PART 2 : SECTION 4

CHAPTER 15

SEARCH AND RESCUE ORGANIZATION

Introduction

1. Responsibility for the search and rescue service in the United Kingdom is undertaken jointly by the Royal Air Force and Royal Navy, although the former is the more concerned. Both service and civil search and rescue facilities are co-ordinated and directed by Headquarters, Coastal Command through a Rescue Co-ordination Centre (R.C.C.) established at each of its group headquarters and at R.A.F. Aldergrove. Fig. 1 shows the division of the United Kingdom and surrounding waters into areas, each of which is administered by an R.C.C. The basis of the organization is that all information concerning distressed aircraft is passed to the R.C.C. through the appropriate Air Traffic Control Centre (A.T.C.C.).

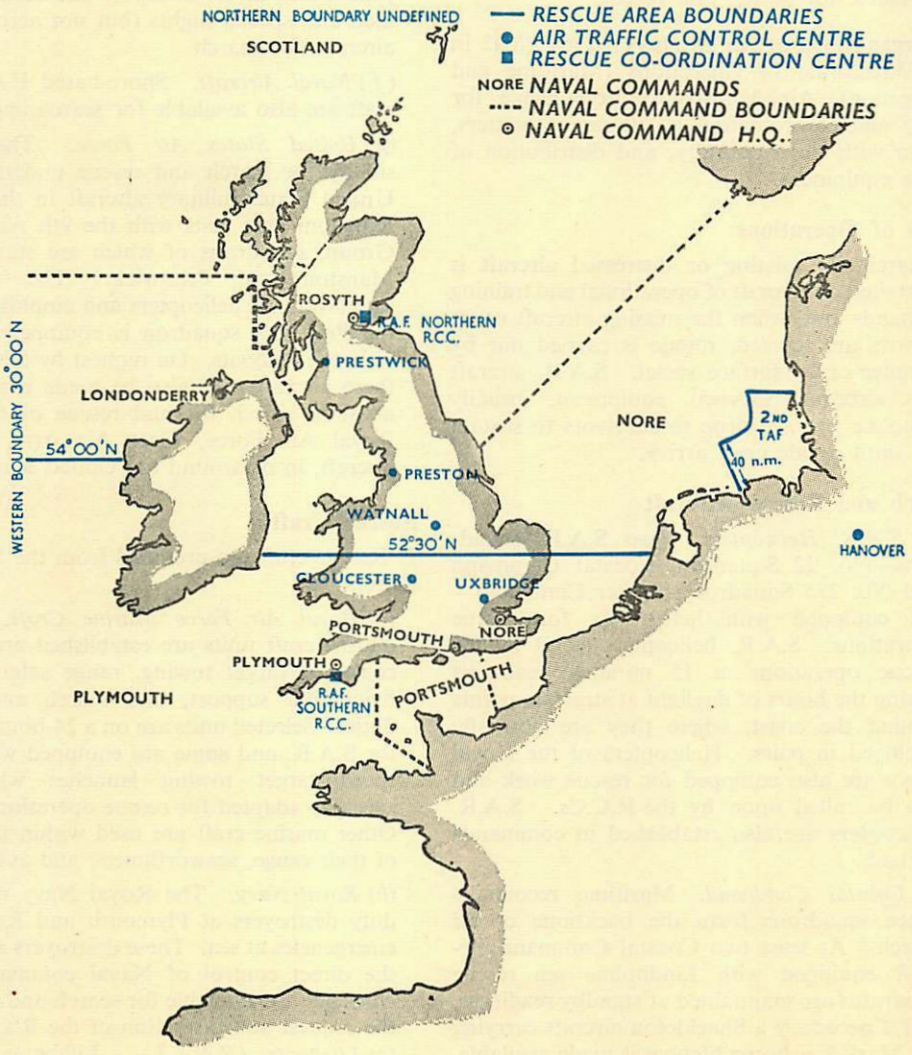

Fig. 1. Search and Rescue Areas—United Kingdom and Surrounding Areas.

2. Search and rescue in areas abroad are the responsibility of the air officer commanding. An R.C.C. is located in each area, but control varies with the facilities available. In some areas, the United Kingdom, under I.C.A.O. agreements, accepts responsibility for providing rescue services for civil and service aircraft; in others, facilities are available for service aircraft only.

3. Under an agreement with the Ministry of Transport and Civil Aviation the Royal Air Force has accepted the responsibility of providing search and rescue facilities for British civil aircraft operating in the United Kingdom, and in those areas abroad where the Royal Air Force is responsible for search and rescue.

4. **Organization at Air Ministry.** Ops. (M)2 in the Directorate of Operations (Maritime and Navigation), Air Ministry, is responsible for policy and co-ordination of all rescue matters, liaison with the Admiralty, and distribution of rescue equipment.

Basis of Operations

5. Search for missing or distressed aircraft is undertaken by aircraft of operational and training commands and, when the missing aircraft or its survivors are located, rescue is carried out by helicopter or by surface vessel. S.A.R. aircraft carry airborne survival equipment, usually Lindholme gear, to drop to survivors to sustain them until rescue craft arrive.

Search and Rescue Aircraft

6. (*a*) *S.A.R. Helicopters.* Two S.A.R. squadrons—No. 22 Squadron, Coastal Command and No. 275 Squadron, Fighter Command—are equipped with helicopters for rescue operations. S.A.R. helicopters stand by for rescue operations at 15 minutes' readiness during the hours of daylight at strategic points around the coast, where they are normally deployed in pairs. Helicopters of the Royal Navy are also equipped for rescue work and can be called upon by the R.C.Cs. S.A.R. helicopters are also established in commands abroad.

(*b*) *Coastal Command.* Maritime reconnaissance squadrons form the backbone of air search. At least two Coastal Command aircraft equipped with Lindholme sea rescue apparatus are maintained at standby readiness, and if necessary a Shackleton aircraft carrying the Mark 3 airborne lifeboat is made available. Additional aircraft are alerted when required.

(*c*) *Bomber Command.* Bomber Command provides standby aircraft equipped with Lindholme apparatus.

(*d*) *Fighter Command.* Fighter Command provides aircraft for search within an inland belt 90 miles wide from Aberdeen to Portland Bill and up to 40 miles from the coast between the same points during the normal working hours of the fighter sectors concerned.

(*e*) *Transport and Flying Training Commands.* These commands provide search aircraft at short notice. Transport Command can provide aircraft equipped with Lindholme gear. Transport Command will also warn and, if practicable, divert transport aircraft on scheduled and special flights (but not aero-medical aircraft) for search.

(*f*) *Naval Aircraft.* Shore-based F.A.A. aircraft are also available for search and rescue.

(*g*) *United States Air Force.* The responsibility for search and rescue undertaken by United States military aircraft in the United Kingdom area rests with the 9th Air Rescue Group, squadrons of which are stationed at Manston and Prestwick. The Manston squadron uses helicopters and amphibians and the Prestwick squadron is equipped to carry airborne lifeboats. On request by the R.C.Cs. these aircraft may also be made available to assist in search for and rescue of distressed Royal Air Force, Fleet Air Arm, or civil aircraft, in or around the United Kingdom.

Rescue Craft

7. Rescue craft are provided from the following sources:—

(*a*) *Royal Air Force Marine Craft.* R.A.F. marine craft units are established around the coast for target towing, range safety duties, flying-boat support, and search and rescue duties. Selected units are on a 24-hour standby for S.A.R. and some are equipped with high-speed target-towing launches which are specially adapted for rescue operations at sea. Other marine craft are used within the limits of their range, seaworthiness, and availability.

(*b*) *Royal Navy.* The Royal Navy maintains duty destroyers at Plymouth and Rosyth for emergencies at sea. These destroyers are under the direct control of Naval commanders-in-chief but are available for search and rescue at the request and discretion of the R.C.Cs.

(*c*) *Lifeboats (R.N.L.I.).* Lifeboats of the R.N.L.I. may be requested to assist in rescue

operations within 60 miles of the coast. Although slow, lifeboats can be used in rough seas where operation of other craft is impossible. Requests for their assistance should be made by the R.C.C. through the local coastguard district headquarters.

(*d*) *Merchant Shipping.* If no other means of rescue is available, merchant shipping may be diverted from their courses to pick up survivors, although such diversions are limited in distance. Such assistance should be requested by the R.C.C. through H.M. Coastguard.

(*e*) *Ocean Weather Ships.* Ocean weather ships positioned on stations in the North Atlantic may be dispatched for search and rescue operations. They can also provide distressed aircraft with radar fixes, homing and navigation aids, and emergency flare paths for night ditching.

Land Rescue

8. Mountain rescue units are based at Royal Air Force stations in or near the mountainous districts of the United Kingdom. These units are manned by specially trained volunteers, and are equipped with suitable motor transport and equipment. Each mountain rescue unit maintains liaison with police stations within its area and equips sub-units formed from local volunteers. The units may be alerted by the R.C.C. or by local action.

Signals Organization

9. Arrangements exist to ensure that distressed aircraft obtain absolute priority and freedom from radio interference for their calls for assistance. These arrangements take the form of reserved frequencies for distress messages and of varying degrees of precedence which may be used in certain stages of emergency. The following radio frequencies are available specifically for use by distressed aircraft. They are guarded throughout the United Kingdom and in certain areas abroad so as to provide continuous listening cover. Ground stations relay distress messages to the R.C.C. normally through the A.T.C.C., and provide fixes for distressed aircraft.

(*a*) H/F D/F watch at master diversion airfields on the R.N./R.A.F. world-wide distress and rescue frequency 5695·5/3095 kc/s.

(*b*) M/F D/F watch at certain R.A.F. stations on 399 kc/s.

(*c*) M/F D/F watch at G.P.O. coast radio stations on the international distress frequency, 500 kc/s.

(*d*) V.H.F. R/T D/F watch at master diversion and other airfields on the International Aeronautical Emergency Channel, 121·5 mc/s.

(*e*) The U.H.F. distress frequency is 243 mc/s.

10. Despite the availability of the above frequencies and facilities, distressed aircraft should transmit first their distress calls and messages on the frequency in use. After this initial transmission, a distressed aircraft should change to the most appropriate distress frequency, retransmit the message, and obtain a fix. The degree of precedence to be used depends on the urgency which exists at the time. Three degrees of precedence are designated, and apply to the following situations :—

(*a*) *Safety.* Aircraft not in immediate danger, but under difficult conditions which may lead to danger, *e.g.* uncertainty as to position, weather conditions, etc. Precedence "TTT" on W/T or "SECURITÉ" on R/T.

(*b*) *Urgency.* Aircraft in danger, and in very urgent need of assistance with the aid of which the danger may possibly be overcome, *e.g.* aircraft lost, fuel shortage, partial engine failure, etc. Precedence "XXX" on W/T or "PAN" on R/T.

(*c*) *Distress.* Aircraft threatened by serious and imminent danger and in need of immediate assistance, *e.g.* ditching. Precedence " SOS " on W/T or "MAYDAY" on R/T.

Rescue Appointments

11. A rescue officer is appointed at every command, group, station, and flying unit. He is normally the navigation officer or is under the direct supervision of the navigation officer. At command and group headquarters, the duties of the rescue staff officer are to advise the air officer commanding-in-chief or air officer commanding on all rescue organization and training. At stations, the rescue officer assists in training flying personnel in the use of safety equipment. Instruction in wet dinghy drill is the responsibility of the Physical Fitness Branch with the co-operation of rescue officers.

DISTRESS PROCEDURE

General Considerations

12. Successful search and rescue action depends on the early receipt of accurate information by the rescue organization. Therefore the aircraft captain should prepare to take action as soon as trouble is suspected ; it is better to originate the

call and then cancel it than to leave matters until the full emergency occurs. The ground organization, on receipt of the message and any other relevant data, passes this to the R.C.C. immediately. Sources of information on which action is taken by the R.C.C. are given below. The first two normally provide enough information for a successful rescue ; the third source alone seldom allows accurate calculation of the position of a distressed aircraft.

(*a*) *Signals Information.* This usually takes the form of a transmission from the distressed aircraft or an accompanying aircraft.

(*b*) *Visual Information.* This is based on personal observation of an aircraft in distress.

(*c*) *Overdue Action.* This is an assumption that an aircraft is in distress because of non-arrival at its stated destination.

The action to be taken by aircraft in any state of emergency is given in Part 4, Sect. 3, Chap. 1.

Action by Ground Organizations (See Fig. 2)

13. **Action by Members of the Public.** Any member of the public who observes an aircraft crash or in distress should :—

(*a*) Render all possible assistance immediately.

(*b*) Telephone the nearest civil police station, R.A.F. unit, R.N. air station, or, in the case of incidents at sea, the nearest coastguard or lifeboat station. The message should be announced as a FLASH call and will then receive priority over any telephone system.

14. **Action by Police.** On receipt of a telephone message or on observing a crash, the civil police should transmit the information immediately to the nearest R.A.F. station or A.T.C.C. ; or, if the incident takes place at sea, to the local coastguard station.

15. **Action by R.A.F. Units.** Any R.A.F. unit receiving a report of a distressed aircraft should relay the information to the appropriate A.T.C.C. If the station commander or his deputy is certain of the reliability of the information, he may pass it, at his discretion, direct to the R.C.C. He must also decide whether to undertake local rescue action, by the dispatch of search aircraft, mountain rescue units, marine craft, or local R.N.L.I. lifeboats, and inform the A.T.C.C. of any action taken and progress of his rescue efforts.

16. **Action by Army Units.** Army units should pass any information to the nearest R.A.F. unit or to the nearest coastguard station if the incident takes place at sea.

17. **Action by Naval Units and H.M. Ships.** Royal Naval air stations and H.M. ships should pass reports to the naval command headquarters which is in constant touch with the R.C.C.

18. **Action by R.A.F. Signals Stations or G.P.O. Coast Radio Stations.** Any distress signal should be passed immediately to the appropriate A.T.C.C.

19. **Action by H.M. Coastguard Stations, Lighthouse Keepers, and Light Vessels.** All available information should be telephoned to the local coastguard district headquarters. Coastguard stations may also take immediate rescue action by dispatching R.N.L.I. lifeboats, should they think fit.

20. **Action by Air Traffic Control Centres.** The A.T.C.C. is responsible for initiating distress action on all overdue aircraft. The senior civil air traffic control officer takes action in respect of civil aircraft, and the R.A.F. controller for service aircraft. Before a request for search action is passed to the R.C.C., the A.T.C.C. makes every effort to ascertain the reliability of the information and to ensure that the aircraft concerned has not landed away from its destination. The R.C.C. is usually alerted as soon as a piston-engined aircraft becomes one hour overdue on its flight plan E.T.A. ; but the time is also governed by the type of aircraft involved and the requirements of the command concerned. In the absence of positive information, rescue action is seldom requested until it is considered that the missing aircraft has exhausted its fuel. The A.T.C.C. passes all incoming reports of distressed aircraft to the R.C.C., having first ascertained the authenticity of the call, and integrated the report with known aircraft movements to identify the aircraft concerned. The senior R.A.F. controller at the A.T.C.C. maintains close contact with the R.C.C. throughout the emergency, and can assist in the rescue action by diverting suitable aircraft.

21. **Action by the Rescue Co-ordination Centre.** The senior officer on duty at the R.C.C. assumes co-ordinating direction and control of all search and rescue operations. He receives all information from the A.T.C.C. and from other sources,

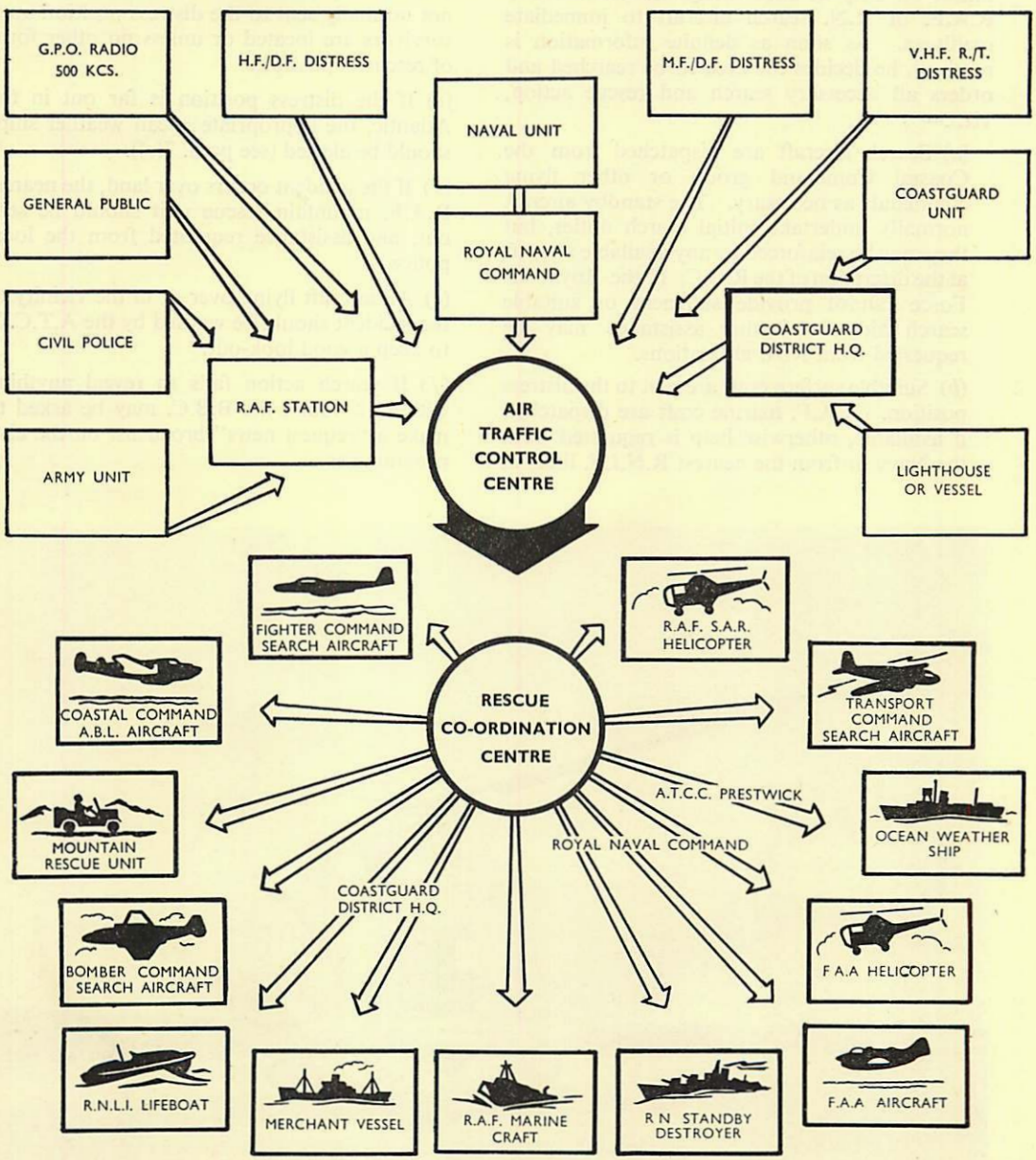

Fig. 2. Organization of the Search and Rescue Service

and keeps a record of all available standby aircraft. He is responsible to his A.O.C. for taking appropriate rescue action. On receiving the initial warning of an aircraft in distress, the officer on duty at once brings suitable standby R.A.F. or R.N. search aircraft to immediate readiness. As soon as definite information is received, he decides the area to be searched and orders all necessary search and rescue action, viz. :—

(*a*) Search aircraft are dispatched from the Coastal Command group or other flying commands as necessary. The standby aircraft normally undertake initial search duties, but they may be reinforced by any available aircraft at the discretion of the R.C.C. If the Royal Air Force cannot provide sufficient or suitable search aircraft, further assistance may be requested from R.N. air stations.

(*b*) Suitable surface craft are sent to the distress position. R.A.F. marine craft are dispatched if available, otherwise help is requested from the Navy or from the nearest R.N.L.I. lifeboat station. If the distress position is close to shipping routes, a position broadcast is relayed to all shipping through the G.P.O. coastal W/T stations. The larger types of R.N. vessels (*e.g.* standby destroyers) or merchant ships are not normally sent to the distress position until survivors are located or unless no other form of rescue is possible.

(*c*) If the distress position is far out in the Atlantic, the appropriate ocean weather ships should be alerted (see para. 7(*e*)).

(*d*) If the incident occurs over land, the nearest R.A.F. mountain rescue unit should be sent out, and assistance requested from the local police.

(*e*) All aircraft flying over or in the vicinity of the incident should be warned by the A.T.C.C. to keep a good look-out.

(*f*) If search action fails to reveal anything within 12 hours, the B.B.C. may be asked to make a "request news" broadcast on the civil programmes.

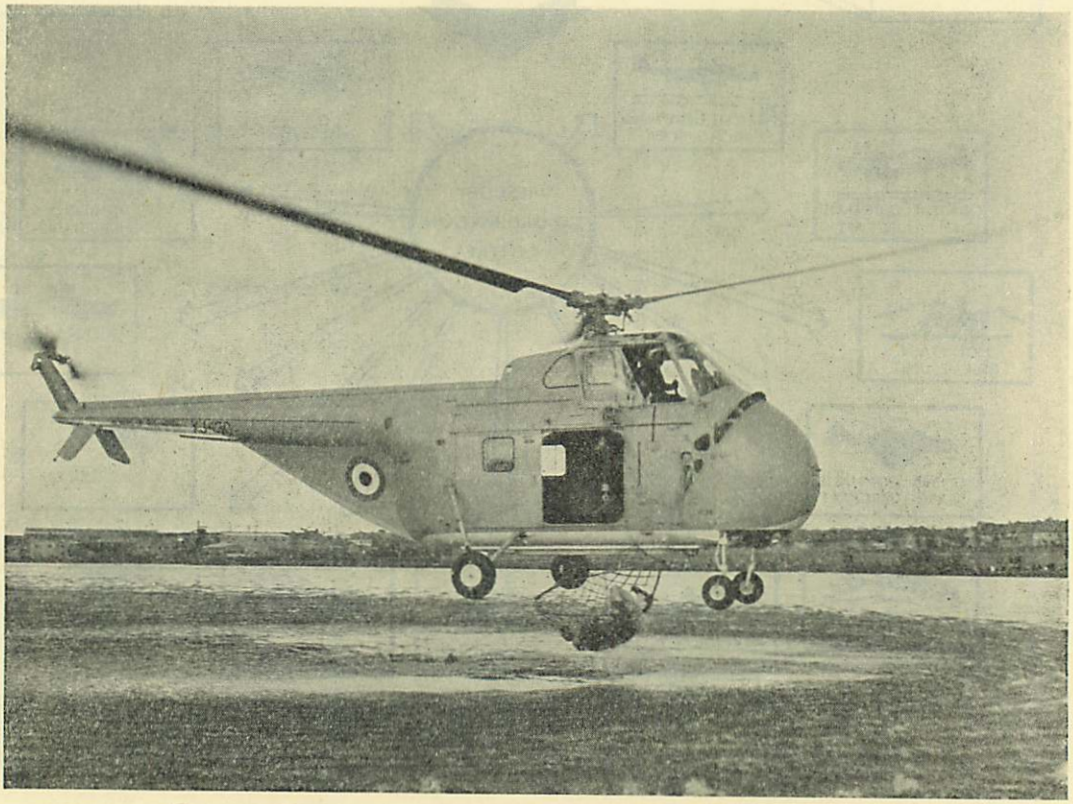

Fig. 3. A "Whirlwind" Helicopter Demonstrating the Use of a Rescue Net to Scoop up Floating Objects

22. **Action in Southern Ireland.** If an R.A.F. aircraft crashes in Southern Ireland, or in Irish territorial waters, rescue becomes the responsibility of Eire. It may be necessary, however, to augment the Eireann rescue facilities with R.A.F. search aircraft or mountain rescue teams. If so, permission must first be obtained from the Eire defence authorities, who are contacted through the British Air Attaché, Dublin.

Aircraft Search Procedure

23. Search aircraft will normally be equipped with the SARAH receiver by which they can home on to the SARAH beacon carried by R.A.F. aircrew. Naval and civilian aircraft do not carry SARAH equipment. Where possible, search aircraft should carry some form of droppable survival equipment to sustain survivors until rescue can be effected. Whilst on search, all

Fig. 4. A High-Speed Launch of the Type Used for Search and Rescue Operations

aircraft look-out positions should be manned continuously, so that no wreckage or survivors can be missed. Look-outs should be changed at half-hourly intervals to reduce eye strain and boredom. It is important that all look-outs are instructed to concentrate their attention on the area of sea or land within the prescribed visibility distance. It is useless to scan the horizon or endeavour to sight a dinghy at distances over five miles. At all times, search aircraft flying over the sea must carry a prepared sea marker or smoke float, to be dropped on sighting any likely object. This marker has a dual purpose : to assist the pilot to locate the object and to provide a reference point for recommencing the search.

Action on Locating Survivors

24. On locating survivors the search aircraft should take the following action :—

(*a*) Drop a marine marker by day or a flame float by night to ensure that visual contact can be maintained.

(*b*) In daylight, if possible, drop survival equipment to the distressed crew.

(*c*) Transmit a message to the R.C.C. giving the position of survivors, using precedence "Operational Immediate".

(*d*) Obtain an accurate fix by Gee, astro, D/F, etc., and transmit this to the R.C.C.

(*e*) Mark the survivors' position by smoke or flame markers. The aircraft should not leave the position until relieved by another aircraft.

(*f*) Where two aircraft sight a dinghy, the first to do so should act as "leader" and stay with the survivors. The second should contact and guide surface craft to the position.

(*g*) Contact and guide vessels to the position by flying low over the vessel, rocking the wings and setting course in the required direction. Green Very cartridges should be fired if the ship does not respond.

Action by Aircraft Sighting Distressed Aircraft

25. Any aircraft sighting a crash landing or ditching should remain in the vicinity of the distressed crew, and transmit a message to its own controlling ground station. If possible the distressed aircraft or crew should be kept in sight until rescue is effected. An aircraft intercepting a distress or emergency message should endeavour to take a bearing on the transmission and plot the position. A listening watch should be kept on that frequency, and if no answer to the distress call is received from a ground station the aircraft should relay the call to its own controlling ground station. At the captain's discretion, the aircraft may proceed to the distress position.

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