.I.	Group Signals Instruction
Gp.	Group
L/A	Land/Air
L.L.	Liaison Letter
M.	Air Headquarters, Malaya
Malaya/C.O. Report	Malaya/Colonial Office Report
M.I.S.	Monthly Intelligence Summary
O.R.B.	Operations Record Book
SACSEA	Supreme Allied Command, South East Asia
SEACOS	South East Asia, Chiefs of Staff
S.F.	Security Forces
Tech.	Technical Wing
V.C.A.S.	Vice Chief of Air Staff
W.I.S.	Weekly Intelligence Summary
W.S.A.O.	Weekly Summary of Air Operations

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INTRODUCTION

- (1) ✓ ~~C.O.I./Malaya, Jun. 1951, p.1~~
- (2) M./O.R.B.(A.S.) Jul. 1951, Appendix ^{216 para 8} F.E.A.F. Operational Research Report No. 1: 'Rand/The Malayan Emergency', p.2.
- (3) ✓ ~~C.O.I./Malaya, Jun. 1951, p.1~~

CHAPTER 1

- (1) ✓ Details from Malaya/C.O. Reports, 1948-1956, passim; D.O.(M) Review, 1948-1957, p.3. (IIJ53/18/3); C.O.I./Malaya, Jun. 1951 pp.4-6.
- (2) V.C.A.S. file 'Policy in Malaya', COS JP(45)121, 7 Jun. 1945 (ID9/515/Pt.I)
- (3) *ibid*, SEACOS 393, 11 May 1945, 394, 12 May 1945 (ID9/515/Pt.I)
- (4) M./O.R.B.(A.S.) Apr. 1948; V.C.A.S. file 'Policy in Malaya', COS JP(45)121, 7 Jun. 1945, COS (45) 586 (0), 24 Sep. 1945 (ID9/515/Pt.I)
- (5) *ibid*, SEACOS 394, 12 May 1945 (ID9/515/Pt.I)
- (6) *ibid*, SACSEA to F.O./434, 3 Sep. 1945 (ID9/515/Pt.I)
- (7) ✓ Details from Malaya/C.O. Reports, 1948 to 1956, passim; ^{D.O.(M) Review, 1948 to 1957, pp.3-5 (IIJ53/18/3)} D.O.(M) Review 1955 pp. 2, 3, and 1956, pp. 1-3 (IIJ53/18/2); C.O.I./Malaya, Jun. 1951, pp. 4-9; AOC(M) First Report, Jun. 1948 to Mar. 1949, pp. 2, 3, Second Report, Apr. 1949 to Dec. 1950, pp. 6, 7, and Third Report, Jan. to Aug. 1951, pp. 3, 4. (IIJ53/16/2)
- (8) Malaya/C.O. Report, 1952, p.5
- (9) *ibid*, 1949, p. 203; A.O.C.(M) Second Report, Apr. 1949 to Dec. 1950, p. 6 (IIJ53/16/2)
- (10) *ibid*, Third Report, Jan. to Aug. 1951, Annexure 3 to Appendix 'A' (IIJ53/16/2)
- (11) *ibid*, Third Report, Jan. to Aug. 1951, pp. 3, 4 (IIJ53/16/2)
- (12) *ibid*, Third Report, Jan. to Aug. 1951, p. 3 (IIJ53/16/2)
- (13) D.O.(M) Review, 1948 to 1957, p. 4 (IIJ53/18/3)
- (14) ✓ Details from Malaya/C.O. Reports, 1948 to 1956, passim; D.O.(M) Review, 1948 to 1957, pp. 19-21, (IIJ53/18/3); D.O.(M) Reviews, 1955 pp. 9-19, and 1956, Appendices F-J (IIJ53/18/2); C.O.I./Malaya, Jun. 1951, pp. 10-11; A.O.C.(M) Second Report, Apr. 1949 to Dec. 1950, pp. 8, 9 and Third Report, Jan. to Aug. 1951, pp. 5-7 (IIJ53/16/2)
- (15) Malaya/C.O. Reports, 1949 p. 209, 1950 p. 7, and 1954 p. 411.
- (16) *ibid*, 1951 p. 8; A.O.C.(M) Third Report, Jan. to Aug. 1951, p.6 (IIJ53/16/2)
- (17) D.O.(M) Review, 1955, p. 10 (IIJ53/18/2)
- (18) *ibid*, 1948-1957, Appendix 'B', Table I. (IIJ53/18/3)
- (19) A.O.C.(M) Second Report, Apr. 1949 to Dec. 1950, p.8 (IIJ53/16/2); Malaya/C.O. Report, 1949, p. 209.
- (20) D.O.(M) Review, 1956, Appendix 'G' p. 1. (IIJ53/18/2)

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- (21) *ibid*, 1948 to 1957, Appendix 'C', (IIJ53/18/2); A.C.F.E.-F.E.A.F./O.R.B. (A.S.) Orders of Battle, 1948 to 1960 *passim*
- (22) D.O.(M) Review, 1948 to 1957, p. 19 (IIJ53/18/2); Malaya/C.O. Reports, 1948 to 1956 *passim*.
- (23) *ibid*, 1948 to 1956, *passim*; D.O.(M) Review, 1948 to 1957, pp. 13-15 (IIJ53/18/2); D.O.(M) Review, 1956, p. 4 (IIJ53/18/3)
- (24) Details from V.C.A.S. file 'Policy in Malaya', COS (50) 216, 27 Jun. 1950 (ID9/515/Pt.4); Malaya/C.O. Report, 1950 pp. 3-13; D.O.(M) Review, 1948 to 1957, pp. 9, 16-19 (IIJ53/18/2); A.O.C.(M) Second Report, Apr. 1949 to Dec. 1950, p. 7 and Third Report, Jan. to Aug. 1950, pp. 4, 5 (IIJ53/16/2); D.O.(M) Report, 1950/1951, pp. 6-10 (IIJ53/18/1)
- (25) As for (24) plus V.C.A.S. file 'Policy in Malaya', SEACOS 242, G.H.Q. FARELF to Min. of Defence, 15 Nov. 1951 (ID9/515/Pt.5)
- (26) Malaya/C.O. Report, 1949, p. 209
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CHAPTER 2

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CHAPTER 3

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RESTRICTED

CHAPTER 3

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RESTRICTED

RESTRICTED

CHAPTER 3

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RESTRICTED

RESTRICTED

CHAPTER 3

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RESTRICTED

RESTRICTED

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RESTRICTED

RESTRICTED

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RESTRICTED

CHAPTER 4

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RESTRICTED

CHAPTER 4

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RESTRICTED

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CHAPTER 4

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CHAPTER 4

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RESTRICTED

CHAPTER 4

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RESTRICTED

~~RESTRICTED~~

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~~RESTRICTED~~

RESTRICTED

CHAPTER 5

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RESTRICTED

RESTRICTED

CHAPTER 5

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RESTRICTED

RESTRICTED

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RESTRICTED

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RESTRICTED

CHAPTER 6

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RESTRICTED

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RESTRICTED

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