MULTIPLE AIRCRAFT SAR OPERATIONS
STANDARD OPERATING PROCEDURES

ENDORSED FOR OPERATIONAL USE IN THE
NORTHERN, CENTRAL and SOUTHERN NORTH SEA [UKCS] AND IN THE AREA TO THE
WEST OF SHETLAND [UKCS]

Version 1.1

Dated: 15 September 2013
IMPORTANT NOTES

This document contains procedures that represent best practise for multiple aircraft SAR operations and should normally be employed. However, not every eventuality can be anticipated; the nature of a SAR incident might oblige modifications or additional courses of action. Therefore, nothing described in this document takes precedence over common sense, experience and initiative when necessary to ensure Flight Safety and SAR efficiency.

The ACO “instructions” are not orders; they must never be understood as air traffic clearances, but should be regarded as advisory information. As such, an ACO will not in any respect take on the Flight Safety responsibility from the other pilots in command.

ABBREVIATIONS

AC   Aircraft  
ACO  Aircraft Coordinator  
ARCC   Aeronautical Rescue Coordination Centre [based at Kinloss Barracks]  
ATSOCAS   Air Traffic Services Outside Controlled Airspace  
ATSU   Air Traffic Service Unit  
CAA   Civil Aviation Authority  
ERF   Emergency Restrictions of Flying  
ETA   Estimated Time of Arrival  
FW   Fixed Wing [Airplane]  
IAMSAR   International Aeronautical and Maritime Search and Rescue Manual  
MRCC   Maritime Rescue Coordination Centre  
OIM   Offshore Installation Manager  
PFEER   Prevention of Fire and Explosion, and Emergency Response\(^1\)  
POD   Probability of Detection  
RA [T]   Restricted Area [Temporary]  
RCC   Rescue Coordination Centre  
RT   Radio Telephony  
RW   Rotary Wing [Helicopter]  
SAR   Search and Rescue  
SARG   Safety and Airspace Regulation Group  
SAROP   Search and Rescue Operation  
SRR   Search and Rescue Region  
SITREP   Situation Report  
SRU   Search and Rescue Unit

FOREWORD

These Standard Operating Procedures form part of the wider EPOL IOER document which covers the overall concept of Integrated Offshore Emergency Response. They are sponsored and endorsed by the Emergency Preparedness Offshore Liaison (EPOL) Group through its Offshore Emergency Response Working Group (OERWG) primarily for use in the Northern, Central and Southern North Sea (UKCS) and Area to the West of Shetland (UKCS). They replace and supersede existing multiple aircraft standard operating procedures established under EPOL, which were originated in 2009 and entitled: ‘Coordination of Multiple Airborne Assets during a Major Offshore Incident’. Although intended for use over UK areas of the North Sea and Area to the West of Shetland, it is intended that the principles and procedures within this document are mostly generic and could also be applied (with minor modifications) elsewhere in the UK SRR.

\(^1\) Regulations 1995; Statutory Instrument 1995 No 743  
[UK legislation covering offshore Oil & Gas Installations]
BACKGROUND

Through liaison and debriefs following major offshore incidents, it has been found that a highly coordinated effort is one of the deciding factors in the successful outcome of a multiple air asset SAR operation. A major offshore incident will normally involve many agencies in the initial rescue phase alone. In addition to the co-ordinating authorities (ARCC, HM Coastguard, Police) a major offshore incident may include any of the following – SAR helicopters (RAF, RN, MCA & Industry provided), NATS, CAA, offshore transportation companies, marine vessels and offshore industry own emergency response structure. It is vital that the organisations that expect to work together during such incidents conduct regular liaison and debriefs following major incidents. Doing so promotes a mutual understanding of the roles and responsibilities of each agency. This ensures that, in the event of a multiple aircraft SAR operation, all participants are prepared to work together towards common objectives.

The role of ACO is a fundamental component of this coordination where there may be multiple air assets on scene. Debriefs following every single major Offshore incident over many years have found this to be a challenging role, due to communication problems and difficulties in coordinating a large number of airborne assets. The challenges faced by ACOs are increased when a multiple aircraft SAR response includes aircraft from a variety of backgrounds. In the North Sea, incident responses might involve national SAR aircraft (MCA, RAF & RN), SAR helicopters operated by industry (such as ‘Jigsaw’ and Norwegian Offshore helicopters) and offshore public transport helicopters. Furthermore, such major incidents are rare which means that aircrews involved in responses might not have experience of multiple aircraft SAR procedures.

Currently, the IAMSAR Manual provides only general guidance about various roles undertaken during a multiple aircraft SAR operation, along with basic guidance about procedures. Work is underway internationally to improve the guidance contained in the IAMSAR Manual, in order to better assist authorities with the development of SAR plans. However, the production of detailed SAR plans for multiple aircraft SAR operations is still encouraged regionally. Therefore, this document describes the regional, standard operating procedures for the coordination of multiple aircraft SAR operations in the Northern, Central and Southern North Sea and West of Shetland. Based on experience of operations and exercises, it is designed to provide detailed procedures to support and conduct the role of ACO, in line with current and emerging IAMSAR Manual guidance.

A wide range of authorities and individuals have been consulted in drawing up these standard operating procedures, including the following:

MRCC Aberdeen
HM Coastguard SAR Headquarters
HM Coastguard – Offshore Energy Liaison Team
ARCC Kinloss UK SAR Force
Aberdeen ATSU
CAA
Public Transport Helicopter Operators
Oil & Gas UK
BP [Jigsaw Management]
Jigsaw SAR helicopter flight [Bond Offshore]

CONTENTS

1. Coordination Responsibility During Multiple Aircraft SAR Operations
2. ACO Goals
3. ACO Planning
4. ACO Workflow
5. Area Specific Notes: Northern, Central & Southern North Sea & W of Shetland
1 Coordination Responsibility During Multiple Aircraft SAR Operations.

1.1 SAR Mission Coordinator [SMC]

SAR operations are normally coordinated under the direction and supervision of an SMC, who is usually the supervisor of the MRCC duty team. The SMC is responsible for the coordination of a SAR operation until it is clear that SAR operations are no longer required or responsibility is handed across to another authority. The SMC should be able to use readily available facilities and to request additional assets during a SAR operation. The SMC plans searches and coordinates the SAR assets and facilities required in an operation.

1.2 On-Scene Coordinator [OSC]

When two or more SAR units are working together on the same mission, there is an advantage if one person is assigned to coordinate their activities. The SMC delegates this function to an on-scene coordinator (OSC) who may be the person in charge of a SRU, ship or aircraft participating in a search, or someone at another nearby facility in a position to handle the duties. In some situations, the person in charge of the first SAR facility to arrive on scene will assume the function of the OSC until the SMC appoints another.

1.3 Aeronautical Rescue Coordination Centre [ARCC]

The ARCC is responsible for supporting and liaising with the SMC in order to coordinate the airborne SAR response. Whilst the IAMSAR Manual states that an ACO is normally designated by the SMC or OSC, in the UK this task would normally be carried out by the ARCC, in support of a SMC. During SAR responses to military air accidents and the initial stages of some civil air accidents, the ARCC may have primacy for SAR coordination. Once an incident (non-military) is clearly in a maritime or inland domain, overall primacy for SAR coordination normally rests with a SMC or the relevant police force incident manager, as appropriate.
1.4  Aircraft Coordinator [ACO]

The purpose of the ACO function is to promote Flight Safety and coordinate on scene air activity during a SAR operation, to help make it more effective. The ACO function should be seen as a coordinating, supporting and advisory service. The ACO function will normally be performed by the facility with the most suitable mix of experience, communication means, endurance on scene and capabilities. The ACO is tasked to effectively coordinate the on scene activities of aircraft involved in multiple aircraft SAR operations.

2  ACO GOALS

2.1  In order to appreciate the value and operational goals of the ACO function, it is useful to consider what might occur without one being nominated. In the example North Sea search scenario above, six helicopters are approaching the same position without being coordinated (this may be at night or in cloud or sea fog). With similar transit times, all six helicopters will arrive in roughly the same place at the same time. Without being aware of the location and intentions of the other aircraft inbound, there is a high likelihood of a mid-air collision. This is a highly dangerous situation, which demonstrates the first goal of ACO duties, as follows:

**MAINTAIN FLIGHT SAFETY**

2.2  Without being coordinated, each helicopter will then form an independent search plan based on their scramble call and the information they have received from a RCC or their tasking agency. It is likely that multiple assets may subsequently be searching the same areas, whilst leaving others unsearched. This is clearly an inefficient use of SAR ac, which demonstrates the second goal of ACO duties:

**OPTIMISE SAR EFFICIENCY**
3 ACO PLANNING

The key concept to successful ACO operations is to prepare as early as possible for multiple airborne assets arriving on scene within a short time frame. Each incoming aircraft will seek from the ACO an initial objective so that they have a steer. Where aircraft crews are not provided with an objective or steer, it is likely they will repeatedly request information and objectives. This will increase the workload of the ACO, whilst attempts are made to simultaneously organise tasking and deconfliction for several aircraft. Without a confident plan, the operating frequency is then likely to become overloaded as aircraft begin to attempt mutual deconfliction.

Conversely, when incoming aircraft are aware of what is required of them, each crew is able to concentrate on their own flight operations. In turn, this improves the Flight Safety for each crew and reduces radio call requests to the ACO. This permits greater mental capacity for the ACO and the ability to plan further ahead. With far fewer radio calls being made, the ACO frequency is free for radio calls which are essential to the SAR operation and Flight Safety. For the majority of such SAR operations, it is evident when the situation is progressing smoothly as the radio calls become less frequent.

Planning for multiple airborne assets requires a deconfliction plan, which will be governed by the prevailing conditions (chiefly, whether it is day or night, and the weather). It is also necessary to form a communication plan based on the units which are anticipated to be on scene.

4 ACO WORKFLOW

In order to achieve the key concept of early planning, the person(s) undertaking the role of ACO need to know as soon as possible; that they have been nominated for the role. They also need to be informed about SAR operation details and tasking, details of other aircraft involved, and
the weather conditions on scene. In the case of offshore installation evacuations, the ACO needs to be informed of identified receptor and refuelling platforms.

4.2 In terms of supporting the ACO, nothing can be of more assistance than rapidly providing the information described above. In order to do this, the following workflow is primarily designed for all organisations and SAR units involved to assimilate the required information in the shortest possible timeframe.

4.3 The tasks below are listed in what would generally be a chronological order for a long-range maritime SAR operation. Depending on the exact nature of the SAR operation, tasks may require completion concurrently, in a different order, or not at all.

<table>
<thead>
<tr>
<th>SERIAL</th>
<th>TASK</th>
<th>ACO</th>
<th>SMC &amp; ARCC</th>
<th>ATSU</th>
<th>SAR AC</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Declaration Of Emergency Phase</td>
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<tr>
<td>2</td>
<td>Identify Requirement for ACO</td>
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<tr>
<td>3</td>
<td>Select And Notify ACO</td>
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<tr>
<td>4</td>
<td>Inform ATSU &amp; Establish ERF</td>
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<td>X</td>
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<tr>
<td>5</td>
<td>Manage Aircraft Involvement</td>
<td>X</td>
<td>X</td>
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<tr>
<td>6</td>
<td>List Aircraft And Capabilities</td>
<td>X</td>
<td>X</td>
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<tr>
<td>7</td>
<td>Split Tasks amongst ACO Crew</td>
<td>X</td>
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<tr>
<td>8</td>
<td>Develop and Promulgate Plan</td>
<td></td>
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<td></td>
<td>X</td>
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<tr>
<td>9</td>
<td>Establish Responsibilities with OSC</td>
<td></td>
<td>X</td>
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<tr>
<td>10</td>
<td>Transit Radar Service</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>11</td>
<td>Call ACO At 20nm Inbound</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Monitor Plan [Amend If Required]</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Consider extricating ACO Involvement</td>
<td>X</td>
<td></td>
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<tr>
<td>14</td>
<td>Provide Regular SITREPS</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>15</td>
<td>Manage Fuel &amp; Release Of Assets</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

X signifies action required or the receipt of information
ATSU refers to the Air Traffic Service Units covering the area en-route to the Scene of SAR
SAR AC refers ac involved in the SAROP, other than the ACO

4.4 A description of the tasks outlined above is amplified as follows:

4.4.1 Declaration of Emergency Phase
SMC & ARCC

Declaration of the Emergency Phase is particularly important in terms of airborne response, as aircraft captains may only be able to operate beyond certain rules and regulations when demanded by the urgency of an operation, or formally tasked for SAR operations by their tasking agency. For reference, the IAMSAR definitions are listed below;

Uncertainty Phase A situation wherein doubt exists as to the safety of an ac or a marine vessel, and of the persons on board.

Alert Phase A situation wherein apprehension exists as to the safety of an ac or marine vessel, and of the persons on board.

Distress Phase A situation wherein there is reasonable certainty that a vessel or other craft, including an ac or a person, is threatened by grave and imminent danger and requires immediate assistance.
4.4.2 **Identify Requirement for ACO**

SMC & ARCC

As soon as it becomes apparent that an airborne response will involve multiple airborne assets, it is necessary to recognise the requirement to appoint an ACO.

4.4.3 **Select and Notify ACO**

ACO, SMC & ARCC

There are numerous considerations in selecting the most appropriate unit to take the role of ACO. The IAMSAR Manual states that the ACO may be a fixed-wing aircraft, a helicopter, a ship, a fixed structure such as an oil rig, or an appropriate land unit. However, experience has shown that the role of ACO is most successfully completed by suitably trained personnel, who have relevant aviation experience. In the UK context, this might normally require an aircraft, or an aircrew member or another appropriately trained person on the ground to be appointed as an ACO. Personnel who have completed a specific ACO course are ideally placed; emerging IAMSAR Manual guidance recommends that anyone likely to become an ACO should be specifically trained for the role.

Where the ACO will be a SAR unit, one of the main considerations will be the order of arrival of participating air assets. **It is essential that the ACO is one of the first assets on scene in order to conduct the role.**

For offshore oil and gas incidents or offshore oil and gas related incidents, familiarity with offshore industry terminology and procedures is a major factor to be considered when appointing an ACO. Additionally, familiarity with ACO procedures and helicopter operations, together with the availability of appropriate communications is vital. The use of a fixed-wing aircraft in the ACO role can offer advantages, such as enhanced communications, speed and endurance on scene. It also enables all participating SAR helicopters to directly support on scene operations, instead of one potentially being dedicated to ACO duties. However, non-helicopter ACOs are generally not as familiar with the SAR environment. These factors generally lend themselves to the appointment of ACOs who are in helicopters, although the viability of appointing ACOs on board fixed-wing aircraft or based on platforms or surface vessels should not be overlooked. The appointment of an ACO is the responsibility of the SMC, although the ARCC may appoint an ACO on the SMC’s behalf.

4.4.4 **Establish Temporary Airspace & Inform ATSU**

SMC & ARCC, ATSU

The SMC (via the ARCC) should normally request restriction of flying regulations through the establishment of a Restricted Area (Temporary) [RA(T)]. A RA(T) provides a measure of protection for SAR aircraft operating within it, as well as for other aircraft that are not involved in the SAR operation. If routine traffic continues passing through the scene of SAR operations, this may reduce the level of safety, cause confusion and increase the workload of the ACO.

The dimensions of a suitable RA(T) must be identified through communication between the SMC, ARCC and Airspace Utilisation of the Safety and Airspace Regulation Group (SARG) of the CAA (normally via the Distress and Diversion Cells). These dimensions might be expressed laterally as a radius in nautical miles from a fixed point with vertical limits given in feet (for example, Centre Point 57 05N 001 08E with a radius 10nm up to 3000 ft) or described as an area bounded by fixed coordinates. The dimensions should take into
account casualty location, installations likely to participate as receptor or refuelling platforms, the potential search area, impact on routine traffic, etc. Once the dimensions are agreed, the MRCC or ARCC must apply for the temporary airspace through recognised procedures at the earliest opportunity. The establishment of temporary airspace is one of the first tasks in the workflow.

Early notification of the SAR operation to the appropriate ATSU offers 2 advantages. Firstly, there is early notification of the intended temporary airspace so that the ATSU can begin to route routine air traffic around the Scene of SAR. Secondly, the ATSU has the capability to act as a communications link between the SMC and offshore transportation helicopters. This enables the ATSU to gather information and ascertain which assets might be capable of responding and assisting in the SAR operation, if required. This information must be fed back to the SMC, who is responsible for coordinating and approving the involvement of assets in the following task:

4.4.5 Manage Aircraft Involvement
ACO, SMC & ARCC, ATSU

Managing aircraft involvement requires the right number of aircraft being in the right place at the right time. It is vital that only the appropriate numbers of aircraft are tasked (not too few and not too many). Where there are not enough aircraft, searching or winching may take longer, or not be completed, with a possible adverse effect on SAR efficiency. Where there are too many aircraft, Flight Safety will be degraded with an increasing number of aircraft operating in a small area. SAR efficiency may also be degraded as crews increasingly put their emphasis on collision avoidance rather than the efficiency of the SAR operation. The number of aircraft which can operate on scene may depend on the weather (cloud base, visibility, precipitation and light level). Establishing the safe number of aircraft which can operate on scene may require close cooperation between the SMC, the ARCC, the ACO and, where appropriate, an ATSU.

If an incident involves an offshore Installation, the SMC should confirm with the OIM and appropriate operating companies whether any civilian air assets have already been, or are likely to be made available (transport or shuttle helicopters, Jigsaw or Norwegian offshore SAR helicopters, etc). It is vital for reasons of flight safety that the participation by any aircraft in a SAR operation, or within temporary airspace established for SAR purposes, is coordinated and approved by the SMC; the SMC may delegate this function or parts of it to the ARCC. The entry and exit of aircraft operating within temporary airspace should be coordinated by the ACO.

In terms of having aircraft in the right place at the right time, it is worth considering forward positioning aircraft which are not going to be used in the first wave of SAR. This may assist in ensuring there are not too many aircraft during the initial surge, whilst having others with sufficient endurance close to the scene of SAR and at a high state of readiness. This second wave of aircraft is ready to move in as the first wave departs (for instance with survivors on board or for refuel).

4.4.6 List Aircraft and Capabilities
ACO, SMC & ARCC

Once the aircraft involved have been identified, it is necessary to pass this list to the ACO as soon as possible to provide sufficient time to develop and promulgate the plan. The ACO Asset Sheet at Annex A contains the information which the IAMSAR Manual recommends is passed in a Joining Entry Report. Where appropriate, the SMC (or ARCC) and participating aircraft should aim to pass information in this recognised format. Passing
this information could be time-consuming, so will require liaison between the SMC / ARCC and ACO to determine appropriate opportunities for such communications.

If an ATSU has initially been asked to manage aircraft activity around an incident, a formal notification of handover should take place. However, if information to be passed to an ACO is likely to be lengthy (for example, list of all SAR ac, callsigns, types, etc), the ATSU should consider passing these details by telephone to the SMC (or ARCC) to forward to the ACO in order to avoid congestion on the operational ATC frequency.

4.4.7 Split Tasks amongst ACO Crew

It is likely that several radio frequencies will be operated, so the captain should consider splitting these between crew members so that they can be monitored concurrently without missing calls. Any crew member without an active role can act as spare capacity to oversee the plan.

4.4.8 Develop and Promulgate Plan

As previously stated, once nominated, the ACO requires information on the SAROP tasking from the SMC, the other aircraft involved, and the weather conditions on scene (if known). Given this information, the ACO should develop a flow control plan for arrival, SAR operations on scene, and departure. Generally speaking, taking into account the number of aircraft and weather conditions, the plan should be as simple as possible. This will reduce the chance for misunderstanding in communicating it to the other participating aircraft and improve situational awareness for all aircraft on scene.

The method of keeping aircraft apart will depend on the number of aircraft involved and the time of day or weather conditions. The effect of these factors is illustrated in the figure below:

<table>
<thead>
<tr>
<th>Day / fine weather conditions</th>
<th>Night / poor weather conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Few SAR ac on scene</td>
<td>Many SAR ac on scene</td>
</tr>
<tr>
<td>Visual Deconflict</td>
<td>Procedural Deconflict</td>
</tr>
</tbody>
</table>

[Common overwater QNH]

4.4.8.1 Visual Deconflict

Where the conditions allow, deconfliction can be achieved very simply by using the ‘see and avoid’ principle. Deconfliction can be further enhanced by directing SAR aircraft to different heights when holding, inbound, and outbound. The ‘see and avoid’ principle may be improved by advising SAR aircraft to make use of their integral, external lighting.

4.4.8.2 Procedural Deconfliction
In more challenging weather or light conditions, it is necessary to adopt an increasingly procedural deconfliction model. This ensures that, as long as SAR aircraft comply with the flow control plan promulgated by the ACO, no two aircraft should be in the same place at the same time. This is achieved by using a one-way flow between holding points, entry points, exit points and missed approach procedures (with stepped heights for supplementary vertical deconfliction).

An example procedural deconfliction model is at Annex B (reproduced from the Baltic ACO manual, as approved for operational use by Denmark, Finland and Sweden). It is a good example of a procedural deconfliction model, which is also of use for the purposes of these Standard Operating Procedures. Use of the Baltic model is also relevant because UK SAR aircraft responding to multi-national North Sea incidents may be tasked to operate under an ACO who is predominantly accustomed to working with Baltic procedures.

4.4.8.3 Instrument Procedures

When conditions prevent safe flying operations using either visual or procedural deconfliction, then it might be possible for aircraft to use instrument procedures instead. The use of instrument procedures during a multiple aircraft SAR operation might not provide the same safety margins for aircraft as ‘published instrument approaches’. Unless operations are carried out in controlled airspace under the full control of an ATS unit, aircraft captains are responsible for avoiding other air traffic and surface obstructions.

If aircraft are required to hold at adjacent points, such as a holding point and an entry point, then they should also be separated using altitude, for safety purposes. Aircraft involved in multiple aircraft SAR operations using instrument procedures should also be equipped with functioning GNSS equipment, Flight Management System enabling the plotting of waypoints and preferably a form of on-board radar that enables the detection of surface obstructions by air crew.

The ACO should work together with the OSC and SMC to keep the aircraft approach paths as clear as possible of surface vessels. The ACO should also try to minimise the periods with no helicopter at the location of persons in distress, by allowing helicopters to begin instrument approaches before helicopters on scene have departed. This process needs to be managed carefully, in order to ensure that all participating helicopters are aware of each other. Missed approach procedures must be briefed to all SAR helicopters. An example of how instrument procedures might be applied is on the next page.
4.4.8.4 Search Area Deconfliction

If the SAR tasking is a search box or line, it may be necessary to split the area into sub areas to improve SAR efficiency and the probability of detection (POD). In this case, the same principles of deconfliction recommended above need to be followed. Where the conditions require a procedural deconfliction model, there are four methods of deconfliction for consideration;

a. Direct the first SAR aircraft on scene to the furthest box from the line of advance (LOA).

b. Set the same line of advance for all participating aircraft.

c. Use different heights in adjacent areas

d. Utilise ‘no fly buffer zones’ between adjacent areas (shown below between areas C and D).
In assigning search areas to SAR aircraft, an ACO should be aware that different aircraft may use different navigation computer equipment. If in doubt, passing four sets of Latitude and Longitude positions, along with the commence search point (CSP) the direction of first leg and the track spacing, is unambiguous.

4.4.8.5 Communications

Communications procedures and an illustration of On Scene Air Communications are at Annexes C-1 and 2. These may need to be modified based on the communications equipment operated by the responding SAR aircraft. In accordance with the IAMSAR Manual, the callsign used for ACOs should be: ‘AIR COORDINATOR’.

4.4.8.6 Promulgating the Plan

Whilst the content of the ACO plan is vital, it is equally important that it is developed quickly so that it can be promulgated to SAR aircraft as early as possible. If time permits, the ideal situation is for the ACO to promulgate the plan back to the SMC & ARCC. Other SAR ac will then be briefed during their outbound transit. As an example, a briefed initial task might be as simple as ‘R128 is to proceed to holding point A (with lat / long position) at 1000ft on overwater QNH 1013. Contact AIR COORDINATOR on 123.1 MHz at 20nm to run’.

4.4.9 Establish Responsibilities with OSC

ACO

Depending on the nature of the SAR operation, there may or may not be a nominated OSC. The SMC can either confirm the OSC or appoint another unit if the SMC considers it would be more effective. The SMC must notify all other participating units or authorities as to who has been appointed as OSC.

Where there is an OSC, it is essential (due to possible overlap between the roles) that any questions over responsibilities are established early on. The prime example is in ensuring there is a clear responsibility and method for maintaining a tally of persons extracted.

If the casualty is an offshore installation, the OIM may have assumed the role of OSC in accordance with existing procedures, IAMSAR and responsibilities under PFEER. The SMC must positively confirm whether the OIM has assumed the role of OSC, or whether an adjacent installation or standby vessel has assumed the role. Where the OIM of a casualty installation maintains the role of OSC, the SMC should consider taking over responsibility for maintaining a tally of persons extracted, in case the OIM becomes no longer capable. The ACO should not normally be responsible for maintaining an overall count of persons involved in a SAR operation,
but should remain aware of the number of persons on board each participating aircraft, for safety
purposes.

Few OIMs or masters of surface vessels will have either the necessary experience or capability to
coordinate multiple airborne assets. In any case, they are likely to be fully occupied with other
events on scene. It is strongly recommended that the roles of OSC and ACO are therefore kept
separate and accredited with equal status (so that the ACO reports to the SMC (or through the
ARCC) and not through the OSC).

4.4.10 Transit Radar Service
ACO, ATSU, SAR AC

Participating aircraft proceeding to a SAR operation should request an ATS outside of controlled
airspace (where appropriate) or ‘ATSOCAS’ from the appropriate ATSU in accordance with normal
procedures.

4.4.11 Call ACO At 20nm Inbound
ACO, SAR AC

At 20nm inbound, participating aircraft should make a joining call to the ACO of:

- Position
- Altitude (on pressure setting used)
- ETA (at relevant point or search area)
- Intentions

The ACO should respond to confirm intentions and to establish two-way communications. Once
this is done, aircraft inbound to the scene of a SAR operation should terminate the ATSOCAS,
where one was being received⁴.

4.4.12 Monitor Plan
ACO

Once SAR aircraft are on scene and the SAR effort is underway, it is then a case of implementing and
monitoring the plan. For all but the most challenging of multiple asset SAR operations, the initial
high workload of planning and arriving on scene should diminish as the participating aircraft begin
search or rescue or evacuation operations. If the initial plan is not effective, or a change could
offer a significant benefit for Flight Safety or SAR efficiency, then the plan may require revision.
Changes to the ACO plan may impact on the overall plan or strategy being implemented by the
SMC and/or ARCC. Any changes (proposed or actual) should be notified to these authorities at
the earliest opportunity.

4.4.13 Consider Extricating ACO Involvement
ACO

Depending on the number of SAR aircraft involved in a SAR operation, there may not be a
requirement for the ACO to be directly involved in searching or other on scene activity. In this
case, it is strongly recommended that the ACO extricates from direct involvement to revert to a
purely coordination function. This normally affords an ACO much greater capacity, with
subsequent benefits for all participating aircraft in terms of deconfliction and efficiency.

⁴ In the majority of cases, an ATSU will be unable to continue providing an ATSOCAS to aircraft on scene
due to low level overwater radar coverage and the number of assets operating very close together within a
small area.
4.4.14 Provide Regular SITREPS
ACO, SMC & ARCC

It is essential that the flow of information extends back from the SAR aircraft to the ACO, OSC, ARCC and SMC. Operationally, accurate and timely information is essential for those coordinating a SAR operation to keep a correct count of how many survivors have been accounted for. It also enables SMCs to ensure that SAR operations continue to be supported with the correct assets. As a general guide, ACOs should aim to relay situation reports back to the ARCC or SMC approximately every 30 minutes, although workload and the circumstances of a SAR operation might make another timescale more appropriate.

4.4.15 Manage Fuel & Release of Assets
ACO, SMC & ARCC, SAR AC

As a SAR operation progresses, there may be a requirement to prepare refuelling options. By considering this requirement early, alongside the endurance of each SAR ac, an ACO can plan to complete a staged refuelling process so that efficiency is maintained along with endurance. This process should also ensure that not all SAR aircraft depart for fuel at the same time.

The SMC is responsible for releasing SAR units when their assistance is no longer required, although the tasking authority for SAR assets remains with the ARCC. This decision may require communication between the SMC, OSC, ACO and the ARCC. Depending on the weather conditions, the release of assets may require a staged approach with flow control from the ACO, before a return to base under ATSOCAS, where appropriate.

5.  AREA SPECIFIC NOTES: NORTHERN, CENTRAL and SOUTHERN NORTH SEA and AREA to the WEST of SHETLAND

5.1  Aberdeen ATSU

Aberdeen ATSU, based at Aberdeen Airport, provides air traffic services to helicopters working with the Offshore Oil & Gas Industry in the Northern, Central and Southern North Sea. It also provides services to helicopters operating in the West of Shetland area. Aberdeen ATSU covers flying operations across the majority of the North Sea using a combination of land and offshore based surveillance and radio sites. However, in a significant part of the Central North Sea, (mainly between 55 and 56 degrees North) there is currently no surveillance and limited radio coverage so only very limited air traffic services can be provided.

In conjunction with the Offshore Oil & Gas Industry, Aberdeen ATSU surveillance coverage has been extended beyond the range of land-based radars with Wide Area Multilateration (WAM). The WAM system is a network of remote units located on offshore installations which interrogate the aircraft transponder to plot their position. This is then displayed to air traffic controllers in a form that looks like secondary radar, although the WAM technology is different.

Aberdeen ATSU works closely with the civil helicopters that service the Offshore Oil & Gas Industry. It has considerable experience and capabilities that can play an important role during SAR operations. Under these standard operating procedures, Aberdeen ATSU will be able to form a valuable part of the overall SAR response to any offshore industry incident. It could also assist with SAR responses to any major maritime incident taking place within those areas of the North Sea in which the industry, or helicopters servicing it, are likely to be involved.
5.2 **Air Communications**

Aberdeen ATSU will nominate an aeronautical frequency for its radio voice communications with an ACO. This will normally be the appropriate Aberdeen ATSU radio frequency for the geographical location of the incident. Aberdeen ATSU and an ACO will use this frequency to exchange information about aircraft (SAR, civil transport helicopters, counter pollution ac, etc) entering or leaving the scene of SAR operations.

5.3 **Available Assets**

Experience in the Northern and Central North Sea has shown that a lack of helicopters is rarely an issue and that a more likely problem is the safe management of a large number of air assets. The SMC must understand the dangers of overloading an ACO and should liaise with an ACO concerning the number of assets deployed. The ACO should be proactive in identifying the manageable number of assets required for the task. Analysis of past incidents has also shown that, at times, a smaller number of aircraft working together can operate as effectively as a larger number working without cohesion. Additionally, as much as possible, situations should be avoided in which aircraft are airborne without a mission.
## ANNEX A

### ACO ASSET SHEET

<table>
<thead>
<tr>
<th>SAR AC</th>
<th>Callsign</th>
<th>Nationality</th>
<th>Type [FW/RW]</th>
<th>Position</th>
<th>Altitude</th>
<th>ETA</th>
<th>Endurance</th>
<th>Remarks</th>
<th>POB</th>
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</table>
The ACO provides only ADVISORY information, aircraft commanders are responsible for the safety of their aircraft. Notify ACO immediately if unable to comply with instructions received.

Waypoints are in radial and distance from the reference point.
ANNEX C - 1

COMMUNICATIONS

Proceeding to / from the Scene of SAR

Aircraft proceeding to or from the scene of a SAR incident will communicate with the ATSU on appropriate published frequencies.

Air Communications at Scene of SAR

All air to air and air to surface communications (in the case of offshore installations) should primarily be on the internationally recognised on scene SAR frequency of 123.1 MHz. If this frequency becomes congested, helicopters tasked to evacuate persons to adjacent installations or for refuelling may elect to use an alternative frequency, providing they retain the ability to monitor 123.1 MHz.

Air to surface communications (in the case of vessels) should normally take place on the marine band calling channel of VHF Ch 16 or scene of SAR Ch 6 for winching.

SMC to ACO Communications

SMC to ACO communications will normally be conducted through the ARCC on HF 5680 KHz or on another suitable frequency nominated by ARCC. Although ACO to SMC / MRCC communications will normally be relayed through ARCC, they may be conducted direct on HF following agreement between the MRCC and ARCC. It may also be appropriate, in certain cases, for direct communications to take place between the ACO and SMC / MRCC on VHF FM Ch 16 or Ch 0.

SMC to OSC Communications

SMC to OSC communications will normally be via telephone to an offshore installation or via radio voice communications on 2182 KHz or VHF FM Ch 16, or by satellite communications, as appropriate.

ACO to OSC Communications

ACO to OSC communications will normally be conducted on 123.1 MHz or VHF Ch 16 as appropriate. Alternate frequencies may be used as long as the ability to use 123.1 MHz or Ch 16 is not compromised.

Minimum ACO Communications

It is strongly recommended that the minimum communications available to an ACO should be:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>HF</td>
<td>5680 KHz</td>
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<tr>
<td>2 x VHF AM</td>
<td>123.1 MHz and another on scene frequency or an en-route designated by and ATSU frequency</td>
</tr>
<tr>
<td>1 x VHF FM</td>
<td>Including the ability to receive and transmit on Ch 16, Ch 6 and Ch 0.</td>
</tr>
</tbody>
</table>
Communications with ATSUs

ATSUs (for N Sea areas provided by NATS) can play an invaluable role during multiple aircraft SAR responses, particularly relating to the movement of aircraft outside of the on scene area. Relevant communications procedures are as follows:

**SMCs and ARCC.** SMC and ARCC communication with the ATSU and should normally be by telephone.

**ACO.** On scene, the ACO should liaise routinely with the ATSU to coordinate the flow of aircraft to and from the on scene area. The primary means for communications between the ACO and ATSU should be a VHF AM frequency designated by the ATSU.

Other Communications

In order to facilitate safety and monitoring of on scene traffic, all aircraft that are suitably equipped should use Mode 3/C Transponder equipment, AIS (if fitted) and other position tracking equipment (eg satellite tracking - if fitted). The appropriate Mode 3 squawk for aircraft participating in multiple aircraft SAR operations is 0023, which should be displayed by all aircraft unless an alternative squawk is required for positioning or other operational purposes (eg by an ATS unit).

Communications Failures

In general, a backup communication frequency should be nominated by the ACO in case the primary frequency cannot be used.

Due to the variety of radios available to most aircraft, a complete failure of all radio systems on board an aircraft is unlikely, except under the most extreme conditions. The situations below therefore envisage the more likely scenarios.

a. In the event that a radio frequency becomes unusable – for example through congestion or interference, then the ACO should nominate an alternative.

b. Individual aircraft that lose radio communications on a frequency in use on scene, should attempt to establish communications with the ACO through alternative means. If alternative communications cannot be established, then the aircraft should normally continue with its planned timings, events and flight path, still transmitting all position and altitude reports, until clear of the immediate on scene area.

c. If an aircraft has not been given a plan when a radio communications failure occurs, then it should avoid the on scene area, departing by an appropriate route and heights.

d. Once clear of the on scene area, aircraft should consider moving near or landing at a suitable facility in order to establish communications by alternative methods.

e. If no radio voice communications are available, then aircraft captains or pilots in command should consider squawking the international Transponder Code ‘7600’ (Mode A) to indicate radio voice communications failure to other aircraft and ATS units.

f. Standard international methods for visually indicating communications failure between aircraft could also be used.
ANNEX C - 2
ON SCENE AIR COMMUNICATIONS

SCENE OF SAR
AIR TO AIR
123.1 MHz

ACO

HF as designated by ARCC/SMC

SMC/ARCC

TRANSPORT HELICOPTERS

MVHF as designated by OSC

OSC

PLATFORMS IN DISTRESS
[OR RECEPTOR PLATFORMS]

SAR AIRCRAFT

MVHF Ch 16
[Ch 6 WINCHING]

SURFACE VESSELS

IMAGES INCLUDED ARE PURELY
REPRESENTATIVE OF ASSET TYPE
Request for Emergency Restriction of Flying Regulations

<table>
<thead>
<tr>
<th>Location Name:</th>
</tr>
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<tbody>
<tr>
<td>Position: (DD MM SS N DDD MM SS E/W)</td>
</tr>
<tr>
<td>Radius (nm):</td>
</tr>
<tr>
<td>Vertical Extent: (feet amsl)</td>
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<tr>
<td>Name of Emergency Controlling Authority (ECA):</td>
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<tr>
<td>Contact number of Emergency Controlling Authority:</td>
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<tr>
<td>Exemptions to Restrictions:</td>
</tr>
<tr>
<td>Other relevant information:</td>
</tr>
</tbody>
</table>