NOTE 15

SPECIAL TASKS AND RESPONSIBILITIES OF ATCRU'S IN RESPECT OF ROYAL FLIGHTS SUPPLEMENTARY RADAR SERVICE FOR ROYAL FLIGHTS

INTRODUCTION

1. Special tasks are a regular feature of ATCRU work, and although there is no laid down definition of a special task, the term can be used as a broad category to include all aircraft movements requiring control techniques beyond the scope of, or in addition to, standard ATCRU operating procedures. According to the varying requirement of the aircraft operator such flights will be controlled either by Fighter Controllers at a Sector Operations Centre (SOC) or Control Reporting Cell (CRC), Air Traffic Controllers in a Special Tasks Sect, at an ATCRU or in the normal Operations Room.

ALLOCATION OF SPECIAL TASKS

2. Aircraft performance trials and test flights will almost always require special handling techniques. The majority of R & D airfields generating this type of flying are situated in the southern part of the country, and thus come under the responsibility of London (Mil). To cope with the high intensity of test flights taking place over the south of England, London (Mil) has established a Special Tasks Sect, consisting of two consoles separated from the Main Ops room, but enjoying all the facilities and equipment available to the rest of the unit. Manned by Air Traffic Controllers, and having discrete SSR and R/T frequency allocation, this Sect is responsible for the control of the majority of test flying from R & D airfields, and for the control of weapons, aircraft and ground equipment trials as required by ASWE, ETPS and various departments of MOD. The work involved requires very close co-operation and liaison between pilots, aircraft operating authorities and controllers.

3. Special tasks of a less specialised nature are usually handled within the main Ops room of an ATCRU. Normal allocation procedures may be followed, but it is more usual for a separate console to be nominated for the control of the flight. A written brief, flight plan or NOTAM will often be available to aid the controller.

4. Flights detailed for control by a SOC/CRC usually involve interceptions or classified procedures, and are beyond the scope of this course.

CONDUCT OF SUPERSONIC FLIGHTS

5. To avoid nuisance to the public and damage to buildings, supersonic flights in the UK are to be made over the sea. Aircraft heading directly out to sea may accelerate to supersonic speed when at least 10 nautical miles out to sea and along a line of flight at least 20^{0} divergent from the mean line of the coast. Supersonic flights with the aircraft pointing towards land, turning or flying parallel to the coast are to take place at least 35 nautical miles from the nearest coastline. In all cases the angle of dive is not to exceed the minimum necessary.

6. To ensure correct positioning, all supersonic flights are to be carried out under the control of a SOC/CRC, an authorised MATO radar or Naval radar as appropriate. Where a MATO radar and SOC are controlling within the same airspace, close co-ordination is to be effected before any supersonic run takes place and the simultaneous control of supersonic flights by both units is to be avoided. Co-ordination is effected with the Defence Co-ordination Cell (DEFCOC) at Neatishead or (JCOC) Boulmer.

RECORDING OF SUPERSONIC FLIGHTS

7. Operating authorities are to notify the appropriate Radar Unit of all supersonic flights in advance. Radar Units are to maintain a permanent record of supersonic flights carried out under their control as follows:

a. Aircraft type and callsign.

b. Date and time of flight.

c. Heading.

d. Speed (if available; this information may be classified).

e. Position (area in the case of sustained flight).

f. Flight level and attitude.

EMBELLISH AIRCRAFT

8. "Embellish" is a codeword signifying that an aircraft (usually a bomber) is willing to act as target for fighter interception.

9. When a SOC/CRC selects an EMBELLISH aircraft for interception, details of the flight will be passed to the appropriate ATCRU. The supervisor is to brief the relevant ATCRU controller of the intended interception. The controller is to take into consideration that fighter aircraft will be intercepting the EMBELLISH aircraft when giving conflicting traffic information or initiating avoiding action. The notification of an immediate interception will be passed by the SOC/CRC Fighter Marshaller to the appropriate ATCRU, and the fighter identified to the controller.

AIR TO AIR REFUELLING

10. A fair proportion of air to air refuelling (AAR) is carried out either under the control of a SOC/CRC, or the rendezvous and link up procedures are self navigated by the aircrew using airborne aids. However, there still exists a requirement for ground controller R/Vs to be carried out by ATCRU controllers.

11. Most training refuelling takes place on designated towlines - racetrack patterns about 60 - 100 miles long as laid down in the "Flight Refuelling Handbook", and usually between FL's 200 - 300. Tanking exercises are usually promulgated in advance, and shortly before refuelling actually takes place the relevant airspace should be notified as active to those units and agencies designated in local orders. Block levels should be obtained from the civil control authorities whose Upper Air Routes are affected.

12. Control of the refuelling exercise is handled by one particular console nominated by the supervisor, and the tanker pilot always listens out on a normal control frequency. Air to air communications are carried out on a separate descrete UHF frequency, and once the tanker is under control and heading for the towline the pilot should be asked for this frequency, and for the callsigns or number of "chicks" expected.

13. The tanker will normally be established on the towline at the correct level before the first fighters arrive. Once they also are under control they should be reminded of the tanker's callsign, discrete frequency, and informed of the procedures required when breaking off from the tanker on completion of refuelling.

14. Thereafter the basic aim is to manoeuvre the fighters into position 1 - 2 miles astern of, and 2,000 feet below, the tanker. The easiest method is to attack the tanker at 90° or 180° offset, and turn in behind. The judgement of this turn is crucial; too early and the fighters will end up ahead of the tanker, too late and the distance between the units will result in a time wasting tailchase. Speed differential between tanker and fighter is not great, and is not effective in achieving a link up. Note that the RV will usually be effected by turning the fighter. The tanker may also be turned in ahead of its new chick, but only if it has no others in tow or is making a normal turn up - or downtrack at the end of the towline. Having positioned the fighter correctly the controller is to wait until the pilot has the tanker in sight. Once visual contact is established the fighter may be released to tanker frequency; the climb of tanking level and final link up being completed visually.

15. When the tanker has chicks in tow it is to be given non-deviating status. Any turns must be pre-notified if at all possible, and in giving turns the controller is to bear in mind the limited manoeuvreability of tanker/fighter combine. Procedures for breaking away from the tanker vary according to circumstances. Usually the fighters will clear the tanker visually, climb 1,000 feet and recall the ATCRU on a pre-briefed discrete frequency.

OPERATIONAL REFUELLING

16. There is an occasional requirement for short range aircraft to be ferried overseas. They will normally take on fuel shortly after reaching cruising level. The procedures differ somewhat from those outline above in that the refuelling is usually carried out on a straight line track en-route, and the R/V is generally achieved using airborne aids.

SPECIAL FLIGHTS

17. Certain flights, such as photographic surveys and Navaid calibration, frequently require the aircraft to make repeated penetrations of controlled airspace and danger areas, or otherwise affect the normal operation of other airspace users. The procedures and clearances involved are too complicated to be arranged on an ad hoc basis and must be agreed in advance. The sponsoring authority submits full details to MATO, as detailed in JSP 318 Part 1, Section 2, Annex 6A, who then negotiate the appropriate clearances. Once agreement has been reached on all aspects of the flight it is then given a Special Flight serial number and a fully detailed brief circulated to units. Actual control of the flight is straightforward, the controller working from the above mentioned brief, which gives all details of routing, flight levels, co-ordination and clearance procedures and any special handling techniques required.

TEST FLIGHTS

18. Aircraft performance trials and test flights generated by manufacturers' airfields will almost always require special handling. The requirements may include:

a. Rapid climbs and descents.

b. Uninterrupted climbs, descents or straight tracks.

c. Flight level band for stalls, spins or engine relights.

d. Minimum R/T.

27. Any instructions given by the supplementary radar controller will be repeated on VHF by the pilot for the information of the civil procedural controller.

28. Changes of flight level are to be made only after co-ordination with the civil procedural controller.

SEPARATION STANDARDS

29. Normal separation standards of 5 nm in plan, and 5000 ft using a height-finder, are applied. Royal Aircraft is only to be diverted to leave the purple airspace when there is no other means of maintaining separation.

IDENTIFICATION

30. Identification of the Royal Flight will usually be by position information passed from controller to controller. If any doubt exists as to the identification of the Royal Flight, the standard means of identification may be used.

HANDOVER OF CONTROL

31. Provisional handover points between control agencies will be shown in the Royal Flight Supplementary Radar Tasking signal. Handover points may be adjusted between assigned radar and radar approach agencies but the centre controller is to be informed before handover. When the handover is complete, the radar agency assuming control is to inform the Royal Aircraft. Controller to controller communication is to be established 15 mins before the handover is carried out.

LOSS OF RADAR CONTACT

32. If Radar Contact is lost, the supplementary radar service units is to take the following action:

a. Inform the aircraft captain.

b. Inform the next assigned radar control unit.

c. Inform the civil controller at the ATCC.

Annex:

A. ARTS Supersonic Flight Exercises
B. Introductory Brief for Air to Air Refuelling (AAR) Rutland Radar MRSA Air Refuelling Area (ARA) 12

A

ANNEX 4 TO

NOTE 15

ARTS SUPERSONIC FLIGHT EXERCISES

RUTLAND RADAR NORTH SEA SUPERSONIC RUNS

1. Before an aircraft under the control of Rutland Radar is allowed to go supersonic, co-ordination must be effected between Rutland and at Chief Controller Neatishead. The controller is to ascertain from the pilot the general area and flight level required, and the duration of the supersonic phase occasionally the pilot will also request a specific heading. From this information the controller will calculate the GEOREF square affected, and must then book these squares at the appropriate flight level with Chief Controller. Occasionally particular squares or flight levels will not be available due to other SOC/CRC activity; the matter then becomes subject to negotiation between pilot, ATCRU controller and Chief Controller Neatishead. Once the relevant airspace has been booked, the aircraft is to be positioned correctly out to sea and, when clear of other traffic, is to be allowed to accelerate. Once again the times for going supersonic and resuming subsonic are to be obtained from the pilot. Care must be taken to ensure the aircraft does not fly out of radar range, and once the run is complete Chief Controller Neatishead is to be informed.

ANNEX B TO
LESSON NOTE 15
DATED: MAR 82

INTRODUCTORY BRIEF FOR AIR TO AIR REFUELLING (AAR)
RUTLAND RADAR MRSA AIR REFUELLING AREA (ARA) 12

INTRODUCTION

1. AAR in the Rutland MRSA takes place in ARA 12 the location is shown at Appendix 2. For the purposes of the exercise, console 5 Rutland Radar will be the tanker control console. The student nominated on the programme will be the Rutland tanker controller.

STATUS OF AAR

2. AAR in ARA 12 is accorded non deviating status and all aircraft will be under Radar Control. In ARA 12 FLs 250 and 280 inclusive are normally reserved for the tanking procedure. When ARA 12 is active, other traffic being controlled by Rutland Radar may be vectored through the area, subject to agreed coordination between the relevant controllers. Aircraft below FL245, when climbing to, or descending from ARA 12, are to be placed under Radar Advisory.

RENDEZVOUS PROCEDURES

3. ARA 12 procedures require the controller to be entirely responsible for effecting the tanker/receiver join up. The procedures are as follows:

a. Receivers are given radar vectors towards the tanker with regular updates on its relative position. The interval between updates should be reduced as the range decreases. (Suggested ranges 50:30:20:10:5:4:3:1 miles)

b. The minimum separation between tanker and receivers is normally to be 2000'. Exceptionally, (ie bad visibility) the vertical separation can be reduced to 1000', with the permission of both tanker and receiver captains. Radar vectors should be continued until the receivers are 2 nm behind the tanker, 2000' below, and on a similar heading. Within 20 nm of the tanker the receiver should be asked to call when he is visual contact.

c. When, within 5 nm and visual with the tanker, the receiver, with the tanker captain's permission may be cleared to climb visually to the tanker's level and join up. The receiver will then be told to stop squawk alpha and contact the tanker on discrete frequency (244.0).

DEPARTING PROCEDURES

4. The procedure for receivers to leave the tanker must be clearly stated before join up. The tanker captain will obtain clearance from the tanker controller before each receiver departs. The tanker controller must be certain that there is no confliction with previous departed receivers before issuing the clearance.

POSITIONING TECHNIQUES

5. Under normal circumstances ARA 12 tankers will remain in the race track pattern and the receivers will be vectored to position 1-2 nm behind. The following data may be of value for tanking procedures ie tanker flying at 300 kts receiver 360 kts.

a. Receiver turning onto tanker from reciprocal heading. Suggested ranges are 10 nm lateral displacement and slant range of 20 nm.

b. When the receiver is approaching the tanker at 90° to tanker track turns to the left or right may be given to increase or decrease the rate of closing.

The above examples are for guidance only and are no substitute for observation and experience.

RT PHRASEOLOGY

6. The RT phraseology to be used in the Rutland procedures is reproduced at Appendix 1 to this Annex.

BRIEFING

7. This refuelling brief has been written in general terms but ensures that all Rutland controllers are provided with the necessary operational guidelines to execute the refuelling task. To include more detailed information and advice on vectoring techniques would result in a brief of unacceptable length. In addition to the foregoing, the student will be given a verbal brief at console prior to the commencement of each exercise.

APPENDICES:

1. Tanking Phraseology ARA 12
2. Map Rutland Radar ARA 12

APPENDIX 1 TO
ANNEX B TO
LESSON NOTE 15
DATED: MAR 82

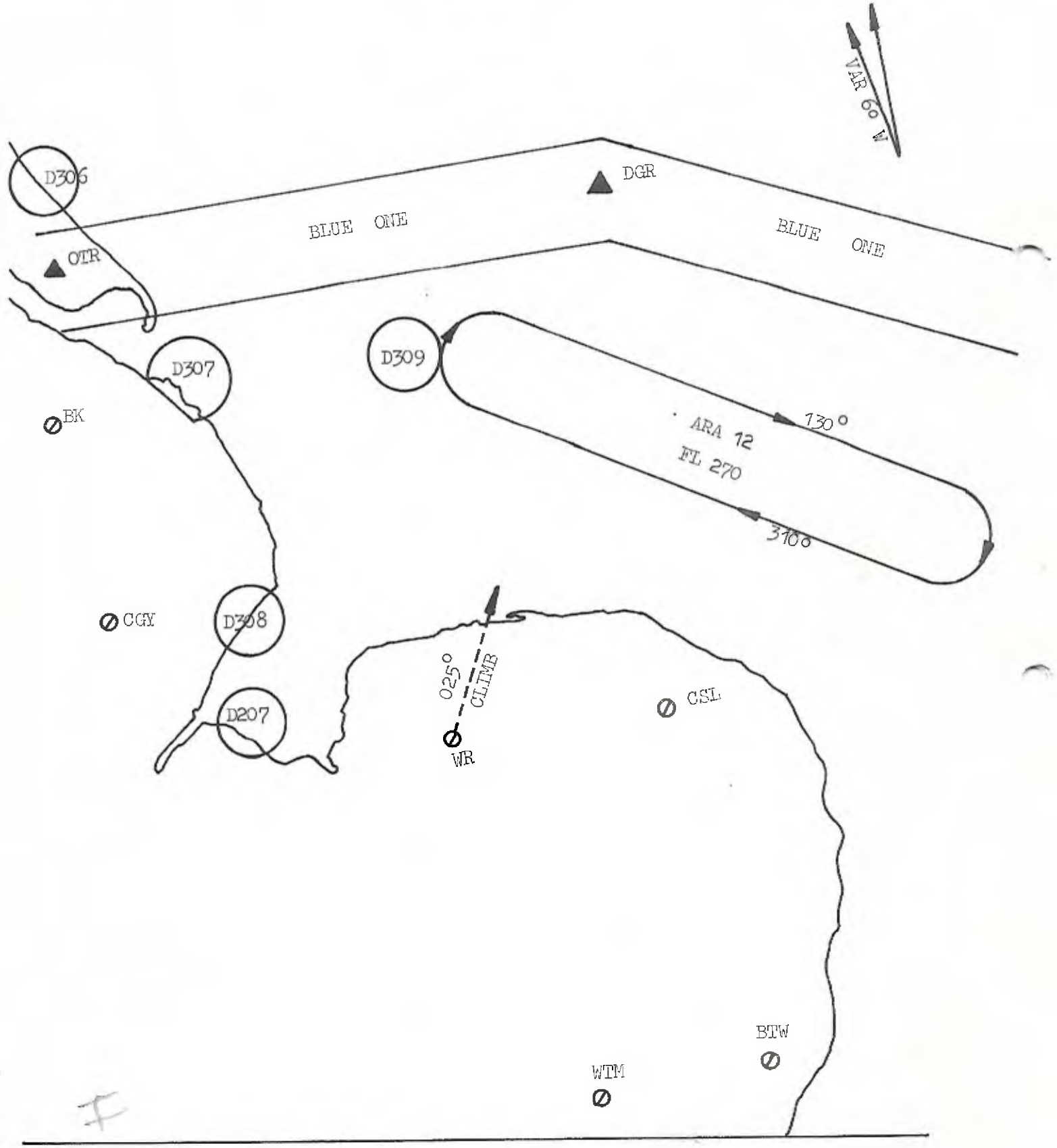
PHRASEOLOGY - ARA NO 12

SERIAL NUMBER (a)	CIRCUMSTANCES (b)	RADAR CONTROLLER TO AIRCRAFT (c)
1	Prior to rendezvous	"This is your tanker controller. The Tanker callsign is Cluny 15 position 30 nm East, heading 300, at flight level 270. Tanker discrete frequency is 244.MHz".
2	Rutland off tanker Procedure.	"Stead 18 chicks off procedure. Climb 1000' above the tanker, maintain position near the tanker and contact Rutland Radar on this frequency".
3	Receiver permission to close.	"Cluny 15. Stead 18 is position ..... (relative to tanker) at flight level 250. Request permission to close".
4	Permission to close tanker given.	"Stead 18 clear to close".
5	Joining the Tanker	"Stead 18 stop squawk alpha contact tanker on frequency 244.0 MHz.

14

APPENDIX 2 TO
ANNEX A TO
LESSON NOTE 15
DATED: MAR 82

RUTLAND RADAR
ARA 12



ARTS

NOTE 16

DUTIES OF AN ASSISTANT

INTRODUCTION

1. Assistant Air Traffic Controllers at Area Radar Units are required to fulfil many and varied functions, dependent on the tasks allocated to the particular ATCRU.

ASSISTANT'S TASKS

2. Some tasks carried out by assistants at ATCRUs relate directly to similar functions at any terminal radar unit, such as the manning of the unit switchboard and updating the controllers' tote displays.

3. However, many other functions remain unique to the Area Radar environment. Certain equipments in current use require the manning of tracking consoles, height finding equipment and touch wire displays. Additionally, becuase the administrative workload tends to be higher than in the terminal environment, each area controller is allocated a personal assistant, whose jobs include acting as a filter, obtaining and relaying information and initiating calls to other units.

4. Consequently, Area Radar Assistant Air Traffic Controllers often find themselves working side by side with their controllers as an integral part of a control team giving a service to aircraft. The working relationship automatically becomes extremely close and must be based on interdependance and mutual respect.

THE TEAM

5. During any controlling session at an ATCRU, there will probably be a rotation of assistants to a control team. It is important that controllers make themselves aware of this rotation and they ensure that every new assistant is briefed as to their requirements. Your assistants must know what you require from them. Equally, you should have a good idea of the standard and limitations of each of the assistants you work with.

6. Assistants forming part of a control team at an ATCRU are the responsibility of the controller. The standards the team exhibit and the knowledge they display are, therefore, largely dependent on the training you give them.

RADAR HANDOVERS BETWEEN UNITS

INTRODUCTION

1. These procedures are to be followed when handing over aircraft to ATCRU's.

2. Handovers are to be effected by the passing of all relevant information from controller to controller and not (unless landlines are unavailable) by the aircraft captain reporting flight details to the next unit.

WHEN TO HANDOVER

3. Aircraft are to be transferred to another ATCRU/ATC agency on the following occasions:

a. When the aircraft is on a track which will take it into the MRSA of another ATCRU.

b. When the aircraft (not in a MRSA) is approaching the unit's overhead, weather or other clutter and another ATCRU can provide a radar service.

c. When there is a radar failure. If the aircraft is in the MRSA the Contingency Plan in MATO ASIs will indicate the ATCRU tasked to provide the radar service.

d. When the number of aircraft being controlled reaches the maximum safe handling capacity.

e. When it is known that the aircraft will eventually pass out of solid cover.

f. When the aircraft is for an airfield recovery.

4. The transfer of responsibility for an aircraft from one radar controller to another may be effected provided that the following conditions apply:

a. The handover is directly from controller to controller.

b. The aircraft is clear of controlled airspace.

c. The aircraft is in an area within mutual overlapping radar cover.

d. The aircraft is clear of conflicting traffic. Should a confliction develop during the handover sequences, the transferring controller is to resolve this prior to completing the handover.

HANDOVER PROCEDURE

UHF/VHF HIGH/MED LEVEL H/O

5. Controller to controller communication is first to be established in good time before the estimated handover position is reached, and the following information passed in the order given:

a. Callsign.

b. Position and heading. (The transferring controller should pause after passing this information to allow the receiving controller to locate the aircraft by saying 'Contact' and pass new SSR code for selection by aircraft.)

c. Flight level.

d. Type.

e. Service required.

f. Any other information, viz aircraft destination, type of flight or next turning point.

g. Console numbers of the receiving controller and transferring controller are to be exchanged.

NOTE: This information is to be checked by 'reading back'.

6. When a radar handover is effected using primary radar one of the following methods will be used to give the aircraft's position.

a. If the 2 radar displays are adjacent, by direct indication of the radar echo.

b. Designation of the radar echo by:

(1) Bearing and distance from a specified geographical position or navigational facility which appears on both radar displays:

or

(2) Reference to GEOREF video map.

c. Designation of the radar echo by positioning an electronic marker or symbol so that only one radar echo is thereby indicated, and there is no possible doubt of correct identification.

7. Identification will normally be established by a coded secondary radar response or from the position report and a short period of track observation; alternatively, it may be necessary for the receiving unit to establish or confirm identification by a turn. In this case the controller initiating the handover is to instruct the aircraft to change heading for identification. After identification is established, the receiving controller is to inform the transferring controller and request that control of the aircraft be handed over. The receiving controller is responsible for establishing the identity of an aircraft before accepting control. Should the transferring controller have additional information concerning the aircraft or suspect that a misidentification has occurred, he is to notify the receiving controller. The exchange of controllers' console numbers enables the receiving controller to quickly re-contact

the transferring controller if he does not obtain R/T contact with the aircraft, or has any subsequent query.

LANDLINE FAILURE OR NOT AVAILABLE

8. If the landline to the ATCRU has failed or is not available, the pilot is to be given his position and instructed to call the unit on its Initial Contact Frequency (ICF).

9. Handover of Control to Continental Agencies. Where direct landlines between United Kingdom and Continental Radar Units exist, these are to be used for handover of control. When no such landlines are available, aircraft may be released temporarily at a suitable position, when it appears safe to do so, to call the appropriate Agency for a clearance to enter Continental FIR/UIRs. In this case the pilot must be advised that radar service will be dis-continued until RT communications is re-established.

RT CALL OUTSIDE SOLID COVER

10. When the aircraft calls outside solid cover and will not climb or fly into solid cover, advise the pilot to call another ATCRU in whose solid cover he may be. No landline call is necessary to that ATCRU.

RT PHRASEOLOGY

11. The R/T Phraseology to be used by both the transferring and receiving controllers is as follows:

a. Transferring Controller

"Contact _____ (Unit) on _____ (frequency)".

EXAMPLE. "Stead 69, contact Eastern Radar on 302.8".

b. Receiving Controller

"Identified, at flight level _____, under _____ (Radar control/Radar advisory)".

EXAMPLE. "Stead 69, identified at flight level 210 ~~under~~ Radar Advisory".

NOTE: If aircraft is climbing or descending ask pilot to report passing FL 245 if necessary, and include the expression "climbing to FL" in the initial call.

RADAR HANDOVERS - RT PHRASEOLOGY

1. You are a controller at Eastern Radar and during the space of an hour have been handed the following aircraft by other units. Write down the correct RT phraseology that you would use to the pilot after his initial call to you. Aircraft above FL 245 are operating in the MRSA.

a. ASCOT 3217 | AND
340 | 165 V

b. EKX 33 | 4J
065 | ~~330~~ 290 V ↓

c. STEAD 69 | F4
010 | ↑ 70 I ~~50~~

d. EVERGREEN 60 | 2J
125 | ~~370~~ 50 I ↓

e. ALEM 50 | F4
270 | 470 V

f. MOCNT | 4 J
200 ↷ | ↑ 430 ~~350~~ V

RADAR HANDOVERS

RECOMMENDED RT PHRASES

1. Here are the recommended phrases to the handovers mentioned in Annex A:

a. ASCOT 3217, identified, at flight level 165 ~~under~~ Radar Advisory.

b. EKX 33 identified, descending to FL 290, ~~under~~ Radar Control.

c. STEAD 69 identified, climbing to FL 70, ~~under~~ Radar Advisory.

d. EVERGREEN 60 identified, descending to FL 50, report passing FL 245, ~~under~~ Radar Control.

e. ALEM 50 identified, at FL 470 ~~under~~ Radar Control.

f. MNT identified, climbing to FL 430, ~~under~~ Radar Control. Report steady heading 200.

NOTE 18

CO-ORDINATION

CO-ORDINATION - DEFINITION

1. Co-ordination is the act of negotiation between 2 or more controllers each vested with the authority to make executive decisions appropriate to the task being discharged.

EFFECTING CO-ORDINATION

2. Co-ordination is effected when the controllers concerned, on the basis of known intelligence, agree a course of action. Responsibility for obtaining the agreement and for ensuring implementation of the agreed course of action may be vested in one of the controllers involved. The controller who initiates co-ordinating action normally has the primary responsibility for mutual positive agreement on the course or courses of action to be taken and by whom.

TRAFFIC INFORMATION - DEFINITION

3. Traffic information is the passing of known intelligence on an aircraft by one controller to another. Once traffic information has been passed it becomes dead information and no commitment to an agreed course of action is implied, nor is there any undertaking to update the information passed.

4. Traffic information may be passed and received by assistants on behalf of their controllers. It is most often used to establish whether or not co-ordination is necessary and it will frequently lead to co-ordination, but remember, the passing or receiving of traffic information does not, in itself, constitute co-ordination.

RESPONSIBILITY FOR INITIATING CO-ORDINATION

5. MATO Controllers. It is the responsibility of MATO Controllers to initiate co-ordination in respect of On-Route GAT.

6. CATO Controllers. It is the responsibility of CATO Controllers to initiate co-ordination in respect of Off-Route GAT. Additionally, when On-Route GAT is required to "Hold" in the UAS and thus may be flying beyond the 5 mile displacement criterion, it is the responsibility of CATO controllers to initiate co-ordination.

7. This division of responsibility, however, should not inhibit either MATO or CATO controllers in any way, and controllers should attempt to achieve co-ordination regardless of the status or position of the aircraft. Whilst the detailed discussion necessary between controllers for co-ordination cannot always follow a standard format, guidance on the procedure is given in para 11. Controllers are to follow this recommended procedure wherever possible in the interests of standardisation.

c. Co-ordination can be time consuming and may not be effected in time. Be prepared to take avoiding action and start early. Always ensure that you can obtain the required separation should your attempts to obtain co-ordination be unsuccessful.

d. Never agree a course of action that you don't understand or think may be unsafe.

e. Give enough details of the level and intentions of your traffic to enable suitable and expeditious action to be agreed, but don't go into unnecessary detail.

f. Don't break a contract without first reco-ordinating.

g. Never confuse traffic information and co-ordination. If you detect a potential confliction and need to agree a course of action, ask for co-ordination and not traffic information.