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THE SECOND WORLD WAR  
1939-1945  
ROYAL AIR FORCE

# AIR/SEA RESCUE

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## CHAPTER I

### EARLY HISTORY AND FORMATION OF THE AIR/SEA RESCUE SERVICE, 1919-1941

The primary duty of an Air/Sea Rescue Organisation is to rescue airmen, not aircraft from the sea. In times of peace such an organisation has two aims; the maintenance of morale, and the closely allied humanitarian impulse of saving life. In times of war to these two aims must be added a third, the most important of the three, the preservation of trained manpower for the furtherance of the war effort.

In the early years after the first world war little special equipment or organisation was provided for the rescue of aircrews unfortunate enough to force-land or bale out over the sea. They were issued with lifebelts or flotation jackets of varying types, but once in the sea were dependent for rescue upon passing naval or mercantile shipping. In the years of peace, however, little flying was undertaken by landplanes over the sea. Moreover the increasing reliability of aircraft engines and the fact that there was less need for flying in adverse weather conditions meant that the number of forced landings at sea was very small.

For many years aircraft flying from carriers had been provided with attendant destroyers and rescue craft, and most of the early shipborne aircraft had some form of flotation gear which would enable them to float for some time should they be forced down in the sea. This usually took the form of permanently inflated flotation bags in the rear part of the aircraft fuselage, but some types had inflatable bags fitted amidships, which blew up externally. The only Royal Air Force aircrew who were provided with any type of rescue equipment were the flying boat crews who by nature of their work, which entailed constant flying over and alighting on the sea, were provided with a triangular dinghy for use as an emergency tender.

The first type of inflatable dinghy, the "A" type, of rough triangular shape and intended for a crew of three, was developed for use as a flying boat tender in 1925. This was followed by "B" and "C" types, also triangular but of a smaller and lighter construction and intended for use only in an emergency. The "D" type, similar to the "A" type but accommodating a crew of five, succeeded the latter as a general purpose tender for flying boat crews and was also adopted for emergency rescue purposes.

In 1935 Fleet Air Arm aircraft were supplied with a circular pneumatic dinghy known as the Youngman dinghy. These dinghies, in three sizes "E", "F" and "G", had an outer ring of two separate chambers forming the buoyancy compartment, filled in at half depth with a heavy fabric floor. Housed on the upper surface of the top wing of the aircraft, they were provided with a number of suspension wires meeting at a common point in a heavy steel cable, capable of supporting the aircraft and thus providing means of salvage as well as rescue for the crew. In the event of a ditching the dinghy was released from the wing and floated to the surface still connected by the cable to the aircraft. The crew then walked along the upper wing and sat themselves in the dinghy to await rescue.

As regards marine rescue craft, bombing and air gunnery ranges were provided with safety boats intended only to operate in waters in the immediate vicinity of their own stations.<sup>1</sup> In 1935 Air Staff approval was given to the building of an experimental high speed launch, to be tried out as a sea-going safety boat for coastal defence work. If the trials of such a boat were successful, it was intended to establish similar safety boats for the use of General Reconnaissance Squadrons of Coastal Command when flying over the sea, and for use as a marker boat and a check to air navigation.

The experimental launch (High Speed Launch No. 100), the first of its kind, was handed over to the Royal Air Force Station, Manston, in August 1936. It was a success as a safety boat, capable of carrying four stretchers and proceeding to sea to aid distressed crews in all but the roughest weather. In consequence, in 1936 orders were given for a further fifteen of these launches, one of which was to be established on each of the seven Coastal Command General Reconnaissance Squadrons and one each on Malta, Aden, Basra, Ceylon, Penang and Hong Kong.<sup>2</sup> Although these craft were established primarily for use with aircraft of their own units, they could be called upon to assist other aircraft in distress over the sea, the conduct of such search being left entirely to the individual station commanders.

From 1934 onwards instructions had been issued to units from time to time on the steps to be taken when service aircraft were in distress or overdue flying over the sea in the vicinity of the British Isles.<sup>3</sup> In 1937 the first instructions were issued in which specific reference was made to these rescue high speed launches. The procedure was as follows:—

When a distress call was received or an aircraft was known to be overdue a message was broadcast to shipping from the G.P.O. W/T Stations; naval authorities were requested to inform any H.M. ships in the vicinity and H.M. Coastguards were advised in order that they might, if necessary, call for assistance upon the lifeboats of the R.N.L.I. If the missing aircraft was believed to be in the vicinity of the Croydon-Continental air routes, Croydon aerodrome was also informed in order that civil aircraft might search along the route. If the location of the aircraft in distress was believed to be more than three hundred miles from the British coast an international broadcast was sent out from the G.P.O. Radio Station at Portishead, in order that ships at sea of any nationality might keep watch for possible survivors. Where Royal Air Force flying boats or General Reconnaissance bases were within reasonable distance, their help could also be enlisted in the search, as well as that of any rescue high speed launches in the area, at the discretion of the senior officer concerned.

In 1936 and 1937 the Air Staff gave consideration to the policy of carrying flotation gear in land planes, whose primary flying role was over the land but which might be called upon to carry out flights over the sea.<sup>4</sup> As a result in 1937 it was decided that Fleet Air Arm aircraft, General Reconnaissance aircraft and torpedo bombers as well as flying boats, should be provided with emergency dinghies, marine distress signals and positive buoyancy for

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<sup>1</sup> A.M. File 324485/34.

<sup>2</sup> A.M. File S 49508 (*passim*).

<sup>3</sup> A.M.O.s A 30/34 and A 394/37.

<sup>4</sup> A.M. File 494550/36 (*passim*).

their aircraft. This latter was to be achieved by built-in watertight compartments, fuel-jettisoning gear, or inflatable flotation gear and was required for the additional safety of the crew rather than for the purpose of salvaging the aircraft, it having been realised by this time that a ditched aircraft was of little use for salvage. Whilst it was agreed that new types of bomber aircraft were to include in their design accommodation for an inflatable dinghy, it was felt that modifications to existing types could not be justified and the lack of them would prevent the stowage of any flotation gear in the aircraft. Accordingly at this time crews of existing bomber aircraft were provided only with a type of flotation jacket.

At the beginning of 1938 representations were made by Bomber Command that as bombers were having to undertake long journeys over the sea in the course of navigational exercises, their crews should be given a reasonable chance of rescue by the provision of dinghies. In May of the same year it was agreed that the heavy bombers (the Harrow, Whitley, Heyford and Hampden) should be provided with a circular type of pneumatic dinghy ("H" type) adopted from the Youngman dinghy, but which on ditching floated freely unattached to the aircraft. It was found possible to house the dinghy and accessories in a floating container which could be thrown into the sea by one of the crew immediately the aircraft came to rest. The medium bomber types (the Battle and Blenheim) were to be equipped with a triangular type "C" dinghy in a similar container. A large type for seven to eight persons (the "J" type) was being developed for the heavy bomber aircraft (such as the Stirling) then commencing production. These dinghies were not intended to be propelled, but merely to assist the crew to remain afloat until they could be rescued by sea craft. No equipment was provided other than a topping-up pump for the dinghy, a drogue to act as a sea anchor, and three marine distress signals of an inferior kind which were not adequately waterproofed and therefore seldom functioned when required.

In 1938, also, the Navy experimented with a new smoke float for carriage in their dinghies, which in operation would emit a large cloud of red smoke. The design was cumbersome and only one or two could be carried. They also called for provision of an emergency flying ration for each member of the crew and a first aid outfit. The Royal Air Force followed suit with rations and first aid, but water—the most important item—remained a problem which could only be met by carriage of the normal service water bottle issued to each member of the crew. It should be pointed out here that it was not anticipated at this time that any aircrew would have to remain in their dinghy for more than a short period before rescue, and the equipment provided was based on this assumption.

In the course of the extensive Home Defence exercises held in August 1938 and July-August 1939, landplanes were obliged to fly over the sea and special rescue arrangements were made to cover the period of the exercise in each case.<sup>1</sup> Special safety boats were supplied by the Royal Air Force and attendant destroyers supplied by the Navy. In addition coastguards were instructed to keep special watch for any distress signals from aircraft forced landed in the sea. In September 1938, the facilities provided by the Civil

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<sup>1</sup> A.M. Files S. 45021 and S. 48357 (*passim*).

Life-Saving Control Officers at civil aerodromes were added to those which could be made available for rescue work. These officers could call upon civil aircraft equipped with radio and advise those flying over the area to search for missing aircrew.<sup>1</sup>

In December 1938, the Air Officer Commanding-in-Chief Bomber Command (Air Chief Marshal Sir E. R. Ludlow Hewitt) raised the question of the safety arrangements in his command. He pointed out that our war plans, then being formulated, involved the operation of the main part of our Striking Force across the North Sea. It was essential, therefore, that training of bomber squadrons should include extensive flights over the sea, but these had to be restricted owing to the lack of rescue arrangements and the necessity for relying upon the rescue craft of Coastal Command, often not available without long delay. At this time there were seven high speed launches in operation at Manston, Felixstowe, Donibristle, Calshot (two), Tayport and Pembroke Dock, leaving four hundred miles of eastern coast line from Tayport to Felixstowe uncovered by any high speed launch. Even though the bomber crews were now provided with dinghies, these would be of little use if marine craft could not be despatched quickly to their aid. At the same time, the war plans included the conversion to a General Reconnaissance role of four auxiliary squadrons to operate from Dyce, Thornaby, Detling and Belfast, which would also require safety boats.

As a result a conference was held at Air Ministry on 28 February 1939, presided over by the Assistant Chief of Air Staff (Air Vice-Marshal W. Sholto-Douglas) and attended by representatives of Coastal, Fighter, Bomber and Training Commands, to decide how best to meet these additional requirements. The Chairman ruled that the conference should confine itself to peace requirements and not those which might be considered necessary in the event of mobilisation.<sup>2</sup> It was decided that the whole high speed launch organisation in Home waters should be placed under the operational and administrative control of Coastal Command, and that to meet the increased requirements an additional thirteen high speed launches would be necessary. This was to include two boats for the Middle East Command, one for Port Said and one for Haifa, where requirements were similar to those in the British Isles. It was realised that the building of these additional launches would take from nine to twelve months. It was also agreed that the high speed launches already allocated to Penang and Ceylon should be diverted to Grimsby and Yarmouth, and the launch from Donibristle be transferred to Blyth, in order that more immediate rescue cover should be given to the North Sea.

In July 1939 amended instructions were issued to units laying down the responsibility of Coastal Reconnaissance Group Commanders for co-ordinating the aircraft and marine craft engaged in rescue; that they were to be responsible for calling upon the services of the high speed launches in their area and for requesting naval assistance when necessary.<sup>3</sup> Pending the provision of a chain of nineteen high speed launches to be available for rescue work at places ranging from Wick in the north of Scotland

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<sup>1</sup> A.M.O. A 348/38.

<sup>2</sup> A.M. File S. 49508: Encls. 26A and 34A.

<sup>3</sup> A.M.O. A 263/39.

eastwards round the coast to the Isle of Man, interim measures were taken to locate existing launches at Tayport, Blyth, Grimsby, Yarmouth, Felixstowe, Ramsgate, Calshot (two) and Pembroke Dock.

On the outbreak of war the Assistant Chief of Air Staff ruled that no further launches were to be shipped abroad until requirements at Home had been met—the result of this decision was that the Overseas Commands had only four high speed launches, at Singapore, Malta, Aden and Basra.<sup>1</sup>

### Early Stages of the War

The general lines of the peace-time rescue arrangements continued during the early months of the war. Aircraft alighting in the sea were searched for by operational aircraft from their own units, and if and when located *ad hoc* arrangements were made to divert any surface craft available in the vicinity. The 1939 instructions became obsolete, however, as certain of the peace-time facilities were no longer available. Transmission from Civil Aerodromes' W/T Stations was no longer allowed, and the standing station flights of reconnaissance planes were dispersed, which hitherto could be called upon in an emergency. Owing to the congestions which occurred on the G.P.O. public telephone system, delay was frequently experienced in advising the coastguard stations and calling out the lifeboats.<sup>2</sup> To assist in overcoming this, the G.P.O. divided Great Britain into Group Distress areas, according to the Bomber, Fighter, or Coastal Group Headquarters with which telephone communication was the quickest. In war time, for reasons of security, the G.P.O. W/T Stations were no longer allowed to broadcast to shipping.

In March 1940 the Fighter Command Movements Liaison Section was instrumental in causing revised instructions to be issued embodying the new chain of communication for dealing with aircraft in distress over the sea.<sup>3</sup> An aircraft in distress sent out an S.O.S. or Mayday (M'aidez) message. The Royal Air Force formation receiving this passed a priority message to the Movements Liaison Section of Fighter Command. Through this Section the message was passed to the naval authorities, the appropriate Reconnaissance Group of Coastal Command for action by air and/or marine craft, and to the Group Distress Area Headquarters for action by H.M. Coastguards.

It was soon found that there was an unnecessary loss of life when G.P.O. broadcasts to shipping could not be enlisted, and in June 1940 it was agreed that the saving of life was of more importance than the possibility of giving information to the enemy.<sup>4</sup> The G.P.O. W/T Stations were, therefore, brought into use again for rescue work and the instructions previously issued amended accordingly.<sup>5</sup> It is interesting to note that at this time, June 1940, there were still only fourteen high speed launches in commission at the original bases which had had them in July 1939, plus Kirkwall, Lerwick, Aberdeen and Guernsey.<sup>6</sup>

<sup>1</sup> A.M. File S. 49508: Encl. 122A.

<sup>2</sup> A.M. File S. 60223: Encl. 2A.

<sup>3</sup> A.M.C.O. A 29/40.

<sup>4</sup> A.M. File S. 60223 (*passim*).

<sup>5</sup> A.M.C.O. A 54/40.

<sup>6</sup> A.M. File S. 60223: Encl. 72A.

The intensity of air operations over the Channel during the early stages of the Battle of Britain, brought to the notice of the authorities the losses that were being incurred of airmen landing in the sea close to our shores. During the last twenty-one days of July over 220 aircrew were killed or missing, the majority over the sea. As a result, at the end of July 1940 the Vice-Admiral, Dover (Vice-Admiral Sir Bertram H. Ramsay) and the Air Officer Commanding No. 11 Group (Air Vice-Marshal K. R. Park) organised a local rescue service with light naval craft, Royal Air Force high speed launches and some Lysander aircraft borrowed from Army Co-operation Command. The value that could be derived from such a "Combined Services" organisation was soon apparent.

#### **Formation of Skeleton Sea Rescue Organisation**

On 22 August 1940 the Deputy Chief of Air Staff (Air Vice-Marshal A. T. Harris) called a meeting at the Air Ministry to discuss a draft organisation for rescue craft. This meeting was attended by the Director of Small Vessels Pool (Admiral Sir L. G. Preston) and other Admiralty, Coastal and Fighter Command representatives. It was decided to combine the skeleton rescue organisation run by the high speed launches of Coastal Command with the rescue functions of the Naval Auxiliary Patrol, and to place the Royal Air Force rescue craft under the operational control of the local naval authorities. It was agreed that the Royal Air Force should be responsible for organising the necessary air search and for informing the naval authorities of the area being searched. Approval was given to the use of the twelve Lysander aircraft, already borrowed unofficially from Army Co-operation Command, and which were now to be placed under the operational control of Fighter Command. It was intended that these aircraft should be stationed at various Fighter Stations along the coast to conduct searches within a twenty mile radius from the coast, any air search beyond this radius being undertaken by operational aircraft. As a result of these decisions, special liaison officers were appointed to Headquarters, Nos. 10 and 11 Fighter Groups to assist in handling the search organisation. Thus, nearly twelve months after the outbreak of war, the first steps were taken towards the formation of an organisation specifically allotted the task of sea rescue.

#### **German Sea Rescue Service**

The enemy had for some considerable time realised the value of a sea rescue service for the maintenance of aircrew morale.<sup>1</sup> Such a service was in existence as an integral part of the German Air Force before the outbreak of war, but it was not used extensively until the Norwegian campaign. During the Battle of Britain it was extended to cover the English Channel and areas off the Belgian and Dutch coasts. At that time rescues were mainly effected by He. 59 Float-planes, sometimes assisted by fast rescue launches. The He. 59 carried three collapsible rubber boats, blankets and medical stores and was equipped with two-way radio communication. It was painted white, and marked with the Red Cross until representations were made to the Germans that the use of the Red Cross in this manner could not be countenanced.<sup>2</sup>

<sup>1</sup> A.M. File S. 72415: Encl. 5A.

<sup>2</sup> A.C.M. Sir Hugh Dowding's Despatch on *The Battle of Britain*, para. 156.

One of the most interesting innovations of the German Rescue Service was the Sea Rescue Float. A number of these first appeared in October 1940, placed in position up to half-way across the English Channel. Very considerable care had been taken to equip the floats in every detail for the maintenance of life of any aircrew who might reach them. They were fitted with bunks for four men, blankets, clothing, food and water, distress signals and lamps. They were painted yellow with a red cross each side of the central conning tower and had a 250 foot length of rope attached to floats drifting in the current, to aid the airman in climbing aboard.

The German Rescue Service also led the way in the provision of certain other types of rescue equipment. As with the Royal Air Force, an inflatable dinghy formed part of the standard equipment of their bomber aircraft, and in the summer of 1940 one-man dinghies began to be provided for pilots of Me. 109's. These one-man dinghies were compactly folded and carried on the pilot's back. They could be partially inflated by a flask of liquid carbon dioxide gas carried for the purpose, the pilot completing the inflation by mouth. All German aircrews were also provided with bags of a chemical known as fluoresceine, which stained a large area of water with vivid green colouring; and their bomber crews were also provided with wireless transmitters which could be taken in the dinghy and used to call for assistance.

It was the German Rescue Service, too, which first employed yellow colouring (the colour adopted later by the international Air-Sea Rescue Service), their rubber dinghies, skull caps and flotation jackets being all of this colour.<sup>1</sup> The Royal Air Force were employing the same colour for dinghies, but by August 1940, its use had been extended to the painting of skull caps and flotation jackets.<sup>2</sup> Following on the German initiative, fluoresceine bags were also issued to Royal Air Force aircrews. Smoke Floats, similar to those used in the Fleet Air Arm in 1938, were also issued to aircrew.

### **Early Development in Air-Sea Rescue Equipment**

Before any attempt was made to organise air-sea rescue, units searching for their own lost aircrews soon began to realise that crews in distress needed immediate aid to enable them to survive for long enough to be rescued by passing shipping. Various devices were constructed at different Royal Air Force Stations which were intended to be dropped from searching aircraft for the succour of distressed aircrews.

Two types of supply-dropping equipment first thought of in 1940 for this purpose were the Thornaby Bag and the Bircham Barrel.

*Thornaby Bag.* The first of these was the Thornaby Bag invented and first used in 1940 by the Royal Air Force Station, Thornaby.<sup>3</sup> It consisted of a fabric parachute bag strengthened by tapes, and buoyed by floats made from Mae West kapok pads. The advantage of these bags was that all the components were readily obtainable on the station. Individual bags were

<sup>1</sup> A.M. File S. 60223: Encl. 103A.

<sup>2</sup> As a result of considerable research, the original yellow shade used for most rescue equipment, developed into an orange or chrome tint.

<sup>3</sup> A.M. File S. 70846 and D.D.A/S.R. Folders B.J. 1 and 2.

made up with a slightly varying content at each station where Air-Sea Rescue aircraft might be called upon to carry out a search over the sea, but they all contained watertight tins of foods, drink, cigarettes and first aid equipment. The bag was never a complete success owing to the fact that it was hard to see in even a moderate sea, and was liable to burst open upon contact with the water.

*Bircham Barrel.* The Royal Air Force Station, Bircham Newton, followed up the idea of the Thornaby Bag by beginning experiments with a type of supply dropping container which could be carried on the bomb racks of a searching aircraft, and dropped therefrom to distressed aircrews. This was known as the Bircham Barrel, and consisted of a cylindrical container (actually the cardboard tail container of a 250 lb. bomb), with a reinforced inner frame and an inner canvas bag, the whole rendered completely watertight. Here again, the components were readily available on the station, and as with the Thornaby Bag, the contents varied according to the individual station concerned. They all contained distress signals, water, some form of food and a first aid outfit.

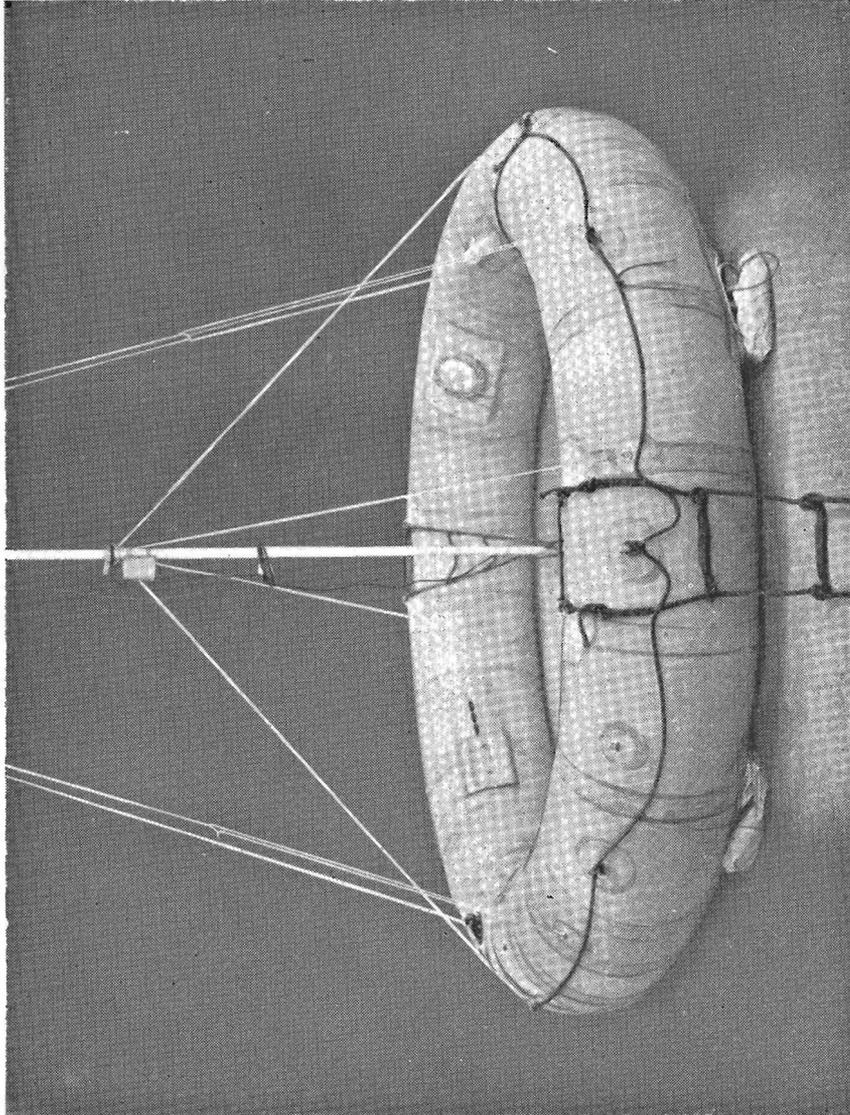
*Dinghy Dropping Equipment.* It was soon obvious that distressed aircrews required something more than food containers to aid their chances of survival until picked up by shipping.<sup>1</sup> Between August 1940 and March 1941 the Station Commander of the Royal Air Force Station, Lindholme (Group Captain Waring) invented and perfected, with the aid of his armament officer, a dinghy dropping apparatus whereby an inflatable dinghy, food, clothing and first aid outfits could all be dropped in a set of containers. The apparatus was originally designed to be carried by Hampden aircraft, and consisted of five containers. The large container was the tail unit container of a 500 lb. bomb and in this a large dinghy was installed which inflated automatically upon contact with the water. In four similar containers (tail unit containers of 250 lb. bombs) were water, food and protective clothing. All the containers were strung together by floating ropes which distressed crews could grasp and haul in. The advantage of this dinghy-dropping apparatus was that even if the ditched crew were in the dinghy rescued from their crashed aircraft, the type of dinghy dropped to them in the Lindholme apparatus was frequently of a more stable type than their own and would stand up better to rough seas; in any event they could avail themselves of the food, water and warm clothing.

*Emergency Packs.* In 1939 and 1940 a spate of local improvisations arose to include many and varied items in rescue apparatus and dinghy packs, according to whatever the different units thought fit. Co-ordination was brought about later by the introduction of standardised emergency equipment packs made to accommodate only standard items of equipment, emergency rations and first aid.

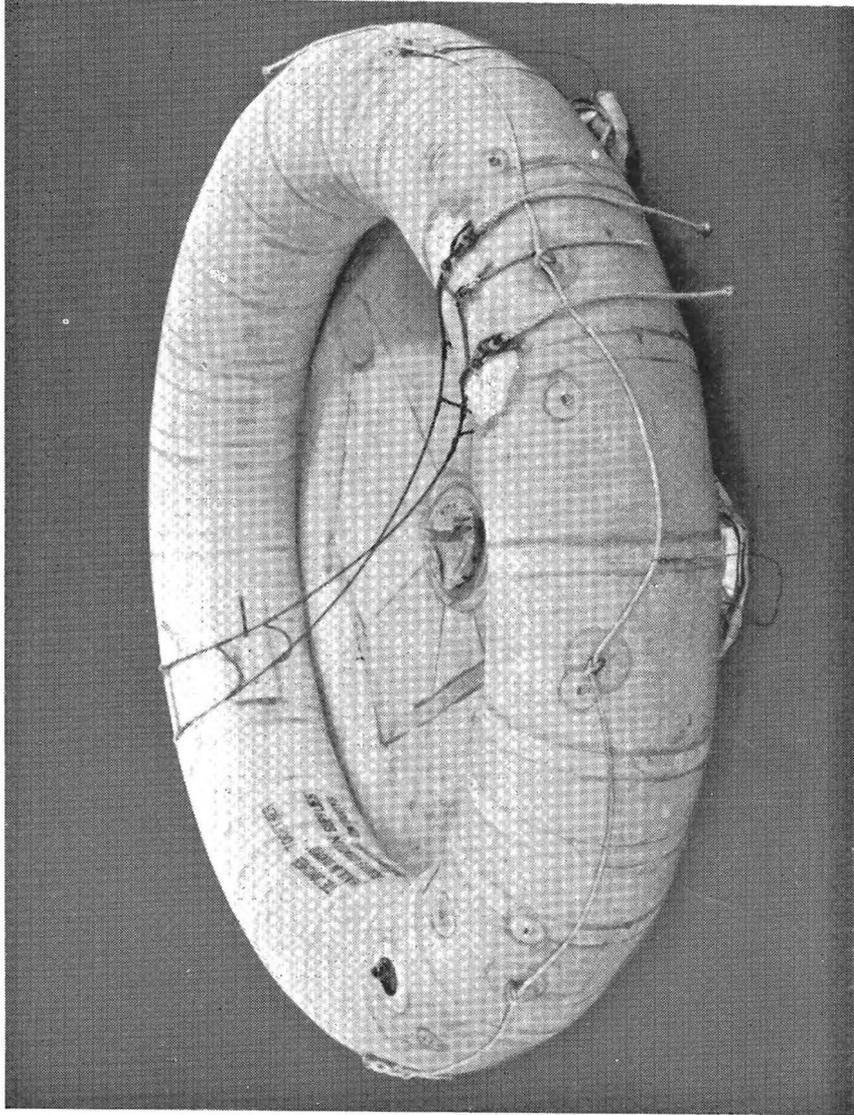
*Aircraft Dinghies.* Apart from the rescue packs and dinghies which might be dropped by searching or rescue aircraft, every member of an aircrew operating over the sea had to be provided in his aircraft with some means of assistance towards maintenance of life until such time as he could be located and rescued.

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<sup>1</sup> A.M. File S. 70805 and D.D.A/S.R. Folder—Lindholme Gear.



'H' Type Dinghy.



'J' Type Dinghy.

In 1940 the "H" and "J" type dinghies were redesigned to provide greater carrying capacity and increased stability, without increasing the stowage dimensions. The two-compartment buoyancy arrangement had to be sacrificed, but leak stoppers were introduced simultaneously. Varying sizes of these stoppers, introduced into the dinghy pack, could be used to seal efficiently any puncture the dinghy might sustain during or after launching. In the original "H" and "J" type dinghies the crew were obliged to sit on the edge, there being no depth of floor. In the improved types the floor was lowered to permit the crew to sit inside thus making it less likely to overturn in a rough sea, and obviating the possibility of an injured or exhausted man falling overboard. The modified type of "H" dinghy was introduced and used in Wellington, Hudson, Hampden and Whitley aircraft. In the Wellington, Hampden and Whitley it was installed in a stowage compartment on the aircraft, and when the aircraft came to rest on the water the sea put into operation an immersion switch which actuated the operating head of a carbon-dioxide bottle thus automatically inflating the dinghy. In the Whitley the dinghy was carried in a valise in the aircraft. An operating cord from the valise had one end attached to the operating head of the carbon-dioxide bottle, and upon ditching it was necessary to attach the other end of the cord to a strong point of the aircraft. The subsequent action of throwing the valise into the water actuated the operating head and automatically inflated the dinghy.

A dinghy scaled down from the improved "H" and "J" types but to accommodate three persons—the "M" type—replaced the now obsolescent "C" type triangular pneumatic raft in 1940, followed by a two-seater "L" type which was in production at the end of 1940. Thus by the end of 1940 all multi-seater aircraft had been or were being supplied with dinghies.

The fighter pilot on the other hand had to rely solely upon his flotation jacket (or Mae West) to keep him afloat until help arrived, should he bale out or force land in the sea.<sup>1</sup> The possibility of fitting a dinghy in fighter aircraft was carefully investigated, but the difficulties in stowing one in so small an aircraft were such that the idea had to be abandoned. In April 1940 experts in the Ministry of Aircraft Production directed their attention to the possibility of designing a single-seater dinghy which could be packed into a valise and worn attached to the parachute harness. Unfortunately at that time the difficulties of attaching such a pack to the parachute harness led to the project being dropped, and it was not until later in the year when an example of the German single-seater dinghy became available, that fresh impetus was given to the development of a dinghy for the fighter pilot. The German one was of inferior design, and the Ministry of Aircraft Production were able to profit by the enemy's mistakes when experiments began anew in the autumn of 1940.<sup>2</sup>

All these rescue appliances and dinghies were at best a very temporary means of maintaining life; without co-ordinated search and rescue, and an adequate supply of rescue craft, little could be done to reduce the losses of aircrew force-landed in the sea.

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<sup>1</sup> M.A.P. Folder Res/F1.214: Encls. 1A and B.

<sup>2</sup> For further details see Chapter 3.

The Sea Rescue Organisation put into force in August 1940, valuable though it had proved to be during the Battle of Britain, was still found to be seriously wanting in many respects, and of too narrow a scope to meet the increasing demands being made upon it. The value of such an organisation was largely dependent upon the speed at which it was able to take action, and speed of action was difficult to acquire with the divided control imposed upon the Service. The administration of high speed launches (which suffered from a high degree of unserviceability) was the responsibility of Coastal Command, and the local Naval Flag Officers were responsible for their operation; Fighter Command was responsible for providing search Lysanders and fighter escorts for marine craft. Coastal and Bomber Commands were frequently called upon to provide operational aircraft for search purposes. There was no one body to co-relate the requirements for rescue with the activities of the various branches of Air Ministry and the Ministry of Aircraft Production responsible for rescue apparatus and craft. It was becoming obvious that the co-ordination of the work of the rescue services under a central organisation would be the only means of securing true efficiency.

For the month of October 1940 the aircrew losses stood at the high figure of 260, and it was known that a large proportion of this total had been lost over the sea. It was felt that many of these losses might have been avoided by a more efficient rescue service and, accordingly, in December 1940, the Chief of Air Staff instructed that the Sea Rescue organisation be drastically re-organised, expanded and put on an efficient basis.<sup>1</sup> It was realised that to do this would necessitate the whole time and attention of a senior Royal Air Force officer, assisted by a suitable staff.

#### **Formation of the Air/Sea Rescue Service. January-February 1941**

Acting upon the instructions of the Chief of Air Staff, a meeting was held in the Air Ministry on 14 January 1941, under the Chairmanship of the Deputy Chief of Air Staff, to discuss methods of improving and expanding the Sea Rescue Service. The Navy and the various Royal Air Force Operational Commands were fully represented at the meeting, and amongst those present was Group Captain L. G. Le B. Croke, Officer Commanding Royal Air Force Station, St. Eval. This officer had shown a keen interest in Sea Rescue at his station and was already regarded as the Director of Sea Rescue Services elect.

D.C.A.S. opened the meeting by explaining that no aircraft or aircrews could be spared specifically for rescue tasks, and all proposed improvements or expansions must therefore come within the existing operational framework both at home and overseas; the operation of the rescue services remaining the responsibility of the Operational Commands. Assistant Chief of Naval Staff (Home) (Rear Admiral Power) stated that the Admiralty were faced with the same difficulties and would be unable to secure special craft for rescue services. It was agreed that the rescue of Royal Air Force personnel from the sea had become of such paramount importance that it should receive the whole time attention of an Air Commodore as Director of Sea Rescue Services, assisted by a Naval Deputy Director not below the rank of a senior Commander. The

<sup>1</sup> D.C.A.S. Minute to D.U.S. and V.C.A.S. dated 22 January 1941. Copy on A.M. File S. 72408.

Royal Air Force component of the Directorate was to be responsible for all those matters affecting the air side of the problem, and the naval staff to be responsible for the provision and organisation of surface craft, the closest possible co-operation and liaison being maintained between the two services.

Considerable discussion then followed on the methods of initiating rescue searches and it was made clear that the existing system of communications must be employed, through the Fighter Groups to the naval authorities. In view of this, it was recommended that the Director of Sea Rescue should be located at Headquarters, Fighter Command; but subsequent consideration made it apparent that the best location was Headquarters, Coastal Command, where he would be able to keep in very close touch with all air and sea searches. The meeting concluded with a resolution that, as soon as appointed, the Director and Deputy Director of Sea Rescue should set up a Committee to examine plans for the general improvement of the Rescue Organisation.

Provisional approval for the formation of the Directorate was given by the Secretary of State on 24 January, and subsequently by the Treasury with the proviso that the establishment should be reviewed in six months' time.<sup>1</sup> This proviso was made on the grounds that whilst there was a clear need for the existence of a Directorate in the initial stages, once the Organisation was functioning satisfactorily the continuance of a separate Directorate might not be necessary. Group Captain L. G. Le. B. Croke was accordingly appointed the first Director of Sea Rescue, and the Admiralty appointed as Deputy Director, Captain C. L. Howe, R.N. The first action of the Committee, convened by the newly appointed Director, was to agree that the title of the Directorate should be changed to "Air/Sea Rescue Services" as its fundamental task was the rescue of airmen, and such a title would obviate confusion with the Naval Sea Rescue Services.

A set of regulations for the operation of the new Directorate was then drawn up by the Committee, to be put into effect as soon as the Directorate took up its duties at Headquarters, Coastal Command. The Directorate was answerable direct to D.C.A.S. and briefly its responsibilities were to be:—<sup>2</sup>

- (a) The co-ordination of all sea rescue operations for aircraft and aircraft crews.
- (b) The provision of ancillary equipment to be dropped by aircraft at the scene of distress, to provide aircrews with a chance of survival until the arrival of the rescue craft.
- (c) The provision of adequate marine craft, moored buoys and similar aids to rescue.

In addition to the Director and Deputy Director, officers were appointed to the staff of the Directorate of Air/Sea Rescue in February 1941, to fill the approved establishment vacancies of one squadron leader, one flight lieutenant, a marine craft officer and a signals officer. The establishment for a signals officer was not filled at the outset. In addition, four watch-keeping officers were employed solely for Air/Sea Rescue work, at each of the four Area Combined Headquarters.

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<sup>1</sup> A.M. File C.S. 8046 (*passim*).

<sup>2</sup> A.M.C.O. S. 8/41.

The new Directorate took up its duties at Headquarters Coastal Command on 6 February 1941. During the following six months its small staff proceeded with the work of co-ordinating the rescue services. It obtained the co-operation of the Ministry of War Transport and the Royal National Lifeboat Institution, the assistance of the Police and the Royal Observer Corps, took steps for training of crews in dinghy and ditching drill, overhauled and improved rescue apparatus. In brief it secured a steadily mounting interest in the rescue organisation.

The organisation procedure at this time was laid down as follows. The Director of Air/Sea Rescue services and his staff were to be attached to Coastal Command where they could keep in close touch with the sea and air authorities concerned in search activities.<sup>1</sup> Officers of the Directorate were also to be attached to the Area Combined Headquarters of Nos. 15, 16, 18 and 19 Groups, whose functions were to control sea rescue activities and co-ordinate air and sea searches. For the purpose of sea search the British Isles was divided into four areas coinciding with the geographical boundaries of the Coastal Command Groups, and all Royal Air Force Flying Stations within each area contributed as far as their resources permitted to searches within that area.<sup>2</sup>

Close-in search in a coastal area twenty miles in depth, and stretching from the Wash round to the south coast, along the Channel coast round to the Bristol Channel, and to South Wales as far as Milford Haven, was the responsibility of the Fighter Command Lysander aircraft. Fighter Groups communicated direct with the Naval Flag Officer-in-Charge when the despatch of surface rescue craft was required.

Besides dealing with the actual rescue activities, the Directorate of Air/Sea Rescue was to be responsible through the Directorate of Operational Requirements for the development, improvement and introduction of all life-saving equipment and safety devices for aircraft which might land at sea. In accordance with the normal procedure, the Ministry of Aircraft Production were then responsible for meeting, developing and producing these requirements, the Director General of Equipment for issuing and storing them and the Director of Servicing and Maintenance for keeping them in efficient working order. In addition the Director of Hygiene was responsible for recommending to D.A./S.R. suitable rations, medical aids, etc., for use in emergency dinghies.<sup>3</sup>

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<sup>1</sup> Details of organisation given more fully at Appendix No. I.

<sup>2</sup> See map attachment to Appendix No. I.

<sup>3</sup> For medical aspects of Air/Sea Rescue see *Medical History of the War* prepared by M.A.8.

## CHAPTER 2

### THE WORK OF THE DIRECTORATE OF AIR/SEA RESCUE (FEBRUARY-SEPTEMBER 1941)

From its foundation the Directorate had four main problems to solve:—

How to teach aircrews to ditch and abandon a land plane forced landed into the sea.

How to maintain the life of the aircrew after their aircraft had been abandoned.

How to locate the aircrew.

How to bring them safely home.

A fifth problem, how to improve the construction of aircraft so that they might be successfully ditched and the crew make a safe exit—was at that time handled by the Ministry of Aircraft Production. Until all these problems could be solved, the rescue organisation could not be regarded as successful.

Taking these problems in logical order—the last problem first—before the formation of the Directorate of Air/Sea Rescue a section of the Ministry of Aircraft Production, Research and Development (Sea planes) Branch (R.D.S.), was interested in the technical development of life saving equipment and in improving the design of aircraft to assist in successful ditching. If the aircraft could be made strong enough to withstand the stresses imposed during the landing, if the buoyancy could be improved by means of watertight lower hatches and auxiliary flotation gear and if exits could be made easy of access and egress, the chance of saving the lives of an aircrew would be far greater. These tasks though formidable in aircraft already in production, could be successfully carried out on all proposed new types. The same section of the Ministry of Aircraft Production also interested itself in the successful stowage and operation of the pneumatic dinghies carried in the aircraft, and to this end they arranged to interrogate rescued aircrews so that the survivors might offer criticism of the equipment and give valuable information as to the performance of the aircraft.<sup>1</sup> From these experiences the Ministry of Aircraft Production evolved special ditching drills detailing the duties of each member of the aircrew in preparing for ditching.

The next difficult problem which the Directorate had to face was the training of aircrews in ditching and dinghy procedure. At this time most crews were uneducated in the use of the emergency dinghy and equipment and unfamiliar with the art of successful ditching. All the assistance and safety apparatus which could be devised would be useless unless aircrews could be trained to extricate themselves from their ditched aircraft and having done so to use the aids with which they had been provided or which might be dropped to them. As soon as special lifesaving gear was first introduced there were a few Group, Station or Squadron Commanders who were sufficiently keen to try and interest aircrews in their own safety, but

<sup>1</sup> Part responsibility for these duties was later taken over by D.A/S.R. who by virtue of the scope of their organisation and the various statistics available to them could use the experience of survivors to assist in producing better methods of search and types of rescue equipment.

on the whole little training was given regarding the correct distress procedure, handling of aircraft and dinghy drills. In 1940 No. 5 Bomber Group had some rescue enthusiasts who were led by the Air Officer Commanding (Air Vice-Marshal A. T. Harris) and they were sufficiently interested to conduct local experiments and organise their own local rescue services.<sup>1</sup>

As soon as it was formed in February 1941, the Directorate of Air/Sea Rescue began to represent to all commands the urgent need for aircrew instruction in all rescue aspects, and made requests that every endeavour should be made to give pilots and aircrews dinghy drill, etc. Lectures and instructional pamphlets were prepared and syllabuses of Initial Training Wings in Training Command revised to include duties of aircrew before, during and after ditching. Starting in June 1941, special air diagrams were issued to illustrate the ditching drills prepared by the Ministry of Aircraft Production. These showed in colour step by step pictures of the main features of the drill and were issued in a most attractive form in an effort to enlist the interest of aircrews. In spite of this training drive it was apparent from rescue results and reports of survivors that insufficient time and attention were being paid to instruction in air/sea rescue; aircrews generally refused to take much interest on the grounds that it would "never happen to them", and the Directorate had an uphill task in their drive to organise and co-ordinate rescue training.

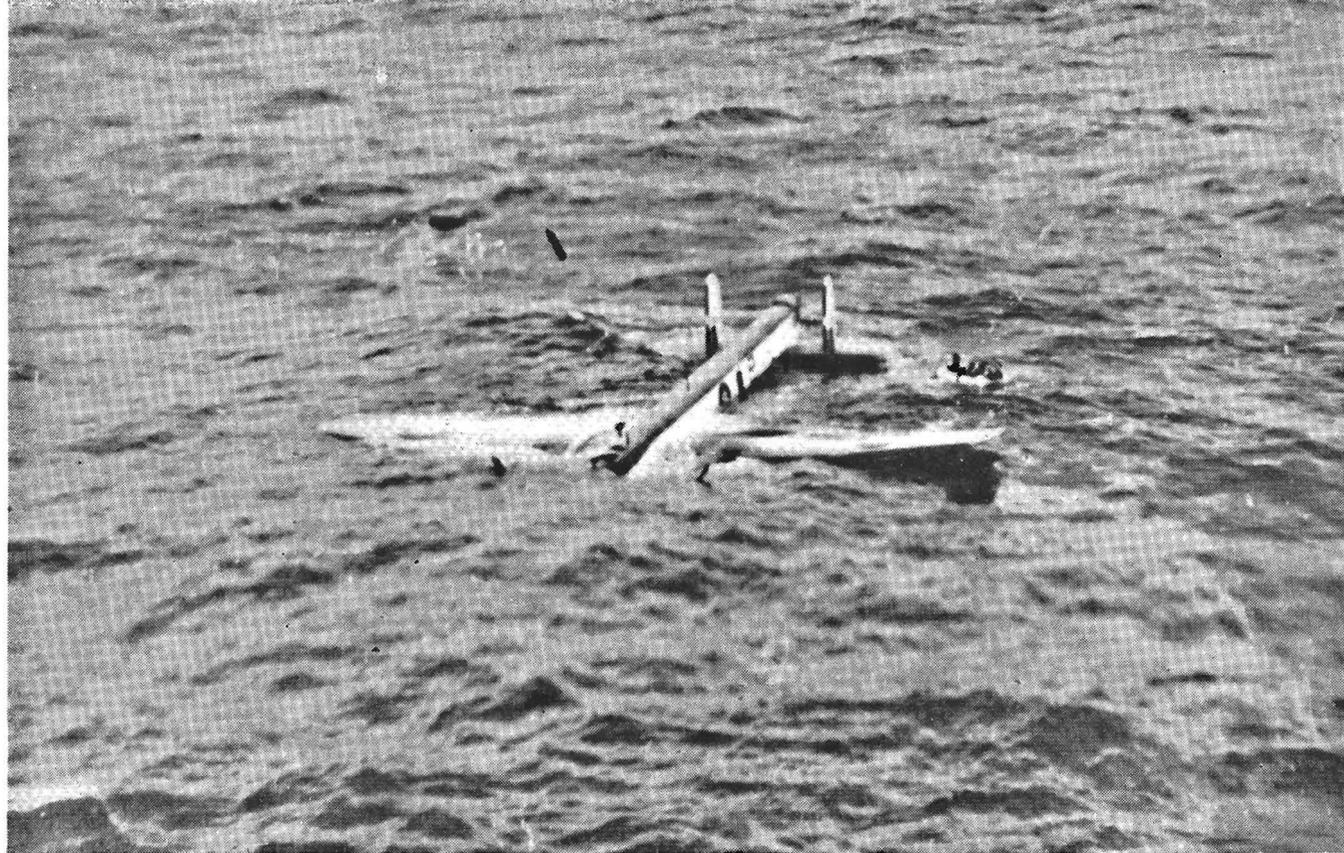
An incident which occurred on 15 August 1941, illustrated that there were some Training Units where interest was taken in these matters. A Wellington from No. 20 Operational Training Unit was on a training cross-country flight with a pupil crew captained by a Flight Sergeant Instructor. Fifty miles east of Wick the engines failed and the aircraft was ditched in accordance with the normal ditching drill. Both the captain and the screened wireless operator were injured in the crash and rendered unconscious, whereupon the pupil crew rescued them and deposited them in their "J" dinghy, carrying out the correct dinghy drill. After thirty minutes they were rescued by a naval sloop. No. 20 O.T.U. at least was so well aware of the importance of dinghy drill that the pupil crews had carried out drill supposing two members of the crew to be injured. That they were able to carry out on their first cross-country flight the instructions given them in practice spoke highly for the training of the crew.

The problem of maintaining the life of the aircrew after abandoning their machines mainly revolved round the provision of suitable dinghies and rescue supply dropping devices.

*Dinghies. (Multi-seater types.)* At the beginning of 1941 automatically inflatable dinghies (types "H", "M" and "L") were available for multi-seater aircraft, and in addition the large inflatable dinghy ("J" type), capable of accommodating seven to eight persons, was in production for allotment to heavy bomber aircraft. All these dinghies were of circular shape and were intended merely to keep the crew afloat in the vicinity of their ditched aircraft. They were stored in the aircraft in a valise, or a blow-out stowage from which they were either manually or automatically ejected according to the type of aircraft.

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<sup>1</sup> A.M. File S. 72447 (*passim*).



A ditched Whitley. Aircrew await rescue in dinghy.

*Single-seater type.* In 1940 a special single-seater inflatable dinghy was being devised for the use of fighter pilots.<sup>1</sup> Generally speaking, encouragement was not given to the ditching of single-engine fighter aircraft, the pilot being instructed to bale out over the sea unless low altitude made ditching imperative. It was therefore necessary to provide a dinghy to be carried on the person, so that a pilot baling out would have with him a means of survival in the sea. The "K" single seater type was designed accordingly: a boat shaped dinghy packed in a valise and worn either attached to the parachute harness or the Mae West according to the type of aircraft flown. At the beginning of 1941, 12,000 "K" dinghies were ordered for production and issue to all fighter and Fleet Air Arm pilots, and by September of that year had been supplied to all single seater aircraft. Improvements on the original design were soon effected, and the dinghy pack made to include paddles, a telescopic mast and flag to attract attention, and emergency rations.

An interesting incident involving the use of both a "K" and "M" dinghy took place on 26 May 1941. A Fulmar of the Fleet Air Arm was forced to ditch in the Atlantic. As well as the "M" type dinghy from the aircraft, the captain had borrowed a Royal Air Force "K" dinghy pack. The waves were thirty feet high and owing to fear of being washed overboard, the pilot decided to use the "K" dinghy as a roof. Both men lay flat in the "M" dinghy and held the "K" dinghy down on the top of them, by which means they kept out the sea. They remained like this for two nights and one day. On the second day, the seas being less rough, they were able to remove the "K" dinghy and tow it behind. They paddled for a time in the direction of what they supposed to be land, then saw a large ship about six miles off. Being unable to fire the distress signal, they lifted the "K" dinghy and waved it to attract attention. The ship turned about, picked them up and landed them at Holyhead. This incident proved the need for a dinghy cover for all types of dinghy, which improvement was being put into production at that time.

*Thornaby Bag and Lindholme Dinghy Dropping Gear.* In April 1941, the successful rescue of a Whitley crew, who had been at sea in their dinghy for seventy-two hours, was carried out with the aid of a Thornaby bag and a Lindholme dinghy dropping gear.<sup>2</sup> This proved a practical successful test of the new type of apparatus. As a result D.A/S.R. immediately requested Coastal Command to instruct its units in making up Thornaby Bags. These were to be held at every station whose aircraft might be employed on air rescue searches.

In view of the success which attended the Lindholme gear's initial use, it was agreed to commence commercial production of a number of sets for the use of Bomber and Coastal aircraft when employed on a sea search. To accelerate the provision of this urgently needed apparatus, the Royal Air Force Station, Lindholme, undertook the production of 100 sets, using station labour and the components available from Royal Air Force stores. Between June and December 1941, these sets were provided and allocated to squadrons in Bomber Command and Coastal Command equipped with

<sup>1</sup> A.M. File S. 70803 and D.D.A/S.R. Folder—"K" Dinghy.

<sup>2</sup> A.M. File S. 70805/I and D.D.A/S.R. Folder—Lindholme Gear.

Hudson, Hampden and Wellington aircraft, the three types originally scheduled to employ the apparatus. Rescues with the aid of Lindholme gear became frequent but one which is outstanding on account of the endurance of the crew took place on 1 July 1941.

A Hampden proceeding to Dusseldorf on operations was forced to ditch in the North Sea sixty miles east of Yarmouth. The crew of four took to their dinghy, but could find no paddles. They drifted for four days, after which they made efforts to paddle in a westerly direction with improvised paddles made from unserviceable marine signals. By the eighth day they were feeling very weak and their supply of water had become exhausted. They had been unable to attract the attention of any aircraft and no shipping was seen as they were drifting in the minefields. On the morning of the ninth day a Hampden saw them and dropped a Lindholme dinghy gear. In spite of their weakness they managed to reach the Lindholme dinghy and drank the water stored in the containers. Just after midday on the same day they were picked up by a Royal Air Force launch, after having been afloat from one Tuesday morning to the following Thursday week.

*Bircham Barrel.* By July 1941, Bircham Newton had perfected its method of dropping supplies from Blenheim aircraft by means of the Bircham Barrel.<sup>1</sup> In August, a further improvement was added in order to make it more visible to a distressed crew and assist them to pick it up. This consisted of a float connected to the barrel by a buoyant cord; and ensured that on dropping the rope spread out across the sea so that it could be seen and caught. By September, arrangements were in hand to clear the Bircham Barrel for use in a wide range of aircraft, so that it might be available to all stations called upon to aid in rescue work.

*Lysander Rescue Outfit.* The Lysander, the original type of aircraft used specifically in Air/Sea Rescue search, was unable to carry the Lindholme gear, but it was necessary to provide it with some type of rescue apparatus which could be dropped to distressed crews.<sup>2</sup> Early in 1941, an apparatus was therefore devised consisting of four sets of "M" type dinghies, each containing water, food and distress signals and each packed in a valise inside a standard small bomb container. These containers were fitted and dropped from the stub-wings of the Lysander.

*Rescue Floats and Buoys.* Although the German Air/Sea Rescue floats had created a good deal of interest, there was no proof that they had been successful. However, in January 1941, Air Ministry agreed to build sixteen floats of a similar pattern as an experiment, to be moored in various channels and estuaries.<sup>3</sup> These floats painted red and orange were equipped with food, clothing, a cooking stove and blankets and were provided with an automatic W/T set, distress signals, signalling torch, and whistle to attract the attention of passing shipping. Naval and Royal Air Force craft visited the floats from time to time to service them and to take off any airmen who might have managed to reach them. Although the knowledge of the presence of these floats undoubtedly exerted a good influence on the morale of aircrews, no rescues were ever effected by them. The initial experiment

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<sup>1</sup> A.M. File S. 70846 and D.D.A/S.R. Folders B.J. 1 and 2.

<sup>2</sup> A.M. File S. 72467.

<sup>3</sup> A.M. File S. 70809.

was not repeated, but those floats already in position were allowed to remain. During April five ex-German life saving floats which had drifted ashore on the British coast were placed in position for the use of our distressed airmen, at Portsmouth, Shoreham and Newhaven.<sup>1</sup>

Provision of smaller buoys with fixed moorings seemed a much more practicable proposition. This was discussed at D.C.A.S.'s meeting on 14 January, when it was suggested that suitable navigational buoys should be fitted with ladders and ropes to enable a ditched airman to clamber on to them. On 27 February the Admiralty were asked to fit suitable buoys on the east and south coasts as temporary refuges, with ladders, life lines and a box containing rations, water, first-aid kit, knife, floating lamp, Verey pistol and cartridges. In addition a yellow flag was provided, so that anyone who managed to climb aboard could let searching aircraft know of their presence on the buoy. In June, the scheme was extended to cover the Milford Haven, Cardiff and Tyne areas.

### **Aids to Location**

The problem of saving the lives of the crew did not end when they succeeded in getting into a dinghy; the most difficult operation was to locate them. The wireless distress signals received from aircraft over the sea enabled a D.F. (direction finding) fix to be obtained, but owing to distance or bad weather some time might have elapsed before searching aircraft or surface craft could have arrived in the vicinity, in which time the dinghy might have drifted a considerable distance from its original position.

Sometimes an aircraft in distress had no time to send out an S.O.S. before ditching. The occupants of the dingy had to be provided, therefore, with means which would help searching craft to locate them. All aircrew carried whistles for sound location, but it was necessary to provide visual and radio aids to location. The German idea of providing Mae Wests and skull caps coloured yellow was extended to all aircrew. Fluorescine bags were packed in the dinghies, which on immersion stained the surrounding water. Early experiments had been made with red and green colouring but these were not found to show up well so here again the yellow colouring was introduced. At the beginning of 1941 automatically inflating balloons or kites were supplied in dinghies as an aid to location, and the "K" dinghy had a telescopic mast and flag supplied for the same purpose. In addition to this the Directorate of Air/Sea Rescue from its early days encouraged the development of water-proof pyrotechnic signals and floating signalling torches; but the most important aid to location being developed in 1941 was the dinghy wireless set on which rescue craft could home. Unfortunately, delays were experienced and it was not until September 1941, that sets were ready for trials.

One more rescue aid, apt to be overlooked as an assistance to location, was the cage of homing pigeons carried in many multi-seater aircraft. If no S.O.S. was possible before ditching, a pigeon could be released bearing a message giving location of the distressed crew.

### **Rescue of Survivors**

The fourth problem—to bring home the crew when located—involved the provision of aircraft and marine craft specially allotted for the purpose

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<sup>1</sup> A.M. File S. 70812/1 (*passim*).

and the speedy co-operation between both air and surface craft to effect a successful rescue. Every vessel at sea and every aircraft flying in the vicinity was regarded as a potential rescuer, and as soon as contacted the naval authorities set in motion the machinery for calling out or diverting surface craft, whether those of the Navy, Air Force or Royal National Lifeboat Institution.

As far as neutral countries were concerned the Directorate maintained as close a watch as possible on all aircraft that became distressed or might force-land in waters in close proximity to their coast lines, and in the case of Eire direct working arrangements were put into force and equipment provided in certain cases. Where aircraft were known to be off their course and likely to become distressed information was passed by telephone to the offices of the United Kingdom Representative to Eire, Sir John Mackie. This office which maintained a twenty-four hour watch, immediately conveyed the information to the Eire Minister of Defence from whence it travelled to the Chief Officer of the Coast Life-Saving Services.

The Coast Life-Saving Services were responsible for operating all sea rescues off the coast of Eire and were in direct touch with coast watching services and with the lifeboats. The lifeboats all belonged to the R.N.L.I. and this authority made no differentiation on account of the border between Northern and Southern Ireland. In July 1941, the Directorate approached the R.N.L.I. with a view to arranging for additional lifeboats around the coast of Ireland. As a result, one full time lifeboat was placed at Killybegs in Donegal Bay, and auxiliary lifeboat stations were set up at intervals around the coast where gaps existed between the normal lifeboat stations, as was also done to cover certain sections of the Scottish coast.<sup>1</sup>

In addition the Eire Government agreed to a trawler the *Robert Hastie* being based at Killybegs. This was administered by a civilian shipping company operated by the Admiralty in the area of operation of the Coastal Command aircraft based on Lough Erne, and was available to go to the aid of any aircraft in distress. Wherever possible, any Royal Air Force survivors were to be landed in Northern Ireland to avoid the possibility of their being interned. The G.P.O. wireless stations at Valencia and Malin Head came into direct use in regard to distress over the Atlantic.

In addition to the Lysander search aircraft, Coastal Command could be called upon to make use of their operational aircraft for deep search and where necessary Bomber Command were also called upon for assistance. The aircraft locating a dinghy guided the surface rescue craft to the scene, the crew were taken aboard and the boat returned to its base where the survivors received immediate medical attention.

The task which the Directorate of Air/Sea Rescue faced in its first year, the solution of all these problems, was a formidable one, and the interest of the Air Staff in the provision of an efficient and expanding service can be understood when one realises that the losses of trained aircrew personnel in the sea which were occurring in 1941 averaged 200 per month, when every member of an aircrew was of the utmost value to the progress of the war.

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<sup>1</sup> A.M. File S. 71715 (*passim*).

### Rescue Aircraft

From its inauguration, everyone concerned with Air/Sea Rescue had been warned that the shortage of men and machines made it impossible to allot aircraft specifically for air/sea rescue and calls must be made upon the operational commands for assistance. The difficulty in carrying out efficient rescues with such a handicap is illustrated by the struggles of the Directorate to obtain additional aircraft during its first year of office.

*Lysander.* In January 1941 the twelve Lysanders borrowed from Army Co-operation Command were the only aircraft employed specifically on search work.<sup>1</sup> The searching which they undertook was confined to a limited belt, outside which the other commands had to rely on their own rescue arrangements. In May 1941, these aircraft were transferred to the complete control of Fighter Command, and with the addition of a further six aircraft were allotted, two each to nine Fighter Stations: Pembry, Portreath, Exeter, Warmwell, Tangmere, Shoreham, Manston, Martlesham, Coltishall.

Following representations from Fighter Command that these aircraft were insufficient to cover the search areas, the nucleus of air/sea rescue aircraft was enlarged in September to four squadrons of Lysanders (two of 8 plus 4 and two of 4 plus 2). This expanded force widened the original area of search round the coast from the Isle of Man on the west, round the south coast and up the east coast as far as the mouth of the Humber.

*Walrus Amphibian.* As early as 1940, recommendations had been made that a type of amphibious aircraft would be of valuable assistance to the rescue service, as in calm weather it could alight on the sea to the rescue of ditched aircraft. The Admiralty was approached to provide Walrus aircraft for this purpose, whilst the United States were asked if they could supply a suitable amphibian. Success was not achieved in either direction. The Admiralty could not spare any Walruses, and the only suitable types in the United States, the Guba and Sikorsky amphibian, were not available. In May 1941 a further appeal was made to the Admiralty for Walruses for the rescue of fighter pilots in the Bristol Channel, where lack of harbours on the North Cornwall coast made difficult the rescue of fighter pilots covering convoys in the area. This was followed up by a similar request for Dover, where it was stated in support of the request that the enemy was again making use of float planes for their own rescue work.<sup>2</sup> Whilst promising to make every effort to increase rescue craft in the area, the Admiralty again found themselves unable to supply Walruses as all they had were needed to provide protection for cruisers on trade routes.

In July three Walruses already in Coastal Command were authorised for use as rescue aircraft, but the field of search that they could cover was very small compared with the requirements. D.C.A.S. concerned by the large number of fighter pilots forced down in the Channel, caused further appeals to be made to America during this month for the use of some PBV (Consolidated) amphibians.<sup>3</sup> Here again there was no result, there being no new amphibious aircraft available in the United States at that time. In

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<sup>1</sup> A.M. File S. 71039.

<sup>2</sup> A.M. File S. 70807 (*passim*).

<sup>3</sup> A.M. File C.S. 9960.

desperation, the Director of Air/Sea Rescue and the Air Officer Commanding-in-Chief, Fighter Command, made personal appeals to the Fifth Sea Lord which resulted in the Navy delivering six Walruses to Fighter Command at the beginning of August, to cover the coastal areas around Hawkinge, Coltishall, and Portreath.

In September 1941 the Lysanders and Walruses already obtained were formed into composite squadrons, thus the first Air/Sea Rescue Squadrons were formed as Nos. 275, 276, 277 and 278 Squadrons with establishments and located at Valley, Colerne, Stapleford Tawney and Coltishall respectively. In the face of the pronouncement that no aircraft or crews could be allotted for rescue work in six months the Directorate had achieved the provision of 24 additional Lysanders and 9 Walruses, all allotted especially for air searches.

### **Marine Craft**

The high speed launch building programme, suffering from the switch from peace to war conditions, labour troubles and lack of materials, had produced only 22 high speed launches by February 1941, and the estimated rate of production at that time was only two per month.<sup>1</sup> The original 64-foot model had been followed by a 63-foot type which had the advantages of a properly constructed sick bay, better seaworthiness and manoeuvrability than its predecessor. Both types, however, were difficult to maintain and suffered from a high degree of unserviceability. As an example, on 6 February 1941 only four high speed launches were serviceable in the east coast area between the Shetlands and Dover and there was only one serviceable boat north of Blyth on that day. The two pre-war orders for high speed launches had been followed up by a further one in December 1940 bringing the total in use and under production to 66 boats, but it was not anticipated that any of the additional craft would be available until the latter end of 1941. At the beginning of 1941 there were various types of Royal Air Force and naval marine craft which could be called upon to assist in rescue work within the limitations imposed by their structure and speed.

*Royal Air Force Pinnaces.* These 60-foot diesel-engined boats were established on various stations as general purpose boats. They were used for torpedo recovery, carriage of cargo to waterborne balloon barrages, etc., and were quite good sea boats for their size though useless for very rough weather. In February 1941, 14 of these pinnaces were in service located at Sullom Voe, Invergordon, Gosport and Calshot.

*Royal Air Force Seaplane Tenders.* A number of 40-foot seaplane tenders were established at flying boat bases for use as attendant craft for seaplanes and flying boats. Suitable only for use in the open sea in the calmest weather, they were of little value for rescue work except in the case of ditchings close inshore. In February 1941, these were established at Sullom Voe, Helensburgh, Invergordon, Bridlington, Wells-on-Sea, Gosport and Calshot.

*Naval Motor Launches.* A number of naval motor launches manned by naval personnel were provided by the Admiralty for use as rescue vessels when not required for their normal duty as coastal patrol boats. These 110-foot launches had a reasonable speed (20 knots maximum) and were

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<sup>1</sup> A.M. File S. 70807 (*passim*).

good sea boats, but most of them were of too deep a draught to cross the mine barrier. In February 1941, an average of 20 of these motor launches were available daily for rescue work, mainly in the vicinity of Portland, Dover, Newhaven, Dartmouth, Milford Haven and Falmouth.

Although all these craft could be called upon to aid in a search, together with miscellaneous small naval coastal craft such as converted motor yachts (known as air rescue boats) the majority were of negligible value except under the best weather conditions. Naval motor torpedo boats, launches, patrol craft and minesweepers could also be called upon when available to take part in sea searches, but their practical value was small as they were constantly employed on other duties and limited to restricted areas. Moreover, such rescue craft as there were in existence at this time were needed to cover the North Sea and the eastern end of the English Channel, for which their services were scarcely adequate. For rescue work in the area from Lands End to the Isle of Man it was necessary to rely entirely upon operational naval craft.

*New Marine Craft Requirements.* The position regarding the type and supply of sea rescue craft in February 1941, could not therefore be regarded as satisfactory, and one of the first tasks of the Directorate was to represent both to the Air Staff and to the Admiralty the marine craft requirements needed to meet the necessary expansion in sea rescue services.

The two main requirements were:—

- (a) Boats capable of cruising at low speeds in the area of air operations for a prolonged period, but with a speed up to 25 knots available at short notice.
- (b) Boats capable of high speed in rough sea for operations from selected harbours.

For the former, the naval motor launch ("Fairmile") was considered the most suitable type. The Admiralty had a number of these in production, but all of them were earmarked for naval purposes and they made it clearly understood that the supply of these craft was primarily allotted to naval coastal operations. They were, however, willing to assist in air/sea rescue work wherever possible, on the understanding that purely naval operations must take precedence over rescue work.

For the latter requirement, whilst the high speed launch was considered a suitable type, a fresh design was needed which would be of more robust build and be easier to maintain than the existing types. The current types were designed to give high speeds and their sea-keeping qualities suffered in consequence. The question of replacing the type of high speed launch was raised at the Marine Craft Policy Committee on 14 March 1941, when it was agreed that the Ministry of Aircraft Production, Coastal Command, Air/Sea Rescue Services and the Directorate of Operational Requirements should collaborate to produce a suitable replacement hull, having regard to the type of engine available.

The question of securing additional high speed launches to meet the immediate expansion was quite another matter. No increase of production was possible in this country owing to the many demands being made upon the manufacturers and to the interference that would be caused to the Admiralty programmes.

*High Speed Launch Flotillas.* To increase efficiency in operation of Coastal Command launches, in March D.A/S.R. submitted to the Director General of Organisation a scheme for the re-organisation of the high speed launches into four flotillas, one for each Coastal Group.<sup>1</sup> Each high speed launch was to be commanded by a flight lieutenant and as soon as the number of boats in a flotilla merited it, a squadron leader was to be appointed in charge of the flotilla, responsible for the general efficiency of the boats and crew. On 1 April this scheme was approved by the Director General of Organisation, but owing to the shortage of high speed launches no officers in charge of the flotilla could be appointed at this stage.<sup>2</sup>

*World Wide Expansion Plans.* In May 1941, the marine craft position was represented to the Deputy Chief of Air Staff. It was pointed out that a new organisation to be formed under Rear Admiral Coastal Forces would include a special section dealing entirely with Air/Sea Rescue, and that as soon as the Admiralty had formulated their policy in this connection it was anticipated that they would ask the Air Ministry for full co-operation.<sup>3</sup> In order that the Royal Air Force might collaborate fully D.A/S.R. recommended to the Deputy Chief of Air Staff that for immediate requirements at home the Royal Air Force should man and maintain a total of 64 high speed launches and 50 pinnaces or seaplane tenders, but that the Navy should be asked to undertake full operation of these craft.

The Deputy Chief of Air Staff, whilst approving this expansion scheme in principle, requested D.A/S.R. to draw up a provisional world wide expansion programme based on the existing strategical situation. A plan was drawn up and submitted to the various operational and administrative directorates for their comments. This resulted in an agreed estimate of 134 Royal Air Force craft with an addition of 44 for overseas commands and 110 naval craft. On 30 May the approximate deficiencies on these estimated requirements for Royal Air Force craft at home were 29 seaplane tenders and 49 high speed launches, whilst overseas they still had only the four high speed launches despatched before the outbreak of war, plus one allocated by Coastal Command to Gibraltar. Bearing in mind that in the four months February to May 1941, only 213 aircrew had been rescued out of a total of 607 forced to descend in the seas, it was agreed that little could be done to improve rescue results whilst the present deficiencies of sea craft obtained. Accordingly it was decided to approach the Admiralty to release motor launches from operational duties for use as rescue craft, a verbal suggestion to this end having already been given by Assistant Chief of Naval Staff (Home) (Rear-Admiral Power).

In June 1941, the case was put before the Admiralty who, however, was unable to offer any immediate assistance.<sup>4</sup> The grounds for this refusal were that the number of naval motor launches available was insufficient for the essential coastal services, and that motor launches were not likely to be available for rescue work before 1942. The matter was, therefore, referred

<sup>1</sup> A.M. Files S. 70813 and S. 70807/I and II (*passim*).

<sup>2</sup> In point of fact this scheme never reached fruition, the Squadron Leader posts being subsequently converted into Marine Craft Organisation Officer posts on the staffs of the four Coastal Command Group Headquarters.

<sup>3</sup> A.M. File S. 70807/II: Mins. 10-14.

<sup>4</sup> A.M. File S. 70807.

back to the Air Staff with the request that to meet the requirements for naval motor launches in the interim, a number of Royal Air Force pinnaces might be provided for rescue work. The Ministry of Aircraft Production reported that in addition to the general service pinnaces already under construction an additional forty could be built by December 1941.<sup>1</sup> On 23 June, the Deputy Chief of Air Staff agreed that the forty 60-foot pinnaces should be built especially for rescue purposes, and that the whole situation should be reviewed in January 1942, in the light of Admiralty commitments at that date.

Meanwhile representations were being made to the United States authorities to enlist their assistance in providing suitable craft to fill the requirements for high speed launches. In June 1941 the British Air Commission, Washington, reported to the Ministry of Aircraft Production that whilst suitable rescue craft were being constructed in the United States of America, at the Miami Ship Building Corporation, all shipments being made overseas were in fulfilment of Admiralty orders.<sup>2</sup> Application to the Admiralty resulted in an agreement to divert to the Royal Air Force two boats per month from their contract up to a total of 30 boats. The Dominions Office also obtained the concurrence of the South African Government to the deferment of 9 high speed launches due for delivery to them during June. The Ministry of Aircraft Production also did their utmost to obtain an increase in production of high speed launches but the difficulty of engine supply was the limiting factor in this instance and there seemed little chance of any improvement.

Whilst these arrangements were being made, the Deputy Director of Air/Sea Rescue (Captain C. L. Howe, R.N.) strongly recommended that the marine craft side of the rescue organisation should cease to be a combined service, and should become the entire responsibility either of the Admiralty or of the Air Ministry so that supply of craft and personnel, maintenance, and training should all be undertaken by the same body.<sup>3</sup> The pros and cons of such an arrangement were considered, but in view of the promise of future assistance from the Admiralty and the knowledge that neither the Admiralty nor the Air Ministry could undertake the entire responsibility at this juncture, the idea soon died a natural death.

To swell the numbers of craft available for rescue work, at the beginning of July the Director General of Organisation gave approval for 21 seaplane tenders, provided in accordance with normal marine craft requirements, to be specifically allotted for sea rescue work for use in calm weather. These seaplane tenders were to be established on Coastal Command stations in Wales, the Isle of Man and eastern Scotland areas. At this date there were still only 27 high speed launches available in service; and on many occasions it was necessary to approach the Navy for assistance in search and rescue, an assistance which could ill be spared but which was given with all the co-operation possible.

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<sup>1</sup> A.M. File S. 70807/II.

<sup>2</sup> Signals M.A.P. 6255 dated 1 June 1941 and Briny 5896 dated 4 June 1941.

<sup>3</sup> A.M. File S. 70807/I and II (*passim*).

On 28 July came official notification that the Home establishment of Air/Sea Rescue Services was to be expanded immediately to 48 high speed launches, 35 seaplane tenders and 40 pinnaces, and at a later date, further expanded to the figure approved by the Air Staff in the previous June, viz. ;—

64 Initial Equipment plus 10 Immediate Reserve High Speed Launches.

50 Initial Equipment plus 10 Immediate Reserve Seaplane Tenders.

40 Royal Air Force Pinnaces (in lieu of Naval Launches).

It was estimated that by December 1941, the strength of marine craft should be up to the initial figures of establishment.

The additional high speed launches were to be allotted to Coastal Command stations in the Rosyth, Nore, Dover and Western Approaches areas, the seaplane tenders to the Western Approaches and the pinnaces to be given a wide distribution at points ranging from the Shetlands, eastwards round to the Irish Sea.

*Defence of Marine Craft.* Whereas naval craft used for rescue work were well armed (some naval launches had a 3-pounder and as many as 9 small anti-aircraft guns), the Royal Air Force rescue craft had little or no defensive armament. The seaplane tenders were entirely unarmed, whilst the general services pinnaces and high speed launches all had two .303 guns. In the early war days there had been a certain *esprit de corps* amongst the British and German rescue units and attacks by aircraft on either side were rare.<sup>1</sup> During 1941 it was noticed that the enemy was beginning to take offensive action when meeting our rescue craft in the Channel, and in August 1941, two high speed launches were attacked and sunk by a German aircraft. This made it obvious that the existing High Speed Launch armament was inadequate in any area where enemy fighters or "E" boats might attack them, and proposals were put forward to provide high speed launches operating in dangerous waters with two twin Browning turrets.<sup>2</sup> On 12 August the Air Staff agreed to arming of the 24 high speed launches operating at the eastern end of the Channel, by the conversion of their existing turrets to take two Browning guns.<sup>3</sup>

### Expansion of Rescue Services

No accurate figures of crews lost at sea were available prior to 1941, but by the most generous estimates, not more than a bare 20 per cent. of distressed aircrews were rescued in the early years of the war. During the first four months of the new Directorate the percentage of successful rescues was raised to 35 per cent. and rescue of some or all of the crew was made in 46 per cent. of the incidents recorded during this period.

Nevertheless in June 1941 the Deputy Chief of Air Staff (Air Vice-Marshal N. H. Bottomley) concerned that the rescue organisation was not expanding in ratio with the increasing air offensive, commenced an examination to discover how it fell short of the needs of the operational commands.<sup>4</sup> This fear was

<sup>1</sup> A.M. File S. 72413: Encl. 4A.

<sup>2</sup> A.M. File S. 70854.

<sup>3</sup> Note of this date should be made. See Chapter 3, p. 33.

<sup>4</sup> A.M. File C.S. 9708.

supported by the anxiety expressed about this time by the Air Officer Commanding-in-Chief, Bomber Command, at the inability of the rescue services to meet the growing needs of his Command.<sup>1</sup> At the same time the Admiralty were holding conferences to discuss the administration of their light Coastal Forces, which included the naval motor boats used for sea rescue. Up to this date, although Air/Sea Rescue craft were operated by the Navy, no part of the Naval Operations Staff was directly concerned, but the Admiralty now began to feel that the time had come to introduce into the operations division an officer fully alive to the importance of air/sea rescue. The obvious choice for such an appointment was the Deputy Director of Air/Sea Rescue, Captain C. L. Howe, R.N.<sup>2</sup>

In view of the greater interest in rescue now evinced by the Admiralty, and in the interests of efficiency and economy, the Deputy Chief of Air Staff recommended to the Vice Chief of Air Staff, after examination of the problem, that it would be of advantage if the Air/Sea Rescue services could be more closely knit with the allied work of Regional and Flying Control. He felt that the co-ordination of Air/Sea Rescue operations was so closely connected with the navigation and signals communication side of Regional and Flying Control that it would foster efficiency to fuse under one head the two organisations responsible for the safety of aircraft and crews.

Although D.A/S.R. was concerned that such a step might have an unfavourable reaction on the efficiency of the rescue services in that they would be relegated to a secondary place in a large directorate, the various Operational Directorates were in general agreement with the Deputy Chief of Air Staff's view. Accordingly Vice Chief of Air Staff approved in principle the proposals to amalgamate Flying Control and Air/Sea Rescue under a Director of Aircraft and Aircrew Safety. The question then arose as to the provision of a suitable officer to take over such a Directorate. It was felt that a senior officer of considerable standing with wide knowledge and experience should be chosen and it was finally agreed that the appointment should be that of a Director General. The choice fell upon Marshal of the Royal Air Force Sir John Salmond. On 20 August the Chief of Air Staff offered him the post asking him to waive considerations of rank. He accepted and took up his appointment on 23 September 1941.

The proposed organisation which he was asked to head consisted of the amalgamation of:—

Directorate of Air/Sea Rescue—concerned with the rescue of aircrews from the sea.

The Assistant Directorate of Regional Control—concerned with guiding aircraft to their bases.

That Branch of the Directorate of Fighter Operations concerned with aerodrome lighting and navigational warnings.

The Air/Sea Rescue side was to be headed by a Group Captain Deputy Director, assisted by a Commander, R.N.,<sup>3</sup> and three branches to deal respectively with rescue policy, aircraft and ancillary aircraft equipment; the

<sup>1</sup> D.O. letter to V.C.A.S., Recp/DO/7 dated 9 July 1941.

<sup>2</sup> Subsequently transferred to the Admiralty to take up these duties in September 1941.

<sup>3</sup> Group Captain E. F. Waring and Commander G. Barnard, R.N., were appointed to these posts.

provision and allocation of marine craft and ancillary marine craft equipment ; and liaison with Coastal Command.

In the meantime on 31 August, the Deputy Chief of Air Staff had requested that D.A./S.R. should prepare a short report on the present position of the Sea Rescue Services outlining the success so far achieved, the difficulties encountered and the improvements planned, with special reference to marine craft.<sup>1</sup> This report was presented at a Conference called by the Air Staff to discuss the general organisation of the Rescue Services held on 11 September 1941 with the Deputy Chief of Air Staff in the Chair, attended by the Assistant Chief of Naval Staff (Home) (Rear-Admiral Power, R.N.), and other representatives of the Admiralty, as well as those of Coastal, Bomber, Fighter and Army Co-operation Commands, and the various operational and administrative Directorates concerned.

Success so far achieved was illustrated by the fact that since the inception of D.A./S.R., 1,200 aircrew members had crashed and presumably landed in the sea, of whom 37 per cent. had been rescued due to the Air/Sea Rescue Organisation. Rescue of some or all of the crew had been made in 46 per cent. of the incidents reported. The Service had obtained the co-operation of the Royal Air Force generally, the Observer Corps, H.M. Coastguards, the Royal National Lifeboat Institution and Trinity House. Good progress had been made in providing airmen with dinghies and equipment to keep them alive and attract attention ; and in instilling in aircrews a feeling of confidence in their safety equipment. The fitting of navigational buoys as refuges along the east coast was nearly complete, co-operation with the Navy had been developed and the naval authorities had lent a number of operational craft to offset the existing shortage of special rescue boats. The main difficulties encountered were the lack of rescue craft and the unsuitability of existing high speed launches for deep searches in rough water. The improvements planned included the development of further rescue aids, the production of a more sea-worthy type of high speed launch and the provision of additional launches and pinnaces.

The Meeting then discussed further methods for improving the rescue service. It was pointed out that there was no co-ordinating operational executive authority. D.A./S.R. covered the co-ordination of all measures of search and rescue, but the executive control of operations still remained with the individual commands. It was agreed, as any Area Headquarters requiring additional facilities would turn to Coastal Command for assistance, that operational executive control should be vested in the Air Officer Commanding-in-Chief Coastal Command.

The system whereby the Lysanders and Walruses of Fighter Command searched for the depth of twenty miles from the coast was another item discussed. It was felt that better results would be obtained if Fighter Command could undertake to search a larger area, and, as soon as further aircraft and pilots became available, it was agreed that the depth of search should be increased to forty miles and the Fighter Command area extended coastwise along the east coast to Flamborough Head and then to Acklington, then up the west coast and across to Northern Ireland.

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<sup>1</sup> A. M. File C.S. 11004: Encl. 1A.

Beyond the confines of search by the Lysander air/sea rescue aircraft, deep search was undertaken by operational aircraft. The serious losses of highly trained aircrew during the summer of 1941 indicated that speed in commencing the search was vitally necessary and this was difficult of attainment with the use of operational aircraft. Frequently station commanders found it difficult or even impossible to comply with orders to send aircraft out on an immediate search, and if they were available engine hours were used which were urgently needed for operational commitments. Moreover they could not take off on search until the special rescue gear had been fitted, further increasing the delay. For a successful search close co-operation with surface craft was essential, but was difficult of achievement with crews untrained in rescue work. Little prospect of improvement in deep search could be hoped for unless aircraft could be spared from operational requirements and specifically allotted to Air/Sea Rescue.

The need for deep search aircraft was agreed. It was accordingly decided that two squadrons of Hudsons, equipped with A.S.V. (air to surface vessel)<sup>1</sup> should be added to the Air/Sea Rescue services for deep search, the Air Staff agreeing that the formation of these units was essential to the efficiency of the service.

Lastly, the available types of sea rescue craft were fully investigated, and it was decided that high speed must be sacrificed for sea-worthiness—that crews must be kept alive in their dinghies until rescued by slower, but more sea-worthy, craft, which would stand a better chance of reaching them in a rough sea. The Admiralty representative reported that the Fairmile "B" Type Launch was now being produced for the Admiralty in reasonable numbers, and it was thought that by March 1942, some of these launches might be handed over solely for rescue duties. To meet the requirement for 90 motor launches, against which 40 Royal Air Force pinnaces were already in production, 50 naval motor launches would be needed and it was agreed to approach the Admiralty for this number.

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The story of the first nine months of the Air/Sea Rescue Service and their uphill task would not be complete without a few illustrative incidents of the Service in action.

The well-known fighter pilot Squadron Leader Standford Tuck, whilst forty miles off The Hague on 21 June, was attacked by three Me. 109's. In the ensuing battle he shot down two enemy aircraft and damaged the third, but his own aircraft received damage, and on his return journey he was forced to bale out very rapidly about four miles from the Suffolk coast. He made a successful descent, releasing his parachute harness as his feet entered the water. He swam towards the dinghy stowage attached to his harness and had no difficulty in ripping off the cover and inflating the dinghy. During this time a Lysander passed to and fro overhead. A barge in the vicinity had seen the pilot bale out and steamed towards him. The pilot saw the barge as soon as he had settled in the dinghy and paddled towards it, and ten minutes later the barge came up and took him on board. Soon after this a naval launch, warned by the Lysander, came out, collected him from the barge, and took him back to base.

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<sup>1</sup> A radar device for the detection of reflected echoes from surface vessels.

On the same day a Hurricane pilot became separated from his squadron whilst protecting bombers on operations over Boulogne. On his way back across Channel he was repeatedly attacked by Me. 109's and soon exhausted all his ammunition. Eventually he was hit and his aircraft caught fire. He decided to bale out and entered the water enveloped in his parachute. After great difficulty in disentangling the shroud lines of the parachute he managed to inflate his dinghy and get inside. Seeing no land on either side of him—he had baled out about half way between the English and French coasts—he decided to start paddling with his hands, using the sun as a guide. After half an hour he saw a float plane escorted by a single seater aircraft. These proved to be a Heinkel 59 and an Me. 109, so evacuating his dinghy, he sought cover in the water. After they had passed, he again climbed aboard his dinghy and paddled in the direction of the English coast. A Lysander then passed overhead escorted by several Spitfires; the latter attacked some Me. 109's which appeared on the scene. A number of Hurricanes then arrived and joined in the fray and a Spitfire and an Me. 109 were shot down into the sea. So excited was the pilot at watching these dog-fights that he remained floating in his dinghy, but as soon as the aircraft disappeared, he continued paddling towards England and after about two hours, was able to see the coastline. High speed launches on patrol came out to look for the lost Spitfire which had been in the recent battle, and the Hurricane pilot managed to attract the attention of one of them by splashing and shouting. He was taken to Dover none the worse for his adventures and quite certain that had he not been picked up he would have been able to reach shore by nightfall.

Still a third incident of 21 June—a Czech pilot, engaged with some Me. 109's, was hit when eight miles south of Folkestone. He decided to try to reach the English coast, but finding that he could not do so, called up his Ground Station and informed them that he was going to land on the sea. He made an excellent landing and as the sea entered the aircraft felt himself floating, helped by the buoyancy of his Mae West. He had no difficulty in climbing out of the aircraft and inflating the dinghy. After being in the dinghy for half an hour, a search Lysander escorted by four Spitfires came in sight. He waved to them, they saw him, circuted round, and went back to England. A quarter of an hour later a rescue launch picked him up and took him to Dover. In this instance the pilot, being a Czech, was anxious to fly as far away from enemy-occupied territory as he could before coming down in the water, and for this reason he did not bale out immediately his aircraft had been hit.

Whilst returning from a bombing raid on Berlin, a Whitley encountered some enemy night fighters in the region of Hamburg and both engines were hit by machine-gun bullets. The pilot tried to make for home, but was soon aware that he would not have time to reach the English coast. The wireless operator broadcast distress signals, whilst the rest of the crew jettisoned all their heavy equipment. At 0320 hours, when ninety miles from the Humber, the starboard engine caught fire and the pilot decided to ditch the aircraft. He did this successfully but by the time the aircraft struck the water the fuselage and starboard mainplane were on fire and two minutes later the aircraft blew up. The crew were all aboard the dinghy within fifty seconds and when the aircraft blew up they had paddled thirty yards away.

Unfortunately, the dinghy had inverted whilst being inflated and the contents of the emergency pack, other than two marine distress signals, had gone overboard. For two days the sea was too rough for the crew to endeavour to right the dinghy and though it subsided on the third day they were too weak to risk getting into the sea. During the whole time two men in turn paddled westwards, whilst the others baled with shoes and an empty Verey pistol cartridge. During the first day a number of searching aircraft were observed; one Whitley located them, but lost them again in the high seas, and in trying to regain contact with the aircraft both distress signals were used. That night and all next day nothing was seen, but the crew continued to paddle west in the hope of approaching the shipping route on the British side of the minefield. The next day a number of aircraft were observed and eventually a Hudson spotted them, circled round and dropped supplies, remaining until nightfall and dropping flame floats before departing. The same evening a Hampden came up and dropped a Lindholme dinghy gear containing provisions and warm clothing. The crew clambered into the rescue dinghy. An hour later, although it was very dark, they heard a Royal Air Force high speed launch approaching the flame floats. They shouted, were picked up and taken to hospital at Grimsby, having been in their dinghy from 0320 hours on 18 April to 2200 hours on 20 April.

## CHAPTER 3

### DEVELOPMENT OF AIR/SEA RESCUE SERVICE (OCTOBER 1941—DECEMBER 1942)

#### Marine Craft Problems

The first task of the newly formed Directorate-General was to approach the Admiralty for the 50 Fairmile launches required to bring the total establishment of launches and pinnaces up to 90 boats.<sup>1</sup> This request was put forward in October and the Admiralty agreed to allocate 50 launches from their production, commencing in March 1942; such launches to be known as Rescue Motor Launches (R.M.L.s). Immediate assistance was also given in the shape of a temporary loan of 14 motor anti-submarine boats (M.A.S.B.), a craft similar in design and performance to the High Speed Launch.

It had been thought that the gap before the advent of the R.M.L.s would be bridged by the production of the 40 Royal Air Force pinnaces, but as the autumn of 1941 drew on, it was obvious that delays in production then occurring would result in few or no pinnaces being available by the original estimated date—December 1941. To bridge the second gap existing general service pinnaces were modified to be put into temporary service as rescue pinnaces, but even this improvisation only succeeded in putting one modified pinnace in service by December 1941. During the winter of 1941 only an inadequate rescue service could be maintained with these craft.<sup>2</sup> Most of them were unsuitable for winter and rough weather conditions.

In November plans were drawn up by the Directorate and approved by the Air Staff for additional craft needed to expand the Service up to the autumn of 1943. It was realised that such plans could not be final, but the Directorate did not want to be caught again with an insufficient number of craft in production to meet expanding strategic requirements.

#### Pooling Resources of Marine Craft

As far back as September 1941, the Admiralty had sounded a warning note about their shortage of personnel. At the Deputy Chief of Air Staff's meeting on 11 September, Admiral Power pointed out that they were having the greatest difficulty in manning all the ships that they were building and consequently sooner or later there would have to be a drive for economy in personnel.

At the end of November, having completed investigations into their manpower problems, the Admiralty put forward the suggestion that economy and efficiency might best be effected by the pooling of all Naval and Royal Air Force surface rescue craft and by making the Admiralty solely responsible for the sea rescue side of the organisation.<sup>3</sup> No detailed reasons were put forward by the Admiralty in support of their opinions and it was realised that if the Air Council agreed to discuss the question a considerable amount of time would be taken up by both services with further investigations into

<sup>1</sup> A.M. File S. 70807/I and II (*passim*).

<sup>2</sup> A.M. File S. 70838 (*passim*).

<sup>3</sup> A.M. File S. 72454. This proposal had been mooted within the Air Ministry in the summer of 1941, but had been considered to be impracticable at that time.

varying considerations for and against the suggestion. During December the Director-General of Aircraft Safety put the case before the Deputy Chief of Air Staff and Air Member for Supply and Organisation pointing out that as the Sea Rescue service was at last beginning to find its feet, he would hesitate to make any change in its administration at this stage. Accordingly on 29 December 1941, on the direction of the Deputy Chief of Air Staff, the Admiralty were advised that in the interests of the progress of the rescue service the Air Council were reluctant to agree to any re-organisation. It was, however, agreed to consider any recommendation for economy which might be put forward in connection with repair, maintenance and design. A series of meetings and discussions on the subject culminated in two conferences held, on Admiralty instructions, by Rear Admiral Coastal Forces on 16 and 17 March 1942 and attended by representatives of D.D.A/S.R. and M.A.P.

The amicable feeling between the two Services was maintained by the concurrence of the Admiralty to the Air Council desire that the administration of Royal Air Force rescue craft should remain in the hands of the Air Force. Moreover the Admiralty agreed that economies in repair, maintenance and design of rescue craft could best be effected by close working co-operation between the Staffs of the Admiralty and Air Ministry, and continuous interchange of information relating to types of boats, building capacity, and engine supplies to prevent unnecessary duplication and conflicting staff requirements.

*High Speed Launches.* From September 1942 onwards, efforts had been made to find a suitable type of high speed launch to replace existing 63 and 64 foot designs, both of which were condemned as bad sea boats. D.D.A/S.R. agreed with Coastal Command on the type of hull required but the engine production situation caused continual difficulties in finding a suitable engine. A Perkins 900 H.P. Diesel engine, looked upon as being most promising, had to be abandoned as there was no hope of getting this make into production for at least two years. To obtain boats in the near future it was necessary to use an existing type which was available—either a Napier Lion or a Thornycroft "R.Y.12."<sup>1</sup>

To keep production going until a final type was agreed, more 63-foot launches were ordered in January and in March it was agreed to adapt the existing 67-foot Thornycroft hull for use as a rescue boat by the installation of three Napier Lion engines. This was still not the new design required but it was a solidly built slow boat useful for the outer bases. In April two other types were chosen as being the most suitable ones available, the 73-foot Vosper and the 68-foot Power Boat. The hulls of both these boats were designed for sea-keeping and endurance, but here again the service had to take whatever engines were available. The Vosper boat was to be equipped with Thornycroft engines which resulted in rather a low speed (25 knots) but the 68-foot Power Boat was to be equipped with three Napier Lion engines which would give a greater speed of up to 29 knots.

The actual production of existing types was still very slow. The 30 Miami boats ordered by the Admiralty for the Royal Air Force under Lease-Lend in June 1941, were just about to begin delivery when the United

<sup>1</sup> A.M. File S. 70807/III (*passim*).

States entered the war, and after Pearl Harbour wholesale diversion took place. By 1 June there were 50 high speed launches in service at home. Whilst this represented an increase of 18 in six months, compared with the initial establishment of 96 it could not be considered very good progress.

*Pinnaces and Rescue Motor Launches.* In spite of all the efforts made by D.G.A.S. and D.D.A/S.R. to accelerate the building of the 40 Royal Air Force pinnaces, production remained practically at a standstill throughout the winter of 1941-42.<sup>1</sup> By the beginning of April only seven pinnaces were in service out of the total of 40 originally promised by the Ministry of Aircraft Production for delivery by December 1941. On 1 April the first naval rescue motor launch was commissioned for service with the Royal Air Force Rescue Services, only two weeks late on the promise given by the Admiralty in October 1941. Although by this time the bulk of the pinnace production troubles had been overcome the whole programme was six months in arrears which contrasted badly with the prompt delivery of the naval craft and caused considerable harm to the Royal Air Force reputation for marine craft.

#### **Arming of Marine Craft**

It will be remembered that in August 1941, authority had been given to arm the high speed launches operating in dangerous waters with two twin Browning turrets. In December 1941, the Commander-in-Chief, Portsmouth, complained that the Royal Air Force craft under his operational control were inadequately armed, and action was taken by D.G.A.S. to speed up the trials of the double turret.<sup>2</sup> In January, the Air Staff agreed that there was no difficulty in providing the guns and that all high speed launches in building should be fitted with twin Brownings. In spite of this, no progress was made and neither turrets nor guns were produced for the craft already in service, the delay being due in the main to technical arguments and to Training Command's requirements for similar turrets.

In April 1942, a naval rescue motor anti-submarine boat was attacked by enemy fighters off Dover. The captain was killed and several of the crew injured. This demonstrated still more forcibly the need for armament in the Royal Air Force craft. During this month D.G.A.S. accompanied the Under Secretary of State to Dover, the most dangerous area for rescue craft; and during their visit it was found that not one high speed launch had yet been allotted its twin turret. As a result of this visit still further efforts were made to speed up production but as it was evident that the early delay could not be made up, an interim defence measure was taken. During May a number of Vickers (G.O.) guns were borrowed from Air Force sources; and commencing on 1 June steps were taken to mount them on single pedestal mountings, two guns per high speed launch on those craft which operated in the danger areas of the English Channel.

#### **Formation of Deep Search Squadrons**

An important step in improving the rescue services had been the decision by the Air Staff to form two squadrons of deep search A.S.V. Hudson aircraft in Coastal Command. Unfortunately, immediately following the September

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<sup>1</sup> A.M. File S. 70807/III (*passim*).

<sup>2</sup> A.M. File S. 70854 (*passim*).

meeting which gave this decision, it was realised that the agreed flow of aircraft to Russia might prevent the formation of these two squadrons.

As one of his first duties the Director-General of Aircraft Safety put forward to Vice Chief of Air Staff a strong claim for consideration of the allotment of Hudsons for this rescue work.<sup>1</sup> He pointed out that a high state of efficiency in air search could not be obtained without team work and adequate wireless communication between the search aircraft and sea rescue craft. Team work involved constant exercises and practice in co-operation, practice which could only be possible with the provision of specially trained aircrews. Adequate communication between aircraft and boat was impossible when operational aircraft on varying wireless frequencies were used for searches, whereas it had been agreed at the meeting that both Hudsons and rescue boats should be fitted V.H.F.<sup>2</sup> and H.F./R.T. V.H.F. was also fitted, or to be fitted to the Lysander and Walrus search aircraft in Fighter Command.<sup>3</sup>

These claims were considered by the Air Staff and it was agreed in early October that sufficient aircraft for one squadron could be produced in November, although such a decision should not interfere with operational requirements. Accordingly, on 24 October authority was given for the formation of No. 279 Air/Sea Rescue Squadron at Bircham Newton which was to be followed by a second squadron early in 1942. Both squadrons were to be equipped with 16 plus 4 Hudsons Mark III, fitted with Lindholme rescue gear. No. 279 Squadron commenced to form in November, but its formation was considerably hampered by the difficulty of obtaining aircrew and by the pronouncement by the Commander-in-Chief, Coastal Command, that he could not allow such training to interfere with his operational commitments.

Authority for the formation of the second Squadron (No. 280) at Thorney Island was given on 28 November, but as no Hudsons could be allotted to the squadron at this time, the end of 1941 saw the Air/Sea Rescue Services still served only by the four squadrons of Lysander/Walrus in Fighter Command.

At the beginning of January 1942, the Director-General of Aircraft Safety was informed by the Air Staff that as all available Hudson aircraft were required for operational commitments overseas, the formation of No. 280 Squadron would have to be postponed unless Ansons were acceptable for deep search duties. In addition to this, on 11 January the Air Officer Commanding-in-Chief, Coastal Command, informed D.G.A.S. that he was obliged to withdraw nine Hudsons from those already allotted to No. 279 Squadron to meet his operational commitments. Realising the necessity for these steps, D.G.A.S. had no option but to agree that No. 280 Squadron should be temporarily equipped with Anson aircraft, but pointed out the importance of early return to operational types for both squadrons as Ansons were unable to carry the existing Lindholme rescue gear. It was also agreed that Ansons should be allotted temporarily to make up the deficiency of Hudsons in No. 279 Squadron, thus making it necessary to modify and adapt the Lindholme gear for operations with this type of aircraft.

<sup>1</sup> A.M. File C.S. 11004: Encl. 12A.

<sup>2</sup> V.H.F. provides control of, and navigational assistance for, aircraft by means of radio-telephony.

<sup>3</sup> A.M. File S. 70826.

No. 279 Squadron became fully operational in March, and during the months of May and June was able to prove the value of a deep search squadron to ditched crews who carried out the correct distress procedure.<sup>1</sup> Six crews were rescued during these two months (representing thirty-five men); five of them were picked up by rescue launches within five hours of daylight and the sixth was sighted by search aircraft in the dark within sixty-five minutes of ditching, all of them having sent out distress signals in the correct manner. In addition, nineteen members of other aircrews were rescued in these two months. No. 280 Squadron, only just becoming operational in June, had a similar success in picking up one crew during that month.

It is interesting to note that of the seven crews thus rescued, four were Polish. Allied airmen, being particularly anxious not to fall into enemy hands, were more conscientious in carrying out ditching and dinghy drill than their British colleagues, and these incidents offered only one example of the successful results of their training.

#### **Provision of "K" Dinghies in Multi-Seater Aircraft**

The issue of "K" dinghies to all single-seater fighters had been followed up in the autumn of 1942 by issue to all other types of fighters. Three types of pack were made available; "A"—the seat pack in place of the seat cushion on the parachute, for use by fighter pilots; "B"—a back pack replacing the standard parachute back pad, for use in Lysanders and Havocs, and "C"—a detachable seat pack for use with observer's parachute harness, which permitted complete freedom of movement but could be attached to the harness when required for use. By this time most of the "K" dinghies had been issued with a protective apron and hood, which protected the occupant both from the weather and the sea.

Requests from the various commands at home and overseas then began to appear, asking for "K" dinghies to be supplied in other types of multi-seater aircraft for the use of crews who might be forced to bale out over the sea. To meet these requests and in view of the success achieved with the "K" dinghy in the single-seater fighter, the distribution was increased in January 1942 to include all Coastal Command landplanes, all American operational types of aircraft and, in fact, almost all aircraft other than heavy bombers and training aircraft.

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#### **The Scharnhorst and Gneisenau Operation**

February 1942 proved to be a black month for the Air/Sea Rescue Services. Increased bombing operations, bad weather conditions and lack of "deep-search" aircraft combined to make the percentage of successful rescues the lowest officially recorded. In spite of an agreement by the Admiralty to maintain a patrol of rescue motor launches outside the mine barrier in the vicinity of the Humber whilst bomber formations were conducting operations over Germany, the losses for the month from normal operational and training commitments, amounted to 192 aircrew, of whom only 33 were rescued—17 per cent. of the total.<sup>2</sup>

These figures were exclusive of the losses sustained on 12 February during an action in the Channel. On the morning of 12 February a Spitfire reconnaissance aircraft spotted the two German battleships, the *Scharnhorst* and

<sup>1</sup> D.D.A/S.R. Folder to A.M. File S. 70800/III: Encl. 22b.

<sup>2</sup> A.M. File S. 72478 and A.S.R. Rescue Statistics, February 1942.

the *Gneisenau* accompanied by the *Prince Eugen*, proceeding up-Channel escorted by other naval units and provided with air cover from shore-based enemy fighters. The Air/Sea Rescue craft of Dover Command had already been briefed to proceed to rendezvous positions for a normal fighter sweep. As soon as the first report of enemy vessels approaching was received, eight naval rescue craft and five Royal Air Force rescue craft were sent to their rendezvous positions. All available Bomber and Coastal aircraft were called upon to take part in the attack, during the day Bomber Command flying 242 sorties and Coastal Command 41 sorties. Fighter Command provided escorts and completed 301 sorties during the action. They continued to attack the German ships, in co-operation with aircraft of the Fleet Air Arm, until they had passed through the Channel and out of range. After the German ships had passed, the rescue craft, in conjunction with search aircraft and fighters from No. 11 Group, carried out a thorough search until dark over the scene of the main fighter engagements and the attack by Swordfish of the Fleet Air Arm. Eleven naval operational craft were also sent to assist the rescue boats operating in the area, but nothing was seen by them except for five Swordfish crew picked up by a motor anti-submarine boat and a motor torpedo boat. The Bomber and Coastal Command attacks took place mainly outside the fighter search area and no operational aircraft whatever could be spared for deep rescue searches; only two Air/Sea Rescue Hudsons of No. 279 Squadron were available for this purpose.

A number of S.O.S. signals were received by No. 16 Group. Some of the aircraft which had previously sent out S.O.S. signals subsequently passed the coast, but after a re-examination of outstanding distress plots No. 16 Group organised an extensive search by Bomber and Coastal Commands to commence at dawn on 13 February. Fifty-four aircraft took part in the search and covered the area of the S.O.S. signals and distress reports, but on account of enemy fighter activity, did not approach within thirty miles of the Dutch Coast. This search was continued until dusk, but nothing was found and similar searches by Fighter Command, within their close search area, were also unsuccessful. Bomber Command lost 15 aircraft, Fighter Command 17 aircraft and Coastal Command 5 aircraft during the action, and over 120 aircrew (including Fleet Air Arm) were presumed to have come down in the Channel. Apart from the five Swordfish pilots rescued, no trace of any dinghies or personnel were found, other than two dead Swordfish crew picked up by a naval craft.

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### **The Airborne Lifeboat**

All the rescue apparatus in use or proposed during the early years of the war was at best only a temporary means of sustaining the life of a distressed aircrew. Unless the dropping of dinghies and food was not quickly followed up by the arrival of rescue craft, the airman's chance of survival was not very great.<sup>1</sup> Moreover, as bombing operations increased and long distance flying developed, it became apparent that the day would arrive when numbers of aircrew would be forced to bale out in places too far from the coast to be reached by marine craft and beyond the range of fighter aircraft.

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<sup>1</sup> A.M. File S. 72478.

As long ago as early 1940 Air Vice-Marshal A. T. Harris, when Air Officer Commanding No. 5 Group, visualised a glider type boat that could be towed by an aircraft to the scene of a forced landing and then released. Wings and tailplane would then be dropped and the resulting motor boat fitted with a 10 h.p. motor could be used to bring the rescued personnel back to base. So many technical objections of one kind and another and the acute shortage of trained glider pilots combined to rule out the scheme as impracticable.

As an alternative to this scheme and as a result of recommendations made by the Air Officer Commanding-in-Chief, Bomber Command, in September 1940, plans were prepared by the Ministry of Aircraft Production for a 32-foot motor dinghy which could be dropped from a Hampden aircraft. After a great deal of experimental work and discussion this plan was also abandoned.<sup>1</sup>

Nevertheless, the idea had been born of carrying a boat by aircraft and dropping it to distressed aircrews, and if a practical scheme could be conceived its advantages were obvious. Group Captain E. F. Waring, while still at Lindholme had conceived the idea of carrying a motor driven lifeboat under an aircraft and dropping it by parachute. A crew thus provided with a rescue craft could make their way under their own power either to a friendly coast or to waters where they could be more easily rescued. The two problems this officer had to solve were whether a boat of orthodox construction could be made strong enough to stand the drop and not break up upon contact with the water and if this difficulty could be overcome whether a distressed crew in their dinghy could be given a reasonable chance of reaching the boat.

When Group Captain Waring came to the Air Ministry in September 1941, he continued to work on this scheme. He managed to contact a Lieutenant Robb, R.N.V.R., a boat building expert, who showed great interest in the scheme and undertook to make drawings of a type of boat which he considered would be suitable. This was to be constructed of wood, approximately 20 feet in length, fitted with sail, oars and motor and capable of holding five to seven persons. It was apparent that if such a boat descended on parachutes it would drift downwind out of reach of the crew, so some means of orientating it was necessary, as well as a device for releasing the parachutes once the boat was in the sea so that they would not drag the craft in the wrong direction. The former difficulty was overcome by fitting a rocket-fired weighted drogue to the bows to form a sea anchor and thus bring up the boat, bows to wind. On the latter point D.D.A/S.R. contacted Mr. Raymond Quilter of the "G.Q." Parachute Company, who devised a suitable parachute release-gear.

The next difficulty to be overcome was the possibility of the boat's capsizing. An orthodox lifeboat has buoyancy chambers at its bows and stern, which, by their shape, cause the boat to be righted immediately should it capsize. Permanently inflated buoyancy chambers could not be used for the airborne lifeboat, because of the necessity of making a craft whose gunwale had to conform to the belly of the aircraft by which it would be carried.<sup>2</sup> This difficulty was overcome by providing buoyancy chambers

<sup>1</sup> A.M. File S. 72453.

<sup>2</sup> A.M. File S. 72453 and D.D.A/S.R. Folder—Airborne Lifeboat, Mark I.

which could be inflated by the action of the opening parachutes operating the control heads of carbon dioxide bottles, whilst the boat was in the process of dropping from the aircraft.

It was then realised that in a rough sea a crew in their dinghy might not be able to keep alongside the lifeboat, or might not even see it in the high waves. It was, therefore, decided that a rocket should be installed at either beam, arranged to fire automatically upon impact with the sea, each rocket to carry 200 feet of buoyant line to be ejected, one to port and one to starboard. Thus the distressed crew could drift down on one of these buoyant lines and help themselves aboard.

In November, when D.D.A/S.R. had arrived at this stage in his plan he submitted it for approval through D.O.R. to M.A.P. It was natural that most people hearing of it were sceptical of its possibilities and it did not arouse great interest. Fortunately, Mr. Uffa Fox, the famous constructor of light sailing craft, happened to hear of the idea and appreciating its possibilities produced a similar scheme based on the lines of one of his existing boats. This proposal was submitted by Fox direct to the Minister of Aircraft Production (Lieutenant-Colonel The Right Honourable J. T. Moore-Brabazon) at the end of December. The Minister sent an emissary to the Director General of Aircraft Safety to ask if such a proposal was worth pursuing and on receiving an affirmative reply with an assurance that a similar idea had already been submitted through the usual channels, on 8 January 1942 he gave his approval to proceed with the development of the boat.

In January 1942 authority was given for a contract to be placed with Uffa Fox for the construction of an airborne rescue boat. Whilst Fox was told that this was to be on the broad lines of his suggestion, he was asked to produce an amended design to meet D.D.A/S.R.'s requirements, which in effect meant the incorporation of Group Captain Waring's and Lieutenant Robb's ideas. The resulting design was practically identical in all respects to the description given above, in spite of the fact that it became known as the Uffa Fox Boat.

By the end of January development work had commenced on the new rescue boat. On 18 February a meeting of the Scrutiny Panel was called and they agreed to sanction minor modifications to the Hudson, in order that the Air/Sea Rescue Deep Search Squadrons should be fitted with the boat. By April 1942 Uffa Fox had produced an acceptable design for the airborne lifeboat.<sup>1</sup> This had been completed to make the boat workable single handed and by a method sufficiently simple to make it possible for an inexperienced crew, possibly suffering from exposure, to make their way to friendly waters.

Meanwhile, at the beginning of June searching aircraft located and lost three times in forty-eight hours a Halifax crew floating in their dinghy in the North Sea, drifting nearer and nearer the Dutch Coast. Air and surface craft which went in search of them had repeated encounters with the enemy. Although a rescue was effected ultimately, had an airborne lifeboat been available, the crew might have been saved more expeditiously and without the continued risk to so many other lives. This case was put forward as an argument to speed up the production of the airborne lifeboat. As a

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<sup>1</sup> D.D.A/S.R. Folder—Airborne Lifeboat, Mark I.

result of the intervention of Chief of Research and Development, and the pressure of D.D.A/S.R., the machinery for progress was speeded up and initial tests in handling the aircraft and dropping the boat were scheduled for early July.

The preliminary tests of the Airborne Lifeboat during July and August having met with success, on 19 September it was agreed to produce the successful version of the boat, as Airborne Lifeboat Mark I, for Service acceptance trials.<sup>1</sup>

At the beginning of October the decision to substitute the Warwick for the Hudson as a deep search rescue aircraft came as a bomb-shell as it meant modifying the airborne lifeboat to fit the new type of aircraft. It was apparent that the change of aircraft would mean further delay in producing the airborne lifeboat as it would be necessary to flight test it on the Warwick before further action could be taken. At the end of October the Director-General of Organisation called the attention of the Aircraft Equipment Committee to this point and asked whether in the circumstances it was worth while continuing work on the boat in view of the impending withdrawal of the Hudson. It was agreed to hold up production whilst ascertaining whether there was still an Air Staff requirement for the Mark I version.

Investigation showed that No. 279 Squadron had sufficient Hudsons to maintain it on this type until March 1943 at least, and in view of this and the urgency of producing the boat, D.D.A/S.R. was able to persuade the Aircraft Equipment Committee to approve limited production of the Mark I model. Accordingly, on 13 November the provision of 24 Mark I boats was authorised to cover the period during which an improved boat was being developed for the Warwick. It was anticipated that these boats would be available to the Service in January 1943.

#### **Appointment of Station Air/Sea Rescue Officers**

During the month of February five cases of loss occurred where aircraft failed to return from flights over the sea, without carrying out the correct distress procedure of giving W/T indication that they were in trouble. This was only one of the examples during the early months of 1942 which made it apparent that crews were still very ignorant of the essentials necessary to effect a successful ditching and subsequent rescue.

In March 1942, therefore, steps were taken to appoint an officer at every station as the Air/Sea Rescue Officer. Such an officer was responsible to his Commanding Officer for all aspects of Air/Sea Rescue Equipment carried by the aircraft of his station, and for the training of aircrews in dinghy drill and distress procedure. The distress procedure and dinghy drill with which these station rescue officers were expected to be familiar is described below.

An aircraft in distress was required to inform its base of its intended ditching and the nature of distress. Bomber and Coastal aircraft informed the control station either on the Group Operational Frequency, or the M.F/D.F. Section appropriate to the area in which the aircraft was flying; giving course, height, air speed, position and time, together with any other

<sup>1</sup> A.M. File S. 72453 and D.D.A/S.R. Folder—Airborne Lifeboat, Mark I.

relevant details. They continued to transmit until just about to ditch when, after giving the standard S.O.S. distress signal, they clamped down their wireless key. Coastal Command aircraft also made use of radio telephony if within range of a convoy. Fighter Command aircraft made their S.O.S. call on their R/T Sector Fixer Frequency. Prior to landing in the sea the crew carried out their dinghy drill. All lower escape hatches, bomb doors and communicating doors were closed to delay the entry of water. Upper exists were opened and previously appointed crash stations taken up. The pilot, strapped in, endeavoured to land the aircraft into wind as slowly as possible, tail down; the other members of the crew bracing themselves against firm parts of the aircraft to break the shock of impact. Having landed in the water each member of the crew carried out his previously appointed task of assisting the others to embark in the emergency dinghy and of bringing out of the aircraft such requisite items of equipment as might be required. It will be appreciated that if this procedure and drill was not rehearsed, personnel and equipment were likely to be lost. The task of the Station Rescue Officer was therefore a formidable one, as he had to arouse the interest of his aircrews when frequently he had not the up-to-date knowledge or practical experience which would make his training, lectures and demonstrations convincing.

#### **Improvements in Rescue Equipment**

Considerable improvement had been made by the spring of 1942 in the individual items of equipment carried either in the aircraft or in the emergency packs attached to the dinghy.

*Weather Covers.* From April 1942 all multi-seater dinghies in production were supplied with rubber weather covers to keep out the sea and rain. These were made to be attached to the buoyancy chambers and button across the dinghy, and were packed in an emergency pack.<sup>1</sup> By this time all "K" Dinghies had been fitted with a weather apron and hood and steps were being taken to fit dinghies already in the service with these weather covers.

*Distress Signals.* The normal marine distress signals stowed in the dinghy pack, although now supplied with a rubber waterproof cover, had never proved very satisfactory and frequently failed to operate when required. Aircrews were urged to take into their dinghy, if forced to ditch, the Verey pistol from the aircraft and the cartridges issued to them as signals for the day. To add to the cartridges available for use in an emergency, at the beginning of 1942 steps were taken to provide waterproofed red star Verey cartridges and these were included in the dinghy pack. From this idea a lightweight 1-inch Verey pistol was developed during the spring of 1942, capable of firing a red star cartridge, and this also was intended for inclusion in the pack. During the spring of 1942 the cumbersome smoke floats (only one of which could be carried in a "K" pack) began to be replaced by waterproofed two-star distress signals, three of which would be carried in the place of one smoke float.

*Food and Drink.* Continual experiments were being undertaken to find the best type of food to be included in the emergency ration and the advice of the Director of Hygiene was sought constantly in order to give aircrews

<sup>1</sup> A.M. File S. 70802/I.

the greatest amount of nourishment in the smallest space possible. The great problem of stowing drinking liquid in an emergency pack owing to its bulk had been to some extent solved by the provision of tinned tomato or fruit juice. In the spring of 1942 canned water began to replace the tomato and fruit juices in the emergency pack.

*Floating Knives.* By the spring of 1942 an important piece of equipment had been added to multi-seater dinghies—a floating knife. It had been customary for units to stow a jack knife with the emergency dinghy for cutting adrift from floating wreckage and from any cordage which might impede the inflation of the dinghy. The disadvantages of a normal jack-knife were that it had to be opened, possibly with cold and numbed fingers; its sharp point might pierce the dinghy fabric, and if dropped overboard it sank. The floating knife was of sheath-knife design with a curved end to the blade and a cork handle coloured a vivid yellow so that it could be seen in the event of falling into the sea, and it was attached by a lanyard to the dinghy to minimise the chances of it being lost.

Thus aircrews were now provided, either personally or in the dinghy and emergency packs, with the following aids to rescue:—floating torch, whistle, chocolate, emergency rations, drinking water or fruit juice, first aid outfit, fluorescine, skull caps, paddles, drinking cup, baler, leak stoppers, floating knife, telescopic mast and flag, distress signals, Verey cartridges and dinghy weather cover. All these items contributed in some small measure to the maintenance of life and successful rescue of many aircrews.

#### **Progress in Methods of Communication**

*Dinghy Wireless Transmitters.* Although the spring of 1942 had been reached without a dinghy wireless transmitter being available to aircrews, experiments had been proceeding ever since the middle of 1941, and a prototype was available for trials in September of that year. After capture of a German (N.S.2) set, it was realised that this was more efficient than the original prototype which was scrapped. On 22 September 1941, instructions were given by the Ministry of Aircraft Production to produce 2,000 modified versions of the German set. Technical troubles delayed the work but during December trials were held with the Standard Telephone Company's version of the German set, and in view of its success full approval was given by the Air Staff to the production of sufficient sets to enable supply to be made on the basis of one per dinghy. On 22 January 1942 an order for a further 8,000 of these sets was authorised, the original 2,000 being promised by June.

This transmitter (known as type T.1333) was designed to function on the International Distress Frequency of 500 Kilocycles. Provision was also made for the transmission of automatic or manual distress S.O.S. signals. It was enclosed in a waterproof floating case and in the accepted model the aerial was raised by means of a gas-filled balloon.<sup>1</sup> This method was found to be unsatisfactory and experiments were commenced to find a suitable type of mast or kite for the purpose of carrying the aerial. Although it was desired to stow the set in the dinghy, the shape of the Standard Telephone set made

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<sup>1</sup> A.M. File S. 72457 (*passim*).

it impracticable to do so, and in order that production should not be further delayed it was agreed that it should be stowed loose in the aircraft and brought out by hand at the time of ditching.

In March a Parliamentary question was put to the Secretary of State for Air, "Whether any radio set for S.O.S. calls was supplied to R.A.F. bombers for use in rescue dinghies. If not, why, seeing that such sets had been long in use by enemy machines?" The reply given was that various technical difficulties had arisen which were not finally settled until December 1941. The provision of these sets was now proceeding on the highest priority and they would be in use in the Service by the beginning of May.

Neither May nor June, however, saw production of the promised dinghy W/T sets; production troubles were again the cause of delay. In April the idea of using a balloon to support the aerial had been finally abandoned as unsuitable and trials of a mast and a rocket launched kite were then begun. The provision of a mast meant the provision of a loading coil which caused still further delay. During June repeated efforts were made by D.G.A.S. to obtain hastening action.<sup>1</sup> The design of the generator was then given as the cause of the hold-up and every endeavour was taken to speed up delivery in order that sets might be available by July. Actual deliveries to the service during July totalled only 16 and a further 100 were promised for August. In view of this grave situation a demand for 1,000 American sets (an exact replica of the German set) was put on order immediately.

*The Pigeon Service.* The Royal Air Force Pigeon Service, which had been established shortly before the war, originally provided reconnaissance planes operating over the sea with a means of emergency communication. Their use was later extended to bomber aircraft for communication from aircraft in flight or forced landed, at a time when W/T communications were either non-effective or inadvisable. They were rarely used when aircraft forced landed in the sea as pigeons would not fly in bad visibility, at night or when wet, and as the container in which they were carried in the aircraft was not waterproof they were seldom in a fit state to undertake a flight after being taken into the dinghy.<sup>2</sup> Most of these pigeons were supplied from lofts run by National Pigeon Service volunteers, although at a few stations Royal Air Force lofts had been established, which were maintained by Service personnel.

In October 1941 the Director-General of Aircraft Safety had pressed for a properly regulated Pigeon Service for Air/Sea Rescue purposes, but met with little support from the operational commands, who looked upon pigeons as a last resort. One good result of D.G.A.S.'s interest, however, was the provision of a watertight floatable pigeon container which replaced the pigeon basket in January 1942.

At the end of February a pigeon figured in a rescue incident which aroused a good deal of attention in the Press, and emphasised that pigeons can give help in bringing rescue to a ditched crew. On 23 February a Beaufort from Leuchars failed to return and at 20.00 hours No. 18 Group gave the last known signalled position of the aircraft as one hundred and fifty miles east of Aberdeen. Two pigeons were carried in the aircraft, one of which escaped

<sup>1</sup> A.M. File S. 72457.

<sup>2</sup> A.M. File S. 43060 (*passim*) and D.G.A.S. Folder B.J. 38.

when the aircraft ditched. The other was released in the approved manner with a message attached.<sup>1</sup> Only the truant without any message reached his loft. From his condition, the estimated time in the air and the distance covered, it was deduced that the aircraft had ditched about fifty miles nearer Leuchars than the last signalled position, and the area of search was adjusted accordingly. A Catalina searched throughout the night followed by a daylight search by aircraft from Leuchars, Dyce and Arbroath.

The dinghy of the lost aircraft was located in mid-morning of the next day by a Hudson from Leuchars, at a point estimated to be equidistant from the high speed launch bases at Aberdeen and Blyth. The Commander-in-Chief, Rosyth despatched two high speed launches from each base ; it is of interest to note that boats from bases one hundred and twenty miles apart were simultaneously sent to the rescue. A Fleet Air Arm Walrus from Arbroath alighted on the sea near the dinghy at 1400 hours and remained until a launch from Blyth arrived, picked up the whole crew of four survivors and returned to Blyth at 1730 hours on 24 February. A creditable rescue to all concerned, but a good deal of the credit went to Winkie the Pigeon.

This episode, in which the area of search was cut down by the homing of a pigeon, was an added argument in favour of the use of these birds in rescue work. D.G.A.S. renewed his appeals and used his influence to secure the interest of the Air Staff in the case.

In the opinion of most senior officers, pigeons were useless for rescue work, but as the promised dinghy radio transmitter was so slow in coming off production and in view of the diversity of opinions expressed, in May V.C.A.S. agreed that to meet the requirements of Air/Sea Rescue, the Pigeon Service should be continued where already established. It was not intended to expand the Service other than to any unit which might put forward a request for the establishment of a loft, but to improve the existing Service it was agreed that Royal Air Force lofts should be established in lieu of those run by the National Pigeon Service volunteer groups. Ditching drills were amended to include instructions for the use of pigeons on ditching, but no further incident of a successful rescue by this means was recorded during 1942.

*A.S.V. Oscillators.* The difficulty of air and sea craft locating a small dinghy in the sea was a problem with which those interested in rescue work had always been confronted and some form of radar device as an alternative to the dinghy wireless set was constantly under investigation.<sup>2</sup>

As far back as mid-1941, official and unofficial experiments were being undertaken by various radar experts to find a means of providing dinghies with an automatic distress signal which could be picked up by aircraft equipped with A.S.V. (Air to Surface Vessel). The idea of attaching a metalled or wired flag to the mast of a "K" type dinghy, to give an echo on the A.S.V., was an early scheme tried out by the Telecommunication Experimental Flight Unit at Hurn, but trials revealed a very limited range and the idea was later abandoned as impracticable.

As soon as the deep search Hudson Squadrons began to form at the end of 1941, emphasis was laid on the advantages of providing dinghy packs with

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<sup>1</sup> A.M. File S. 72478.

<sup>2</sup> A.M. File S. 72455/I (*passim*).

some type of oscillator to make contact with the A.S.V. of the searching aircraft. As a natural corollary to this, if dinghies were to be fitted with an oscillator, the fitting of A.S.V. to high speed launches would enable dinghies to be located at night or in weather when aircraft could not be used.

An officer of No. 608 Squadron at Bircham Newton evolved a successful experimental oscillator from standard spares and improvised parts, and in February 1942 this was brought to the notice of D.D.A/S.R. and the Ministry of Aircraft Production. The former requested that the oscillator should be given trial to substantiate the claims made for it and, if satisfactory, that it should be put into production immediately. In March and in April further action was taken by D.D.A/S.R. to hasten these trials, but with little result because at the same time experiments were being continued on other models at the Technical Research Establishment and Telecommunications Flying Unit.

At the beginning of May, therefore, the new methods of communication and location were still not available; no dinghy transmitting sets had come off production and no model of an oscillator had yet been accepted for production. The renewed interest in the pigeon service was the only tangible result of six months constant pressing by D.G.A.S. and his staff for additional rescue communication facilities.

#### **Increase and Re-Equipment of Fighter Command's Search Squadrons**

In March, Fighter Command put forward a request for an Air/Sea Rescue Squadron in the No. 13 Group area to operate off the Scottish Coast. The need for this additional squadron was agreed, as the boundary of search at that time did not touch this area and, consequently, crews lost off the Scottish Coast stood little chance of rescue.<sup>1</sup> Moreover, extensive operations off the North Coast were anticipated in the immediate future.

The Lysander, the aircraft with which the four original Fighter Command Rescue Squadrons were equipped, had been an old type of aircraft at the time of formation of the squadrons in September 1941, and difficulty was always experienced in obtaining spares to keep them serviceable. At the beginning of 1942, supplies reached such a low level that it became necessary to consider a suitable replacement type. Trials with another almost obsolete type of aircraft, the Defiant Marks I, II and III, were commenced in February.

Owing to the shortage of Lysanders, the Air Staff agreed that, subject to the conclusion of successful trials, the new squadron should be formed of Defiants Mark I. Official authority for the formation of No. 281 Squadron was given accordingly on 26 March. It was to form at Ouston one flight of which was to operate from Turnhouse.

On 27 April, Fighter Command advised that the trial of the Defiant as an Air/Sea Rescue aircraft was satisfactory and an improvement on the Lysander. They accordingly requested that the Lysanders in the four original squadrons should be replaced by Defiants. This re-equipment could be undertaken from Command resources, as the Defiant Night Fighter Squadrons in Fighter Command had recently re-armed with twin engined aircraft. The changeover was duly authorised on 7 May, Nos. 275, 276 and 278 Squadrons retaining their original establishment. No. 277 Squadron's establishment

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<sup>1</sup> D.D.A/S.R. Folder B.J. 75.

was raised to 8 plus 4 Defiants and 3 plus 1 Lysanders, as it operated in the south coast area where intensive fighter activities were taking place over the sea.

The use of the Defiant, however, meant the redesigning of the Lysander rescue equipment, as none of the three marks of Defiants was designed to carry bomb racks, which in the Lysander had been used for carrying the dinghy-dropping apparatus. In June a modified form of rescue equipment container was designed for the Defiant, which was attached to the light series rack lugs on the underside of the wings. The contents of each dinghy pack were identical with those of the Lysander, but only two sets could be carried instead of four.<sup>1</sup>

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### **Paddling a "K" Dinghy for 58 Hours**

An outstanding rescue was recorded on 13 March, when the pilot of a Spitfire brought himself safely home from enemy waters without the aid of any special rescue craft. Squadron Leader Carver piloting a Spitfire as part of a bomber escort over the Channel Islands area, spotted a Ju.88 in the vicinity and went in to attack. His radiator was hit by return fire from the enemy, the engine became very rough and he decided to set course for home. He made distress calls by R/T and contact was made by another fighter which went up to 8,000 feet to obtain a fix. Shortly afterwards Squadron Leader Carver baled out three miles off the Casquets, the time being 17.30 hours. He failed to inflate his Mae West and to release his parachute before entering the water, but on coming to the surface managed to release the harness and inflate his dinghy after having some trouble by becoming entangled in the parachute shrouds. Once in the dinghy he baled out the water and found there were no leaks, covered himself with the apron and proceeded to undo the emergency pack. This contained paddles and a baler but no mast or flag. He had no rations other than his own escape box with him and this he decided not to open until he was really hungry. The first night he kept awake blowing his whistle at half hourly intervals thinking it possible that boats might be sent to his rescue in response to his S.O.S. He did not then know that he was too near the enemy coast for aircraft or marine craft to be sent to his aid and that No. 16 Group had broadcast an international distress message.

The next day, feeling quite fit, the pilot decided to set course for the English coast. He reckoned he would have to cover about seventy miles and estimated that this would take him three days paddling. To allow for emergencies he allotted himself seven days for the journey and opening his escape box rationed the contents to one seventh per day—six Horlicks tablets and a small piece of chocolate. He paddled all that day and the next, at times lifting the apron on one side and using it as a sail to increase his speed. On the morning of the second day he saw three Hudsons in the distance and in the afternoon a convoy. Although he had no means of attracting their attention this convinced him that he was making good progress in the right direction. He slept a little on the second night and on the third day he continued to make good progress. On the third night whilst dozing he was

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<sup>1</sup> A.M. File S. 72469.

awakened by the noise of ships' engines and found himself in the middle of a convoy. He signalled an S.O.S. on his whistle, the nearest ship answered and came alongside. He was so overcome with surprise that in attempting to climb the ship's ladder he fell into the sea. Then—three days late—he inflated his Mae West. One of the ship's crew jumped into the water and hauled him aboard. The ship was H.M.S. *Tynedale*, the time 0310 hours on 16 March, and the place seven miles south of Portland. Squadron Leader Carver had paddled thirty-three miles in fifty-eight hours. As a result of this incident emergency rations were introduced into the "K" dinghy pack.

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### **Suggestion that Air/Sea Rescue Should Become a Directorate**

During D.G.A.S.'s first nine months in office, the work of his two Deputy Directorates increased enormously and it was apparent that it would continue to increase.<sup>1</sup> At the beginning of June, therefore, he approached the Assistant Chief of Air Staff (Operations) with the suggestion that the scope of work and the responsibilities undertaken were such as to justify upgrading the Deputy Director of Aircraft Safety and the Deputy Director of Air/Sea Rescue to full Directorates.

Unfortunately this request came at a time when the Chief of Air Staff had been making a special effort to economise in personnel and had expressed a wish to keep Air Ministry staffs down to the lowest figures consistent with efficiency. On the direction of Vice-Chief of Air Staff, therefore, D.G.A.S. was informed that unless he felt strongly that efficiency would suffer, he should postpone his request for the present, although it had been appreciated on the formation of D.G.A.S. that such a step might be necessary in due course.

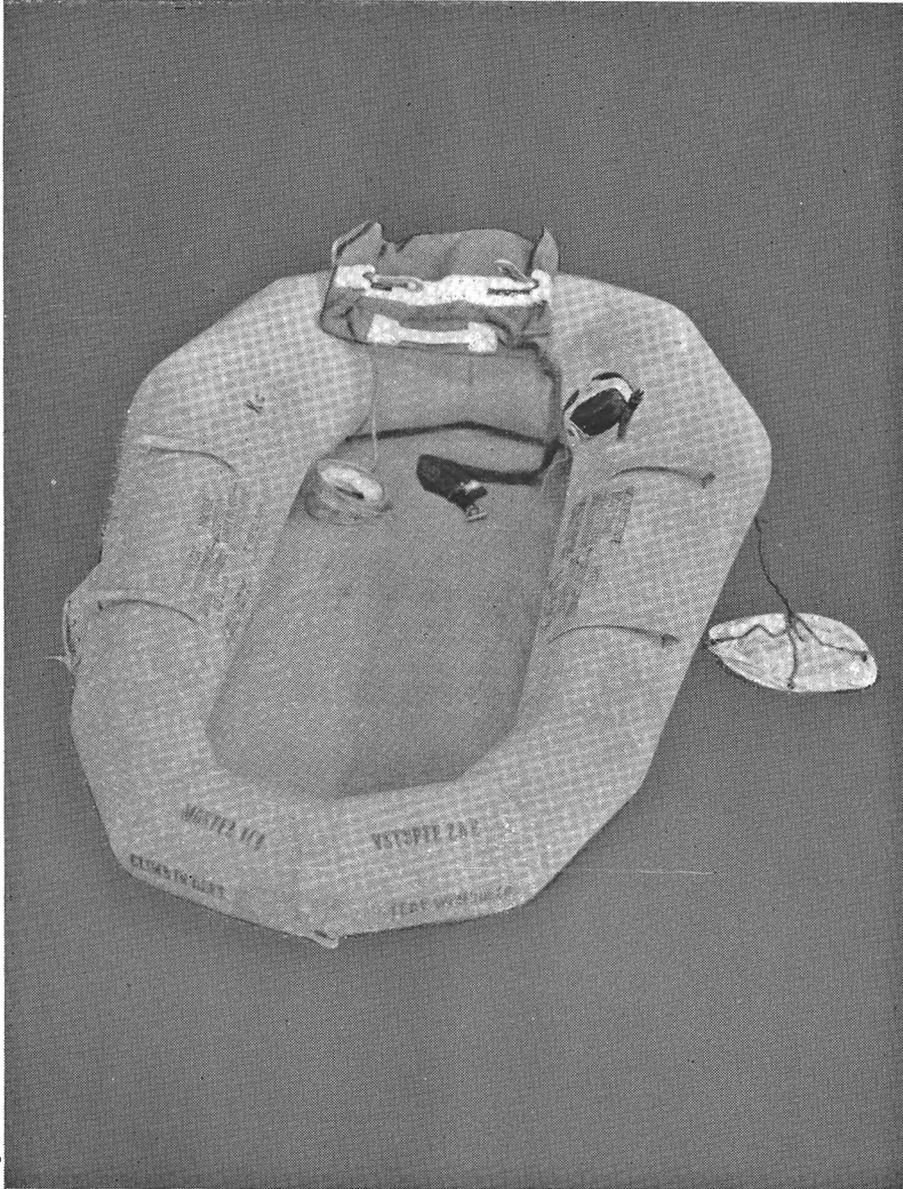
During the same month D.G.A.S. requested the Ministry of Aircraft Production to undertake a revision of the existing arrangements for dealing with the progressing of rescue development work. There were about forty departments and sub-departments of the Ministry of Aircraft Production which were concerned with rescue equipment, as well as the provisioning sections of the Directorate of Equipment, and experience had shown that unless D.G.A.S. and his staff were continually pressing the development and production of the various rescue items, very little progress was made. This had been due in the main to lack of liaison between the various departments. As a result of D.G.A.S.'s representations, from July onwards all rescue equipment items were handled through the branch of the Ministry of Aircraft Production known as Research and Development (Seaplanes) 3.

### **Development of Sailing Dinghies**

From time to time, particularly in the winter months, a number of dead aircrew were picked up who had successfully boarded their dinghies and then died of exposure. Some of these were from aircraft operating in the Atlantic, whose rescue would have been complicated by the distance involved and the proximity to enemy bases on the west coast of France. In the early months of 1942 these tragedies included eight fighter pilots picked up in their "K" dinghies, dead from exposure in weather conditions which would

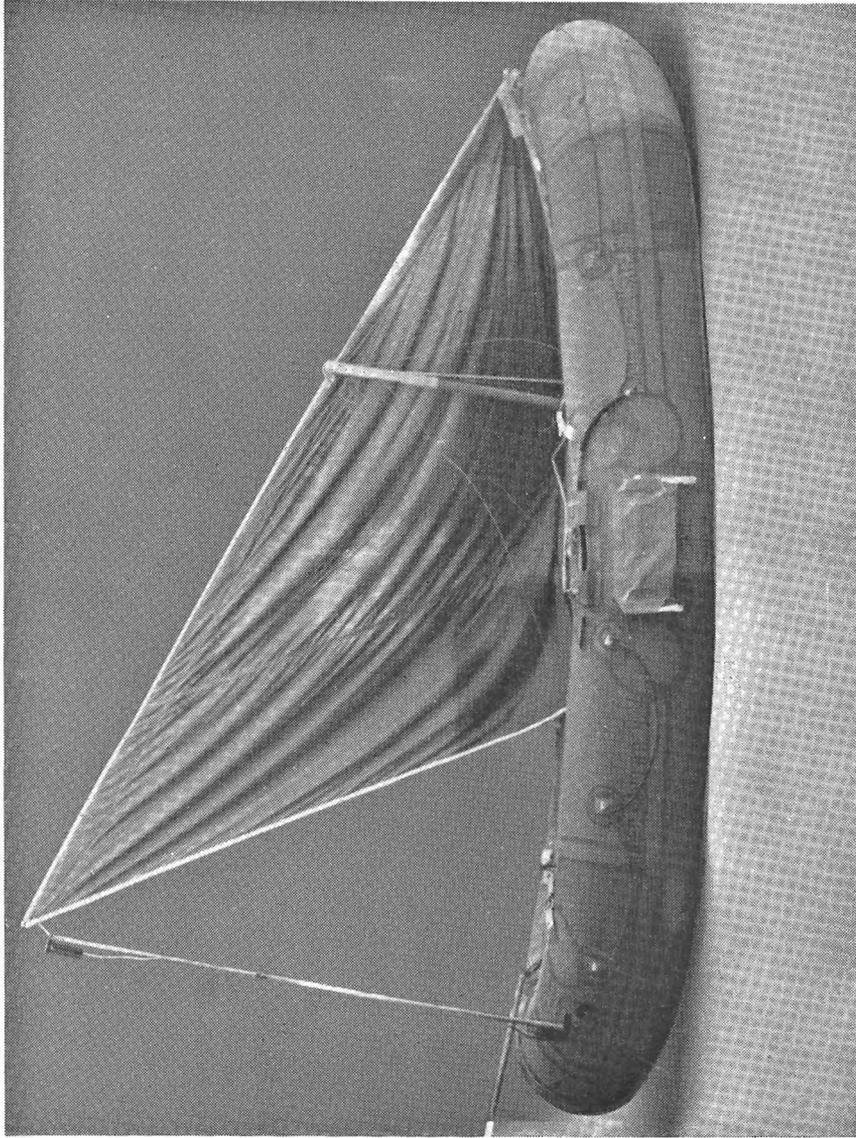
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<sup>1</sup> A.M. File C.S. 9708.



'K' Type Dinghy.

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'Q' Type Dinghy.

have hindered any adequate search procedure.<sup>1</sup> D.D.A/S.R. was convinced that the introduction of a sail in dinghies would do much towards the saving of aircrew lives, and that the psychological effect of making the endeavour to sail home would contribute to their resistance to exposure.

Accordingly in May and June unofficial experiments were made at Falmouth with the object of converting the "K" dinghy to sail; and of designing a suitable type of multi-seater sailing dinghy to replace the "J" type in bomber aircraft. In these experiments the various people concerned were fortunate in enlisting the aid of Lieutenant Commander W. B. Luard, R.N., an authority on small boat sailing, who designed certain types of sail and rigging for the experiments.

It was found that to convert the "K" dinghy to sail needed only minor modifications of a simple type which could be undertaken on stations. In lieu of the telescopic mast and flag supplied in the dinghy pack, a stronger mast was designed stepped in a wooden thwart, with a simple rig and a sail of red cotton. With this equipment and the protective apron and hood it was considered possible for the "K" dinghy to be sailed to friendly waters by an unskilled person, and in moderate weather conditions with a reasonable chance of survival. By omitting the paddles, the telescopic mast and flag, it was possible to include the extra equipment in the dinghy pack without any appreciable increase of bulk. So that paddles would be available in calm weather, the wooden thwart was so designed that it could be divided into two sections for use as paddles. The results of these unofficial trials were brought to the notice of the Air Staff in July, who agreed to accept them as Service trials. The sailing equipment was approved as an operational requirement in August and immediate steps taken to put the necessary sets into production.

Whilst early tests were still being carried out to find a suitable multi-seater sailing dinghy (to be known as the "Q" dinghy), the initiative of a Beau-fighter pilot, who improvised a sail for his "H" dinghy, is worthy of record. The aircraft, returning from a search flight over the North Sea on 27 July, was forced to ditch by engine failure. The crew took with them in their "H" dinghy the "K" dinghy pack from the ditched aircraft. Several aircraft passed overhead during the first day, but it was not possible to attract their attention. After a cold night the pilot decided to make for the English Coast and started paddling in a westerly direction. After four hours paddling he decided to aid progress by means of an improvised sail, so he cut a section from his parachute and taking the mast from his "K" dinghy he fastened the sail to it, tying the whole contraption to the large dinghy by means of parachute cords. He and his observer held the sail in position and sailed throughout the night. In the morning the wind dropped and they lay becalmed all day, but the next morning it began to blow again so they re-erected the sail and continued on their course. At mid-day they were spotted by a Blenheim and shortly afterwards rescue launches appeared and took the pilot and observer aboard. According to his calculations the pilot considered that the improvised sail had taken them about twenty miles.

*"Q" Sailing Dinghy.* The experiments to find a suitable multi-seater sailing dinghy (later known as the "Q" dinghy) were continued throughout the autumn. Two model sailing dinghies were produced by civilian firms,

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<sup>1</sup> A.M. File S. 81697/II and III (*passim*).

as well as one by the Royal Aeronautical Establishment, and on 18 September all three were given trials to ascertain their sailing qualities. The one produced by R.A.E. (known as the "R" dinghy) was considerably larger than the other two, and as it was desired to produce a sailing dinghy to replace the "J" dinghy without any alteration in the aircraft stowage space, one of the "Q" model dinghies was selected for Service trials. At the end of September successful Service trials were held, as a result of which D.D.A./S.R. recommended to the Air Staff that authority should be given for its introduction into the Service. In order to fulfil the policy of supplying sail for all multi-seater dinghies, it was also desired to scale down the "Q" model to replace the "H" dinghy.

The accepted "Q" dinghy model was a boat-shaped yellow dinghy 16 feet long with a 14 foot mast rigged with main-sail and fore-sail coloured dark brown, and was designed to carry a dinghy radio to operate with a kite aerial. Simple sailing charts printed on cotton fabric were prepared for inclusion in the dinghy to assist survivors to sail to friendly waters.

On 29 October, approval was given to the immediate production of 50 "Q" sailing dinghies against urgent demands for Whitley, Wellington, Stirling and Sunderland aircraft operating in the south-west coastal areas.

#### **Increase in Establishment of Marine Craft**

With the progressive increase in offensive operations and the advent of the American Air Force in home waters; in June 1942, D.G.A.S. considered it desirable for the existing home establishment of 96 high speed launches (76 Initial Equipment plus 20 Immediate Reserve) to be increased by an additional 30 craft.

This addition was queried by the Treasury as the plans approved in the previous November had been stated at that time to meet requirements up to the autumn of 1943. D.G.A.S. pointed out that the 1943 home programme of 76 I.E. plus 30 I.R. high speed launches was not intended to be considered as a final requirement, and recent experience had borne out the fact that due to progressive increase in offensive operations, which in the near future would be still further increased by American Air Force operations, it would be necessary to reinforce the number of high speed launches in home waters by approximately 25 per cent.<sup>1</sup> The Treasury then agreed to give final approval provided that 10 of the 30 craft required should be pinnaces.

In August 1942, the home establishment was accordingly increased from 96 to 116 high speed launches and from 70 to 80 pinnaces. The actual Royal Air Force rescue craft in service on 1 August were 52 high speed launches, 36 seaplane tenders and 22 pinnaces, a total of 110 craft being an increase of 48 craft in the first seven months of 1942.

At this time, it was felt that the rescue facilities in the Shannon area of Eire should be increased. In August arrangements were made with the Department of Industry and Commerce of the Eire Government for the supply of a pinnace to the airport at Foynes. A 60-foot Royal Air Force pinnace was loaned to the airport authorities to be civilian manned and to act as an airport control boat. This loan was made free of charge on condition that the pinnace was kept at readiness to operate as an Air/Sea Rescue boat

<sup>1</sup> A.M. File S. 72494.

whenever required, and special provisos were made in regard to any aircrew which she might rescue in order to prevent them being interned in a neutral country.<sup>1</sup>

### Combined Rescue Operations

The combined rescue facilities of the Royal Navy and the Royal Air Force including a destroyer, motor launches, aircraft and high speed launches were used for the crew of a Wellington that ditched on 12 August. This aircraft was engaged in an anti-submarine patrol in the Bay of Biscay on the night of 11 August. Early on the following morning the starboard engine seized and as it was clear to the pilot that a ditching was imminent an S.O.S. was transmitted immediately on the Group frequency. It was very dark, with a strong wind and high waves when the aircraft ditched at 0400 hours. The crew of six carried out their dinghy drill correctly but the dinghy failed to blow out of the stowage. The pilot noticing that the dinghy had not been released broke into the stowage with his bare hands and brought out the dinghy, whilst the crew stood on the wing up to their knees in water as the aircraft plunged in the high seas. The dinghy then began to inflate and the crew soon climbed aboard. They were immediately drenched by breaking seas and all six of them spent the first three hours baling out continually. The emergency pack contained only two marine signals which were soon used in an effort to attract the attention firstly of a Beaufighter and then of a Whitley which passed overhead during the early morning. Nine further aircraft flew over them during the morning but the crew had only a flag and fluorescine to attract their attention.

In due course a Whitley escorted by three Beaufighters spotted them and dropped a spare dinghy and a Thornaby bag. An attempt to reach the spare dinghy was abandoned but the bag was retrieved which happily held a Verey pistol and some cartridges. The Whitley then returned to base signalling the correct dinghy position and a Sunderland was despatched to the scene with an escort of Beaufighters. On its way it had an encounter with a Condor but the enemy soon broke off the attack and departed. The attention of another Whitley was attracted to the dinghy by various signals and this one signalled "Sunderland coming". On its way back to base it was attacked by enemy action and shot down with all its crew.

On arrival over the dinghy the Sunderland pilot decided to alight on the water. Sea and wind conditions were far too rough, the aircraft rolled over, one of the starboard motors burst into flames and the aircraft dived into the sea. The crew of the Sunderland were only able to launch one of their dinghies which burst immediately. One of the Sunderland crew made for the Whitley spare dinghy, floating in the sea four hundred yards away, and tried to propel it back for the rescue of his comrades. He soon became exhausted and had to board the dinghy—the remaining members of the Sunderland crew all being drowned.

The next day further search aircraft saw the Whitley dinghy and presumed all the Sunderland crew were aboard it. Two Whitleys came up and circled round each dinghy in turn when suddenly three Arado aircraft were perceived in pursuit of them. The Wellington crew lay low in the hope that the enemy aircraft would not see them.

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<sup>1</sup> A.M. File S. 71715 (*passim*).

The weather on the next two days (14th and 15th) was so bad that air search was prevented throughout the greater part of the forty-eight hours, but H.M.S. *Tynedale* sailed from Falmouth in an effort to locate the survivors. Meanwhile as a south-westerly wind was blowing the Wellington crew decided to try and sail in the direction of home. They improvised a sail with the dinghy cover, their telescopic mast and bandages for sheets and stays and decided to sail before the wind whenever it blew between south-east and north-west. Little progress was made, however, as the wind soon died down. At midday on the fourth day (16 August) two Beaufighters appeared on the scene, one of them signalling "Contact other dinghy—injured man aboard". Guided by the Beaufighter the crew began to paddle the 1,000 yards which separated them. Whilst they were paddling two Hudsons appeared one of whom dropped a Lindholme gear. The Lindholme dinghy landed on the sea in an inverted position, but after a great struggle the crew managed to right it, emptied all the contents into their own dinghy, made the two fast together and continued to paddle. After five hours they reached the Sunderland survivor in his dinghy and tied up the three dinghies to each other.

Throughout the day the search by H.M.S. *Tynedale* continued and Beaufighters were despatched from time to time as her escort. One of the escorting Beaufighters attacked a Ju.88, which crashed into the sea. The destroyer was aided in her search by a number of motor launches, high speed launches and motor anti-submarine boats, assisted by Hudsons and Beaufighters. Soon after the three dinghies tied up together they saw a Beaufighter engaged in combat with two F.W.190's. A Sunderland passed overhead at the same time, but the survivors did not signal her as they did not wish to attract the attention of the enemy aircraft.

On the next day (the 17th) three Hudsons and two Beaufighters appeared overhead whilst other aircraft circled to the north-west. The crew tried to warn them about the enemy aircraft in the vicinity but could not make them understand. One of the Beaufighters then sighted an enemy motor launch, escorted by three Arados, making in the direction of the survivors' dinghies. The Beaufighter closed in on the enemy craft which opened fire but without effect.

One of the Hudsons succeeded in advising the searching motor launches of the position of the dinghies; and as they made in the correct direction they were attacked by two F.W.s which were driven off by the circling Beaufighter. At 0730 hours two motor launches drew alongside the dinghies and took off the survivors, but their adventures were not yet over.

As soon as the captains of the motor launches were advised of the hovering enemy aircraft they signalled for further fighter escort. On the way back the F.W.s made determined attacks on the motor launches, which opened fire and hit one of them. Later a Condor and a Ju. 88 were sighted but were driven off by Beaufighters. The Condor continued to shadow the motor launches until the fighter escort arrived to conduct them to port, when it flew away without further attack.

At 1720 hours on 17 August the motor launches entered Newlyn Harbour with the survivors they had rescued. The retrieving of a crew from within the grasp of the enemy, after one hundred and twenty-four hours at sea,

presented a credit balance of seven rescued men, two damaged enemy aircraft and two hundred valuable hours of experience in rescue operations, against which had to be placed a debit of the lost Sunderland, Whitley and Wellington together with seventeen of their crews.

### **Operation "Jubilee"**

The Air/Sea Rescue Organisation took its place in the combined operations and landing at Dieppe, known as Operation "Jubilee" which took place on 19 August 1942. The object was to capture and occupy Dieppe for a limited period and to force the German Air Force into combat over the area. Over sixty squadrons of aircraft were scheduled to take part in the operation; fighters for cover and for close support, bombers for smoke-bomb attacks on enemy batteries and bombing attacks on various targets, as well as Coastal aircraft for A.S.V. reconnaissance over the Channel and Army Co-operation aircraft for tactical attacks. As the majority of these air operations were likely to take place over the sea, the provision of Air/Sea Rescue facilities was an essential part of the operational plan.

It was laid down that the Naval Force Commander should be responsible for sea rescue within a radius of three miles from Dieppe and ships were to be advised to keep a special lookout for aircraft in distress. The Air/Sea Rescue Organisation was to be responsible within its normal boundaries, and plans were made to call upon the surface craft of Dover, Ramsgate and Newhaven as well as the Fighter Command search squadrons from Hawkinge, Shoreham and Martlesham.

Landings of troops at Dieppe commenced at first light and the first "Jimcrow" (call for Fighter Reconnaissance patrols) was given at 0429 hours when the rescue boats were called out. Thirty-one rescue boats actually took part in these operations; 14 high speed launches (4 from Ramsgate, and 5 each from Dover and Newhaven) and 17 naval boats of the Dover Command. From dawn onwards twelve Defiants, three Lysanders and five Walruses flew continuous patrols over the sea.

The withdrawal from Dieppe took place soon after mid-day and the Air Forces involved operated from dawn until late afternoon, a heavy strain being imposed upon them by the intensity of air operations throughout the period. At first the number of enemy aircraft patrolling the area did not exceed one squadron, but opposition rapidly increased when the enemy began to appreciate the scale of our effort. Our fighter cover over Dieppe itself was increased from three to six squadrons and at times to nine squadrons, and after withdrawal had been completed fighter cover was maintained throughout the long voyage home. Considering the intensity of the fighting and the number of squadrons taking part, the total casualties were remarkably light. There were many cases of our aircraft being engaged by our own guns, but in spite of the fact that 106 aircraft (of which 88 were fighters) were lost, from these only a total of 80 aircrew were reported as killed or missing. It was later established that the German Air Force losses were between 150 and 200 aircraft.

The Air/Sea Rescue Organisation worked quite well on the whole although at one period communications were hampered by the break-down of a D.F. (wireless) station. Whilst the rescue boats were under the protection of the

fighter screen they were comparatively safe, but at times they went outside in an effort to effect a rescue. As the result of deliberate enemy attacks three high speed launches were sunk during the day, Dover losing two out of its five launches, and the Air/Sea Rescue Organisation two officers and eighteen other ranks of its marine craft crews.

In spite of these attacks twelve aircrew survivors were rescued from the sea by rescue craft as well as three (two of whom died later) by naval ships and a further one by a Rye fishing boat. Those rescued were all fighter pilots, most of whom baled out and floated in their "K" dinghies until picked up. An Air/Sea Rescue Defiant was successful in dropping an "M" dinghy to one pilot floating in the sea in his Mae West. He climbed aboard and was later picked up by a naval motor anti-submarine boat. On the following morning a thorough search of the area was made by the rescue aircraft of Fighter Command, but no further survivors were located.

### **The Lesson of Dieppe**

Although rescue motor launches and naval motor launches were instructed to attack enemy aircraft and surface vessels at all times, high speed launches and motor anti-submarine boats were on no account to open fire unless attacked.<sup>1</sup> The deliberate enemy attacks upon the high speed launches made it clear that armour plate protection for gunners on marine craft was a necessary addition wherever boats were operating in the danger areas.<sup>2</sup> As a result the Air Staff was requested to agree to additional protection for high speed launches, and additional armament in the form of an Oerlikon gun for all craft operating in the Dover area. As a first step in this direction, the Admiralty agreed to supply fifteen Oerlikon guns for the high speed launches at Dover and Newhaven and the fitting of these was commenced in September.

In October finalised requirements for armament and armoured protection in general were still under discussion.<sup>3</sup> On 20 October the Air Staff agreed that as the twin turrets to be fitted with Browning guns were not expected to be ready for retrospective fitting until the end of the year, all high speed launches operating on the south coast and on the east coast south of the Humber should have additional armament provided immediately. This meant that the 32 craft based at Grimsby, Gorleston, Felixstowe, Dover, Newhaven, Gosport, Falmouth and Newlyn were each to be provided with one 20-mm. Oerlikon and four .303 Vickers guns on twin pedestal mountings. This armament could be installed by units themselves, and the Vickers guns were available from Royal Air Force sources. It was also agreed that armour plating should be provided for the more vulnerable areas of the boats, with a similar protection for turret gunners when the new turrets were installed; armour plate shields being already provided on Oerlikon and pedestal mountings.

On 31 October application was made to the Admiralty for the supply of the further 17 Oerlikon guns needed to complete the fitting of the 32 high speed launches and these the Admiralty agreed to supply at the beginning of December.

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<sup>1</sup> A.M.C.O. A 94/42.

<sup>2</sup> A.M. File S. 70854 (*passim*).

<sup>3</sup> A.M. File S. 70854.

### Re-Equipment of Air/Sea Rescue Squadrons

*Fighter Command Squadrons.* In September Fighter Command made a request for two Ansons to be added to the establishment of No. 275 Squadron, Valley.<sup>1</sup> Training aircraft were making a large number of forced landings in the sea in the area in which this Squadron operated, and the Anson was considered by Fighter Command to be the best type of aircraft for close search where no enemy opposition existed and where the position of the force-landed aircraft was uncertain. Ansons were already in use in No. 280 Squadron of Coastal Command's Rescue Squadrons and as they had proved satisfactory there it was agreed to increase the establishment of the Valley Squadron by 2 plus O Ansons.

On 31 October D.G.A.S. drew the attention of the Air Staff to the difficulties encountered by the Air/Sea Rescue Organisation in the allotment of obsolescent or worn-out types of aircraft for rescue work. He pointed out that the Defiants supplied to the Fighter Command Squadrons had been so old that they had been difficult to maintain, they had a high stalling speed and a wide turning circle which made them unsuitable for rescue work, and they had proved a poor substitute for the Lysander.<sup>2</sup> Now they were obsolescent and a substitute must be found entailing yet another modification of rescue equipment. He asked for an increase of three close search squadrons in Fighter Command and put forward a plea that their re-equipment should be with Mosquito, Beaufighter or Havoc aircraft. He also asked for an increase of four squadrons in Coastal Command's deep search squadrons, and pointed out that such an establishment as he desired did not compare with the number of aircraft employed by the enemy for the same purpose. With a suitable type of aircraft he promised an increase in the number of rescues, and felt that such a policy would have a good effect on the morale of aircrews who would realise that their rescue after an operation had, in the eyes of authority, no less importance than reaching the target.

Lack of operational aircraft precluded approval of D.G.A.S.'s request, but it was agreed that certain increases and re-equipment should be made in existing Fighter Command Squadrons to give more adequate cover to parts of the coast which up to then had had few rescue facilities. This included the Irish coast, which was to be covered by Flights at Ballyhalbert and Eglinton. It was agreed that the Defiants and Lysanders should be replaced by Spitfires in areas where enemy fighter opposition might be encountered and by Ansons in areas beyond the reach of enemy fighters. The substitution of the Spitfire meant a further re-designing of the Defiant rescue gear, but the Anson was capable of carrying the modified Lindholme gear.

On 27 November new establishments for Fighter Command's five squadrons were authorised representing an increase of 15 aircraft (9 land planes and 6 amphibians) to the previous establishments. These increases still left uncovered the Scottish coast from Montrose to Oban, in which area there had been 70 forced landings in the sea in twelve months and in December a request was made for a squadron to be based at Castletown

<sup>1</sup> A.M. File S. 72480.

<sup>2</sup> A.M. File S. 71700.

with detached flights at Peterhead and Scatsta. Authority was given for the formation of this additional squadron (No. 282 Air/Sea Rescue Squadron) with effect from 1 January 1943, with an establishment of 3 plus 1 Ansons and 3 plus 1 Walruses, bringing the total of Fighter Command's Search Squadrons to six.

*Deep Search Squadrons.* The representations from D.G.A.S. and D.D.A/S.R. that the replacement of the Hudson by a non-operational type aircraft would hinder the efficient working of the Service, eventually resulted in the suggestion that the new bomber aircraft, the Warwick, should be given to Air/Sea Rescue for trials. In October, the Vice Chief of Air Staff gave his agreement to this proposal and trials of the Wellington and Albemarle were therefore abandoned.<sup>1</sup>

The difficulty of finding a suitable aircraft for the existing Coastal Command Squadrons meant that none were available for any additional squadrons of this kind, and as with the Fighter Command Squadrons the Air Staff were unable to agree any increases. As the Admiralty had consented to release 12 Walruses for rescue work and a tacit understanding existed that they would make good all wastage incurred in Walrus rescue aircraft, it was agreed to allot some Walruses to Coastal Command to cover areas previously short of rescue aircraft.

In November the establishments of Nos. 279 and 280 Squadrons were increased by the addition of two and one Walruses respectively, and the three amphibians which remained after the approved expansion of the Fighter Command Squadrons were allocated to the Coastal Command Stations at Skaeabrae, Vaagar and Sullom Voe to cover the areas of the Orkneys, Faroes and Shetlands.

#### **Badge for Air/Sea Rescue Marine Craft Crews**

In November 1942 H.M. The King approved the issue of a badge to airmen members of Royal Air Force marine craft crews engaged on Air/Sea Rescue duties. Thus ended a long struggle to obtain some recognition for the rescue craft crews, who had volunteered to face the enemy as well as the hazards of the sea, but had no badge to distinguish them from those normally engaged in non-combatant duties.

It had long been the wish of many people in the Service that Air Force personnel employed at sea on Air/Sea Rescue duties, should receive some distinguishing badge to indicate the specialist nature of their work. Coastal Command had first put forward such a request in October 1941, but it had been turned down on the grounds that the Air Ministry did not normally authorise the badges to indicate a trade or duty, but only as proof of some special qualification which an individual had gained.<sup>2</sup>

In April 1942, during the visit of the Under Secretary of State and the Director-General of Aircraft Safety to Dover, requests were made to them that some form of badge should be supplied to officers and other ranks employed in Air/Sea Rescue. These requests were supported by both the Under Secretary of State and D.G.A.S. and, as a result of their interest, the matter was

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<sup>1</sup> A.M. File S. 70813 (*passim*).

<sup>2</sup> A.M. File A. 169060 (*passim*).

put before the Air Council meeting in June, when the Air Member for Personnel undertook to examine the claims of the Air/Sea Rescue Organisation. Agreement in principle was given to a badge, but in conformity with the general policy ruling that badges other than aircrew should not be worn by officers, its use was to be confined to airmen.

Various designs were considered and abandoned during the summer of 1942, whilst the Press conducted a campaign requesting that the Minister for Air should look into the matter, as the Air/Sea Rescue men deserved some recognition and the badge which had been promised to them had not materialised. The badge eventually submitted for approval to H.M. The King consisted of a launch at speed, with the letters "A.S.R." included in the design.

There was also considerable feeling, both in the Service and amongst members of the general public, that the Masters of rescue craft should be deserving of a badge equally with airmen. In common with their men they undertook arduous and dangerous duties in the face of the enemy. The question of the wearing of distinguishing badges in general by officers and warrant officers was fully considered by the Council on 27 November, when special consideration was given to the wearing, by Royal Air Force officers, and warrant officers, of the Air/Sea Rescue badge. It was decided, however, that the existing policy should be continued, as the grant of the Air/Sea Rescue badge to officers would make it impossible to resist applications from other officers to wear a badge intended to indicate the nature of the dangerous work undertaken by them, and would thus result in a break in tradition.

## CHAPTER 4

### AIR/SEA RESCUE AT HOME (January 1943—May 1944)

#### Organisation

At the beginning of January 1943, following the retirement of Sir John Salmond, the post of Director General was abolished and the appointment of a Director of Air Safety was authorised. Air Commodore H. A. Haines was posted as first Director and like his predecessor was responsible direct to the Deputy Chief of Air Staff and then to the Assistant Chief of Air Staff (Operations) when the former post was abolished. On 18 August 1943 this responsibility was transferred to the Assistant Chief of Air Staff (General), when certain re-organisation took place in the Air Staff.

The employment of an operational type—the Warwick—as a deep search aircraft having been accepted by the Air Staff, a provisional target for Air/Sea Rescue Squadrons was necessary to provide an expansion and re-equipment programme for the future. In February the Air Staff agreed that for the purpose of long term planning and as a basis for provisioning, the Air/Sea Rescue Squadrons at Home to be included in Target "H" (Expansion Programme to March 1944) should consist of eight and a half squadrons each of twenty aircraft. Based on Target "H", the provisional Expansion Programme (CWE/E/47) issued in March 1943, provided that the long range squadrons were to be equipped with Warwicks, four squadrons in Coastal Command and the equivalent of one in Fighter Command. The amphibian squadrons or their equivalent in flights were to be equipped with Walruses until replaced in 1944 by the Navy's new type amphibian, the Sea Otter; and the high speed squadrons were to be equipped with fighter types, Spitfires or Mosquitoes if available.

Delays in production of the Warwick and hindrances to its clearance as a rescue aircraft prevented any possibility of re-equipment of Coastal Command's deep search squadrons before the late summer. The aircrews of No. 280 Squadron, still operating on Ansons, had no experience of modern operational types and as the shortage of Hudsons precluded any allocation to them three Wellingtons had been provided in February for training personnel of No. 280 Squadron, preparatory to their switch-over to Warwicks.<sup>1</sup>

Bearing in mind that five squadrons at home were to be ultimately re-equipped with long range aircraft, D.D.A/S.R. made a request to the Air Staff that the necessary Warwick aircraft should be provided as quickly as possible in view of the dwindling number of Hudsons, which by April were reduced to a total of only twelve in No. 279 Squadron against its establishment of twenty aircraft.

As frequently happens with new aircraft, various technical defects were found in the Warwick which delayed production and clearance for rescue work. A number of what was known as the "Intermediate Stage" Warwicks had been produced, which fulfilled certain but not all the requirements for

<sup>1</sup> A.M. File S. 70813.

Air/Sea Rescue aircraft.<sup>1</sup> To prevent further delay in re-equipment, in May D.D.A/S.R. agreed to accept the incomplete version Warwick as an interim measure. Ten of these were estimated to be available in July, followed by twenty in August.

Accordingly on 1 June formal authority was given for the re-equipment of No. 280 Squadron, with effect from 9 July, to an establishment of 16 plus 4 Warwicks, equipped to carry the airborne lifeboat and Lindholme gear. It was anticipated that the re-equipment of No. 279 Squadron to a similar establishment could follow at the end of August; authority being actually given for this re-equipment on 16 September.

Meanwhile the Warwick transport programme having been affected with similar production troubles, there were suggestions from the Ministry of Aircraft Production that the transport aircraft should be given priority at the expense of Air/Sea Rescue. This culminated in a recommendation from Assistant Chief of Air Staff (Operations) to the Secretary of State that Air/Sea Rescue units should not suffer by a cut in the production of the rescue type Warwicks, as Air/Sea Rescue was already behind its programme as far as aircraft properly modified for rescue work were concerned, and in view of the great emphasis laid upon the importance of Air/Sea Rescue by the various Air Officers Commanding-in-Chief.

The Warwick aircraft for the re-equipment of Nos. 280 and 279 Squadrons came forward very slowly during the summer and autumn of 1943. The aircraft had been cleared for boat dropping in July but various technical troubles and serious defects occurred in its early service life. In consequence the proper Air/Sea Rescue variation of the Warwick came off production concurrently with the intermediate type and a mixed bag of both types was issued for re-equipment of the Coastal Command Air/Sea Rescue Squadrons. No. 280 Squadron did not receive its full establishment of aircraft until the beginning of October and the unit was then withdrawn from operations for training on the new type of aircraft.<sup>2</sup>

The re-equipment of No. 279 Squadron was just about to follow on when Coastal Command made representations to D.D.A/S.R. that they preferred to retain the Hudsons in No. 279 Squadron for the time being, and form a new and urgently required long range squadron from the Warwicks.

As the formation of a third squadron was within Coastal Command's target it was agreed that the Warwick should be used for this purpose. As the total number of Air/Sea Rescue Squadrons in the Metropolitan Air Force was up to the total expansion figure, no fresh squadron number could be issued to cover the expansion. Accordingly, on 11 November, authority was given for Nos. 281 and 282 Squadrons of Fighter Command to be amalgamated, and the number plate of No. 281 Squadron thus thrown up for the use of Coastal Command. The establishment of No. 282 Squadron then became 7 plus 3 Ansons and 5 plus 2 Walrus, whilst No. 281 Squadron was to re-form in Coastal Command to an establishment of 16 plus 4 Warwicks, adjusting the total rescue squadrons to three in Coastal Command, and five in Fighter Command.

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<sup>1</sup> A.M. File S. 70820.

<sup>2</sup> A.M. File S. 70820 (*passim*).



A Warwick carrying an airborne lifeboat.

### **Re-organisation of Air/Sea Rescue Squadrons**

In September 1943, Fighter Command had put forward suggestions for the re-organisation of Air/Sea Rescue in the Metropolitan Air Force, in order to derive the maximum benefit from available technical developments and to meet the requirements of future operations.<sup>1</sup>

Up to this time Fighter Command were only responsible for rescue within forty miles of the coast ; Coastal Command for rescues anywhere outside this area. The impending employment of the Warwick for rescue work in both Fighter and Coastal Commands would make navigational facilities such as A.S.V., Gee, W/T, H.F. and V.H.F. R/T available for the rescue services in the whole of the coastal areas, and it was therefore submitted that each command should be responsible for a certain length of the British coast line without regard to the distance from the coast. This suggestion was mutually agreed by both commands and put forward to the Air Staff for approval, when it was recommended that Fighter Command should be responsible for rescue in areas opposite enemy held coasts (where fighter cover and escorts were often a necessary requirement of rescue operations), and Coastal Command for all other areas.

In order that the proposed re-organisation should meet the requirements of forthcoming major operations, the Air Staff were also requested to approve slight adjustments to the Air/Sea Rescue Squadrons' target figures. On 22 November the Expansion and Re-equipment Progress Committee agreed that the expansion programme for both commands should be amended to a total of 8 squadrons. In determining these requirements it was realised that the Air/Sea Rescue Squadrons would probably be operated as separate flights, but this was accepted provided that the total UE of aircraft was not exceeded.

To accomplish the new targets the formation of two additional squadrons in Coastal Command and the reduction of one squadron in Fighter Command, now Air Defence of Great Britain Command, were agreed. The re-formation of No. 281 Squadron in Coastal Command having already been authorised, it was suggested that to complete Coastal Command's target No. 282 Squadron should be thrown up by A.D.G.B. in favour of Coastal Command. Thus the Coastal Command Air/Sea Rescue Squadrons would number 279 to 282 inclusive and the A.D.G.B. Squadrons 275 to 278 inclusive.

Formal approval to the re-organisation of Air/Sea Rescue was given in February, when it was agreed that on a date to be announced Air Defence of Great Britain Command were to be made responsible for an area along the southern shores of England with the lateral boundaries extending across to the Continent, the eastern boundary being a line running from Southwold to the Hook of Holland, and the western boundary a line running west from Land's End to 7 degrees west thence down and in to a point just below Brest.

Coastal Command were to be solely responsible for all rescues outside this area, for which purpose they were to have three squadrons of Warwicks and one of Hudsons, all at 20 U.E., operating from Bircham Newton, Thornaby, Tiree and Davidstow Moor.

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<sup>1</sup> A.M. File S. 95190 (*passim*).

In addition, No. 269 (Met.) Squadron based at Lagens in the Azores had been re-formed on 1 January 1944, to include an Air/Sea Rescue Flight of 4 plus 2 Hudsons and 2 plus 1 Walrus, to cover rescue operations in the Bay of Biscay area. Until sufficient Warwicks were forthcoming to form Coastal Command's fourth squadron, it was agreed that Ansons should remain in the Air/Sea Rescue Squadrons of A.D.G.B.

#### **Formation of the School of Air/Sea Rescue**

The Station Air/Sea Rescue Officers (first appointed in March 1942) had done their best to train aircrews in correct ditching and dinghy procedure, but frequently they possessed insufficient knowledge themselves, and had very little opportunity of undertaking any training to acquire this knowledge. Their functions and duties had never been definitely clarified because of this lack of facilities for their training.

Towards the end of 1942 the increase in operations and the consequent number of forced landings at sea made it imperative to ensure that an officer on each station was fully trained in Air/Sea Rescue procedure. This applied particularly to the U.S.A.A.F. whose aircrews were practically untrained in dinghy drill. In February 1943, D.D.A/S.R. was successful in obtaining the interest of the Air Staff in the training of these officers, when he put forward the suggestion that a special training course should be authorised at a suitable station where practical exercises could be carried out by air and surface craft in conjunction with dinghies. In support of this argument D.D.A/S.R. stated that out of the 1,761 aircrews who came down in the sea in the last six months of 1942 1,166 lives were lost or 66 per cent. of the crews involved in these incidents. He had conducted an investigation into the various factors affecting the success of the rescue organisation and was convinced that one of the major factors was the standard of training of aircrews and of the maintenance personnel responsible for rescue equipment. In this latter connection the new trade of Safety Equipment Worker had only just been introduced, but very few trained personnel were available for handling emergency equipment.<sup>1</sup>

The assistant Chief of Air Staff (Operations) agreed that such an investment as an Air/Sea Rescue Training unit would return good dividends and on 26 February gave authority for the formation of a School of Air/Sea Rescue.<sup>2</sup>

He followed this up with a letter to all operational Commands urging a general improvement of standards of supervision and training, with the object of achieving a substantial improvement in the number of successful rescues.<sup>3</sup> He pointed out that the new school would be of great assistance in improving the standard of training, and that the new trade of Safety Equipment Worker would also be of help. As soon as personnel of this trade could be trained and posted to squadrons, they would ensure an improved standard of packing, stowage and maintenance of emergency equipment.

<sup>1</sup> Until December 1942 the only workers engaged on safety equipment apparatus were Parachute Packers (Group V) whose work did not include packing and maintenance of safety equipment. In December this trade was re-named "Safety Equipment Assistant" and upgraded to Group III; and the work handled extended to include responsibility for packing, stowing and maintenance of safety equipment including dinghies. The Safety Equipment Workers (Group II) were to be the N.C.O.s of the trade for supervision and training purposes. (A.M.O. A. 1277/42.)

<sup>2</sup> A.M. File S. 8796A: Min. 19.

<sup>3</sup> A.M. File S. 7800/III.

Various locations were considered for the School of Air/Sea Rescue and the final choice fell upon Blackpool, where the school could be accommodated at Technical Training Command's Station. The school was provided with suitable instructors, an establishment of 2 plus 1 Ansons, and arrangements were made to use the Air/Sea Rescue marine craft at Fleetwood for exercises and dinghy training. The course was to be of two weeks' duration, to accommodate twenty officers per course, from Bomber, Fighter, Coastal, Transport and Flying Training Commands, as well as U.S.A.A.F. Officers. The school opened on 30 May 1943, and both theoretical and practical training was given to ensure that all students gained a thorough knowledge of rescue procedure and became thoroughly familiar with all types of rescue equipment.

The rescue of a Lancaster crew ditched near the Dutch coast provided a useful illustration at this time of the importance of having a responsible fully-trained officer at each squadron to make certain that all aircrews were familiar with ditching and dinghy drills.

The Lancaster, returning from an operational mission on 14 May, was hit by a burst of heavy *flak* when flying at 17,000 feet near the Dutch coast. The pilot lost control of the aircraft which went into a spiral dive but he recovered control at 8,000 feet. He gave the order for bombs to be jettisoned and continued out to sea still losing height. At 4,000 feet the pilot decided to alight on the water and gave the order to prepare for ditching, which he should have initiated directly he had passed the coast. The wireless operator was not aware until he heard the order that the aircraft was about to ditch, whereas he should have been advised to commence the distress procedure as soon as the aircraft began to lose height. An S.O.S. was sent out immediately but the aircraft was too low for a fix to be obtained and the wireless operator did not switch his I.F.F. to distress before commencing distress procedure.

The aircraft came to rest on the sea in a level attitude and the dinghy was released satisfactorily. The crew brought with them into the dinghy the emergency packs, the pigeon containers and the radio transmitter. Then they cut the two cords which appeared to be joining the dinghy to the aircraft which in fact cut adrift the emergency pack containing the signals pistol, the loading coil of the dinghy radio and other emergency equipment. They found that one of the pigeons had been drowned because the lids of the containers had not been closed prior to ditching—this should have been the allotted task of the mid-upper gunner. The other pigeon was wet but they released it with a message attached. It did not reach base, probably owing to its condition. After the crew had spent twenty-four hours in the dinghy, two Bostons and two Spitfires passed overhead, but they were unable to attract the attention of the aircraft as they had no pyrotechnics. They endeavoured to work the radio without success, unaware that the loading unit was missing. For four days they drifted in the direction of England, and at times the weather was so clear that they could see both the English and French Coasts. They hoisted a shirt on the mast in the hope that they would be sighted and early on the fifth day they were seen and picked up by a minesweeper when eight miles north-east of Dungeness. Their hundred and twenty-nine hours in the dinghy might have been considerably reduced had they known the correct distress procedure, their knowledge of which had never been checked since arrival at their parent Station.

### **New Air/Sea Rescue Organisation Comes into Force**

On 29 March a meeting was convened at Coastal Command by the Air Officer Commanding-in-Chief (Air Chief Marshal Sir W. Sholto-Douglas) attended by representatives of Coastal Command, A.D.G.B. Command, D.F.C.R.<sup>1</sup> and D.D.A/S.R. to ascertain how soon the new policy of Air/Sea Rescue organisation could be brought into effect.

By this time the three Warwick Squadrons in Coastal Command had all been supplied with their establishment of aircraft, and Warwicks were available for the Warwick flights of A.D.G.B. Coastal Command agreed that they would assist with long range rescue operations within A.D.G.B.'s area of responsibility until these Warwick flights were fully operational.

It was accordingly decided that the new areas of responsibility should be brought into effect on 15 April and that Coastal Command liaison officers should be attached to the A.D.G.B. Air/Sea Rescue Sectors to assist in implementing the new arrangements.

The revised general organisation was set out in a new Air Ministry Confidential Order (A.45/44) and procedure for putting this re-organisation into effect was detailed in an operational instruction jointly issued by Coastal and Air Defence of Great Britain Commands. In the past Fighter Command having undertaken all searches within forty miles of the coast, when an aircraft ditched in this area a fighter aircraft was scrambled and vectored to the position. Now it was necessary for Coastal Command Air/Sea Rescue aircraft to scramble for searches within a similar area and pilots and crews of these squadrons had to learn to undertake this quickly—not an easy task with a Warwick aircraft.

By May the new organisation was working well and minor adjustments were made to the location of various rescue flights to give ample cover for forthcoming invasion operations. In this the U.S.A.A.F. Rescue Squadron of Thunderbolts was also ready to play its part.

### **Re-Organisation of Marine Craft Units**

In March a re-organisation of Air/Sea Rescue Marine Craft Units was undertaken in view of the commitments of the forthcoming major operations. It was necessary to reinforce the south coast units, and for the most part this was done by the disbandment of units in areas which would be unaffected by invasion operations.

In May total marine craft available in the United Kingdom were:—

#### *R.A.F.*

High Speed Launches	...	...	...	...	130
Pinnaces	...	...	...	...	25
Seaplane Tenders	...	...	...	...	27

#### *Naval.*

Rescue Motor Launches	...	...	...	50
Motor Anti-Submarine Boats	}	on	14	
Air Rescue Boats		loan	14	

<sup>1</sup> A.M. File S. 95190.

## Development of Equipment

### The Airborne Lifeboat

1942 had been a year of development of new rescue devices; 1943 was to see nearly all these developments in full use either as originally planned or adapted and improved as the result of operational experiences.

*Mark I.* The first five months of the year saw the most important of these developments—the Airborne Lifeboat—in successful use. The first of the twenty-four boats came off production in January, but its troubles were not yet over. The Hudson aircraft of No. 279 Squadron had to be modified to carry the lifeboats, and delays occurred in carrying out this work. The first delivery was soon followed up, but as there was no simultaneous delivery of parachutes further delays occurred.<sup>1</sup>

By the beginning of March, when six boats had been delivered, it was found that the original design of mast and sails proved unsatisfactory in practice, and urgent steps were taken to modify them to a more satisfactory design. Another urgent requirement was the inclusion of a message passing device, so that a message slip might be passed from the dropping aircraft to the lifeboat just prior to release.

The Airborne Lifeboat Mark I as initially issued for operational use was supplied with sufficient food, drink and comforts to cover seven days' requirements for a crew of seven. These included:—

*For communication:—*

A dinghy radio set, a Verrey pistol and cartridges, a waterproof torch, smoke floats and an Aldis signalling lamp.

*For comfort and protection from exposure:—*

Waterproof outer suits with warm inner suits, first aid outfit and massage oil, and ever-hot bags (a type of chemical hot bottle).

*For food and drink:—*

Tinned water and drinking cup, condensed milk, tins of emergency rations, cigarettes and matches.

In addition, to aid the survivors on their voyage, a compass, log and charts were provided as well as materials to effect repairs, tools, bellows (for inflating the self-righting compartments) and leak stoppers.

All these were stowed in the boat's lockers together with petrol, oil, sails, masts and rigging and a full set of simple instructions to enable survivors with little nautical knowledge to operate the boat and navigate it to safe waters. To drop the boat the carrying aircraft flew into wind on a track passing over the dinghy, and as soon as the aircraft was overhead the lifeboat was released. Three parachutes supporting the boat opened immediately. As soon as the lifeboat was tilted at an angle of 30 degrees a mercury switch closed and completed an electrical circuit which fired a cartridge, setting off the rocket carrying the sea anchor drogue. This fell into the water attached to the boat by a line and brought it up bows to wind. As the boat alighted on the water a second (immersion type) switch closed and two rockets fired over either beam of the boat, carrying buoyant lines to assist distressed crew to secure the boat and climb aboard.

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<sup>1</sup> D.D.A/S.R. Folder—Airborne Lifeboat—Mark I (*passim*).

By the beginning of May the worst of the teething troubles were over and No. 279 Squadron was becoming well equipped with airborne lifeboats. On 5 May the first operational drop of a lifeboat provided proof of the practical success of the new invention.

A Halifax returning from a raid was struck by *flak* and forced to ditch fifty-one miles east of Spurn Head. In striking the water the bomb aimer was thrown from his ditching station and severely injured his face. The dinghy failed to blow out of the stowage in spite of the use of the manual release, but the captain succeeded in breaking into the stowage and pulling it out, when it inflated immediately. The crew stayed in the vicinity of the floating aircraft for about one hour, after which it was lost to sight. Three hours later at an early hour of the morning, a Hudson, sent out to search as a result of the S.O.S. made before ditching, came into view and saw the Verey lights fired by the survivors. It reported the position of the dinghy and remained circling for an hour when two more Hudsons arrived, one carrying the airborne lifeboat. The crew in the dinghy had never heard of the airborne lifeboat and were curious about the peculiarly shaped Hudson flying above them. Great was their astonishment when the bottom of the Hudson fell off and they saw that it was a boat with propellers protruding from it. The lifeboat landed satisfactorily but the rocket drogue did not fire. However, just after it struck the water the parachute automatic release functioned and the parachutes blew clear of the boat which was only twenty-five yards to leeward of the dinghy. The crew managed to board it with ease, in spite of being wet and seasick. The injured bomb aimer laid down on the forward self-righting chamber which had not inflated and by his action concealed the equipment hatch which contained the instructions for operating the boat. Nevertheless the engineer and navigator, both of whom had yachting experience, started the engines and proceeded on the course flashed to them on the Aldis lamp of the shadowing Hudson. The boat proceeded at a speed of six knots with the dinghy in tow, but after a few minutes the tow rope broke and as the dinghy drifted away it was sunk by gunfire from one of the accompanying Hudsons. Before long the starboard engine failed, so the mast was stepped and the main sail set, and for some time fair progress was made half under sail and half under power, until the port engine failed. Soon after mid-day the lifeboat was again sighted by aircraft and surface rescue craft were ordered to the position. The crew wrote "engines u/s" with fluorescine upon the sail hoping that the aircraft would see the message. A high speed launch and two rescue motor launches soon proceeded to the scene and shortly afterwards came alongside the lifeboat, when the crew was transferred and landed at Grimsby.

*Mark IA and Mark II Boats.* Although the Mark I boat was now in active use, experiments and trials were being carried out to provide an airborne lifeboat suitable for carrying by the Warwick aircraft when it became available for employment in Air/Sea Rescue Squadrons. As the sphere of air operations was continually increasing, it was considered that a larger boat of greater range would be desirable; and in April a specification for a new boat was drawn up (known as the Mark II) which was to be 30 feet long, with capacity for 10 men, and capable of covering three hundred sea miles at a speed of approximately 7 knots. It was apparent that the development and production of this new Mark might take some considerable time, and meanwhile it was anticipated that the Warwicks would be available

for the re-equipment of Coastal Command deep search squadrons by June or July. To bridge the gap, in April an order was given for a further 50 Mark I boats for modification and fitting to the Warwick aircraft for use until the new Mark II should be available. This modified type was to be known as the Mark IA.

It was found possible to adapt the original lifeboat for use with the Warwick aircraft without any great difficulty, and by September 1943, the first of the modified Mark IA boats had been supplied for Service trials with the Warwick. The slow progress of Warwick re-equipment in Nos. 280 and 279 Squadrons during the autumn of 1943 precluded the operational use of the Mark IA lifeboat before the end of the year.

During November a Mark IA boat was taken to America for exhibition purposes. With the equipment and advice provided by the R.A.F. the U.S.A.A.F. were able to adapt the boat for use by a Fortress aircraft, and within ten weeks of its arrival in U.S.A. the lifeboat was successfully dropped from a Fortress.

It was not until January 1944 that the first successful drop of the Mark IA lifeboat was achieved. On 7 January at 1440 hours, four Mosquitoes took off from the Royal Air Force Station Predannack to carry out an offensive patrol in the Bay of Biscay. The outward journey was without incident but at 1624 hours two Ju 88's were sighted. These were chased, the nearest one overtaken, attacked and sent crashing into the sea. During the combat return fire disabled both engines of one Mosquito whose captain decided immediately that ditching was inevitable. He realised that to send distress signals to base would probably be abortive in view of the low altitude and the distance (one hundred and seventy miles south of Land's End); so he informed the accompanying aircraft of his intention to ditch.

The Mosquito came to rest on the sea in a level attitude and the navigator got out in less than a minute. The captain followed him closely bringing with him his "K" type dinghy. The "L" type dinghy from the aircraft inflated satisfactorily and both men clambered aboard. They baled out the water and found that with both the "L" and "K" packs they had a floating knife, bellows, rescue line, aprons, drogues, paddles, ever-hot bags, emergency rations, six 2-star red signals, leak stoppers, fluorescine, whistle, compass, mast and sail and floating torches.

The navigator was a man of enormous build so the captain decided that for comfort's sake it would be better to leave him in the "L" dinghy and use the "K" dinghy for himself. They secured the two dinghies together and kept alternate watch throughout the night.

The next morning they hoisted the sail of the "K" dinghy and got under way towing the "L" dinghy astern, making about one knot in a north-easterly direction. At noon they were overjoyed to see four Mosquitoes of their own Squadron circling them, followed soon afterwards by five Beau-fighters. This stimulated their flagging spirits and restored every confidence of rescue. Soon afterwards a Warwick of No. 280 Squadron was sighted carrying the airborne lifeboat which was dropped about one hundred yards down-wind of the dinghy. The captain cast off from the "L" dinghy and paddled his "K" dinghy across to the lifeboat followed by the navigator who brought his "L" dinghy alongside in style, using his weather apron as a sail.

In the boat they found a message "Steer 350 degrees—Good Luck". The captain found that the parachute lines had fouled both propellers of the lifeboat so he stripped off his clothes, entered the water and with the dinghy knife cleared away the offending lines. The starboard motor was started up and course was set as ordered. After an hour's run the motor stopped so the port motor was started and course maintained as before at a steady speed of three knots. Stock of all the equipment on board was taken and it was decided to work out a rationing scheme which would last four weeks if necessary. Steady progress was made all day and throughout the night, every effort being made to navigate as accurately as possible and no effort being spared to keep the lifeboat ship-shape and tidy. About dawn on the 9th the port engine stopped and they found that both propellers had been fouled by the drogue rocket wire which had not been properly brought aboard. All efforts to clear the propellers being unsuccessful the mast was stepped and sails were set. Though the occupants had never rigged or sailed a small craft they accomplished the task without difficulty after reading the instructional booklet.

No aircraft were seen throughout the day. Towards dusk the wind and sea increased, consequently a decision was made to heave to. Next morning the weather abated so they proceeded again under sail, good progress again being made as the wind was now more favourable. By this time the crew were so tired that they experienced an almost over-powering inclination to make for the French coast, but they fought it off and made a steadfast resolution to sail into Mounts Bay if they were not rescued in the interim. In the afternoon they were encouraged by the sight of a Mosquito which orbited over the boat, waggled its wings in greeting and flew away due north. This was interpreted to mean that the lifeboat was due south of the Scillies so course was altered again. During the evening a Liberator from St. Eval was despatched on search as well as high speed launches and rescue motor launches from Penzance and the Scillies. The Liberator flew over the lifeboat but did not see the red star signals fired by the occupants. Later it sighted a high speed launch which was seven miles from the lifeboat and mistaking it for the airborne lifeboat dropped two flares and a quantity of petrol.

During this time the lifeboat altered course with a change of wind and proceeded until the evening of the following day when the wind changed again. At mid-night the wind fell off altogether so sails were furled and the occupants took turns in resting, the first opportunity they had had since they had started their voyage in the lifeboat. Shortly afterwards the sound of engines were heard. Surface craft were observed which were recognised as rescue motor launches as they came near. Three rescue motor launches closed round the lifeboat and the occupants leapt on board one of the rescue craft. The time was 2345 hours on 11 January and the place approximately forty miles south-west of Land's End. The survivors were in high spirits, little the worse for their voyage after one hundred and three hours afloat. There is no doubt that they could have reached home by their own efforts had they not been located by the rescue craft. These two men set a very high standard of initiative and skill coupled with courage, fortitude and determination ; it is interesting to note that the captain of the aircraft was the Squadron Air/Sea Rescue Officer.

The second successful drop of an airborne lifeboat under much more arduous conditions than those of the first one proved beyond doubt the value of the lifeboat to the rescue services. An O.T.U. Wellington en route for Rennes on a pamphlet-dropping operation on 14 July was damaged by *flak* when twenty miles south of Caen. Course was maintained for the target but when the aircraft was fifty miles from Rennes the oil pressure dropped to zero, causing the pilot to head for the open sea in the direction of Bayeux. Ditching procedure was begun immediately and a signal to base was confirmed and repeated back to them. When seven miles out to sea from the French coast at 0210 hours the aircraft was successfully ditched twenty-six miles west of Cap de la Heve. The whole crew assembled in the dinghy, immediately began to feel the effects of severe seasickness and it was not until the morning that they recovered their spirits and refreshed themselves with a Horlicks tablet each. They then discovered that they were drifting towards the shore and a long struggle began with paddles to avoid approaching the enemy coast. Meanwhile an International Distress Signal had been broadcast and acknowledged by the German radio service. At mid-day Typhoons sighted the dinghy fifteen miles west of Le Havre. All that day the dinghy drifted parallel with the coastline and next morning was resighted by Typhoons eight miles off Cap d'Antifer. Hudsons of No. 279 Squadron were called up and soon appeared, one of them carrying an airborne lifeboat. The boat was successfully dropped and alighted twenty yards upwind of the dinghy, but vigorous paddling soon brought the crew alongside. They boarded the lifeboat with ease and after transferring their equipment from the dinghy let it float away as a decoy for the enemy. The captain took charge and read the instructional booklet aloud shouting above the noise of the escorting aircraft which made hearing difficult. Both the bomb aimer and the wireless operator had some engine experience and they were detailed as engineers. Within twenty minutes all was shipshape, the engines were started, and a course was steered northwards. It was decided to reach mid-Channel and then to sail the remainder of the way. When thirty miles had been covered at an average speed of 7 knots they were intercepted by two high speed launches thirty-seven miles north-west of Cap d'Antifer. The crew hastily tidied up their craft before the "professional seamen" came alongside. All this time escorting aircraft gave air cover, passing to and fro between the high speed launches and the lifeboat which remained unmolested by the enemy. One launch took the crew aboard, the second took the lifeboat in tow. The crew had seen air diagrams of the lifeboat and had read in the papers of the previous rescue, but they had received no instruction in the actual use of the boat. In spite of this they managed very well and estimated that they could have entered the Solent under power within another six hours if they had not been reached by the launches.

#### **"Q" and "S" Sailing Dinghies**

The multi-seater sailing dinghy trials in February revealed various defects affecting the performance and general safety of the boat. The production models suffered from porosity of the rubberised fabric, and caused production to be suspended in March until a gored form of construction could be adopted. New designs were produced in April and May to improve stability and general performance, and all these difficulties hindered the development

of a final design which could be accepted for full production.<sup>1</sup> Nevertheless in May a rescue was achieved by means of a "Q" sailing dinghy which demonstrated that if a satisfactory type could be evolved for general use it would be of tremendous assistance in the rescue of aircrew.

A Whitley from St. Eval was on anti-submarine patrol off the west coast of France on 17 May when its starboard engine failed. The captain gave the order to prepare for ditching and S.O.S. was transmitted, but the aircraft approached the water at such a speed that there was little time for ditching drill to be carried out in full and the crew were not fully prepared as the aircraft struck the water. The bomb aimer was coming up from the nose and suffered a fractured ankle and deep cuts to his knees. The rear gunner was leaving his turret and being thrown down by the impact, fractured his left arm. In spite of their injuries the crew were able to board the dinghy without difficulty. Before leaving the aircraft the wireless operator threw the dinghy radio into the sea but forgot the kite container in his excitement. They paddled towards the dinghy radio and retrieved it, after which they remained riding to the sea anchor a few yards from the aircraft. The crew felt confident since they had a boat in which they could sail, but they considered it advisable to remain in the vicinity of the ditching in order to facilitate rescue craft spotting them. Unfortunately the weather showed signs of severe deterioration and two Air/Sea Rescue aircraft despatched in search of them were recalled. A Whitley which flew over the dinghy during the afternoon of the first day could not be contacted although the radio was operated with the aerial held aloft in the hands of the crew. No further aircraft were seen that day so the crew rigged up the weather aprons and endeavoured to make themselves comfortable.

Next morning at about 1000 hours they decided to rig the mast and hoist the sails to make for home. The captain consulted the instructional diagram and carried out the instructions. They failed to discover how to set the foresail properly and hauled it down, but managed to make fair progress with only the mainsail. After six hours sailing the dinghy was sighted by a Sunderland, the crew of which stated that they would never have seen the dinghy had it not been for the presence of the sail. This aircraft circled the dinghy and asked base for permission to alight. The survivors furled their mainsail and put out their sea anchor whilst the Sunderland pilot lost flying speed, then appeared to stall and dipped the nose right into the swell. On impact the Sunderland's "J" dinghy came out of the blow-out stowage and all the crew managed to board it, with the exception of the captain who was lost. The "Q" dinghy crew then set sail and managed to reach the Sunderland crew. They made fast alongside and sat down to await the arrival of assistance. Soon afterwards a Whitley was sighted at which a signal was fired but without results. Just as it was getting dusk a second Sunderland was seen approaching and they managed to attract its attention with the aid of a Verey cartridge. Meanwhile a destroyer was despatched in search of the dinghy crew on the position given by the Sunderland before alighting. The next morning a further Sunderland spotted the dinghies and as the sea was calm alighted and took all the survivors aboard. Shortly afterwards they were transferred to the destroyer which had then arrived.

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<sup>1</sup> D.D.A/S.R. Folder 81687/III.

In view of their lack of sailing experience it was considered that the survivors managed reasonably well. The removal of the foresail was a mistake as with only a mainsail set, little progress could be made. However it is worthy of note that the sails had been the means of attracting the attention of the first Sunderland.

#### **Development of Sailing Dinghies**

By the end of 1943, general production of the "Q" Sailing Dinghy (authorised in the previous August) was well in hand but no general issue had yet been made to the Service. The re-designed dinghy of gored construction was cleared for use in the Whitley, Wellington, Warwick, Halifax and Lancaster in lieu of the "J" dinghy carried in these types of aircraft.

A scaled down "Q" dinghy, the "S" dinghy, was also under development, trials of which had been successful, but no dinghies of this type were put into production in 1943 as it was doubtful whether a requirement existed for the smaller size dinghy, and there was little possibility of using it in the existing stowages of British aircraft.<sup>1</sup>

Early "Q" models used for instructional purposes were found to be too difficult of assembly and sail by the average aircrew. As a result, in December 1943 recommendations were made by D.D.A/S.R. that the sail arrangement was too complicated for successful operation by survivors unversed in sailing. Investigations were undertaken accordingly by the Ministry of Aircraft Production in an effort to provide a simplified sail plan to take the place of the existing rig in both the "Q" and "S" dinghy.

In January it was agreed to produce sufficient numbers of the existing "Q" sailing rig to cater for one year's requirements for Halifaxes, and Lancasters (Marks II and IV (all with enlarged stowage), Warwicks and Windsors in order not to hold up essential current requirements. Meanwhile, a lateen (one sail) rig had been produced experimentally, and in February trials were commenced with this rig, which continued under varying weather conditions throughout the summer of 1944.

#### **Spitfire Rescue Gear**

By the spring of 1943, the re-equipment of Fighter Command's rescue squadrons was in full progress. Authority to use the Spitfires Marks I and II for re-equipment of certain of these squadrons necessitated the provision of a rescue apparatus which could be carried on and dropped from this aircraft. Tests were carried out during the first three months of 1943 with a type of apparatus carried internally in the emergency landing flare chutes, and this proved highly successful.<sup>2</sup>

In May preliminary provisioning action was taken for issue of this apparatus to all Air/Sea Rescue Spitfires in Fighter Command. The outfit (known as Type "E" Rescue Gear) consisted of three containers joined by lines. The largest container complete with "L" type dinghy was carried in one flare chute; and two others, one containing 75 yards of buoyant line and a float, and the other ancillary equipment, were carried in the second flare

<sup>1</sup> This was confirmed in July 1944 when it was considered undesirable to introduce a further type of dinghy having an extremely limited application. It was later adopted by the Fleet Air Arm for use as a type of airborne lifeboat.

<sup>2</sup> A.M. File S. 72409 (*passim*).

chute. As the apparatus was dropped the rope container remained attached to the chute and the line attached to the equipment container actuated the automatic inflation mechanism of the dinghy, the buoyant rope falling free on the sea surface. Equipment provided in addition to the "L" dinghy included canned water, emergency rations, first aid, a whistle and two star red distress signals and the equipment container acted as a drogue for the dinghy when in the water.

The great advantage of this rescue gear over all its predecessors was that it did not retard the aircraft in flight nor did it necessitate any modification or reduction in the normal armament of the Spitfire. This meant that in the event of an encounter with enemy aircraft a Spitfire rescue aircraft had no need to jettison its rescue apparatus but could engage the enemy in the normal way giving a greater feeling of confidence to the pilot in the knowledge that he was not at a disadvantage in an air battle. This apparatus was still in current use in the Spitfire rescue squadrons of Fighter Command, until their disbandment in February 1945.

#### **Communication Aids to Location**

*Radio Transmitters.* By February the initial 1,600 sets had all been issued to the Service and normal production was in hand for general issue of these sets, the release of which was to be on a broad basis of two-thirds for Home Commands and one-third for Overseas Commands.<sup>1</sup> In the same month the first of the American manufactured sets (SCR.578) arrived. These were similar to the British type but the aerial was launched by means of either a gas-filled balloon or a hand-launched kite. To standardise these with the British sets it was necessary to replace the American aerial equipment by the British rocket-launched kite and aerial. It was found possible to do this and issue of the sets to Coastal Command commenced in March. In order that marine craft could home on a dinghy operating the dinghy radio, steps were taken at the same time to fit high speed launches and rescue motor launches with the appropriate wireless receiver (R.1155) and the D.F. loop.

An interesting incident recorded in the Press in May 1943 was that of nineteen merchant seamen adrift in a lifeboat in the Atlantic, four hundred and fifty miles from England, to whom a dinghy transmitter was dropped by a patrolling Sunderland of Coastal Command. For four days after the lifeboat had been spotted by the Sunderland the weather was so bad that searching aircraft could not re-sight the boat. On the fifth day a faint S.O.S. from the dinghy radio caused new areas to be searched, still without success. Two days followed in which signals were heard intermittently and on the eighth day the signals were received in sufficient strength for a destroyer to home on them and pick up the boat's company.

"*Walter.*" The dinghy radio could not be carried in a number of aircraft owing to the lack of stowage space (Anson, Beaufort, Baltimore, Hampden, Mosquito and Walrus amongst others).<sup>2</sup> In addition, until suitable stowage in the dinghy pack could be made for the radio set, it had to be carried loose in such aircraft as could accommodate the set and in consequence

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<sup>1</sup> A.M. File S. 72457.

<sup>2</sup> A.M. File S. 72455.

was frequently left behind when ditching occurred. In fact it was estimated that in only 5 per cent. of ditchings was the radio taken into the dinghy. The need for "Walter" was apparent, therefore, not only for fighter aircraft but for multi-seater aircraft.

In February the first twelve trial sets became available and were issued to Nos. 172 and 547 Squadrons for trials. These were successful, but the difficulty still remained of how "Walter" could be stowed in a "K" dinghy pack without the sacrifice of other ancillary equipment. The size of the trial model oscillator was 14½" x 5" x 1¾" and the weight twenty ozs., but it was thought that this bulk could be reduced by further experiment.

The Navy were agreeable to the deletion of the sailing gear in the "K" dinghy pack and in consequence during February the introduction of "Walter" was authorised into the "K" dinghy pack for all existing and new production aircraft of the Fleet Air Arm, in lieu of the sailing mast, sail and thwart and one smoke float. In spite of this the Air Staff were not entirely convinced that "Walter" was a definite requirement for the Royal Air Force. In April both Coastal Command and Fighter Command pressed for its adoption on the grounds that trials had proved the efficacy of the apparatus for the purpose of improving the number of successful rescues. The latter Command also preferred the provision of "Walter" in the "K" dinghy pack to that of sailing gear. In consequence on 1 May the Air Staff approved the requirement and the Ministry of Aircraft Production were requested to put production of the transmitter in hand without delay, and for all types of aircraft.

It is interesting to note that while the advisability of sacrificing the "K" dinghy sail for "Walter" was under consideration, the pilot of a Spitfire, equipped with a "K" dinghy with sail, managed to survive in his dinghy for seven days, during which he sailed nearly one hundred miles. Shot down on 11 April, twenty miles west of Batz (roughly one hundred and thirty-five miles south of the Lizard) he was first seen by a Lancaster on the night of 17 April when forty-six miles south of the Lizard. As a result of the Lancaster's signals, search planes were sent out and at eight o'clock the following night (the 18th), the dinghy was spotted by an Anson thirty-nine miles south of the Lizard. The Anson called up an Air/Sea Rescue Walrus which was quickly on the spot. Guided by flares dropped by the Anson, the Walrus landed on the sea and took the survivor aboard, tired and hungry, but otherwise little the worse for his adventure.

#### **Progress in Dinghy Aids to Location**

The winter of 1943-44 saw the commencement of production of "Walter", the proposal to substitute the United States dinghy radio for the British type, the production of an improved 2-star red distress signal for "K" dinghies, and the abolition of the Pigeon Rescue Service.

"Walter". It is interesting to note that in August 1943, a German emergency transmitter (N.S.4) was captured. This consisted of an aluminium box weighing thirty-five pounds containing a two valve transmitter with the aerial made from a strip of copper plated steel tape similar to that used in pocket rules, the whole apparatus being compact and well designed and small enough for use in a single-seater dinghy. This demonstrated that the enemy appreciated the value of a radar transmitter in easing the problem of air search.

Although trials of "Walter" had been successfully undertaken and it had been approved as an operational requirement as far back as May, it was October before the transmitter went into general production. No further reduction in bulk being achieved, the sailing gear in the "K" dinghy pack had to be sacrificed for the inclusion of "Walter"; but it could be included with only minor sacrifices in the dinghy stowage of most operational aircraft, priority in the latter cases being given to aircraft unable to carry the dinghy radio. In certain blowout stowages it was stowed in the emergency pack in the dinghy compartment, in others in the emergency pack carried in the aircraft, in the Beaufighter and Mosquito in the "K" type dinghy.

The complete unit as finally approved comprised a cylindrical battery container and a telescopic mast extending to a height of over seven feet, carrying at its top an oscillator unit and a horizontal dipole aerial. The battery was of sufficient capacity to operate "Walter" for twenty hours in home waters, but it was considered that in tropical waters its duration was likely to drop considerably below this figure.

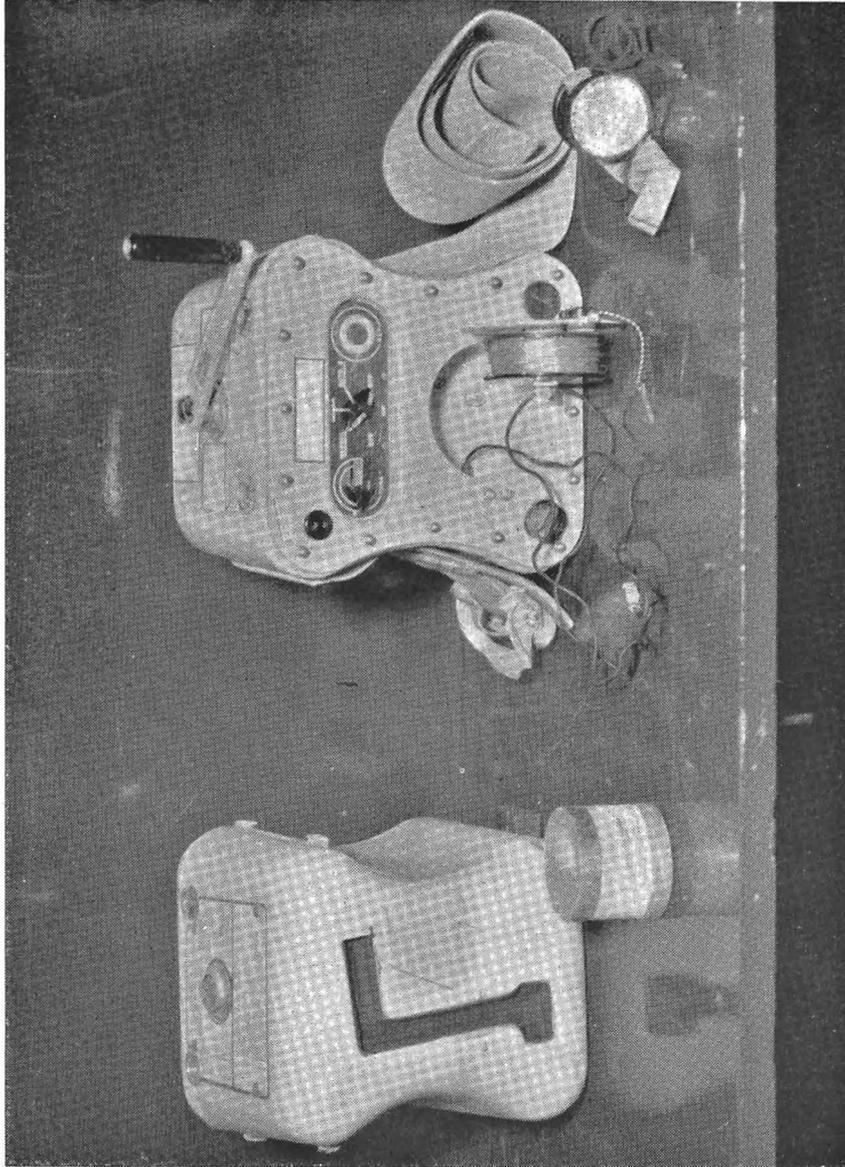
Delays occurred in commencing production but in December D.D.A/S.R. prevailed upon the Director General of Signals to bring pressure to bear, and as a result the Ministry of Aircraft Production gave a forecast that sets would commence to come off production in January 1944, and be available to the Service by February 1944.

*Dinghy Radio.* By the summer of 1943 the American type dinghy radio had been supplied to Coastal Command in large numbers and by the end of July over eight thousand British sets were in process of distribution to Operational Commands at home and overseas. There had been no record rescue incident for which use of the R.A.F. dinghy transmitter had been responsible but eight U.S.A.A.F. crews had been saved by this means, seven by the Sea Rescue Services and one crew by the enemy.

The British set (T. 1333) was found to be less satisfactory in use than its American counterpart and there was considerable difficulty in supplying suitable ball-bearings and generators for its production. The Americans, on the other hand, had the advantage of our set as an example (as we in our turn had been able to improve on the German set) and they had not the limitations in the use of material which restricted our manufacture. Proposals were put forward in July and again in September to substitute the American set for the British set. After considerable discussion and argument it was finally agreed that 12,000 American (SCR.578) sets should be supplied to Britain by the United States authorities and that British production should be adjusted accordingly. It was estimated that these sets would become available to the Royal Air Force during 1944.<sup>1</sup>

*2-Star Red Distress Signals.* At the end of 1943 the single-seater fighter pilot still had to rely on visual aids to location, not being able to accommodate the dinghy radio and "Walter" still being unavailable from production. It was therefore of importance that the pyrotechnics supplied in the "K" dinghy pack should be as infallible as possible. The 2-Star Red signal supplied in the pack was found to be liable to failure on many occasions, and in December the Ministry of Aircraft Production produced a modified

<sup>1</sup> A.M. File S. 72457/II.



Dinghy Radio. SCR 578.

type of this pyrotechnic, which was a distinct improvement on its predecessors.<sup>1</sup>

*Curtailment of the Pigeon Service.* The use of the pigeon service for Air/Sea Rescue never achieved great success and apart from "Winkie the Pigeon" no rescues could be credited to the assistance of a pigeon. There was a general lack of enthusiasm for the pigeon service amongst the Operational Commands who preferred to rely upon mechanical means of communication; and as the distances flown on operations extended more and more during 1943 it became doubtful whether pigeons could fly these distances over the sea, even if they were used.

The view of the Director of Aircraft Safety was that although pigeons were desirable they were not essential, and after obtaining the views of Bomber and Coastal Commands, who both stated definitely that they did not require an Air/Sea Rescue pigeon service, the case for the abolition of this service in Home Commands was put before the Air Staff in November 1943. This was agreed and confirmed by the Secretary of State during November that the pigeon service should be reconstituted to cover functions other than rescue. In the same month action was taken to delete any reference to pigeons in dinghy and ditching drills.<sup>2</sup> The retention of the pigeon service in Overseas Commands was considered necessary as the supply of dinghy radios was still insufficient to meet overseas requirements.

Just before the decision to abolish the pigeon service received its confirmation a second rescue was achieved by means of a pigeon in weather conditions which kept search aircraft grounded, thus providing "the Swan Song" of the service.

A Catalina from Sullom Voe flying west of Shetlands on 11 October with wireless out of order was forced to ditch in bad weather when all search aircraft were grounded. During the evening a pigeon from the aircraft arrived at Sullom Voe carrying a message that the aircraft had safely ditched and giving its location. A message was immediately broadcast to the Catalina to use its dinghy transmitter and shortly afterwards faint signals were heard sufficient to obtain a bearing. An intensive search was commenced by various marine craft from bases in the vicinity and shortly after midnight the Catalina was sighted by a launch. The crew was taken aboard and the aircraft was abandoned.

#### **Sea Water De-Salting Apparatus**

By 1943 the rescue equipment provided for aircrews and in aircraft had been improved and modified to meet many of the important requirements for the comfort, health and maintenance of life of ditched aircrews, often as a result of the recommendations made by survivors. The most frequent recommendation was for an apparatus capable of converting sea water into drinking water. This was a problem on which scientists had been working for years in an endeavour to aid the shipwrecked but the only apparatus they could evolve were of a size out of all proportion to the yield of drinking water to be obtained from them.

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<sup>1</sup> A.M. File S. 70803.

<sup>2</sup> A.M. File S. 43060 and D.D.A/S.R. Folder B.J. 38.

With air/sea rescue this question of bulk was the determining factor ; and as water supplies had to be restricted by reason of the space taken up in the emergency or dinghy pack, it was essential that any apparatus for this purpose must only occupy a small space and provide a reasonable water supply.<sup>1</sup>

Experiments had been taking place both in the United States and in this country during 1942 with types of de-salting kits, invented by various scientists, in an endeavour to ascertain how these kits could be reduced in size without reducing their efficiency. In this country considerable work was carried out by the Water Pollution Research Laboratory of the Department of Scientific and Industrial Research and the Permutit Company of Great Britain who were ultimately successful in producing types of a size practicable for carriage in aircraft.

Early in 1943 these trial outfits were submitted to the Medical Authorities at Air Ministry and Admiralty for recommendation and approval. In March, authority was given to submit the outfits to searching service trials both in the Royal Air Force and the Fleet Air Arm, planned to determine suitability of the outfits for use by men adrift in a dinghy in severe weather conditions.

Meanwhile the United States authorities had approved an apparatus for use in the U.S.A.A.F. but this was not looked upon with favour by the British Medical Authorities as a sulphate content was left in the drinking water produced by their apparatus.

The trials continued throughout the summer with various modifications of the original sets and of the American set and in October the Director of Hygiene agreed to production of a set which was both practicable for stowage in multi-seater dinghy packs and at the same time produced a reasonable amount of water. This apparatus (originally known as the W.P.R. Salt Water Conversion Unit but later as a "de-salting outfit") occupied the same stowage space as two cans of water (1.4 pints) and was capable of producing nine pints of drinking water. The outfit consisted of two tinned steel containers, a water-proof bag and a pump. One of these containers was the purifier, the other served as a drinking vessel, and both were packed with the chemical reagents necessary for purification of the sea water. To use the equipment the contents of both tins were emptied into the water-proof bag and the purifier was hung round the neck by a lanyard after being partially filled with sea water. A block of chemical reagent was then placed in the water, a filter inserted in the lid and the vessel shaken up thoroughly to dissolve the reagent. After twenty minutes shaking the purifier was clipped in an inverted position to the drinking can and the pump was then gently operated to force the water through the filter into the drinking vessel. One process would produce half a pint of water, and sufficient reagent was packed in the purifier and drinking can to repeat the process eighteen times.

The advantage of this set was that where distressed aircrews had previously been supplied with four cans of water (2.8 pints) they were now to have two cans of water and an outfit capable of producing a further nine pints.

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<sup>1</sup> D.D.A/S.R. Folder S. 21 (*passim*).

The disadvantages were the rigidity of the outfit which made it difficult for stowage, and the consequent impossibility of making it available for single-seater fighter aircraft.

#### **Replacement of Pinnaces by High Speed Launches**

It will be recalled that pinnaces were originally brought into use for the rescue service at a time when they were in urgent need of additional boats.<sup>1</sup> These pinnaces did not prove very satisfactory in use owing to their poor speed and serviceability. As better service could be provided with a smaller number of high speed launches, effecting a consequent economy of crews, in August 1943 authority was sought to replace pinnaces on the Home establishment with high speed launches except in areas where the use of the latter was impracticable.

Authority was given in September for the increase in the initial Home establishment of high speed launches from 96 to 122, and for a corresponding reduction in pinnaces from 45 plus 9 to 11 plus 2. By this time high speed launches in service were more than equal to the initial establishment and consequently no difficulty was anticipated in filling the new increased establishment for this type.

It was not until October that the long awaited twin Browning gun turrets began to be fitted to the high speed launches, nearly two years after they had been stated as a requirement.<sup>2</sup> Their production had received a series of set-backs, and production programmes were in a constant state of revision during 1943, owing to labour difficulties and technical hitches.

#### **Rescue Results for 1943**

As regards aircrew losses at sea, the figures for 1943 reached a new high level. During the year 1,188 aircraft were lost or believed lost at sea, involving 5,466 aircrew. Of the rescues effected, the rescue service was wholly or partly responsible for saving 1,684 lives, or 31 per cent. of the total. Although this percentage did not exceed the 1942 figure, the actual number of aircrew ditched in 1943 was almost double that of 1942, so the maintenance of the 30 per cent. rate was a creditable effort.

During its first seven months, the Air/Sea Rescue School trained 526 officers in rescue procedure; and over 3,000 Safety Equipment Assistants were trained and posted to stations, resulting in an improved standard of maintenance and knowledge of rescue appliances.

Films, too, took their part as a training aid to rescue procedure during 1943. "Prepare for Ditching", an instructional film, was shown at many Royal Air Force Stations during the year and another one on the same lines "Ditching without Hedging" was also prepared and by December 1943 was ready for exhibition.

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<sup>1</sup> A.M. File S. 72494.

<sup>2</sup> A.M. File S. 70854.

CHAPTER 5  
**THE AMERICAN AIR FORCES IN  
THE EUROPEAN THEATRE OF OPERATIONS**  
**(March 1942—May 1944)**

The spring and summer of 1942 saw the arrival in the United Kingdom of the first units of the United States Air Forces. The original units to arrive were attached to the Royal Air Force for training and observation, and took no active part in operations. Their activities were covered in the normal way by the Air/Sea Rescue Organisation, but it was realised that rescue facilities would have to be provided for United States crews of aircraft operating in the United Kingdom when the Eighth Air Force appeared in strength in this country.

On 7 July, when only one United States Bomber Group had arrived in the United Kingdom, the Chief of Air Staff made representations to General Arnold, Commanding General United States Army Air Forces, suggesting that he would find an Air/Sea Rescue Service most valuable to his forces when they commenced operations from this country. As it would be uneconomical to have two similar organisations side by side, it was suggested that United States aircraft should participate in the existing Air/Sea Rescue Organisation. Royal Air Force rescue activities were outlined, and provided that the United States was willing to take part in them, it was put forward that they might contribute four Hudson aircraft and crews immediately for rescue purposes, and one Hudson and crew each month thereafter.

General Arnold consulted General Spaatz on the subject and as a result replies stating that whilst he realised the importance of Air/Sea Rescue and felt that the United States Air Forces should take part in it, operational commitments for Hudson aircraft prevented their immediate participation. He thought that when American Forces had actually reached the United Kingdom and built up to substantial strength, they would be able to contribute a proportionate share to the Rescue Organisation, but, meanwhile, General Spaatz had been requested to make initial arrangements for British rescue of United States crews.<sup>1</sup>

At the beginning of September application was made by the Eighth Air Force, for arrangements to be made for the rescue of their aircrews by the Royal Air Force Air/Sea Rescue Organisation, provided that the Royal Air Force facilities were found to be adequate to provide this additional service. The matter was discussed by the Assistant Chief of Air Staff (Operations) (Air Vice-Marshal N. H. Bottomley) with General Spaatz, when it was suggested that if an American Rescue Squadron could not be provided in the near future it might be possible for the Americans to man a flight attached to one of our Royal Air Force deep search squadrons. General Spaatz undertook to examine the possibilities of the future contribution of United States Forces to the Rescue Organisation.

D.G.A.S. reported to the Air Staff that provided the U.S.A.A.F. could comply with the current regulations laid down for dealing with aircraft in distress,<sup>2</sup> it was considered that the existing Rescue Organisation was capable

<sup>1</sup> Signal Marcus 458 dated 27 August 1942.

<sup>2</sup> A.M.C.O. A. 25/42.

of providing a safety service for United States crews. On 8 September the Eighth Air Force were informed accordingly that all the resources and facilities of Air/Sea Rescue were placed at their disposal.<sup>1</sup>

It is interesting to note that exactly one month after the facilities of Air/Sea Rescue had been placed at the disposal of the United States authorities, the first recorded incidents of ditched United States planes were made. Both of these were Fortress aircraft from the same squadron which ditched in the English Channel within three hours of each other. These aircraft were taking part in the first large scale mission of the Eighth Air Force, which involved a high level bombing attack on industrial targets at Lille on 9 October, in which 108 planes took part. One incident was unsuccessful—four Spitfires searched for an hour in the region where the Fortress had ditched off Calais, after which an International broadcast was made at the request of the United States Headquarters.

The successful rescue concerned a Fortress which ditched half a mile off the North Foreland. When returning from bombing its target at Lille it was attacked by a Focke-Wulf 190 as a result of which two of its engines were put out of action. The radio operator was warned of the danger and proceeded to send out an S.O.S. on the allotted M.F/D.F. frequency, but as the receiver was not correctly tuned—no contact was made with base. Flying clothing was discarded by all but two of the crew and they assembled in the radio room and sat on the floor at various angles, the pilot and second pilot remaining in their seats. The pilot was successful in landing the aircraft in the sea, but all the crew were thrown together on impact. One of them cut his face on the Verrey pistol which he was holding, and the navigator was thrown through the bomb-bay door and cut his head open. The crew managed to get out of the various exits, but had difficulty in dragging out their two inflatable rafts, which were stowed on each side of the fuselage. One raft had been damaged by bullet holes and was useless to sit in although five men were able to cling to parts which had not been submerged. Three men boarded the second dinghy carried by the aircraft, a fourth man stayed in the water holding on to the dinghy side rope and within ninety seconds the aircraft sank. The waves were over ten feet high and those men not in the dinghy were submerged many times. Fortunately the aircraft ditching had been witnessed by a passing Spitfire. It gave their position to Air/Sea Rescue craft which arrived in thirty minutes and took all the crew safely aboard. Subsequent interrogation discovered that no ditching drill had ever been practised by any member of the crew and until they experienced an actual ditching the real importance of dinghy drill was not realised by them. Luckily for them they were sufficiently near to the shore to make their rescue comparatively easy, but had they not been sighted by the Spitfire the consequences might have been disastrous.

#### **Arrangements for Training United States Crews**

When Brigadier General Eaker and his staff in the United Kingdom were making plans, during the early spring of 1942, for the establishment of an American Bomber Command, it had been clearly recognised that there were many conditions peculiar to air operations from England to which American

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<sup>1</sup> D.G.A.S. Folder B.J. 22 dated 8 September 1942.

crews must adapt themselves ; many local procedures with which they must learn to conform.<sup>1</sup>

One factor which had not received attention in training in the United States was, that of necessity all operations against the enemy must be in some part over water. Whilst their bombers were equipped with dinghies, dinghy radios and emergency rations, little or no thought had been given to the problem of ditching.

Though these inadequacies in training and equipment were not fully appreciated or rectified for some time, the necessity for training in British Air/Sea Rescue procedure was recognised by General Eaker and referred to in his initial report of 20 March 1942. On arrival, Groups and replacement crews were to be instructed in crash and rescue drills, use of rafts and rescue equipment. By June 1942 plans for the Bomber Combat Crew Replacement Centre had taken more definite shape and the training syllabus included lectures and demonstrations on the Air/Sea Rescue Service and its various aspects.

On 15 September instructions were issued to all Commands of the Eighth Air Force that they were to ensure that aircrews were familiar with the correct rescue procedure and channels of communication. To this end, Station Commanders were to appoint Station Air/Sea Rescue Officers who would be responsible for instructing in ditching and dinghy drill. This was followed in November by the suggestion that full-time Air/Sea Rescue Officers should be appointed at each Command of the Eighth Air Force, for liaison duties with their opposite numbers in the Royal Air Force Organisation, and for the dissemination of all rescue information, but lack of trained officers precluded the establishment of such posts.

Meanwhile, arrangements were made for officers from D.D.A./S.R. to visit the various American stations and give lectures on Air/Sea Rescue to all American crews. The task of both United States and Royal Air Force Officers was a difficult one. In the first place, during training all American aircrews had been conditioned to bale out when in distress ; this is quite natural as in America most flying is normally over land. Realising that during the winter months survival was remote in the seas of the Channel and North Sea, the American authorities were quick to appreciate the necessity for ditching aircraft, but the aircrews' training handicapped them in their realisation of the necessity for the change of policy.

Secondly, the majority of American aircraft had very indifferent ditching qualities. This had already been discovered by Royal Air Force aircrews using American types of aircraft ; it had been found that they had very little buoyancy owing to their unfavourable hydronamic characteristics, poor escape facilities due to the lack of adequate upper exits and to their sealed crew stations. Since before the war we had been trying to improve the design of our aircraft to provide for safer ditching and we were still far off perfection ; the American designs, for which ditching had not been considered, were far behind us. Another thing hampering the Americans was their lack of standardisation of emergency equipment and the absence of standard stowage. All their aircraft were provided with pneumatic safety rafts but these, unlike ours had no automatic ejection and the manual release mechanisms were

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<sup>1</sup> U.S.S.T.A.F. Historical Archives.

unsatisfactory. Moreover, owing to lack of stowage space, the emergency ancillary equipment which we stowed in the dinghy pack (thus ensuring that it was ejected from the aircraft on ditching) had to be stowed loose in American aircraft, making it more difficult to ensure that the crews would have with them sufficient facilities for survival.<sup>1</sup>

At the end of October a group of Eighth Air Force officers were sent back to the United States to inform the Staff of the Commanding General (American Air Forces) of the experience and lessons gained in the European Theatre of Operations. Information and details of the use of the Air/Sea Rescue Services were given by this Group and the American Air Forces began to become a little more interested in the organisation.

An incident which led to some emphasis being placed on the correct air/sea rescue procedure was the loss of Brigadier A. N. Duncan, Chief of Staff, Eighth Air Force, from a Fortress en route to North Africa. Brigadier Duncan was a passenger in an aircraft, leader of a flight of eight B.17's of the 97th Bombardment Group on their way to the African Continent. An hour after the flight left Predannack and when about ninety miles west of Brest, the aircraft was seen to catch fire and go down into the sea.

Whilst other aircraft of the flight dropped emergency equipment one plane radioed Predannack and also contacted Headquarters No. 44 Group at Gloucester but the messages received were somewhat vague and subsequent investigations proved that the proper procedure had not been used. Members of the flight saw one individual climb into a life raft and five or six others appeared in the water in their Mae Wests. One of the Fortresses circled the spot for six-and-a-quarter hours before returning to Predannack and two deep search Hudsons were sent out with an escort of Beaufighters. Two destroyers were also diverted to the search area but without result. Although the search was continued for several days no further trace of anyone was seen. It was later ascertained that the flight had not been briefed on air/sea rescue procedure, but as the 97th Bomber Group was the first to reach the United Kingdom and went into combat operations soon after arrival they had had little opportunity for special instruction.

#### **Preparation of Ditching Instructions**

Matters pertaining to Air/Sea Rescue which came to the attention of Headquarters, Eighth Air Force, during the latter part of 1942 and early 1943 were normally referred to their A.3 Section but no one officer was responsible for air/sea rescue arrangements. Nevertheless representatives of the section attended meetings at which procedure was discussed, and as a result recommendations were prepared in co-operation with the Royal Air Force and the Eighth Air Force Medical Field Service School. In the main the problems of air/sea rescue during this period were handled by the Surgeon, Eighth Air Force and the Medical Field Service School at Headquarters, VIII Bomber Command. Their work, however, was more concerned with questions of rescue equipment and ditching positions than with operational training.

It was clear that American crews had insufficient training in ditching drill and that there were definite deficiencies in American equipment. An offer was made therefore by D.D.A/S.R. to supply certain of his officers to

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<sup>1</sup> A.M. File S. 91456.

collaborate with the Eighth Air Force in drawing up a memorandum of organisation for air/sea rescue amongst United States Air Forces operating in Great Britain.

At the close of the year an intensive study was in preparation at the Medical Field Service School on air/sea rescue and proper ditching procedures. As a result of this comprehensive study a detailed plan was prepared by the Medical School with the assistance of the officers from D.D.A/S.R. which was submitted to the Commanding General of the Eighth Air Force on 24 January 1943.<sup>1</sup>

Meanwhile an officer of D.D.A/S.R. in collaboration with various Eighth Air Force specialist officers, produced dinghy drills for United States aircraft which up to date had not existed for the American manned versions. The first of these were the Fortress (B.17 E and F), Mitchell (B.25 C), Marauder (B.26 A) and Boston (A.20). Together with the appropriate air diagrams these were circulated to all American stations and training films demonstrating the correct method of ditching were shown to all aircrews.

### **Training Drive**

In January 1943, two instances where loss of life resulted from lack of knowledge caused Headquarters Eighth Air Force to draw the attention of VIII Bomber Command to the original instruction that all combat crews were to be in possession of a complete knowledge of procedure and to be familiar with the operation of emergency equipment. The two cases quoted were :—

A United States crew returning from a flight over the sea sighted two men afloat in a dinghy a few miles off the English coast. They obtained no fix when over the dinghy and only after landing passed the information on to the rescue services. A search plane was despatched on the general directions obtained from the United States crew but failed to return, resulting in the loss of the two men in the dinghy as well as the rescue plane and its crew.

One United States aircraft of a flight of fourteen which departed from St. Eval developed engine trouble. Instead of making use of emergency facilities the pilot became confused and proceeded out to sea where it was believed that the crew abandoned the plane. Proper knowledge and use of emergency facilities would probably have saved the lives of the crew, if not the aircraft.

Up to this date although Air/Sea Rescue Officers had been appointed at all stations in VIII Bomber Command, as they had little or no knowledge of rescue procedure they were unable to give their aircrews very much useful instruction. At the end of January, therefore, it was decided to give the Flying Control Officers (who had received a little data on rescue procedure whilst under training) the responsibility of Air/Sea Rescue on all U.S.A.A.F. stations in the European Theatre. In order to fit them for this responsibility it was arranged that they should be given six days'

<sup>1</sup> A pamphlet embodying the detailed plan which was entitled " Forced Descent of Aircraft at Sea (Ditching) " was issued to all Commands of the Eighth Air Force in February 1943. Major James J. Smith of the Medical Field Service School was awarded the Legion of Merit for his part in the preparation of this plan.

intensive training by the Royal Air Force. On 7 March two Lieutenants of VIII Bomber Command completed the Royal Air Force Air/Sea Rescue course, the first United States officers to do so.<sup>1</sup>

In spite of all the efforts by the Eighth Air Force to inculcate Air/Sea Rescue into the members of their service, losses of United States crews continued. After the one successful incident in October 1942, no further successful incident was reported until February 1943, during which month nine United States aircraft were lost, involving 65 United States aircrew, of whom only one man was saved. These figures were remarked upon by the Assistant Chief of Air Staff (Operations) (Air Vice-Marshal N. H. Bottomley) and as a result in April he forwarded to General Eaker, Commanding General of the Eighth Air Force, certain recommendations put forward by D.D.A/S.R. with regard to modifications in aircraft, provision of special equipment and certain training measures. These recommendations included the provision of improved exits in United States aircraft, the provision of flotation gear, automatic dinghy inflation and improved stowage, standardisation of American rescue equipment to the Royal Air Force scale and provision of single seater dinghies in multi-seater aircraft. It was also pointed out to General Eaker that in spite of all the efforts of the Eighth Air Force it was known that dinghy and ditching drills were not being practised and little interest was being taken in rescue training. General Eaker in his reply stated that they were now concentrating on the development of thorough Air/Sea Rescue indoctrination and action had already been initiated in respect of most of the Royal Air Force recommendations, but it would naturally take time to put all these into practice. Structural modifications in United States aircraft would have to be done in the United States however, and, therefore, it would only be practicable to incorporate these improvements in future types.

Another step taken by the Eighth Air Force in March was the appointment of a Unit Equipment Officer in every Group and Squadron. These officers were appointed for the purpose of ensuring the greatest safety and efficiency of combat crews through the proper use of emergency equipment, particularly rescue equipment and parachutes. Arrangements were made to train the officers appointed in all details of American emergency equipment.

The few rescues recorded in the spring of 1943 were for the most part the result more of luck than of skill, and one recorded on 4 March was an outstanding example of amazing luck in the face of lack of training.

A Fortress returning from a bombing raid on Germany was engaged by enemy aircraft. In the ensuing action three engines and the radio were put out of action. The aircraft proceeded on its course, losing height rapidly, and at 5,000 feet the pilot decided that a ditching was imminent. No S.O.S. could be transmitted as the wireless was out of order. The pilot and second pilot remained in their flying positions, the eight remaining members of the crew taking up positions in the radio room. On ditching the aircraft broke immediately into four pieces but all ten members of the crew managed to get out of the wreckage. The dinghies floated out and attempts were made to inflate them. As these had not been stowed in their official stowage but had been wrapped in string and carried loose in the fuselage, great

<sup>1</sup> Originally the training was given in the Air Ministry but later at the School of Air/Sea Rescue after it opened in May 1943, when eight places per course were allotted to U.S. officers.

difficulty was experienced in inflating them and in the thirty minutes before the first one could be inflated three members of the crew were drowned although they all wore Mae Wests.

One man saw an object floating in the sea and grabbed hold of it to give himself buoyancy. All seven surviving members of the crew managed to get aboard the first dinghy whilst the second one was being inflated and it was then found that the floating object was the dinghy radio. Although no one had any previous experience of this transmitter they managed to launch the kite aerial and an S.O.S. was automatically transmitted. A fix was made on this S.O.S. and six hours later search aircraft sighted the distressed crew and dropped a Lindholme gear to them. This they managed to reach and availed themselves of the comforts and pyrotechnics in the containers. Two hours later they were rescued by a minesweeper diverted for the purpose.

Subsequent interrogation revealed that no dinghy drill had ever been carried out in their squadron and although some of the crew remembered seeing the dinghy drill and diagram for a B.17 they had never taken the trouble to study it. Their faulty ditching procedure caused them to land into the swell instead of across the top and parallel to it and it was miraculous that none of the crew was drowned in the resultant break up of the aircraft. This whole incident served as an example of the serious consequences that follow lack of training.

A result of this incident was that further instructions were issued by VIII Bomber Command to ensure once again that training was carried out at all stations. Up to this time there was a general idea amongst United States crews that there was very little chance of being rescued once they went into the sea, and consequently there was a reluctance to ask for help until it was too late. This was not surprising when one recalled the similar attitude of many British crews in the early years of the war.

#### **Success of American Dinghy Transmitter**

The rescue of the Fortress crew through the medium of their dinghy radio was the first successful incident due to its use, although in this instance the use of the transmitter was due to luck and not knowledge. No recorded rescue incident had so far been credited to the use of the British Transmitter but this could be attributed, to a large extent, to the fact that most ditchings of Royal Air Force bomber aircraft took place at night when conditions would always make it more difficult to remove loose objects from the aircraft at the time of ditching.

On the afternoon of 21 May, Headquarters No. 16 Group obtained a fix on a dinghy radio transmission. High speed launches were despatched to the position and instructed to home on the dinghy radio. Despite sea-fog this was accomplished successfully and an entire crew of ten men from a B.17 was picked up on the evening of 22 May.

By the end of July eight U.S.A.A.F. crews had been saved by this means. The American set had definite advantages over the British model, in that it floated, it was shaped to fit between the knees of the operator, and was provided with a strap for fastening to an airman's leg to alleviate the strain of using it, and with a signalling lamp for use at night. Its disadvantage was the use of a hydrogen balloon or kite to carry the aerial (neither of which were

practicable for windy weather) but in the summer of 1943 trials were carried out by VIII Bomber Command with the telescopic mast and rocket kite used for the purpose by the Royal Air Force.

Meanwhile the usefulness and the success of the dinghy radio was impressed upon U.S.A.A.F. aircrew, so much so that in June Air Ministry were forced to request Eighth Air Force that instructions be issued to prevent a number of sets being operated simultaneously as transmission traffic was becoming congested.

#### **Use of British Rescue Equipment**

United States bomber aircraft of the Eighth Air Force (and later the Ninth Air Force) in this country were provided with life rafts known as A.3 type. These each held five men, and two were carried in heavy bombers. They were boat shaped, provided with oars and could be propelled quite efficaciously. The Royal Air Force "J" type dinghy could not be used in American bombers, owing to lack of stowage space.

United States fighter pilots were not provided with dinghies, and it was therefore agreed that we should supply them with "K" dinghy packs until such time as supplies of American fighter dinghies could be made available.<sup>1</sup> The fighter pilots were also supplied with Royal Air Force type parachute harness as the American models had no quick release mechanism, and would be a handicap to anyone baling out into the sea.

The American Mae West differed from the British pattern in having no supporting collar or pad behind the neck, and an unconscious man in the sea rapidly drowned, as his head was liable to slip down in the water. Early ditchings of American aircrew soon revealed this defect and recommendations were made to the American Forces regarding the inadequacy of their Mae West in this respect. As an interim measure, whilst American modifications were progressing, a large number of British Mae Wests were issued to the Eighth Air Force.

In November 1942 it was considered that bomber crews should be also provided with single-seater dinghies, but as seven different types of parachutes were furnished to United States combat crews standardisation of parachutes and harnesses would have been necessary before a dinghy pack could be worn, and the idea was accordingly abandoned. (At a much later date American bomber crews were supplied with the American single-seater dinghy.)

By the summer of 1943 emergency ration packs, first aid kits, fluorescine, canned water, distress signals and floating knives had been supplied by the Royal Air Force to the Eighth Air Forces in an effort to help to standardise their rescue equipment. Instructions were also issued for the modification of American rafts so that the dinghy pack might include the bulk of the ancillary equipment. Specimens of all types of Royal Air Force rescue equipment were also made available for study and investigation by the U.S.A.A.F. with a view to adaption where practicable for use by the American Air Forces, and during the summer of 1943 a trailer fitted with every type of

<sup>1</sup> It is interesting to note that in May 1944 the U.S.A.A.F. in the United Kingdom were still using "K" dinghies whenever possible, as the American one-man raft was found to have many deficiencies.



An airborne lifeboat being dropped to a Fortress Crew.

British and American ancillary rescue equipment toured United States operational stations in order to familiarise combat crews with the various aids available to them.

As a result of the training drives made by Headquarters Eighth Air Force and the combined efforts of the R.A.F. and U.S.A.A.F. Air/Sea Rescue Officers, rescue figures began to improve in the summer of 1943. In June 255 United States aircrew came down in the sea of which 71 were saved, representing approximately a 28 per cent. success. On 28 June in a large-scale raid on St. Nazaire six heavy bombers were lost, but three complete crews were rescued, resulting in a letter of congratulation to the Air/Sea Rescue Organisation from Brigadier-General Anderson, General Commanding VIII Bomber Command.

This success was followed up in July by the rescue of 139 out of 196 Fortress aircrew. On 25 July the rescue of 78 United States aircrew was accomplished out of a total of 80 reported down in the sea, and a further congratulatory letter from General Anderson stated that these rescues had definitely improved the morale of his units, increasing their confidence in the rescue services and giving them the feeling that everything would be done to rescue them to continue the fight against Germany. During the Quebec Conference these congratulations were followed up by a letter from General Arnold to the Chief of Air Staff expressing his high praise and appreciation of the Air/Sea Rescue Service, not only because of the saving of lives achieved, but also for the effect on all flying personnel.

#### **Airborne Lifeboat Rescues**

Amongst the 78 aircrew rescued on 25 July was the crew of a Fortress saved by an airborne lifeboat, the first United States crew to be so rescued and the fourth successful operational airborne lifeboat drop. This Fortress, returning from a raid, was attacked by three F.W. 190's off the Danish coast and forced to descend into the sea seventy-seven miles north-west of Borkum. The two dinghies operated well. The crew climbed aboard and tied them together. They had with them the dinghy radio, rations, flare pistols and a compass from their escape kit. For nineteen hours both dinghies drifted. During the night the crew enjoyed both seeing and hearing the bombing of Hamburg after which they transmitted an S.O.S. every half hour. Next day they began to paddle in a westerly direction using their compass as a guide. At mid-day two Lancasters were seen to the south and signals were fired which attracted their attention. One of the Lancasters circled the dinghy and dropped a Lindholme gear. This was reached and the water-proof suits were donned. During the afternoon the Lancaster dropped two further Lindholme gears, the rest of the waterproof suits were secured from these and the three "J" dinghies tied up with the American rafts. During the evening three Hudsons appeared, one carrying a lifeboat. After dropping the smoke floats the lifeboat was dropped slightly to one side of the dinghy. Everything worked successfully, the parachute automatic release functioning properly and the self-righting chambers inflating. Two men in one of the rafts rowed up to the lifeboat, climbed aboard and paddled it back to the other dinghies. As soon as the crew had transferred as much gear as possible to the boat the circling Hudsons destroyed all the dinghies by gunfire. After forty-five minutes experimenting the crew succeeded in operating both engines, which

ran well at half throttle. The mast was stepped at the same time but as the engines ran successfully sail was not set. A course as signalled by one of the Hudsons was steered throughout the following night. Early next morning a Danish sailing smack was sighted dead ahead. The crew decided to investigate this ship and when only four men were seen aboard they went alongside. Welcome was friendly and the Danes agreed to set course for England. No sooner had the lifeboat been hauled aboard than two high speed launches arrived and came alongside the smack. After a bottle of rum had been consumed the Danish ship set course for Yarmouth accompanied by the marine craft, port being reached at 2245 hours the same night.

The fourth successful lifeboat rescue was quickly followed by a fifth on 28 July, when a Fortress coming away from a raid at Kiel was attacked by a large number of F.W. 190's. Three engines were soon put out of order and the starboard wing caught fire. The pilot immediately put the nose down and dived towards the sea. When a few feet above the water he held off and the aircraft struck the sea, tail first, with a very severe impact. Five members of the crew managed to escape although badly shaken but were unable to give any reason why the remaining five members had lost their lives.

The engineer, showing considerable presence of mind and seeing that the dinghy had not blown out, went back into the aircraft which was sinking rapidly. He managed to prise open one of the dinghy doors and pull the dinghy out as the aircraft sank. He was carried down to a depth of several feet but would not release his hold for fear that the dinghy would sink before it had a chance to inflate. The five men climbed into the dinghy without difficulty but were not able to secure any rescue equipment from the aircraft except some distress flares.

No S.O.S. had been put out before ditching as the realisation of danger had come too suddenly, but luckily another Fortress returning from the same raid had seen the ditching and circled round until the survivors were safely aboard their dinghy when it flew back to base and initiated rescue procedure. During the afternoon the survivors saw three search aircraft and fired off five flares without effect. As the aircraft turned away they fired a flare and were seen. One aircraft then proceeded to circle them until two Hudsons arrived, one carrying an airborne lifeboat which was successfully released. The crew boarded the boat, found the instructions and the engineer soon started the engines. A course of 250 degrees was set according to the directions given by the Hudsons. They proceeded on this course all night on one engine and the following morning more petrol was dropped them by search aircraft. Other aircraft escorted them on their way throughout the day and on the same night they were picked up by a high speed launch and taken back to Yarmouth. They had ditched 70 miles north-west of Borkum and were picked up 98 miles from Yarmouth having travelled 100 miles by airborne lifeboat in 28 hours.

#### **Appointment of United States Rescue Liaison Officers**

As a result of the record rescue figures during June and July, at the beginning of August the Assistant Chief of Air Staff (Operations) wrote to General Eaker to congratulate him on these successes. He considered that these to a great extent were due to the training and organisation drive which General Eaker had instigated earlier in the year.

A.C.A.S. (Ops.) then pointed out that the increase in combined air activities and the consequent higher rate of ditching was throwing a considerable strain on the Rescue organisation at Air Ministry, officers from which were still delivering lectures and giving training and demonstrations to the various commands of the Eighth Air Force and undertaking a considerable amount of liaison duties. He suggested that it would be of mutual benefit if General Eaker could spare an officer for duty in D.D.A/S.R. as a permanent link between his Command and the Rescue Staff. General Eaker gladly agreed to this at the same time informing A.C.A.S. (Ops.) that in order to further co-operation in the Air/Sea Rescue Service and to ensure better training in ditching procedure he had established at his Headquarters an officer specifically charged with these tasks. At the same time, VIII Bomber Command also appointed a Command Air/Sea Rescue Officer. At the end of August, Lieutenant A. P. Field was appointed as the first United States Liaison Officer with D.D.A/S.R. The first result of this liaison was the modification of United States life rafts to make them more stable. These modifications have since been adopted in production.

As a further means to full co-operation, during August a representative of the Air Technical Section was attached to the Staff of D.D.A/S.R. to study the design, production and modification of rescue equipment from the operational aspect. In addition, in order to assist the United States Flight Control Command to form a nucleus of officers to build up a rescue service in other American theatres of war, D.D.A/S.R. undertook to arrange a seven weeks' course for twelve officers from Flight Control Command and to brief them fully in Air/Sea Rescue procedure for this purpose.

#### **United States Aircraft for Search Duties**

At the end of August a step was taken which was of great assistance in rescue procedure when operations were becoming more intensive than ever before.<sup>1</sup> This was the agreement made by Eighth Air Force at the request of Air Ministry, to have available one aircraft per group for search purposes when required by the Air/Sea Rescue Organisation. As a result of this decision the Lindholme gear was cleared for use on Fortress, Liberator and Mitchell aircraft on 1 September, and both this Gear and the Bircham Barrel were issued for use in aircraft of the Eighth Air Force when called out on search duties.

The standard of rescue training achieved by the Eighth Air Force during 1943 is well illustrated by the percentage of successful rescues during the latter half of that year. The months of August and September continued the rescue successes gained in the previous month. During August the percentage of personnel saved from the entire Eighth Air Force was 60 per cent., and in September this figure rose to 61 per cent. On 6 and 7 September alone 118 out of 121 aircrew were saved. It is natural that these high figures could not be maintained during the winter months, but the total personnel saved for the period of July to December stood at 524, out of 1,346 down in the sea; or nearly 40 per cent. as compared with the first half of 1942 when only 6 per cent. of United States personnel were rescued. It is interesting to note that the December figures included 10 men saved from two B.24's (Liberators) the first to be rescued from Eighth Air Force aircraft of this type in the European Theatre.

<sup>1</sup> A.M. File S. 91456.

### **U.S.A.A.F. Officers and Air/Sea Rescue Training**

Due to the urgent necessity of providing a number of officers trained in Air/Sea Rescue for future large scale operations, and to complete the training programme of officers in the United Kingdom, in February 1944 an intensive course in Air/Sea Rescue was set up at Toome, Northern Ireland. Here 120 U.S.A.A.F. officers were made thoroughly conversant with rescue procedure in the short space of three weeks. This was in addition to the training of United States officers at the School of Air/Sea Rescue, Blackpool. The Staff of D.D.A/S.R. gave assistance in preparing a syllabus for the school, Royal Air Force equipment was lent for instruction and demonstration, and the Royal Air Force Marine Craft Unit at Antrim contributed by the provision of safety boats during dinghy practice.

### **British Rescue Equipment in United States**

During 1943 specimens of all British rescue equipment were forwarded to America for study, and for adoption and modification where desired to meet the needs of United States Air/Sea Rescue in other theatres of war. Full facilities were also accorded the United States Air Forces for the use of British air diagrams covering ditching and dinghy drill. During the autumn an airborne lifeboat and spares were taken to America by an officer from D.D.A/S.R. and adapted to a B.17 aircraft from which it was successfully dropped.<sup>1</sup>

In September the Headquarters of the American Air Forces in Washington formed a special branch, known as the Emergency Rescue Branch, to deal with the supply and maintenance of all emergency equipment. Preparations were also begun for a full Air/Sea Rescue Organisation to be set up for the Pacific theatre of operations. In early 1944 this was followed by the establishment of an Air/Sea Rescue Agency in Washington, formed at the direction of the Joint Chiefs of Staff, operated by the United States Coastguard Service, and responsible to a Board of officers from the United States Navy, Army Air Forces, and Army. This Agency, which had no executive authority, was formed to co-ordinate the research and development of equipment for Air/Sea Rescue methods, technique and procedure; and to maintain liaison (amongst others) with the British Deputy Directorate of Air/Sea Rescue on these matters.

As a result of the formation of the Emergency Rescue Branch of the United States Air Forces, and of the interest shown in Air/Sea Rescue in America, it was considered that the presence of a Royal Air Force Air/Sea Rescue officer in America would be of great advantage. The benefit of having a permanent liaison officer in the United States to exchange information between the U.S.A.A.F. and the R.A.F. was apparent; it would make for unity and standardisation of procedure and equipment. In February 1944, approval was given to the establishment of an Air/Sea Rescue officer on the staff of the Royal Air Force Delegation, Washington, for duties both with RAFDEL and B.A.C. On 1 March, Wing Commander R. Bicknell, of A/S.R.3., who had experience of rescue equipment and procedure, both in the Ministry of Air Production and Air Ministry, was posted to fill this establishment.

<sup>1</sup> Later lifeboats based on our design were produced in U.S.A. for use with American aircraft.

### **Communication Channels for United States Aircraft in Distress**

On the arrival of the Eighth Air Force in this country a W/T frequency on Section "J" of our M.F/D.F. network had been allotted to their aircraft for operations. American aircrews for the main part were more familiar with the use of V.H.F., however, and preferred to use it whenever possible. All their operational aircraft in the United Kingdom were fitted with it and when in emergency or distress they were briefed to call up on the appropriate V.H.F. channels, the distress call being dealt with by their Central Control Room at 65th Fighter Wing Headquarters, Saffron Walden.

If an aircraft advised that ditching was imminent, the Air/Sea Rescue controller there passed the information to the appropriate Royal Air Force Fighter Group or Area Combined Headquarters for action but delay was inevitable before these messages were received by the naval officer controlling the rescue craft. In the case of fighter aircraft such delays would frequently prove fatal. As large fighter escorts became more generally employed on United States operations spotter aircraft drawn from the operational fighter units were used to patrol the aircraft strike lanes after a mission, for the purpose of reporting back to Saffron Walden any aircraft down in the sea.

In early 1944, when the rescue organisation had to be prepared for the intensive air operations in being and projected and the consequent anticipated higher rate of ditching it was suggested that the spotter aircraft might be utilised as repeater stations for direct control of Air/Sea Rescue craft, during rescue operations. Experimental trials on these lines were carried out in April, using the spotter aircraft as a relay to Air/Sea Rescue craft fitted with V.H.F. on the VIII Fighter Command frequency.

### **Augmentation of Air/Sea Rescue Organisation by United States Strategic and Tactical Air Forces.**

Arising from the successful trials of the spotter aircraft as repeater stations, and because of the need for increased air/sea rescue facilities to cover U.S.A.A.F. operations, a representative meeting was held at Air Ministry on 8 May 1944 (under the chairmanship of D.D.A/S.R.), with the object of discussing the augmentation of the rescue services.

The United States Strategic and Tactical Air Forces Headquarters (U.S.S.T.A.F.) agreed to augment this service, not only by the provision of a V.H.F. fixer service with a complete Control Centre at Saffron Walden, but by the provision of 25 P.47 (Thunderbolt) aircraft and pilots to be allotted specifically for rescue work, and to be based at Boxted. These aircraft, to replace the spotter aircraft supplied from operational fighter units, were to be equipped to drop the British "M" type dinghies and smoke floats (similar to the Lysander rescue gear) which equipment would be supplied from Royal Air Force sources. Although intended primarily to cover United States operations, when not required for this purpose they would be available as needed for participation in any rescue operation as a result of the Royal Air Force Group concerned passing a request for assistance to Saffron Walden.

The Royal Air Force part in the augmentation of the service was an agreement to make available six Warwick aircraft, equipped with airborne lifeboats, prior to each Eighth Air Force Operation, in addition to two

Walrus aircraft at Martlesham; all of which could be diverted to the scene of any United States incident at the request of Saffron Walden. In addition, it was agreed to fit Air/Sea Rescue craft in the Eastern Coastal Areas of No. 16 Group with the VIII Fighter Command Air/Sea Rescue frequency, in order that they might be diverted by Saffron Walden through this channel using the P.47 search aircraft as a relay.

Until the summer of 1944, the rescues of United States aircrew in home waters were placed to the credit of the British Air/Sea Rescue Organisation; but it would be unfair to complete this Section without recording some of the successes of the American section of the Rescue Services in Great Britain.

The new Rescue Squadron (later to be known as the 5th Emergency Rescue Squadron) commenced operations on 9 May, and within two weeks was able to record participation in an outstanding rescue. A B.17 returning from a mission on 19 May was seen to ditch in the sea two hundred and forty miles north-east of Great Yarmouth, and a search was immediately carried out by Air/Sea Rescue Warwicks without result. The afternoon of the following day Headquarters No. 16 Group requested United States cover for their search and rescue aircraft. The distance involved was too great for the rescue P.47's so four Mustangs were despatched and co-operated with Air/Sea Rescue Hudsons in the search. At 1812 hours the survivors were located in their dinghy and an airborne lifeboat was dropped to them.<sup>1</sup> Rescue aircraft remained on patrol all night and at 0600 hours on the 21st a patrolling aircraft saw the survivors taken from their lifeboat aboard a Danish fishing craft which immediately set course for German occupied Denmark.

The Warwick fired shots across its bows, and requested assistance from base in diverting the purpose of the fishing boat. Four P.47's of the United States Rescue Squadron were then despatched to the scene and their presence undoubtedly persuaded the fishing boat to "heave to" until the arrival of a high speed launch, when the survivors, all ten crew of the B.17, were transferred to the rescue craft and taken to Yarmouth none the worse for their adventure.

At 1135 hours on 29 June a United States Army Air Force Fortress called up Saffron Walden and gave the position of their imminent ditching. This was the only call received from the aircraft, but further signals came from accompanying fighters, who stated that eight airmen from the Fortress, in two dinghies, were approximately twenty miles west of Alkmar. The Navy at Great Yarmouth and Headquarters No. 16 Group were notified immediately and a high speed launch was despatched. One of the fighters was instructed to intercept the launch and lead it to the dinghies. Three hours later the high speed launch picked up the eight survivors.

A Ju. 88 had been shadowing the rescue operation, however, and took advantage of the low cloud to attack the high speed launch as soon as the rescued men had been taken aboard, and when it was one hundred and ten miles east of Great Yarmouth. Meanwhile United States rescue aircraft were despatched to the area but in the low cloud were unable to sight the launch or establish radio contact. At last they found the burning high speed launch and saw men in dinghies and life rafts around it. The P.47's called

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<sup>1</sup> U.S. 65th Fighter Wing History.

high speed launches to the scene at 1845 hours, and succeeded in picking up the eight members of the Fortress crew, now rescued for the second time, and thirteen of the launch crew. As some of the survivors needed instant medical aid a Royal Air Force Walrus from Martlesham carried two United States Army Air Force doctors to the scene, the necessary attention was given to the wounded and the whole party landed at Great Yarmouth just before midnight. This story affords a good example of co-operation between Royal Air Force, Royal Naval and United States Army Air Force sections of the Rescue Organisation.

Another incident recorded on 29 June was one in which the United States Rescue Organisation helped to rescue some Royal Air Force rescuers—a good turn returned indeed. Headquarters No. 11 Group reported that a man in a dinghy had been seen ten miles west of the Hook of Holland. A Warwick with an airborne lifeboat and two P.47's of the United States Rescue Squadron were despatched to the search. As the rescue aircraft approached the enemy coast *flak* became very heavy and the Warwick was hit. The P.47's spotted the man in his dinghy, and two Air/Sea Rescue Hudsons with two more P.47's were then despatched. A high speed launch was then brought to the scene for which further P.47's gave cover, and after seven hours of effort on the part of fifteen aircraft the occupant of the dinghy, an Australian Beaufighter pilot, was rescued. The body of his navigator was later picked up by another high speed launch.

Meanwhile the damaged Warwick had not returned to base, and continuous calls to her received no response. The Leader of a United States fighter formation returning from a mission in the area reported having seen a dinghy in the sea with several men in it, so contacted a high speed launch from Harwich and instructed it to steer a course for the dinghy. The 6th Control Wing, Saffron Walden, then gave the Fighter Leader a course to intercept the high speed launch, which he did, and led the rescue craft to the dinghy. There they found the crew of the Air/Sea Rescue Warwick ; their rescue was undoubtedly due to the efficiency of the United States Fighter Leader and the assistance of the United States Rescue Service.

### **Summary**

The arrival of the United States Air Forces in this country, the fitting of them into the existing Air/Sea Rescue Organisation, and the development and improvement of their own rescue service is almost a reproduction of the history of Air/Sea Rescue in the Royal Air Force.

The difficulties of convincing aircrews of the necessity for their co-operation in Air/Sea Rescue, and the problems of training them to make the best use of the facilities provided had been experienced with British and American crews alike. The modification of aircraft to provide adequate hydrodynamic qualities and sufficient exits to ensure reasonable ditching safety was a problem for the designers and manufacturers of both countries.

But the American Air Force had the advantage of being able to benefit from Royal Air Force experience, an experience which had been gained over several years of trial, often through errors and disappointments. Royal Air Force recommendations and knowledge based on this experience were at the disposal of the United States Forces for modification of American equipment to meet the exacting requirements necessary for survival at sea. In some

cases their equipment was modified to follow the Royal Air Force design, as were their dinghies and Mae Wests ; in others, such as the dinghy radio the Americans were able to eliminate the faults or drawbacks of the Royal Air Force design, and so produce a better article.

When once the American authorities had been convinced of the benefits of Air/Sea Rescue no effort was spared to bring these home to their personnel, and the vast improvement in American rescue figures during 1943 was a tribute to the enthusiasm which was brought to the task. With the formation of their own Air/Sea Rescue Squadron, the United States Army Air Force fulfilled the suggestion originally made by the Chief of the Air Staff to General Arnold that the United States Air Forces should become participators in the existing Air/Sea Rescue Organisation, their facilities being available to the Royal Air Force and vice versa.

Thus, by the end of May 1944, the Air/Sea Rescue Organisation, strengthened by American co-operation and participation, stood prepared to play its full part in the "biggest amphibian operation of all time".

CHAPTER 6  
**RE-ENTRY INTO EUROPE**  
**(May 1944—March 1945)**

All adjustments to the Air/Sea Rescue Organisation during the winter and spring of 1943-44 had been made with one major aim in view—the impending liberation campaign.

**Alterations in Areas of Responsibility**

The alteration to the areas of responsibility of Coastal Command and Air Defence of Great Britain Command in respect of rescue operations, which came into force on 15 April 1944, meant that A.D.G.B. became responsible for rescue work in the whole of the proposed assault area. To undertake this responsibility their rescue resources had to be suitably reinforced, both by search aircraft and by the assistance of additional Coastal Command marine craft units along the south coast.

The strengthening of the rescue squadrons was already in hand with the addition of the Warwick flights, but in early May certain minor alterations were made to allocations of flights, to give adequate cover all along the south coast.<sup>1</sup> Nos. 276 and 278 Squadrons' Warwick flights moved to Portreath and Bradwell Bay, whilst their Spitfire/Walrus flights moved to Bolthead and Martlesham respectively. These moves made Air/Sea Rescue search flights available at Warmwell, Bolthead, Portreath, Shoreham, Hawkinge, Bradwell and Martlesham, with a total U.E. of 80 aircraft. Outside the assault areas ample cover was provided by the U.S.A.A.F. rescue squadron of Thunderbolts and the four Coastal Command deep search squadrons.

In order to cover the assault area, a concentration of marine craft units was required along the south coast. To provide this temporary increase in establishments certain units were disbanded, others enlarged, whilst several new units were formed. With new units based at Plymouth, Poole, and Portland, and nine other units stretching from Felixstowe to Falmouth and Newlyn, a total of 76 high speed launches was planned for employment in "Overlord", in addition to seaplane tenders at Sheerness and Lyme Regis. In May the final re-deployment of marine craft in the assault area actually totalled 90 high speed launches based at Felixstowe, Dover and Ramsgate, Newhaven, Littlehampton, Cowes, Poole, Weymouth, Torquay, Salcombe, Plymouth and Newlyn, the force based at Calshot being a mobile rescue unit of 14 new 68-foot high speed launches.

In order to facilitate the maintenance and interchangeability of spares between units the craft were grouped according to type, Napier-powered high speed launches at the eastern end of the Channel; RY.12-powered high speed launches in the south-western coastal areas. A reduction of pinnaces in the north-western area was made in order to provide the personnel to man the additional launches.

The Navy also carried out a re-disposition of rescue motor launches to provide two flotillas at Dartmouth and one each at Newhaven, Falmouth and Plymouth. This re-allocation was effected on 15 May by the withdrawal

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<sup>1</sup> A.M. File S. 95190 (*passim*).

of rescue motor launches from Milford Haven, Larne, Appledore and the Clyde. The Royal National Lifeboat Institution were also approached to earmark 15 lifeboats as a separate force for rescue work outside the assault areas.

On 31 May the operational strength of Air/Sea Rescue craft in the assault areas totalled:—

High Speed Launches	...	...	...	90
Seaplane Tenders	...	...	...	6
Rescue Motor Launches	...	...	...	40
Total	...	...	...	136

In addition there were 14 Naval motor anti-submarine boats allocated to rescue work, but subject to recall for naval operations.

The United States authorities had made arrangements to send to this country, in time for "Overlord", 60 coastal cutters of the American Coast-guard Rescue Flotilla, charged with the duty of rescuing distressed crews from shipping in the invasion areas. This force could also be regarded as an additional aid to the rescue of distressed aircrews in the Channel.

#### **Preparation of Forces**

Arrangements were made during May for the equipment of all Air/Sea Rescue craft with aircraft "H" type dinghies in valise packs. These were to be stowed on the deck for use when rescue craft went to the aid of a distressed ship or landing craft, and were unable to take all survivors on board. At such times the dinghies could be inflated and would offer support to the distressed crews until subsequent rescue could be effected. Similar arrangements under Reverse Lease Lend were also made to supply 360 valise-stowed "H" dinghies for the use of the American coastal cutters. All rescue surface craft taking part in the operation were instructed to have a large white five-pointed star painted on the fore deck in order that they should be clearly recognised by allied aircraft.

#### **Special Plans for Individual Air Operations**

A special study was made of each aircraft operation, planned both immediately prior to and immediately after "D Day". A chart was prepared by Headquarters Allied Expeditionary Air Forces showing the proposed routes for all air operations and arrangements were made to dispose surface craft along the proposed sea routes and to carry out combined Air/Sea Rescue searches along the routes following the completion of each operation.

As an example, high speed launches were attached to the Diversionary Force planned to sweep in to the enemy coast to the east of the assault area. On its return this Force carried out a sweep over the track of the British Airborne Force which had gone off to the Continent a few hours previously. Air/Sea Rescue launches were also attached to the marker ships used as turning points for the Airborne Forces on the westward route. At first light on "D Day" these launches carried out a search along the northern part of the track which had been followed by the Airborne Forces, whilst light Coastal Forces returning from intruder operations south of the Channel Islands

carried out a sea search over the southern part of the track. This was supplemented by an air search over the whole track at first light on "D plus 1".

#### **Briefing of Crews**

A Directif was issued by Headquarters A.E.A.F. to all Air Formations taking part in "Overlord"; giving particulars of the procedure to be adopted by aircraft in distress in the sea area through which the Allied force was moving, or in the neighbourhood of the assault area. With the large number of aircraft operating during "Overlord", it was emphasized that successful rescues would depend more than ever before upon correct action by aircrews. Pilots of single-seater fighters were instructed to bale out, if possible, ahead of a friendly surface craft moving in a northerly direction. It was also emphasized that single-seater aircraft which attempted to ditch would run the risk of being treated as hostile, or even being mistaken for enemy glider bombs. Therefore, if they were forced to ditch they were advised to keep well away from surface craft.

On the other hand crews of multi-engined aircraft were advised to ditch rather than to bale out, after selecting a friendly surface craft heading in a northerly direction and convincing the craft of their friendly intentions by firing the appropriate pyrotechnic signals. In the event of being unsuccessful in this respect aircraft were to ditch as far out of range of surface craft as possible and then use emergency signals to attract attention. The surface craft in their turn were advised that recognition of friendly aircraft would be facilitated by the painting of black and white stripes on the wings and fuselage, and at night by the switching on of navigation lights in response to the aircraft recognition signal fired by the surface craft.

Detailed operational instructions for marine rescue craft were issued in each case by the naval sub-commands responsible. They were warned that a maximum effort would be required on "D Day" and probably up to "D plus 3", after which it was hoped that they would revert to a routine level.

Certain rescue motor launches were to be used as hospital and casualty clearing boats stationed at stated rendezvous. When rescue craft picked up airmen they were instructed to retain them on board until their return to harbour, unless they required immediate medical attention, when they were to be transferred to a hospital rescue motor launch or taken ashore at the nearest harbour. It had to be borne in mind that if casualties were numerous one serious casualty might have to be sacrificed for the sake of others.

#### **Air/Sea Rescue in the Assault Area**

Immediately on either side of the actual assault area, Air Defence of Great Britain Command were responsible for initiation and co-ordination of all rescue efforts, in the normal manner. Inside the assault area and in the shipping lane, rescue craft were to be sailed in accordance with naval orders. Two high speed launches were to be attached to each of the three fighter direction tenders allocated for the operation. The craft were to lie alongside the tenders, to operate as directed by the Senior Royal Air Force Officer aboard the tender within his own area of responsibility. The mobile flotilla of high speed launches based on Calshot (No. 32 Air/Sea Rescue Marine Craft Unit) was scheduled to carry out this duty in the assault area until such time as operation from the Continent should be possible. Six craft

from this unit were instructed to sail at first light on "D Day" to take up appointed positions alongside the fighter direction tenders, being relieved on each succeeding day by another six high speed launches.<sup>1</sup>

#### **Air/Sea Rescue on "D Day"**

The Royal Air Force high speed launches, and the various rescue and spotting aircraft had been well disposed for operations on "D Day" and everything went according to schedule. There were so many naval ships filling the Channel that the chances of an airman being lost were remote. In the early hours of 6 June, the surface craft took up their rendezvous positions. Before dawn the Spitfires and Walruses were out on patrol. The assault area and the areas on either side of it were systematically covered, so that it would have been difficult for any airman to bale out or ditch his aircraft without being seen and picked up in a matter of minutes.

Of the many thousands of Allied airmen on "D Day" operations very few were lost at sea, but no official records were kept of the number of aircraft force-landing, or crashing into the Channel. Sixty aircrew were rescued by the Air/Sea Rescue Organisation, and it is believed that very few lives were lost in the sea through want of rescue aids. Among the rescued were five Americans from a Liberator which crashed into the Channel, and a Thunderbolt pilot picked up twenty miles off the English coast. In addition the rescue launches were successful in picking up forty-four soldiers and sailors who had gone into the sea from ships and landing craft.

Frequently the signals from aircraft in danger were passed from the fighter direction tenders to the rescue launches at such speed that the rescue craft were on the spot almost as soon as the aircrew landed in the sea. One Spitfire pilot in trouble sent out an S.O.S. when he was about to bale out. A high speed launch was despatched to the scene in time to see the aircraft dive into the sea. The crew looked up and saw the pilot floating down on his parachute. He hit the water a few yards away and was picked up almost before he had time to get wet.

A United States Dakota going over with the first wave of paratroops was hit by *flak* on reaching the French coast. The port engine was damaged and the starboard engine commenced to burn out rapidly. The pilot realizing that a forced landing was inevitable gave orders to prepare for ditching. He favoured landing off the German-held Channel Isles, as he had been engaged in airborne operations in the Sicilian campaign and had been fired upon by friendly vessels. The co-pilot, remembering his briefing instructions, wished to ditch alongside a friendly vessel. He gained his point and the radar operator succeeded in locating and calling up a British destroyer.

It was only 0010 hours so approach to the sea was made with the aid of landing lights. On ditching the impact was only moderate and, with the exception of the co-pilot, all the crew as well as the eighteen paratroopers carried were able to leave the aircraft before it commenced to sink. The co-pilot remained in his cockpit signalling to the destroyer with a torch. Eventually he climbed out of the upper escape hatch, caught a rope thrown by the destroyer's boat and walked off the wing into the boat, without even getting his feet wet. The paratroopers had remained in their seats until

<sup>1</sup> See Appendix No. 2.

ordered to jump by the Stick Master, when they jumped into the water six at a time, as they had been previously instructed to do, and from there clambered into their life rafts. They were there for only ten minutes before being picked up, and suffered very little from their early morning bathe.

This incident was only one of fourteen successful ditchings of (C.47) Dakotas during the twenty-four hours of "D Day".

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The results of the special rescue arrangements for the initial period of the campaign surpassed all expectations. It was not possible to obtain complete statistics of aircraft forced landed in the sea, nor of the total number of aircrew rescued, but during the first ten days of "Overlord" 163 aircrew, 58 others and 2 Germans were picked up by the Air/Sea Rescue Services alone, in addition to the numbers of aircrew picked up by a variety of naval vessels and landing craft. The four rescue squadrons of A.D.G.B. flew a total of 1,471 operational sorties during June, and were instrumental in the rescue of many of the 355 lives saved during the period.

After the first few days, the number of calls for the rescue services decreased, due to the establishment of emergency landing strips in Normandy, which gave fighter pilots an alternative to coming down in the Channel.

The fighter direction tenders were withdrawn from the assault area as soon as we had won a firm footing on the Continent. With effect from 26 June, the mobile high speed launches were attached to anchorages in the Seine Bay area. Two boats were allocated to the "Mulberry B" at Arromanches and two each to the "Gooseberries" at Courselles and Ouistreham. It was the intention that as soon as suitable bases in France became available the mobile flotilla of marine craft should be based upon the Continent.

Injured aircrew picked up by the high speed launches when based on the "Mulberries" and "Gooseberries" were handed over to the nearest hospital ship; uninjured personnel were returned to the Flag Officer, British Assault Areas (F.O.B.A.A.), who arranged their return to units. If attacked by enemy aircraft all rescue craft were instructed to request fighter protection from the Flag Officer, British Assault Area who in turn would request this from A.E.A.F.

A Royal Air Force maintenance party was placed aboard H.M.S. *Adventure*, anchored off Arromanches, for the purpose of giving assistance with routine maintenance and a Royal Air Force Air/Sea Rescue Liaison Officer was attached to the staff of F.O.B.A.A. to deal with any rescue arrangements that might arise.

The original plan for Air/Sea Rescue on the Continent embraced only the areas along the coastline of Normandy and Brittany. It was visualised that as soon as Air/Sea Rescue units could be based there, responsibility for their operation should rest with Headquarters, Allied Expeditionary Air Forces. The Air Staff requirement for this commitment was estimated at two marine craft units, each comprising nine high speed launches and one general purpose pinnace. On 20 June, therefore, instructions were given to Coastal Command to re-form No. 32 Mobile Air/Sea Rescue Unit on an overseas basis as two units—Nos. 32 and 33—to be transferred subsequently to A.E.A.F.

A.E.A.F. then proposed that the areas of responsibility should be revised, contingent upon the success of future operations, and that they should be responsible for the coastal areas round the north and north-west coasts of France, from Dieppe round to the borders of Spanish territorial waters. They requested that a marine craft unit should be based initially at Cherbourg, with the suggestion that at a later date there should be detachments at Le Havre and possibly Lorient. For aircraft requirements they desired a composite squadron of Warwicks (complete with airborne lifeboat), Walruses and Spitfires transferred from the resources of A.D.G.B.

On 7 July, A.E.A.F. assumed responsibility for the coastal area from Dieppe to a point east of Cherbourg, when steps were taken to attach three high speed launches to Cherbourg pending the move of No. 32 Air/Sea Rescue Marine Craft Unit to that port. This detachment was placed under the operational control of the American Naval Officer Commanding the American Ports and Bases, France.

The policy of changed areas of responsibility was given consideration at various levels, and ultimately agreement was given to A.E.A.F.'s proposals both by the Air Ministry and the naval authorities. The attachment of No. 32 Air/Sea Rescue Marine Craft Unit to Cherbourg was put into effect on 27 July when No. 85 Group took over the responsibility for initiating sea searches in the Cherbourg area.

This was followed on 1 August by A.E.A.F. assuming responsibility for initiating and co-ordinating all Air/Sea Rescue search action in the area from Dieppe to Cherbourg; at the same time action was taken to base "A" Flight of No. 276 Squadron (four Spitfires and four Walruses) on the Cherbourg Peninsula and on 10 August No. 85 Group assumed general responsibility for all Air/Sea Rescue on the Continent.

It was visualised that progress of military operations in the near future would permit location of rescue craft in the Channel Isles and both marine craft and aircraft on the Brest Peninsula, at the end of which period the two marine craft rescue units and the whole of No. 276 Squadron should be based on the Continent.

### **Marine Craft Rescues**

The Air/Sea Rescue high speed launches carried out many interesting rescues in the early days of the campaign. Not only did they pick up aircrews from the sea, but they were also instrumental in rescuing soldiers, sailors both of the Navy and Mercantile Marine, airborne troops, several aircraft, and crews of other rescue launches as well as a number of German sailors and airmen. In this latter respect a considerable number of bodies of German sailors and airmen were picked up in the Channel, searched for marks of identification and then given sea burial.

A few of the widely varied incidents recorded are reproduced below.

On the morning of "D Day" a high speed launch from Dover was called to the assistance of a merchant vessel, the S.S. *Sam Butt*, burning in the Channel as the result of an explosion on board. When the high speed launch arrived on the scene of the disaster, the vessel was burning furiously and survivors were spread over a wide area of the surrounding sea. A rescue craft succeeded in picking up 45 men, only one of whom was badly hurt, and returning them to Dover.



Transferring survivors from a Walrus to a High Speed Launch.

On 12 June, one of the high speed launches from the Mobile Rescue Flotilla at Calshot, returning from patrol, was informed by a tug flashing an S.O.S. that it had seen some men in the sea nearby. In rough seas and low visibility a search was begun in the vicinity, in which two United States Coastguard Cutters also participated. Early the following morning the lookout on the high speed launch sighted a raft with five men aboard and they were soon picked up. They were the complete crew of a pontoon bridge which had slipped its tow rope in the high seas and smashed to pieces.

On 15 June the lookouts on two high speed launches from Weymouth heard an explosion and saw large clouds of smoke rising from amongst a group of destroyers on the southern horizon. Both craft set off at full speed to investigate. Within half an hour they were alongside a naval frigate, H.M.S. *Blackwood*, which was very badly damaged from the funnel forward as the result of an encounter with a mine. The medical officer was the only ship's officer still on his feet and though wounded himself was attending the injured and continued to do so until arrival in harbour. The wounded were transferred from the frigate to the two launches under difficult conditions, the waves lifting the high speed launches as much as six feet at times. One hundred and fifteen survivors were taken aboard the rescue boats of which 50 were stretcher cases. The high speed launches set off for base having sent a signal for two other rescue boats to intercept them and assist in transferring the walking cases. This rescue was a tribute to the 68-foot high speed launch, one of which, with 86 persons aboard, proceeded through a ten foot swell without once becoming unmanageable.

On 29 June High Speed Launch No. 2551 from Great Yarmouth went to the rescue of a ditched Fortress off the coast of Holland, at the request of a Warwick pilot of No. 280 Squadron who had sighted eight of the survivors in a dinghy. The survivors were picked up, but hardly had the return journey commenced than the high speed launch was attacked by a Ju.88, killing one of the marine crew and one of the survivors, and injuring seven others. Another high speed launch from the same base had been following the progress of No. 2551 on its V.H.F. when an intercepted signal gave the news that as the result of enemy attack the rescuing boat had caught fire and was sinking. The listening high speed launch immediately altered course and made for the scene of the attack at all possible speed, joined by a third craft from Great Yarmouth. They found fifteen survivors in lifejackets in a damaged Carley Float, and various dinghies, and took them aboard. The extent of their injuries caused signals to be sent for medical aid. A Walrus immediately flew out two doctors to the scene who attended the wounded and administered blood plasma to the more serious casualties, whilst on the journey back to base.

On 4 July in a similar incident a high speed launch received a signal that a Walrus in the Channel with rescued airmen aboard was unable to take off. The high speed launch took the Walrus in tow and brought the aircraft and its occupants safely back to port.

Lastly a rescue of enemy sailors on 19 July is one of many worthy of record. A high speed launch from Salcombe, en route to its rendezvous position, was instructed by R/T to proceed to pick up a number of survivors reported by searching aircraft to be floating in dinghies south of Start Point. A further radio message informed the crew that the survivors were probably

hostile and that all precautions should be taken. The co-operating aircraft were then seen orbiting over a number of dinghies which on approach were found to contain a German submarine crew. Under cover of Sten guns and revolvers three officers and twenty-five other ranks, survivors of a U-boat, were taken aboard and returned to Plymouth to be handed over to the authorities.

#### **Adjustment of Areas of Responsibility**

The progress of military operations on the Continent during August and September meant the move of the British Forces to the north-east, with the consequent reduction in operational flying in the sea areas of the Western Channel and off the west coast of France. The section of No. 85 Group previously located in the Cherbourg Peninsula was moved eastwards and in consequence it was thought advisable that Air Defence of Great Britain Command should again resume responsibility as heretofore for rescue in the English Channel and round the north-western areas of the French coast. This resumption of responsibility by Nos. 10 and 11 Groups of A.D.G.B. came into force on 23 September, and arrangements were made for No. 11 Group to be able to communicate with rescue marine craft on the far shore through the Portsmouth Naval Command.

#### **Operation "Market"**

The large-scale airborne operations directed against Holland on 17 September—Operation "Market"—which culminated in the epic defence of Arnhem, gave the Air/Sea Rescue Organisation one of the heaviest tasks it has performed.

The necessity for reinforcing the initial assault troops dropped on Nijmegen and Arnhem meant a stream of gliders passing from the United Kingdom to Holland for several days, the route of the airborne armies being covered each day by surface craft and search aircraft. During the four days—17 to 20 September inclusive—a total of 181 personnel was rescued by the Air/Sea Rescue Organisation from thirty-five gliders and one tug Dakota which came down in the sea. A further 21 were rescued by a minesweeper and by a lifeboat operating in the area. Of this total, 92 were rescued in one day, 19 September. Further patrols and searches were carried out during the next three days but no further survivors were picked up.

The story is told that at the end of the first day, Headquarters No. 11 Group, knowing that the Rescue Services had picked up everybody that it was possible to rescue, asked the Airborne Operations Headquarters (H.Q. No. 38 Group) if they were satisfied with the Air/Sea Rescue arrangements. The reply was that they were more than satisfied; they had been given such good cover all along the route that the tug aircraft had no need to navigate, but had simply followed the track of the rescue launches.

By October, the Allied Forces having penetrated well into Belgium and Holland, the situation again came under review, as the Air/Sea Rescue cover required was rapidly moving further to the east. It was considered that high speed launches should continue to be based upon the Continent to enable them to reach incidents close to the Continental shore and to operate when weather conditions favoured departure from bases on the Continent.

It was agreed by Fighter and Coastal Commands and Second Tactical Air Force (who had taken over control of No. 85 Group), that in the North Sea area the authority first receiving information of aircraft in distress should be responsible for initiating action. Whilst Second Tactical Air Force should be given areas of responsibility, the proposed new areas were not to be rigidly defined, and action could be taken either from the United Kingdom or the Continent where incidents were reported within reach of both shores. Inside an area bounded on the west by the Greenwich Meridian, on the north by latitude 53 degrees north, and on the east and south by the corresponding coasts of Holland, Belgium and France, No. 85 Group were liable to be called upon to supplement the Air/Sea Rescue Forces based in the United Kingdom. To operate the Continental Service, four high speed launches of No. 32 Air/Sea Rescue Marine Craft Unit and nine high speed launches of No. 33 Air/Sea Rescue Marine Craft Unit were located at Ostend.

#### **Changes of Organisation within Coastal Command**

The success of the Allied Armies on the Continent called for changes, not only in the Air/Sea Rescue Units of Fighter Command and Second Tactical Air Force, but also in those of Coastal Command. As the Continent was rapidly being overrun by the Allies, the enemy moved their main U-boat bases from the Bay of Biscay to the Norwegian ports. This necessitated the move during September of several of Coastal Command's operational squadrons to the north of Scotland, with the consequent transfer of a suitable proportion of the Air/Sea Rescue effort to that area. By this time Coastal Command had had time to observe the results of the re-organisation effected in the previous April, and had come to the conclusion that it would be preferable for each operational group to have its own Air/Sea Rescue Squadron, to prevent overlapping or possible gaps in search cover. The Air Officer Commanding-in-Chief Coastal Command therefore requested Air Ministry that in order to give suitable rescue cover to meet his requirements, five Air/Sea Rescue Squadrons should be established.

Although aircraft were available to carry out the proposed re-equipment, the Air Staff could not agree to the formation of an additional Air/Sea Rescue Squadron in excess of the target force, as the manpower situation would not permit of any expansion other than that already planned. Accordingly, in October Coastal Command were informed that the alterations and additions to existing establishments could be approved subject to their being effected by re-allocation of personnel within their Command establishment ceiling. The final re-allocation of squadrons was effected on 26 October when the four Coastal Command Air/Sea Rescue Squadrons reformed as Nos. 279, 280, 281 and 282 Squadrons.<sup>1</sup>

The Air/Sea Rescue Flight at Lagens in the Azores (No. 269 Squadron), having been re-equipped with 6 U.E. Warwicks in the previous August, the Hudson had now been finally deleted from the Air/Sea Rescue programme.

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<sup>1</sup> A.M. File S. 95190: Encl. 54A.

### **Transfer of Fighter Command Air/Sea Rescue Squadrons to Coastal Command**

The planning of Air/Sea Rescue facilities after the defeat of Germany (known as Stage II of the War) visualised a very reduced rescue service in the United Kingdom. By November the changed situation in Europe and the lack of any enemy opposition in the Channel and Straits of Dover caused D.D.A/S.R. to put forward the suggestion that the reduction to a Stage II basis could now commence.<sup>1</sup> This suggestion was put forward to Fighter and Coastal Commands, the former of whom expressed the view that the Spitfire was no longer required in an Air/Sea Rescue role in the United Kingdom in view of the lack of enemy opposition. They therefore proposed that the Air/Sea Rescue Spitfire components of their rescue squadrons should be disbanded and the Walrus and Warwick components transferred to Coastal Command.

As a result of this suggestion the Air Officer Commanding-in-Chief, Coastal Command, called a meeting of all the interested parties—Coastal Command, Fighter Command and Air Ministry—to discuss the proposal to hand over Fighter Command responsibilities to Coastal Command. This meeting, held on 13 December, agreed that such a transfer was both desirable and practicable, and that it should be made as soon as arrangements could be put in hand and not delayed until the opening of Stage II. It was generally accepted that with no threat of enemy interception in the Channel, fighter type aircraft were no longer required for rescue squadrons and that Warwicks and amphibians were now adequate for the purpose. It was also considered that Coastal Command should be the responsible authority for co-ordinating all rescue operations, responsibility between Coastal Command and Second Tactical Air Force for initiating action in the Channel area remaining as at present.

Coastal Command were then asked by Air Ministry to review their requirements in the light of their proposed new responsibilities and to put forward their suggestions for employment of the Walrus and Warwick Flights of Fighter Command's Rescue Squadrons.

In January they put forward the suggestion that in view of the amount of Allied shipping in the Channel, the Fighter Command Warwick Flights in the south coast area were no longer necessary, particularly in view of the Coastal Command Warwick Squadrons stationed in the vicinity at St. Eval and Beccles. Consequently they proposed that all Air/Sea Rescue work in the old Fighter Command area of responsibility should be carried out by amphibians.

### **Rescue Figures for 1944**

During the six months ending 31 December 1944, 936 aircrew members were rescued by the Air/Sea Rescue Services, as compared with the previous six months' total of 1,225, which latter figure covered the assault period. No comparative percentages can be quoted for 1944 as during the intensive period of "Overlord" no separate records were maintained for aircraft lost at sea.

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<sup>1</sup> D.D.A/S.R. Folder S. 130 (*passim*).

### **Deployment of Air/Sea Rescue Squadrons**

Coastal Command's requirements in the old Fighter Command area of responsibility were assessed at 24 Walrus, or Sea Otters, disposed at St. Eval, Exeter, Thorney Island, Hawkinge and Beccles. They also desired to replace with Walrus the Hurricanes provided for "scrambling" duties in No. 18 Group. On 15 February, authority was given for the transfer to Coastal Command of the responsibility for all Air/Sea Rescue in the British Isles, for which they were to have five search squadrons, together with a flight in the Azores.

It was the intention to equip all amphibious components of rescue squadrons with Sea Otters as soon as these aircraft had been modified for rescue work. Arrangements were made for the Navy to supply the requisite number required and meanwhile Walrus Mark II were allotted to Air/Sea Rescue Squadrons equipped with amphibians.

With the transfer of No. 278 Squadron to Coastal Command and the disbandment of Nos. 275 and 277 Squadrons on 15 February, Fighter Command ceased to possess any rescue squadrons, but control of Air/Sea Rescue Units for "quick scrambling" in close-up search remained vested in the appropriate Fighter Command Sector Control Stations.

Second Tactical Air Force having made representations to Air Ministry that six Walrus were sufficient to cover Air/Sea Rescue commitments on the Continent, in January the establishment of No. 276 Squadron was amended to five Spitfires and six Walrus/Sea Otter.

Although Coastal Command was now the "Parent Command" of all Royal Air Force rescue craft and search aircraft in the United Kingdom, Fighter Command retained the responsibility for scrambling aircraft for close-in searches, Bomber and Flying Training Commands could always be called upon to augment air searches when required, and the Navy retained the responsibility for the control and operation of all surface rescue craft, Royal Air Force and Naval alike. The Air/Sea Rescue Organisation was still a Combined Service; the Merchant Service, the R.N.L.I. and the Fishing Fleets still played their part in the rescue of aircrews. Even when the Allied Armies were inside Germany the work of the Air/Sea Rescue Organisation for the safety of the Allied Air Forces still went on.

In Operation "Varsity" (the Airborne Forces' part in the crossing of the Rhine in March 1945) the rescue aircraft and launches patrolled the routes followed by the gliders and troop-carrying aircraft, and picked up the crews of the only two gliders which were forced to descend in the sea.

In March 1945, 84 aircrew were rescued from a total of 291 down in the sea, in 79 incidents, representing a 28½ per cent. success. The total of aircrew saved by the Rescue Organisation at Home, since its inception to the end of March 1945, was 5,658. In addition there were many non-aircrew personnel, both of the Allied Forces and of the enemy, who were saved by the Service.

## CHAPTER 7

### THE MEDITERRANEAN AND WEST AFRICA

#### Early Problems

The focal point of Air/Sea Rescue work in the Mediterranean Theatre fluctuated from east to west with the progress of the War in the Near and Middle East, and in following the history of the organisation the general trend of operations in the Mediterranean must be borne in mind. In 1939 and early 1940, very little flying took place in the Mediterranean and there were no organised attempts at rescue work. In June 1940 the entry of Italy into the War followed by the commencement of the campaign in the Western Desert first drew attention to the need of rescue facilities. Then during the summer of 1942 the siege of Malta showed the necessity for a properly constituted rescue organisation as had already been demonstrated to the Home Commands by the Battle of Britain. The invasion of North Africa in November 1942, followed by the invasion of Sicily and Italy, the War in the Aegean and the assault upon the South of France, all in their turn influenced the story of the Rescue Service in the Mediterranean.

During the early years of war Rescue Services in Overseas Commands could only be operated with such improvised facilities as could be obtained from the resources available within the commands concerned. Soon after the formation of the Directorate of Air/Sea Rescue at Air Ministry in February 1941, officers were appointed to the Overseas Commands to advise on the methods of search and general rescue procedure which had already been put in force in the British Isles. On 13 May one flight lieutenant was added to the establishments of Headquarters Mediterranean, (Malta), Headquarters Far East, (Singapore) and Headquarters West Africa, (Freetown), to supervise the introduction of a local Air/Sea Rescue Organisation. During the summer of 1941 the war in the Mediterranean called for more flying over the sea than had been visualised when the original establishments were made, and on 23 September, one squadron leader was added to the establishment of Headquarters Middle East to organise Air/Sea Rescue in the Eastern Mediterranean.<sup>1</sup> This post was not filled until February 1942.

*Rescue Craft.* At the outbreak of war there were only four rescue high speed launches overseas based at Singapore, Aden, Basra, and Malta. This number was later augmented by one of Coastal Command's high speed launches based at Gibraltar, but for such a wide area of sea the few rescue craft available were of little use. As all rescue boats were needed for Home Commands, the claim of Overseas Commands for more high speed launches had to go unanswered for the first two years of war.

The sea rescue organisation in the Eastern Mediterranean was built up from the one high speed launch originally based at Basrah. With the increase of reconnaissance work over sea by land planes, it was decided to move this launch to Port Said in April 1940 and from there to Hurghada at the entrance to the Gulf of Suez. Elsewhere reliance for rescue work was placed upon Navy or Merchant shipping, but there was little need for expansion of rescue facilities until the entry of Italy into the war in June 1940.<sup>2</sup>

<sup>1</sup> A.M. File C.S. 8046: Encls. 37A and B and Min. 79.

<sup>2</sup> Mediterranean Review No. 7.

In August 1940, in anticipation of campaigns in the Western Desert, Headquarters Middle East decided to base their one high speed launch at Mersa Matruh where, assisted by a cabin cruiser improvised as a rescue boat, it operated until the autumn of 1941.

*Search Aircraft.* As with marine craft, the United Kingdom needed every aircraft which could be spared for rescue work; Overseas Commands had to rely on operational and training units, when available, for search purposes, and for the first two years of war no definite system of rescue existed. Happily there was comparatively little aerial activity over the Mediterranean and the Indian Ocean in the early days of the war, mainly because of the small number of aircraft operating overseas.

The siege of Malta soon brought realisation that the provision of Air/Sea Rescue facilities in the Mediterranean was vital. The carefully conserved fighters defending the Island were valuable enough, but the lives of the pilots were almost beyond price in those days when every aircraft counted in the battle for Malta.

It is interesting to note that at the time of Italy's entry into the War, the Italian Air Force (like the German Air Force) had a reasonably well developed Air Rescue Service. For this purpose they employed, for the most part, Cant Z civil type seaplanes, which were stationed at all important seaplane bases in operational areas.

### **Overseas Requirements**

It was in May 1941 that D.A./S.R. produced his requirements for world-wide commitments for Air/Sea Rescue, and the establishment of high speed launches for Overseas Commands was authorised at 34 Initial Establishment plus 10 reserve. It was realised that the rate of production of high speed launches would prevent this establishment being filled for some time, but in June 1941 it was agreed that six launches from existing stocks should be allotted immediately to cover Air/Sea Rescue requirements in the areas of Middle East and Malta, three of which craft were to be based at Malta; the other three in the Middle East were to be at Port Said, Aboukir and Mersa Matruh.<sup>1</sup>

Malta, fighting throughout the summer of 1941 with only two squadrons of fighter aircraft to defend her, had only the one original Air/Sea Rescue Launch, High Speed Launch 107<sup>2</sup> based at Kalafrana. Many pilots were being shot down in the sea, and although improvised rescue arrangements were put in force with the aid of seaplane tenders and miscellaneous small craft, the need was great for further rescue craft.

In June the Chiefs of Staff decided to reinforce the Island's defences by the provision of a third fighter squadron. It was agreed that the ground personnel for this squadron would have to be conveyed to Malta in H.M. ships and it was therefore decided to take the shipping opportunity presented to put into Malta other personnel and equipment urgently required. This

<sup>1</sup> A.M. File S. 70807/II: Mins. 10-14.

<sup>2</sup> High Speed Launch 107—This famous rescue craft, broken up in 1945, performed invaluable service during the Battle of Malta. From 1940-44 its crews rescued 67 Allied aircrew as well as 16 of the enemy.

operation, the Royal Air Force part of which was known by its code name of "Random", was to include the shipment of an air/sea rescue launch and its crew, taken from the three craft allotted to Malta.

Desperate as was the need for this rescue boat, other things were needed even more, and although the launch crew was embarked in "Random", the craft was left behind owing to loading difficulties. Lack of shipping space and loss of ships from the convoys relieving Malta made it necessary to think of some other scheme for reinforcing Malta's Rescue Organisation. In July, therefore, it was decided to fit all three launches with extra tanks, ship them to Gibraltar and allow them to proceed under their own power from there to Malta. Unfortunately, this operation was not carried out as it involved a tanker stopping to refuel the boats en route, and upon re-consideration the Navy decided that such a task was too hazardous to undertake at the time. It was not until October that a convoy was successful in getting through to Malta with two of the high speed launches and crews.

Meanwhile the locally improvised rescue unit of one high speed launch, three seaplane tenders, and twelve miscellaneous craft did their best under the most hazardous conditions. Although no accurate records were kept prior to November 1941, it is known that during the summer of 1941 approximately 30 British pilots were rescued from the sea by this local service; for 17 of which High Speed Launch No. 107 was responsible.

By August 1941 it had become obvious that the whole of the Mediterranean was an active theatre of operations and likely to remain so for a considerable period. The original world-wide plan submitted by D.A/S.R. in May was reconsidered by the Air Staff in the light of the existing situation, when it was decided that all requirements for overseas commands should be met by high speed launches, established as initial equipment only, at the following locations: Gibraltar, Malta, Mersa Matruh, Alexandria, Port Said, Cyprus, Haifa, Aden, Singapore, Kuantan, Khota Bahru, Freetown and Bathurst—to a total of 33 boats. It was appreciated that it would be some months before boats would be available to fill these establishments and it was considered inadvisable to divert any from those allocated to home commands.

#### **Middle East's Rescue Flight**

During the summer of 1941 a large percentage of the flying and air fighting in Middle East took place over the sea and the provision of air rescue facilities was first given active consideration. In August 1941 Middle East formed an Air/Sea Rescue Flight with three Wellington IC's under the operational control of No. 201 Group.

This rescue flight was formed at Kabrit and in September was moved to Burg-el-Arab, thus becoming a Western Desert Unit. It was intended that the Unit should devote itself entirely to rescue work, operating in conjunction with Middle East's high speed launches (at that time they had only one) and the Carrier Pigeon Service. The plan of action was for a Wellington to drop supplies to survivors, together with a rubber dinghy if necessary, and shadow them until they could be rescued by surface craft.

It was not until September that the flight became operational and soon after that date they had their first success, although it was not an aircrew which was rescued. A reconnaissance aircraft reported a ship's lifeboat,

with a crew of ten, one hundred miles north of Ras-el-Kanazis. A sea-rescue Wellington located the lifeboat, dropped supplies and instructions on the course to steer and remained shadowing until dusk. The occupants were rescued the next day when it was found that the boat carried escapees from Crete. Three further successes were reported during the next two months.

In November a Walrus was obtained on loan from the Navy, and established at Mersa Matruh. The flight was also augmented by two American amphibians, a Fairchild and a Grumman which had been presented to the Royal Air Force by wellwishers in the United States for air ambulance work in the Middle East.<sup>1</sup> The Grumman was of little use for sea work, having been designed for landing on inland waters, and was only used in an emergency. About the same time Middle East's one high speed launch in the Mediterranean was augmented by the arrival of a further two and at this point an Air/Sea Rescue Organisation in the Mediterranean really began to function.

At the end of 1941, as a result of our military successes, it was decided to send an Air/Sea Rescue detachment to cover the forward areas and on 9 January 1942 the flight moved up to El Adem (Tobruk) but as the ground situation deteriorated again rapidly the flight was ordered back, first to Gambut and then to Fuka where it arrived on 2 February 1942.<sup>2</sup> During the following six months the calls on the services of the flight increased continuously; 67 rescue calls were answered of which 16 were successful, and 75 people were rescued. At the end of June the military situation again became grave and the flight was moved back to a landing ground near Abu-Sueir. By this time the flight was recognised as an efficient rescue unit which had developed a well-conceived search organisation.

#### **Organisation in the Middle East**

The turning point in Air/Sea Rescue work in the Middle East had come with the formation of their Air/Sea Rescue Flight in August 1941. About this time, No. 230 (Sunderland) Squadron experimented with and perfected a type of supply dropper similar to the Thornaby bag, and standardised methods of supply dropping were introduced. Early in the following November, when the two long-awaited high speed launches arrived at Port Said from the United Kingdom, the Air/Sea Rescue Organisation in the Mediterranean may be said to have begun, although detailed records of activities were not kept until 1942. On 14 November, fitted out, the launches sailed for duty at Mersa Matruh.

By the end of the year, besides the two new launches at Mersa Matruh, the original launch was again at Port Said, the cabin cruiser, which had never been suitable for rescue work, had been returned to Alexandria, and an improvised rescue pinnace was stationed at Cyprus. By December 1941, five of the six additional launches allocated in the previous June had reached their overseas destination making a total strength of three launches at Malta, three in the Middle East and one at Aden.

<sup>1</sup> It will be remembered that Air Ministry could obtain no amphibians from U.S.A. for rescue work at Home.

<sup>2</sup> Mediterranean Review No. 3.

Middle East's rescue organisation was based upon the use of a minimum of 12 launches, but until May 1942, no further reinforcements reached any overseas base, which is not surprising when one remembers that only 10 high speed launches were added to the home strength between December 1941, and May 1942. In February 1942, an Air/Sea Rescue officer from Air Ministry arrived to co-ordinate the rescue organisation throughout Middle East. He began to organise and develop a rescue organisation to cover, as far as resources would allow, the areas of Cyprus, the Levant, the Red Sea and the Persian Gulf.

In August 1942, the rescue service was put on a footing similar to the home organisation, in that the Commander-in-Chief, Mediterranean, took over operational control of all Royal Air Force rescue craft, and undertook to provide or divert naval surface craft as required for rescue purposes.

During this period—February to September 1942—86 lives were saved by Middle East's Rescue Service.

#### **Malta's Air/Sea Rescue Unit**

After the arrival at Malta of two new rescue launches a combined Marine and High Speed Launch section was formed in November 1941, with two high speed launches and its Headquarters at Kalafrana, the third high speed launch being based with a seaplane tender at St. Paul's Bay. During November and December 1941, this Unit made 38 operational trips to rescue ditched aircrew and succeeded in rescuing 12 Royal Air Force aircrew and one Italian pilot from the sea.

In addition to rescue work, Malta's Air/Sea Rescue Unit provided craft and personnel for handling, unloading and refuelling of seaplanes arriving in Malta. During the siege a great number of essential supplies were brought in by this means, which meant working through the night to allow the seaplanes to be out of the danger area before dawn. Many tons of essential supplies were also brought in under cover of darkness by submarines and these supplies were also handled and brought ashore by the Air/Sea Rescue Unit.

Doctors were taken out to merchant vessels, wounded men were brought ashore, salvage apparatus taken out to damaged vessels and a host of other duties undertaken. When the damaged armed merchant cruiser *Breconshire* was towed into Kalafrana in March 1942 all the ferrying of her passengers and kit was undertaken by the Units. Until she sank three days after arrival in the bay, her crew were ferried back and forth many times in poor sea conditions. When she was dive-bombed and ablaze, with ammunition exploding in all directions, men and officers from the Air/Sea Rescue Unit worked aboard until everything that could be saved had been transhipped ashore.

Fire fighting was another speciality of the Unit. During the height of the air-raids many gallons of petrol and much equipment was saved with the assistance of the men and the boats of the Rescue Unit. Of the high speed launches damaged by enemy action only one was destroyed by fire.

The Rescue Unit's total for 1941 was 34 Allied aircrew, and 12 enemy aircrew, but in 1942 the totals were increased to 85 Allied and 40 enemy aircrew.

### **Formation of Air/Sea Rescue Units Overseas**

Up to July 1942, the few high speed launches overseas were established on permanent bases, such as Freetown, Aden and Port Said. In July it was decided that, for ease of operation and administration, high speed launches were to be organised in pairs in numbered Air/Sea Rescue Units.

As further launches became available, it was the intention that the number of units should be augmented, but at the beginning of July, although 13 high speed launches were on passage to the newly formed Air/Sea Rescue Units, the actual number of high speed launches at overseas bases was still only nine, for although one more boat had reached Malta, this had only served as a replacement for the one destroyed in June during a blitz. On 26 July, the first two Miami launches reached Middle East and from then onwards their Air/Sea Rescue Units were slowly built up to establishment.

By the autumn of 1942 the general policy of marine craft provisioning had been sufficiently clarified to permit the forward planning of Air/Sea Rescue Units for overseas. From the high speed launches, pinnaces, Miami craft and naval rescue motor launches under production for world-wide Air/Sea Rescue commitments, it was decided in October to allot 135 boats to Overseas Commands. This number would permit the formation of 47 Air/Sea Rescue Units, of which the 13 Units authorised in July had already been formed, although still deficient of their full strength of marine craft. It was anticipated that the other 34 Units could be formed by May 1943, thus covering the rescue requirements in Middle East Command, West Africa Command, India Command, as well as providing one Unit in the Bahamas for No. 111 O.T.U., Nassau.

### **Operation "Torch"**

The plan for Operation "Torch" did not include any Air/Sea Rescue Units in the assault phase, but as soon as the Allied forces had established a firm footing in North Africa, there was an immediate need for rescue craft for that theatre of war.

High speed launches began to arrive in North Africa at the end of November, but shortage of spares and vital equipment were a handicap to making the boats fit for operations. In December, two additional Air/Sea Rescue Units were formed, each of three pinnaces and crews. The pinnaces were diverted from the Home Commands' allocations for immediate shipment to North Africa.

This was followed in February 1943 by the formation of an Air/Sea Rescue Squadron for North Africa; the first Overseas Air/Sea Rescue Squadron to be formed. The Admiralty having agreed to allot 6 Walrus aircraft from No. 700 F.A.A. Squadron at Algiers, (a Naval Squadron formed for the early stages of the North Africa campaign) these aircraft were now to be used to form No. 283 Air/Sea Rescue Squadron (4 plus 2 Walrus) in Eastern Air Command, (which was afterwards absorbed into Mediterranean Air Command), the Squadron forming at La Sebala (Tunis). Thus the newest Overseas Command was the first to be officially equipped with a combined air and sea rescue organisation: viz. two Air/Sea Rescue Units and a Rescue Squadron of Walrus.

Meanwhile, Middle East's local rescue organisation continued to do good work. The number of Wellingtons had been increased to six in August 1942, and during September and October, a further six high speed launches arrived from the United Kingdom.

At 13.30 hours on 2 November 1942, a Beaufighter was reported missing in a position north and a little to the west of the Bay of Sollum. Middle East's Air/Sea Rescue Flight was requested to send an aircraft to search in the area but as the distance involved was two hundred and forty-nine nautical miles no search could have been carried out before darkness fell. An aircraft was therefore despatched to Aden to take off at first light next morning. Early the next morning this aircraft took off for the indicated position and sighted a dinghy containing two men. A Sunderland and a Beaufighter were despatched by No. 201 Group to assist them in retaining the dinghy in sight, but owing to petrol shortage the aircraft could not remain over the dinghy till the relief arrived, with the result that the dinghy was once more lost.

On 4 November a Sunderland re-located the dinghy but as the rough sea made it impossible to alight, the survivors could not be picked up. On 5 November two Wellingtons of the Air/Sea Rescue Flight were preparing to continue the search in conjunction with a Baltimore of No. 203 Squadron. The Baltimore failed to locate the dinghy so the Wellingtons did not take off. A plan had been evolved that the Baltimore should drop supplies to the survivors with instructions to fire the pyrotechnics dropped to them so that the Air/Sea Rescue Wellingtons could locate them and mark and guide a rescue launch to the area. This plan was successfully put into force on 7 November, and one of the Wellingtons located the dinghy as darkness fell. It was subsequently learnt that the supply kit had broken on impact with the water and the pyrotechnics could not be salvaged by the survivors.

The search was continued on the 8th without success to the limits of the rescue aircraft's endurance, but on the 9th the dinghy was found by a rescue Wellington which was later joined by some Bisleys. Motor torpedo boats were then seen in the area but it was not possible to guide them to the dinghy. On the 10th the search was continued again and the dinghy's position of the previous day given to the rescue high speed launch at Mersa Matruh. During the morning the launches located the survivors still alive although weak and exhausted. Thus ended successfully more than a week's efforts to rescue the crew of the Beaufighter.

Many rescues have been related from the survivor's point of view. The story of a rescue in January 1943 by one of Middle East's high speed launches emphasises the difficulties and hardships which were met by the rescue launch crews in the course of their normal work.

A high speed launch was instructed to leave Tobruk on the morning of 3 January to search for survivors of a crashed U.S.A.A.F. Mitchell. The barometer was falling and there was every indication of an approaching storm. After four hours search no trace of a dinghy had been found, but a message broadcast from Alexandria gave them a new position and the search continued. The wind began to rise and the sky looked threatening when a Walrus flew over the launch and signalled "follow me". On testing, the launch's W/T was found to be out of action. The launch followed the

Walrus and found two dinghies, lashed together, containing the Mitchell crew of seven, two of them injured and all of them stiff from being in their dinghies for twenty-four hours.

The gale broke as the launch made course for Tobruk with the survivors aboard. They began to ship water heavily and to wallow in the heavy seas which made it difficult to steer. By 2100 hours the launch had no steerage way, she had shipped another heavy sea, dipped her bow completely under, and carried a great volume of water to her wheelhouse. Soon afterwards she stopped within sight of Tobruk, but unable to make contact with the shore owing to the broken down W/T. That night and throughout the next two days the launch drifted, tossed like a cork in the heavy seas, but engine oil was spread on the water and saved her from damage.

On the morning of the 5th, the sea moderated slightly and by noon the sun began to shine. Unsuccessful efforts were made to contact a Wellington which flew over during the afternoon, and as the barometer was rising, preparations were made to get under way at dawn the next morning. It was estimated that the drift had brought the launch north of Sidi Barani so course was set for Bardia, where the survivors were removed by ambulance. After refuelling the launch returned to Tobruk after weathering three days of storm, which caused the Master a great deal of anxiety, both for the sake of the injured men aboard and the safety of his crew and craft.

When the American survivors were told that they had been rescued by a lease-lend launch, one remarked, "Well, you need not pay for this one: we will write and tell our President to chalk it right off".

#### **Increased Commitments of Middle East Command**

All through the Desert war of 1941-42 Middle East Command had used what few operational aircraft they could spare, together with their Air/Sea Rescue Flight to search for lost aircrews in the Mediterranean. During this time the majority of air operations had taken place over the land or near the coast but by the beginning of 1943 the Desert War was over and it was known that future operations would involve long sea crossings and increase the number of forced landings at sea.

At Malta a Sunderland flying-boat had been used for rescues from time to time, as well as various aircraft belonging to their Communication Flight, such as Blenheim and Beaufort, and later a Swordfish and some Walrus. In the Eastern Mediterranean Wellingtons and Blenheims of the Coastal Air Force were usually employed on search work. In East Africa they relied entirely upon the Fleet Air Arm, who employed Ansons and Walrus amphibians for search purposes.

Middle East's Air/Sea Rescue Flight had remained at Abu-Sueir until November 1942, when with the advance of the Eighth Army the whole flight moved to Burg-el-Arab again with detachments at Gambut, Benghazi and Sidi Barani. The flight was now responsible for such a long stretch of coastline that a Blenheim flight was formed in January 1943, and in February further increased by the addition of one Walrus. Nevertheless, with so few high speed launches at their disposal and only improvised rescue units of general purpose pinnaces and seaplane tenders in some areas, Middle East could not expect to cover the wide field of rescue commitments which was theirs in February 1943<sup>1</sup>.

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<sup>1</sup> Mediterranean Review No. 3.

Whilst the first Air/Sea Rescue Squadron was being formed for the Western Mediterranean, therefore, Headquarters Middle East were putting forward a request for composite Air/Sea Rescue Squadrons of twin-engined land planes and amphibians for their sphere of operations in the Eastern Mediterranean. They asked for a total of thirty-two twin-engined land planes and sixteen amphibians (preferably Catalinas) to cover their Air/Sea Rescue requirements in the Eastern Mediterranean as far as Tripoli, Malta, Iraq and Persia, Aden, and Central and East Africa, as well as light aircraft for communications and land rescue.<sup>1</sup>

The policy of the provision of further overseas rescue squadrons was at this time under consideration by the Air Staff in connection with their planning of Target "Force H" which envisaged the proposed establishment of operational squadrons up to March 1944. To cover the whole of the Mediterranean and the Middle East, the Air Staff estimate for rescue squadrons comprised a total of sixty aircraft; forty long range and twenty high speed aircraft.

At that time Middle East's request exceeded the possibilities of supply, there being no Catalina amphibian available and the supply of Hudsons being insufficient to equip the Coastal Command search squadrons in the United Kingdom. In March, therefore, they were offered an establishment of twenty Warwicks and ten Walrus to meet the total requirements of Air/Sea Rescue in the whole of the Mediterranean. It was, however, pointed out that none of these aircraft would be available before August 1943: a somewhat optimistic forecast as far as the Warwicks were concerned, as was proved by later events.

Not only had Middle East no Air/Sea Rescue aircraft other than the Flight provided from their own resources; they were still short of rescue craft and were far from happy about the situation. Owing to difficulties in the production of high speed launches at home and the shortage of shipping space, the programme arranged in October 1942, had fallen considerably behind schedule—in fact only eight craft had been shipped to Middle East in the five months ending March 1943. As far as rescue craft were concerned, Air Ministry agreed with Middle East's request for 55 boats, but there were still only 17 high speed launches in operation in that theatre, including Malta. In February 1943, the capture of Tripolitania made necessary the further expansion of Middle East's rescue organisation.

On 5 February a high speed launch sailed from Benghazi to Tripoli to take up duty there as a rescue launch, Tripoli now having become the most easterly point of Middle East rescue operations. In March this launch was bombed and attacked by enemy aircraft whilst going to the rescue of a fighter pilot in the sea. One member of the launch's crew was killed and another seriously injured.<sup>2</sup> Altogether, during February, 14 survivors (including 6 enemy aircrew) were picked up by Middle East high speed launches.

A high speed launch which arrived in Malta on 9 January from Benghazi, and was unfamiliar with local waters, was called away from Kalafrana in the early hours of 10 January to proceed to the rescue of a Wellington crew who

<sup>1</sup> H.Q.M.E. Signals 0409 dated 14 February 1943 and 0416 dated 15 February 1943.

<sup>2</sup> Mediterranean Review No. 7.

ditched eighty-six miles away. After the launch had covered sixty-five miles a red flare was seen about two miles to port. The launch crew answered this with a green flare to indicate that further distress signals should be fired by the occupants of the dinghy. Four more red flares were then seen, the dinghy was located within ten minutes and with the aid of the launch searchlight, the Wellington crew were safely taken aboard, the whole operation being carried out in complete darkness.

#### **Requirements for Operation "Husky"**

In April the relative claims of the Overseas Commands had to be considered afresh by the Air Staff, bearing in mind the formation of the new Mediterranean Air Command and the proposed operations in connection with the invasion of Sicily and Italy. Specifically for these operations it was agreed to form one Air/Sea Rescue Squadron and one Air/Sea Rescue Unit to be included in the build-up for the Sicilian Campaign (known as Operation "Husky"). Agreement was accordingly given to the formation of No. 253 Air/Sea Rescue Unit (6 high speed launches) and No. 284 Air/Sea Rescue Squadron (4 plus 2 Walrus) in North West Africa. At the urgent request of Headquarters, Mediterranean Air Command a further Air/Sea Rescue Unit was approved in May, No. 254 Air/Sea Rescue Unit (8 high speed launches and 2 pinnaces) which was to be regarded as a normal reinforcement for Mediterranean Air Command. Arrangements were made for shipment of high speed launches from the United Kingdom and for the transfer of Walrus aircraft from the naval pool at Gibraltar.

In May the Air Staff decided that owing to the limited resources available for air and sea rescue in the Mediterranean, the newly formed Mediterranean Air Command should be given the power of laying down the detailed allocation of rescue craft and aircraft for the Mediterranean and Middle East according to their operational requirements.

Highest shipping priority was accorded to deliveries of rescue craft and it was hoped that a total of thirty-eight boats would be provided for the Mediterranean during June and July to add to Mediterranean Air Command's existing strength of high speed launches which at 20 May stood at thirty-one.

All through the summer of 1943, Middle East struggled to obtain from Mediterranean Air Command additional rescue aircraft and marine craft to assist them in providing cover for their areas outside the Mediterranean. With the impending Sicilian and Italian campaigns, nothing could be spared them, and they were compelled to continue with their existing resources.

In May also there seemed little hope of fulfilling Air Ministry's promise that Air/Sea Rescue Warwicks might be available for the Mediterranean. Before the intermediate Air/Sea Rescue Warwicks came off the line (which were to be supplied to Coastal Command's Rescue Squadrons) a quantity of "Bastard" Bomber Warwicks had been produced.

Owing to Mediterranean Air Command's need for Air/Sea Rescue aircraft the Deputy Director of Air/Sea Rescue agreed that although the "Bastard" Bomber could not carry an airborne lifeboat, these should be supplied to Mediterranean Air Command until such time as the Air/Sea Rescue type became available in September or October. It was hoped that these aircraft

could be flown out to Mediterranean Air Command in time to re-equip their squadrons for the Italian campaign; another forlorn hope to add to the sad story of the Warwick.

### **A Glider Ditches in Operation "Beggar"**

The possibility of ditching a glider was a subject which had not received much attention until 1943. In the summer of 1943, however, General Eisenhower put forward an urgent requirement for Horsa gliders for contemplated airborne operations in connection with the Sicilian and Italian Campaigns. Difficulties of stowage on ships and lack of time made it necessary for Halifax tugs to tow the gliders from the United Kingdom to North Africa; this reinforcement of the airborne forces in North Africa being known as Operation "Beggar".

No official ditching drill existed for a glider at this time but most glider pilots engaged on the operation worked out a drill of their own. The operation was surprisingly free of accidents, but a glider which broke away from its tug on 3 June made a successful landing in the Bay of Biscay.

The crew comprised three pilots, the first pilot assuming the responsibilities of the captain. Having overshot the towing cable they were unable to jettison it, neither could the load of stores carried be jettisoned owing to lack of time. However, the Horsa came to rest on the sea quite gently but water entered fairly heavily through the perspex panels and the glider sank to wing level in about five minutes. The crew were in their "M" dinghy within two minutes together with their emergency pack, two thermos flasks of hot tea, two tins of biscuits and their Royal Air Force escape kit. All felt rather sick and had no need for food but they each had a cup of hot tea. There was no radio in the dinghy but the towing Halifax had circled it and obtained a good fix. From the first the crew were confident of rescue and before long they were located by a Sunderland which guided a frigate to the spot. When the frigate appeared on the horizon they fired the Verey pistol from the emergency pack at intervals of twenty minutes until contact was made. After ten hours in their dinghy the crew were finally rescued still within paddling distance of their water-logged floating glider. This was sunk by a depth-charge from the rescue vessel.

Shortly after this a ditching drill was prepared for the Horsa glider which proved of value during the operations for the invasion of Sicily.

### **Pigeon Rescue**

Whilst the pigeon service had never contributed a great deal to the rescue organisation at Home, in Overseas Commands the pigeon service proved its worth on many occasions where mechanical means of communication were far less frequent and not very reliable.

In the summer of 1943 when Home Commands were already anxious to abolish the pigeon rescue service, a pigeon was directly responsible for the rescue from the Mediterranean of a Baltimore crew. On account of engine failure this Baltimore ditched in the sea one hundred miles from base. A S.O.S. had been sent out prior to ditching and a H.F./D.F. fix obtained, but a square search by rescue aircraft from the position of the fix was unsuccessful owing to the poor visibility.<sup>1</sup>

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<sup>1</sup> A.M. Pigeon Service Records.

Meanwhile the crew, who had taken the pigeon containers into the dinghy, found that as they had omitted to seal them one bird had been drowned, and the other one was very wet. After a second accidental ducking in the oily sea, this surviving pigeon's feathers were allowed to dry and he was then released with a message. Not many hours later the pigeon arrived at base with the message, "Crew safe in dinghy 10° W. of Tocra". Next morning a launch sent to search in this area located the crew, picked them up, and returned them safely to land.

#### **Re-Adjustment of Air/Sea Rescue Units in the Mediterranean**

The formation of the Air/Sea Rescue Units for "Husky" and North Africa had completely thrown out the original programme for Air/Sea Rescue Units formulated in October 1942, when 47 Air/Sea Rescue Units were planned for Overseas Commands, with a total of 135 boats. In July 1943, the general programme, as altered to fit the various Mediterranean requirements, was again set out. At this time 16 Air/Sea Rescue Units had been formed in Mediterranean Air Command, 7 in North African Air Forces, 8 in Middle East and one at Aden, with a total strength of 43 high speed launches and 12 pinnaces.

A total of 87 craft was now allotted to Mediterranean Air Command (including the Middle East), and it was anticipated that of the balance 32 boats required to form all the Air/Sea Rescue Units planned, 24 would arrive in the Command before the end of August to bring the existing units up to full strength and to assist in forming one further Unit in Middle East, four in East Africa and three in Iraq and Persia.

#### **Operation "Husky"**

The original "Husky" plan provided for two Air/Sea Rescue Units and one Air/Sea Rescue Squadron; one Air/Sea Rescue Unit to reinforce Mediterranean Air Command before commencement of the operation, the other together with the rescue squadron to be included in the build-up phase and shipped direct to Sicily to arrive about 20 July.

On reconsideration of the plan, however, Mediterranean Air Command decided that they would require all the Air/Sea Rescue Organisation specifically planned for "Husky" to be operational in the Mediterranean before "D Day" and plans were altered at the end of May in order that the units might be despatched as normal reinforcements. The aircrews of No. 284 Squadron were to be shipped to Gibraltar—there to take over the Walrus from the naval pool.

A muddle then arose over Mediterranean Air Command allotment of the Walrus aircraft for the equipment of the new squadron. Mediterranean Air Command had anticipated the formation of No. 284 Squadron by obtaining 13 aircraft in advance from the Admiralty stocks at Gibraltar to augment their existing Air/Sea Rescue Squadron (No. 283), and were under the impression that a further 6 aircraft would be supplied for No. 284 Squadron. A visit to Mediterranean Air Command by the Deputy Director of Air/Sea Rescue was necessary in June to straighten out this tangled position, when he was able to make it clear that six of the thirteen Walrus obtained were to form No. 284 Squadron. After the aircraft supply position had been

straightened out, No. 284 Squadron was formed at Malta and arrangements were made to station No. 283 Squadron for the period of operations in North West Africa, with a detachment at Pantellaria.

To complicate the matter still further this moment was chosen by Air Ministry to inform Mediterranean Air Command that the re-equipment of Nos. 283 and 284 Squadrons with 16 plus 4 Warwicks would commence in July (when the "Bastard Bombers" were anticipated to be available), which meant that between the invasion of Sicily and that of the mainland of Italy the equipment of their Air/Sea Squadrons was to be completely altered.

The Air/Sea Rescue Organisation in the Western Mediterranean had been the responsibility of the North West African Coastal Air Force from the time of formation of the Mediterranean Air Command. To co-ordinate the rescue facilities at the disposal of Malta, Middle East and North West African Coastal Air Force, a uniform Air/Sea Rescue Service was formed on 1 July for the Central Mediterranean, each command being delegated its own area of responsibility.

For and during the invasion of Sicily, three special zones were set up for which North West African Coastal Air Force, Malta and Middle East were each responsible respectively, and exact arrangements were made to deal with distress calls on the boundaries of these areas. Wellington and Catalina aircraft were provided at Bizerta for deep searches and rescues in conditions for which Walrus aircraft would not be suited, and arrangements were also made to attach No. 230 (Sunderland) Squadron for rescue duties during the first two weeks of July. A few Walrus and crew of the then newly-forming No. 284 Squadron were stationed at Hal Far, Malta, during the early invasion period; and close liaison was maintained between Malta and North West African Coastal Air Force with the Air/Sea Unit at Kalafrana.

During the air offensive which preceded the assault on Sicily, frequent calls were made upon the Rescue Service and there were a number of successful incidents. On 2 July, for instance, a Beaufighter ditched eighty miles off the Tunis coast, and two Walrus aircraft were sent on search. One of them located the dinghy and rescued the crew, but being unable to take off attempted to taxi into Bizerta. After seven hours it ran out of petrol, but was taken in tow by a high speed launch and returned to base with crew and survivors.

In preparation for and during the invasion of Sicily, the Air/Sea Rescue Unit at Malta was temporarily reinforced to a total of 8 high speed launches, 4 pinnaces and 6 seaplane tenders and during the whole of the "Husky" operation 100 per cent. serviceability was maintained by the servicing organisation. Thirty-five and a half squadrons were based upon Malta for "D Day" of "Husky", and in the first seven days of the assault only 30 pilots were lost. It was in this period that the peak of rescue work at Malta was reached. By this time, the newly-formed Air/Sea Rescue Units in North West Africa were also operating after having experienced considerable trouble in obtaining spares to bring their launches to a state of readiness. Thus as far as Air/Sea Rescue Units were concerned the planned requirements for "Husky" were complete.

### **An Outstanding Land Rescue**

Although Middle East's Air/Sea Rescue Service was little employed in rescuing aircrews from the sea during the early stages of "Husky" its full resources were called upon for an outstanding land rescue during this period.

A United States Liberator returning from an invasion eve attack on Sicily on 10 July completely lost its bearings over the Libyan Desert. When the aircraft had reached its limit of endurance the ten members of the crew baled out, owing to the difficulty of making a forced landing in the dark. They came down in a most inaccessible spot in an area consisting mainly of black coal-like volcanic lava, approximately three hundred miles south of Benghazi.

A H.F/D.F. Station in the area picked up the S.O.S. which they had transmitted before baling out and in consequence an Air/Sea Rescue Wellington, together with two United States Liberators, was despatched early next morning to search for the crew. No trace could be found of any survivors. A more extensive search was then planned using United States Liberators with Wellingtons and Blenheims from the Sea Rescue flight. The following day the Liberators spotted first five survivors, and then a further two, and supplies were dropped to both parties. Meanwhile a land rescue attempt was being organised with an army Light Car Patrol of the Sudan Defence Force. They were given the position of the survivors but the difficulty of driving cars or landing aircraft on the lava was overwhelming. Subsequent events are best told in the form of a diary:—

13 July. An Air/Sea Rescue Wellington located four survivors (originally thought to be five) and dropped further supplies. Two Wellingtons and three Liberators carried out searches throughout the day.

14 July. Two survivors were located by a Liberator. Another land patrol was requested from Derna.

15 July. An Air/Sea Rescue Wellington took off with a crew composed of those who had been on the previous successful sightings. Both parties were re-located and found to be about eight miles apart.

16 July. The land parties struggled through the desert having to manhandle great blocks of lava in order to make any progress with the cars.

17 July. Land parties reached rendezvous given them by the Wellington and started to prepare a landing strip for a rescue aircraft.

18 July. A Wellington managed to land on the prepared strip, joined two and a half hours later by a Magister.

19 July. The patrol was guided by the Wellington, first to the two survivors then to the other four. Two of them were injured, the others were weak but otherwise well. The survivors thought that the remaining four members of the crew were somewhere in the "coal" but had no idea in what direction they had landed. It was accordingly decided to take the six survivors back to base before commencing a search for the still lost airmen, and two Air/Sea Rescue Wellingtons flew them back to Berka. Further search revealed no trace of the missing airmen and hope that they might still be alive was abandoned.

This rescue affords an excellent example of team work and triumph over difficulties. The Air/Sea Rescue aircraft of Middle East Rescue Flight flew 120 flying hours and searched a total area of 15,500 miles. The land party also covered 1,350 miles in their journeying to and from the rescue rendezvous.

On Saturday 10 July, the invasion of Sicily began, and by 17 August the whole of the island was in Allied hands. Throughout the period Air/Sea Rescue craft searched continuously for missing aircrews, the Sunderland flying boats and United States Catalinas being used to assist the regular rescue aircraft. A total of 45 lives was saved between 3 July and 10 July, the period immediately preceding the main invasion of Sicily.

On the evening of 17 July a heavy bombardment of Naples took place and immediately afterwards a Sunderland with P.38's as escort was despatched in search of seven dinghies reported in the sea south-west of Naples. The Sunderland was driven off by enemy aircraft, but a second Sunderland despatched the next morning succeeded in rescuing six aircrew, while a third continued search for the remainder. On the final return from search the escort intercepted fifteen Ju.52's and shot down every one of them.

On 2 August a Catalina carried out a daring rescue. It alighted on the water four miles south of Cagliari to pick up a Beaufighter crew who had baled out, but in attempting to take off the starboard propeller was hit and damaged by the mounting seas. Every time the pilot tried to taxi away, enemy shore batteries opened fire. Enemy fighters then came out to attack but the Catalina's fighter escort managed to shoot down three before they set the flying boat alight. Taking to their dinghies, already punctured with bullet holes, the crew of the Catalina and the Beaufighter's survivors baled and pumped madly in an effort to keep afloat, whilst they drifted towards the Sardinian coast. Under heavy fire from land batteries, they were eventually rescued by a high speed launch.

#### **Squadrons Based on Sicily**

No. 283 Squadron which had formed at, and operated from La Sebala (Tunis) from early 1943, with a detachment at Pantellaria during "Husky", began to operate a Flight at Palermo as soon as that place was in our hands at the beginning of August. On 5 August a Walrus from this Flight was despatched to look for a dinghy containing three enemy airmen. Landing their Walrus on the water they rescued the dinghy occupants but were unable to take off again because of rough seas. They taxied in the direction of Sicily but discovered that they would not be able to make landfall before they ran out of petrol. Accordingly, they altered course for Salina Island which was reached that night. They were not sure whether the Island had already been occupied by Allied Forces, but luck was with them and they were greeted by the British Garrison who had just taken possession of the Island. They could not communicate their whereabouts to Squadron Headquarters as there was no signals equipment on the Island and they were recorded as missing by their home base. It was not until 10 August when a high speed launch arrived with supplies for the garrison that the mystery of their disappearance was cleared up.

By the end of August the entire Squadron had been moved to Palermo and on 26 September new detachments were formed at Monte Corvino and Sidi Achmed. Meanwhile, No. 284 Squadron which had been assembled in the United Kingdom in May 1943, had arrived at Gibraltar in June and after many delays due to the incorrect distribution of Walrus aircraft already recorded, and a considerable time spent in transit camps in North Africa, eventually formed at Malta. The squadron commenced operation from Cassibile (Sicily) on 27 July, and on their first day there they were successful in picking up a United States fighter pilot from the sea ten miles south-west of the Toe of Italy.

During their stay at Cassibile No. 284 Squadron had a successful record of rescues, picking up eight Allied and one German aircrew in the first three weeks of August. The Sicilian campaign closed on 17 August and on 22 August, the squadron, now complete, moved to Lentini and from 9 September also operated a Flight from Milazzo.

The careful preparation of the Air/Sea Rescue Organisation to meet the anticipated demands of the Sicilian campaign was well repaid. From 8 July to 17 August 427 sorties were flown on air/sea rescue missions. A breakdown of rescue figures is not available but in the first 14 days of the assault period 45 lives were saved.

A real test of Air/Sea Rescue facilities was made during August, following the raid on the Messerschmitt works at Regensburg on 17 August when United States Fortresses flew from Great Britain to make their attack, subsequently arriving at bases in North Africa. Seven Fortresses which did not complete the journey came down in the sea north of Bone. Sixty-five aircraft of all types and several high-speed launches assisted in the search which continued for three days and nights. One United States rescue Catalina of the 1st Emergency Rescue Squadron, a Unit recently arrived in North Africa, picked up a crew of ten, but was damaged in alighting on the sea. Nevertheless it set taxi course for Bone. Three hours later the survivors were handed over to a rescue launch, after which the Catalina, still taxying, picked up two more dinghy loads. Beaufighters and Bisleys were successful in finding four other dinghies, no fewer than 42 aircrew in all being picked up and brought safely to shore.

#### **Preparations for Landing in Italy**

The invasion of Sicily having been successful, Mediterranean Air Command were immediately involved in preparations for an assault on a much bigger scale directed against the mainland of Italy. For this Mediterranean Air Command wished to base two Air/Sea Rescue flights in North Africa and one in Sicily, whilst one was also required in Middle East. Accordingly at the end of July authority was sought for the formation of four Air/Sea Rescue Squadrons from their existing two; each squadron to be a composite one of landplanes and amphibians. This suggestion was at first opposed by Air Ministry on the grounds that two large squadrons would prove more efficient than a number of smaller ones, but they agreed to maintain the amphibious element by establishing five Walrus and crews on each of the two squadrons. Mediterranean Air Command returned to the fight again in August pointing out that the lack of long distance search aircraft necessitated the wide dispersal of their rescue flights and it would

not be possible for Middle-East to administer half a unit operating outside their Command area. Accordingly on 30 August, the formation of four Air/Sea Rescue Squadrons for Mediterranean Air Command was authorised by the splitting of No. 283 and 284 Squadrons to provide two additional units, Nos. 293 and 294, all four squadrons to be formed to an establishment of 8 plus 2 Warwicks and 3 plus 0 Walrus.

Thus the "Target H" figure was fulfilled as far as the 40 long range aircraft were concerned, and shortly afterwards the total Walrus establishment was raised to 20 by giving each squadron a reserve of two aircraft. Mediterranean Air Command had therefore reached (on paper) the total of 60 Air/Sea Rescue aircraft which had been visualised in "Target H".

Meanwhile in view of the forthcoming operations, Mediterranean Air Command was very anxious to receive some Warwicks by the beginning of September, but their hopes were dashed on 20 August when they were informed that owing to technical defects which had come to light in the "Bastard Bomber" Warwick, there was little likelihood of any aircraft reaching the Mediterranean until late September.

#### **Air/Sea Rescue During the Invasion of Italy**

As no Warwicks were supplied to Mediterranean Air Command in time for the invasion of Italy, Air/Sea Rescue during the assault was carried out by Walrus aircraft and the Lindholme-fitted Bisleys of No. 614 Squadron, assisted by flying boats, Wellingtons, and a few Hudsons hastily despatched from West Africa. For the assault period the whole of the Air/Sea Rescue work north of a line joining Cape Orlando to Cape Vaticano was undertaken by the North African Coastal Air Force, but as soon as the Tactical Air Forces were established in the Salerno area they were to assume responsibility for rescues within forty miles from the beaches.<sup>1</sup>

No. 614 Squadron operated from Borizzo, Air/Sea Rescue launches and Walrus aircraft were based at Salerno and Milazzo, launches at Ustica and the Salina Islands in the Lipari Group, and a Depot ship equipped with V.H.F. and supplied with P.O.L. for emergency refuelling of launches and flying boats was also provided for the assault period.

No. 1 Emergency Rescue Squadron of the United States Army Air Force, equipped with amphibian Catalinas, covered operations from the North African Coast during the assault stages and did some excellent work.

From 3 September when the Allied forces crossed in strength to the Toe of Italy, to 8 September when the Allied assault on Salerno began, the Air/Sea Rescue Units were constantly active. Whilst the Allied Air Forces flew an unprecedented number of sorties no spectacular rescues took place during the period, although in the first eight days of the assault 27 lives were saved by the rescue organisation, and many aircrew were picked up by passing convoys and naval patrols. Two incidents recorded later in September, when aerial activity still remained at a high level, are worthy of record.

On 15 September, the pilot and navigator of a Beaufighter from El Aouina on convoy strike were forced to ditch between Elba and Capraia. The crew took to their "H" dinghy, and also took with them two "K" type dinghies,

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<sup>1</sup> Mediterranean Review No. 7 and A.M. File S. 93711 (*passim*).

the pilot's parachute, and an emergency pack. The aircraft's water tank floating nearby was salvaged and found to contain nearly 30 pints of water. Armed with all their food and drink they could have remained at sea for many days, but before a few hours had passed the crew were picked up by an Italian-manned launch and taken to Capraia, then in Italian occupation. For the next three days nothing happened; they rested at leisure in comfortable quarters whilst the Governor tried to make up his mind what to do with them. Eventually he gave permission for them to make their way to Allied occupied territory in an Italian "E" boat. They had no instruments other than a damaged compass, but in spite of this, after an erratic journey they reached Ponza half an hour before it fell into Allied hands. However, all was well, and as soon as the Allies arrived the survivors left again for Capri in their "E" boat with four German prisoners, and having landed there they devoted a day to bathing, shopping and resting. They were later taken aboard a motor torpedo boat and conveyed to Valetta, whence they were returned to their unit by air, after nine days of adventure.<sup>1</sup>

On 21 September a damaged Beaufighter was forced to ditch near the north coast of Sardinia after taking part in a contest with fifteen Ju. 52's, followed by seven attacks by two Me. 109's. Lack of control due to the damage sustained made the ditching difficult, and the pilot was knocked unconscious on impact with the water, the navigator being unconscious already from wounds received in the action. On coming to, in a cockpit half filled with water, the pilot found the navigator had recovered consciousness and was attempting to struggle out of the fuselage in spite of a broken leg. The pilot went to his aid and managed to get the navigator out before the aircraft sank. By great fortune the dinghy had been automatically ejected and was already inflated. After a struggle the pilot managed to haul his wounded companion into the dinghy and then found that they were within sight of land. He tried to paddle in the right direction, but the current was too strong to make any progress. Then he got into the water and tried to swim whilst holding the dinghy with one hand. Then he had a bright idea; he grasped the rope ladder of the dinghy, placed it over his head so that one of the rungs rested on his chin, and by this means he was able to tow the wounded navigator ashore, where his wounds were tended by Sardinian nuns from a nearby convent.

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Middle East's rescue flight, operating from Benghazi during 1943, had continued to cover a wide area along the coast of the Mediterranean, and from the Turkish coast to Tunis. During the flight's first two years of operation, from July 1941 to June 1943, it had been responsible for assisting in the rescue of 234 personnel, including 12 enemy airmen. Of these 92 were rescued from the desert, the rest from the sea. April 1943, proved a particularly busy month for the flight, 41 sorties being flown, resulting in the rescue of 11 airmen.

May saw the end of the Tunisian Battle, with the whole of the North African coast in our hands. Rescue aircraft moved forward the whole time, in phase with the progress of the Eighth Army. The Blenheim flight had

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<sup>1</sup> Mediterranean Review No. 7.

been replaced by Wellingtons and the Walrus brought up to a total of nine. In June, a detachment at Misurata had been equipped with four Wellingtons and one Walrus to cover this area for the landings in Sicily. As already stated, this detachment had very little rescue work to do during the landings. With the formation of No. 294 Air/Sea Rescue Squadron at Berka in the Middle East, on 24 September 1943, the Wellingtons and Walrus of the flight became the nucleus of the new squadron.

### **The Aegean**

During the time when preparations for the invasion of the Italian mainland were nearing completion, plans were also being made in Middle East Command to conduct an offensive on the various enemy held islands in the Aegean Sea.

In September of 1943 a high speed launch was briefed for a special task, that of landing a Joint Mission on the Island of Rhodes. This five hundred mile trip in the Aegean involved a call at the Island of Castel Rosso where the Italian Government had just surrendered to our Commandos. The party then proceeded to Rhodes, but were warned not to enter the harbour by an Italian launch sent out to meet them. They returned to Castel Rosso to await developments, from whence they were ordered to Leros which had just been occupied by our forces. A few days later, after landing the Mission, the high speed launch moved to Cos to carry out rescue work in support of the Spitfires established on that island.

On 3 October, when the Germans invaded Cos, a high speed launch, together with a seaplane tender, were based on the island. With 90 Army personnel and Italians on board these boats escaped, and having transferred their Army personnel to naval craft off the Turkish coast, managed to reach Castel Rosso. On 16 November, when our resistance in Leros was nearly over, three high speed launches at Castel Rosso (including the one escaped from Cos), took part in the rescue of troops from Leros and Samos. After these particular operations in the Aegean had ceased, Middle East agreed with Mediterranean Air Command to reduce the area covered by their rescue launches by transferring Tripoli to Mediterranean Air Command and making Benghazi the most westerly limit for Middle East's Air/Sea Rescue operations.

### **Re-Organisation of Air/Sea Rescue Services**

At the beginning of October Mediterranean Air Command's Air/Sea Rescue Service was re-organised to meet their operational requirements in Italy; Air Headquarters Malta being given entire responsibility for Air/Sea Rescue operations in Sicily and the Toe of Italy. After the capture of Naples on 1 October most of the Allied air forces moved to the mainland of Italy and the work of the rescue organisation slowed down a little. Other than detached Walrus flights, their Air/Sea Rescue Squadrons were non-operational at this time, and slowly re-equipping with the few Warwicks so far received at Blida. Accordingly all G.R. Units were instructed to keep one aircraft, fitted with Lindholme rescue gear, at readiness for deep search duties, and subject to operational commitments all Fighter Sectors had single-engine fighters on call for close search. Meanwhile, the Walrus rescue aircraft were spread over as wide a field as possible, detachments

being stationed at Palermo, Ajaccio, Monte Corvino, Brindisi, Catania and Malta.<sup>1</sup> In addition two Catalinas were available for deep search from Sidi Achmed and Cant aircraft of the Italian Air Force were stationed at Brindisi and Taranto. High speed launches were based in Corsica, in Italy at Naples, Salerno, Termoli and Bari, in Sicily, Sardinia, Malta and Tunisia.<sup>1</sup>

By this means protection was given to the focal operational areas in the Ligurian, Tyrrhenian and Adriatic Seas, and in the Mediterranean between Cape Bon and Sicily.

The occupation of Corsica, Sardinia and Southern Italy had doubled the operational area of the Mediterranean Rescue Service, and long range search aircraft were badly needed. On 18 November, Mediterranean Air Command made an appeal for further rescue aircraft, as with the intensive operations then taking place and about to take place their rescue facilities were proving inadequate. At this time only 13 Warwicks had been despatched to them and the forecast of further deliveries did not seem very encouraging. A thorough investigation was carried out in Air Ministry on the highest levels, but little hope could be given that more than a further 20 Warwicks were likely to be despatched before the end of January 1944.

In December the Air/Sea Rescue Squadron policy both at Home and Overseas was reviewed by the Air Staff on account of the limited manpower resources available and a likely shortage of Warwick aircraft. The Air Staff agreed that further rescue facilities could not be provided for transit routes or to cover G.R. activities in otherwise non-operational areas, such as parts of the Indian Ocean. It was agreed that Mediterranean Air Command's target force should remain at four composite squadrons (each of 8 plus 2 Warwicks and 3 plus 2 Walrus) but that Middle East should be relieved of rescue responsibilities outside the Mediterranean and that these responsibilities should be taken over by Air Command South East Asia.<sup>2</sup> In January 1944 Mediterranean Air Command (which had now become Mediterranean Allied Air Forces) was in a parlous state for Air/Sea Rescue aircraft. They still had only received 16 Warwicks, all of them "Bastard Bombers" and unable to carry the airborne lifeboat. Originally it had not been intended to send lifeboats to Mediterranean Allied Air Force for some time as they could not be used on the bomber type Warwick, but as soon as fully modified Air/Sea Rescue Warwicks began to come off production, 24 boats were ordered for delivery to Mediterranean Allied Air Force.

Both types of Warwick had developed a surprising number of technical faults. As these came to light the number of modifications needed on each aircraft mounted considerably; between August 1943 and January 1944 sixty-one airframe modifications were passed through the Airframes Modification Committee. In February certain modifications not considered essential were omitted in an effort to speed up deliveries, and between then and June 1944 Mediterranean Allied Air Forces received most of the Warwicks they needed to re-equip their three Air/Sea Rescue squadrons

<sup>1</sup> A.M. File S. 93711 (*passim*).

<sup>2</sup> In actual fact, although No. 222 Group, Ceylon, controlled rescue operations in the Indian Ocean, Mediterranean Allied Air Forces continued to be responsible for providing rescue cover in the Persian Gulf and as far East as Masirah.

and Middle East's one. Thus nearly a year after the Warwicks had first been promised for delivery to Mediterranean Allied Air Force they were able to operate long range search aircraft. By this time, too, the airborne lifeboats began to arrive in a steady flow, the first one having been delivered by air in February soon followed up by sea deliveries.

All through the winter of 1943 and spring of 1944, the lack of Warwick aircraft put a severe strain on the Air/Sea Rescue Walrus, which were employed on searches as well as for rescue purposes.

The story of an Air/Sea Rescue Walrus's two nights out in the North Adriatic during the winter of 1943-44 is of interest to show the durability of these stout rescue aircraft. An American Mustang pilot, forced to bale out over the Adriatic, floated down into a minefield. There he sat in his "K" dinghy awaiting the rescuers for whom he had called before baling out. An Air/Sea Rescue Walrus, attached to the Desert Air Force, was sent to the rescue. The crew located the Mustang pilot and succeeded in landing close to him in the rough seas. They pulled him aboard but a storm sprang up and they were unable to take off again. The crew kept anxious vigil on the weather, watching out for possible floating mines and keeping an eye on the movements of three torpedo boats, believed to be German, which had appeared upon the horizon. They could not taxi the Walrus to shore in the high waves, so they were compelled to ride out the storm until the next morning. Spitfires from the Desert Air Force found them an hour after dawn and directed a nearby destroyer to the spot. The occupants were taken off and the storm-battered aircraft was left to ride the waves until she sank twenty-two hours later.

Only a few weeks previously this same aircraft had rescued the crew of a Fortress in the North Atlantic. The aircraft ditched after being hit by *flak* and all the crew of ten succeeded in reaching their dinghies. After an hour and a half they were located by Desert Air Force Spitfires who also spotted enemy rescue boats approaching. The fighters drove off the enemy boats and circled the dinghies until the Walrus arrived, landed in the sea and took the ten Americans aboard. With such a load the pilot could not take off again so he began to taxi to the shore, but found this too much of a strain. As darkness descended he decided to remain in the same position until the next day, so the aircraft tossed in the rough seas all night. The next morning an Air/Sea Rescue launch arrived and took the Americans off, after which the Walrus became airborne and returned to base.

### **Long Range Rescue**

By January 1944 Mediterranean Allied Air Force held a strength of 45 high speed launches against their establishment of 33, whilst Middle East was up to the establishment of 21 high speed launches. In early 1944 the new 68-foot launches had begun to arrive in the Mediterranean and their extra range was found to be of great advantage. On 26 February one of the new launches operating from Mersa Matruh received a call to search for a dinghy at the extreme limit of its range. After thirty-seven hours unsuccessful search, they returned to base to re-fuel and immediately set off again. On the morning of the 29th an aircraft appeared overhead and signalled the launch to follow. At the same moment a destroyer

on the horizon was seen heading in the same direction.<sup>1</sup> A race developed and the launch won. Arriving alongside the dinghy when twenty miles south-east of Crete, they picked up the two survivors who had been floating in the Mediterranean for seven days. Later the survivors were transferred to the destroyer and the launch crew were also given food and drink, a very welcome gesture as they had had no rest and little food for three days. The Air/Sea Rescue Wellingtons of No. 294 Squadron, aided by operational Baltimores and Beaufighters flew a total of 229 hours in searching for and locating this dinghy.

Although by 1944 Middle East were well supplied with marine rescue craft, they were still short of rescue aircraft. Although Mediterranean Air Forces were receiving their Warwicks fairly regularly by the late spring of 1944, none found their way to Middle East. In May they had still received no Warwicks and their No. 294 Air/Sea Rescue Squadron was equipped with Wellingtons and Walrus, as their original Flight had been. Although operational flying in the Eastern Mediterranean was now on a reduced scale as compared with previous activity, Middle East were anxious to secure some long range search aircraft equipped with the airborne lifeboat, as their rescue Wellingtons were only able to carry the Lindholme gear, and the war against German shipping in the Aegean was still in full swing.

It was not until the following September that the first four Warwicks were transferred from Mediterranean Allied Air Force to Middle East. Nevertheless the work of this squadron was one of constant activity in search and rescue, both over the sea and over the desert. From the formation of Middle East's Rescue Flight to 31 March 1944, a total of 324 aircrew were rescued by the Air/Sea Rescue Organisation, 193 from the sea and 131 from the desert.

#### **Desert Rescue.**

Many aircrews crash-landed in the desert owed their lives to No. 294 Air/Sea Rescue Squadron and its predecessor, the Rescue Flight. One rescue worthy of record took place in May 1944, when a crew of sergeants, whilst on a training cross-country flight, crashed into the sand hills south-west of Suez. On the morning of 27 May, a Wellington of No. 294 Squadron was ordered to search for the missing aircraft, and within three hours located the survivors, of whom there were five. It circled until relieved by a second Wellington which managed to drop medical supplies, cigarettes and a rescue kit. One of the Wellingtons then sent back a message to base that it might be possible to land a light aircraft in the area, but that rescue by land would be a long and arduous affair.

The only Walrus in the Squadron at that time was temporarily unserviceable, but ground crews got to work immediately and within an hour and a half the aircraft was airborne, heading for the position, and managed to land a quarter of a mile from the scene of the crash.

The rescue crew found that only one survivor was unhurt, the other four all being seriously injured. The problem was then how to get the injured to the aircraft. A stretcher was improvised from a parachute and some

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<sup>1</sup> Mediterranean Review No. 7.

engine cowling from the wrecked aircraft and eventually all the wounded were safely stowed in the Walrus. The difficulty of taking off with such a load was tremendous, but after a series of bumps the Walrus became airborne and landed at Heliopolis only six and three quarter hours after leaving base in the morning. The survivors were transferred to hospital and all but one recovered from his injuries, due in no small way to the first aid rendered by the Walrus crew and the speedy transfer to hospital made possible by the A/S.R. aircraft.<sup>1</sup>

It would be appropriate here to say a word about desert rescue for although this is not strictly a part of Air/Sea Rescue, the same organisation is used, substituting Motor Transport for rescue launches and working with the Air/Sea Rescue aircraft of Middle East Command.

During the desert campaign a provisional rescue organisation utilised the services of the Air/Sea Rescue Flight in co-operation with units of the Long Range Desert Group. As far back as August 1942, a co-ordinated land rescue organisation had been put into operation, and instructions were issued to aircrew on the steps to take should they force-land in the desert. Frequently the larger search aircraft such as the Wellington could not land near the scene of an incident in which case a light aircraft would be flown up in easy stages to the rescue.

The radio of a crashed aircraft was often used to call for assistance and the dinghy radio when provided could also be used for short range transmission. Aircrew flying over the desert were supplied with special desert packs which contained, in addition to water, food and medical aids, ground signalling strips, signalling discs and codes, maps of the route, and a mirror or heliograph. Dropping of supplies by search aircraft depended largely upon the position of the incident and the distance from any base, and where necessary a supply dropping container (similar to that dropped to partisans) was utilised. Middle East Command also devised a special land rescue kit using a bomb container attached to a parachute, the contents of the container depending upon the conditions of the incident.

After the desert campaign became a thing of the past little flying took place over the desert other than by non-operational aircraft along set routes. When an aircraft was reported missing or in distress aircraft from the Air/Sea Rescue squadrons carried out a creeping line ahead search along the recognised route, unless they were in possession of more definite news of the position of the distressed aircraft.

#### **Mediterranean Allied Air Forces Rescue Squadrons**

By the spring of 1944 Mediterranean Allied Air Forces' three Air/Sea Rescue Squadrons had all become operational on Warwick aircraft and were re-distributed to cover the wide field of rescue in the Western Mediterranean. No. 283 Squadron was stationed at Hal Far, Malta, where on 26 April it carried out its first successful operational search with Warwick aircraft. From April onwards No. 284 Squadron at Alghero and No. 293 Squadron at Pomigliano covered the Sardinian, Corsican and Italian coasts, with detached flights of Warwicks and Walrus amphibians, as required by the trend of

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<sup>1</sup> Mediterranean Review No. 7.

operations. From mid March also Air/Sea Rescue activity increased considerably over the Adriatic and the official Air/Sea Rescue detachments that covered this area were assisted by two flights of United States Catalinas based on Foggia and Grottaglie. As an example of this activity, in May ninety-seven rescue incidents were recorded in the Adriatic of which thirty-three were successful.

During the spring and summer of 1944, increasing use began to be made of Cant aircraft of the Italian Air Force. These were located at Brindisi, Lake Varano and Cagliari, where they did most useful rescue work. In April, one of the first months they were in operation they completed forty-three rescue sorties, in which they accomplished four successful rescues.

No. 283 Squadron received its first three airborne lifeboats in May but the first operational drop did not take place until 22 July, and it was not a success. A Spitfire pilot in combat with a Ju. 88 developed engine trouble and was forced to bale out when over the sea in a position south-east of Malta. The fighter leader gave a fix to base and remained circling his colleague's dinghy until an Air/Sea Rescue Warwick arrived on the scene. The Warwick dropped a Lindholme rescue gear and the Spitfire pilot was able to transfer himself to a larger dinghy without trouble. By this time it was nearly dark and the Warwick dropped flame flares around the dinghy to mark the spot for a second Air/Sea Rescue Warwick which arrived complete with airborne lifeboat. The boat was released but the quick release equipment failed and the parachute broke away in mid-air, the boat being smashed to pieces on contact with the water. The pilot was subsequently rescued by a high speed launch.

Further drops by both Nos. 283 and 284 Squadrons were all equally unsuccessful. In fact up to the end of 1944 Mediterranean Allied Air Forces' lifeboat records maintained a 100 per cent. failure, due in nearly every instance to the non-operation of the parachute release gear. This seemed inexplicable in view of the success achieved at Home with the same type of rescue aircraft and lifeboat.

Apart from the airborne lifeboat failures, Mediterranean Allied Air Forces' rescue service had very successful results during June and July 1944, recording 80 successful incidents out of a total of 143, which represented the saving of lives of 235 Allied aircrew, as well as four of the enemy.

In June, the pilot of a Spitfire was forced to bale out five miles east of Grossette. He was being rapidly blown inshore in his "K" dinghy, when he was located by an Air/Sea Rescue Walrus despatched in response to his S.O.S. The sea was very rough, and although the Walrus was able to alight and pick up the Spitfire pilot, it sprung a leak almost immediately, and both rescued and rescuers had to take to their "M" dinghy. They were soon picked up by a high speed launch, and returned unhurt to base.

In June too, a United States Liberator, damaged by *flak* was forced to ditch north of Ancona. Seven survivors of the crew took to their dinghies, and were soon picked up by a German hospital ship. To their astonishment, after being fed and given medical attention, the German naval captain gave them the option of becoming prisoners of war or being returned to their dinghies. They chose to be put back into the sea, whilst the German ship

broadcast their position. The broadcast was picked up by the Rescue Organisation who despatched a Catalina to the scene to pick up the survivors and convey them to hospital.

### **Operation "Dragoon"**

Whilst the landings in Normandy were meeting with success Mediterranean Allied Air Forces were preparing for the invasion of Southern France. Based on the experience gained at the landings in Sicily and Italy a full Air/Sea Rescue plan was drawn up for this operation, which was known by the code name of "Dragoon".

Mediterranean Allied Tactical Air Forces were to be held responsible for rescue work within the assault area inside a fifteen mile radius of the fighter direction ship. Outside this area air/sea rescue responsibility was undertaken by the 63rd United States Fighter Wing, under Mediterranean Allied Coastal Forces.

The fighter direction ship was provided with a Flying Control team and two high speed launches, whilst H.M.S. *Antwerp*, equipped as an Air/Sea Rescue ship with full V.H.F. control and homing facilities, was stationed between Corsica and the assault area. Aboard the fighter direction ship the Air/Sea Rescue Flying Control team was responsible for initiating any immediate action necessary to effect a rescue and for requesting H.M.S. *Antwerp's* facilities where necessary, including use of her two pinnaces. Special refuelling facilities were also provided for the Air/Sea Rescue launches in the assault area.<sup>1</sup>

Outside the assault area high speed launches and Walrus aircraft were based at Cagliari, Alghero, and Calvi, high speed launches at Borgo and Ajaccio, Italian Cants at Cagliari, and Warwicks at Cagliari and Alghero. Naval assistance was made available in the shape of naval despatch boats, and the Naval Carrier Force was responsible for rescuing any aircrew forced down in sight by detaching a destroyer for the purpose.

The landings which commenced on 16 August met with such light opposition that very little rescue work was necessary. As soon as Mediterranean Allied Tactical Air Forces was established ashore it took over rescue responsibilities up to forty miles from the coast, with the aid of three high speed launches and three Walrus aircraft from Calvi.

August, which gave promise of being an outstanding month for the rescue organisation in the Mediterranean, proved to be most uneventful. Few aircraft were lost during the landings in Southern France and the advance inland became so rapid that there was little flying over the sea. From that time onwards Mediterranean Allied Air Forces' rescue squadrons (with the exception of No. 293 Squadron based in Italy) had little operational rescue work to do, and they provided cover mainly for non-operational areas and transit and ferry aircraft routes. Convoy and escort work added to their responsibilities, but many and varied were the tasks carried out by the rescue squadrons and launches during the latter half of 1944.

The main Air/Sea Rescue commitment of Mediterranean Allied Air Forces at this time was in connection with the operations of the Fifteenth Air Force against some of the most heavily defended targets in Europe.

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<sup>1</sup> A.M. File S. 93711 (*passim*).

No. 323 Wing of Mediterranean Allied Coastal Air Forces, stationed at Foggia, had control of the major part of rescue aircraft and marine craft in the Adriatic, with a flight of Catalina amphibians of the 1st United States Emergency Rescue Squadron, a Warwick detachment of No. 293 Squadron, and an Air/Sea Rescue Unit of high speed launches at Manfredonia. In addition, this wing could call upon the Cants of the Italian Seaplane Wing, Fortresses and Liberators of the United States Fifteenth Air Force, Walrus aircraft of No. 293 Squadron, as well as fighter escorts from a variety of sources.

By co-operation with the Long Range Desert Group, crews who landed on any islands in the Adriatic were guided to locations where they could be picked up by a rescue Catalina. When targets for the Fifteenth Air Force were announced, Air/Sea Rescue facilities were provided to cover the route of the bombers' return journey.

In the six months ending December 1944, No. 323 Wing's rescue organisation was instrumental in rescuing 512 persons from the sea, mainly Allied aircrews but including some German aircrews, Yugoslav partisans, and even Poles deserting from the *Wehrmacht*. Of their many and varied experiences the following rescue is an outstanding example, which earned for the American rescue pilot the British Distinguished Flying Cross.

On 18 July a dinghy containing a Hurricane pilot was located just offshore in the Mljetski channel. Despite the enemy shore batteries which were known to cover the channel, a United States Catalina pilot volunteered to pick him up. The shore batteries opened fire as the aircraft prepared to land, but undeterred, the captain landed his aircraft, picked up the survivor and taking violent evasive action took off and brought his passenger home safely.

The rest of No. 293 Squadron, operating from Italy, continued to see a good deal of operational activity in support of the land battle rapidly moving towards Northern Italy. In October alone 32 aircrews were rescued by, or with the aid of, the Squadron's Walrus and Warwick aircraft and the 21 October proved one of its most successful days when three brilliant rescues were effected in the Venice area in the face of heavy enemy fire. In January 1945 this Squadron carried out an intensive search for the aircraft containing two Members of Parliament lost whilst on a trip to Italy.

Nos. 283 and 284 Squadrons had little rescue work to do, however. Among the few incidents in which No. 283 Squadron (Malta) took a part was the rescue of passengers from the S.S. *Kumonva*. This was a Yugoslav vessel which plied between Malta and Sicily carrying service leave personnel. In the early hours of 27 December, when the worst storm in years was raging, the ship became helpless off Syracuse, owing to engine trouble. Naval vessels were quickly on the scene in response to her distress calls, but were unable to come alongside owing to the heavy seas. Rescue aircraft of No. 283 Squadron were then called upon to help. Flying backwards and forwards over the scene they passed a running commentary to Air Headquarters, Malta, and the naval surface craft. When it became apparent that the ship must be abandoned Lindholme gear and dinghies were dropped successfully to the passengers. All but two of her one hundred and ninety passengers were

picked up by small naval craft, and No. 283 Squadron found that they had aided in saving seven of their own squadron personnel who were proceeding on leave aboard the S.S. *Kumonva*.

No. 294 Squadron likewise had less rescue work to do as operational flying in the Middle East continued to decrease. In September the squadron rescued seven aircrew from the sea, but during the next three months few rescue sorties were flown and no rescues were made. The squadron was kept fully employed, however, for in addition to rescue work its aircraft were called upon to take part in many operations of varying character. One such incident was recorded on 14 October when a rescue Wellington was ordered to search for three night fighter Beaufighters reported missing on a flight to Araxos in Greece. No trace of the missing aircraft was found that day and the Wellington returned to its base at Gambut.

Meanwhile, a Baltimore returning from a raid on Maleme was forced to land on the airfield at Kalamai in Southern Greece. Accordingly, the next day the rescue Wellington was again despatched with instructions to combine the search for the missing Beaufighters with a flight to Kalamai to transport a fitter to examine the damaged Baltimore. Shortly afterwards the Beaufighters were reported safe at Araxos, so the Wellington proceeded to fly the fitter to Kalamai. On arrival there the crew found a party of Greek partisans with some officers of the Allied Military Mission anxiously waiting on the airfield for a supply plane which was a month overdue. It was ascertained that the Baltimore could be made serviceable by replacement of minor spares which the Wellington captain agreed to collect from Gambut. The officers of the Allied Military Mission then asked whether, in view of their desperate shortage of food and medical supplies, it might be possible for the rescue aircraft to bring some supplies from Tobruk on its return trip. The Wellington returned to base, collected spares, loaded up food, blankets and medical supplies together with comforts contributed by every member of the mess, and on 18 October returned to Kalamai where the crew were enthusiastically received.

Undoubtedly their trip was the means of rescuing a number of people from want and even starvation. They completed their task by escorting the repaired Baltimore to Araxos (where lack of petrol forced it to remain) and from there they transported the Baltimore crew to North Africa.

#### **Airborne Lifeboat Operations**

Although the lifeboat was little used in the Mediterranean for its initial purpose of bringing survivors into friendly waters, it proved its worth in the heavily mined seas of the Northern Adriatic, where rescue launches and amphibians dared not venture.

On the evening of 10 March, a Mosquito pilot was forced to ditch his aircraft in these waters, off the German occupied coast of Northern Italy. Attempts were made by Air/Sea Rescue aircraft to rescue the crew in the light of flares, but they had to be given up owing to strenuous enemy opposition.

The next morning a heavy fog descended on the area, but when it lifted during the afternoon a Walrus and a Warwick, escorted by Spitfires, were sent to re-locate the survivors. One man was spotted, standing on the beach beside

his wrecked aircraft, which had floated ashore inside a minefield. The Walrus landed outside the mines and two of the crew attempted to reach the Mosquito by paddling an aircraft dinghy through the mines, but owing to the strong currents this attempt was abandoned. The Warwick was then called up to drop an airborne lifeboat alongside the Walrus. This was successfully accomplished, and two members of the Walrus crew boarded the lifeboat, carefully piloting it between the mines. They found the survivor was the pilot of the Mosquito, the navigator being dead inside the wrecked aircraft. With the living survivor aboard the lifeboat, it was piloted back through the minefield to the Walrus, which then took off, escorted by Spitfires, and returned safely to base.

The month of April brought more success for the Airborne Lifeboat, and included the dropping of a boat on three successive occasions to the same pilot—surely an incident without parallel in the history of Air/Sea Rescue.

On 2 April, Lieutenant Veitch, a South African Air Force pilot of No. 260 Squadron, was over Yugoslavia in a Thunderbolt attacking enemy communications. As a result of enemy *flak*, engine trouble developed and he was forced to bale out in the Gulf of Venice, about five miles off the Istria peninsula. He had transmitted a "Mayday" signal before baling out, and a Catalina of No. 1 Emergency Rescue Squadron was despatched by the Rescue Organisation. The Thunderbolt pilot, in his dinghy, was found drifting in a minefield, which prevented the Catalina from alighting in the vicinity. Assistance was then requested from a Warwick of No. 293 Squadron, which dropped an airborne lifeboat to the survivor. The pilot boarded the boat, steered clear of the mines in accordance with instructions passed to him, was taken aboard the Catalina and returned to base.

Three days later, Lieutenant Veitch's aircraft was hit whilst attacking a train in Yugoslavia. He glided out to sea and baled out over the Gulf of Trieste, in a minefield. He had just climbed into his "K" dinghy when an enemy torpedo boat came out from the shore with the object of picking him up. An escorting Mustang fired at the enemy, which turned back to land. A Warwick came on the scene and dropped its airborne lifeboat, and the survivor climbed aboard. Immediately shore batteries opened fire on him, and German naval craft came out in an endeavour to capture the lifeboat and its occupant. The Warwick's fighter escort opened fire with cannon across the bows of the enemy, but could not deter it from its purpose, so an escorting Mosquito was forced to sink it. This Mosquito then hovered over the lifeboat all day, whilst Veitch started up the lifeboat's engines and headed for the open sea. Next morning a rescue Catalina resighted the boat and instructed the pilot on the course to steer to clear the mines. In spite of the rough sea the Catalina landed and as soon as the lifeboat came alongside, Veitch was pulled into the Catalina.

Not content with these two adventures, the same pilot repeated the performance for the third time on 30 April, baling out south of Lake Marano in a mined area. The next morning a United States Fortress dropped a lifeboat which enabled him to get clear of the minefield, where he was taken in tow by a high speed launch. Lieutenant Veitch came through all three rescues without a scratch, and was awarded an immediate Distinguished Flying Cross.

### **Establishment of an Air/Sea Rescue Service in West Africa**

Although West Africa was never an active theatre of operations, a considerable amount of flying took place in that area during the course of the war in the Middle East and the desert. West Africa formed an important part of the southern reinforcement route for aircraft from Britain, and later from America to the Middle East, and was a base for general reconnaissance squadrons tracking down the U-boats in the South Atlantic. The existence of an Air/Sea Rescue Service was, therefore, very necessary from the beginning of the war. In August 1941, when the first overseas requirements for rescue craft were presented to the Air Staff by the Director of Air/Sea Rescue, West Africa was allotted four high speed launches for use at Freetown and Bathurst. Owing to the overall shortage of marine craft, however, the first two launches did not arrive in West Africa until October 1942, and no more craft followed until July 1943.

The first Air/Sea Rescue Officer was appointed to Air Headquarters, West Africa, in October 1942. A certain amount of rescue work had already been performed by the Sunderland flying boats, stationed at Jui, one aircraft being detailed for rescue work as required. These were equipped with locally improvised rescue kits modelled on the Thornaby Bag, made from kit bags or parachute bags, filled with food, first aid kit, signal and distress flares, the whole packed round with kapok, secured in a ship's lifebelt.

### **A Sunderland Sea Rescue**

One of the early rescues accomplished by these Sunderlands was recorded in October 1942, when the passengers and crew of the S.S. *Oransay* were rescued through the efforts of a searching Sunderland equipped with makeshift rescue packs. The *Oransay* was torpedoed three hundred miles off the coast of Liberia. The next morning a Sunderland on search duty sighted six lifeboats, and after dropping rescue packs, called up a naval vessel to their aid. The following day the Sunderland found nine more lifeboats and on the third day the remaining three lifeboats. Thus all passengers and crew were saved, an achievement of which the Sunderland squadron was justly proud.

In December 1942, supplies of Lindholme rescue gear arrived in West Africa for use with the Hudson aircraft of No. 200 Squadron. West Africa was thus the first Overseas Command to receive and use this rescue equipment. Whilst the supply of rescue equipment was of assistance in improving the rescue service, its efficiency was still hampered at this time by shortage of marine craft, and naval launches provided the bulk of assistance in sea rescue. The size and nature of the Command and the lack of communications also hindered any rapid improvement of the service.

### **Increase in Rescue Units**

In July 1943, Air Ministry raised the establishment of Air/Sea Rescue units in West Africa to five, each with an allocation of two marine craft. During July four pinnaces arrived to be added to the two high speed launches already in the Command, which enabled a unit to be formed at Takoradi, in addition to those already in being at Freetown and Bathurst.

It was intended that the other two units should be stationed at Pointe Noire and Port Etienne as soon as their marine craft arrived. This still left large sections of the coastline uncovered by any rescue craft, but the

United States Army Air Force in Dakar were provided with two rescue launches which could be called upon for assistance, and the French naval authorities expressed their willingness to co-operate whenever possible.

An interesting incident was recorded during August 1943, when by an irony of fate the dinghies of a Liberator shot down by a U-boat were the means of saving enemy lives. On 11 August, Sunderlands and Liberators were despatched to search for a Liberator from Yumdum, overdue from patrol. One of the searching aircraft spotted an empty dinghy and nearby a second dinghy containing seven men. Assuming them to be the crew of the lost aircraft, equipment was dropped to them and a rescue vessel was "homed" to the spot by the search aircraft. On arrival there the seven survivors were found to be members of a German U-boat crew, and search for the Liberator crew was instantly resumed, but without success.

Subsequent interrogation of the U-boat crew revealed the fact that the U-boat had attacked the Liberator and ultimately shot it down, but in the course of the attack the Liberator, in its turn, sank the enemy submarine. All the aircrew were killed when their aircraft crashed into the sea, but the blow-out dinghy stowages in the Liberator operated, and the dinghies were subsequently used by the U-boat survivors. It is interesting to note that a posthumous award of the Victoria Cross was made to the captain of the Liberator, Flying Officer L. A. Trigg.

#### **Allocation of Marine Craft**

By January 1944, the final disposition of marine craft had been settled and the total allocation of boats received in Africa. Two high speed launches were stationed at Port Etienne, two pinnaces at Bathurst, two high speed launches at Freetown, one high speed launch and one pinnace both at Takoradi and at Banana. At Banana, a Belgian possession, a Belgian launch was also available for rescue work.<sup>1</sup> By August 1944, the service had been augmented sufficiently to cover the whole West African coast from Port Etienne to Lagos by the move of the Air/Sea Rescue Unit from Banana to Lagos.

As the U-boat warfare gradually subsided, operational flying became practically non-existent in West Africa, and by the end of 1944 the work of Air/Sea Rescue in West Africa dwindled to a minimum. From March 1943 to February 1945, the Air/Sea Rescue Organisation in West Africa took part in 32 incidents out of 44 reported, and rescued 201 aircrew out of a total of approximately 270. In addition, 649 merchant seamen were rescued with the aid of the aircraft and marine rescue craft of West Africa Command.

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<sup>1</sup> A.M. File S. 70808 (*passim*).

## CHAPTER 8

### INDIA AND THE FAR EAST

In October 1941, the first Air/Sea Rescue Officer was appointed to Air Headquarters, Far East. He did his best to organise some sort of rescue service in Malaya to cover the approaches to Singapore, with the aid of the one high speed launch sent to Singapore before the outbreak of war, a Royal Air Force pinnace and a marine tender, and with the co-operation of naval craft in the vicinity. In spite of the few resources available, this rescue service seems to have met with a certain amount of success, and in December 1941, the service's first full month in operation, it rescued or assisted in rescuing eleven pilots from the sea.

In January 1942, twelve pilots were rescued by the rescue service, with the aid of Moth aircraft of the Malaya Volunteer Air Force, equipped with smoke floats and life jackets to drop to aircrew in the sea. On 23 January the rescue service recorded its first rescue of a Hurricane pilot from a "K" dinghy. After a Moth had kept the dinghy in sight for half an hour, in conditions of bad visibility, a high speed launch picked up the occupant. This January report was the last received in the Directorate of Air/Sea Rescue, and with the fall of Singapore there perished the first attempt to organise a rescue service in the Far East.

India, on the other hand, received no rescue craft until the spring of 1943. The needs of India and the Far East were on the lowest priority and in fact remained very low in the scale as compared with Home and other overseas commands until after the landings on the Continent. Consequently they received little assistance in the shape of rescue equipment prior to 1943, and had few resources from which to improvise their own rescue organisation. Such air/sea rescue as there was during the early years of war in the Indian Ocean area was carried out by the Navy and Fleet Air Arm.

Early in 1942, Air Headquarters, India, asked for assistance in both surface craft and aircraft for rescue purposes, but the general shortage in the more active theatres of war made it impossible to give India any immediate assistance. Nevertheless in February 1942 Air Ministry made application to the Admiralty for the release of sixteen Walrus aircraft, in order that Air/Sea Rescue search squadrons might be formed in the Far East as well as in the Middle East. Although the Admiralty were anxious to help they were unable to release any amphibians specifically for rescue work, owing to the shortage of Walrus aircraft for their own requirements. In April, however, naval authorities overseas were informed by the Admiralty that Walrus aircraft could be made available for rescue purposes by local arrangement, provided that the position of reserves permitted.

In the meantime Air Headquarters, India, hearing of the success of the rescue Lysander aircraft at home, made further requests for assistance in the shape of some of these aircraft.<sup>1</sup> Once again Air Staff was obliged to point out that higher operational priorities governed the provision of aircraft and marine craft. It was anticipated that India would be provided with rescue launches early in 1943. Meanwhile they had to rely upon naval assistance when an emergency arose, and the diversion of operational aircraft if the tactical situation permitted.

<sup>1</sup> A.H.Q. India Signal PX. 6593 dated 2 May 1942.

In January 1942 an order had been given for the production of high speed launches to meet future overseas requirements, at which time the total establishment of Air/Sea Rescue craft overseas was increased from 33 to 66 boats. In February the situation in the Far East made it apparent that overseas requirements must be further increased and a total of 80 craft was earmarked from production for Australasia and the Far East. With the fall of Singapore and the Japanese occupation of the Dutch East Indies, these 80 boats were no longer an immediate requirement for the Far East, but it was agreed by the Air Staff that craft must be made available for future forward operations in that theatre.

During the summer of 1942 machinery was set in motion to obtain American agreement to assume rescue responsibility for the United States zone of operations in the Far East.<sup>1</sup> This agreement having been obtained, it was considered that for forward operations in the British zone in the Far East a total of thirty craft only would be required, making a total of 70 high speed launches allotted in all to the Far East and Indian Ocean areas; 30 for India, 10 for the East African coast (at that time the responsibility of Middle East Command) and 30 for future forward operations. Of this total, it was estimated that 20 would be delivered to India during 1943.

#### **Establishment of Air/Sea Rescue in the Indian Theatre**

In July 1943 authority was given for the establishment of India's first Air/Sea Rescue unit (No. 203) with an allotment of two launches. This was followed in October by the establishment of a second unit. Owing to the diversion of craft for the invasion of North Africa, and other operations in the Mediterranean, however, there were constant alterations to the original allocations, and by the beginning of July 1943 only five high speed launches had reached India. Four more arrived during that month, but from then until January 1944 no further launches arrived and no additional rescue units could be formed.

In February 1943 the Air Staff drew up their Target "H" setting out the planned operational target figures to be achieved by March 1944. In this document it was proposed that India should be provided by that date with one squadron of twenty deep-search and long-range aircraft. When the Expansion and Re-equipment Programme (CW/E/47) based upon Target "H" was issued in the following March, it was anticipated that Warwicks would not be available for India's squadron until June 1944.

Although an Air/Sea Rescue Officer was at last appointed for the Indian theatre of operations in March 1943, he could do little at the outset to put a rescue organisation into working order with the few facilities available in the Command. On the whole the demands for Air/Sea Rescue assistance were very light, except in the Chittagong area, where the original 63-foot Miami launches were based. These were called out from time to time on search for aircraft in distress off the neighbouring enemy-held coasts and on their first operational sorties were successful in rescuing three members of a ditched Wellington.

Credit for early rescue work was mostly due to India's General Reconnaissance Squadrons. One of the few successful rescues recorded in 1943 was that of the crew of a Blenheim from Trichinopoly in August 1943.

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<sup>1</sup> A.M. File S. 72494 (*passim*).

Two Hurricanes and a Catalina were despatched to search for the Blenheim, reported down in the vicinity of China Bay. One of the Hurricanes sighted the occupants in their "M" dinghy and reported to base, whereupon a high speed launch from China Bay was called up. The Hurricane led the launch to the dinghy, the three survivors were picked up and the dinghy salvaged, only two hours after the original distress call had been received from the aircraft.

India's Air/Sea Rescue Squadron was to be formed as No. 292 Squadron with an establishment of 16 plus 4 Warwicks. In September 1944, it was agreed that an amphibian element should be introduced into the squadron, as had been found advisable both in the United Kingdom and in the Mediterranean. Accordingly, No. 292 Squadron's establishment was augmented by the addition of five Walrus aircraft.

The lack of any co-ordinated rescue facilities in the Indian Ocean placed emphasis upon the need for early provision of this squadron, and it was decided in September to bring forward the date of its formation so that one half might be operational by February 1944, and the second half by 1 March 1944.

Air Headquarters, India were advised of this decision, and at the same time informed that they might expect to receive ten Warwicks by mid-January, whilst the Walrus were to be supplied concurrently from Admiralty stocks in India.

In November 1943, the first consignment of rescue equipment was sent to India, supplies of both Lindholme gear and the Bircham Barrel being despatched. Whilst the lack of special rescue aircraft still hampered rescue proceedings, the supply of this rescue apparatus enabled any operational aircraft employed on search to carry aids to rescue. The successful rescue of a U.S.A.A.F. crew to whom a Lindholme gear was dropped, was recorded within the same month.<sup>1</sup>

An Air/Sea Rescue Organisation based on the system in force in the United Kingdom, adapted to local conditions, had been formed in India by November 1943. Though still far from complete, at this time it was agreed that the responsibility for rescue of both Royal Air Force and Fleet Air Arm aircrew (hitherto unofficially accepted by the Navy and the Fleet Air Arm) should now be undertaken by the Royal Air Force, the Navy being called upon for assistance when necessary. The organisation was planned to be in full operation by March 1944 by which time it was hoped that India's Air/Sea Rescue Squadron would be operational.

In November also, the Air Staff reviewed the overseas requirements for Air/Sea Rescue squadrons, when it was agreed to increase the amphibian element of India's squadron by five Walrus/Sea Otter. At the same time, it was decided that the requirements of Middle-East outside the Mediterranean should be amalgamated with those of the Indian Ocean, and the entire responsibility be taken over by India (now becoming part of South-East Asia Air Command). The operational control of the coastal areas of East Africa was already in the hands of No. 222 Group, Ceylon.

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<sup>1</sup> Despatch from C.-in-C.—A.C.S.E.A., November 1943.

In December, South-East Asia Air Command were advised that their target was now a composite squadron of twenty Warwicks and ten Walrus/Sea Otter, but that owing to the setbacks in preparation of Warwicks for overseas and the limited training capacity available for crews, it was unlikely that ten Warwicks would reach India by January 1944, as had been originally forecast.

At the end of January Air Command South-East Asia was told the sad story (already so familiar to the Mediterranean Air Forces) that the teething troubles of the Warwick had necessitated a large number of modifications, thus holding up preparation of the aircraft allotted to India. They were warned that no forecast of delivery could be given and recommended not to place any reliance upon their early arrival for assistance with rescue arrangements.

In spite of the various setbacks, the long-awaited flow of Warwicks began in April. Sea Otters also arrived by sea, Walrus aircraft having already been obtained from the Navy on the spot. With the provision of these aircraft the formation of No. 292 Squadron was commenced at Jessore. It was intended to base detached flights of Warwicks at Bombay and in Ceylon, whilst the Walrus were located in Ceylon, and the Sea Otters at Chittagong to give protection to aircraft operating along the west coast of Burma. Until sufficient Air/Sea Rescue aircraft were available for all these demands, searches continued to be carried out by operational aircraft, carrying the Lindholme gear whenever possible.

During the early part of 1944, when the Warwick section of No. 292 Squadron were still forming and training, most of the air/sea rescue searches around the coast of India continued to be carried out by aircraft of No. 231 Group, mainly Wellington aircraft. In several cases United States amphibian Catalinas of the Eastern Air Command assisted in successful rescues. One such rescue was recorded on 17 April when two Wellingtons were despatched to search for the crew of a Beaufighter reported in distress in the Chittagong area.

The Wellingtons were successful in locating the two members of the Beaufighter crew in their dinghy, and dropped them a Lindholme gear. The survivors were able to clamber into the Lindholme dinghy and they trailed a fluorescine marker behind them as they drifted in a south-easterly direction, in order that the searching aircraft might be able to keep them in sight for the rest of the day. Early next morning another Wellington re-located the dinghy and called up a United States Catalina to the rescue. The Catalina alighted on the sea alongside the dinghy, took off the survivors and returned them safely to base.

With the provision of No. 292 Squadron the rescue organisation in South East Asia Command began to show a marked improvement. By June 1944, the shipping position had permitted further allocations of high speed launches, which were now based all round the coasts of India and Ceylon from Karachi to Chittagong to a total of 45 craft. Plans were already in being to provide two Air/Sea Rescue units in the Persian Gulf, at Jiwani and Jask, and these units became operational at the beginning of August. The supply position of ancillary rescue equipment was slowly improving and its maintenance

in good order was assisted by the arrival in the Command of a number of safety equipment workers. Air/Sea Rescue Liaison Officers were appointed to the staffs of Eastern Air Command, Third Tactical Air Force, and the various operational Group headquarters. Limiting factors in the successful operation and efficient control of the rescue organisation were the distances involved and the lack of telephonic and wireless communication facilities. These were further aggravated by a shortage of signals personnel throughout the Command.

In June 1944, the Air/Sea Rescue Service played a successful part in going to the rescue of a crew of a B.29 (Super-Fortress) which crashed near the estuary of the Sangu River. On 5 June the operations room at Chittagong received a series of calls from a Super-Fortress in the area indicating that it was in distress. The last call recorded that the aircraft could not make land and would have to ditch. Spitfires from Chittagong were ordered to search for the aircraft while a high speed launch was despatched to the river-mouth. Within twenty minutes the Spitfires sighted the ditched B.29 lying on a mud bank with water over the main and tail planes.<sup>1</sup> One Spitfire remained in the vicinity whilst another returned to the river-mouth and led the high speed launch to the aircraft. The launch picked up six survivors from two dinghies, including one badly injured man, and then noticed that one member of the crew was still sitting aft on the fuselage. A dinghy was launched to bring him off and returned with the news that the remaining four aircrew members were trapped in the pressurised after-compartment in the aircraft tail. A second high speed launch was then brought to the scene and efforts were made to break into the fuselage. The tide defeated the attempt but at low tide efforts were renewed, with the assistance of a mine-sweeper, under the direction of the captain of the Super-Fortress who alone was familiar with the aircraft's construction.

All next day salvage operations were continued without result, although it was known that none of the four men could still be alive. Eventually the hull became completely waterlogged and was blown up by the salvage crew. Throughout the entire rescue operation Spitfires patrolled over the scene, and V.H.F. contact was maintained between the launches, the search aircraft and the ground stations.

Throughout the summer and autumn of 1944, the Air/Sea Rescue Organisation continued its build up. The Warwick aircraft were not proving very successful, however. Added to the maintenance troubles which gave this aircraft a high rate of unserviceability in all countries, the climate of India caused rapid deterioration of the fabric, a trouble which had already been experienced with the fabric covered Wellington. Although the substitution of the Lancaster Mark III was proposed as a solution, this type of aircraft could not be spared until sometime after the cessation of hostilities in Europe.<sup>2</sup>

The shortcomings of the rescue service in India were brought to a head in November through a complaint from the General Commanding XX Bomber Command, who expressed great concern at the lack of rescue facilities, in the Bay of Bengal area in particular. He had no complaint against the organisation

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<sup>1</sup> A.C.S.E.A. A/S.R. Report—August 1944.

<sup>2</sup> A.M. File S. 72484.

of the rescue service, but was perturbed at the number of unsuccessful rescue incidents, involving United States aircrew, due to a lack of rescue personnel, aircraft and communications. He also expressed the opinion that the Royal Air Force marine craft available had insufficient range for many of the distances required, and that the Royal Indian naval launches were not always available, and were very slow.

Incidents quoted to give point to this complaint included one where a B.29 crew were located three hours after ditching in the Bay of Bengal, but due to lack of marine craft were not picked up until two days later, when a Royal Indian Navy motor-launch effected the rescue. Another case was that of two B.29's lost when on search for a missing aircraft. Only one Catalina could be made available for search by the rescue service necessitating the diversion of further United States aircraft from operational missions.

To offset the unserviceable Warwicks, as a temporary measure A.C.S.E.A. employed their Catalina flying boats and General Reconnaissance Liberators for rescue work. In December it was agreed that No. 212 Catalina (Flying Boat) Squadron should be employed in an Air/Sea Rescue rôle and stationed at Karachi to cover the Bay of Bengal and the west coast of India, whilst No. 292 Air/Sea Rescue Squadron detachment from that area was moved to Ratmalana (Ceylon).

In January 1945 this was followed by the move from Italy of two flights of the United States First Emergency Rescue Squadron, to form No. 7 Emergency Rescue Squadron, equipped with Catalinas and B.17's fitted with airborne lifeboats. It was thought that with the provision of this squadron and the employment of No. 212 Squadron, the A.C.S.E.A. Rescue Organisation would be provided with aircraft which could carry out the long range searches so necessary in the Indian Ocean area, and drop airborne lifeboats at a distance greater than that which could have been achieved by the Warwick.

### **Long Range Rescue Craft**

The complaint made by the General Commanding XX Bomber Command that Royal Air Force rescue craft in A.C.S.E.A. had insufficient range had already been realised by the Royal Air Force and it was appreciated that as the sphere of operations moved forward, rescue craft with a range far in excess of that provided by high speed launches would be essential to the success of any rescue operations.

In May 1944, D.D.A/S.R. had stated an operational requirement for a new type of rescue craft suitable for use in the Indian Ocean and Far Eastern Theatre, to be known as Long Range Rescue Craft (L.R.R.C.).<sup>1</sup> It was desired that such a boat should have a range of 1,500 to 2,500 miles at normal speeds, with a maximum cruising speed of approximately 35 knots, and should provide living accommodation for a crew, and fuel capacity sufficient to enable craft to operate away from base for a period up to fourteen days. The Admiralty was approached to provide a craft to meet this requirement and in the following August agreed to make available to Air Ministry and Ministry of Aircraft Production facilities for the construction of long range craft.

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<sup>1</sup> A.M. File S. 96199 (*passim*).

It was evident that a considerable time would elapse before these could be put into production. As an interim measure, therefore, arrangements were made for Admiralty to supply a number of "D" Type Fairmile launches fitted with Packard engines and equipped for Air/Sea Rescue work. Whilst the "D" Type Fairmile had a range of 1,500 miles at normal speeds, its maximum cruising speed was only 24 knots. The Admiralty estimated that 40 of these launches could be made available in time to commence despatch from the United Kingdom in March 1945 and Air Command South East Asia was informed accordingly.

Preparation of these craft made progress during the autumn and winter of 1944, but maintenance problems began to arise owing to the wooden hulls of the Fairmile launches being liable to extensive damage from the Toredoworm. To correct this it would be necessary to dock craft every few weeks for inspection and India had very limited docking facilities. Alternatively the hull could be copper-sheathed, but this would reduce the maximum speed to 18 knots.

After considerable discussion between the Air Ministry and the Admiralty, it was decided that failing any more suitable craft the despatch of the Fairmiles must be undertaken. By March 1945 however, on account of delays in delivery and equipment, no craft was available for despatch and it was reluctantly decided to postpone delivery until after the Monsoon period, i.e., until July 1945.

Neither the Air Ministry nor the Admiralty were satisfied, however, that the Fairmile had the exceptional sea going qualities required for long range work and the provision of suitable maintenance facilities still remained a serious difficulty. Accordingly the Air Council approached the Admiralty to provide naval rescue craft for South East Asia.

Whilst the Admiralty were considering this request two units of Fairmiles completed their acceptance trials and at the end of July started on their long sea journey to India. On arrival in the Mediterranean they were halted; as in the meantime, agreement had been reached to provide naval craft from those already available in the Indian Ocean. On 4 August, Air Command South East Asia were informed that no Fairmiles would be delivered to them, nor would they be employed east of the Suez Canal, as the Commander-in-Chief, East Indies, had agreed to employ twelve Flower-class corvettes, manned by naval personnel, for long range air/sea rescue in South East Asia.

This decision not only overcame the difficulties of maintenance but had the added advantages of saving Royal Air Force man-power and providing long-range rescue craft with the minimum of delay, since it would have taken approximately three months for the Fairmiles to become operational in India. This change of plan had only just been promulgated when, on 15 August, the Japanese High Command surrendered to the Allies.

### **Jungle Rescue**

In the Far Eastern war flying across the jungle was undertaken as frequently as flying across the sea. Until late in 1943 rescue of aircrew forced to bale out in the jungle was the responsibility of the Army working in conjunction with Air Commands, India and South-East Asia.<sup>1</sup> A considerable amount of research regarding the survival and rescue of ground personnel

<sup>1</sup> A.M. File S. 97133 (*passim*).

had been made by Wingate's Army in Burma, by Combined Operations, and by the Inter-Services Research Bureau ; and the knowledge gained was made available for aircrews by the setting up of a Royal Air Force Jungle Self-Preservation School at Poona. On arrival in A.C.S.E.A. all aircrews were given three weeks training at the School.

By the end of 1943 A.C.S.E.A. had realised that a standard type of flying overall and jungle kit pack should be made available for aircrews to assist them in escaping from enemy territory through the jungle, and in January 1944, the first issues of this standard kit were made. It is rarely possible for aircraft to force land in the jungle, consequently crews had to be provided with the maximum amount of personal equipment they could carry individually, in order that they might bale out provided with sufficient facilities to maintain life and health until a return to base could be effected.

In friendly territories close to our forward lines, aircrews landing in a clearing or open jungle could generally remain in or return to the vicinity of their aircraft with every hope of being visually located. Few attempts could be made to rescue aircrews from the hinterland of Burma, however, where it was nearly impossible for searching aircraft to see either them or any signals they might make. Aircrews, therefore, had to be left to their own initiative to find their way back to Allied lines with the aid of their jungle kit and such training as they had had in jungle survival, with very little hope of being located en route by any search aircraft from which further supplies could be dropped to them. An important part of the jungle survival training therefore was to teach aircrews how to live "off the land" and to provide them with such things as snares, fishing lines, etc., to enable food supplies to be secured from natural resources.

Early in 1944 it was decided that the Deputy Directorate of Air/Sea Rescue should assume responsibility within the Air Ministry for co-ordination of all matters relating to jungle and desert rescue and to the collation of relevant information on these subjects.

Although training and organisation of jungle rescue must perforce be left as a Command responsibility, the Directorate of Air/Sea Rescue contributed to the improvement of survival methods by initiating the provision of a light-weight flying overall (which was an improvement on the locally produced article), and an individual tropical survival pack. This tropical pack, which was almost rectangular in shape, could be sewn to the back of the Mae West or attached to the parachute harness for carriage in the aircraft. It was closed with a zip fastener and its contents included waterproofed matches, fire-making tablets and a burning glass, water-purifying tablets, and a flexible water-bottle, razor blades and a clasp knife, emergency rations and a first-aid kit, a compass and a heliograph. In addition, for personal protection from the sun and mosquitoes, a sun-hat with mosquito head-net was provided together with spare socks, soft leather gauntlet gloves and mosquito repellent. For purposes of identification amongst native races a Union Jack and an American flag were also included in the pack.

The light-weight flying overall was provided with similar items of equipment contained in suitably disposed pockets, together with a haversack for carrying the equipment when on the ground. Equipped with either of these aids a man could survive in the jungle and make his way back to civilisation

with the exercise of commonsense and a spirit of improvisation. During the summer of 1945 both overall and tropical pack became available from production for issue to aircrews in South East Asia.

### **Rescue Results**

Before the formation of the Air/Sea Rescue Service in South-East Asia Command in June 1943, no record had been maintained of rescue operations in that area. From June 1943 until the end of the Far East campaign 150 aircraft involving 700 aircrew were recorded in distress over the sea. In 88 of these incidents successful rescues were effected; 327 aircrew being saved, representing nearly a 50 per cent. success.<sup>1</sup> These figures would appear to contradict the statements made regarding the unsatisfactory state of the rescue organisation but it must be borne in mind that the majority of the successful rescues were effected with the aid of operational rather than of Air/Sea Rescue aircraft and the number of aircraft lost over the sea represents a small total for twenty-six months of operations.

Although not forming a part of the Rescue Service, credit must be given to the rescue work undertaken by the General Reconnaissance Catalinas of Air Command, South-East Asia, in co-operation with naval and merchant vessels. By their united efforts 1,304 shipwrecked mariners were saved during the twenty-seven months ending 31 July 1945.

### **Air/Sea Rescue Plans for the Closing Stages of the Far Eastern Campaign**

Up to the end of the War in Europe the history of the rescue organisation in South East Asia was almost negligible, owing to the few facilities available to them for effective operation. They had to be content with the minimum assistance in building up their rescue service, owing to the demands made in the European and Mediterranean spheres of operation.

Once the war in Europe was over, every effort was directed to reinforcing the rescue facilities in the Far East. With the effective contribution of aircraft, long range marine craft, and rescue equipment planned to reach South East Asia during the latter half of 1945, it was considered that their Air/Sea Rescue Organisation would be ready to play its full part in the closing stages of the war against Japan.

By the beginning of June No. 292 Squadron had been disbanded and re-formed into seven separate flights; Warwick/Liberator flights based at Agaterla and Kankasanturai, and Sea Otter flights at Akyab, Ratmalana and Mingaladen. During July despatch commenced of Warwicks Mk. I specially treated with aluminium dope as a temporary solution to the Warwick fabric problem, and to tide over the period until the Lancasters became available at the end of 1945. In addition to these improvements No. 212 Catalina Squadron commenced re-equipment to Sunderlands Mark V in August. It was decided to re-equip all general reconnaissance flying boat squadrons in the Far East with the Sunderland although it could not carry the airborne lifeboat. The advantages were that it was easier to maintain and of greater seaworthiness.

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<sup>1</sup> A/S.R. Official Statistics.

Over and above the plans for the normal reinforcement of the Air Force in South East Asia for the second phase of the war, a special very long-range force of Lincoln bombers was also being prepared for that theatre. A special rescue flight was planned as part of this force and it was intended that this should be equipped with Lancasters and amphibian Catalinas. Before this special reinforcement could be put into effect, the Japanese surrender was complete.

## CHAPTER 9

### DEVELOPMENTS DURING THE FINAL STAGES OF THE WAR

#### Rescue Equipment

Despite the fact that the highlight of 1944 was the re-entry into Europe, the work of improving existing rescue aids and developing new ideas continued unabated, the needs of the Far East being kept high in the list of operational requirements. The most important requirement for survival in the tropics is almost certainly water. To this end the existing emergency equipment was revised to make more stowage space for water, improvements made in the desalting kit ; and experiments conducted with varying types of solar stills.

*Desalting Kits.* Whilst the original desalting outfits were slowly coming off production in 1944, experts had already commenced experiments with improved and redesigned types of apparatus.<sup>1</sup> The Permutit Company of New York developed a flexible plastic purifier made of a material known as Vinylite, but this material left an unpleasant taste in the drinking water produced with it.

The Permutit Company of Great Britain experimented with their own versions of the American flexible purifier in an endeavour to reduce the size of the desalting outfit, and to improve upon the pump method of producing the drinking water. In May 1944, they produced an outfit similar to the American apparatus but with the purifier made of rubberised fabric and the drinking cup of cellulose acetate. This had a tremendous advantage over the original outfit as each unit was self-contained. The flexible purifier and nine charges of reagent in a light waterproof bag were all enclosed inside the plastic drinking vessel, which had a black plastic lid, sealed to the drinking vessel when packed. The use of the pump was eliminated, drinking water being squeezed through the filter by manipulating the flexible purifier.

Production of these desalting kits was very slow, owing mainly to labour troubles. The minimum rate of production needed to meet Royal Air Force and Fleet Air Arm requirements was 2,500 sets per week. Early trials of the improved sets in South East Asia revealed that high tropical temperatures caused the cellulose acetate container to become deformed and a new type of perspex container was substituted.

The desalting kit was of too great a bulk for inclusion in single-seater dinghies, but experiments to overcome this were carried out meeting with some success. Fighter pilots were provided with a certain quantity of water by the addition to their "K" dinghy pack of a water cushion.<sup>2</sup> This water cushion contained a rubber water-bottle capable of holding up to three pints of water. It was attached to the seat pack ("A" type) "K" dinghy by means of loops, in the cases of the back pack ("B" type) or observer type ("C" type) the cushion was attached to the Mae West by a lanyard ;

<sup>1</sup> D.D.A/S. R. Folder S, 21.

<sup>2</sup> A.M. File S. 70803.

and, in all cases, even if the water was not required for an emergency, it offered additional comfort to the user during long range fighter operations. Issue of this water cushion to single-seater fighter aircraft and to the Fleet Air Arm was completed by the spring of 1945, and was followed by issues to twin-engined fighters.

*Solar Stills.* The United States Air Forces in the Pacific developed types of solar stills which produced drinking water by the process of condensation. The simplest and most compact was the "pillow" model. This was made of a very fine translucent plastic material known as P.V.C. (Polyvinyl-chloride), with an inner sheet of viscose sponge. The method of operation was to fill the pillow with sea-water and drain it out again, then inflate the cover by means of the mouth and the tube provided. Left in the sun, the drops of moisture remaining in the sponge evaporated by the action of the sun. Condensation then occurred on the inside of the transparent cover and drinkable water was thus produced at the rate of 35 fluid ozs. per average day's sunlight.

Orders were placed with America for 50,000 of these stills so that an issue might be made to all operational flying personnel for placing in the dinghy stowage of all aircraft operating in the Far East and Pacific theatres.

*Aids to Location.* Another outstanding requirement during operations in the vast tracts of sea of South-East Asia was an efficient aid to location. All multi-seater aircraft carried the American dinghy radio (SCR.578) whilst single-seater pilots were provided with "Walter" in their "K" dinghy packs. Both these location aids had certain disadvantages—the dinghy radio had to be manually operated—a drawback where survivors were injured or exhausted; "Walter" relied upon batteries, the lives of which were not long and could be seriously curtailed when subjected to extremes of temperature.

The American Air Forces developed a collapsible Corner Reflector known as "Emily" which overcame these disadvantages.<sup>1</sup> This reflector consisted of a lightweight collapsible structure, with reflecting planes of wire mesh made of monel metal that opened out like an umbrella. Three reflecting planes facing at right angles were capable of directing back to the source a large proportion of the radar energy intercepted by them, which could be detected by aircraft equipped with the appropriate radar equipment (centimetre A.S.V.). Two types of "Corner" were available for multi- and single-seater dinghies respectively.

The United States planned an extensive Air/Sea Rescue Service in the Far East and it was felt that Royal Air Force crews would receive the benefits of such service if they were equipped with the necessary location aids. In consequence, orders were placed with America for supplies of Corner Reflectors, for use as a supplement to "Walter" both in home and overseas waters, and issue commenced before the end of the Japanese War. At the same time steps were taken to fit Warwick, Catalina and Lancaster Air/Sea Rescue aircraft with the radar equipment (Mark VIII A.S.V.) necessary for use in conjunction with these location aids.

*Personal Packs.* It was proposed to improve the rescue equipment carried in aircraft by the addition of a personal pack.<sup>2</sup> In addition to the rescue aids packed in the dinghy stowage, twin and multi-engined aircraft carried

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<sup>1</sup> A.M. File S. 103910 (*passim*).

<sup>2</sup> A.M. File S. 70802.

emergency packs containing food, drink, and distress signals. In the event of an aircraft ditching it was necessary to retrieve these packs from their stowage within the fuselage, and in an emergency they frequently failed to reach the dinghy, either being dropped in the sea or left in the aircraft. An analysis of ditchings showed that emergency packs were successfully retrieved in less than fifty per cent. of the total successful rescues.

During 1944 experiments and tests were carried out to design a personal emergency pack which could be issued to individual aircrew, other than pilots. In the event of an imminent ditching this pack would be strapped to the individual, thus ensuring that a portion, if not all, of the emergency equipment had a chance of reaching the dinghy. In December 1944 approval was given in principle to the use of the personal pack and authority given for production.

This personal pack became available from production at the beginning of August 1945. It consisted of a bakelised-fabric container in which was enclosed a desalting kit, emergency rations, a heliograph, signal cartridges and water storage bag. It was provided with a strap to be slipped over the head and tied round the waist in the event of an emergency, thus leaving the individual free to direct all his resources to leaving his ditched aircraft. The contents of the personal pack were being standardised for both home and overseas commands, such special equipment required for tropical areas of operation being included either in the dinghy pack or in an aircraft stowage.

*Inflatable Exposure Suits.* For a long time there had been a demand in the Royal Air Force for a type of protective clothing for use in a dinghy. Aircraft heating systems had been so improved during the war that crews frequently flew in battle dress without any outer flying clothing. In the event of an emergency ditching they were more liable therefore to the effects of prolonged exposure.<sup>1</sup> The carriage of extra clothing in the aircraft did not meet the case, as experience had proved that in an emergency anything carried loose in the aircraft was frequently left behind.

A protective suit was required, therefore, which could be carried on the person without difficulty or discomfort and which could be donned after boarding the dinghy. During 1944 continuous experiments and trials were carried out at the Royal Air Force Physiological Laboratory and by July, from the various types of suits produced, a suitable design had been evolved which was then submitted to service trials.

The suit as accepted for production was made of a very fine double rubberised fabric with feet, hands, and hood, to envelop the body completely. It was provided with a valve so that it might be inflated by means of the mouth, the layer of air between the two layers of material thus affording additional aid in retaining body heat. The weight of the suit was only two pounds thirteen ounces, and it was easily carried rolled in the stole of the Mae West, together with a small air cushion for the survivor to sit on when in the dinghy. It was the intention to provision this suit for all aircraft operating over long sea routes, both in Europe and in the Far Eastern theatre of war. Production commenced but the limited amount of rubber available for the fabric was a hindrance to manufacture in any large quantity.

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<sup>1</sup> A.M. File S. 72401 (*passim*).

*Shark Deterrent.* A shark repellent adopted by the United States Air Forces in the Pacific consisted of a mixture of chemicals in block form which, when released in the sea, rendered the water nauseating to sharks and at the same time produced a dense black cloud similar to that made by an octopus.<sup>1</sup> Orders were placed with the United States for supplies of this deterrent for issue to the Fleet Air Arm and the Royal Air Force in the Far East. It was intended that the pack should be attached to the Mae West and provided with a release tag so that a man in the sea or aboard a dinghy could release it at will. Shark deterrent was provided unofficially by the United States Air Forces direct to the Royal Air Force in South-East Asia.

### **Rescue Dropping Gear**

Although the Lindholme gear was in constant use in all operational theatres, it was felt that some improvement could be made on the other types of supply-dropping gear such as the Thornaby Bag or Bircham Barrel. A supply dropper was also required to drop supplementary supplies of petrol to airborne lifeboats.

*Supply Dropper "F".* During 1944 successful trials were carried out with a new type of supply dropper known as type "F". This was a cylindrical container which could be dropped through the flare chute of almost any type of aircraft, the number of cylinders carried varying with the size of the aircraft. The contents of each were a torch, distress signals, water, and "Walter", and the head of the cylinder contained a pilot-type three-foot parachute which opened on dropping and checked the rate of descent. The original model was provided with a flame float to be used as an indicator when dropped, but this was found to be unsuccessful from the point of view of being reached by the survivor. One hundred and seventy yards of buoyant cord were substituted so that the cylinder could be readily reached and hauled into the dinghy. The first five hundred of these new supply droppers became available from production in early August.

*Petrol Dropper.* As well as development of a new supply dropper, 1944 saw the development of a petrol supply dropper. This was a simple device made of plastic material, in the form of a large tube, which held up to one and three-quarter gallons of petrol. The container was filled to two-thirds of its capacity and simply dropped to survivors in an airborne lifeboat from the bomb racks of an aircraft. The air in the container gave it buoyancy to float until it could be picked out of the water by the crew of the lifeboat. These petrol droppers were introduced to the Service during the spring of 1945.

### **Land and Mountain Rescue**

In December 1944 the Inspector-General recommended that the Deputy Directorate of Air/Sea Rescue should be responsible within Air Ministry for the safety, welfare, and rescue of all force landed aircrews.<sup>2</sup> The Deputy Directorate being already responsible at Air Ministry level for crews who force landed in the desert or jungle, the adoption of this recommendation meant that it became responsible for crashes anywhere on land, as well as anywhere at sea.

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<sup>1</sup> D.D.A/S.R. Folder S. 86.

<sup>2</sup> I.G. Tour Report No. 1. December 1944.

Crews crashing in normal land areas did not present any great problems of welfare and rescue, but the Deputy Directorate undertook the study of all accident and crash reports, in order that recommendations might be made to the appropriate service department, where additional safety precautions might have prevented or minimised the accident.

As regards crashes in the mountains, a form of unofficial mountain rescue service was first initiated in 1942 by the Royal Air Force Station, Llandwrog, to search for and rescue crews of aircraft which crashed in the mountains of North Wales. Similar action was subsequently taken by other Royal Air Force Stations situated in the vicinity of high ground throughout Great Britain, and the service offered by these stations was co-ordinated by the Deputy Directorate of Air/Sea Rescue.<sup>1</sup>

As no personnel were specifically established for mountain rescue duties, but were recruited as far as possible from volunteers with a knowledge of mountaineering and hillclimbing, no uniform organisation was laid down. In general, however, the rescue party was organised under the direction of the Station Medical Officer and was divided into advance, support, and carrying sections. The party was equipped with suitable transport (a Humber ambulance and two jeeps) and provided with navigational and communication aids, medical stores and equipment, climbing aids and suitable clothing, as well as rations and cooking utensils.

When notice of a crash was received by Flying Control the advance search party immediately prepared for action. The estimated location of the crash was studied and an appropriate route selected after which the party set out in the ambulance and the jeeps. It was rarely possible to take the vehicles right up to the scene of the crash, and a mountain base was established at the head of the nearest track. The ambulance contained a powerful wireless transmitting and receiving set, and as soon as a mountain Headquarters had been established, contact was made with the base Station who by this time were usually able to inform the rescue party how many persons were involved in the crash, and give other relevant details. The support party was then called up from the base and search was commenced, contact being maintained between searchers and mountain Headquarters by means of "walkie-talkie" portable radio sets. Sometimes air co-operation could also be enlisted, when aircraft made contact via the mountain Headquarters with the searchers, and vice-versa. When survivors were found first aid was administered and the seriously injured taken to station sick quarters by ambulance.

There were many stories of interesting mountain rescues of which the following is one. Information was received at Llandwrog Royal Air Force Station, North Wales that a training aircraft had crashed some thirty miles away in the mountains. Early the following morning two of the surviving members of the crash managed, despite injuries, to reach a village in the neighbourhood of their crashed aircraft. The rescue party set out for the village, but found the men in such a dazed condition that they gave little reliable information. The only solution was to search the valley and the surrounding mountains on both sides. A second search party was called

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<sup>1</sup> A.M. File S. 02456 (*passim*).

up from base and a thorough search continued throughout fourteen hours, but without result.

Early the following day a third party was summoned from Headquarters and a request was sent for an aircraft to assist in the search. Visibility was so poor however that the pilot of the aircraft was forced to return to base almost immediately. At mid-day a third survivor arrived in the village, and was able to give more precise information as to the scene of the crash. All the search parties were recalled to the mountain base where they pieced together their information, after which it was decided to establish a new base at a more distant point. The search party set out once more and during the course of the afternoon the news came to the mountain base that the crashed aircraft had been found, together with the remaining member of the crew who was suffering from a fractured leg. Tea and blankets were sent up the mountain side, the leg was placed in splints and the patient rapidly conveyed by stretcher to the ambulance and thence to hospital.

From 1942 to 1944 a total of 82 survivors were rescued from the 347 aircrew involved in 81 crashes in mountain districts of Great Britain.

### **Rescue Results**

Up to the end of war in Europe the Rescue Service provided cover for the air operations connected with the final assault of Germany. The American rescue squadron, known as the Fifth Emergency Rescue Squadron, took its full share in this rescue work, using amphibian Catalinas and Fortresses equipped with airborne lifeboats, in addition to its Thunderbolt search aircraft.

Between 1 January and 30 April 1945, the rescue services were responsible for saving the lives of 241 aircrew in 72 successful incidents, out of a total of 258 incidents recorded involving 1,053 aircrew. Aircrew saved from home waters since the inception of the rescue service in February 1941, to the end of the War in Europe totalled 5,721. In addition, 4,665 non-aircrew personnel were rescued at home and overseas, as well as 277 German and Italian enemy airmen.

Included in the above figures were six American airmen, crew of a rescue Catalina of the Fifth Emergency Rescue Squadron. They were rescued after one of the longest and most daring efforts on record, after having been adrift in the North Sea for one hundred and nine hours.

The Catalina was called out on 30 March to the rescue of a Mustang pilot floating in his dinghy three miles off Schiermonnikoog. It set off, accompanied by two Thunderbolts and successfully alighted near the dinghy. When within a wingspan of it, a wave smashed one of the Catalina's engines. Ropes and lifebelts were thrown to the fighter pilot, but he drifted away and was not seen again. The Catalina, now unable to take off, drifted on the water. Headquarters No. 16 Group were asked to send assistance and a Warwick was immediately despatched to the position but sighted nothing.

Early the next morning, another Warwick continued the search accompanied by four Mustangs. Within two hours the Catalina had been sighted and an airborne lifeboat dropped to the crew. The Catalina pilot then attempted to taxi his aircraft to the boat, but owing to the heavy seas, the boat was smashed by the tail of the Catalina and subsequently sank. Another

Warwick with fighter escort then succeeded in dropping a second boat which the Catalina crew boarded but found it sinking and returned to their aircraft. Shortly afterwards an enemy jet-propelled aircraft attacked the Catalina, shooting up the tail with one burst and severing the wing with a second. The crew of six took to their three dinghies and were soon found by other search aircraft. A Fortress of the United States Rescue Squadron then came on the scene and succeeded in dropping an American airborne lifeboat. The survivors managed to board the boat and soon started the engines. From a position fifteen miles north-west of the Island of Nordeney they proceeded in a north-westerly direction for thirty-six hours before they ran out of petrol.

For the whole of the first two days of April, search was made for the survivors in their lifeboat, but owing to bad weather the searches were all unsuccessful and during the second day, a Beaufighter and crew were lost, crashing into the sea whilst on search. On 3 April, two Warwicks with an escort of Mustangs again set out on search and before long picked up an automatic S.O.S. signal transmitted by the dinghy radio in the lifeboat. After several attempts to home on the signals, the lifeboat was successfully contacted. Lindholme gear, petrol droppers and a fourth lifeboat were dropped to the survivors, and visual signals were made to them to use their oars in an endeavour to obtain petrol and food from the boat that had just been dropped. The distressed crew did not recognise the petrol containers as such, but they succeeded in reaching the lifeboat which was the latest arrival, and in transferring petrol and equipment from it to the American boat.

They could not start the engines again, however, and as the waves were becoming very high, they were constantly sea-sick and could do little to help themselves. During the day, other search aircraft dropped more Lindholme gear and further supplies of petrol, and at last the survivors picked up some of the petrol containers, but signalled to the aircraft that they could not start their engines.

During the evening of 3 April, a fifth airborne lifeboat was dropped to them and by this time, cloud base was down to 700 feet and the visibility became very poor. No effort was made by the survivors to reach this boat, possibly because of their exhaustion. Some of the search aircraft remained in the vicinity after dark and dropped sea markers to keep the survivors' boat located. Rescue motor launches were then contacted and informed of the position of the lifeboat, but were unable to locate it in the dark.

The operation was continued on 4 April by further Warwicks and Mustangs. At 08.40 hours on that day a rescue launch informed the search aircraft that all the survivors had been picked up, exhausted but otherwise in good condition, within twenty miles of Heligoland, having drifted in an easterly direction throughout the two previous days. They were landed at Great Yarmouth in the early hours of 5 April, after a journey of approximately two hundred miles. Thus ended a rescue which lasted seven days and employed many of the resources of the Rescue Service.

APPENDIX No. 1

**ORIGINAL REGULATIONS FOR THE OPERATION OF THE  
SEA RESCUE SERVICES (HOME)**

**Introduction**

It has been decided to form a Directorate under the Deputy Chief of the Air Staff to be known as the Directorate of Air/Sea Rescue Services. (Short title D.A/S.R.S.).

2. The responsibilities of this Directorate will be :—

- (a) the co-ordination of all sea rescue operations for aircraft and aircraft crews ;
- (b) the provision of ancillary equipment to be dropped by aircraft at the scene of distress to provide air crews with an improved chance of survival until the arrival of rescue craft ;
- (c) the provision of adequate marine craft, moored buoys and similar aids to rescue.

**Part I**

**Organisation**

3. It has been decided that the sea rescue organisation at home shall be based on the Coastal Command organisation. For this purpose the Director of Sea Rescue Services and his Staff will be attached to Coastal Command Headquarters in order to keep in close touch with the air and sea authorities concerned in search activities.

4. Executive action in connection with air search will lie with the Area Combined Headquarters of Nos. 15, 16, 18 and 19 Groups who will also co-ordinate these searches with the activities of surface craft. Officers of the Directorate of Sea Rescue Services will be attached to the Area Combined Headquarters to control sea rescue activities and to co-ordinate the air and sea searches.

5. For the purposes of air search the British Isles will be divided into four areas coinciding with the geographical boundaries of the existing Coastal Command Groups. All Royal Air Force Flying Stations within each area will contribute so far as their resources permit to air search, under the control of the Area Combined Headquarters within whose area they lie. At Attachment "A" is a map showing the geographical boundaries of the Coastal Command Groups and at Attachment "B" is a list of the Royal Air Force Groups coming within each Coastal Command Group Area.

6. Close-in search and rescue in area No. 5 (Attachment "A") will be the responsibility of Fighter Command who will use Lysander aircraft attached for air search purposes. Fighter Groups will communicate direct with Flag Officers in Charge or Naval Officers in Charge for the despatch of surface rescue craft.

**Search by Aircraft**

7. The aircraft Search Organisation is to be based on the principle that the Sea Rescue Services Officers will call upon aircraft from Coastal or other Groups to carry out immediate searches for aircraft who have forced

landed in the sea. With regard to Fighter Groups Nos. 10 and 11, the orders at present in force issued for the use of Lysander aircraft will not be altered at present.

#### **Rescue by Surface Craft**

8. (a) The control of surface craft employed on rescue duties is the responsibility of the local Flag Officers or Naval Officers in charge. In addition to the Royal Air Force high speed launches, the Admiralty are providing a number of miscellaneous craft for rescue purposes, based at intervals around the Coast. Other craft, not specifically allotted for rescue work may be available according to the tactical situation. All craft used for rescue purposes are under the direct orders of the Flag Officers or the Naval Officers in charge. In addition to these, there are a number of Royal Air Force Marine craft sections. In the event of a particular part of the coast not being covered by any other craft, and a Royal Air Force Marine Craft section is located in this area, a Flag Officer or Naval Officer in charge may, if the need arises, request the Station Commander responsible for the administration of such sections, to supply any suitable craft to assist in rescue operations.

(b) The Boats of the Royal National Lifeboat Institution will be used, they will be requested to assist when required, any request for their help will be put through the appropriate Flag Officer or Naval Officer.

9. R.A.F. Marine Craft Sections, however, are not to be regarded as part of the organisation coming under the control of the Naval Authorities, nor must marine craft be sent on rescue duties without informing the Flag Officer or Naval Officer in charge.

#### **Ancillary Rescue Equipment**

10. Ancillary rescue equipment which can be conveyed by air to the scene of distress for the use of survivors to give chances of better final rescue, is to be held by Groups and Stations on a scale, and to be operated in the manner to be determined by the Director of Sea Rescue Services.

11. Other equipment such as rescue buoys, will be provided in accordance with the policy decided by the Director of Sea Rescue Services.

### **Part II**

#### **Action Following the Reporting of Aircraft and Crews in Distress in the Sea**

##### **Transmission of Distress Messages**

12. An aircraft in distress over the sea is, whenever possible to originate the distress message on the frequency that is being worked, as follows:—

“S.O.S., Aircraft Callsign Letters and if possible an approximate position with any other relevant information.”

It is to be impressed upon all pilots that aircraft in distress are to make their signals as early as possible, and if at all practicable to repeat them so that reliable D/F bearings and fixes may be made. This will enable air and sea searches to proceed direct to the correct position and thus render assistance without loss of time in searching over a wide area.

13. In the case of Fighters, the facts concerning the crew of a fighter being in distress are to be passed as soon as possible to the sector control by R/T by other pilots witnessing the occurrence. If the situation does not permit the use of R/T, all information will be reported immediately the returning aircraft lands. Should a fighter pilot witness any other aircraft making a forced landing in the sea, he will report this fact if possible by R/T and immediately on landing at the aerodrome.

**Action by Units receiving distress information**

14. Station Commanders or their representatives are immediately to pass all available information direct to the Operation Rooms of their appropriate Group Headquarters. (In the case of the Navy Air Arm Stations, report direct to the appropriate Area Combined Headquarters). Flying Training Command, Technical Training and other Non-operational units are to telephone the information to the Operations Room of the nearest Operational Group Headquarters.

**Action by Operational Group Headquarters**

15. Operational Group Headquarters on receiving distress information are to take action as follows:—

- (a) Telephone to the appropriate Area Combined Headquarters using the prefix "Rescue Aircraft". This message is to be passed to the Rescue Service Officer who will keep continuous watch in the Area Combined Headquarters.
- (b) If the distressed aircraft or air crews are identified as belonging to another operational group, inform the parent command concerned, telling them the information has been passed to the Area Combined Headquarters.
- (c) In the case of Fighter Groups No. 10 and 11, the Group Headquarters concerned is to initiate immediate search by Lysander aircraft from the aerodrome nearest to the scene of the accident and is to request through the Group Naval Liaison Officer that a sea search be commenced immediately, this information being passed to the Sea Rescue Service officer at the appropriate Area Combined Headquarters, so that he may have full knowledge of the incident and if necessary provide reinforcements of both air and sea searches.

**Action by Area Combined Headquarters. Sea Rescue Service Officers**

16. The Officer on watch at Area Combined Headquarters will request from the appropriate Group of either Coastal or any other Operational Command, the despatch of air search aircraft, developing the search in accordance with requirements.

17. The sea rescue services officer will decide in consultation with the Naval Staff what search surface craft shall be despatched, and request that the appropriate Flag Officer or Naval Officer in charge shall order such vessels to sea.

18. A decision is to be made by these officers whether the G.P.O. Coastal W/T stations shall broadcast to shipping the details of aircraft reported in distress.

19. Fighter Command are to be notified of all rescue operations in progress in order that consideration may be given to the provision of fighter protection of both the air search and the rescue craft at sea.

20. Consultation will be made with the operational staff at either Coastal Command Headquarters, or with the Area Combined Headquarters Staff whether Coastal Command reconnaissance aircraft already on patrol in the vicinity shall be diverted to render assistance to the distressed aircraft.

21. The Sea Rescue Service Officer on watch will keep the Director of Sea Rescue Services fully informed of the progress of the rescue operations, so that the fullest co-ordination may be assumed between the air searches and the sea searches of all the Commands concerned.

#### **Action by Flag Officers or Naval Officers in Charge**

22. On receiving information of aircraft or air crews down in the sea from Coastal Command, Area Combined Headquarters, Fighter Command, or from the Coast Guards, Coast Watchers or Observer Corps, or any other source, the Flag Officer or Naval Officers in charge are requested to issue orders for the appropriate marine craft nearest to the reporting position to put to sea immediately. At all such times when these craft have put to sea, the fact is to be reported immediately to the Area Combined Headquarters, who will if possible pass this information to the aircraft involved in the air search.

#### **Action by Civil Air Traffic Control**

23. Civil Air Traffic Control Officers on receipt of information of aircraft in distress are immediately to communicate with the Movement Liaison Section (Civil) Headquarters, Fighter Command who are in turn to pass the information to the appropriate Area Combined Headquarters for action.

#### **Action by Movement Liaison Section, Headquarters, Fighter Command**

24. The Movement Liaison Section Headquarters, Fighter Command, are responsible for passing distress messages received from M.F.D/F Stations and other sources to the Coastal Command Liaison Section for onward transmission to the appropriate Area Combined Headquarters.

25. M.F.D/F Stations having direct communication with Operational Groups are to pass distress messages direct to such groups.

#### **Action by Search Aircraft**

26. Search aircraft are, as far as possible, to carry the special equipment provided for succouring air crews in distress in the sea. Searches are to be made in accordance with the standard air search procedure at sea. On the location of the distressed air crew, the following procedure is to be followed:—

- (a) Drop the special dinghy gear carried.
- (b) Make a transmission giving the location of distressed air crew to give the shore D/F stations an opportunity to obtain a fix.
- (c) In Search Areas Nos. 1, 3 and 4, the aircraft are to remain in the vicinity of the distressed air crew until relief or until the rescue surface craft arrive, or until the aircraft is recalled or is compelled to return to base.

- (d) In Search Area No. 2 N. of the line Yarmouth- Texel, the procedure as detailed in (b) above is to be carried out at the discretion of the Group Commander provided that the tactical situation allows and there is no serious risk of the enemy intercepting the search aircraft.
- (e) In Search Area No. 2 in the sector between the lines Yarmouth- Texel, and Harwich- Flushing, the search aircraft is to remain in the vicinity of the distressed crew if within 40 miles of the English Coast, otherwise to return to base.
- (f) Beyond the 40 mile limit in the remainder of this Search Area No. 2, the search aircraft unless accompanied by long-distance fighter protection or is provided by long-distance fighters is to return to base.
- (g) In Search Area No. 4 excepting the Sector E. of the line Lands End- Brest, the search aircraft is to act as in (b) above. If within the sector stated and outside the area covered by the Lysander aircraft, i.e. 20 miles from the shore, and unless carried out by long distance fighter aircraft, aircraft is to return to base.
- (h) In Search Area No. 5 the search aircraft are to act as at (b) above.

**Action by Rescue Surface Craft**

27. These are to act in accordance with the instructions given by Flag Officers or Naval Officers in charge.

**Action by Fighter Command—Air Battles**

28. Fighter Group Headquarters are responsible for informing the local Naval Authorities and the Director of Sea Rescue Services of any air battles which are imminent or are taking place, in order that rescue craft may be deployed in suitable positions to rescue airmen down in the sea. Similarly, advance information of intended fighter sweeps over the sea are to be given whenever practicable.

**Part III. (Provisional)**

**Communications and Telecommunications**

**Coastal Command**

29. Communications between Coastal Command Stations, Groups and Area Combined Headquarters will be over existing telecommunications lines.

**Bomber Command**

30. Bomber Command stations will communicate with Bomber Groups over existing lines and Bomber Groups will communicate with Area Combined Headquarters via Fighter Command Headquarters.

**Fighter Command**

31. Fighter Command stations will communicate with Fighter Groups through existing channels. Fighter Groups will communicate with Area Combined Headquarters through channels already established, and with the Director of Sea Rescue Services via Fighter Command to Coastal Command.

### **Flying Training Command**

32. Special communication arrangements will be made to enable Air Observer Navigation Schools, Schools of Air Navigation, and Schools of General Reconnaissance, to communicate rapidly with the appropriate Area Combined Headquarters.

33. Other Flying Training Schools are to communicate with the appropriate Area Combined Headquarters over the teleprinter net work, all signals being given the special prefix "Rescue Aircraft".

### **Civil Aviation**

34. Operational Services (Civil Aviation) are to communicate details of civil aircraft down in the sea direct to the Movement Liaison Section, Fighter Command, who are to communicate with the Director of Sea Rescue Services and the appropriate Area Combined Headquarters, through existing channels.

### **Army Co-operation Command and Maintenance Command**

35. Stations of Army Co-operation and Maintenance Command wishing to initiate search for missing aircraft are to communicate requirements to Movement Liaison Section, Fighter Command, who will thereafter take action to inform the appropriate Area Combined Headquarters, and the Director of the Rescue Services.

### **Shore-Based Naval Air Arm Aircraft**

36. Naval Air Arm Shore Stations will communicate their search and rescue requirements direct to the appropriate Area Combined Headquarters.

## **W/T Communications**

### **Coastal and Bomber Commands**

37. Search aircraft are to communicate on a frequency to be decided by Area Combined Headquarters.

### **Fighter Command**

38. Lysander search aircraft of Fighter Command are to communicate on (PORT) frequency to Sector Headquarters, Flag Officers and Naval Officers in Charge at ports are to communicate all such information received to Area Combined Headquarters. Sectors are to communicate W/T messages received from search aircraft to the appropriate Fighter Group Headquarters over existing channels.

### **Shipborne Naval Air Arm Aircraft**

39. Arrangements for shore co-operation in the search for missing shipborne Naval Air Arm Aircraft are to be made to the appropriate Area Combined Headquarters.

### **Introduction of Revised Sea Rescue Organisation**

40. These instructions are to come into force at a date which will be communicated in due course, as from this date these instructions will cancel A.M.C.O. A54/1940.

(Sgd.) L. G. CROKE,

Group Captain,

Director of Sea Rescue Services.



## ATTACHMENT B

## SEA RESCUE SERVICES

Area Combined Headquarters	Groups in Touch	Flag Officers in Charge and Naval Officers in Charge	Coastal Command Stations	Lysander Aircraft
No. 18 Group	No. 14 (Fighter) No. 13 (Fighter)	A.C. Orkney and Shetland F.O.I.C. Invergordon F.O.I.C. Greenock C.-in-C. Rosyth F.O.I.C. Tyne N.O.I.C. Stornaway	Sullum Voe Sumburgh Wick Dyce Leuchars Invergordon	
No. 16 Group	No. 1 (Bomber) No. 12 (Fighter) No. 5 (Bomber) No. 2 (Bomber) No. 7 (Training) No. 3 (Bomber) No. 6 (Training) No. 3 (Bomber) No. 6 (Training) No. 17 (Training) No. 11 (Fighter) No. 4 (Bomber)	F.O.I.C. Humber F.O.I.C. Yarmouth F.O.I.C. Harwich C.-in-C. Nore V.A. Dover C.-in-C. Portsmouth F.O.I.C. Portland	North Coates Bircham Newton Detling Thorney Island	No. 11 Group Martlesham Manston Shoreham Tangmere
No. 19 Group	No. 10 (Fighter)	N.O.I.C. Dartmouth C.-in-C. Western Approaches F.O.I.C. Falmouth F.O.I.C. Cardiff F.O.I.C. Milford Haven	St. Eval Carew Cheriton Mount Batten Pembroke Chivenor	No. 10 Group Warmwell Roborough
No. 15 Group	No. 9 (Fighter)	N.O.I.C. Liverpool F.O.I.C. Belfast	Hooton Park Stranraer Oban Stornaway Benbecula Port Ellen Bowmore (Isley) Tiree Aldergrove Limavady Eglington Ballykelly } N.I.	

APPENDIX No. 2

**ALLIED EXPEDITIONARY AIR FORCE  
OPERATION "OVERLORD"**

**AIR STAFF POLICY AND OPERATION INSTRUCTIONS No. 5**

**Air/Sea Rescue Including Assistance from Naval Forces**

**Introduction**

1. The general organization of all Air/Sea Rescue services is set out in A.M.C.O. A. 45/44.

**Object**

2. The object of this instruction is to define the Air/Sea Rescue Organization available for Operation "Overlord". It comprises the following Sections and Appendices:—

- (i) *Section I*—(a) Air/Sea Rescue from the United Kingdom.  
(b) Air/Sea Rescue in the Assault Area.
- (ii) *Section II*—(a) Air/Sea Rescue from the Continent initially by Air/Sea Rescue launches only.  
(b) Air/Sea Rescue from the Continent with the establishment of Air/Sea Rescue air and surface craft.
- (iii) *Appendix "A"*—Inter-communication (not included).

**Section I**

**Air/Sea Rescue from the United Kingdom and in the Assault Area**

**Air/Sea Rescue from the United Kingdom**

3. Headquarters, Air Defence of Great Britain will remain responsible as at present for the initiation and co-ordination of all Air/Sea Rescue operations in the waters outside the Assault Area.

4. Full details of the A.D.G.B. Air/Sea Rescue Organization are included in A.D.G.B. Operational Instruction No. 4/1944 supplemented by ADGB/TS 37072/Ops. 1/ASR dated 4 May 1944.

**Air/Sea Rescue in the Assault Area**

5. Air/Sea Rescue craft in the Assault Area and Shipping Lane will be sailed in accordance with Naval orders.

6. For convenience a minimum of two High Speed Launches will be attached to each Fighter Direction Tender, since the Fighter Direction Tenders have the best local facilities for receiving distress messages from aircraft whether they are under the control of the Fighter Direction Tender itself or a Headquarters Ship.

7. The Senior Air Force Officer on each Fighter Direction Tender is responsible for initiating Air/Sea Rescue surface craft search within the area of responsibility of that Fighter Direction Tender. He will not permit surface craft to proceed outside that area without prior approval from the Task Force Flag Ship.

8. Headquarters, No. 11 Group in consultation with the Allied Naval Commander, Expeditionary Force, and the Naval Commanders of the Eastern and Western Task Forces are responsible for defining the area of responsibility of each Fighter Direction Tender for Air/Sea Rescue surface craft search and for promulgating this information in orders to the Senior Air Force Officer on each Fighter Direction Tender.

9. Information in regard to distress incidents will normally reach the Fighter Direction Tender in one of the following ways:—

- (i) Visual sighting.
- (ii) Distress messages from aircraft.
- (iii) Distress messages from the Headquarters Ship.
- (iv) Distress messages received by the Home Based Air/Sea Rescue Organization and transmitted via 11 Group.

10. Information reaching the Fighter Direction Tender of distressed crews in waters outside the Assault Area, and for which the Fighter Direction Tender cannot initiate Air/Sea Rescue surface craft action, will be passed back to 11 Group for action.

#### **Communications**

11. The following communications are available for Air/Sea Rescue purposes in Fighter Direction Tenders:—

- (i) To Headquarters Ships—Headquarters Ship/Fighter Direction Tender Liaison Wave.
- (ii) To Task Force Flag Ships—Headquarters Ship/Fighter Direction Tender Liaison Wave.
- (iii) To Headquarters, No. 11 Group—Fighter Direction Tender Liaison or Standby Liaison Wave.
- (iv) To aircraft—four V.H.F. channels.

12. The following communications are available in Air/Sea Rescue High Speed Launches:—

- (i) To the Fighter Direction Tender—V.H.F. R/T.
- (ii) To Naval Authorities in accordance with Naval communication orders.

## **Section II**

### **Air/Sea Rescue from the Continent**

#### **Surface Craft**

13. A mobile flotilla of High Speed Launches has been established and is known as No. 32 Air/Sea Rescue Marine Craft Unit. This unit will form the nucleus of Air/Sea Rescue surface craft to be based on the Continent. Initially launches from this unit will work in the Assault Area on detachment from the United Kingdom. The unit will move to the Continent as and when suitable bases become available when it will be transferred to No. 85 Group for administration.

**Initially by surface craft only based on the Continent**

14. Immediately Flag Officer British Assault Area and Flag Officer Western Assault Area have established their respective Headquarters on the Continent, they will assume responsibility for Air/Sea Rescue search within the boundaries of their respective commands, and within limits which will be notified under separate cover.

15. Air/Sea Rescue surface craft will be withdrawn from Fighter Direction Tenders and sufficient Air/Sea Rescue surface craft will be based under the respective control of Flag Officer British Assault Area and Flag Officer Western Assault Area to provide adequate Air/Sea Rescue coverage for their respective areas of responsibility.

**The ultimate Air/Sea Rescue Organisation on the Continent**

16. Air/Sea Rescue air and surface craft will be established and located conveniently to provide Air/Sea Rescue cover in: —

- (i) Areas not adequately covered by the Air/Sea Rescue organisation based in the United Kingdom.
- (ii) Areas where special operations necessitate the provision of additional Air/Sea Rescue cover.

**Air/Sea Rescue Surface Craft**

17. Air/Sea Rescue surface craft will be under the operational control of the Royal Navy and will be administered by Headquarters, No. 85 Group in conjunction where necessary with the IXth U.S. Air Service Command.

**Air/Sea Rescue Aircraft**

18. Air/Sea Rescue aircraft will be operated by No. 85 Group in conjunction, where necessary, with Ninth U.S. Air Force and will be administered by No. 85 Group.

**Communications**

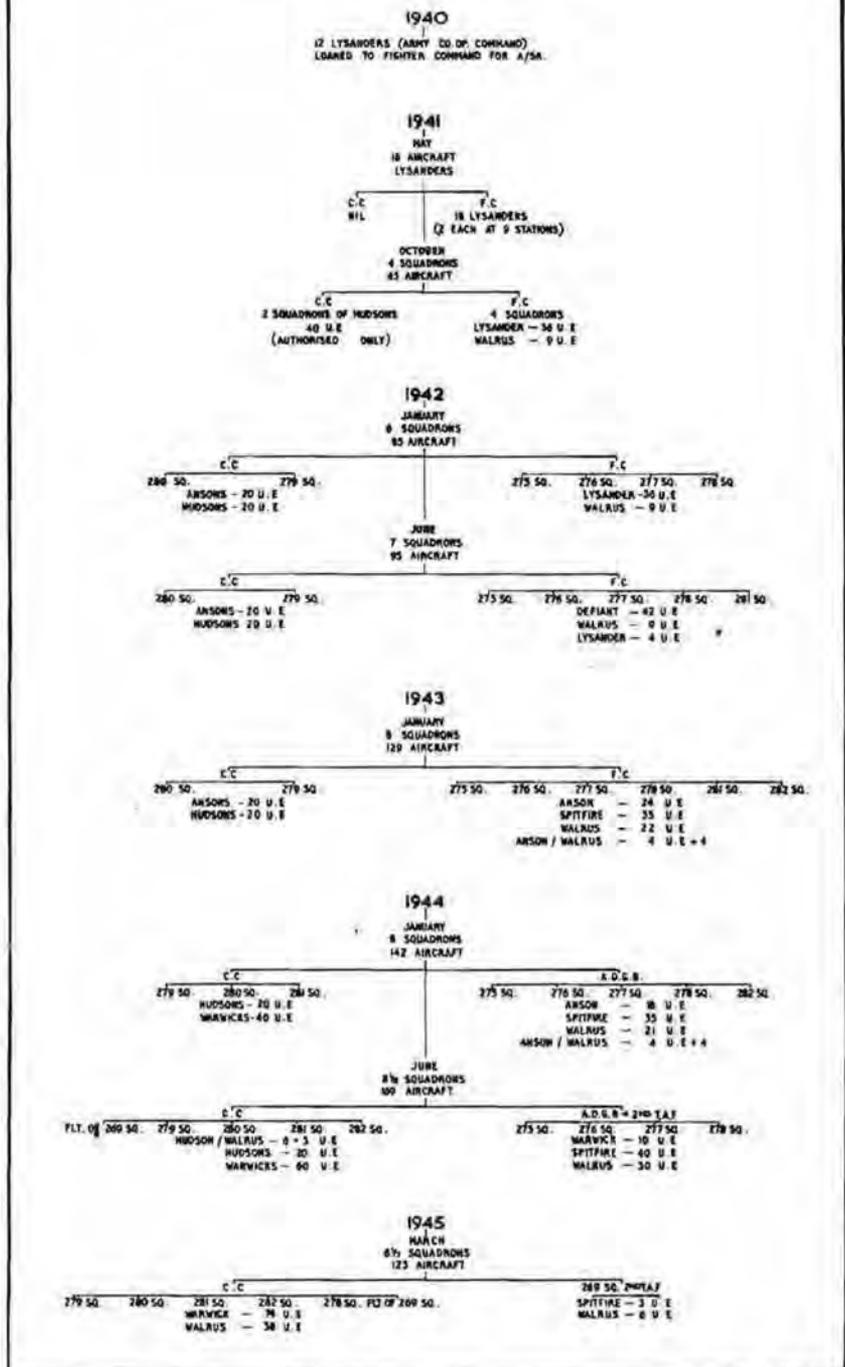
19. No. 85 Group in conjunction where necessary with Ninth Air Force are responsible for providing Air Force communications for Air/Sea Rescue purposes.

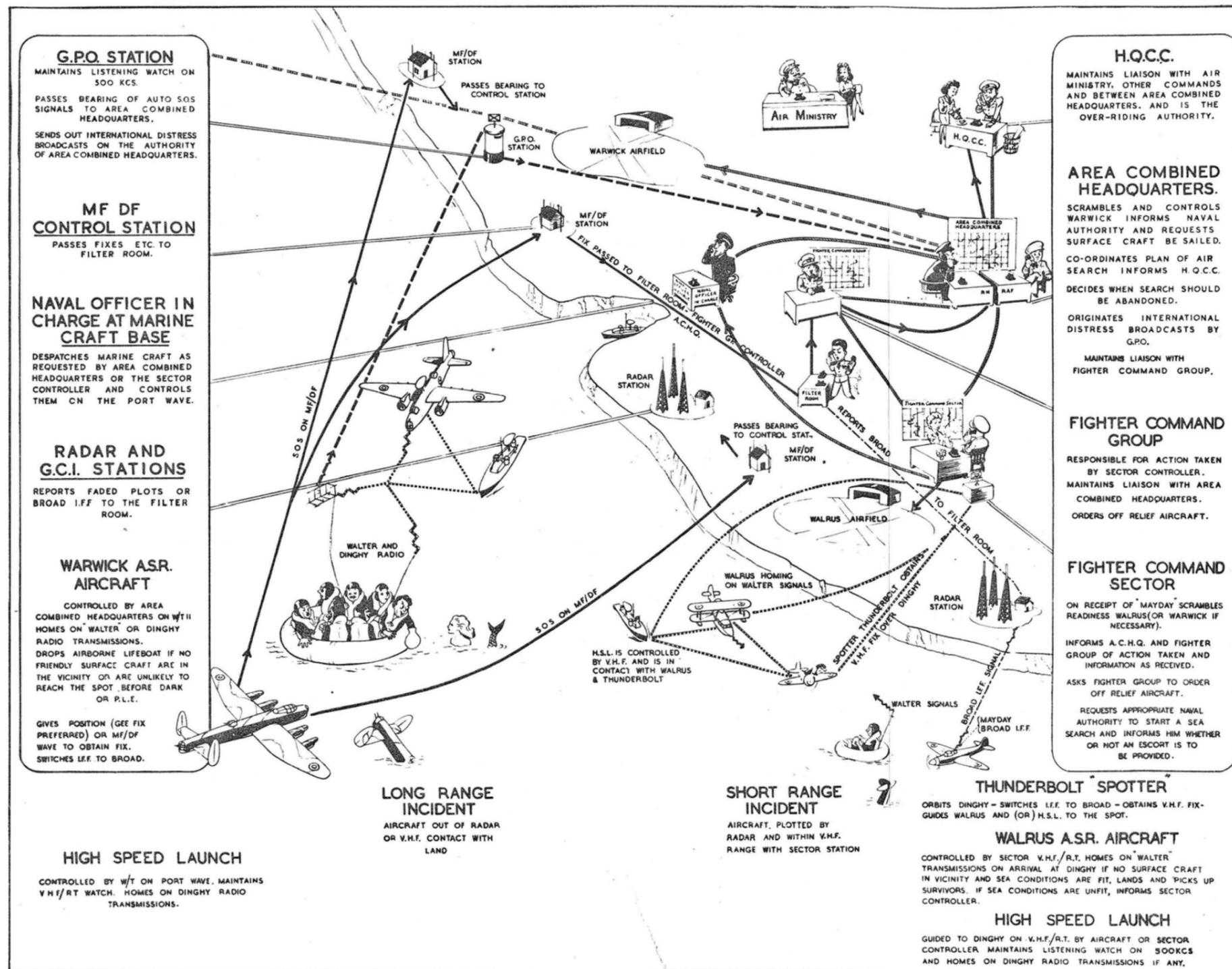
*AEAF/S 796/ Air Plans.*

29 May 1944.

# HOME COMMANDS 1939-1945

## CHART SHOWING PROGRESS OF AIR/SEA RESCUE SQUADRONS





**G.P.O. STATION**  
 MAINTAINS LISTENING WATCH ON 500 KCS.  
 PASSES BEARING OF AUTO SOS SIGNALS TO AREA COMBINED HEADQUARTERS.  
 SENDS OUT INTERNATIONAL DISTRESS BROADCASTS ON THE AUTHORITY OF AREA COMBINED HEADQUARTERS.

**MF DF CONTROL STATION**  
 PASSES FIXES ETC TO FILTER ROOM.

**NAVAL OFFICER IN CHARGE AT MARINE CRAFT BASE**  
 DESPATCHES MARINE CRAFT AS REQUESTED BY AREA COMBINED HEADQUARTERS OR THE SECTOR CONTROLLER AND CONTROLS THEM ON THE PORT WAVE.

**RADAR AND G.C.I. STATIONS**  
 REPORTS FADED PLOTS OR BROAD I.F.F. TO THE FILTER ROOM.

**WARWICK ASR. AIRCRAFT**  
 CONTROLLED BY AREA COMBINED HEADQUARTERS ON W/T HOMES ON WALTER OR DINGHY RADIO TRANSMISSIONS.  
 DROPS AIRBORNE LIFEBOAT IF NO FRIENDLY SURFACE CRAFT ARE IN THE VICINITY OR ARE UNLIKELY TO REACH THE SPOT BEFORE DARK OR P.L.E.

GIVES POSITION (GEE FIX PREFERRED) OR MF/DF WAVE TO OBTAIN FIX.  
 SWITCHES L.F.F. TO BROAD.

**HIGH SPEED LAUNCH**  
 CONTROLLED BY W/T ON PORT WAVE. MAINTAINS V.H.F./RT WATCH. HOMES ON DINGHY RADIO TRANSMISSIONS.

**LONG RANGE INCIDENT**  
 AIRCRAFT OUT OF RADAR OR V.H.F. CONTACT WITH LAND

**SHORT RANGE INCIDENT**  
 AIRCRAFT, PLOTTED BY RADAR AND WITHIN V.H.F. RANGE WITH SECTOR STATION

**THUNDERBOLT SPOTTER**  
 ORBITS DINGHY - SWITCHES L.F.F. TO BROAD - OBTAINS V.H.F. FIX - GUIDES WALRUS AND (OR) H.S.L. TO THE SPOT.

**WALRUS A.S.R. AIRCRAFT**  
 CONTROLLED BY SECTOR V.H.F./RT. HOMES ON WALTER TRANSMISSIONS ON ARRIVAL AT DINGHY IF NO SURFACE CRAFT IN VICINITY AND SEA CONDITIONS ARE FIT, LANDS AND PICKS UP SURVIVORS. IF SEA CONDITIONS ARE UNFIT, INFORMS SECTOR CONTROLLER.

**HIGH SPEED LAUNCH**  
 GUIDED TO DINGHY ON V.H.F./RT. BY AIRCRAFT OR SECTOR CONTROLLER MAINTAINS LISTENING WATCH ON 500KCS AND HOMES ON DINGHY RADIO TRANSMISSIONS IF ANY.

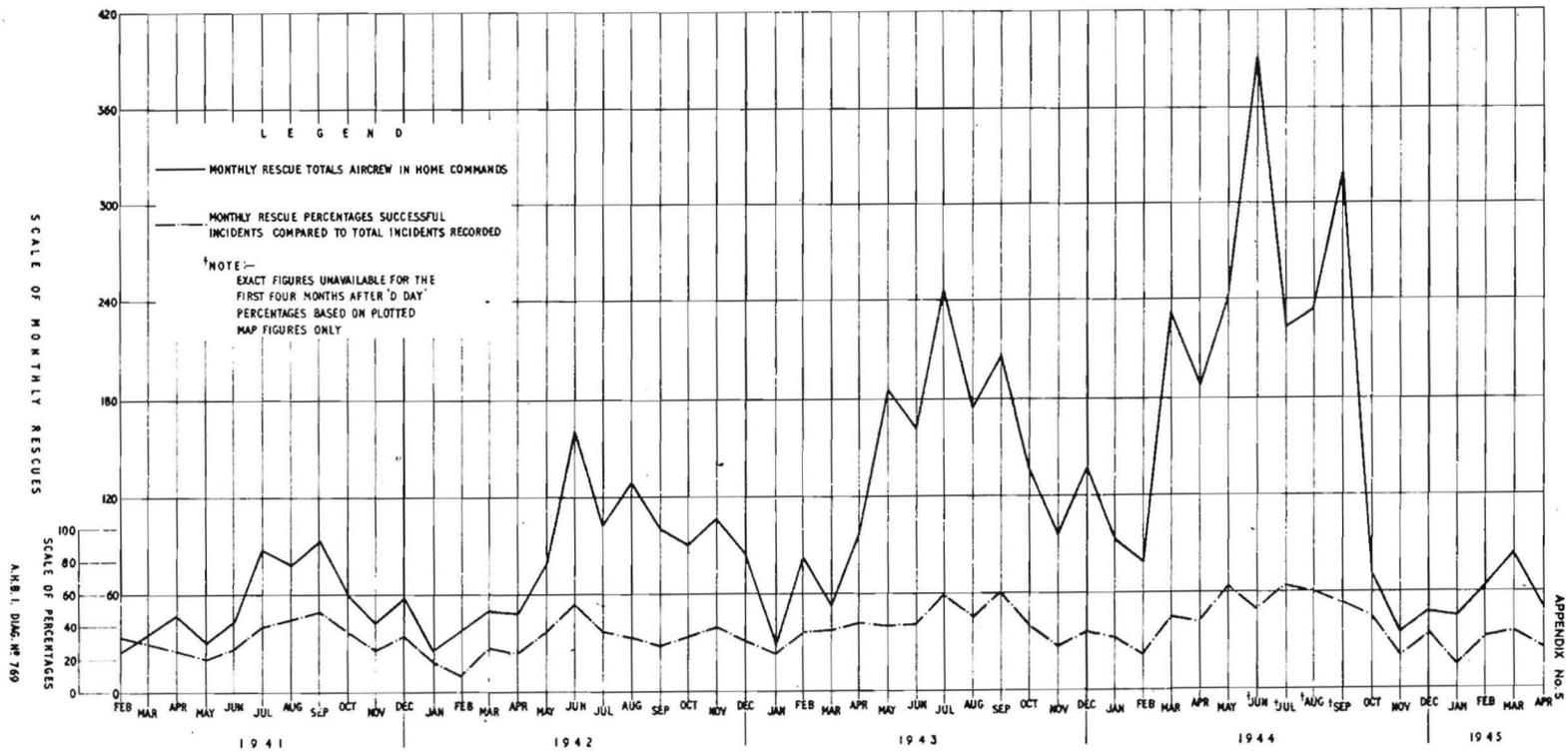
**H.Q.C.C.**  
 MAINTAINS LIAISON WITH AIR MINISTRY, OTHER COMMANDS AND BETWEEN AREA COMBINED HEADQUARTERS. AND IS THE OVER-RIDING AUTHORITY.

**AREA COMBINED HEADQUARTERS.**  
 SCRAMBLES AND CONTROLS WARWICK INFORMS NAVAL AUTHORITY AND REQUESTS SURFACE CRAFT BE SAILED.  
 CO-ORDINATES PLAN OF AIR SEARCH INFORMS H.Q.C.C.  
 DECIDES WHEN SEARCH SHOULD BE ABANDONED.  
 ORIGINATES INTERNATIONAL DISTRESS BROADCASTS BY G.P.O.  
 MAINTAINS LIAISON WITH FIGHTER COMMAND GROUP.

**FIGHTER COMMAND GROUP**  
 RESPONSIBLE FOR ACTION TAKEN BY SECTOR CONTROLLER.  
 MAINTAINS LIAISON WITH AREA COMBINED HEADQUARTERS.  
 ORDERS OFF RELIEF AIRCRAFT.

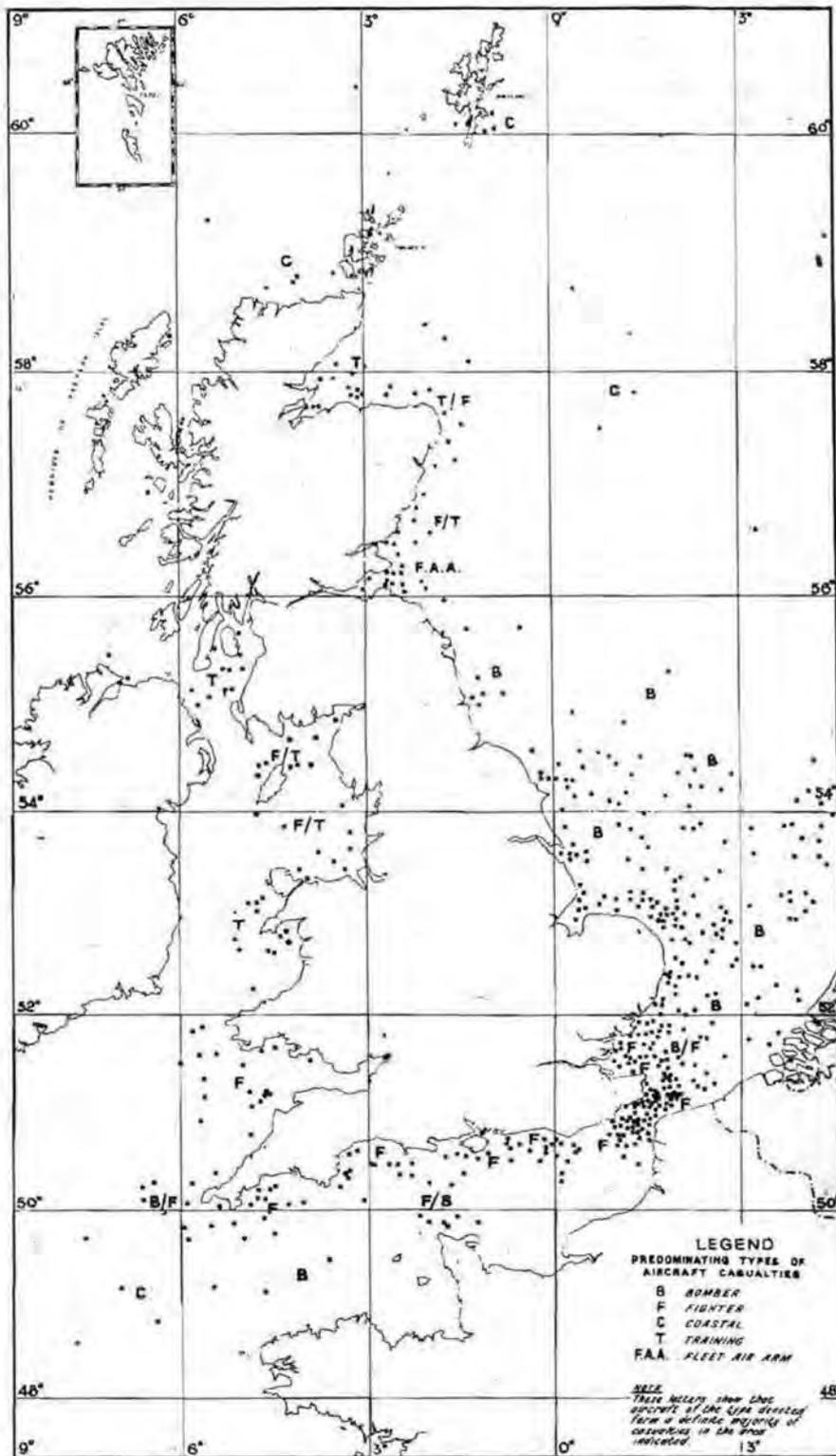
**FIGHTER COMMAND SECTOR**  
 ON RECEIPT OF MAYDAY SCRAMBLES READINESS WALRUS (OR WARWICK IF NECESSARY).  
 INFORMS A.C.H.Q. AND FIGHTER GROUP OF ACTION TAKEN AND INFORMATION AS RECEIVED.  
 ASKS FIGHTER GROUP TO ORDER OFF RELIEF AIRCRAFT.  
 REQUESTS APPROPRIATE NAVAL AUTHORITY TO START A SEA SEARCH AND INFORMS HIM WHETHER OR NOT AN ESCORT IS TO BE PROVIDED.

# GRAPH OF RESCUE RESULTS IN HOME WATERS FEBRUARY 1941-APRIL 1945



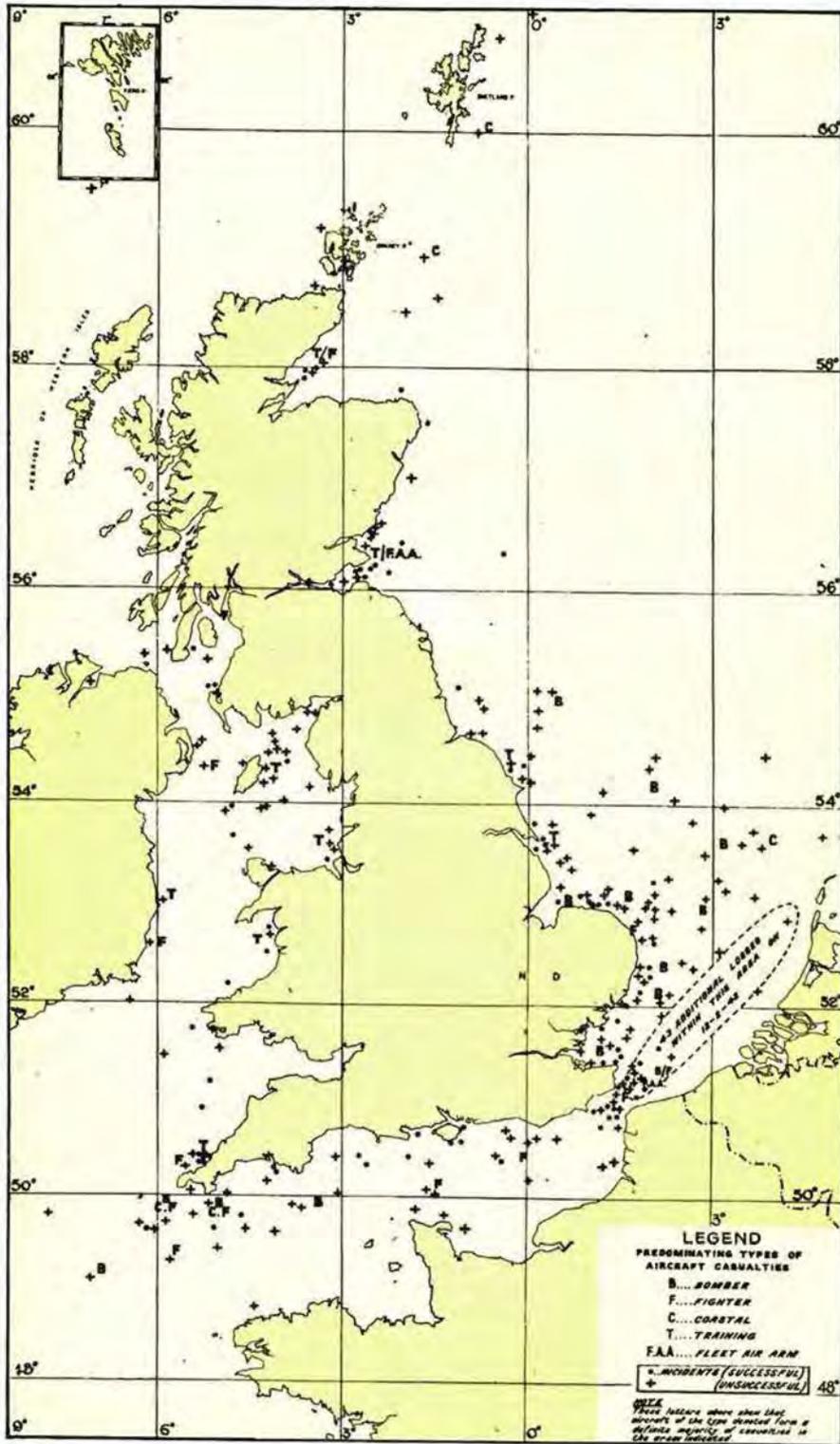
A.N.B.I. DIAG. No. 769

APPENDIX No. 5

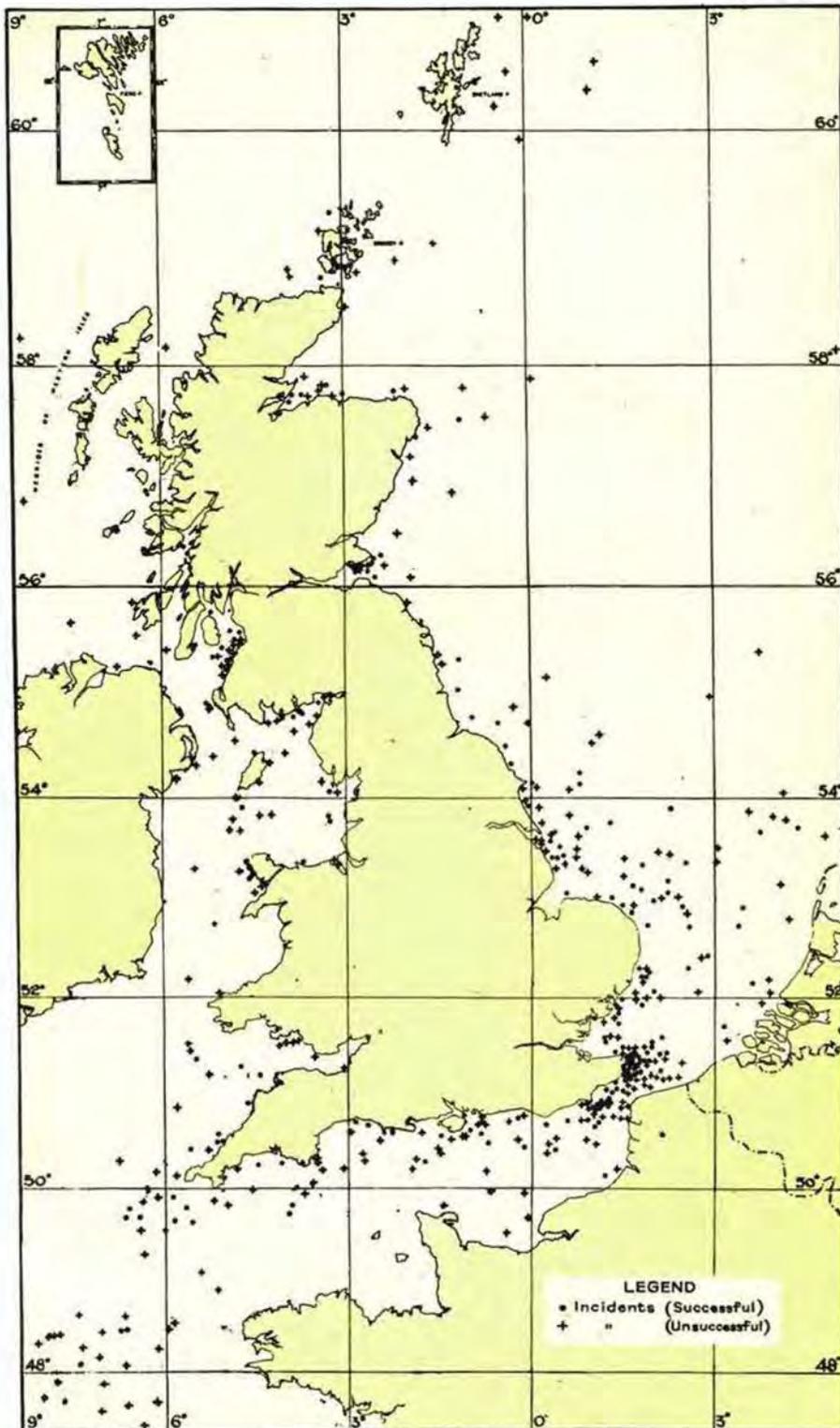


AIRCRAFT FORCED LANDINGS IN THE SEA  
 FEBRUARY — NOVEMBER 1941

APPENDIX No. 6

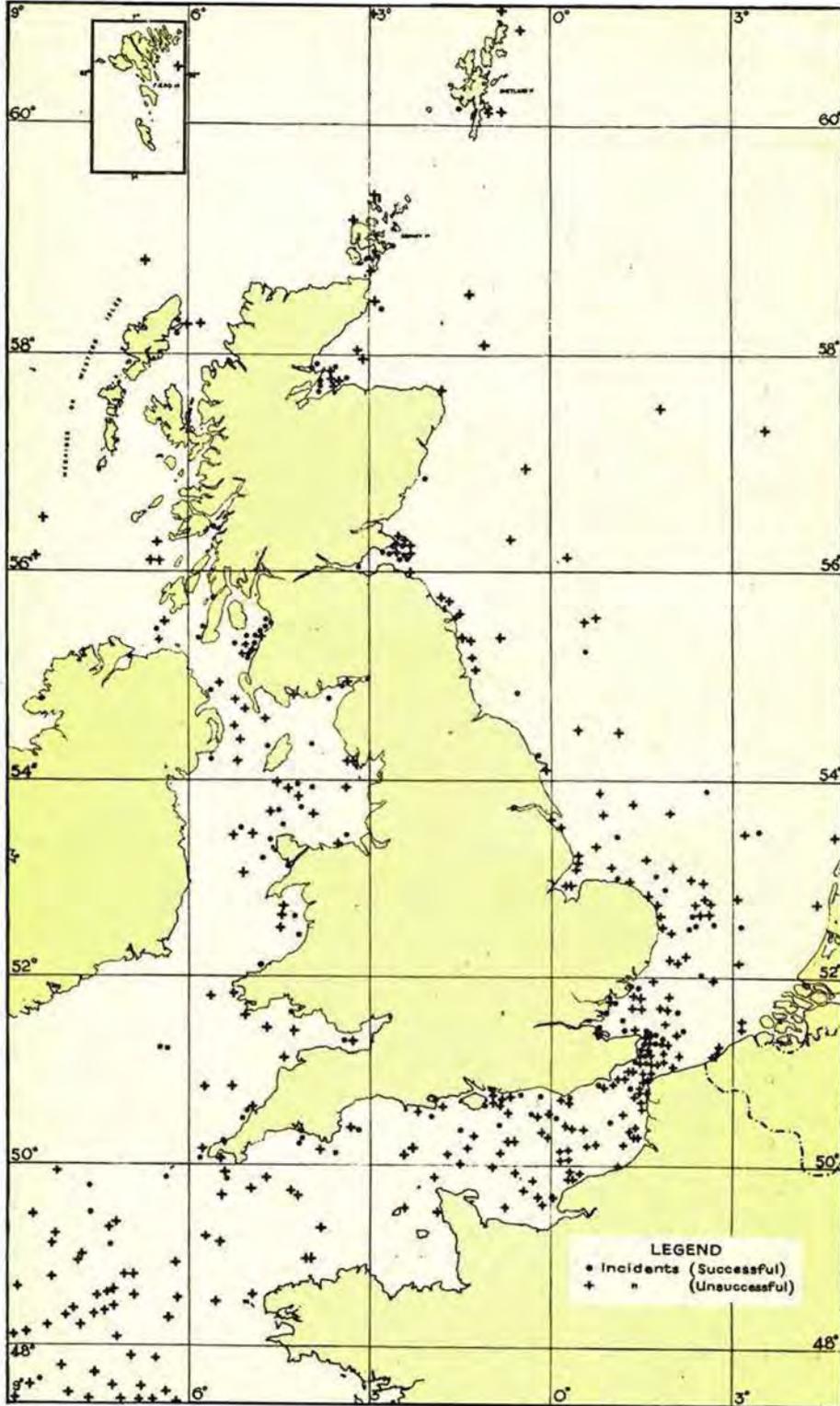


AIRCRAFT FORCED LANDINGS IN THE SEA  
OCTOBER 1941 — MARCH 1942

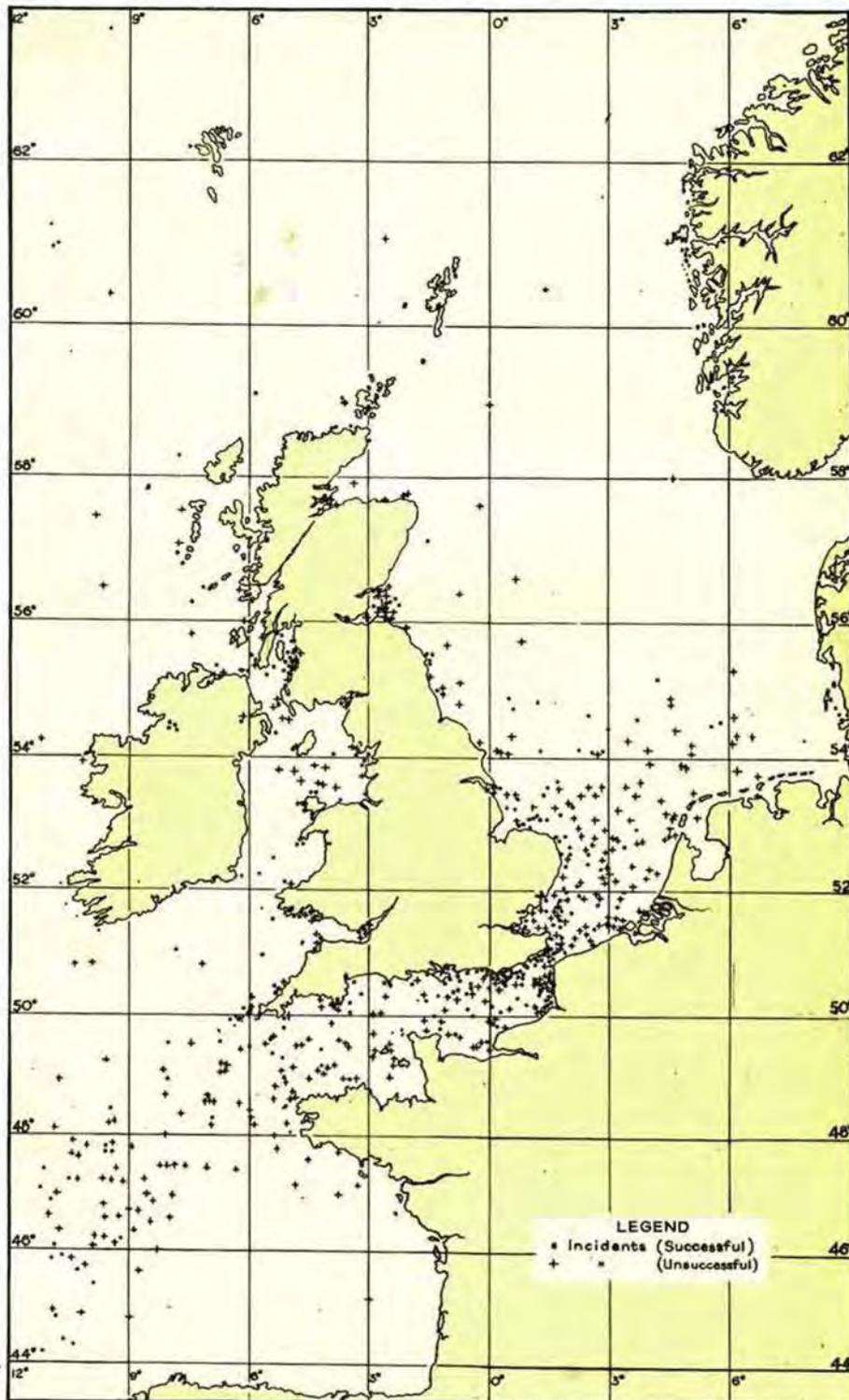


AIRCRAFT FORCED LANDINGS IN THE SEA  
1<sup>st</sup> APRIL 1942 — 30<sup>th</sup> SEPTEMBER 1942

APPENDIX No. 6

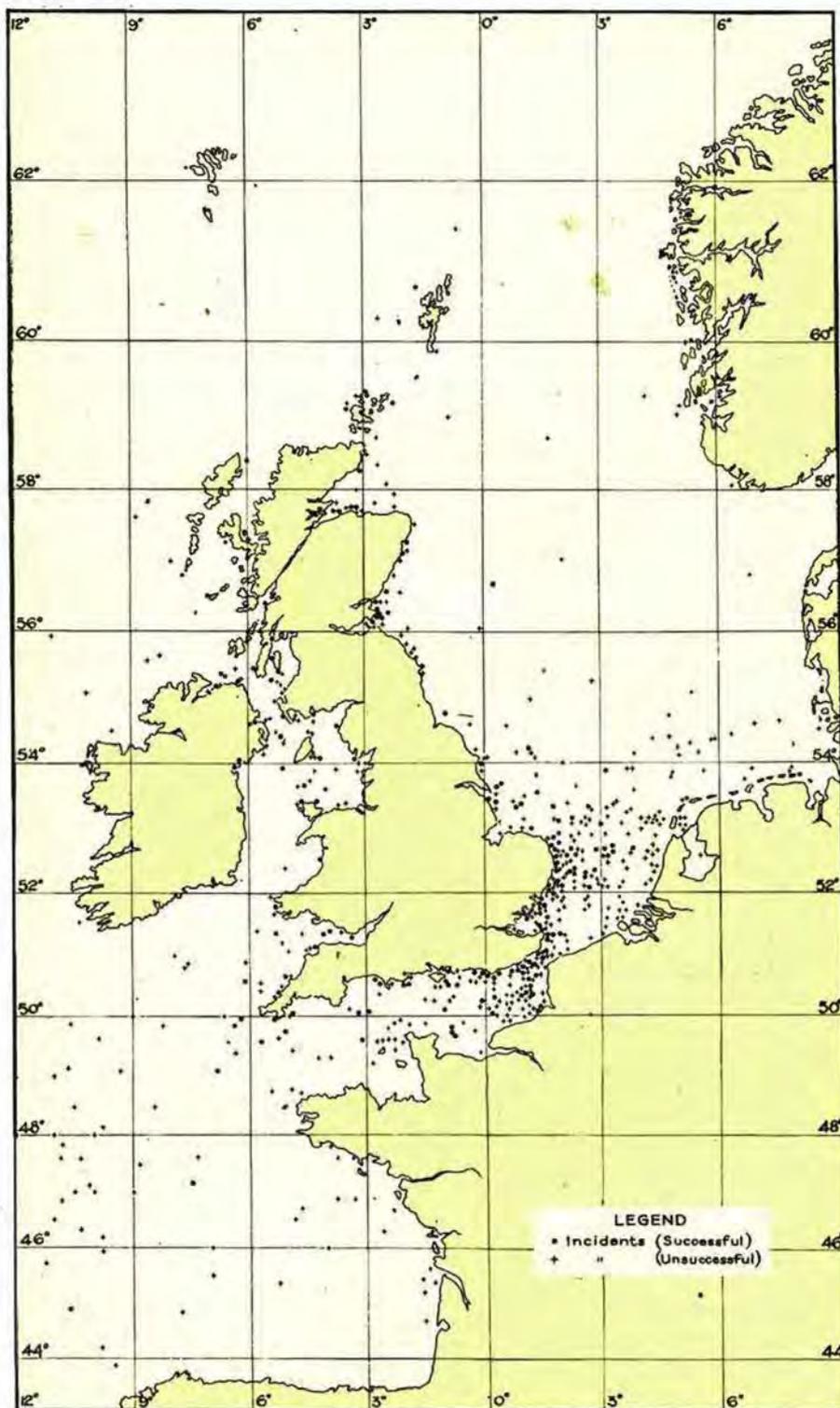


AIRCRAFT FORCED LANDINGS IN THE SEA  
1<sup>ST</sup> OCTOBER 1942 — 31<sup>ST</sup> MARCH 1943

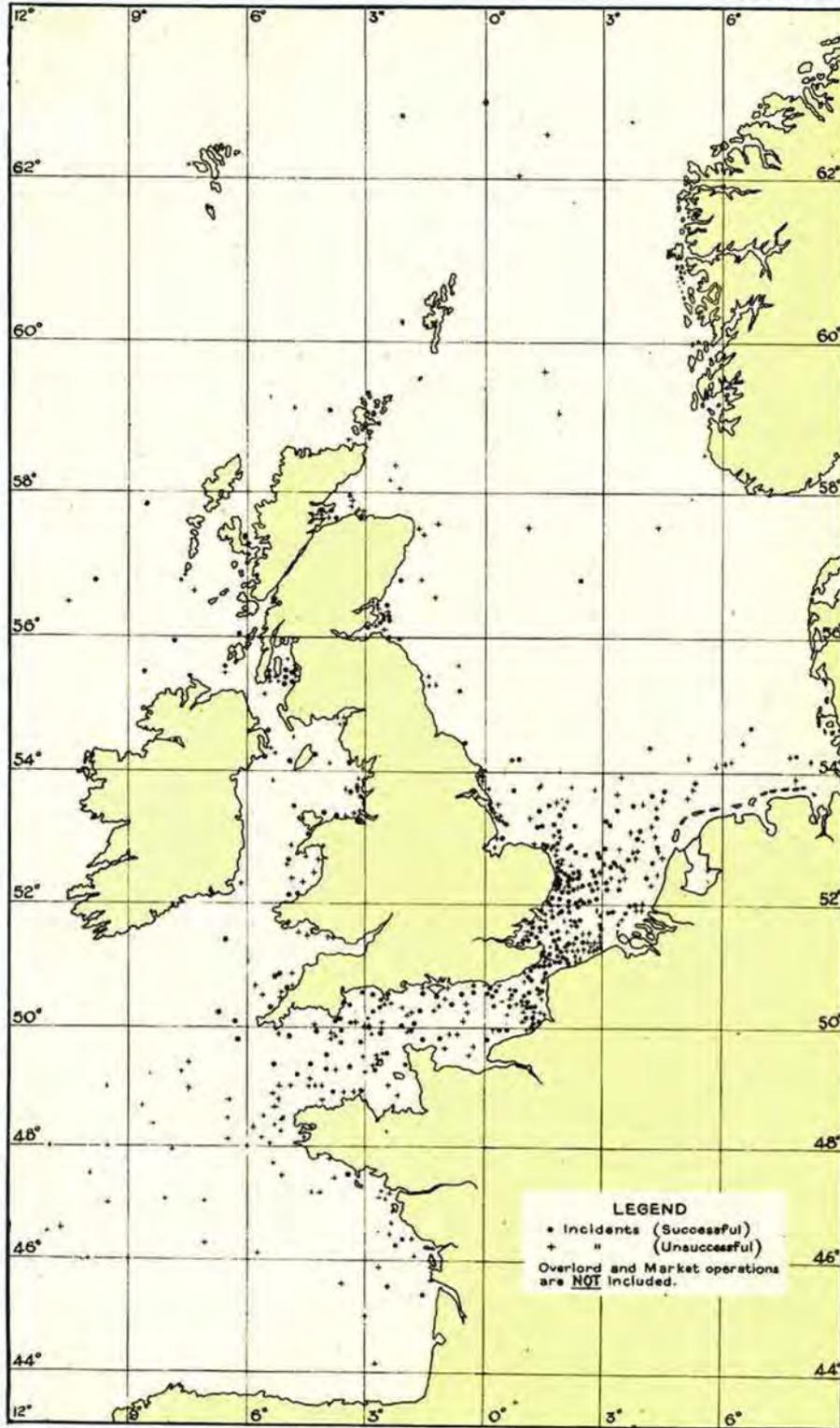


AIRCRAFT FORCED LANDINGS IN THE SEA  
1<sup>st</sup> APRIL 1943 — 30<sup>th</sup> SEPTEMBER 1943

APPENDIX No. 6

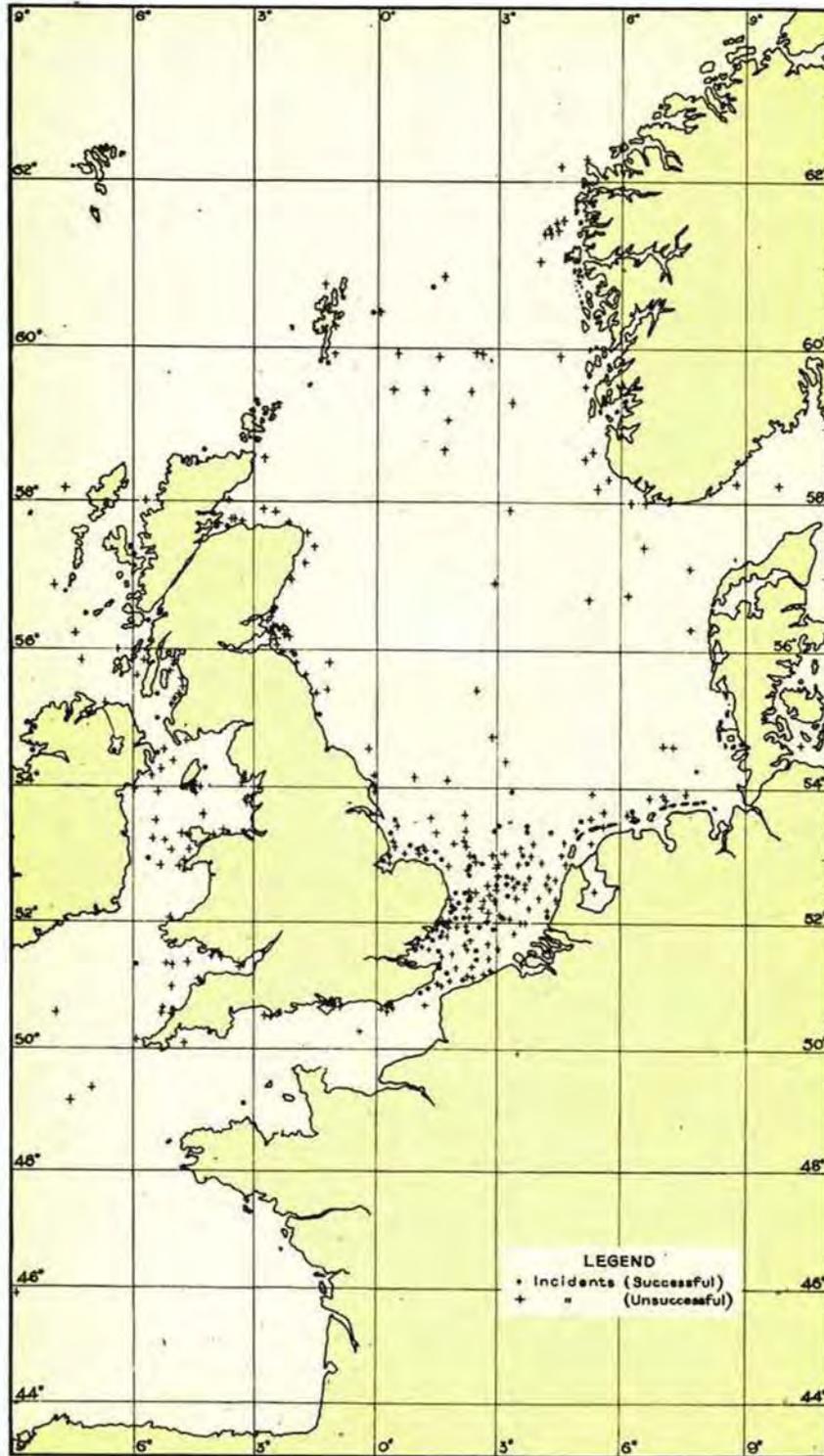


AIRCRAFT FORCED LANDINGS IN THE SEA  
1<sup>st</sup> OCTOBER 1943 — 31<sup>st</sup> MARCH 1944



AIRCRAFT FORCED LANDINGS IN THE SEA  
1<sup>ST</sup> APRIL — 30<sup>TH</sup> SEPTEMBER 1944

APPENDIX No. 6



AIRCRAFT FORCED LANDINGS IN THE SEA  
1<sup>ST</sup> OCTOBER 1944 -- 31<sup>ST</sup> MARCH 1945

C. B. H. 20795 - Wt. 31546 - Dd. L. 2026 - 1196 - 2/52

DITCHING STATIONS AND ORDER OF LEAVING AIRCRAFT						
PILOT	FLIGHT ENGINEER	NAVIGATOR	WIRELESS OPERATOR	AIR BOMBER	MID UPPER GUNNER	REAR GUNNER
In Pilot's seat at controls. Sutton Harness secured and on I/C to F.E. and R.G.	Lying on back on rest bed with safety belt secured across chest, right hand on release catch, left arm protecting face, back of head pressed on back rest, feet braced against bulkhead, left foot towards port side, right foot towards hinge, knees well flexed and on I/C to Pilot.	Seated on floor centrally in rest bed compartment with whole of back against bulkhead door. Hands clasped behind head and feet braced as convenient.	Seated on floor on starboard side in rest bed compartment with whole of back against bulkhead door, hands clasped behind head and feet braced as convenient.	Seated on floor on starboard side with back against rear spar, feet braced against flap jack, hands clasped behind head.	Lying on back on floor on starboard side with feet against flap jack, knees well flexed, left arm about R.G.'s neck (firmly) and right hand against fuselage side.	Lying on back on floor centrally with feet against flap jack and knees well flexed, right arm about M.U.G.'s neck (firmly), left hand against fuselage side or holding suitable part of equipment; on I/C to Pilot.
Through cabin roof exit	First out of mid ditching exit. Gets dinghy waterborne.	Second out of mid ditching exit. Gets dinghy waterborne.	Third out of mid ditching exit. Receives packs from A.B. in fuselage.	Fourth out of mid ditching exit. Operates forward dinghy release and hands out packs to W.Op., and dinghy radio and kite to Pilot.	Second from rear ditching exit. Operates manual release near rear exit and gets on to starboard wing.	First from rear ditching exit. Gets on to starboard wing.
<b>DRILL</b>						
<b>1.</b> At controls	Beside Pilot	At Nav. Table	At Set	In front turret	In turret	In turret
<b>2.</b> Give order "Dinghy, dinghy, prepare for ditching" and signal series of 'D's' on call light. Give Nav. estimated time before ditching, lower flaps 15°, jettison fuel and check security of Sutton Harness (See Note 7).	Acknowledge. Jettison cockpit roof hatch and assist pilot with Sutton harness. (See Note 7)	Acknowledge. Warn W.Op. Prepare C. H. A. P. T. and pass it to him. (See Note 7).	Acknowledge with series of 'D's' on call light. Take Distress Action as per A. M. C. O. A. 25/42 (See Note 5) (See Note 7)	Acknowledge. Leave turret and check security of forward parachute hatch (See Note 7)	Acknowledge. Leave turret. (See Note 7)	Acknowledge. Leave turret. (See Note 7)
<b>3.</b> Jettison bombs	Stand by to assist Pilot as required.	Receive fixes from W.Op. and pass surface W.S. and D to Pilot.	Continue Distress Action sending C. H. A. P. T. received from Nav. Pass to Nav. fixes received.	Go aft. Jettison mid ditching hatch and switch on rest bed light.	Jettison rear ditching hatch.	Go forward, close and secure all doors and hatches, switch on rear fuselage light, proceed to D.S. and establish I/C with Pilot
<b>4.</b> Warn crew "Ditching Stations" and flash series of 'S's' on call light. Lower flaps to 25° and close fuel jettison cocks (See Note 8). Warn W. Op. to D.S. and switch on nav. ident. and landing lights, if necessary. Warn crew "Brace for ditching" and disconnect I/C. Ditch aircraft	Collect axe, go aft to D.S., establish I/C with Pilot, inflate Mae West and take up D.S. - Shout "Brace for ditching", disconnect I/C and brace. -	Warn W.Op. (slap on shoulder), go aft to D.S., inflate Mae West and hold bulkhead door open for W.Op. - Brace -	On receiving warning from Nav., contact Pilot on I/C and await final warning from Pilot to take up D.S., continuing Distress Action in meantime. On receipt of final warning from Pilot, clamp key, go to D.S., close door and take up D.S. with Nav. Brace -	Take up D.S. - Brace -	Take up D.S. - Brace -	- - Shout "Brace for ditching", disconnect I/C and brace. -
<b>5.</b> Release Sutton and parachute harnesses. Leave by cockpit roof exit and inflate Mae West. <b>1.F.</b>	Leave first from mid exit with axe and assist dinghy out of stowage. <b>1.M.</b>	Leave second from mid exit and assist dinghy out of stowage. <b>2.M.</b>	Leave third after Nav. and stand by on wing to receive types 4 and 7 packs from A.B. in fuselage. <b>3.M.</b>	Operate forward dinghy manual release, collect types 4 and 7 packs, move forward over spar to mid exit and pass packs to W.Op. on wing.	Operate dinghy release near rear exit and follow R.G. through exit <b>2.R.</b>	Leave first from rear exit. <b>1.R.</b>
<b>6.</b> Move aft along fuselage top, get on to starboard wing and receive dinghy radio and kite assembly from A.B. in fuselage.	Get dinghy waterborne.	Get dinghy waterborne	Stand by to board dinghy with packs.	Collect dinghy radio and kite assembly and hand out to Pilot on wing.	Move forward along fuselage top and get on to starboard wing.	Move forward along fuselage top and get on to starboard
<b>7.</b> Hand dinghy radio to A.B.	Control dinghy from wing.	Control dinghy from wing.	Board dinghy with packs.	Leave last by mid exit, get on to starboard wing and take dinghy radio from Pilot <b>4.M.</b>	Board dinghy	Board dinghy
<b>8.</b> Board dinghy last with kite assembly. Check equipment, call roll and order Nav. to cast off.	Board dinghy.	Board dinghy. Cut painter and cast off on order from Captain.	Get out paddles and paddle clear of aircraft.	Board dinghy with dinghy radio.	Top up with bellows	Plug any leaks with stoppers
<b>NOTES</b>						
1. When the Captain is not the Pilot, it will be his responsibility to give the order "Dinghy, dinghy, prepare for ditching", or to instruct the Pilot to do so. From this point onwards the crew members are to carry out the drill as laid down, except that the Captain is to board last unless it interferes with the dinghy drill.		4. When an extra member of the crew is carried, he is not to take over the duties of any existing member but should make himself familiar with the duties of all members so that he can take over from any one incapacitated. His ditching station is beside the A.B. in a central but similar position (see above). After ditching, he should go aft to the rear exit and leave third (last). It is the duty of any adjacent member of the crew, when the initial order is given to prepare for ditching, to warn the extra member accordingly.		7. Parachute harness should be removed at the earliest opportunity. In the case of the Pilot and the W.Op. every endeavour should be made to throw the parachute harness straps clear of seat and obstruction.		
2. Crew acknowledge Pilot's orders in turn, i.e., "Flight Engineer ditching", etc.		5. Drills are based upon "Distress" developing from "Emergency". Where "Distress" is taken without previous "Emergency" action, C-course, H-height, A-airspeed, P-position, and T-time, together with the estimated ditching position, should be transmitted only if time permits and without prejudice to full Distress Signals Action. See A.M.C.O.A. 25/42.		8. When jettisoning fuel, sufficient should be left in the tanks for a power-assisted ditching.		
3. All crew members should be familiar with the duties of my other member. The duties of the R.G. and M.U.G. are interchangeable, and should be practised accordingly.		6. Crew should inflate their Mae Wests as instructed in drill. Where, however, one man is unusually large and egress therefore restricted, Mae Wests should be inflated one breath only at D.S. and fully after egress.		9. In the event of dinghy stowage cover failing to blow off, the axe can be used to release the cover. If its use is not necessary, it should be thrown to port side of aircraft. Great care should be taken to avoid puncturing dinghy with axe.		
				10. This drill is not an adequate instruction for full ditching procedure. Reference should also be made to Pilot's Notes General, A.P. 2095.		

C. B. H. 20795

LANCASTER I II III (Standard and 'Y' Types)

Dinghy Drill