Combined Tactical Air Cell (CTAC)

The Management of Multi-Agency Air Assets

JESIP

Working Together – Saving Lives

This guidance has been produced in collaboraton with the following organisations:

JESIP

Working Together – Saving Lives

HM Coastguard

ASSOCIATION OF AMBULANCE CHIEF EXECUTIVES

NFCC
National Fire Chiefs Council

Document Control

Use this page to track minor and major changes to the document.

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Introduction

This document replaces for the previous Combined Silver Air Cell doctrine. It reflects recent changes:

- From local air operations units to the National Police Air Service (NPAS) and the Police Service of Scotland (now referred to as Police Scotland);
- Adoption of the Joint Emergency Services Interoperability Principles (JESIP)" https://www.jesip.org.uk/joint-doctrine
- The move from the "Gold/Silver/Bronze" command structure to one based on Strategic – Tactical – Operational levels
- Transition of responsibility for the UK Aeronautical Rescue Co-ordination Centre (ARCC) role and function from UK Armed forces to the Maritime and Coastguard Agency (MCA) National Maritime Operations Centre (NMOC) and development to be a common procedure for both over land and maritime operations[1].

Information provided in the annexes to this guidance will be maintained and reviewed by the NPAS Ops Centre annually.

Background

Air assets play a significant role in the response to major incidents. In this document air asset refers to both fixed wing and rotary wing crewed aircraft, uninhabited aircraft (UAVs/drones) and aerostats. HM Coastguard, the National Police Air Service, UK armed forces, international Search and Rescue (SAR) partners and a number of air ambulance operator crewed aircraft. A large number of Emergency Service Drone teams are now operational within the UK. These have exemptions to operate Beyond Visual Line of Site & in congested areas during major incidents.

Added to this, many media organisations operate crewed aircraft and drones, and are likely to deploy them to major incidents. Other Civil Contingencies Act category two responders may also operate aircraft, for example electricity distribution companies.

Air assets allow the observation of incidents using a wide range of sensors and as such can provide invaluable information to commanders in developing shared situational awareness. HM Coastguard aircraft have the capability to conduct winch rescues from incidents, coastguard and police aircraft can transport staff at speed into difficult to access areas and all emergency service aircraft can evacuate and transport casualties.

Whilst the use of air assets by single agencies forms part of business as usual when more than one agency is using them problems can arise. For example, following the major floods of 2007 in Sheffield and Gloucestershire, the lack of a co-coordinated approach for the use of air assets was identified as a significant shortcoming during both the rescue and recovery phases. There was no commonality of radio communication between the various agencies involved and no overall co-ordination of the airborne operation. The various aircraft involved all operated around each other but not as a

[1] As agreed at the 2014 SAR Operators Group

coherent force. The close proximity of aircraft operating in often-poor flying conditions meant that the potential for an aircraft collision was heightened.

To address these issues co-ordination of multi-service air support is required. To achieve this a single point of contact for all emergency air asset operators should be formed. This is a Combined Tactical Air Cell (CTAC)[2].

This document provides guidance about the purpose and function of a CTAC.

Purpose

The guidance provided in this document will:

- improve the integration of aircraft at large scale and protracted incidents both pre-planned and spontaneous
- improve the coordination of aircraft used as part of the response to an incident to avoid conflict

(Guidance for smaller scale or less protracted incidents can be found in the Helicopter Emergency Liaison Plan, found at Annexe 6 to this document)

This document provides information for:

- CTAC coordinators – those people who will establish a CTAC
- Staff from LRFs who may need to plan for aircraft to assist in the response to an incident

If you think a situation is developing which may require the formation of a CTAC, speak to your operations room supervisor and/or to the tactical commander for your agency.

If you need information to activate a CTAC please see the CTAC Coordinators Checklist on page 18.

[2] The previous title was Combined Silver Air Cell

What is a Combined Tactical Air Cell?

The Combined Tactical Air Cell (CTAC) is the agreed multi-agency term for the central tasking cell of all emergency service air assets supporting an incident. Tasking Authority for the various agencies supplying air assets may be delegated to the CTAC from their individual operating authorities. A CTAC is a scalable team, representing those agencies deploying air assets to an incident where multiple ones are deployed. The location and make-up of the cell will depend on the nature of the incident.

Deconfliction on scene is not the cell's primary role but should be considered particularly if the area of operations is compact[3].

The CTAC will co-ordinate air operations at an incident as required by the incident commanders. It is not anticipated that the formation of a CTAC will occur regularly. However, it is anticipated a CTAC would be implemented at events that draw together significant numbers of air assets from a variety of agencies to a single geographical area.

Deploying an experienced aviation manager (typically a Base Manager or Tactical Flight Officer (TFO)-trained Assistant Operations Director) to the incident room as a tactical advisor is good practice. This Aviation Tactical Advisor will be appointed at an early stage by the CTAC Coordinator in conjunction with NPAS Despatch or the ARCC. In the most stripped back form of CTAC, the CTAC coordinator and aviation tactical advisor are one and the same, and may be the sole constituent of the CTAC.

CTAC Instigation

A CTAC should be instigated during **protracted** incidents or pre-planned event **where three or more aircraft** from **two or more agencies** are involved, and where a Tactical Coordination Group is being set up to manage the incident.

CTAC Role and Staffing

The main role of the CTAC will be the prioritisation of air tasking in accordance with the Strategic Coordinating Group's (SCG) intent and the Tactical Coordinating Group's (TCG) plan.

The CTAC will be formed of liaison officers and supporting staff from the various air support providers, for example National Police Air Support, HM Coastguard Search and Rescue, and air ambulance organisations.

In the early stages of an incident, a nominated individual at the NPAS Ops Centre will act as a point of contact for tactical advice and consider the requirement for deconfliction[4]. For incidents in

[3] Deconfliction refers to the process that minimises the risk of collision between aircraft..
[4] Deconfliction remains the responsibility of the pilot and National Air Traffic Control (NATS) or other air traffic control providers depending on the class of air space. The CTAC can however greatly assist in managing deconfliction workload.

Scotland the Police Inspector of the Air Support Unit will act as SPOC for Police Scotland. For maritime incidents the ARCC will nominate an individual.

The scale of the CTAC will be appropriate to the size and type of the incident. The staffing requirement of an incident may vary from the allocation of an aviation tactical advisor alone, or the remote provision of advice, to a full-scale CTAC formed of several staff from multiple agencies. This requirement will vary with time according to the changing nature of the incident.

CTAC Staffing

For onshore incidents, the CTAC will normally be led by the Police Air Support Liaison Officer (PASLO), in close liaison with the Royal Air Force Regional Liaison Officer (RAFRLO) and/or Search and Rescue (SARLO) if military or MCA assets are in use. The RAFRLO may take an early lead alongside the PASLO and is likely to move in to a strategic command advisory role once a SARLO is established in the CTAC.

For maritime incidents, the CTAC will normally be led by the SARLO

Where possible members of the CTAC should physically co-locate however where circumstances prevent this robust and appropriate communication methods should be employed, for example Airwave interoperability talk-groups, resilience direct incident pages, and fixed landline telephones.

Members of the cell will be drawn from:

a) CTAC Coordinator – PASLO who should normally be an NPAS Assistant Ops Director or Base Manager.

b) CTAC Coordinator - SARLO. Normally a nominated ARCC Search and Rescue (SAR) ops manager.

c) Military Coordination Staff.

d) Air Ambulance Liaison Officer - AALO See contact list for call-out details. As an interim measure contact the local NHS Ambulance Service who have responsibility for Command and Control and will nominate an appropriate representative.

e) Civilian Aircraft Liaison Officer – for example representative of media organisations deploying air assets

f) Landing Site Liaison Officer if a forward operating base is set up for the incident.

g) Representative of organisations deploying drones.

Command and Control

In the UK, during an onshore incident a lead agency will take responsibility for overall coordination of the incident. This will often, but not always, be the police. Each emergency service will have its own command structure in place co-ordinated through the SCG and TCG.

For maritime incidents, the MCA will always be the lead agency.

All incidents will be managed through the application of the JESIP principles (fig 1.)

Fig 1.

Roles & Responsibilities of Others

UK Aeronautical Rescue Co-ordination Centre located at the National Maritime Operations Centre (NMOC)

The ARCC is the single tasking authority for all SAR aircraft in the UK, all of which are operated by the Maritime and Coastguard Agency (MCA)

The ARCC can act as a conduit to enable the creation of a Restricted Airspace (Temporary), (RA(T)), and will liaise with the Distress and Diversion Cell at NATS to establish this. A RA(T) should only be established to provide enhanced safety of flight to aircraft responding to an incident and may be required due to the numbers involved or the weather encountered. A RA(T) should not be established simply to prevent press aircraft from overflying an incident.

The request for any temporary restriction to airspace must be authorised by an NPCC officer/SARLO. The CTAC's responsibility is to communicate the request for a RA(T) to the ARCC.

The ARCC should balance and prioritise the requirements of the CTAC against other SAR demands arising at the same time.

Military Aid to Civil Authorities (MACA)

The Royal Air Force (RAF) can assist in the acquisition of military air assets via a network of senior RAF officers, who cover the different regions of the country, known as Royal Air Force Regional Liaison Officers (RAFRLOs).

A 24-hour call contact system is in place ensuring year-round availability . CTAC coordinators can refer to the separately circulated CTAC directory for contact details.

The primary role of the RAFRLO is to advise the strategic commander and SGC on the employment of Defence Aviation support. The RAFRLO may be available to assist with the initial set-up of the CTAC. If additional military resources are required, the RAFRLO will act as a point of contact. The RAFRLO may be able to provide access to localised temporary ATC and logging services, in the form of a Military Air Operations Team (MAOT) although this assistance cannot be guaranteed.

CTAC Exclusions

Flight following will remain the responsibility of the originating agencies not the CTAC.

Inter-agency support will be provided under existing mutual aid arrangements which are outside the scope of this document.

Communications

Communications between agencies are vital to the successful outcome of any incident. Efforts should be made to ensure that all practicable assets are on a common communications network.

This section of guidance will be reviewed during the delivery of the Airwave replacement, known as the Emergency Services' Network (ESN).

Airwave

All police and MCA air units are fitted with multiple airwave radios, which provide an ideal Command and Control platform on scene, readily accessible to Air Ambulances, Coastguard, and fire service command vehicles.

If a CTAC is in place, then it is highly likely that one or more emergency services operational communications advisors will have been deployed. Early liaison will be very beneficial to developing an effective communication plan.

All airwave users have a series of common talkgroups, which allow for inter-agency communications. For CTAC airborne interoperability the default talk group for airwaves will be the local police force's Emergency Services 3 talkgroup (ES3). This will allow direct communication with police, fire, ambulance, coastguard and other ground-based units and control rooms.

NB, NPAS aircraft generally have the ES1, ES2 and ES3 talk-groups for their region included in their radio terminals. Outside the aircraft's region of origin only ES3 is included.

Police Scotland will utilise PSTRA ES1, ES2 and ES3 where appropriate.

In all instances, all personnel should avoid using point to point AIRWAVE communications with air craft as significantly affects the ability to develop shared situational awareness by restricting such passage of information to the two ends of the point to point call and also, taking both parties out of the shared talk groups for the duration of that call.

VHF

All air assets have aeronautical band VHF radios fitted. These are primarily used for Air Traffic Control communications. Due to the likely presence of multiple aircraft on scene, a common frequency should be used to achieve deconfliction and ensure flight safety. If a suitable ATC frequency exists, it may be prudent to utilise this or, alternatively, the international scene of SAR VHF frequency 123.1 MHz, may be used. Consideration should be given to the use of the police aircraft to de-conflict other assets at scene. It should also be noted that Mountain Rescue Teams (MRTs) have access to VHF radios and may also use FM radios. In this case, FM CH62A is the standard MRT FM frequency which may be utilised to provide on-scene tasking communications.

HF

MCA aircraft are fitted with long-range HF communications. The MCA ARCC is the base station for HF and acts as a relay between tasking requests and the aircraft. The NMOC airwave terminal is co-

located with the HF radio operators and could therefore act as a relay for airwave transmission if required.

SATCOM

MCA aircraft also have satellite-based communications (SATCOM) fitted for long range communications.

The MCA ARCC, NMOC and each of the Coastguard Operating Centres have a call-connect facility which can be used to link differing communications networks.

Where there is a lack of a common radio network for all air assets, the CTAC will act as a voice communications relay.

Onshore Air Coordination Officer

The NPAS Ops manual, along with Ops manuals of UK SAR and Air Ambulance units, contains a section titled “The Helicopter Emergency Liaison Plan”. This describes an agreement between UK emergency air responders to improve coordination on-scene and between control rooms at incidents involving aircraft from multiple agencies.

One provision of the plan is that at the scene of Major incidents, police aircraft in the UK may be required to coordinate other air assets at the scene.

On many occasions, the principle “see and avoid” may be sufficient, with coordination between pilots using the “scene of search” tactical frequency 123.1MHz. As numbers at the scene increase and/or weather conditions deteriorate, coordination may be required to reduce the likelihood of confliction.

A system for the coordination of air assets involved in rescue operations has already been agreed internationally and is in the process of acceptance by the International Maritime Organisation (IMO) and International Civil Aviation Organisation (ICAO). It is the system is called “Air Coordination Officer” (ACO). It lays out simple terminology to describe the flow of aircraft through a scene, and simple methods for describing and coordinating multiple aircraft involved in a search. Whilst some aspects of the system are necessary only for maritime work or flight in procedural conditions, others are applicable to onshore work. Rather than “reinvent the wheel”, NPAS will adopt this terminology.

A brief guide to the ACO system is included as an annexe to this document.

For a comprehensive overview of the International Aeronautical and Maritime Search and Rescue (IAMSAR) ACO system, please refer to the IAMSAR manual volume II chapter 7.

NPAS aspires to train a number of its staff as Air Coordination Officers capable of providing active coordination at the scene of an incident. However, at the time of writing, NPAS does not have the training capacity to maintain such a qualification. As a result, at this time where NPAS aircraft pilots provide coordination, it will be based on planning aircraft flow through the scene, setting a common line of approach and egress, rather than actively coordinating aircraft using “holding points”. If the conditions require a greater degree of coordination, MCA can provide an ACO capability.

Where NPAS aircraft take the initial coordinating role, coordination will be “pilot-to-pilot”, by default on 123.1 MHz. Flow through the scene will be described using the ACO Terminology “Final Approach Point” and “Exit Point”, and LZ, each defined by OSGR and a brief description, along with a common altimeter setting if required. A simplified air picture covering these elements can be promulgated to other attending agencies via the NPAS Ops Centre.

Procedure for Instigating a CTAC - Onshore

See Appendix 6 for flow-chart summarising this process.

A CTAC can be requested by the tactical commander of any responding agency, the TCG or the NPAS operations Centre.

The decision to form a CTAC for an onshore incident will be taken by a member of staff at NPAS at a strategic command level, this will be:

- NPAS Accountable Manager;
- Senior Pilot, or;
- Ops Director

The NPAS Strategic Commander will consult with the Strategic Commander of the operation and decide whether:

- a CTAC should be established;
- the operation should be supported by allocating an aviation tactical advisor, or;
- The operation should be managed as normal business by NPAS

The NPAS Despatch Centre will contact the appropriate Assistant Ops Director, in their absence their deputy, and instruct them to form the CTAC

Once the CTAC has formed, the role of the NPAS Ops Centre will be as a provider of resources and logistical support to the CTAC coordinator. The Ops Centre will remain empowered to recall or reallocate assets.

For incidents in Scotland, any decision to form a CTAC will be considered by the Police Inspector of the Air Support Unit, Unit Executive Officer (UEO). The UEO will then liaise with the Duty Officer Service Overview (Force Control) to assist in establishing the cell and necessary support. If required, the ASU UEO will identify a Police Air Support Liaison Officer.

Procedure for Instigating a CTAC - Offshore

The decision to form a CTAC for an offshore incident will be taken by a member of staff at the MCA at a strategic command level, this will be:

- Commander Aviation, or;
- Duty Ops Director

The MCA Aviation/Strategic Commander will consult with the Maritime Commander of the operation and decide whether:

- a CTAC should be established and where;
- the operation should be supported by allocating an aviation tactical advisor, or;
- The operation should be managed as business as usual by ARCC

Role of the CTAC coordinator

The nominated CTAC coordinator will liaise with the TCG to determine the location for the CTAC (*see Logistics on page 16*) and the scale of response required. They will deploy to the agreed location for the CTAC with the Grab Bag (*see Grab-Bag Contents on page 20*).

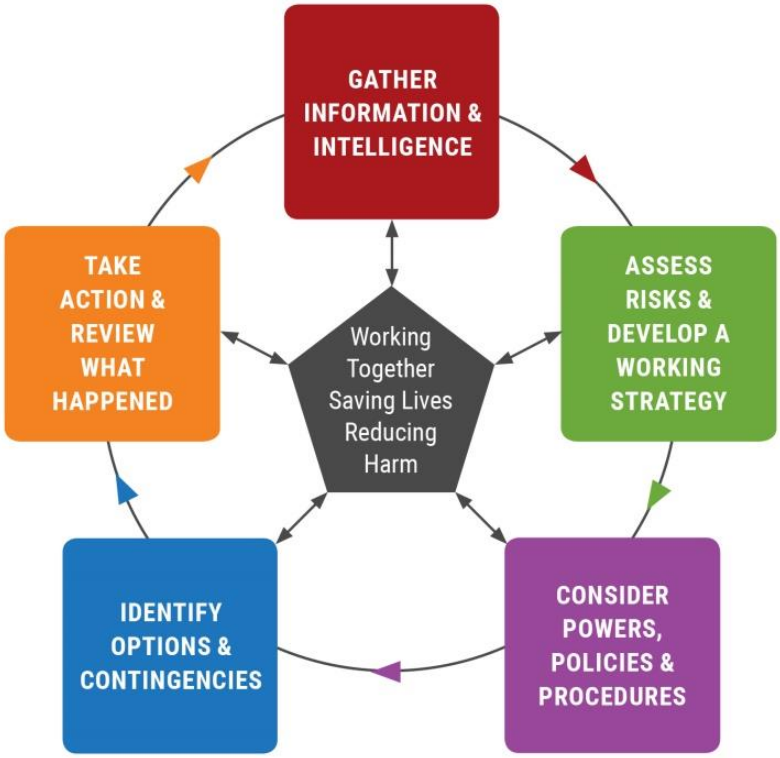
They will then set up the cell following the CTAC coordinators checklist (*see page 18).*

Role of CTAC

The CTAC will undertake the following functions:

a) Give aviation advice to the tactical commander

b) Coordinate assigned air assets and allocate / delegate tasks from tactical commanders, in line with UK "Emergency Air Response" doctrine. Joint decision making will be in accordance with the Joint Decision Model. Where relevant deployment of drones may be considered.



c) Airspace coordination and deconfliction, if practicable. The Helicopter Emergency Liaison Plan (HELP) provides guidance for on-scene co-ordination where ATC assistance is unavailable.

d) Landing site co-ordination, where relevant

e) Logistics including aircrew / ground crew accommodation and welfare, provision of additional staff for the CTAC. Logistical support can be requested through the relevant Ops Centre.

Logistics

Suitable accommodation and resources for the CTAC will need to be provided in line with the numbers of staff to be accommodated. This should include desks with power points, appropriate internet access/Wi-Fi and logistical support. Ideally the accommodation should be located close to the TCG.

Drone Operations

Where a combined tactical air cell is in place all Drone operators must ensure that drone deployments are cleared with the CTAC. All Emergency Service Drone teams will have access to Airwave Communications and will co-operate with a CTAC to meet the strategic objectives of the incident. Non-emergency service drones will present a greater challenge for Deconfliction, communication & co-ordination. It must be noted that only Police, Fire & Ambulance drone teams can use emergency service exemptions.

As a general rule all drone operations must occur below 400ft although there are exceptions particularly for emergency service operations involving tall buildings. Drone operations should normally only occur within 500m of the drone Take off & Landing Area (TOLA) and within line of sight. Emergency Services may use exemptions to fly much further from the TOLA and Beyond Visual Line of Sight (BVLOS) but permission must granted by the incident or tactical commander once set distances are reached.

Drone operators must be briefed that they must not operate closer than the legal bounds of proximity. If an inhabited aircraft infringes, the drone must be grounded immediately. The drone operator should establish communications with the aircraft and agree safe working practices.

Not all drone operators will have sufficient resources to deploy staff to the CTAC, however the CTAC coordinator will brief all agencies involved in the incident that they must liaise with the CTAC prior to deployment. Where an FRS Drone Tactical Advisor is available they are able to act as a single point of contact with the ability to co-ordinate all drone teams and provide advice to CTAC accordingly.

Fire Helicopters

A small number of independent Fire Helicopter operators exist in the UK which provide FRS with an aerial firefighting capability. Such operations are likely during the wildfire seasons (early spring and late summer) and normally operate over remote terrain using underslung buckets. Where a combined tactical air cell is in place all Fire Helicopter operators must ensure that deployments are cleared with the CTAC.

Imagery

In addition to Search & Rescue, tasking is likely to involve the collection and transmission of imagery for situational awareness, mapping & recovery purposes. This is particularly the case for wide area operations such as flooding or wildfires where a number of LRF partners will need urgent access to

imagery or mapping to assist in fulfilling their objectives. The live transmission of aerial imagery to incident commanders is key to effective decision making and using aerial footage to create live incident maps is good practice. The capability of aerial assets to produce live image streams or products for mapping must be known and co-ordinated.

A learning point from recent incidents is that where aircraft footage is required for the purpose of building composite images, the screen overlay of graticules etc. should be switched off to provide a "clean" image. The presence of graticules and symbology can prevent the footage from being successfully processed in to a composite image.

All NPAS Aircraft have the facility to downlink imagery, to local force control rooms, and to portable receivers. Portable receivers can be obtained from local forces. Some NPAS bases hold a receiver for deployment on behalf of their local forces.

CTAC should consider how best to collate, store and forward imagery so as to meet incident and regulatory requirements. Most Strategic Command Groups will have access to mapping tools and aerial reconnaissance can greatly assist in creating & maintaining situational awareness through these tools. Whilst operators must comply with Data Protection law, this should not inhibit the sharing of data between partners during an emergency in order to achieve strategic objectives.

CTAC Coordinators Checklist

The instigating control centre will inform the nominated CTAC coordinator of the requirement for a CTAC and will e-mail the relevant contact list to ensure that the manager has the most up-to-date information.

The CTAC Coordinator will:

Action	Initials/ID Number	Time/Date
Confirm the location for the CTAC		
Equip themselves with a CTAC Grab-Bag, plus airwave radios and chargers		
Nominate and warn a loggist / runner, and a deputy coordinator if required		
Brief the TCG and /or tactical commanders at an early stage on available airborne support capabilities and limitations, including deconfliction and coordination with drone operations.		
Ensure that drone operators are briefed to liaise with the CTAC prior to deployment.		
Ensure they understand the strategic and tactical objectives set for the incident		
Integrate themselves with the TCG meeting cycle		
Nominate and warn an aviation tactical advisor for the tactical command suite		
Ensure the CTAC is equipped with:		
– 1:250,000 charts		
– 1:50,000 OS Maps of the operating area		
– SIO's log book for use by CTAC coordinator		
– At least two police airwaves terminals		
– A VHF hand-held radio to monitor 123.1 MHz		
– Appropriate telephony and IT equipment		

Start a log of policy and despatch decisions, along with the rationale, using an appropriate log book. NPAS despatch will carry out a flight -following function but will not act as policy "loggers". The log will need to be stored after the event in accordance with MOPI and individual service policies and procedures.		
Liaise with the operational communications advisor and devise a communications plan to ensure that the CTAC can coordinate with all assets and agencies involved. The CTAC will need a call sign. CTAC-ONE is suggested.		
Contact and invite the relevant personnel to the CTAC. (NPAS DFMC may be able to provide conference call facilities if required)		
Ensure that the RAFLO is informed that a CTAC is being formed. The RAFRLO may initially act as a CTAC coordinator or SARLO before moving in to their "Strategic" advisory role		
Ensure that additional staff are rostered if required to continue the operation of the cell		
Consider whether a flow plan and/or local co-ordination (for example by ATC or an air asset deployed with responsibility for co-ordination) is required, to reduce the likelihood of aircraft confliction where airspace at the scene is congested		
Arrange and log handover of tasking authority of assets to the CTAC		
Consider prompting a request for restricted airspace (temporary) "RA(T)"		
Brief the media cell on the role of the CTAC and the nature of any RA(T)		
Consider facilitating airborne media access to the scene		
Close the CTAC and hand tasking authority back to the originating agencies		

Grab-Bag Contents

To be kept at the base closest to each Assistant Ops Director. A TFO and deputy will be appointed to maintain the kit

- 1:250,000 and 1:500,000 charts of region and adjacent regions
- 50,000 series maps of region – on Tablet
- “Pooleys” - on Tablet
- Military HLS directories – on Tablet
- Hospital HLS directories – on Tablet
- Regional police HLS directories – On Tablet
- 3x Airwave radios+ chargers+ batteries (not necessarily in the box but must be readily available)
- VHF handheld “airband” radio and charger - availability as Airwaves
- Micro USB and “lightening” chargers for blackberries etc.
- IPAD with maps and offline imagery
- Documentation: CTAC doctrine, CTAC Directory, HELP. NB the Directory will be maintained by NPAS Admin and reviewed and circulated on an annual basis.
- “Day-Glo” vest marked “Air Support” or similar
- ACO Asset Sheet, A3 sized, Deconfliction Aide Memoire
- CTAC door sign, A3 sized
- Stationery pack – log books, “blu-tack”, post—it notes, map pins, pens, “china graph” etc.,
- Gaffer Tape
- Acetate overlay for maps to allow over-writing
- Alcohol gel for cleaning map overlays
- Box of paper wipes/kitchen towels
- JESIP Commanders’ aide memoires / JESIP mobile phone App

References

A. Civil Contingencies Act 2004
B. JESIP Joint Doctrine
C. BHA: The Helicopter Emergency Liaison Plan (HELP)
D. SAR Framework for the UK April 2008
E. MCA SAR Major Incident Response Plan
F. UK EAR Working Group – Final Report
G. Baltic ACO Manual v 1.3 now incorporated in to the 2016 IAMSAR manual

Contact Information

NPAS Ops Centre: 01274 645281 / 01274 645139

Police Scotland Air Support Unit UEO:0141 800 2203/ 2200

ARCC: 0344 382 0818

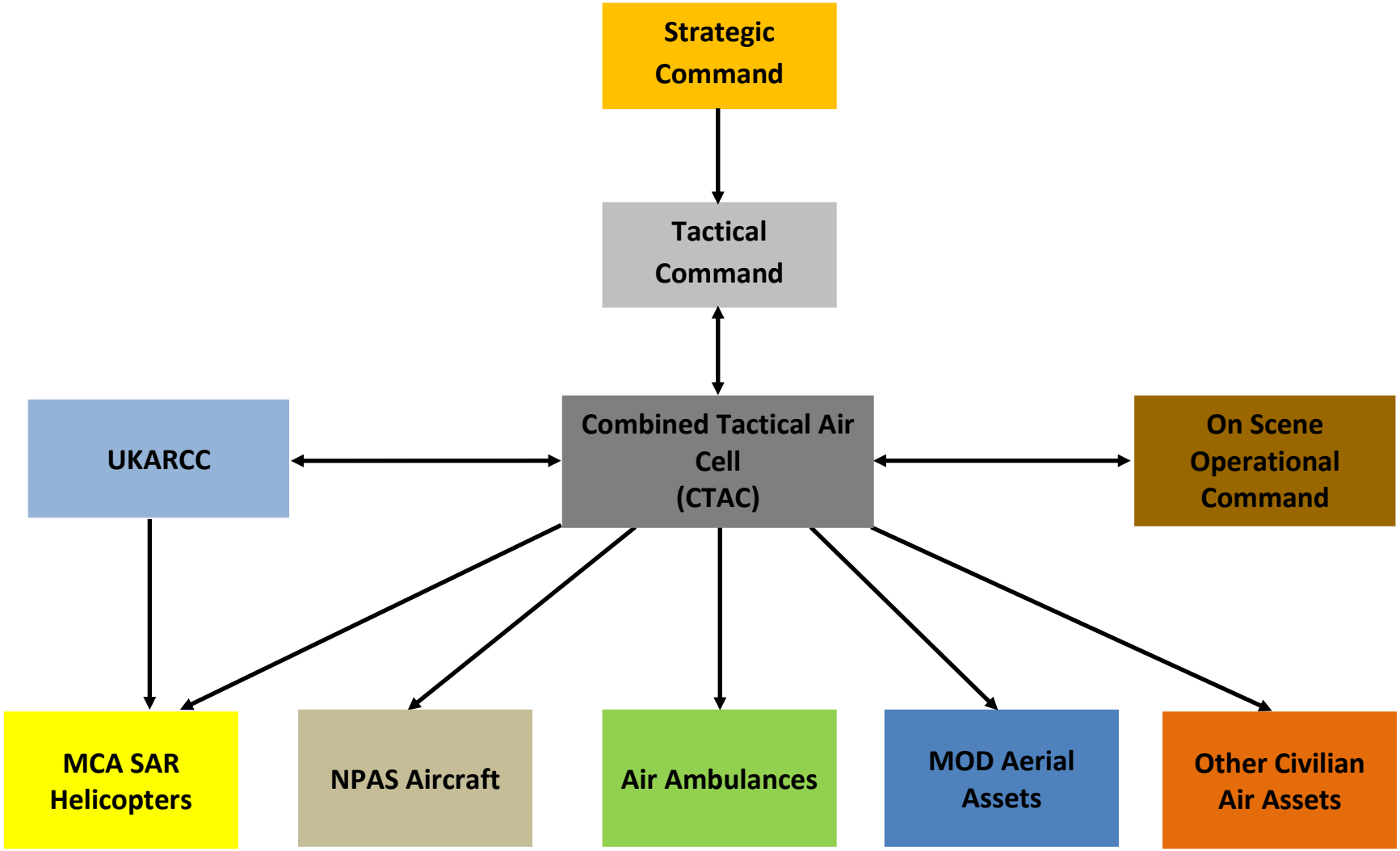
Contact information for all responding agencies in contained in the CTAC Directory, distributed separately to potential CTAC coordinators.

Appendix 1 – Commonly Used Abbreviations

AALO	Air Ambulance Liaison Officer	MCA	Maritime and Coastguard Agency
ACO	Aircraft CoOrdinator	NATS	National Air Traffic Service
ARCC	Aeronautical Rescue Co-ordination Centre	NOTAM	NOTice to AirMen
ASU	Air Support Unit	OPCON	Operational Control
C^2	Command and Control	OSC	On Scene Coordinator
C^3	Command, Control and Communications	PASLO	Police Air Support Liaison Officer
CTAC	Combined TACTICAL Air Cell	RAFRLO	RAF Regional Liaison Officer
CTACLO	Combined TACTICAL Air Cell Liaison Officer	RA(T)	Temporary Restricted Airspace
EAR	Emergency Air Response	SAR	Search and Rescue
ERF	Emergency Restriction of Flying, now called RA(T)	SARLO	Search and Rescue Liaison Officer
EPOL	Emergency Preparedness Offshore Liaison	SAROPS	Search and Rescue Operations
HF	High Frequency	STAC	Scientific and Technology Advisor Cell
HELP	Helicopter Emergency Liaison Plan	TACOM	Tactical Command
HLS	Helicopter Landing Site	TACON	Tactical Control
JESIP	Joint Emergency Services Interoperability Principles	TFO	Tactical Flight Officer
JIGSAW	Offshore Oil Industry Search, Rescue and Evacuation	UK ARCC	UK Aeronautical Rescue Co-ordination Centre
JRLO	Joint Regional Liaison Officer	UHF	Ultra-High Frequency
LRF	Local Resilience Forums	UK EAR	UK Emergency Air Response
MACA	Military Aid to Civilian Agencies	UKMCC	UK Mission Control Centre
MAOT	Military Air Operations Team	VHF	Very High Frequency

Appendix 2 - Operational Flow Chart for the CTAC

The flow chart below represents how a CTAC fits into the command structure along with the delegated Tasking Authorities



Note: MCA Maritime Operations Centre from 2016 SAR takeover

Appendix 3 - Requirements Training & Experience

Initial Training

CTAC coordinator

Whilst it is anticipated that Assistant Ops Directors would be the first choice CTAC Coordinator when setting up a CTAC, in practice and for reasons of resilience, both Base Managers and Assistant Ops Directors will train as CTAC coordinators. The coordinator must have completed the JESIP awareness training and ideally will have attended a JESIP commander's course.

MCA will train SAR Ops Managers for the same role.

Syllabus

- Classroom and table-top exercises,
- Familiarity with CTAC, HELP, ACO and EAR doctrine
- Introduction to the available military support. JRLOs, RAFRLOs, MAOT, standby aircraft.

On Scene Coordinator

- NPAS TFO/pilot/SAR LH pilot
- Familiarity with HELP and ACO

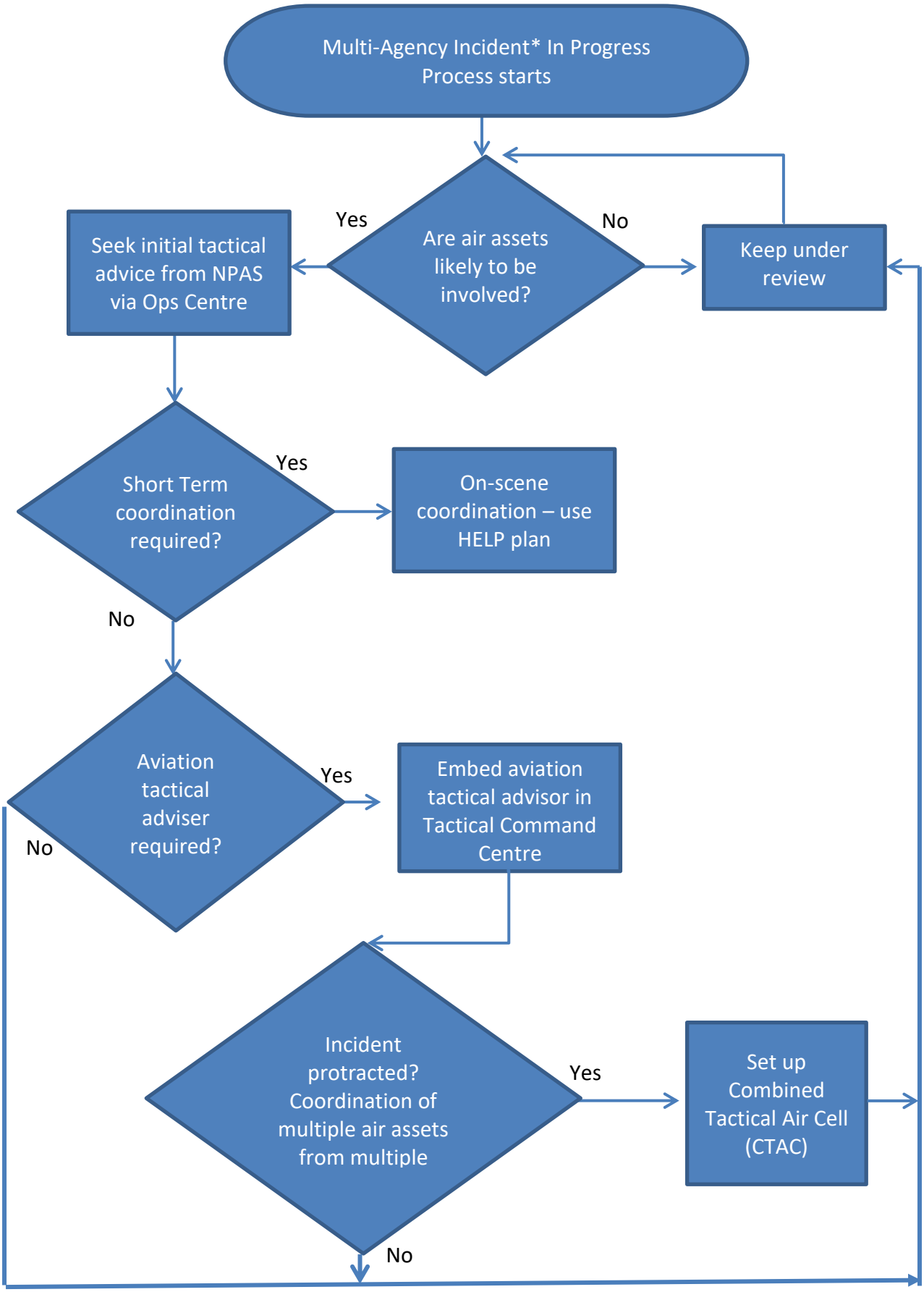
Aviation Tactical Advisor

- An experienced base manager, TFO or pilot
- Nominated at the discretion of the Deputy Ops Director
- Ideally will have attended the CTAC training programme

Ongoing training

- NPAS to arrange an input on the "Magic" course
- New recruits to have familiarisation on "OSC" role as part of NPAS TFO course and pilot induction
- Attend a one-day JESIP tactical command course
- Continuing Exercises
- NPAS will test the CTAC concept in a live exercise on a triennial basis at the minimum

Appendix 4 – Air Asset Management Process



* May include Major Incident Declaration

Appendix 5 – Helicopter Emergency Liaison Plan

JESIP HELP – The HELICOPTER EMERGENCY LIAISON PLAN v. 5.0 | JUNE 2017

COORDINATION OF ROTORCRAFT AT A MAJOR INCIDENT

Introduction

Helicopters are a vital resource for emergency services, and the UK response to any major incident can be expected by Search and Rescue, Police, and Air Ambulance (HEMS) aircraft. Additionally, both the fire service and ambulance service have access to drones; public interest motivates news-gathering helicopters, and the military or civil sector may also supply aviation resources. Because such variety exists between operators and the mechanisms through which aircraft may be dispatched, the BHA has produced this guidance document to ensure common procedures are adopted by all agencies when involved in major incidents outside controlled airspace.

HELP provides nationally agreed advice to manage aircraft deconfliction for the benefit of everyone

Priorities

Early stages of a major incident are invariably chaotic, with the possibility of poor weather and no single person having a clear picture of the emergency. It is quite likely that an unknown quantity of aviation assets may be dispatched rapidly and independently to the same location. Different agencies may have different objectives, but potential conflicts can be resolved by *prioritising the preservation of life*. If doubt exists, then the first police/SAR aircraft arriving on scene will provide guidance to deconflict subsequent arrivals. On the ground, it is entirely probable that a Combined Tactical Air Cell (CTAC) will be established within hours to manage the incident. From this point onwards, tasking will be controlled centrally and resources directed accordingly. Monitoring appropriate communication channels throughout will provide an overview of how the incident is beginning to develop.

Presumption should never be made that other assets will not be involved and already operating near the scene

Communications

Effective communication is the most important aspect of a multi-agency response, but usually the hardest to achieve. Arriving aircraft should be listening on the **LOCAL ATC FREQUENCY** to develop situational awareness and minimise conflict, broadcasting their intentions (blind, if necessary) on **123.1 MHz** while inbound. The first police aircraft present will adopt the callsign ***"Air Co-ordinator"*** to provide guidance and updated information for other commanders on the evolving situation and possible landing sites.

Mutual respect, good airmanship, and adherence to HELP will minimise risk of collision

Emergency service aircraft are also fitted with Airwave radios, enabling secure transmissions to ground units such as fire, police, and ambulance services. Inter-agency communication should be conducted on the default **ES3 TALKGROUP**, with ES1 and ES2 as spare. Point-to-point chatter places excess burden on the network and inhibits both the flow of information and ability to listen, so must be avoided whenever possible.

Every transmission relating to the incident should be concise, relevant, and informative

Mountain Rescue Teams (MRT) are highly likely to be engaged on some incidents, in which case **CHANNEL 62A** (156.125 MHz) can be used by suitably-equipped aircraft. For maritime incidents, **CHANNEL 16** (156.8 MHz) may also be usefully monitored. Other frequencies which could prove useful are **135.475 MHz** (SAFETYCOM) and **122.95 MHz** (DEPCOM), which might be considered to prevent the scene of SAR frequency becoming overloaded.

Deconfliction

Pilots may be working particularly hard in challenging conditions, but should resist any temptation to become distracted by the nature of the task. Regardless of the airspace in which an incident has occurred, visual acquisition remains the most valuable method to avoid collision. Aircraft should also consider approaching incidents at non-standard altitudes to ensure vertical separation from other assets. Whenever drones are tasked to operate near a major incident then ground communications should be established prior to launching, to achieve both safe and legal separation from other aviation assets.

Ultimate responsibility for deconfliction resides with aircraft commanders, and HELP should not be interpreted as a devolution of this obligation.

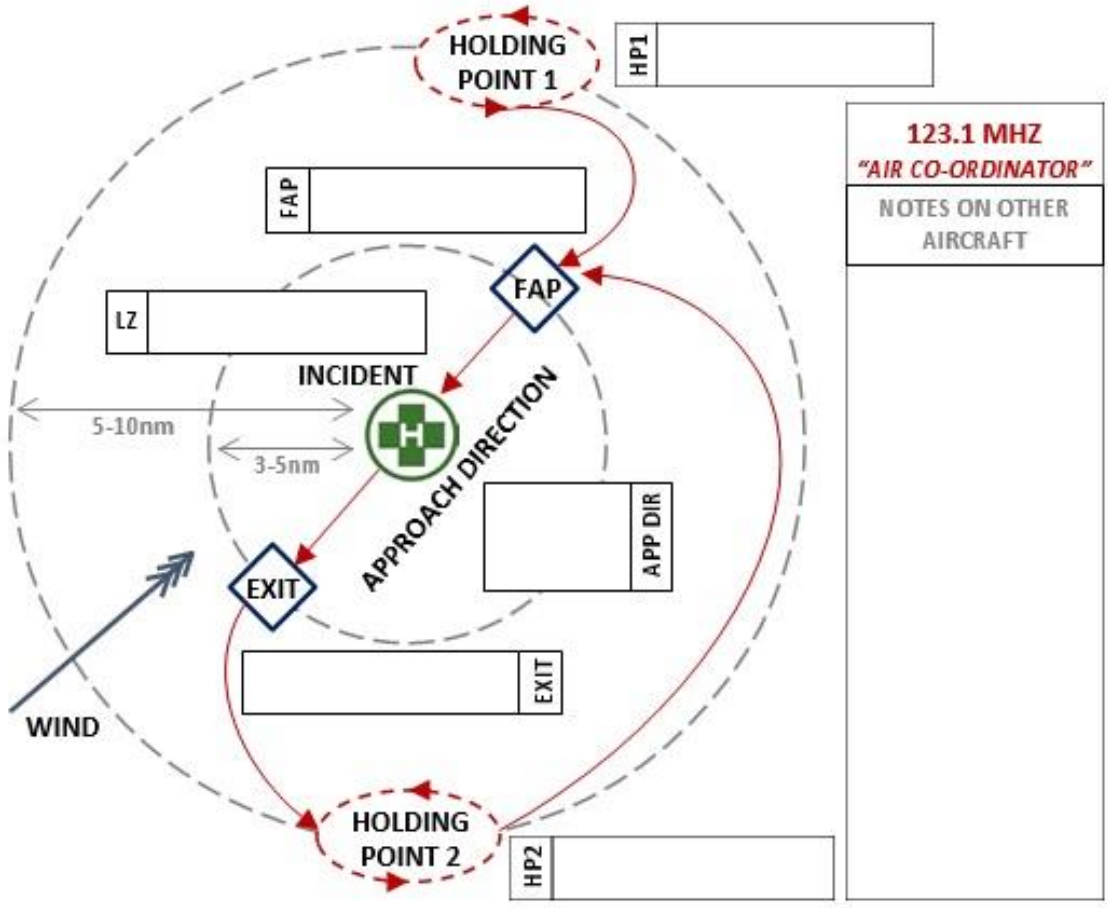
HELP may be freely copied and distributed without restriction to all emergency service units BHA

The Air Picture

The UK Emergency Air Response Group has agreed that a Combined Tactical Air Cell (CTAC) will be formed to manage the response to enduring major incidents; callsign will be ***"CTAC-ONE"*** and the CTAC may assume the role of Air Co-ordination Officer (ACO) from the first aircraft on scene. The ACO will develop a plan for flow deconfliction and establish a Restricted Area if required. In such circumstances, commanders should comply with ACO instructions and follow the plan as described. The generation of an **AIR PICTURE** will assist in the deconfliction of aircraft and **HELP** is part of this process: a simple reference which should be kept in the cockpit to provide guidance for pilots on the expectations of everybody else involved.

*The **AIR PICTURE** will be managed on **123.1 MHz**, and defined by the following terms:*

a. INCIDENT LOCATION – Grid Ref of Landing Zone relating to the incident, near an obvious landmark if possible
b. HOLDING POINTS (x2) – between 1000'-2000' and named sequentially for entry and exit points
c. FINAL APPROACH POINT (FAP) – 1000' access point for aircraft approaching the incident
d. APPROACH DIRECTION – usually into wind, but local geography may require a different direction
e. EXIT POINT – 1000' egress point for aircraft departing the incident



Following contact with the CTAC, commanders are encouraged to annotate the above diagram with appropriate grids to ensure common information is shared between participating aircraft. It is recognised that the complexity of most incidents may not easily be described by an AIR PICTURE, but compliance with these procedures will benefit all concerned parties. Non-standard joins or departures can be requested through CTAC to expedite casualty evacuation, but commanders are unlikely to have a complete awareness of situational priorities and should therefore comply with assigned tasks whilst respecting the proximity of other airspace users.

HELP may be freely copied and distributed without restriction to all emergency service units

Appendix 6 – Air Coordination Officer Onshore Guide

Onshore Air Coordination Officer

The NPAS Ops manual, along with Ops manuals of UK SAR and Air Ambulance units, contains a section titled "The Helicopter Emergency Liaison Plan". This describes an agreement between UK emergency air responders to improve coordination on-scene and between control rooms at incidents involving aircraft from multiple agencies.

One provision of the plan is that at the scene of Major incidents, police aircraft in the UK may be required to coordinate other air assets at the scene.

On many occasions, the principle "see and avoid" may be sufficient, with coordination between pilots using the "scene of search" tactical frequency 123.1MHz. As numbers at the scene increase and/or weather conditions deteriorate, coordination may be required to reduce the likelihood of confliction. A system for the coordination of air assets involved in rescue operations has already been agreed internationally and is in the process of acceptance by the IMO and ICAO. It is the system is called "**Air Coordination Officer**". It lays out simple terminology to describe the flow of aircraft through a scene, and simple methods for describing and coordinating multiple aircraft involved in a search. Whilst some aspects of the system are necessary only for maritime work or flight in procedural conditions, others are applicable to onshore work. Rather than "reinvent the wheel", NPAS will adopt this terminology.

For ease of communication I have included some common search terminology in the glossary.
For a comprehensive overview of the IAMSAR ACO system, please refer to the IAMSAR manual volume II chapter 7.

NPAS aspires to train a number of its staff as Air Coordination Officers capable of providing active coordination at the scene of an incident. However, at the time of writing, NPAS does not have the training capacity to maintain such a qualification. As a result, at this time where NPAS aircraft pilots provide coordination, it will be based on planning aircraft flow through the scene, setting a common line of approach and egress, rather than actively coordinating aircraft using "holding points". If the conditions require a greater degree of coordination, MCA can provide an ACO capability.

Where NPAS aircraft take the initial coordinating role, coordination will be “pilot-to-pilot”, by default on 123.1 MHz. Flow through the scene will be described using the ACO Terminology “Final Approach Point” and “Exit Point”, and LZ, each defined by OSGR and a brief description, along with a common altimeter setting if required. Holding points may be incorporated but will not be actively assigned by the NPAS crew. A simplified air picture covering these elements can be promulgated to other attending agencies via the NPAS Ops Centre.

Air Coordination Officer – Onshore

Responsibilities

1. Devise a communication or "comms" plan allowing pilot-pilot communications on scene, operational coordination, and air-ground communications as necessary. As a general rule, use 123.1MHz for pilot to pilot comms, and the local ES3 talk-group for coordination.
2. Consider the need for a "flow plan" to manage aircraft flow through the scene
3. Consider a suitable standby location
4. Identify a common altimeter setting
5. Consider whether marshalling is needed at the scene
6. Communicate to the NPAS OPS Centre:
    a. That you have taken on the role of "Air Coordination Officer".
    b. Your comms plan
    c. The details of the flow plan/air picture including the overall area of coordination.
    d. The common altimeter setting
    e. Request for this information to be passed on to all attending agencies with a request for a joining report to be passed on the coordination talk-group (generally ******ES3) when inbound aircraft are entering the Area of Coordination (generally20 miles radius from scene.)
7. Assume the call sign "Air Coordinator".
8. Coordinate aircraft to the best of your ability, to avoid duplication of effort and aircraft confliction.
9. Report on scene activity back to police control or the CTAC coordinator
10. Any messages you pass to attending aircraft will be taken as "requests" not "orders". Each pilot remains responsible for the safety of his or her aircraft and will do their best to follow your requests: however, the pilot's judgement about safety, and the crew's perception of operational or clinical necessity may override your request.

Deconfliction

Within controlled airspace, NATS have responsibility for deconfliction, and the ACO role becomes one of operational coordination, however outside controlled airspace, the coordinator has a responsibility to consider aircraft deconfliction.

The following methods of deconfliction are available:

- Visual – Each aircraft is allocated a search area or task. Aircraft avoid each other visually
- S*patial* – ensuring that there is horizontal or vertical space between aircraft
- *Flow deconfliction* – defining a common system of approach and exit from the scene -similar to the principle of "circuits" at an airfield, for traffic through a scene, or by assigning common lines of advance for area searches. Flow deconfliction can be described by simple terminology and an associated "Air Picture" – illustration on page 10.

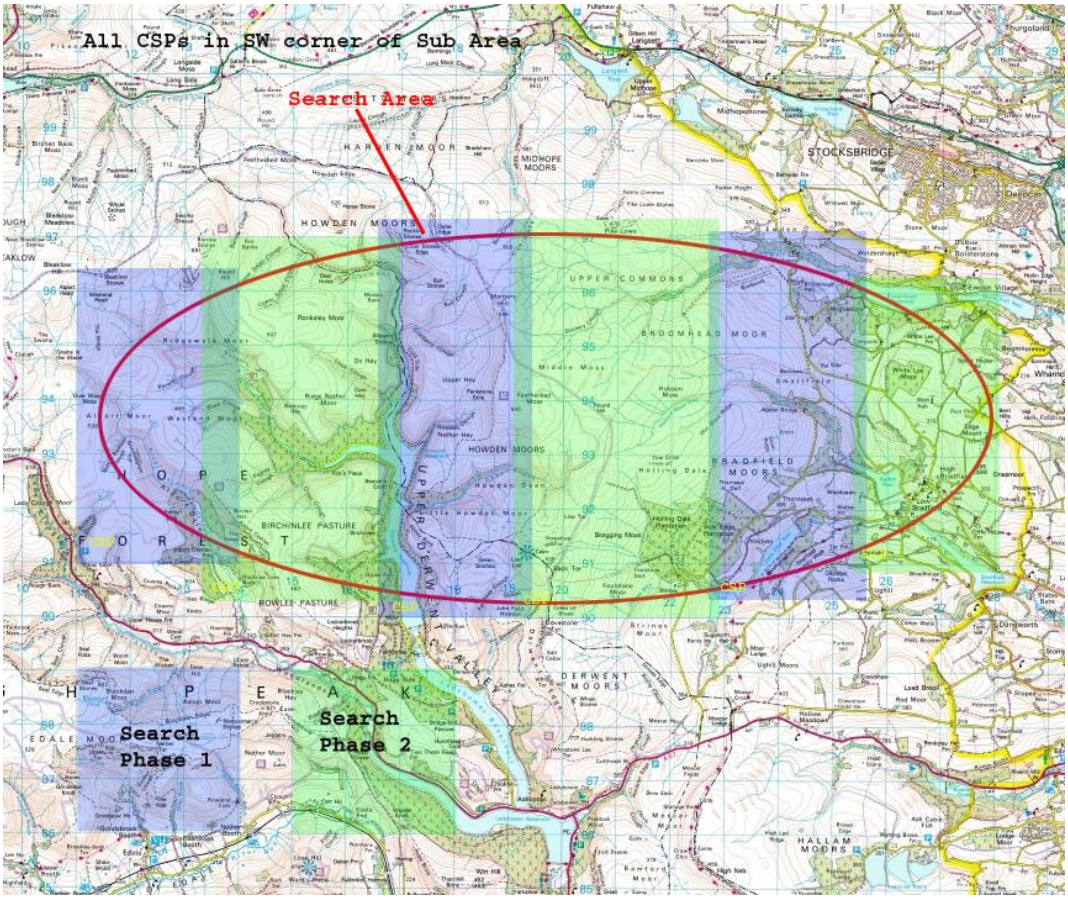
Search Deconfliction

Whilst the ACO manual proposes several systems for search deconfliction, they are optimised for offshore use where a consistent line of advance in a creeping line search will be used by all aircraft involved in a search. As a result, they are not included in this booklet.

Search areas onshore will be defined using OSGR squares, or clear geographic features. As with all police searches, ensure the "joints" between one allocated area and another overlap. It may be necessary to cover each area more than once.

In poor conditions where visual deconfliction is unsuitable, a combination of "flow deconfliction", along with spatial separation, may be used.

- Flow deconfliction – apply the system illustrated in the "air picture" below for approach and exit from a wider area
- Spatial Separation – consider setting a maximum altitude for searching aircraft, and a minimum altitude for transiting aircraft
- Spatial Separation - consider leaving clear areas between assigned search areas. Search the clear areas once the adjacent areas have been searched



Glossary

Area of Coordination.

The area within which the air coordinator will coordinate the actions of attending aircraft. The area will be set by the ACO at a level they consider will enable them to safely coordinate attending aircraft. As a starting point, a radius of twenty miles around the scene has been found to be appropriate in SAR operations.

On Scene Altimeter Setting

A common altimeter setting should be used by all aircraft within the area of coordination. This altimeter setting might be determined when the first aircraft equipped with a radio altimeter arrives on scene. Alternatively, the on-scene altimeter setting can be determined in consultation with air traffic control. The ACO should pass this information to all participating aircraft and units.

Air Coordination Talkgroup

The talkgroup used by the ACO to coordinate attending aircraft.

Joining Report

The report given by an aircraft en-route to an incident when approximately 20 miles distant.
Should include the following:

- Callsign
- Aircraft Type
- Location
- Altitude
- ETA
- Endurance
- Any Specific tasking?

Exit Report

Should include the following:

Call sign

Destination

Outcome

Persons removed from scene

Persons left at scene

ETA to return to scene

Comments

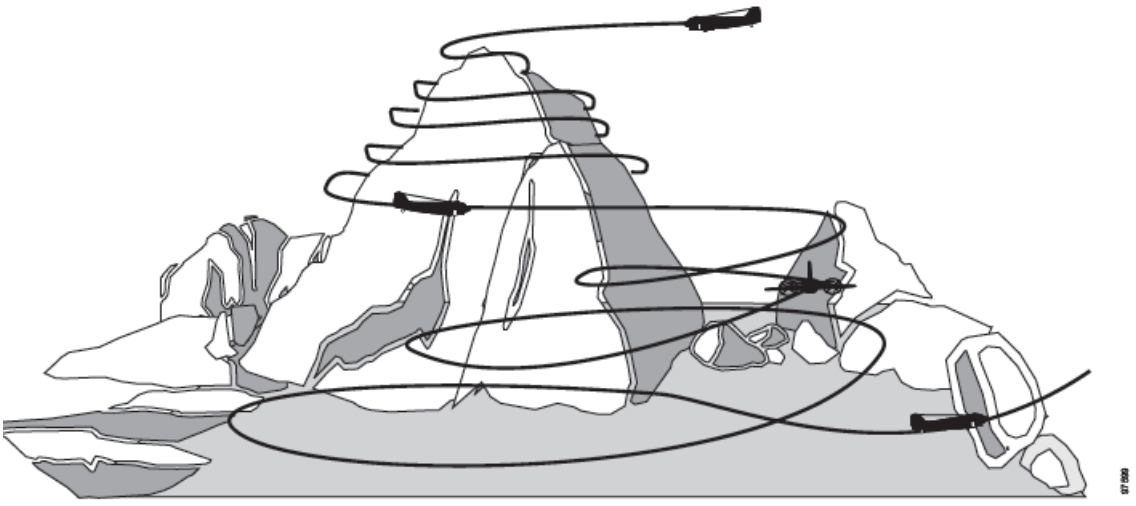
LZ

landing zone – for example “HEMS LZ”

Contour Search

Used in mountainous terrain where other search patterns are not practical. The mountain is circled or swept in a series of descending altitudes.

The search is started from the highest peak and goes from top to bottom with a new altitude for each circuit. Valleys are searched in expanding circuits.



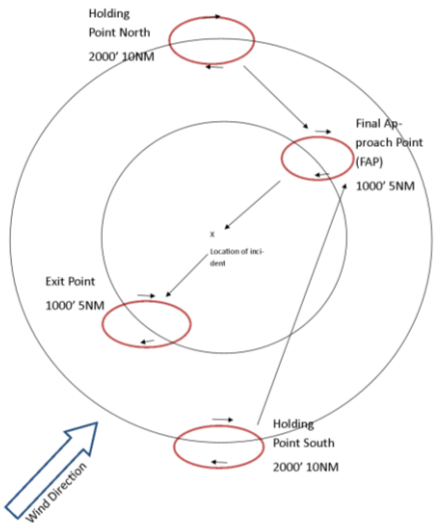
Air Picture – (Flow Deconfliction System)

A simple diagram illustrating the flow of aircraft though a scene. Defined by the following terms:

a. **Position of incident.** USE OSGR along with a landmark if available
b. **Holding Point** (generally x2*) They can be named with a compass point E.g.:" Holding Point North"*
c. Final Approach Point (FAP) *Generally into wind unless hazard or obstruction – e.g. smoke or a mast.*
d. Exit Point *Generally into wind*
e. Wind direction
f. The Holding Points, FAP and Exit Point are defined by *position* (use OSGR and a landmark if available) and *altitude* on the **common altimeter setting**.

At a bare minimum in visual conditions, 300' should separate the altitude of the holding points and the entry and exit points, and ideally between 500' and 1000'. This will depend on factors such as cloud base obstructions and the landscape.

Generally, where the incident is geographically small, for example an evacuation, the Holding points should be at Ten Miles from the LZ (Position of Incident), and the Final Approach and Exit points at five miles. These distances may be altered if necessary.



CSP

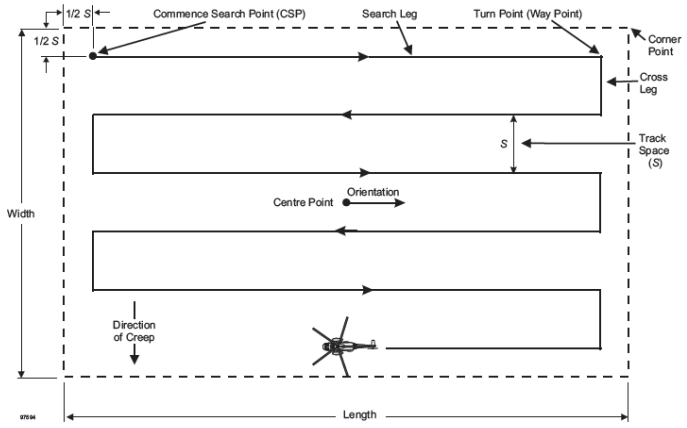
"Commence Search Point"

LOA

"Line Of Advance" The overall trajectory of a creeping line or parallel track search

Parallel track search

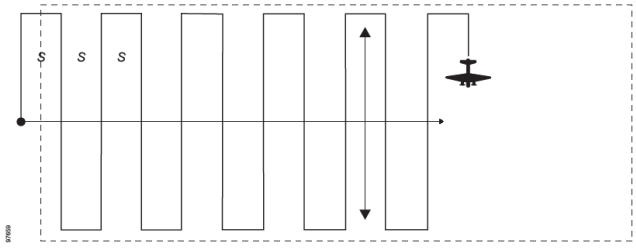
A systematic search of an area using repeated parallel tracks gradually advancing across the search area.



Parallel track search (PS)

Creeping Line Search

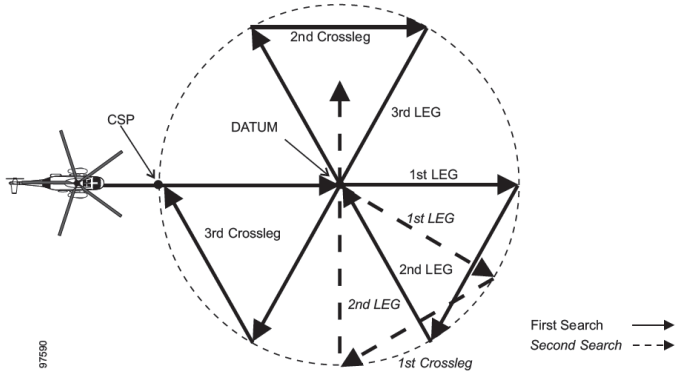
A variant of the parallel track search, where the search legs are parallel to the narrow axis of the search area.



Creeping line search

Sector Search

A concentrated area search pattern centred on a point datum



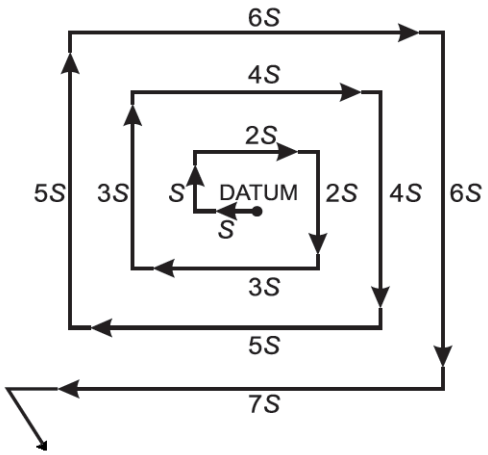
Sector pattern: single-unit (VS)

Datum

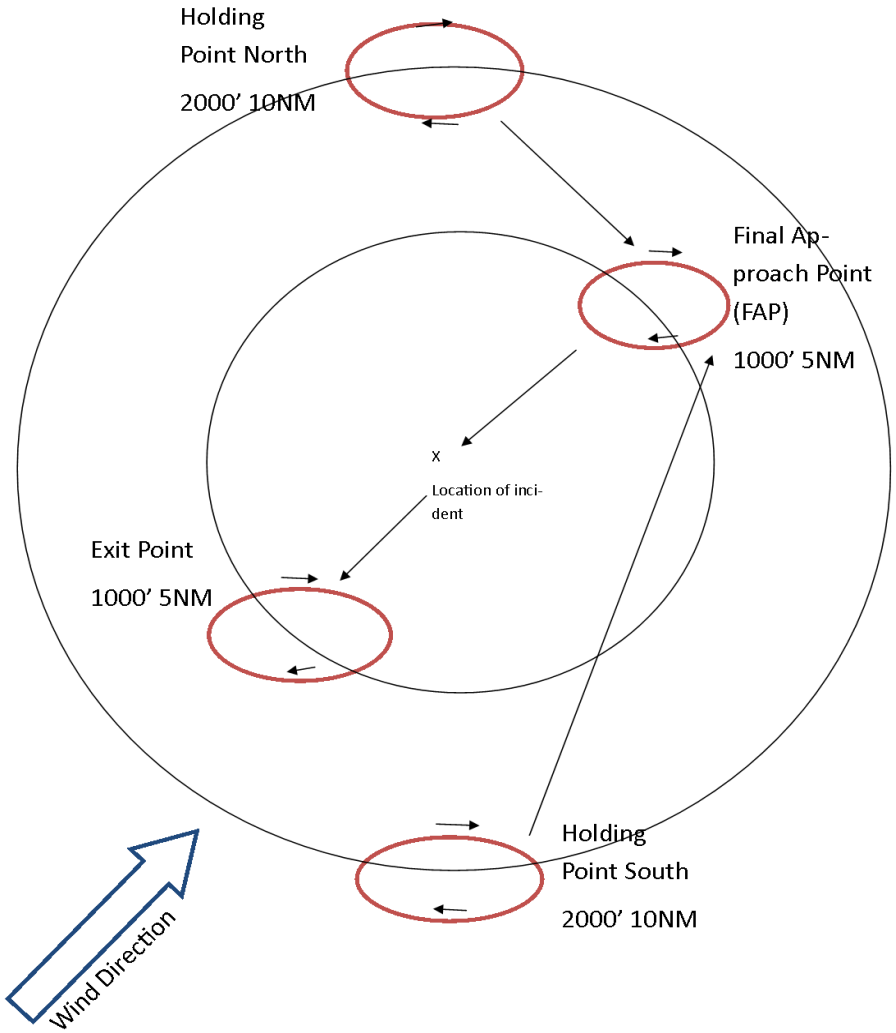
A geographic point, line, or area used in search planning

Expanding Square Search

An expanding search based around a point datum



Expanding square search (SS)



Example air picture

Default comms plan:

Use 123.1 for pilot-pilot comms on scene

Use xxxxxxES3 for inter-agency operational coordination, if required.