

Atomic Weapons Establishment

Aldermaston



**STOCKPILE MANAGEMENT
EXPLOSIVES BUSINESS UNIT**

EXPLOSIVES TECHNOLOGY FACILITY

EMERGENCY RESPONSE PLAN

VOLUME 3

**INFORMATION FOR
FACILITY EMERGENCY RESPONDERS**

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EXPLOSIVES TECHNOLOGY FACILITY

EMERGENCY RESPONSE PLAN

VOLUME 3 – INFORMATION FOR FACILITY EMERGENCY RESPONDERS

Originator:	_____	Date:	27/01/09
	██████████ Operations Manager		
Reviewed:	_____	Date:	10/02/09
	██████████ Deputy Facility Manager		
Authorised:	_____	Date:	10/02/09
	██████████ Explosives Sites Manager		

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This is a Category A as defined in the Company Quality Manual.

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1 Introduction

- 1.1 This volume (3) of the Explosives Technology Facility (XTF) Emergency Response Plan (FERP) provides additional information relating to the FEC/Facility response actions necessary to deal with the consequences of generic and specific emergency scenarios identified in the XTF Safety Case.
- 1.2 This volume is intended to be readily available to the FEC and other facility emergency response staff as required.
- 1.3 Controlled copies include all 4 volumes which are intended to compliment each other and provide a complete Emergency Response overview.
 - Volume 1 – Emergency Arrangements
 - Volume 2 – Emergency Response Actions
 - Volume 3 – Information For Facility Emergency Responders
 - Volume 4 – Supporting Information (Emergency Equipment)
- 1.4 As emergency situations are rarely the same, this volume sets out to provide an aide memoir and general guidance in relation to the reasonably foreseeable emergency situations that could occur within the XTF.
- 1.5 Its layout is broadly similar to Volume 2 with each of the generic and specific hazards listed.
- 1.6 In addition to the generic and specific hazards identified in the Facility Safety Case, information is also provided to Facility Emergency Response staff in relation to calls to the ECP for incidents elsewhere that may require explosives support.

2 Essential Information

In any emergency summon HELP as quickly as possible

2.1 Record the nature of the emergency

- name of the caller
- number of the telephone they are calling from/can be contacted on
- location and nature of the incident
- names of possible casualties
- hazards at the incident scene

2.2 Confirm Emergency Services have been contacted

- If in any doubt raise the alarm (it is better done more than once than not at all)

2.3 Set up the Facility Emergency Control Point

2.4 Confirm whether explosives or other hazardous materials could be involved

2.5 Send Facility Incident Control Officer to remote rendezvous point if applicable

2.6 Summon First Aid Support

- Arrange transport if necessary

Warning

2.7 **Electro-Explosive Devices or Flammable Atmospheres**

2.7.1 Consider the threat to sensitive Electro-Explosive Devices (EED), or flammable atmospheres, from RADIO COMMUNICATION and TELEMETRY equipment operated by responding Emergency Services (both AWE and External Agencies).

2.8 **Defibrillators**

2.8.1 Consider the threat to any nearby explosives substances or articles and the electric shock hazard, in locations with anti-static/conducting areas, before authorising the use of defibrillators, carried by Fire and Medical Teams for the treatment of heart attacks etc. at the incident scene.

3 Evacuation, Sheltering and Muster

3.1 Evacuation of Emergency Control Point (ECP)

3.1.1 In the event of the ECP requiring evacuation due to fire or other emergency in ██████ the actions for the relevant incident provided in Volume 2 take primacy. An alternate ECP should be established in ██████ or other safe location, but the "Grab Bag" should only be taken if it is immediately to hand and safe to do so.

3.2 Sheltering & Muster

3.2.1 Sheltering - Officer In Charge

3.2.1.1 The FEC should appoint someone to conduct a local muster of all personnel sheltering within the ECP and WCC group of buildings, recording names and normal resident location.

3.2.1.2 Close all the doors and windows and shut down the air conditioning and any extract fans.

3.2.1.3 Visitor entry logs and WCC authorisation records should be reviewed to provide a reference for cross-checking by the Muster Co-ordinator.

3.2.1.4 Relay this and the muster information to the co-ordinator in the ECP.

3.2.2 Muster – Co-ordinator

3.2.2.1 The FEC should appoint someone to co-ordinate the muster of staff at remote locations within the Facility.

3.2.2.2 Resident Sections will report their muster by telephone, or e-mail, to the ECP. Names and numbers should be checked against the ECP records of the relevant nominal roll.

3.2.2.3 If no report has been received from an EAB, directly or via another muster, it should be contacted to check whether anyone is sheltering. Radios may be used to contact workers deployed in remote locations to determine where they are sheltering if necessary.

3.2.2.4 The collated information should be checked against Facility entry and WCC authorisation records, where appropriate, to confirm that everyone has been accounted for.

3.2.2.5 After review by the FEC, the final information should be sent to the Site Muster Bureau by e-mail or fax (if e-mail is not available) using the Company muster proforma. The bureau must be telephoned to confirm receipt of the information.

4 Emergency Arrangements

4.1 Emergency Assembly Buildings (EABs)

4.1.1 EABs are always unlocked during normal working hours and have telephones or radios for communication with the Facility ECP. They are:

- within the main XTF Explosives Area:

██████████
 ██████████
 ██████████
 ██████████
 ██████████

- within the Burning Ground Explosives Area:

██████████

- outside the Explosives Areas:

██████████
 ██████████
 ██████████
 ██████████

4.1.2 Should evacuation from a normally occupied EAB, or other building outside the Explosives Area be necessary the evacuation/muster points are:

- ██████████ (for ██████████)
- ██ (for ██████████)
- Hard-standing adjacent to decoy pond (for ██████████)
- ██████████ car park (for ██████████)
- ██████████ foyer (for ██████████)
- ██████████ entrance (for ██████████)
- ██████████ (for ██████████)

4.1.3 A map indicating the location of the EABs and alternate muster points is shown on the map in Figure 4-1 on page 9.

4.1.4 For work during silent hours, specific arrangements must be made for the relevant EABs and/or other appropriate buildings to be unlocked.

4.2 Designated Emergency Rendezvous Points

4.2.1 The Emergency Services should be met at a predetermined Rendezvous Point (RVP) close to the entrances to the Facility to brief them on the nature of the incident and on any specific hazards involved. They will not move further toward an incident until the FEC has confirmed that it is safe for them to do so.

4.2.2 The RVPs have been chosen to be beyond, and avoid the need to travel within, the licensed Class D distance of explosives buildings to afford protection to responders. They are at:

- building [REDACTED] for incidents occurring north of [REDACTED] (in the vicinity of [REDACTED])
- [REDACTED] building [REDACTED] (which provides shelter until entry through Gate 5 is agreed) for incidents occurring in the Explosives Machining Section (buildings: [REDACTED])
- [REDACTED] (Emergency Service access via [REDACTED]) for incidents occurring in the Burning Ground
- adjacent to [REDACTED] (access via [REDACTED]) for all other incidents

4.2.3 For incidents outside the Explosives Areas, the RVP will be established at a safe location in relation to the incident.

4.2.4 The designated RVPs are shown on the map in Figure 4-1 on page 9.

4.3 Facility Emergency Control Point (ECP)

4.3.1 When an incident is reported, the XTF ECP should be set up in the designated area of building [REDACTED] unless it is non-urgent and the limited response required can be dealt with by the WCC (e.g. thunderstorm warning, steam leak, power failure, etc.).

4.3.2 If a [REDACTED] call has not been confirmed by the reporter, or there is any doubt when it is considered necessary, request appropriate emergency assistance; it is better to request help again rather than not at all.

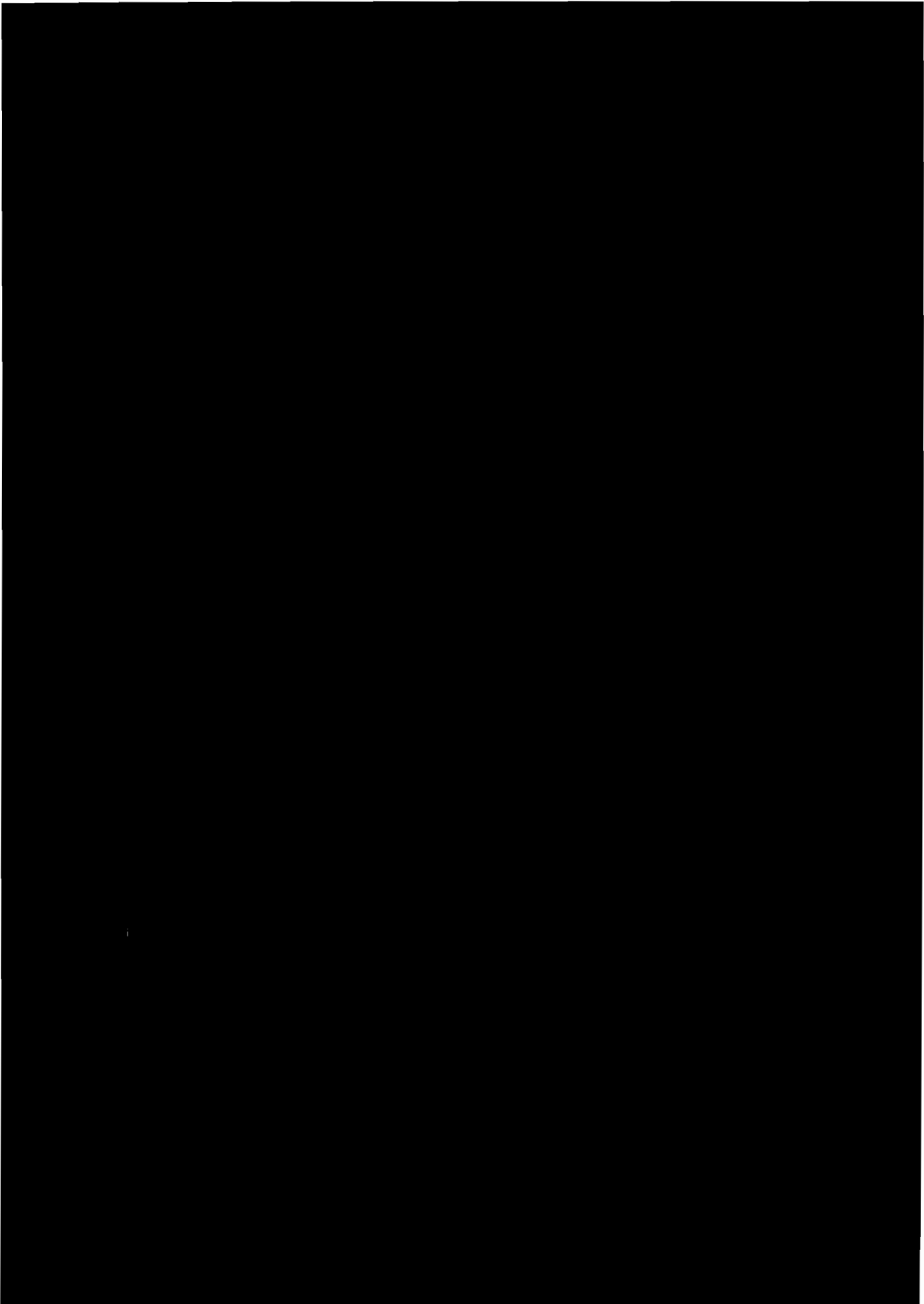
4.3.3 Routine telephones [REDACTED] should be unplugged in the WCC. The ECP telephones should be plugged in to the corresponding sockets to transfer the extensions for ECP use.

4.3.4 Information relating to the incident should be recorded on the visual display board for ready reference (cleaning off old information first if necessary). The incident site should also be marked on the Facility map along with, when known, the wind direction if relevant to the scenario.

4.3.5 Explosives and hazardous material holdings information, supported by the daily movement log, should be brought to the ECP for reference if required.

4.3.6 Relevant drawings (e.g. layout, electrical, fire alarm, etc.) for, and safety data sheets for hazardous materials or lasers at, an incident building should be made available for reference as required.

Figure 4-1: Facility Emergency Response Map



4.4 **Facility Emergency Controller & Facility Responders**

4.4.1 In an emergency the FEC has delegated authority to act on behalf of the Facility Manager (FM) in the control and management of the incident and the response to it. The FM and Business Leader should be notified of any serious, explosives or injury incident as soon as practicable. The Explosives Sites Manager should also be advised of any incident involving explosives.

4.4.2 Other Facility and operational staff have been trained to provide the FEC with essential support in emergency situations. At the time of an incident, the FEC should appoint persons to the roles for which they have been trained: Incident Control Officer (ICO), muster co-ordinator, communications officer, log keeper, board manager, etc.).

4.4.3 The FEC should liaise with the responding emergency services, providing advice and information from ECP records, to support the response to bring the situation under control and effect any rescue of staff. Communication may be direct or relayed via an ICO deployed to an RVP or the scene if safe to do so.

4.4.4 Non-urgent contact with the Site Emergency Manager (EM) is possible for advice or support about a situation which is of concern during any incident. This might be an incident which, although not an immediate emergency, may escalate in to one later if local remedial action fails, or an unusual occurrence that might affect other work areas or facilities.

4.4.5 If the incident is serious, has the potential to extend beyond the Facility boundary, or there is a risk of escalation, the FEC should declare a Facility Emergency (calling extension [REDACTED] at the earliest opportunity. This will result in Site Emergency arrangements being established with direct involvement and the resources of the EM.

4.4.6 When the initial effects of an incident have been successfully controlled, the FEC should plan to make things safe and secure, drawing on expertise from local supervisors, assurance advisors, technical authorities or Site services as required. Plans should take account of the possible need to preserve evidence for subsequent investigation of the incident.

4.5 **First Aid**

4.5.1 A team of trained First Aiders is available to help support Site and Facility emergency situations.

4.5.2 In addition to normal First Aid, the majority of XTF First Aiders are specifically trained to deal with ballistic trauma injuries.

4.5.3 The FEC should request attendance of First Aiders at the ECP for briefing and deployment, or direct deployment to the scene if appropriate and safe to do so. Additional support from neighbouring facilities is also available on request.

4.6 **Site Emergency Arrangements**

- 4.6.1 In a Site Emergency, the Emergency Manager has delegated authority to act on behalf of the AWE Chief Executive.
- 4.6.2 During a fire emergency, the Chief Fire Officer (or his nominated representative) has responsibility for the designated fire ground. The Emergency Manager retains responsibility for the site as a whole.
- 4.6.3 In most other situations, the Ministry of Defence Police (MDP) has control.
- 4.6.4 Details of command and control arrangements are described in Volume 1.

5 Communications

5.1 Useful Telephone Numbers

5.1.1 Site Emergency Control

- Emergency Call [REDACTED]
- Emergency Call (using private mobile phone) [REDACTED]
- SCC (only after Site or facility emergency declared) [REDACTED]
- Site Muster Bureau [REDACTED]
- Site Muster Bureau (fax) [REDACTED]
- Public Address Message Repeat [REDACTED]
- MDP Control Room [REDACTED]
- Health Physics Control Room [REDACTED]
- Shift Control Room [REDACTED]
- Fire Service Control Room [REDACTED]

5.1.2 Facility Emergency Control

- Emergency Call [REDACTED]
- Emergency Call (using private mobile phone) [REDACTED]
- Work Control Centre [REDACTED]
- Contact (using private mobile phone) [REDACTED] extension

5.1.3 Emergency Assembly Buildings (map Figure 4-1 on page 9)

- [REDACTED] [REDACTED]
- [REDACTED] [REDACTED]
- [REDACTED] [REDACTED]
- [REDACTED] [REDACTED]
- [REDACTED] [REDACTED]
- [REDACTED] (Burning Ground) [REDACTED]
- [REDACTED] [REDACTED]
- [REDACTED] (reception) [REDACTED]
- [REDACTED] [REDACTED]
- [REDACTED] [REDACTED]

5.1.4 **Emergency Telephones** (map Figure 4-1 on page 9)

- North Shift Road between [REDACTED]
- Magazine Road between [REDACTED]
- Magazine Road near [REDACTED]
- Viaduct Way next to [REDACTED] opposite [REDACTED]
- Outside [REDACTED]
- Outside [REDACTED]
- Outside [REDACTED]
- Between [REDACTED] and [REDACTED]
- Silchester Way/Viaduct Way junction outside [REDACTED]
- Viaduct Way/Grim's Way junction next to Gate 29A
- Off Grim's Way behind [REDACTED]
- Opposite [REDACTED]
- Silchester Way between [REDACTED]
- Between [REDACTED] and [REDACTED]
- Silchester Way on the wall of [REDACTED]
- Grim's Way opposite [REDACTED]
- Between [REDACTED]

5.1.5 **General**

- Facility Manager/Explosives Sites Manager
- Deputy Facility Manager
- XBU Business Leader
- Senior Authorised Person (Electrical)
- Facility Environment Representative
- Head of Environment
- Environmental Greenline
- Asbestos Focal Group
- Radiation Protection Advisor
- Waste Service Desk
- Asset Care (Maintenance)
- Transport Operations & Maintenance
- Assurance Event Office
- Regulatory Interface Co-ordination Centre
- Head of Corporate Communications
- Media & Publishing Group
- Telephone Operator

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5.1.6 Neighbouring Work Control Centres

- [REDACTED] and [REDACTED] (WCC in [REDACTED])
- [REDACTED]
- [REDACTED]
- Boiler house (Utilities WCC)
- Chlorine Plant (Utilities WCC)
- Hydrodynamics (WCC in [REDACTED])
- [REDACTED] (WCC in [REDACTED])
- Southeast Corner (WCC in [REDACTED])
- Central Zone FM (WCC in [REDACTED])

5.1.7 Fall-Back Telephones

- [REDACTED] (lobby)
- [REDACTED] (foyer)
- [REDACTED] (corridor, opposite room 30)

5.1.7.1 The Fall-Back telephone facility will provide a limited telephone service in the event of a **total failure** of the AWE(A) telephone exchange.

5.1.7.2 Fall-Back telephones are burgundy/red handsets, identified with green signs and operating instructions.

5.1.7.3 To operate any fall-back telephone, lift the receiver and press the RECALL (R) button to obtain the dial tone, then key in the required telephone number.

5.1.7.4 The AWE(A) Emergency Services can be obtained by dialling:

- MDP
- FIRE
- MEDICAL

5.2 Local Public Address Systems

5.2.1 The Facility has a number of buildings equipped with local amplifiers and microphones which are capable of broadcasting to surrounding buildings via the Site Public Address system. These are located at:

Amplifier Building	PA Zone
	20
	21
	22 & 38
	36
	37
	61
	62
	63
	64
	88
	89
	90
	91
	92

5.3 Mobile Phones and Radios

5.3.1 The use of mobile phones in an emergency may be limited by the availability of local "cells". There may also be areas where radio reception is limited.

Warning

5.3.2 Mobile telephones and radios pose a threat to sensitive Electro-Explosive Devices (EEDs) and flammable atmospheres in an emergency situation. They must not be used in unauthorised locations.

Caution

5.3.3 Security aspects of information discussed and location of use must be considered when using mobile phones or radios.

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6 Responses to Generic Scenarios

6.1 Responses to generic scenarios on the following list are given on the pages identified:

Scenario	Response Page
Fire	19
Fire Involving Explosives	20
Fire Involving Radioactive or Toxic Material	21
Vehicle Fire (Non-Hazardous Load)	22
Vehicle Fire (Carrying Explosives).....	23
Security Incident (Threat Message).....	25
Security Incident (Suspicious Object).....	26
Security Incident (Suspect Contents)	27
• Suspicious Package Contents	27
• Suspect Biological, Chemical or Radiological Material	27
Site Emergency (not in XTF)	29
Structural Collapse	29
Personal Injury/Illness	31
Electric Shock.....	33

Fire

The conventional hazards from a fire are thermal radiation, smoke, explosion, degradation of structures (load-bearing, shielding and containment), and the possible destruction of instrumentation and control systems.

In addition, fire in a facility may give rise to the release of radioactive or toxic materials, including asbestos, or the formation of especially toxic smoke.

There are few potential sources of fire within XTF Explosives Areas due to the stringent controls on sources of ignition and the control of materials.

Where explosives processes are carried out, electrical systems and tooling has been designed and installed to reduce the risk of fire or explosion caused by electrical discharge.

Fire presents a particular hazard with explosives, precursor materials and explosive devices. The extent of any fire is expected to be limited due to the separation between explosives buildings and the strict control of other flammable/combustible materials.

All personnel working in the Facility must read and comply with these instructions, which must be read in conjunction with any local Fire Action Notice and Instructions (displayed prominently at the building entrance or other suitable locations). They must know the position of and how to operate:

- fire alarm call points or bells
- the nearest telephone
- fire extinguishers
- the fire control point/fire evacuation area
- the nearest emergency exit

All fire equipment must be kept readily available for use and not obstructed or removed.

Alarms are building or area dependant and can range from fully integrated fire detection and alarm systems to hand operated bells.

Most permanently occupied buildings have manually operated fire alarm systems that once operated ring throughout the building and alert the AWE Fire Service. A zoned fire alarm operates similarly external to groups of buildings. In some instances groups of buildings are linked and the alarm signal differentiates between a fire in the building and a fire in adjacent building.

FIRE

FEC ACTION

- Confirm that explosives are NOT involved
- Confirm that radioactive or toxic materials (e.g. beryllium) are NOT involved
- Identify other hazards at the scene (e.g. compressed gas, electrical equipment, etc.)
 - arrange relevant isolations when possible and safe to do so
- Consider potential for escalation and potential for effects out of the Facility
 - declare a Facility Emergency if necessary
- Identify whether there are any casualties
 - establish their names
 - deploy First Aid as necessary when safe to do so
- Deploy an ICO to the relevant RVP
 - use a route avoiding the incident scene and any smoke plume
- Ensure that a muster is completed and reported to the Fire Service
- Warn others who may be affected nearby
 - use Facility entry log, WCC authorisations and/or Facility work plans
 - instruct whether to evacuate or take shelter
- Collate information (building drawings, safety data sheets, etc.) from ECP records
- Consider the impact of fire fighting water run off on nearby drainage systems

FIRE INVOLVING EXPLOSIVES

Warning

An explosion is very likely soon after a fire reaches explosives and there is always a possibility that an initial explosion may be followed by another

FEC ACTION

- Declare a Facility Emergency [REDACTED] confirming a fire involving explosives
- Request the Site be put under cover
 - as the quickest way to start sheltering and mustering action
 - unless it is known that incident effects will be confined to a building and effective sheltering and mustering can be co-ordinated
- Initial local focus should be on getting people under cover
 - use Facility entry log, WCC authorisations and/or Facility work plans
 - recommend an initial cordon distance of 600m, the RVP if closer, or sheltering inside as appropriate
- Confirm maximum quantity of explosives that could be involved (assume worst case)
 - use information provided, supported by explosives holdings (including XSO limits) and daily movement records
 - determine whether or not explosives are in the same room as the fire, or suspected fire if the alarm was raised by an automatic system (use fire alarm drawings)
- Identify other hazards at the scene (e.g. compressed gas, electrical equipment, etc.)
 - arrange relevant isolations when possible and safe to do so
 - refer to asbestos register and act for asbestos release (page 73) if appropriate
- Identify whether there are any casualties
 - establish their names
 - deploy First Aid as necessary when safe to do so
- Deploy an ICO to the relevant RVP, if safe to do so
 - use a route avoiding inhabited building distance and any smoke plume
- Ensure that a muster is completed and reported to the Fire Service
- Collate information (building drawings, safety data sheets, etc.) from ECP records
- Consider options for viewing the reported scene from afar, taking account of available cover from other buildings and/or distance from the view point
 - this may help support action in a situation where a fire has not been confirmed (possible false alarm from an automated system)
- Consider the impact of fire fighting water run off on nearby drainage systems

FIRE INVOLVING RADIOACTIVE OR TOXIC MATERIAL

FEC ACTION

- Declare a Facility Emergency [REDACTED] confirming a fire involving radioactive materials or beryllium
- Request the Site be put under cover
 - as the quickest way to start sheltering and mustering action
- Request immediate Health Physics support
- Initial local focus should be on getting people downwind under cover
 - use Facility entry log, WCC authorisations and/or Facility work plans
 - ensure they take shelter inside with doors and windows closed, and shut down ventilation systems where safe to do so
- Determine wind direction and speed from Shift Control
- Confirm type and quantities of material (radioactive or beryllium) that could be involved
 - use information provided, supported by explosives holdings (which also identifies other hazardous materials)
 - determine whether or not materials are in the same room as the fire, or suspected fire if the alarm was raised by an automatic system (use fire alarm drawings)
- Identify other hazards at the scene (e.g. compressed gas, electrical equipment, etc.)
 - arrange relevant isolations when possible and safe to do so
 - refer to asbestos register and act for asbestos release (page 73) if appropriate
- Identify whether there are any casualties
 - establish their names
 - deploy First Aid as necessary when safe to do so
- Deploy an ICO to the relevant RVP, or upwind alternative, when safe to do so
 - use an upwind route avoiding any smoke plume
- Ensure that a muster is completed and reported to the Fire Service
- Collate information (building drawings, safety data sheets, etc.) from ECP records
- Consider the impact of fire fighting water run off on nearby drainage systems
- Facility based Radiation Protection Supervisors may be able to provide support and guidance

VEHICLE FIRE (NON-HAZARDOUS LOAD)

FEC ACTION

- Confirm that explosives are NOT involved
- Confirm that radioactive or toxic materials (e.g. beryllium) are NOT involved
- Consider the threat to nearby buildings
 - identify proximity to explosives, radioactive materials etc.
- Identify other hazards at the scene (e.g. compressed gases)
- Identify whether there are any casualties
 - establish their names
 - deploy First Aid as necessary when safe to do so
- Deploy an ICO to the relevant RVP
 - use a route avoiding the incident scene and any smoke plume
- Warn others who may be affected nearby
 - use Facility entry log, WCC authorisations and/or Facility work plans
 - instruct whether to evacuate or take shelter
 - ensure that a muster is completed and reported to the Fire Service
- Consider the impact of fire fighting water run off on nearby drainage systems

VEHICLE FIRE (CARRYING EXPLOSIVES)

FEC ACTION

Warning

An explosion is very likely soon after a fire reaches explosives and there is always a possibility that an initial explosion may be followed by another

FEC ACTION

- Declare a Facility Emergency [REDACTED] confirming a fire involving explosives
- Request the Site be put under cover
 - as the quickest way to start sheltering and mustering action
 - unless it is known that any incident effects will be confined to the vehicle and effective sheltering and mustering can be co-ordinated
- Initial local focus should be on getting people under cover
 - use Facility entry log, WCC authorisations and/or Facility work plans
 - recommend an initial cordon distance of 600m
 - ensure that a muster is completed and reported to the Fire Service
- Confirm maximum quantity of explosives that could be involved (assume worst case)
 - use information provided, supported by daily movement records
- Consider the threat to nearby buildings
 - identify proximity to other explosives, radioactive materials etc.
- Identify other hazards at the scene (e.g. compressed gases)
- Identify whether there are any casualties
 - establish their names
 - deploy First Aid as necessary when safe to do so
- Deploy an ICO to the relevant RVP if safe to do so
 - use a route avoiding the cordon distance and any smoke plume
- Consider options for viewing the reported scene from afar, taking account of available cover from other buildings and/or distance from the view point
 - this may help support further action
- Consider the impact of fire fighting water run off on nearby drainage systems

Security Incident

Threats can be physical, usually in the form of suspicious bags, packages, objects, or vehicles. Suspicious items may be found within or adjacent to the Facility, or may be received through the post.

As well as explosives, a threat could be biological, chemical or radiological and may not be recognised until after an object has been handled or opened.

Threats may also be received by telephone, or other communication means such as e-mail, text message, fax or letter. It may be intended to be confusing and inaccurate. It is important that the person receiving the threat extracts the maximum amount of useful information and if possible records the message verbatim. Never treat such a threat as a hoax.

SECURITY INCIDENT (THREAT MESSAGE)

FEC ACTION

- Record details of the threat from the caller
 - refer to Annex A at the back of this volume
- Ensure that the MDP have been notified
- Identify an RVP for the incident reporter to go to brief the MDP
- Warn building occupants and others in the vicinity of the threat location (if specified)
 - use Facility entry log, WCC authorisations and/or Facility work plans
- Evacuate the local area, using routes avoiding the threat location
- Restrict access to the incident area
- Conduct a muster to account for everyone evacuated
 - report missing persons to the MDP
- Consider the threat to adjacent explosives stocks, radioactive materials or beryllium if the location has been specified
 - identify any other hazards
 - advise MDP of the additional hazards if any
- Deploy an ICO to an agreed RVP if necessary and when safe to do so

SECURITY INCIDENT (SUSPICIOUS OBJECT)

FEC ACTION

- Ensure that the MDP have been notified
- Identify an RVP for the incident reporter to go to brief the MDP
- Warn building occupants and others in the vicinity of the object
 - use Facility entry log, WCC authorisations and/or Facility work plans
- Evacuate the local area, using routes avoiding the object and line of sight to it
 - recommended evacuation distances:
 - 100m (parcel/bag improvised explosive device)
 - 200m (suspected mortar round)
 - >200m (vehicle borne improvised explosive device)
 - >400m (large vehicle borne improvised explosive device)
- Restrict access to the incident area
- Conduct a muster to account for everyone evacuated
 - report missing persons to the MDP
- Consider the threat to adjacent explosives stocks, radioactive materials or beryllium
 - identify any other hazards
 - advise MDP of the additional hazards if any
 - liaise with Facility Manager or assurance advisors if response requires in situ disruption of the object
- Deploy an ICO to an agreed RVP if necessary and when safe to do so

SECURITY INCIDENT (SUSPECT CONTENTS)

Suspicious Package Contents

FEC ACTION

- Take action as for a suspicious object (page 26) unless explosives are not considered a threat

Suspect Biological, Chemical or Radiological Material

FEC ACTION

- Ensure that the MDP have been notified
- Ensure that Health Physics support has been requested if radioactive materials are suspected
- **DO NOT** evacuate the building
- Warn building occupants and others in the vicinity
 - direct them to stay clear of the incident area
 - use Facility entry log, WCC authorisations and/or Facility work plans
- Conduct a muster to account for everyone in the building
 - report missing persons to the MDP
- Identify any other hazards and advise the MDP and other emergency services
- Deploy an ICO to the RVP or building entrance if safe to do so

Site Emergency

Personnel on Site may be endangered by a criticality incident or from the release of radioactive or toxic materials.

In either event the Site Undercover Alarm signal will be broadcast instructing all personnel to seek immediate shelter in the nearest suitable building outside of the Immediate Evacuation Zone, to close all external doors and windows, and to remain at that location until instructed otherwise.

A security incident may also result in Site being placed under cover.

Putting the Site under cover gives managerial control and clears the way for the Emergency Services.

A fire involving explosives or RA material, or an explosion, within the Facility is likely to result in the Site being placed undercover.

Structural Collapse

There are a number of potential causes of either a full or partial structural collapse of a building or maintenance scaffolding. The collapse may be effectively spontaneous, due, for example, to an explosion or the degradation of structural materials.

Alternatively, the collapse may have an external cause such as: extreme weather, seismic activity, or vehicle or aircraft impact.

Some of these more serious external events may well affect more than one facility or building, and the consequent response at facility level will then form part of the larger Site emergency response effort.

SITE EMERGENCY (NOT IN XTF)

FEC ACTION

- Protect the ECP
- Close all doors and windows
- Shut down the office air conditioning and operating extract ventilation in other areas
- Ensure the Facility muster is carried out and results reported (Section 3.2, page 6)

STRUCTURAL COLLAPSE

FEC ACTION

- Confirm the reason for collapse
- Confirm that explosives are NOT involved
 - consider response for damaged or endangered explosives (page 43)
- Confirm that radioactive or toxic materials (e.g. beryllium) are NOT involved
 - consider response for damaged RA container or RA contamination (page 45)
- Consider any secondary hazards (e.g. compressed gases, steam, electricity)
 - consider isolation of utility supplies
 - refer to facility asbestos register to determine if asbestos may be involve
 - take action for response to asbestos release (page 73) if appropriate
- Initial focus should be on identifying personnel that may be trapped and/or injured
 - establish their names
 - use information provided, supported by Facility entry log, WCC authorisations and/or Facility work plans if necessary
 - deploy First Aid as necessary when safe to do so
 - deploy an ICO to the RVP, or scene if safe to do so
- Call for and liaise with relevant emergency services if people are trapped and/or injured.

Personal Injury/Illness

It is possible for personnel to fall ill within a facility for reasons not connected with their work. Under these circumstances, not only will they need medical attention for their condition, but, if they are performing some safety critical operation, their sudden incapacity may itself become the cause of a further accident or incident.

Personal injury could result from a number of hazards including: exposure to toxic materials/chemicals, manual handling and lifting operations, exposure to diesel fumes, fire, electrocution, working at height, vehicle movements, slips, trips and falls etc.

Appropriate Personal Protective Equipment (PPE) together with the appropriate general safety and local safety rules are designed to mitigate these hazards. All operators and maintenance staff must wear PPE as instructed.

PERSONAL INJURY/ILLNESS

FEC ACTION

- Ensure that medical assistance has been called for if deemed necessary
- Deploy First Aiders to the incident location
 - arrange transport if necessary
- **DO NOT** attempt to move any seriously injured persons, unless the situation is immediately life threatening, without the help of trained medical staff
- Identify other hazards at the incident scene (e.g. chemicals, lasers, conducting floor)
 - refer to chemical safety data sheets to determine any PPE required for responders and support treatment of injuries or investigation of illness
- Deploy an ICO to the incident scene

Warning

Defibrillators

Consider the threat to any nearby explosives substances or articles and the electric shock hazard, in locations with anti-static/conducting areas, before authorising the use of defibrillators, carried by Fire and Medical Teams for the treatment of heart attacks etc. at the incident scene.

Electric Shock

Areas of the Explosive Technology Facility house high voltage electrical equipment and standard mains voltage equipment is widely used in processes and building services. Residual current device protection is installed and regularly tested, but there is still a risk of electrocution during the setting up, maintenance and diagnostic testing of this equipment.

In addition to trained First Aiders, Authorised or Nominated Persons (Electrical) (AP(E) or NP(E)) are trained in resuscitation techniques and may be of assistance.

ELECTRIC SHOCK

FEC ACTION

- Deploy First Aiders to the incident location
 - arrange transport if necessary
- **DO NOT** attempt to move any seriously injured persons, unless the situation is immediately life threatening, without the help of trained medical staff
- Identify other hazards at the incident scene (e.g. explosives, conducting floor)
- Deploy an ICO to the incident scene
- Arrange for circuit isolation if required
 - identify an Authorised Person (Electrical) or other suitably qualified electrical engineer if expert advice is required

Warning

Defibrillators

Consider the threat to any nearby explosives substances or articles and the electric shock hazard, in locations with anti-static/conducting areas, before authorising the use of defibrillators, carried by Fire and Medical Teams for the treatment of heart attacks etc. at the incident scene.

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7 Responses to Specific Scenarios

7.1 Responses to specific scenarios on the following list are given on the pages identified:

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Thunder Storm and Adverse Weather Conditions

Thunder Storms are the result of an enormous build up and discharge of static electricity within the atmosphere. A build up of static electricity may occur in advance of other manifestations storm conditions.

Buildings where explosives are processed are offered some protection by Lightning Protection Systems (LPS) which provide a safe pathway to earth for the electrical energy in the event of a lightning strike. However, there may be secondary effects associated with increased voltage potential of the system relative to earth and it is necessary to stop some operations and even evacuate some areas when a storm is present or forecast as imminent.

Anything electrically bonded to the LPS, via equipotential bonding or building earth (e.g. conducting floors, firing chamber plating, large jigs and fixtures, cranes, trials assemblies, etc.) will also rise in voltage with the possibility of an electric shock. Side-flash to nearby unconnected metal objects creates an additional threat to people directly or by ignition of nearby exposed flammable or explosive materials. Radio-frequency interference caused by a lightning strike (direct or nearby) is also a threat to sensitive electro-explosive devices. Physical effects on the building structure can also pose a risk to people and hazardous materials.

Certain buildings with frangible roofs may be susceptible to collapse due to high winds or snow loading. High winds can also make working at height dangerous and leave the access equipment (scaffold, ladder, etc.) vulnerable to collapse or damage. Lifting operations can similarly be affected.

Advance warning from the Met Office Exeter Weather Centre is given when conditions are forecast which may give rise to thunderstorms or other adverse weather conditions. This is broadcasted via the Site Public Address system.

THUNDERSTORMS AND ADVERSE WEATHER

Thunderstorm or Warning

FEC ACTION

- When a lightning risk 1 (very high) warning is given
 - instruct external construction work, especially working at height, to stop, make safe and evacuate the Facility
 - use WCC authorisation records and Facility entry logs as necessary
 - prohibit any movement or transport of explosives until the risk subsides
 - identify process operations at risk from daily authorised work plans
 - confirm that operations with explosives or flammable materials are shut down and explosives packed away
 - confirm that any overhead cranes are parked to one side with the hook as far away from explosives and flammable materials as possible
 - confirm operations in rooms with conducting floors, metal lining or earth bonding tape are made safe and the rooms evacuated
- If a storm is overhead unexpectedly
 - confirm cessation of operations at risk (as risk 1 warning)
 - identify any areas where materials or process equipment could not be made safe during the required evacuation
 - make safe materials and process equipment when the risk subsides

Ice/Snow

FEC ACTION

- Prohibit any movement or transport of explosives until it has been established that the clearways are safe
- Arrange treatment of clearways and footpaths to make safe

High Winds

FEC ACTION

- Prohibit external work at height and vulnerable lifting operations in high winds
- Stop operations already underway if wind speed increases unexpectedly
 - use WCC authorisation records and Facility entry logs as necessary

Explosion

The risk of an explosive incident external to any building within the Facility is low. The transport and handling of explosives is conducted with care and precision, explosive movements are only permitted when following pre-arranged routes and schedules.

All buildings containing explosives are designed and licensed for this purpose. Explosive quantities are sometimes limited as a unitised risk, which means that explosion of the specified amount will not cause effects sufficient to detonate other explosives in a nearby room or protected area.

Where explosives and flammable material processes are carried out, electrical systems and tooling has been designed and installed to reduce the risk of ignition and explosion. The safe method of operating with these materials is defined in Operating Instructions, supported by comprehensive reviews to control the risks.

When it is known or suspected that radioactive material or beryllium is involved the prime consideration is still protection of personnel from the initial effects of the explosion. However, if it is possible given the circumstances at the time, any personnel who are located downwind of the radioactive or toxic aerosol should retire to the nearest upwind EAB and advise Facility Emergency Control of the situation.

An explosion in a process building may also create an asbestos hazard; both airborne and amongst debris. This should also be considered in relation to wind direction and evacuation route/destination.

EXPLOSION

Warning

There is always a possibility that an initial explosion may be followed by another

FEC ACTION

- Declare a Facility Emergency [REDACTED] confirming an explosion
- Request the Site be put under cover
 - as the quickest way to start sheltering and mustering action
 - unless it is known that incident effects will be confined to a building and effective sheltering and mustering can be co-ordinated
- Initial local focus should be on getting people under cover
 - use Facility entry log, WCC authorisations and/or Facility work plans
 - recommend an initial cordon distance of 600m, the RVP if closer, or sheltering inside as appropriate
- Confirm maximum quantity of explosives that could be involved (assume worst case)
 - use information provided, supported by explosives holdings (including XSO limits) and daily movement records
 - determine whether or not other explosives are in the same room or building as the explosion and their status (e.g. securely boxed or otherwise) if possible
- Identify other hazards at the scene (e.g. compressed gas, electrical equipment, etc.)
 - arrange relevant isolations when possible and safe to do so
 - refer to asbestos register and act for asbestos release (page 73) if appropriate
- Identify whether there are any casualties
 - establish their names
 - deploy First Aid as necessary when safe to do so
- Deploy an ICO to the relevant RVP, if safe to do so
 - use a route avoiding inhabited building distance and any smoke plume
- Ensure that a muster is completed and reported to the Fire Service
- Collate information (building drawings, safety data sheets, etc.) from ECP records
- Consider options for viewing the reported scene from afar, taking account of available cover from other buildings and/or distance from the view point
 - this may help support action in a situation where a fire has not been confirmed (possible false alarm from an automated system)
- Consider the impact of fire fighting water run off on nearby drainage systems

Explosion

The risk of an explosive incident external to any building within the Facility is low. The transport and handling of explosives is conducted with care and precision, explosive movements are only permitted when following pre-arranged routes and schedules.

All buildings containing explosives are designed and licensed for this purpose. Explosive quantities are sometimes limited as a unitised risk, which means that explosion of the specified amount will not cause effects sufficient to detonate other explosives in a nearby room or protected area.

Where explosives and flammable material processes are carried out, electrical systems and tooling has been designed and installed to reduce the risk of ignition and explosion. The safe method of operating with these materials is defined in Operating Instructions, supported by comprehensive reviews to control the risks.

When it is known or suspected that radioactive material or beryllium is involved the prime consideration is still protection of personnel from the initial effects of the explosion. However, if it is possible given the circumstances at the time, any personnel who are located downwind of the radioactive or toxic aerosol should retire to the nearest upwind EAB and advise Facility Emergency Control of the situation.

An explosion in a process building may also create an asbestos hazard; both airborne and amongst debris. This should also be considered in relation to wind direction and evacuation route/destination.

EXPLOSION (RADIOACTIVE OR TOXIC MATERIAL)

FEC ACTION

- Declare a Facility Emergency [REDACTED] confirming an explosion involving radioactive materials or beryllium
- Request the Site be put under cover
 - as the quickest way to start sheltering and mustering action
- Request immediate Health Physics support
- Initial local focus should be on getting people downwind under cover
 - use Facility entry log, WCC authorisations and/or Facility work plans
 - recommend an initial cordon distance of 600m, the RVP if closer, or sheltering inside as appropriate
 - ensure they take shelter inside with doors and windows closed, and shut down ventilation systems where safe to do so
- Determine wind direction and speed from Shift Control
- Confirm maximum quantity of explosives that could be involved (assume worst case)
 - use information provided, supported by explosives holdings (including XSO limits) and daily movement records
 - determine whether or not other explosives are in the same room or building as the explosion and their status (e.g. securely boxed or otherwise) if possible
- Confirm type and quantities of material (radioactive or beryllium) that could be involved
 - use information provided, supported by explosives holdings (which also identifies other hazardous materials)
 - determine whether or not materials are in the same room as the fire, or suspected fire if the alarm was raised by an automatic system (use fire alarm drawings)
- Identify other hazards at the scene (e.g. compressed gas, electrical equipment, etc.)
 - arrange relevant isolations when possible and safe to do so
- Identify whether there are any casualties
 - establish their names
 - deploy First Aid as necessary when safe to do so
- Deploy an ICO to the relevant RVP, or upwind alternative, when safe to do so
 - use an upwind route avoiding inhabited building distance & any smoke plume
- Ensure that a muster is completed and reported to the Fire Service
- Collate information (building drawings, safety data sheets, etc.) from ECP records
- Consider the impact of fire fighting water run off on nearby drainage systems
- Facility based Radiation Protection Supervisors may be able to provide support and guidance

Damaged or Endangered Explosives

The possibility that explosives may become damaged or endangered during transportation, processing or testing cannot be overlooked.

Where damage is an expected outcome of a test (e.g. material property, threshold, hazard testing, etc.), specific local arrangements are included in the relevant operating instructions. These emergency arrangements do not apply to such routine expected occurrences.

If a spill of explosive powder is a recognised possibility as part of routine processing (e.g. loss of powder from a spatula on to a bench), local contingency arrangements may also be implemented within the carefully defined scope of applicability.

Recovery activities will be highly dependent upon the nature of the incident, and will be determined by the FEC, in liaison with technical advisors and/or the Facility Manager, following suitable risk assessment.

DAMAGED OR ENDANGERED EXPLOSIVES

Spilled, Damaged or Endangered (Processing or Testing)

FEC ACTION

- Ensure the area has been secured
 - the building or affected room has been evacuated and locked
 - process equipment has been turned off and cannot restart
- If there is no ignition at the time the explosives were originally damaged or insulted, it is extremely unlikely that the material will react unless subjected to additional/new stimuli
- Determine the initial cause of the damage or danger to explosives
 - refer to responses for Electrical Power Failure, Ventilation Failure, Loss of Compressed Air or Vacuum, Flooding, Structural Collapse, etc.
- Consider the status of other hazards at the scene (other explosives, machinery, etc.)
 - arrange isolation of relevant services if necessary to prevent anything moving
 - consider whether something could fall on the explosives
 - consider the location and status (packaged or otherwise) of other explosives
- Consult local supervisor, assurance advisors, technical authorities and risk assessors to establish a recovery plan

Damaged or Endangered (Transport)

FEC ACTION

- Ensure that an appropriate cordon has been established
 - at least 200m
 - warn nearby building occupants and people on the grounds to avoid the cordoned area
- If there is no ignition at the time the explosives were originally damaged or insulted, it is extremely unlikely that the material will react unless subjected to additional/new stimuli
- Consider the status of other hazards at the scene (vehicle fuel, vehicle stability, etc.)
 - stability of vehicle and contents that may fall on explosives
 - possible fuel leaks and the potential need for additional emergency services
 - steam or compressed air main proximity or involvement
 - arrange isolation of relevant services if necessary
- Consult transport supervisor, assurance advisors, technical authorities and risk assessors to establish a recovery plan

Damaged Radioactive Material Container

Radioactive material containers used within, entering or transiting the Facility could be damaged. Damage to outer containments may be readily apparent, however, damage to inner containments may be less apparent.

Damage can be as a result of mishandling, faulty packaging or a traffic accident.

Every effort should be made to assure that no leakage has occurred and that risks to staff and the environment are minimised. The area may need to be cordoned off and Health Physics support may be required.

DAMAGED RADIOACTIVE MATERIAL CONTAINER

FEC ACTION

- Determine whether the container also includes explosives
 - respond as for damaged or endangered explosives (page 43) if necessary
- Request immediate Health Physics support if not already confirmed as requested
- If there is a suspected release of RA material outside a building
 - initial action should be to get downwind people undercover, with doors and windows closed and ventilation systems switched off
 - use Facility entry log, WCC authorisations and/or Facility work plans
 - current wind direction can be obtained from Shift Control
 - be prepared to declare a “facility emergency” or contact neighbouring facilities, citing the RA release, if the incident is near the boundary and there is potential for the release to cross it
- Identify any personnel that may be contaminated
 - Instruct them to wait at a suitable location, separate from other personnel, and restrict spread of contamination
- Ensure that access to the affected area is restricted
- Confirm the type and quantity of RA material that could be involved
- Identify any other hazards (flammable materials, unstable lifting equipment, etc.)
- Deploy an ICO to an agreed RVP, upwind of the incident scene
- Local Radiation Protection Supervisors or the Facility Radiation Protection Advisor should be able to provide support and guidance

RA, Beryllium or [REDACTED] Contamination

Various configurations of test specimens are assembled within the Facility, some of which contain hazardous materials including: radioactive, beryllium and [REDACTED]

Damage to assemblies caused by mechanical or manual handling failures could lead to localised contamination.

RA, BERYLLIUM OR ██████████ CONTAMINATION

FEC ACTION

- Ensure that an exclusion zone is created around the affected area
- If any person has been contaminated with ██████████
 - deploy first aid and confirm that medical assistance has been called
 - ██████████ should be removed from skin with a dry cloth or tissue
 - eyes should be flooded with copious amounts of water for a minimum of 15 minutes.
- ██████████ Consider secondary effects of ██████████ reaction with water ██████████
██████████
- Deploy an ICO to an agreed RVP
- Refer to local supervisor, local contingency plans, safety data sheets, or technical advisors to guide ██████████ clean-up operations
- If any person is suspected as being contaminated by radioactive material or beryllium
 - Ensure that Health Physics assistance has been called
 - limit movement of contaminated persons to minimise spread of contamination
 - Health Physics, local Radiation Protection Supervisors or the Facility Radiation Protection Advisor should be able to provide support and guidance for clean-up operations for beryllium or radioactive materials.

Chemical Spill

A number of substances are used within the Facility, which must comply with the Company Controlled, Restricted and Prohibited substances list, appear on the facility COMAH inventory if applicable, and assessed for use in accordance with Control of Substances Hazardous to Health Regulations.

Safety Data sheets and special handling instructions will be available in all Local Document Control Centres and the Emergency Control Point.

Local procedures/plans are in place to specify the appropriate clean-up action to take in the event of a spillage. These should also be identified on any Permit-to-Work, Work Authorisation Form, Operating Instruction and/or within a local Method Statement.

If a spill or leak occurs, or is discovered, and is within the scope of local contingency plans, it should be dealt with accordingly. There should be no delay in instigating the emergency procedures.

If there is any uncertainty about the significance of any incident it must be treated as serious. The individual discovering the incident, or their supervisor, must inform the ECP as soon as practicable.

Oil Leak/Spill

There are a number of items of plant which use significant quantities of oil, such as presses. While an oil leak may not have a significant immediate risk to people, the environmental consequences may be significant.

CHEMICAL SPILLAGE

FEC ACTION

- Ensure an exclusion zone has been established around the affected area
- Determine the type and quantity of chemical and whether it is flammable or not
 - refer to safety data sheets
 - **DO NOT** permit use of radios, mobile telephones or other electronic or electrical equipment in the vicinity
 - consider isolation of electrical services if necessary and when safe to do so
 - refer to DSEAR risk assessment for extent of a flammable atmosphere
- Ensure that the Fire Service and Safety Shift have been called if the substance is flammable or unknown
- Arrange isolation of any leaking equipment when possible and safe to do so
- Deploy an ICO to an agreed RVP
- Deploy Facility spill kits to the location
 - identify PPE requirements from COSHH assessments and safety data sheets
 - request additional spill control and clean-up materials from Shift if required
- Take action to minimise escape of the chemical in to the Site drainage system or general environment
 - refer to drainage maps if necessary
 - block exposed drains
 - notify Shift and Site Utilities Group of any possible contamination and potential need for downstream isolations to prevent further spread
- Arrange suitable clean-up and disposal operation in accordance with COSHH assessment and safety data sheet recommendations

OIL LEAK/SPILL

FEC ACTION

- Follow the actions for a spilt chemical substance (above), with particular attention on containment and prevention of oil entering drains or the general environment.

Gas Leak

A number of different types of gases are in use in the Facility, either in fixed or temporary installations, meeting the requirements of Pressure Systems Safety Regulations.

All gases stored or used have been subjected to risk assessment. Where appropriate, Safety Data Sheets and special handling instructions are available at the workplace or relevant local Document Control Centre and the ECP.



GAS LEAK

FEC ACTION

- Ensure an exclusion zone has been established around the affected area
- Determine type of gas and whether it is flammable or not
 - refer to safety data sheets
 - **DO NOT** permit use of radios, mobile telephones or other electronic or electrical equipment in the vicinity
 - consider isolation of electrical services if necessary and when safe to do so
 - refer to DSEAR risk assessment for extent of flammable atmosphere
- Ensure that the Fire Service and Safety Shift have been called if the gas is flammable or unknown
- Arrange isolation of the gas supply at the bottle when safe to do so, if not already confirmed as isolated
 - contact Site Utilities Group if the leak is from the gas main
- Deploy an ICO to an agreed RVP
- Consider density of gas relative to air, flammability, toxicity and potential for oxygen depletion as part of re-entry plan

Flooding

This FERP considers flood by rainfall, where water has entered a building (through leaking roof, under doors, etc.), leakage of water or steam from pipe fracture, taps being inadvertently left running or operation of a pressure relief valve.

Where a leak or ingress of water has been discovered, consideration should be given to the isolation of electrical supplies where plant or equipment may be affected. The ECP should be notified at the first opportunity.

If the source of water is a steam leak that must be resolved in accordance with the response instructions for loss or steam or steam leak first.

Flooding may have occurred due to the activation of protective quench systems associated with explosives machining. If the system is initiated in response to an incident whilst machining explosives, the requirements associated with damaged or endangered explosives must be followed in the first instance.

FLOODING

Warning

If flooding is the result of deliberate activation of a quench system, first actions should be in accordance with the response for **Fire** (page 20), **Explosion** (page 39) or **Damaged/Endangered Explosives** (page 43) as appropriate

FEC ACTION

- Ensure that the affected area has been evacuated and all personnel accounted for
- Confirm whether equipment and processes have been made safe
- Identify the source of the flooding (rain water, steam leak etc.)
 - follow actions for a steam leak (page 61) if that is the source
- Establish the severity of flooding, possible contaminants and other hazards
 - deploy an ICO to the scene
 - refer to safety data sheets for materials at the location if appropriate
- Arrange for affected electrical supplies to be isolated
 - refer to building electrical diagrams to identify circuits, including fire alarms and uninterruptible power supplies (UPS)
 - seek support of local or maintenance AP(E) or other suitably qualified electrical engineer for isolation advice if necessary
- Switch off any running taps or equipment that may be the source of the water
- Determine possible low points for pumping operations
 - refer to building layout and drainage drawings
 - seek support from Safety Shift or Fire Service if pumping-out required
- Agree and enact clean up plan, with particular regard to any contaminants
 - ensure mopped up flood water is placed in approved containers
 - refer to Maintenance Authority Guidance for Flood Recovery

Asphyxiation by Oxygen Depletion

Bottled gas is used within the Facility either as part of the process or in support of maintenance activities. These include: nitrogen for purging purposes, sulphur hexafluoride as high voltage electrical insulation, argon or helium for inert atmospheres, and propane for explosives hazard testing.

LPG, propane or acetylene may also be brought in for welding, cutting or roof repair operations in support of maintenance or construction activities. These are not routine and require special authorisation.

Liquid nitrogen is also used to store items at very low temperature or cool process equipment. A significant leak or spill of this liquid can release a large volume of gas in to the work place, displacing oxygen and resulting in a risk of asphyxiation. Oxygen depletion alarms are fitted in process areas assessed as requiring them.

Loss of Breathing Air

Various types of respiratory protection are in use in the Facility. Some respiratory protection equipment is self contained; some is dependent on bottle fed, compressed breathing air hoods/respirators.

All respiratory protection equipment in use in the Facility is subjected to regular operational and functional checks. All personnel who have a need to use respiratory protective equipment are trained in the use of that equipment.

ASPHYXIATION BY OXYGEN DEPLETION

FEC ACTION

- Ensure that the affected area has been evacuated and all personnel accounted for
 - confirm that it has been cordoned off to prevent inadvertent access
- Ensure that medical assistance has been called for
- Determine whether anyone is trapped inside the affected area
 - **DO NOT** allow any rescue without self contained breathing apparatus and appropriate training
 - ensure that the Fire Service has been called for if required
- Determine the source of asphyxiation (gas or liquid nitrogen leak, low enclosure, etc.)
 - refer to actions for a gas leak (page 51) if this is the suspected source, arranging isolations as required
 - refer to safety data sheets for hazard information if necessary
- Identify any other hazards at the scene (e.g. explosives, lasers, chemicals)
 - confirm the status and make safe as required before rescue if required
- Deploy First Aiders and an ICO to the incident scene
 - medical observation of those that have suffered oxygen depletion is required for some time afterwards in case of delayed effects

LOSS OF BREATHING AIR

FEC ACTION

- Ensure that the affected area has been evacuated and all personnel accounted for
 - confirm that it has been cordoned off to prevent inadvertent access
- Deploy First Aiders to the incident scene
 - observation of those that have suffered oxygen depletion, or inhaled fumes or particulates, is required for some time afterwards in case of delayed effects
- If personnel need to be recovered follow the relevant actions for suspected asphyxiation by oxygen depletion (above)
- Confirm that operational plant is shut down and made safe
- Take action to prevent further use of the breathing air system

Electrical Power Failure

The electrical supply can suffer interruption for a variety of causes, including: total failure of the electrical supply to the Site, sub-station failures, local electrical circuit failure or operation of a protective device (residual current or fuse).

All electrical systems within the Facility are designed to "fail safe".

ELECTRICAL POWER FAILURE

Warning

If explosives have been insulted or are endangered as a result of the power failure, action should initially be in accordance with the response for **Damaged/Endangered Explosives** (page 43)

FEC ACTION

- Ensure requirements for ventilation failure (page 59) are carried out if the power failure results in this
- Confirm that equipment and processes have been made safe
 - equipment and plant should be switched off so that it cannot re-start under uncontrolled conditions
 - operation or processes that were in progress should be contained, or appropriately cordoned off with an exclusion zone, in accordance with any local contingency arrangements
- Seek support of local or maintenance AP(E) or other suitably qualified electrical engineer for advice if necessary
- Contact Site Utilities Group or maintenance support services to establish the cause of the failure and any remedial action necessary

Ventilation Failure (including Air Conditioning and Refrigeration)

There are a number of work areas equipped with local exhaust ventilation (LEV) or engineered ventilation in order to protect workers from the possible build up of noxious or explosive gases and fumes arising from production or test activities.

Some explosives begin curing and other flammable materials degrade more rapidly at room temperature. To extend the life of these materials they are stored in refrigerated or air conditioned environments. While failure of such plant and equipment will cause no immediate danger, the risks to quality and usability of the materials may be elevated.

Humidity control is provided in some areas for safety and/or quality reasons. Failure of these systems will not cause an immediate danger, but sensitive materials should be made safe until conditions are corrected for safe handling.

Where it is possible that refrigerant gases could leak into an enclosed/confined area the risk of asphyxiation must be considered.

VENTILATION FAILURE

FEC ACTION

- Ensure that the affected area has been evacuated and all personnel accounted for
 - confirm that it has been cordoned off to prevent inadvertent access
- Ensure that equipment and processes have been made safe where possible
 - without subjecting anyone to unnecessary exposure to gas or fumes
 - with consideration to possible safety implications of inappropriate environmental conditions (e.g. humidity)
- Contact maintenance support services to establish the cause of the failure and any remedial action necessary
- Identify hazards created by the failure, or to which maintenance engineers may subsequently be exposed (e.g. flammable atmospheres, refrigerant gases, explosives, etc.)
 - refer to chemical safety data sheets
 - refer to DSEAR risk assessment for extent of possible flammable atmosphere
 - **DO NOT** permit use of radios, mobile telephones or other electronic or electrical equipment in the vicinity
 - consider isolation of relevant electrical services if necessary
 - consider alternative source of ventilation to disperse dangerous atmospheres if appropriate
 - Safety Shift may be able to help with this

Loss of Steam Supply

The Site steam-main supplies saturated steam at 3barg (42psi) to many buildings within the Facility. The steam pressure is regulated to each building according to its needs. Steam is used in many explosive processing operations as an indirect source of heating and also to provide central heating to buildings.

Failure at source would result in partial or total loss of steam which would result in gradual loss of temperature in heating systems.

Failure due to a pipe rupture or operation of an over pressure device is potentially dangerous as there may be an uncontrolled escape of saturated steam at high pressure.

Failure of the steam supply to the Facility climatic chambers and other heating systems will often trigger an automatic shut down. This will not lead to an explosive hazard but could lead to a failed test or process.

LOSS OF STEAM SUPPLY OR STEAM LEAK

Failure at Source (steam main)

FEC ACTION

- Confirm that equipment and processes have been made safe
 - equipment and plant should be isolated from the steam supply so that it cannot re-start under uncontrolled conditions
 - operation or processes that were in progress should be contained, or appropriately cordoned off with an exclusion zone, in accordance with any local contingency arrangements
- Contact Site Utilities Group or maintenance support services to establish the cause of the failure and any remedial action necessary

Steam Leak (pipe rupture / operation of over pressure device)

FEC ACTION

- Ensure that the affected area has been evacuated and all personnel accounted for
 - confirm that it has been cordoned off to prevent inadvertent access
- Contact Site Utilities Group or maintenance support services to instigate necessary remedial action
 - arrange isolation of the steam supply to shut down the leak
- Consider the impact of the leak, and any isolations made to stop it, on down-stream operations, nearby equipment or neighbouring buildings
 - take action as for Failure at Source (above) if processes may be affected
 - take action as for Flooding (page 53) if condensation is significant

Loss of Compressed Air or Vacuum Supply

Many processes and plant operations within the Facility are dependent on a continuous supply of compressed air and/or utilise a local vacuum pump.

DI Site Utilities Group (SUG) is responsible for maintaining the air-main pressure at 6barg (85psi). Back-up compressors are available and are automatically switched into operation when required.

Some processes have local air compressors which are needed to supplement the Facility air-main or act as stand-alone compressors. These are maintained by the DI Asset Care (Maintenance) Team and any faults or failures must be brought to their attention as soon as possible.

In all cases where a vacuum needs to be maintained there are local written instructions and training given to staff for appropriate emergency response if the vacuum reduces or fails.

LOSS OF COMPRESSED AIR OR VACUUM SUPPLY

Warning

If explosives have been insulted or are endangered as a result of the loss of compressed air or vacuum supply, action should initially be in accordance with the response for **Damaged/Endangered Explosives** (page 43)

FEC ACTION

- Confirm that equipment and processes have been made safe
 - equipment and plant should be isolated from the air supply so that it cannot re-start under uncontrolled conditions
 - equipment depending on a vacuum should be switched off to prevent inadvertent operation
 - operation or processes that were in progress should be contained, or appropriately cordoned off with an exclusion zone, in accordance with any local contingency arrangements
- Contact maintenance support services to establish the cause of the failure and any remedial action necessary

Loss of Shielding

The Facility contains a number of radioactive sources and X-ray equipment, generally used for radiographic inspection.

Loss of, or damage to, shielding, or failure of an interlock, due to a mechanical or electrical fault could result in the exposure of personnel to ionising radiation in the immediate area. Local contingency plans are in place where sources are used routinely.

Alternatively, loss of shielding due to a fire or explosion could lead to the exposure of personnel to both ionising radiation and radioactive materials in the immediate area with the potential for the release of RA material in to the environment.

LOSS OF SHIELDING

FEC ACTION

- Ensure that the affected area has been evacuated and all personnel accounted for
 - confirm that it has been cordoned off to prevent inadvertent access
- Ensure that equipment and processes have been made safe where possible
 - without subjecting anyone to unnecessary exposure to ionising radiation
- Request immediate Health Physics support if not already confirmed as requested
- Identify the type and characteristics of the exposed source
- Identify other hazards at the scene that may affect recovery (e.g. explosives)
- Local contingency plans, Radiation Protection Supervisors, Health Physics, or the Facility Radiation Protection Advisor should be able to provide support and guidance for recovery operations

Source Exposed During Fire or Explosion

FEC ACTION

- Follow actions for response to **Fire** (page 21) or **Explosion** (page 41) involving **Radioactive or Toxic Material** as appropriate
 - initial local focus should be on getting people downwind under cover
 - use Facility entry log, WCC authorisations and/or Facility work plans
 - recommend an initial cordon distance of 600m, the RVP if closer, or sheltering inside as appropriate
 - ensure they take shelter inside with doors and windows closed, and shut down ventilation systems where safe to do so
 - determine wind direction and speed from Shift Control

Vehicle Breakdown

The breakdown of a vehicle within the Facility may not pose an immediate risk. However, dependent on the location of the breakdown, other activities may be compromised, such as the transit of emergency vehicles or the movement of explosives and/or RA material.

VEHICLE BREAKDOWN

FEC ACTION

- Identify the nature of the load (if any) on the vehicle (e.g. non-hazardous, explosives)
- Confirm the location of vehicle breakdown
 - deploy appropriate warning signs and/or cones if necessary
 - consider the impact on other operations and vehicle movements; warning other road users as appropriate

Vehicle Not Carrying Explosives

- Arrange for vehicle recovery or repair by Transport Operations & Maintenance (if a Company vehicle) or other Contractor supplied equivalent

Vehicle Carrying Explosives

- Confirm the nature and quantity of explosives
- Close the clearway and redirect other vehicle movements if necessary
- Arrange for vehicle recovery or repair by Transport Operations & Maintenance
 - normally explosives should be off-loaded to another vehicle before repair or recovery, however, the best course of action should be determined in consultation with the TO&M representative

Vehicle Carrying Explosives and RA Material

FEC ACTION

- Confirm the nature and quantity of explosives and radioactive material
- Close the clearway and redirect other vehicle movements if necessary, with the support of the Explosive Movement Controller
- Arrange for vehicle recovery or repair by Transport Operations & Maintenance
 - normally explosives and the radioactive material should be off-loaded to another vehicle before repair or recovery, however, the best course of action should be determined in consultation with the TO&M representative

Laser Eye Strike

Damage to the eye can be caused by a laser as a consequence of: failure to wear, or failure of PPE, or the malfunction of the laser or interlocks.

It is essential that expert medical attention is sought immediately for an incident where eye damage has been caused or is suspected. The Emergency Services should be advised immediately using the term "Laser Eye Strike" which will illicit the correct response.

Details of the laser power, wavelength and mode of operation (continuous or pulsed) need to be communicated to medical treatment staff. Each room should have a "laser hazard card" with this information to accompany the patient.

LASER EYE STRIKE

FEC ACTION

- Deploy First Aiders to the incident location
 - **DO NOT** permit access to the incident scene until the laser is safe
 - arrange transport if necessary
- Ensure that medical assistance has been called for
 - use the term **LASER EYE STRIKE**
- Identify the casualty
 - instruct them to move to a safe location away from the laser and other hazards to speed up assistance if they are able and it is safe to do so
- Confirm the status of the laser involved
 - confirm it is either turned off or the room door(s) are closed to prevent escape of the laser beam
 - arrange appropriate electrical isolation if there is any doubt
- Confirm the details of the laser involved
 - determine the wave length, power and mode of operation (continuous or pulsed, with repetition rate & length)
 - refer to Facility Laser Database and relevant laser hazard card if necessary

Security Incident (Intruder)

Due to the nature of AWE's activities, it could be the focus of peaceful demonstrators or criminal/terrorist organisations. Once on Site, it is possible for an intruder to gain access to the Explosives Areas at any point along the extensive length of security fencing around the large area involved.

It is essential that any intruder is quickly located and apprehended before they put themselves or others at risk from operations, any damage is sustained, or security is further compromised.

Where operations could pose a risk to intruders or responding MDP officers, they should be made safe as quickly as possible

SECURITY INCIDENT (INTRUDER)

FEC ACTION

- Ensure that the MDP have been notified, unless the information originated from them
- Identify the number of intruders and the last known location and direction of movement
- Alert the Facility that an intruder is, or may be, in the area
 - use Facility entry log, WCC authorisations and/or Facility work plans
 - start the information brief closest to the last known location, if any
 - request they report any intruder sightings to MDP directly and then the ECP
- Identify areas where MDP radios may pose a threat to sensitive Electro-Explosive Devices or flammable atmospheres
 - alert MDP to ensure radios are Transmit Inhibited before entry
 - alert MDP to ensure intruders are warned not to use any mobile communication or electronic equipment if found in sensitive areas
- If explosives and/or radioactive material are in transit within the Facility
 - alert Movement Control staff and the MDP accordingly
- If there is a risk of the intruder or the MDP entering a process exclusion zone (refer to map on page 9)
 - ensure that explosives or radiography operations are shut down safely and as quickly as possible

Communications Systems Failure

The Facility relies upon communications for safe operations and an effective emergency response capability. They are required for: staff to raise an initial alert, alerting them of other incidents, and the subsequent response. They include:

- landline communications

- Public Address (local or Site-wide) and local intercoms

- mobile communication systems (radio, mobile telephone, or pagers)

Asbestos Release

Routine surveys monitor the condition of all known asbestos, which is identified in the Facility Asbestos Register. Reference to this is made before allowing work tasks to proceed in close proximity to asbestos.

If materials known, or suspected, to contain asbestos are found, disturbed or damaged, access to the area should be restricted to prevent potential inhalation or wider contamination. The ECP should be informed immediately.

COMMUNICATIONS SYSTEM FAILURE

FEC ACTION

- **DO NOT** permit operations in areas where there is no means of receiving important emergency information (such as Site undercover) or making an emergency call
- Issue radios or mobile telephones to areas with poor or no Public Address coverage
 - record the alternate contact details for use in the WCC
 - ensure the WCC makes contact to relay important broadcast messages
 - ensure the communications are confirmed working at the start of each day
- Issue radios or mobile telephones as replacements for faulty telephone landlines or handsets
 - record the alternate contact details for use in the WCC
 - ensure regular recharging of the replacement device takes place
- If the Site exchange fails
 - deploy radios to each of the main work areas and make a test broadcast
 - ensure regular recharging of the replacement device take place

ASBESTOS RELEASE

FEC ACTION

- Ensure that the affected area has been evacuated and all personnel accounted for
 - confirm that it has been cordoned off to prevent inadvertent access
 - consider expansion of the zone taking into account the scale of the release and potential spread of contamination (by wind or through ventilation systems)
- Request services of the Asbestos Focal Group (AFG) for material identification and advice for subsequent clean-up and personnel decontamination if necessary
- Deploy an ICO to a suitable RVP
- Identify anyone who may have been contaminated by asbestos
 - limit their movement to minimise further spread of contamination
 - remove clothing and place in plastic bag
 - if possible, use a shower for personnel decontamination, otherwise use wet towels or similar
 - exclude staff from the decontamination facilities pending the outcome of any inspection or sampling by AFG

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8 Responses to External Requests

8.1 Responses to calls to the ECP for incidents involving explosives external to XTF on the following list are given on the pages identified:

Scenario	Response Page
Explosives Transport Incident	77
Unexpected Explosives Find	79
Off-Site Working Incident	81

Explosives Transport Incident

While not part of the XTF Safety Case, XTF staff are involved in on-Site and off-Site explosives transport operations.

Where explosives are transported off-Site, the XTF ECP telephone number is provided as the Emergency Contact Number on the consignment documentation. Details of the consignment are held within the XTF WCC/ECP to be made available to external emergency services as may be necessary.

Details of explosives transport on-Site, but external to XTF, are notified to the WCC to support on on-Site emergency response outside the Facility.

AWE advice and support may also be requested.

EXPLOSIVES TRANSPORT INCIDENT

FEC ACTION

- Record all the details regarding the location and nature of the incident
- Confirm the identity of the person/organisation requesting information
 - be aware of security and call them back if there is any doubt
- If the incident is on-Site
 - ensure that the emergency services have been called
 - declare a Facility Emergency to ensure Site Emergency Manager involvement
 - liaise with emergency services as necessary
 - refer to explosives movement information registered with the WCC
 - consider similar vehicle emergency responses within Facility (fire: page 23, endangered explosives: page 43, breakdown: page 67)
- If the incident is off-Site
 - provide the emergency information requested
 - refer to the Consignment documentation registered with the WCC at the start of the transport
 - Alert the Site Emergency Manager and Corporate Communications if appropriate
- Seek specialist advice from Explosives Operations Support Manager, Explosives Sites Manager, Explosives Safety Authority or other technical authorities if required

Unexpected Explosives Find

AWE Aldermaston is built on a disused air field. It is possible that there are undiscovered munitions and explosive articles still buried within the Site boundaries, which may be uncovered during construction activities.

AWE itself has more than 50 years of history; not all of which has been recorded. There may be legacy explosives substances and articles within laboratories and cupboards across the Company. These may be found during routine operations, or maintenance and refurbishment activities.

UNEXPECTED EXPLOSIVES FIND

FEC ACTION

- Advise the caller that the material or item must not be touched
 - It is extremely unlikely that the material will react unless subjected to additional or new stimuli
 - ensure that the affected area has been evacuated and secured to prevent inadvertent access
- Discovery of non-AWE unexploded ordnance should be referred to the MDP for EOD team attention
- For discovery of AWE explosives substances or articles
 - deploy suitably qualified and experienced personnel to the location to liaise with the local FEC and Facility Management
 - ensure adequate PPE is worn before examining the item
 - consider potential for electrostatic risks and take suitable precautions
 - photograph the item to support subsequent identification if it cannot be determined straight away
 - alert the Explosives Operations Support team that packaging and recovery of an explosive substance or article may be required
 - arrange suitable segregated storage until a disposal route is defined
 - agree any recovery plan with the local FEC and Site Emergency Manager

Off-Site Working Incident

Incidents may occur when personnel are working off-Site. To maintain a consistent approach to the initial response and reporting of such incidents the XTF ECP telephone number is provided as the Emergency Contact Number.

Any necessary emergency response will be instigated and controlled in accordance with the relevant procedures at the off-Site location.

A call to the XTF ECP is necessary to ensure that the nature of the incident is recorded and details cascaded to the relevant people with appropriate advice to support investigation and any restart decisions.

OFF-SITE WORKING INCIDENT

Note

Any immediate emergency actions will be implemented by the relevant personnel at the off-Site venue. This response is to enable the same incident reporting as would happen after an initial response on Site.

WCC ACTION

- Record all the details regarding the location and nature of the incident verbatim as dictated
 - use paper copy of Assurance Event reporting form
 - be aware of security of information discussed
- Confirm that all work has stopped and AWE personnel are in a safe location
- Record contact telephone number of AWE Work Supervisory Officer (WSO) at off-Site location
- Report incident summary to Group Leader of the AWE WSO
 - refer to off-Site working response information provided to WCC

FEC ACTION

- Contact AWE WSO off-Site to check the details and understanding of the incident
- Arrange for information to be copied to electronic assurance event reporting system for further dissemination
- Consider implications of the incident and any response actions necessary
- Contact relevant Group Leader with advice on the way forward
 - refer to similar scenarios within this Volume of the FERP as appropriate
 - refer to relevant technical or assurance advisors within XBU

