



Rescue and Fire Fighting Service (RFFS)

Incident Command

Information Paper

IP-1

Information on the application of the Incident Command System at aerodromes and aircraft incidents

Issue 1, October 2008

Preface

The following document is made available on the Civil Aviation Authority (CAA) website to promote and develop best practice within the RFFS. It is offered as information to the RFFS and should not be seen as CAA policy, requirements or guidance that are normally communicated by Civil Aviation Publications (CAPs) or Notice to Aerodrome Licence Holders (NOTALs).

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Enquiries regarding the content of this publication should be addressed to:
Aerodrome Standards Department, Safety Regulation Group, Civil Aviation Authority, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR.

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1 Introduction

In the UK the Fire and Rescue Services utilise the Incident Command System (ICS) as set out in the manual Incident Command¹. This paper is based on ICS and applies to an aviation/aircraft incident. It provides a framework to assist the Airport Incident Commander (AIC)² to organise and deploy available resources in a safe and efficient manner and provides the AIC with a ready to use organisational structure that can be adapted to fit every incident, from a fuel spillage situation to the largest, most complex aircraft incident.

The requirement to develop and apply the Incident Command System is driven by the critical nature of the types of incidents to which the Airport RFFS respond. The development of an Airport Incident Command System should be seen as part of the aerodrome's overall organisational system for Managing Risk.

CAP 168, Chapter 9, Section 6.2 states:

The Licence Holder should liaise with local emergency responders and establish responsibilities for incident command, particularly for the scene immediately adjacent to the aircraft. Any agreements should be recorded in the aerodrome manual.

This paper should not be seen as a requirement but information to guide local arrangements. It may be necessary to tailor the arrangements to local circumstances; for example, the terminology may be different. For any differences the local arrangements should take priority.

For many smaller aerodromes the information in this paper will not be appropriate; however, the principles of incident command should be applied at all incidents.

2 The Airport Incident Commander

The AIC must focus on the safe and effective resolution of the incident. The AIC tactics are based on a dynamic risk assessment and/or the limited resources available at the time of the incident. At some time within the timeframe of the incident the AIC will need to work in conjunction with other services and agencies as necessary. At this point the full Aerodrome Emergency Plan would have been implemented.

The AIC is therefore principally concerned with the tactical co-ordination of tasks, which will be based on operational procedures. Operations are best described as tasks that are carried out on the incident ground to achieve desired objectives, using prescribed techniques and procedures in accordance with the Aerodrome Emergency Plan/Orders.

3 The Operational Environment

An Airport Incident Command System is driven by the critical nature of the incidents the RFFS attends within and/or outside the aerodrome boundary. Aircraft-related incidents often share common characteristics, which include:

Time Criticality

Time pressure on the requirement to make decisions and act upon them, when or if the aircraft is being evacuated and/or involved in a fire is arguably the major contributory factor in the determination of incident criticality.

¹ Fire and Rescue Manual Volume 2: Fire Service Operations – Incident Command (3rd Edition), www.tsoshop.co.uk

² Whilst the term Airport Incident Commander (AIC) is used in this paper it is accepted that other terms are used. Whatever term is used it is important that it fits into the local arrangements.

Complexity

Large type aircraft-related incidents have a higher degree of complexity, which could result in uncertainty about outcomes (Internal or External Aircraft situations). A large aircraft at a Category 8 may be a 767, where a large aircraft at a Category 5 may be an ATP, each will offer a level of complexity in relation to the minimum level of Rescue and Fire Fighting Service provided.

Moral Pressure

Significant incidents involving people and aircraft will generate moral pressure on those responding. These will place the AIC under immense pressure to take action quickly and make operational tactical decisions.

Duty of Care

Duty of Care by the AIC is critical at incidents to avoid exposing RFFS personnel to unnecessary risks.

Scrutiny

Investigations and/or debriefs will focus on those in command at the critical stage of an aircraft incident. AICs must expect to have their decisions and subsequent actions scrutinised.

Decision-Making

Decision-making under crisis conditions and the operational competency of the AIC could have an effect on the overall outcome of incident.

4 Generic and Operational Dynamic Risk Assessment

The benefits of proceeding with any task must be weighed carefully against the risks to the firefighters. The AIC must first calculate the risks within the hazard.

- Firefighters will take some risk to save lives.
- Firefighters may take some risk to save property.
- Firefighters will not take any risk at all to try to save lives or properties that are already lost.

Therefore, if after implementing all available control measures, the cost (in terms of risk to life) of proceeding with a task still outweighs the benefit, the AIC must not permit operations to proceed but consider a viable alternative course of action.

This is a critical and defining aspect of the operational AIC's responsibility. To discharge this competently requires a detailed knowledge of the principles and regulations surrounding risk assessment and a sound understanding of the factors influencing safety within the Fire and Rescue operation and of course the operational situation.

5 Generic Risk Assessment

Due to the very nature of RFFS operations there is a wide range of operational activities to cover. This can potentially make risk assessment a time consuming activity. To minimise this and avoid duplication and an inconsistent approach, the RFFS should conduct Generic Risk Assessments as part of their Safety Management System (SMS).

The RFFS should conduct and formulate a risk or hazard register or log of all identifiable risks within or in the very close proximity of their aerodrome. From this is formulated the Emergency Plan, operational procedures, training and exercises; all part of the overall Safety Management System (SMS).

6 Operational Dynamic Risk Assessment

The term Dynamic Risk Assessment (DRA) is used to describe the continuing assessment of risk that is carried out in a rapidly changing environment at aircraft/airport related incidents. The outcome of the initial DRA is the declaration of a Tactical Mode. The continued DRA may not change the mode of operations.

The AIC's DRA takes into account the frequently and sometimes rapidly evolving nature of an aircraft incident and is a continuous process. This is further complicated with the need to deal with large numbers of evacuated passengers, external fuel fires, aircraft wreckage and airport/aircraft ground activities.

It is nevertheless essential that an effective risk assessment be carried out at all operational incidents. In a high risk, slow time environment the AIC must implement greater levels of control and apply appropriate control measures, in order to reduce risk to an acceptable level. However, under the circumstances of a rapidly developing aircraft fire situation with many casualties, the risk is high and the timeframe is short with the situation being much more dynamic. Nevertheless, control measures still need to be implemented.

7 Tactical Mode

Tactical Mode is the term used to describe the outcome of the strategic decision, which has been taken by the AIC, which in turn provides the operating framework within which all tactical operations will be conducted. It is often the only strategic decision taken at an aircraft incident.

Tactical Mode is required for all incidents and must be kept current at all times.

In any aircraft incident, there are three possible modes of operation; these are 'Offensive', 'Defensive' and 'Transitional'. Where safe systems of work are deployed and adequate control measures implemented, the mode of operation is likely to be 'Offensive'. However, where the risk to crews is excessive, 'Defensive' mode will be declared. Where an incident is sectorised and the mode of operation varies between sectors, i.e. both Offensive and Defensive modes are in operation at the same time at an incident, the incident is deemed to be in 'Transitional Mode'.

On arrival at an aircraft incident the AIC must establish what and where are the most significant hazards to his/her personnel. The AIC must be aware that the hazard area may well extend beyond the boundaries of the aircraft, terminal or hangar building involved. The hazard area is defined as 'an area in which significant hazards have been identified'. The AIC must decide if the level of risk to crews is justifiable within this area.

8 Offensive Mode

This mode may apply to the entire incident and/or sector.

This is where the operation is being tackled from within the perceived hazard area. Most aircraft incidents will be dealt with from the outset in this mode.

The AIC would have established that potential benefits outweigh the identified risks, so the AIC will be committing crews into a relatively hazardous area, supported by appropriate equipment, procedures and training.

Greater levels of control, additional resource and control measures may be required which form the basis of the Aerodrome Emergency Planning arrangements.

Offensive Mode is the normal mode of operation used at, for example, hot brakes, undercarriage fires, engine fires, taxiway/apron traffic collisions, etc.

Further examples of Offensive Mode:

- RFFS BA crews committed to investigate a smoking undercarriage (hazard area) to undertake possible fire fighting action is an Offensive action.
- RFFS crews committed into a hazard area at an RTC to perform First Aid and/or rescue is an Offensive action.
- RFFS crews to lay a foam blanket on a fuel spillage adjacent to an aircraft on stand is an Offensive action.

9 Defensive Mode

This mode may apply to the entire incident and/or a sector.

This is where the operation is being fought with a defensive position. In Defensive Mode, the identified risks outweigh the potential benefits, so no matter how many additional control measures are put into place, the risks are too great.

In these circumstances the AIC would announce Defensive Mode and ensure that all responding personnel are aware of the mode and its implications.

For example, the internal fire on an aircraft has completely destroyed the integrity of the fuselage; the tactics are to protect exposure risks and adjoining property without committing crews into the hazard area.

Further Examples of Defensive Mode:

- Withdrawing a crew from a hazardous area because the risk has increased.
- Standing by awaiting expert advice, before committing crews, for example to a hazardous cargo incident.

10 Transitional Mode

Transitional is declared when both Offensive and Defensive tactics are being carried out at an incident at the same time but in different sectors. It never applies to an individual sector or scene of operation but always to the whole incident. 'Transitional' Mode is not in itself strictly a tactical mode of operation but is a codified description of the incident status signifying that Offensive and Defensive operations are in use in one or more sectors. It is intended to warn personnel that their actions may affect the safety of teams working in a different Tactical Mode in other sectors.

For example, crews may be working in 'defensive mode' and using handlines to contain a fuel fire on the ground; however, crews from a different sector may have been committed into the aircraft to perform a specific task. Communicating to all personnel throughout the incident ground that the incident is Transitional prompts the AIC to consider whether this action may compromise the safety of those inside the aircraft.

Further Examples of Transitional Mode:

- A Taxiway Traffic Collision involving a fuel tanker leaking avgas; a crew is putting a foam blanket on the fuel whilst a second crew is releasing the driver from the cab.
- An undercarriage fire where the fire is being attacked whilst deployed slides are being protected by water sprays.

11 Default To Defensive

A Tactical Mode must be declared immediately at all incidents. This is a critical part of the procedure. The AIC will make an immediate judgment about whether it is safe to proceed with Offensive operations. If the AIC feels it is not safe enough, a Defensive approach should be used until a suitably safe approach to deal with the incident can be decided upon.

As most RFFS resources exceed the minimum requirements, the initial RFFS is likely to be in Offensive mode.

If the AIC is unsure whether it is safe to announce 'Offensive Mode', or confirm offensive operations, then 'Defensive Mode' must be announced. As soon as the AIC is able, a review of the mode should be conducted. This approach is referred to as 'Default to Defensive'.

The key to effective use of the Tactical Mode procedure is speed of application within the critical decision-making process.

The process is founded on the operational competency of the AIC and his/her own confidence in making such decisions.

12 Recording Of Tactical Mode

The AIC should decide upon the Tactical Mode and then communicate by radio to the Air Traffic Control, Watchroom, and Aerodrome Emergency Planning Centre. Most if not all radio communication at aerodromes is recorded.

As the aircraft incident grows and the AIC's span of control increases, it is essential that all Fire and Rescue personnel are aware of the tactics on the incident ground and the prevailing Tactical Mode.

This will be a fundamental part of the handover of command when the Local Authority Fire Service arrives and establishes contact with the AIC.

The first radio message to ATC and then communicating with the responding Local Authority Fire and Rescue Service should include a confirmation of the Tactical Mode.

Example: - "Fire Command in attendance 737 aircraft undercarriage fire 'Offensive Mode' aircraft being evacuated".

Communication over the ATC radio results in a recording and time stamping of that announcement. When a Dynamic Risk Assessment is conducted, the outcome is therefore recorded.

Any changes in the tactical mode must be transmitted over the ATC radio for recording purposes.

13 Airport Incident Commander Command Competence

CAP 699 sets out the occupational standards of the RFFS. Unit 7 deals with the Command and Control Resolution of Incident.

The role of AIC is a safety critical function for all operational commanders who have a responsibility to respond to incidents. It is essential that Aerodromes are able to provide evidence that their AICs are competent and that the AICs themselves understand and maintain their operational competence.

Command Competence is the ability consistently to use knowledge, skills and understanding to the standards expected in employment, to meet the changing demands of an operational incident and solve operational problems.

It is important that the AIC is not only able to demonstrate adequately those practical skills involved in carrying out Incident Command, but can also manage the range of tasks in a dynamic, stressful, constantly changing environment.

A Workplace assessment linked to operational competency standards (CAP 699) is vital in assessing the operational knowledge, understanding and ability of an AIC.

If any shortfalls in performance are identified, these become part of the development requirements for the individual concerned.

14 Safety Management Systems

Effective Safety Management requires a systems approach to the development of safety policies, procedures and practices to allow the RFFS to achieve its safety objectives. Similar to other aerodrome management functions this requires planning, organising, communicating, training and evaluating.

Safety Management integrates the diverse activities undertaken by the RFFS in a coherent manner.

Effective safety management requires more than established organisational structures and procedures; it requires a genuine commitment to safety on the part of all personnel.

15 Identification

Until the Local Authority Fire and Rescue Service senior officer is in attendance and has assumed overall command, the AIC is responsible for all Fire and Rescue operations. The AIC needs to be easily identifiable by wearing distinctive PPE or surcoat/tabard.

When the AIC has handed over operational command he/she should take on the function of Airport Command Liaison and provide any technical information, liaison and support to the Local Authority Incident Commander.

16 Airport Sector Commander

The AIC will delegate responsibilities for sectors to Sector Commanders. It is their responsibility to monitor the situation and the progress of the incident and pass on all information regarding progress and incident situation to the Incident Commander.

The Airport Sector Commander is to ensure liaison with all emergency service personnel operating within their sector.

Airport Sector Commanders MUST ensure that the AIC is kept informed of all operational progress and any change in tactics due to the development or deterioration of conditions in their sector. All Sector Commanders should be identified, usually by tabards.

When the Airport Sector Commander has been relieved of sector command responsibilities, he/she should provide any technical information, liaison and support to the Local Authority Fire Service Sector Commander.

Effective communication is of critical importance at all incidents. Information has to be relayed accurately from the AIC to the crews carrying out the work and vice-versa so that the crews are aware of the tactics being employed and the AIC is aware of developments on the incident ground.

17 Inter-Agency Liaison

The AIC must establish and maintain effective liaison with all other agencies, where they are present at an incident. This will include tactical liaison with other emergency services to co-ordinate operational activities effectively, and liaison with technical specialists whose specific knowledge may be critical in helping to resolve the incident.

Management and command of serious aircraft incidents is rarely a single agency task. The Airport Incident Command System must be developed to ensure airport procedures fit seamlessly with those of partner organisations and the overall approach to integrated emergency management. The use and compatibility of radio systems and terminology is key to achieving effective liaison at incidents.

The AIC needs to understand agencies, and players, at all levels within the emergency plan including knowledge of the powers and duties of officials at key levels.

Within the Airports Emergency Plan the function/role of all agencies attending the airport as part of the major aircraft incident response would have to be clearly identified and assessed.

An aircraft accident site is potentially a hazardous area, particularly if the airframe has been damaged by impact or exposed to the effects of fire. It is likely, in these circumstances, that hazardous gases, vapors, aviation fuel, hydraulic fluids and particles of composite materials fibres will contaminate the site. It is therefore essential that those requiring access to the accident site are well informed, prepared and protected.

18 Cordons

Cordons are employed as an effective method of controlling resources and maintaining safety on the aircraft incident site. The AIC must consider the safety of firefighters, evacuated passengers, other members of the public, members of other emergency services and voluntary agencies attending.

An inner cordon is used to control access to the immediate scene of operations. Access to the area controlled by an inner cordon, which by definition is a high hazard zone, should be restricted to the minimum numbers required for work to be undertaken safely and effectively.

Personnel should only enter when they have received a full briefing and been allocated specific tasks. The Civil Contingencies Act guidance document entitled 'Emergency Response and Recovery' states in Section 3.7 that "Fire and Rescue Services are trained and equipped to manage 'gateways' into the inner cordon, if requested to do so by the police".

However, if the aircraft incident is the consequence of a suspected criminal act, the police will assume overall control of the area and liaison between all attending services will determine entry and exit protocol.

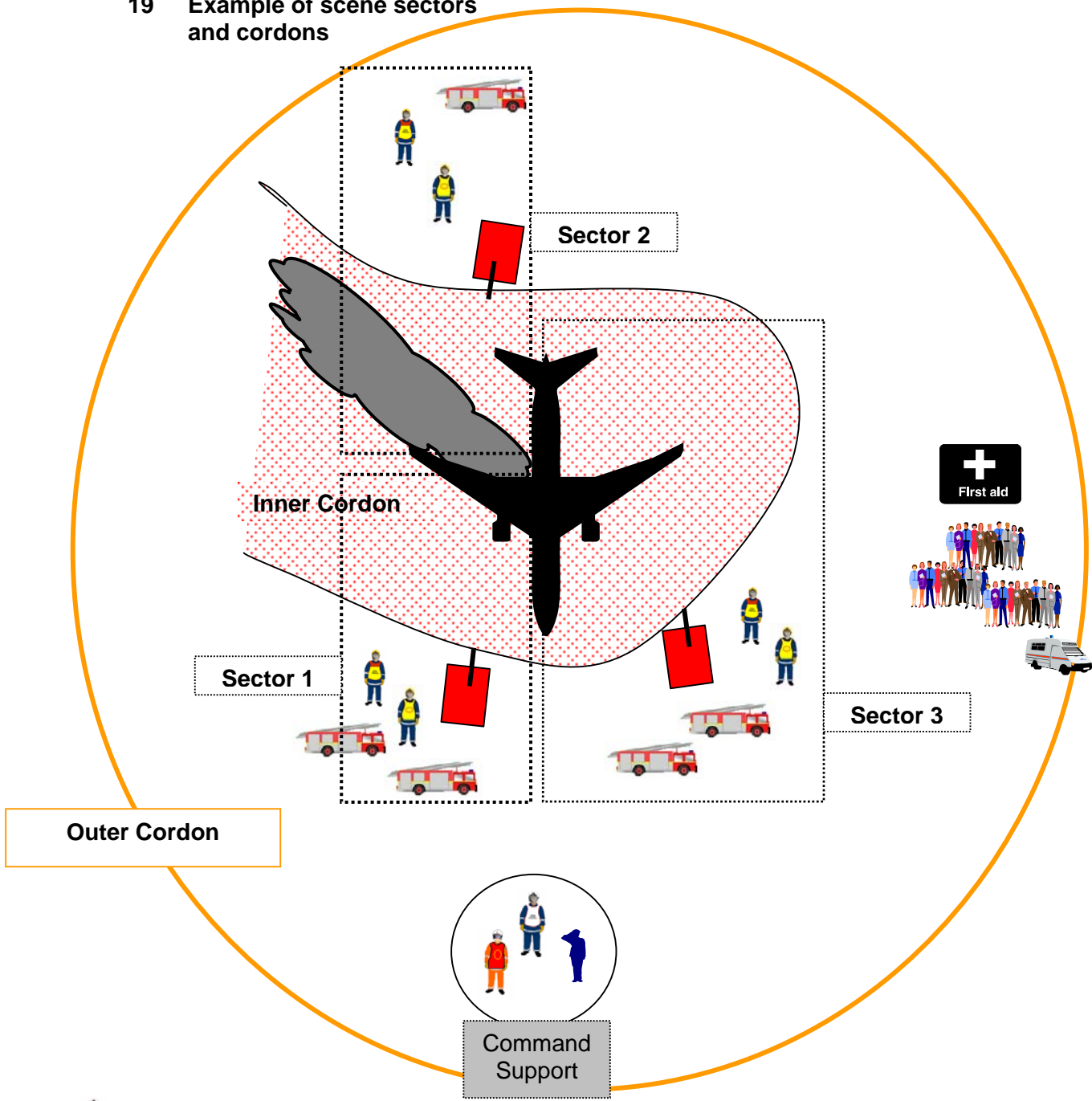
It is vital that local planning and exercising is conducted to ensure misunderstandings about roles and responsibilities do not occur during an incident. In terms of accounting for the safety and whereabouts of personnel, it is a responsibility of AICs, or delegated to Sector Commanders when the incident has been sectorised, to be aware of which personnel and other agencies crews are active in their sector.

This responsibility may be more effectively discharged if the Sector Commander has a sector command folder or board, as used by some FRSs. The addition of space for other agencies' personnel, together with checklists for PPE, escorts if necessary, and details of working location, is a useful addition. It would also be necessary to consider a safety briefing, a record of their presence and agreed evacuation signals. These are matters that should be discussed with the local Fire and Rescue Service.

An outer cordon is used to prevent access by the public into an area used by the emergency services while they are attending an incident. The police will usually control outer cordons. Marshalling areas will usually be located within the outer cordon area if one or more are established. The outer cordon for an on aerodrome aircraft incident may be the aerodrome boundary fence.

Access through the outer cordon for essential non-emergency service personnel should be by way of a scene access control point. The outer cordon may then be further supplemented by a traffic cordon.

19 Example of scene sectors and cordons



Incident Commander



Airport Command Liaison



Local Authority Sector Commander



Airport Technical Liaison



20 Further Reading

- Civil Aviation Authority Publication CAP 168
<http://www.caa.co.uk/docs/33/CAP168.PDF>
- Civil Aviation Authority Publication CAP 699
<http://www.caa.co.uk/docs/33/CAP699.PDF>
- Fire and Rescue Manual Volume 2: Fire Service Operations – Incident Command (3rd Edition), www.tsoshop.co.uk
- The Civil Contingencies Act 2004 and associated guidance
<http://www.ukresilience.gov.uk/preparedness/ccact.aspx>