



PORT OF SOUTHAMPTON OFF-SITE REACTOR EMERGENCY PLAN

SotonSafe

**AMENDED
Version 6.1
April 2013**

Prepared by Southampton City Council Emergency Planning Unit to comply with
the requirements of the
Radiation (Emergency Preparedness and Public Information) Regulations 2001
(REPPiR)

If an Off-Site Nuclear Emergency has been declared, or may be about to occur, and you have not read this plan

DO NOT READ IT NOW!

Find the Action card in Appendix 7 pertaining to your role from this document or the City Council Major Incident plan and follow the instructions thereon.

The following are the amendments to the plan created since the last version (Version 6) in December 2012.

[illegible]

This page is intentionally left blank

Contents

Part	Section	Title	Page
Administration		Amendment Record	i – ii
		Distribution List	iii - iv
		Contents	v – viii
		List of maps and illustrations	ix
		SotonSafe Emergency Planning Group Membership	xi
Part 1	1	Background	1-1 – 1-16
	1.1	Purpose	1-1
	1.2	Format	1-1
	1.3	Scope	1-2
	1.4	Background	1-3 – 1-4
	1.5	Local Liaison Arrangements	1-5 -1-9
	1.6	Planning Zones	1-10 – 1-15
	1.7	Empowering Legislation	1-16
Part 2	2	Objectives and Key Definitions	2-1 – 2-6
	2.1	Objectives	2-1
	2.2	Key Definitions	2-1 - 2-2
	2.3	Nuclear Reactor Emergencies - General	2-4
	2.4	Nuclear Reactor Emergencies - Classifications	2-5- 2-7
Part 3	3	Organisational Structures	3-1 – 3-22
	3.1	NERO – Command and Control	3-1 – 3-7
	3.2	Functions of Key local NERO personnel	3-8 – 3-11
	3.3	Health Physics & Monitoring Organisation	3-12 -3-24
Part 4	4	Media – Warning and Informing	4-1- 4-12
	4.1	Prior information to public	4-1
	4.2	Provision of information to media	4-1 – 4-3
	4.3	Info. to be supplied in event of radiation emergency	4-4
	4.4	Pre-Scripted media release Off-Site Nuclear Emergency Alert	4-5 – 4-6
	4.5	Pre-Scripted media releases Off-Site Nuclear Emergency –Radiation Hazard Confirmed Alert	4-7 – 4-9
	4.6	Pre-Scripted media releases Off-Site Nuclear Emergency – Release of Radioactive Material Confirmed Alert	4-10 – 4-12
Part 5	5	Inter-Agency Response	5-1 – 5-14
	5.1	Pre Visit Arrangements	5-1 5-2
	5.2	Alerting Procedures	5-3 – 5-4
	5.3	Summary Table of Countermeasures	5-5

Part	Section	Title	Page
Part 5 (cont)	5.4	Action Required at Off-Site Nuclear Emergency Alert	5-6 – 5-9
	5.5	Action Required at Off-Site Nuclear Emergency – Radiation Hazard Confirmed Alert	5-10
	5.6	Actions Required at Off-Site Nuclear Emergency – Release of Radioactive Material Confirmed Alert	5-11
	5.7	Access to the Eastern Docks	5-11 – 5-12
	5.8	Community Impact	5-12 – 5-13
	5.9	Record Keeping	5-14
Part 6	6	Organisational Responses	6-1 – 6-20
	6.1	Exposure Levels	6-1
	6.2	Accessing the ACMZ	6-2 – 6-3
	6.3	Hampshire Police	6-4 – 6-6
	6.4	Hampshire Fire & Rescue	6-7 – 6-8
	6.5	South Central Ambulance Service	6-9 – 6-11
	6.6	Southampton City Council	6-12
	6.7	Health Response	6-13 – 6-16
	6.8	New Forest District Council	6-17
	6.9	Hampshire County Council	6-18
	6.10	HSE – Office for Nuclear Regulation	6-19
	6.11	ABP - Southampton	6-20 – 6-22
Part 7	7	Pits Distribution Plan	7-1 – 7-14
	7.1	PITs Distribution Plan	7-1
	7.2	PITs Distribution Policy -General	7-1 – 7-3
	7.3	PITs Distribution Policy - Schools	7-3 – 7-4
	7.4	Nurseries	7-4
	7.5	Notification	7-4
	7.6	HPU Representative Call-Out (formerly Consultant Physician for Health Protection (CPHP))	7-4
	7.7	Pre-Visit Arrangements	7-4
	7.8	Pre-Positioning Sites	7-5 -7-7
	7.9	Navy PIT's Distribution Team	7-8
	7.10	Navy Co-ordinating Centres and Walk Routes	7-8 – 7-10
	7.11	PIT's Centre boxes	7-11
	7.12	Distribution	7-12
	7.13	Dosage, Allocation and Total Requirement	7-12 – 7-13

Part	Section	Title	Page
Part 8 (cont)	8	Remediation and Recovery	8-1 – 8-8
	8.1	Introduction	8-1
	8.2	Remediation Working Group	8-1
	8.3	Membership	8-2
	8.4	Working Group Chair	8-3
	8.5	Co-ordinating Group Chair	8-3
	8.6	Issues during recovery phase	8-4
	8.7	Claims Procedures and Registration of those affected	8-4 – 8-5
	8.8	End of the Off – Site emergency	8-5
Part 8 (cont)	8.9	Information and Advice	8-5
	8.10	Effectiveness of Recovery Countermeasures	8-5 – 8-6
	8.11	Decontamination Measures	8-6 – 8-7
Appendix 1	A1	Contact List Information	A1-1 – 1-2
Appendix 2	A2	Background on Naval Nuclear Reactors	A2-1 – 2-16
Appendix 3	A3	Training, Exercising & Validation	A3-1 – 3-4
	A3.1	Introduction	A3-1
	A3.2	Training	A3-1
	A3.3	Exercising	A3-2
Appendix 4	A4	Public Information Leaflet	A4-1 – 4-10
	A4	Public Information Leaflet	
Appendix 5	A5	PIT's Letters of Authority	A5-1 – 5-2
	A5.1	Southampton City Council	A5-1
	A5.2	Hampshire County Council (New Forest)	A5-2
Appendix 6	A6	Recovery Countermeasures-Information/Advice	A6-1 – 6-6
	A6.1	PHE CRCE Information and Advice	A6-1 - A6-3
	A6.2	Table of Countermeasure Categories, Techniques and effectiveness	A6-4- A6-5
Appendix 7	A7	Actioncards for Key Personnel	A7-1 – 7-3
	A7.1	Submarine Commander / Incident Officer (ABP)	A7-1- A7-2
	A7.2	Military Coordinating Authority	A7-3- A7-4
	A7.3	Police Tactical Commander	A7-5
	A7.4	ABP Southampton Port	A7-6 – A7-7
	A7.5	RN Submarine additional crew instructions	A7-8 – A7-9
	A7.6	EZRC	A7-10 – A7-11
Appendix 8	A8	Glossary of Terms	A8-1 – 8-5
Appendix 9	A9	Abbreviations	A9-1- A9-5

This page is intentionally blank

SotonSafe Distribution List

Name/Organisation	No. of CD Copies	No. of Paper Copies
LOCAL AUTHORITIES		
The Chief Executive, Southampton City Council, Civic Centre, Southampton, SO14 7LY	1	
The Chief Executive, New Forest District Council, Appletree Court, Lyndhurst, Hants, SO43 7PA	1	
The Chief Executive, Eastleigh Borough Council, Civic Offices, Leigh Road, Eastleigh, Hants. SO50 9YN	1	
The Chief Executive, Test Valley Borough Council, Beech Hurst, Weyhill Road, Andover, Hants. SP10 3AJ	1	
The Clerk, Hythe & Dibden Parish Council, The Grove, 25 St. Johns Street, Hythe, Southampton, SO45 6BS	1	
The County Chief Executive, Isle of Wight Council, County Hall, Newport, Isle of Wight, PO30 1UD	1	
The County Emergency Planning Officer, Hampshire County Council, The Castle, Winchester, SO23 8UG	1	
EMERGENCY SERVICES		
The Chief Constable, Hampshire Constabulary, Police Headquarters, Winchester, SO22 5DB	1	1
The Chief Fire Officer, Hampshire Fire and Rescue HQ, Leigh Road, Eastleigh, SO50 9SJ	1	1
Chief Executive, South Central Ambulance Service, Units 7 and 8 Talisman Business Centre, Talisman Road, Bicester, Oxfordshire OX26 6HR	1	1
HEALTH		
The Chief Executive, NHS Commissioning Board Wessex Area Team Oakley Road Southampton SO16 4GX	1	
Emergency Preparedness Manager, Public Health England, Hampshire IOW & Dorset Centre. Unit 8 Fulcrum 2, Solent Business Park, Whiteley, Hampshire, PO15 7FN		1
Group Leader Emergency Response Group, The Public Health England, Centre for Radiation, Chemical and Environmental Hazards (CRCE), Chilton, DIDCOT, Oxon, OX11 0RQ	1	
ROYAL NAVY / MOD		
DES SM for SONART	1	
NBC Devonport (<i>for ARO1</i>)	1	
Navy Command (CSOE(SM))	1	
Clyde Offsite Centre NEPO	1	

Southampton City Council SotonSafe Plan		Distribution List
--	--	-------------------

ROYAL NAVY / MOD (Cont.)		
Defence Nuclear Safety Regulator	1	
Dstl RPA Body, c/o INM Alverstoke	1	
INM Alverstoke (for HSRM)	1	
Naval Base Commander, Portsmouth (PMNUC)	1	1
OTHERS		
The Port Director, ABP Southampton, Ocean Gate, Atlantic Way, Southampton SO14 3QN	1	
Office for Nuclear Regulation, Health & Safety Executive, Redgrave Court, Merton Road, Bootle, Merseyside L20 7HS	1	
Southern Water, Emergency Planning Officer, Southern House, Sparrow Grove, Otterbourne, SO23 2SW	1	
Environment Agency, Technical Support Officer (Nuclear), Red Kite House, West Area Office, Howbery Park, Crowmarsh Gifford, Wallingford, Oxon, OX10 8BD	1	
Serco Assurance, SRD, 5 TH Floor Thomson House, Risley, Warrington, Cheshire WA3 6AT	1	
SOUTHAMPTON CITY COUNCIL		
Head of Legal Services	1	
Director of Public Health	1	
Executive Director Peoples Directorate	1	
Emergency Planning Unit	1	2
Emergency Control Centre		2
Public Health		2

SotonSafe Distribution List (Public Copies)

Southampton Libraries		1
Copies available from SCC website www.southampton.gov.uk		
Total number:	29	12

List of Maps and Diagrams

NB. It should be noted that maps and diagrams within this plan are for illustration only. Those used within the various co-ordination centres are to a larger scale and contain much more detail.

Figure	Description	Page
1	Location of Designated Operational Berth	1-8
2	Nuclear Reactor Planning Zones	1-13
3	Planning Zones for Designated Operational Berth	1-14
4	Extent of 10k Zone	1-15
5	NERO flow Chart	3-5
6	Incident Co-ordination Centre floor plan- Ocean Gate	3-6
7	Tactical Co-ordination Centre floor plan – City Depot	3-7
8	Key locations in relation to the docks	3-10
9	Location of Strategic Co-ordination Centre	3-11
10	NERO Cascade call out chart	5-4
11	PITs Distribution Areas and Co-ordination Centres	7-6
12	Locations of schools in the 10k zone	7-7
13	PITs distribution flow chart	7-10

This page is intentionally blank

SotonSafe Emergency Planning Group Membership

Civil Authorities

Southampton City Council

New Forest District Council

Hampshire County Council

Hampshire Constabulary

Hampshire Fire and Rescue Service

South Central Ambulance Service

Environment Agency *

Associated British Ports Southampton

Public Health England (CRCE)

NHS Commissioning Board Wessex Area Team (WAT)

Health and Safety Executive (HSE) Office For Nuclear Regulation
(ONR)

Naval/MOD (N) Representatives

Naval Base Commander Portsmouth (or his/her representative)

Defence Nuclear Safety Regulator*

Nuclear Safety Adviser *

Safety and Reliability Directorate

Dstl Radiological Protection Services

* Non-Lead Agency

This page is intentionally blank

1 Background

1.1. Purpose

The council, together with other designated 'responders' and statutory organisations, has a legal obligation to provide an integrated response in relation to a reactor emergency involving a nuclear powered submarine whilst it is alongside the designated berth within the Eastern Docks in the Port of Southampton. This plan, known as SotonSafe, is a requirement of the Radiation (Emergency Preparedness and Public Information) Regulations 2001 known hereafter as REPPIR.

It is very unlikely that a reactor emergency would occur whilst a vessel was in the Port of Southampton, although REPPIR requires that a plan exist, notwithstanding the negligible risk.

The purpose of this plan therefore, is to protect the public and workers and provide a set of automatic and pre-planned response actions to mitigate the consequences of an emergency involving a nuclear powered vessel.

The plan is regularly reviewed, particularly before the visit of a nuclear powered vessel. Additionally it is a REPPIR requirement that the plan is exercised and reviewed over a period of three years

1.2. Format

This plan follows the template provided in the Civil Contingencies Act 2004 Emergency Preparedness guidance. It provides general information, sets out details of management and control; activation and actions to be taken by key staff in the event of a reactor emergency. There follows a set of appendices covering additional, more specific information. It should be noted that Appendix 1 may not appear within the public version of this plan due to the personal information it may contain.

1.3. Scope

This plan is more detailed than the SCC generic Major Incident Plan, because of the nature of the incident it seeks to address. In addition it is designated as the “off-site” plan for such incidents. An on-site (or Operators plan) known as SotNuSafe exists to deal with issues involving the vessel and MOD resources in support of the emergency plans. The off-site plan exists primarily to tackle issues outside the Exclusion Zone.

Those residents living within an area up to 1.5km downwind from the berth will be advised to take shelter indoors and take PITs tablets if/when directed. Those working or in transit within the 1.5km zone downwind should self evacuate from the area.

Sufficient notice will be given prior to the arrival of any nuclear powered vessel in the Port of Southampton. This will allow time for additional planning, and to take the necessary advanced actions outlined in the plan, prior to the arrival of the vessel.

The plan contains elements which are both preparatory to a visit and those which would be activated if a radiation emergency occurred. For example the Port, MOD and others would be at an “alert” state of readiness and pre-positioning of PIT’s tablets would have occurred prior to the arrival of a vessel, whilst the response elements of the plan would only commence when a radiation emergency was declared.

There are no hazardous installations which are required to comply with the Control of Major Accident Hazards Regulations 1999 within the Pre-Planned Countermeasures Zone (PCMZ). Those sites outside of the 1.5km zone but located nearby such as BP Hamble and Fawley Refinery are made aware of visits by a nuclear powered vessel.

Declaration of a Radiation Emergency

The Commanding Officer of the visiting submarine will declare an “Off-Site Nuclear Emergency” (OSNE) together with any qualifying classification. The initial alert will be followed up with additional information including updates where appropriate of the reactor emergency classification, as it becomes available.

Full descriptions of the Emergency Classifications can be seen at Part 2.4

1.4. Background

1. The Port of Southampton Off-Site Reactor Emergency Plan, (SotonSafe) is a requirement of the Radiation (Emergency Preparedness and Public Information) Regulations 2001. It interfaces with the Operator's Emergency Plan (SotNuSafe) produced by the MOD.
2. The aim of the plan is to protect the public and workers and includes automatic and pre-planned response actions to mitigate the consequences of an emergency involving a nuclear powered vessel within the port. In addition the plan involves the establishment of the required command, control and liaison organisation, at the local and national level. This allows consideration, by all relevant authorities, of the later follow-on and recovery aspects of the emergency for which detailed pre-planning is not considered appropriate.
3. In the very unlikely event of a reactor emergency in the Port of Southampton, the general public will be advised of actions to take by the Local Authority. A Tactical Co-ordination Centre will be set up, normally at the City Depot of Southampton City Council adjacent to Dock Gate 20. Reserve locations for the TCC have been identified and if required will be decided at the time by police in consultation with Southampton City Council. The Tactical Co-ordination Centre will provide the local point for Command and Control and will use the media and a help line to issue information and advice.
4. Depending on the severity of the emergency and the weather conditions prevailing at the time, there may be a need to implement one or more countermeasures in 3 x 15° sectors downwind of the emergency site. The contingency plans make provision for ensuring that those members of the general public to whom such countermeasures may apply are advised promptly.
5. The measures that may be taken include:
 - a) Remaining indoors with windows and doors closed to provide shelter from any radioactive cloud that may have been released
 - b) The administration of Potassium Iodate tablets (PITs) to be taken orally to prevent the uptake of radioactive Iodine by the thyroid gland

- c) Restrictions on the use of fresh foods and dairy products to prevent the ingestion of any radioactive material
 - d) Temporary relocation or evacuation from areas where radioactive material may have been deposited.
6. The plan is regularly reviewed, particularly before a visit of a Nuclear Powered Vessel. Additionally, it is a REPPIR requirement that the plan is exercised and reviewed at least every three years.
7. The Health and Safety Executive - Office for Nuclear Regulation will agree the emergency plan for use at Southampton is compliant with the regulations.
8. Other contingency plans which could be activated in conjunction with this plan:
- Southampton City Council Major Incident Plan
 - Southampton City Council Traffic Plan
 - Southampton City Council & other Local Authority Rest Centre Plans
 - Hampshire Constabulary Southampton City Centre Evacuation Plan
 - Hampshire County Council Major Incident Plan
 - Hampshire Constabulary Major Incident Plan
 - Hampshire Fire and Rescue Service Major Incident Plan
 - South Central Ambulance Service Major Incident Plan
 - SOLFIRE Plan (Solent and Southampton Water Marine Emergency Plan)
 - HIOW LRF Media Plan
 - HIOW & Dorset Public Health England Centre Incident Response Plan
 - HIOW LRF Recovery Plan
 - HIOW LRF Humanitarian Assistance Guidance
 - HIOW LRF Mass Fatalities Plan
 - NHS CB Wessex Area Team Major Incident Plans
 - ABP Landside Emergency Plan
 - New Forest District Council Emergency Plan

9. In the event of a reactor emergency support would be provided by neighbouring Local Authorities by mutual aid as agreed in the HLOW LRF MOU between Chief Executives. Neighbouring Local Authorities are also members of the SotonSafe Emergency Planning Group.

1.5. Local Liaison Arrangements

Public Consultation Meetings

Historically public consultation meetings have taken place annually and to the future meetings will be held on a needs basis.

SotonSafe Emergency Planning Group (SEPG)

The Southampton Emergency Planning Group, known locally as the SEPG, chaired by SCC consists of representatives from the: local authorities, MOD (Royal Navy), emergency services and local representatives of statutory organisations. The membership of the group appears at the beginning of this plan on page xi.

The purpose of the Group is:-

- a) To inform the public on the scale of any potential risks of radiation hazards that may be involved in operating nuclear powered vessels.
- b) To produce and review the On and Off-Site Emergency Plans and ensure an effective emergency response organisation is in place to respond to a nuclear submarine reactor emergency in accordance with the requirements of REPPIR 2001. The SEPG should meet at least annually but members may request the Chairman to call meetings at a greater frequency, if required.

SotonSafe Emergency Planning Sub Committee

A local action sub-group, chaired by Southampton City Council, may be formed from selected members of the main committee periodically tasked to review elements of the Off-Site Plan and to present proposed amendments to the full committee for approval.

The same committee will also have responsibility for reviewing the plan and a checklist of actions and procedures that must be in place before any visit of a nuclear powered vessel can occur. Included in that checklist will be that a full risk assessment has been undertaken and that an appropriate 24 hour security plan will be in place around the submarine including waterside for the duration of the visit. The checklist will include the need for pre-prepared mapping to be available in all Command & Control Centres in advance of any visit.

Port of Southampton (ABP) Organisation

Categorisation of Berths

The requirements to maintain reactor safety and to have a site-specific local emergency plan, determine that all berths used by nuclear powered vessels must be assessed and their use endorsed by the Director Defence Nuclear Safety Regulator. The berth assessment process examines the safety aspects of navigational hazards, the provision of tugs and other facilities and the existence of any other hazards in the local area. It also contains a description of the population distribution in the area and a brief summary of the emergency organisation. Berths are located so that there are few members of the general public living in the surrounding areas, enabling an effective evacuation of persons from the **Automatic Countermeasures Zone** (500m zone – see Figure 3, page.1-14). Special consideration is given to the proximity of public utilities such as schools and hospitals.

Berths cleared for use by nuclear powered vessels are categorised in terms of their use.

1. **X Berths** are cleared for the building, commissioning, refitting, re-fuelling or de-fuelling of nuclear powered vessels or for the repair and maintenance of the nuclear plant together with tests and trials.
2. **Designated Operational Berths** (formerly known as Z-Berths) are cleared for operational or recreational visits by nuclear powered vessels. These berths are not cleared for the maintenance or repair of the nuclear plant. **The Southampton berth is this type.**

During all periods when a nuclear powered vessel is at a designated operational berth there is a requirement for a number of specialist personnel to be located in the area for the duration of the visit. They are:

1. Elements of the Local Emergency Monitoring Team (LEMT), able to carry out radiation monitoring in the event of an emergency. The activities of these monitors are co-ordinated from a pre-designated Emergency Monitoring Headquarters (EMHQ) situated at Central Road junction of European Way.
2. The Local Emergency Monitoring Team is able to advise the ABP Incident Officer on the need for emergency countermeasures.
3. Project Manager (Nuclear) who is able to provide technical advice to the ABP Incident Officer.
4. Naval personnel to assist with PITs distribution.
5. MOD personnel to operate the Exclusion Zone Reception Centre.

Location of Berths

The Defence Nuclear Safety Regulator has approved the classification of Berth number 38/39 as a single Designated Operational Berth at Southampton.

A diagram of the port showing the location of the Designated Operational Berth can be found at Figure 1 –page 1-8.

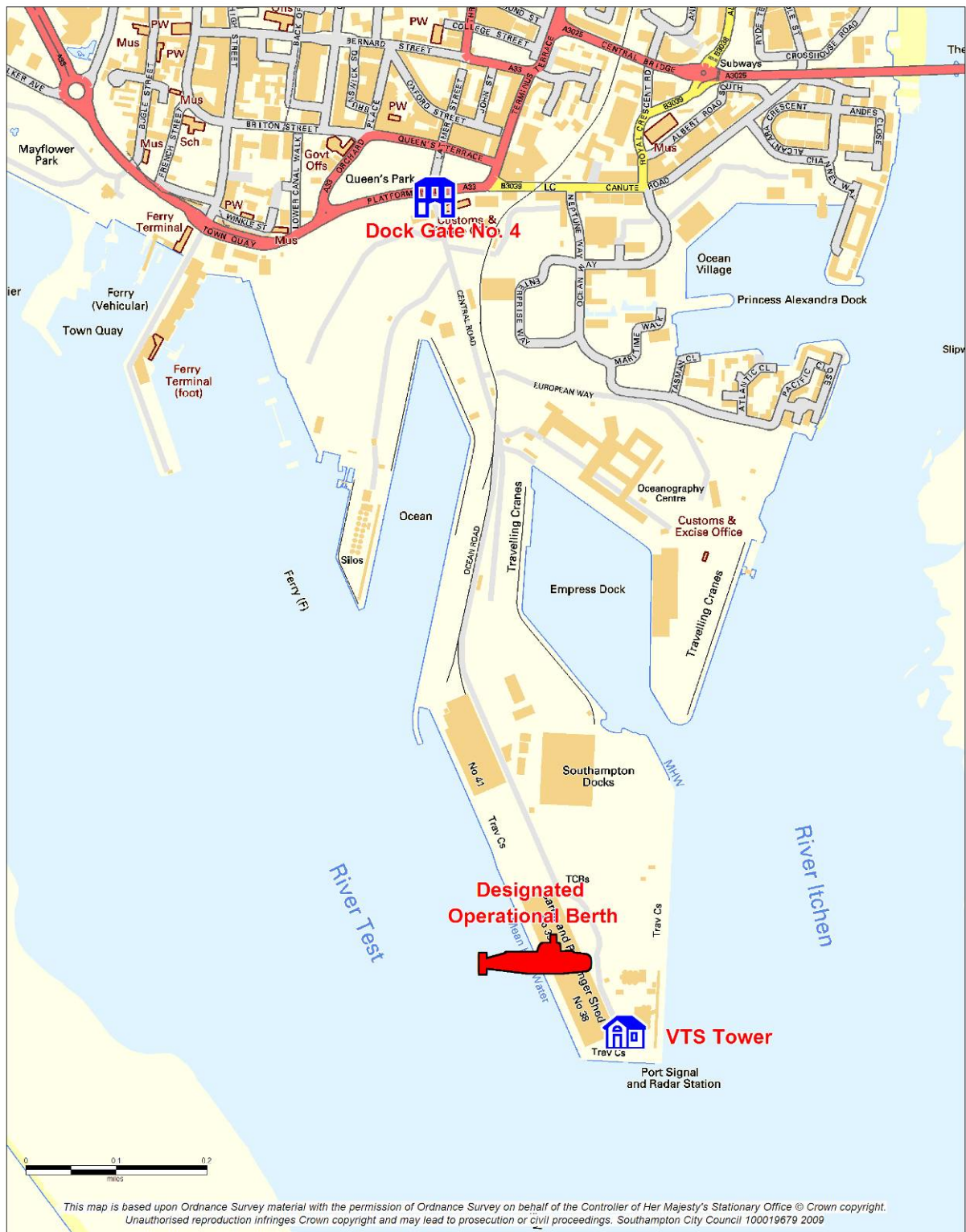


Figure 1 - Location of Designated Operational Berth



Nuclear Vessel Movement Principles

The primary hazards associated with berthing and movement operations are from collision or grounding. The following principles apply for the movement of nuclear powered vessels bound for Southampton when within the Port of Southampton Vessel Traffic Services (VTS) area.

- a) All vessels are to enter and leave the Solent via the eastern approach. They are to give the Southampton VTS Centre 3 hours notice of their ETA at the Nab Tower together with their arrival draught.
- b) Movement to be operationally approved by the Southampton Harbour Master and promulgated in the daily QHM movements signal.
- c) Will normally be given 'Clear Channel Status' for the Western Approach and Thorn Channels and be assigned Southampton Patrol Vessel escort.
- d) An authorised Admiralty Pilot and an authorised Southampton Pilot will be embarked for arrival and for departure to provide navigational and towage advice to the nuclear powered vessel's command team.
- e) Attended by at least two tugs, one of which must be a Nuclear Safety Tug, when transiting between Nab Tower and the berth. Additional tugs as required to ensure safe manoeuvring and separation from other manoeuvring vessels within the vicinity.
- f) Carried out with adequate navigational aids available.
- g) Conducted within established weather and tidal criteria.
- h) Movements of other vessels in the vicinity of nuclear powered vessels are controlled by Southampton VTS in a manner that does not put a NPV at risk.
- i) Adequate security arrangements to be put in place prior to, and during the visit.

1.6. Planning Zones

The basic reactor emergency plan used at all berths cleared for use by nuclear powered vessels specifies four zones where differing actions would take place in the event of an emergency. The zones are shown at Figures 2, 3 & 4 (pages 1-13 – 1-15 following)

The Exclusion Zone

The Exclusion Zone is the vessel itself in which people would be at greatest risk from the hazards of an emergency. The basic consideration is that people within it, even if they took immediate automatic countermeasures, could still receive radiation doses above the upper Emergency Reference Levels (ERL) for evacuation. Within this zone, all people are accounted for and are provided with equipment, which can assess their radiation dose. An Exclusion Zone Reception Centre (EZRC) for personnel evacuating from the zone will be set up and personnel evacuated to this centre will have access to medical, radiation protection, monitoring and decontamination facilities. A mobile EZRC facility is located at the car park at the Ocean Gate.

The Automatic Countermeasures Zone

The extent of the automatic countermeasures zone is set at a distance of 500 metres from the vessel in all directions (See Figure 2 page 1-13). This is where automatic actions would commence immediately on the declaration of an “Off-Site Nuclear Emergency”, irrespective of classification. Within this zone all people not essential to the management of the emergency would be evacuated and issued with Potassium Iodate tablets as directed. Evacuation and alerting of an incident would occur via loud hailer announcements by ABP staff and by the sounding of a portable siren close to the berth. All people working within this zone must be given instructions prior to the visit on what action they should take in the event of an emergency.

VTs will be evacuated and will relocate to Calshot or Semaphore Tower, Portsmouth in accordance with the ABP Contingency Plan. The VTs officer will report to the ABP incident officer at the Ocean Gate Incident Co-ordination Centre to update as appropriate.

The Automatic Evacuation Zone

This zone is the whole of the Eastern Docks area that lies beyond the ACMZ, includes the ACMZ and Oceanography Centre. All personnel will be evacuated from this area upon declaration of an “Off-Site Nuclear Emergency”.

Pre-planned Countermeasures Zone

This zone includes the Automatic Countermeasures Zone and extends to a radius of 1.5km from the berth. The probability of countermeasures being required within this zone is very low in absolute terms. To provide the greatest practicable level of public protection it is a requirement that the MOD notify civil authorities specifically at the commencement of an “Off-Site Nuclear Emergency” so that shelter and Potassium Iodate tablet distribution can be implemented in the downwind sector of the Pre-Planned Countermeasures Zone i.e. to a distance of 1.5km. Plans are contained within the PITS Operational Procedures Manual for distribution of PITS. There will also be a requirement for outline contingency planning for evacuation from this zone (See Figure 3 page 1-14). The MOD will assist civil authorities as required in implementing these countermeasures.

Extendibility Zone.

This zone includes an area extending in all directions from the boundary of the Pre-Planned Countermeasures Zone and extends to a radius of 10km from the berth. (See Figure 4 page 1-15). Assessments of the consequences of reactor emergency demonstrate that emergency countermeasures would only be required beyond the Pre-planned Countermeasures Zone in the very improbable event of a large release of fission products to the atmosphere. The probability of this event is so low that detailed emergency plans are not required. In view of the need for some pre-planning to be carried out to achieve effective implementation outline contingency plans for the Pre-planned Countermeasure Zone provide a basis for the further extension of countermeasures. The zone extends in all directions around the Pre-planned Countermeasures Zone but following an emergency it is anticipated that the requirement for countermeasures would be confined to the downwind areas only. Advice on the need for these measures would be based on a technical

assessment of the way in which the emergency was developing and on an assessment of doses likely to be received by the public.

Beyond the Extendibility Zone the probability of any requirement for emergency countermeasures is so remote that specific plans for emergency public protection are not required. At these distances the main considerations would be monitoring of pasturage contamination and of foodstuffs. Any requirements for foodstuff restrictions would be based on EC Regulations which are mandatory in the UK and which are set at very low levels of contamination. As a result, food restrictions are likely to extend far beyond the area over which other safety measures are required, and will continue to be applied even when the immediate danger to the public from direct irradiation has ended. This is unavoidable but will need to be carefully explained in the context of the co-ordinated effort in dealing with the emergency.

Site Specific Intervention Levels

Any extension of countermeasures beyond those pre-planned within the 1.5km Pre-planned Countermeasures Zone should be based on a comparison of projected individual doses with Site Specific Intervention Levels (SSILs). These intervention levels are known as Emergency Reference Levels (ERLs), and are specified in terms of the dose to an individual, which would be averted by taking the relevant countermeasure. Like ERLs, SSILs refer to the dose that can be averted by taking the countermeasure. SSILs should be selected from within the ERL range but should be drawn up locally in order to reflect local geography and other factors. SSILs should exist for evacuation within the Pre-planned Countermeasures Zone, and for other countermeasures within the Extendibility Zone. The agreed SSILs for the implementation of countermeasures in the Southampton plan are as follows:

COUNTERMEASURE	SITE SPECIFIC INTERVENTION LEVEL (mSv)
Shelter	ERL 3 mSv (Whole body dose)
Potassium Iodate Tablets	ERL 30 mSv (Thyroid dose)
Evacuation	ERL 30 mSv (Whole body dose)

NUCLEAR REACTOR PLANNING ZONES

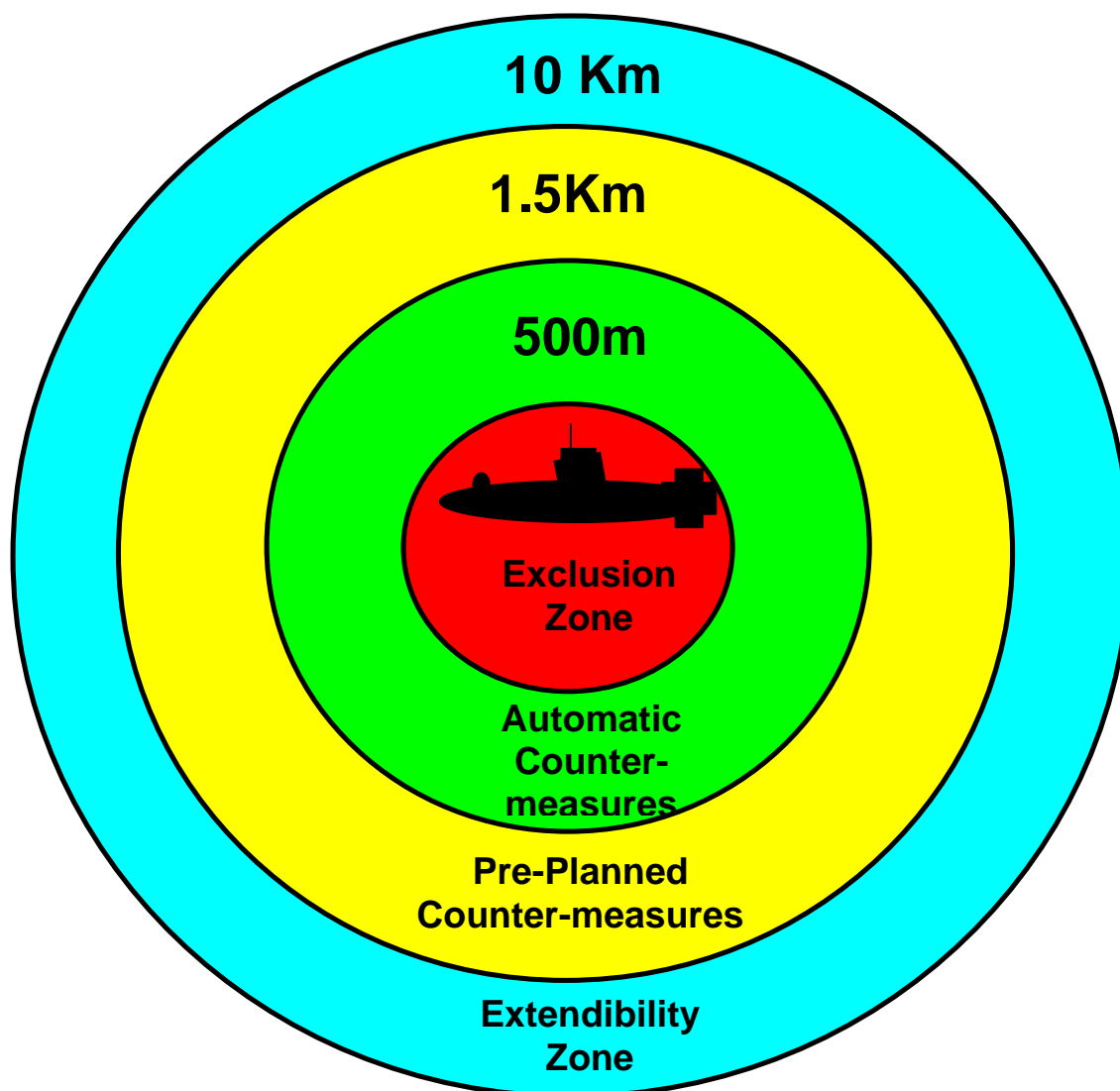


Figure 2 – Nuclear Reactor Planning Zones



Figure 3 - Planning Zones for Designated Operational Berth



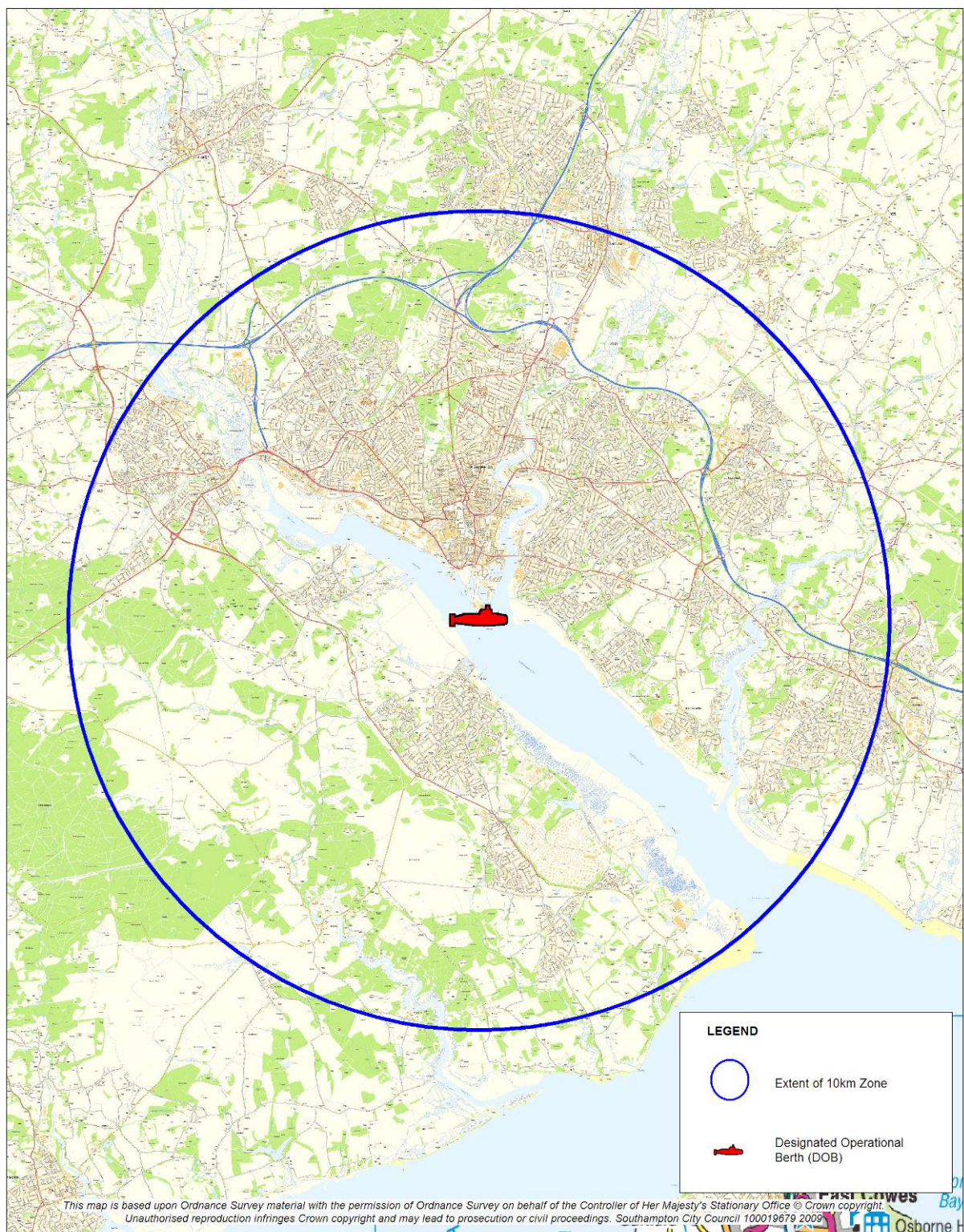


Figure 4 - Extent of the 10km Zone



1.7. Empowering Legislation

Two pieces of primary legislation govern how we plan for the unlikely possibility of a radiation emergency.

Radiation (Emergency Preparedness and Public Information) Regulations 2001

Regulation 9 requires the local authority to maintain an **Off-site emergency plan**, and gives direction on its content and obligations upon the authority.

The Civil Contingencies Act 2004

Within its Sections, Schedules and Regulations it sets out the framework for emergency planning and response and recovery in the UK.

2 Objectives and Definitions

2.1. Objectives

The aim of this plan is to protect the public and workers and to make provision for an effective response by Southampton City Council to a radiation emergency, when called upon to do so, by setting out: -

- (i) the pre-planning arrangements for the impending visit of a nuclear powered vessel which includes an interagency check off meeting
- (ii) details of the organisations involved in a response
- (iii) the emergency actions to be taken
- (iv) post-event remedial actions
- (v) the 24 hour contact telephone numbers for all staff and agencies with responsibilities under the plan. *(not in the public version of the document)*

2.2. Key Definitions

The Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPPIR) sets out the following definitions

‘Operator’ is defined as:

- (a) any premises other than a licensed site, where the person who is, in the course of a trade, business or other undertaking carried on by him, in control of the operation of premises, and
- (b) in the case of a licensed site, is the licensee.

For the purposes of this plan the Operator is the Royal Navy.

“On-site” means the “premises”, as set out in Regulation 2(1) in Radiation (Emergency Preparedness and Public Information) Regulations 2001, which in the case of the Port of Southampton (a non nuclear licensed site that is not controlled by MOD) is the nuclear powered vessel at its geographical location within the port. The MOD has produced an Operator’s Plan for the premises which links in with the Off-Site plan SotonSafe.

“Off-site” means the area outside the nuclear powered vessel including the detailed emergency planning zone. In accordance with Regulation 9 (1), as defined in the Radiation (Emergency Preparedness and Public Information) Regulations 2001, this zone is determined by the HSE and has been set at a distance of up to 1.5km from the vessel.

Port of Southampton

For the purposes of this Plan the Port of Southampton is as defined in Section 5 of the Southampton Harbour Act 1887, as that section has effect in accordance with Section 16 of the British Transport Docks Act 1972.

This includes all the land area within the Port boundary in the Western and Eastern Docks as well as all the waters within the Statutory Harbour Area and the Southampton Competent Harbour Authority Area (Pilotage).

Within these waters all maritime vessel movements are subject to the direction of the Southampton Harbour Master who derives his authority directly from the Southampton Harbour Acts and by agreement with the Queen’s Harbour Master Portsmouth.

X Berth

X Berths are cleared for the building, commissioning, refitting, re-fuelling or de-fuelling of nuclear powered vessels or for the repair and maintenance of the nuclear plant together with tests and trials.

Designated Operational Berth

A Designated Operational berth (previously known as a Z Berth) is cleared for operational or recreational visits by nuclear powered vessels. These berths are not cleared for the maintenance or repair of the nuclear plant. **The Southampton berth is this type.**

2.3. Nuclear Reactor Emergency - General

General

It is impossible for an emergency in a naval pressurised water reactor to result in a nuclear bomb type explosion. However, it is theoretically possible that some sets of circumstances could lead to an emergency in which radiation and/or radioactive contamination would be present outside the vessel.

The operator has undertaken an assessment of the risk associated with potential emergencies through the identification of a Reference Accident. A Reference Accident is defined as the worst-case accident which, although unlikely, is realistically possible.

In accordance with REPPIR the Reference Accident forms the basis of emergency response plans for the protection of the work force and the public who may be affected.

The HSE/ONR have determined that an off-site emergency plan is required for the protection of the public within an area extending to a distance of not less than 1.5km from a submarine berth.

Nuclear Reactor Emergency

It is impossible for an emergency in a naval pressurised water reactor to result in a reactor explosion. The only reactor emergency that can result in a hazard to personnel outside the vessel is one, which leads to a release of the fission products normally retained within the fuel elements in the reactor core.

As part of the safety assessment process, which is established to ensure that all reasonably practical measures have been taken to prevent emergencies, detailed analyses are carried out into the mechanisms by which a reactor emergency could be initiated, and the performance of the many safety systems. The results of such analyses provide quantitative estimates of both the probability of emergencies and their consequences in terms of the magnitude of any release of fission products into the environment and the

resulting doses. The results of this work have been independently assessed and endorsed by the Defence Nuclear Safety Committee (DNSC).

Reference accident characteristics

- A number of cautious assumptions are made about the radioactive material inventory and other characteristics of the reactor.
- A leak occurs in the primary cooling circuit of the reactor, which cannot be isolated and is beyond the capacity of coolant make-up systems.
- A series of unlikely engineering and other failures also occur.
- The primary coolant leak coupled with the other failures lead to damage to the fuel within the reactor after more than 3 hours, resulting in elevated gamma radiation levels around the reactor.
- The fuel damage in turn releases some radioactive material from the reactor. This is largely contained within the submarine but a small proportion may be released to the environment over the following 1-2 days.
- The radioactive material would be carried downwind and would therefore present a hazard in the downwind zone only. This hazard would arise principally via inhalation initially.

The development of MOD contingency plans takes account of the full range of potential emergency scenarios, including those having a low probability of occurrence. This is consistent with International Commission for Radiological Protection (ICRP) recommendations. In order to provide some context for the plans described in this document, the assessed probabilities of emergencies that would give rise to particular consequences are included here for information.

- a) The frequency of emergencies for which the upper ERL for evacuation would be exceeded beyond the Automatic Countermeasure Zone is once in 50,000 years of continuous reactor operation.
- b) The frequency of emergencies for which the upper ERL for shelter or Potassium Iodate tablet distribution would be exceeded beyond the Pre-Planned Countermeasure Zone is once in 50,000 years of continuous reactor operation, and for evacuation once in 200,000 years.
- c) The frequency of emergencies for which the upper ERL for any emergency countermeasure would be exceeded beyond the Extendibility Zone is once in 200,000 years of continuous reactor operation.

In respect of a-c above it is understood that recent (06/09) MOD/HSE assessments of reference accident will make this frequency less, rather than more, likely.

2.4. Emergency Classifications

Definitions of notifiable alerts are as follows

Reactor Safety Alert (RSA) – an abnormal event which poses a potential threat to, or causes serious concern for, reactor plant safety. It is emphasised that a Reactor Safety Alert does not constitute a reactor emergency or require the initiation of either the On-Site or Off-Site plans, albeit VTS (ABP) and the Local Authority will likely be informed as a precaution.

“Off-Site Nuclear Emergency” (OSNE) - a hazardous condition which requires the implementation of urgent countermeasures to protect the public – (*Equates to former Category 1*)

OSNE Qualifiers – The following qualifiers may be used as appropriate for an OSNE:

Radiation hazard confirmed – an Off-Site Nuclear Emergency in which a radiation hazard has been detected – (*Equates to former Category 2*)

Release of radioactive material confirmed – an Off-Site Nuclear Emergency in which a release of radioactive material to the environment has been detected –
(*Equates to former Category 3*)

Any OSNE with or without a qualifier would trigger the Off-Site Emergency Plan:

An “**Off-Site Nuclear Emergency**” (**OSNE**) refers to a situation when it is likely to lead to or has resulted in a release from the fuel but remain contained within the primary circuit. This classification definition allows for the precautionary implementation of contingency plans in a period before any hazard exists.

At an “**Off-Site Nuclear Emergency**” (**OSNE**) -**Radiation hazard confirmed**- fission products have been released from the fuel to cause a radiation hazard but containment remains effective in preventing the release of the fission products to the environment outside the pressure hull. It is normally an indicator of severe core damage.

An “**Off-Site Nuclear Emergency**” (**OSNE**) – **Release of radioactive material confirmed** - is declared when a release of fission products outside the submarine has been detected.

While it is convenient to discuss emergency types in terms of emergency classification, in the remote possibility that a severe emergency were to develop it should be recognised that the classification could change with time as the emergency progressed, or as more information became available. An “Off-Site Nuclear Emergency” notification might refer to an initial event, to be followed by a qualified “Radiation Hazard Confirmed” notification report as a hazard inside the submarine was detected followed by a qualifier of “Release of Radioactive Material Confirmed” as monitoring outside the vessel detected that a release had occurred. Such a progression is by no means automatic, however. Indeed, generic assessments demonstrate that for a given classification of emergency the most likely eventual outcome is that the emergency will not develop to the next classification/qualifier.

The multi-agency Off-Site Emergency Plan, including the implementation of automatic countermeasures should be instigated in full or such parts as necessary following any declaration of a reactor emergency, irrespective of Classification. This is also a requirement of the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPPIR).

On receipt of a notification of an “Off-Site Nuclear Emergency”, both the Operator’s on-site plan (SotNuSafe) and the off-site plan (SotonSafe) plans will be activated by means of the cascade call-out shown at Figure 10 page 5-4.

This page is intentionally blank

3 Organisational Structures

3.1. NUCLEAR EMERGENCY RESPONSE ORGANISATION – NERO

Command and Control

a) Purpose.

The purpose of the Nuclear Emergency Response Organisation (NERO) is to initiate, and subsequently control, the emergency procedures and appropriate actions in the event of a nuclear reactor emergency at the Port of Southampton.

The Nuclear Emergency Response Organisation's role is to protect the public and workers and mitigate the consequences of an emergency.

b) Overall Structure.

The basic structure of the Nuclear Emergency Response Organisation is shown at Figure 5 page 3-5. It is structured around 3 principle levels of Command and Control in accordance with Home Office Guidelines for Responding to Emergencies.

c) Operational Level (Bronze). – Incident Co-ordination Centre

Within the Port of Southampton this comes under the coordination of the Southampton Harbour Master's representative whose Headquarters is based in Ocean Gate within the Eastern Docks. He will act as Incident Officer (ABP) and be advised by the on-site representative from the Naval Base Commander (Portsmouth). When alerted by the cascade call-out, a Health Physicist from the DSTL will deploy to the operational level, as will representatives from the Emergency Services to give support. The operational level organisation looks inwards and is responsible for directing the activities within the off-site (Port of Southampton) area. The organisation also provides support to the operator's emergency plan. Also at the Operational level will be the Emergency Monitoring Headquarters (EMHQ) which is a mobile HQ which sets up in the car park area to the rear of Ocean Gate and provides facilities to support the radiological monitoring task undertaken post emergency by the Local

Emergency Monitoring Team LEMT (DSTL). (For further details relating to Health Physics and Monitoring see Para. 3.3).

1. The Technical Advisory Support Group (TASG): The TASG comprises technical and operating specialists. Its purpose is to provide submarine and reactor technical information and advice to the Incident Officer (ABP). In order that the TASG can perform its task, it is essential that it is in possession of the fullest possible information concerning the state of the reactor plant at the time of the emergency.
2. All activities undertaken at the operational level will be in co-ordination with the Tactical and Strategic levels of co-ordination and will operate within the policies set at those levels.

d) Tactical Level (Silver).

The purpose of tactical level of management is to:

- i. Determine priority in allocating resources
- ii. plan and co-ordinate all resources involved with the response undertaken
- iii. obtain other resources as required
- iv. provide updated information
- v. ensure public protection and information
- vi. consider implications for consequence management

The organisation is commanded by a Senior Police Officer and based at the Tactical Co-ordination Centre (TCC) normally at City Depot, adjacent to Dock Gate 20, Southampton (See figure 8 page 3-10). Reserve locations for the TCC have been identified and if required will be decided at the time by police in consultation with Southampton City Council. New Forest District Council will also open their Tactical Co-ordination Centre at Appletree Court.

The TCC (Southampton) comprises Local Government Cells including Public Health as well as those from the Emergency Services, the Military Co-ordinating Authority representative and a Media and Communication group.

The Military Co-ordinating Authority is led by a Senior Officer appointed by the Naval Base Commander and the team consists of technical and radiological advisers as well as support staff. (See para.3.3 for details).

The Health Physics Radiation Data Management Cell, which is also located at Tactical Level and the role of this cell is specified at within para.3.3.

The Tactical Co-ordination Centre should contain the following equipment:

- adequate telephone, fax and other communications equipment
- refreshment facilities
- conference and other accommodation for all inter-agency staff
- display boards to provide timely situation updates and other data
- relevant mapping
- Information available on the following:
 - Hospitals
 - Schools
 - Open markets and bulk food storage depots.
 - Vulnerable groups within the community
 - Appropriate personal protective equipment:

e) Strategic Level (Gold).

Chaired by a Senior Police Commander and based at the Strategic Co-ordination Centre which is formed at the Police Training School, Netley. (See figure 9 page 3-11). Reserve locations for the SCC have been identified and if required will be decided at the time by police.

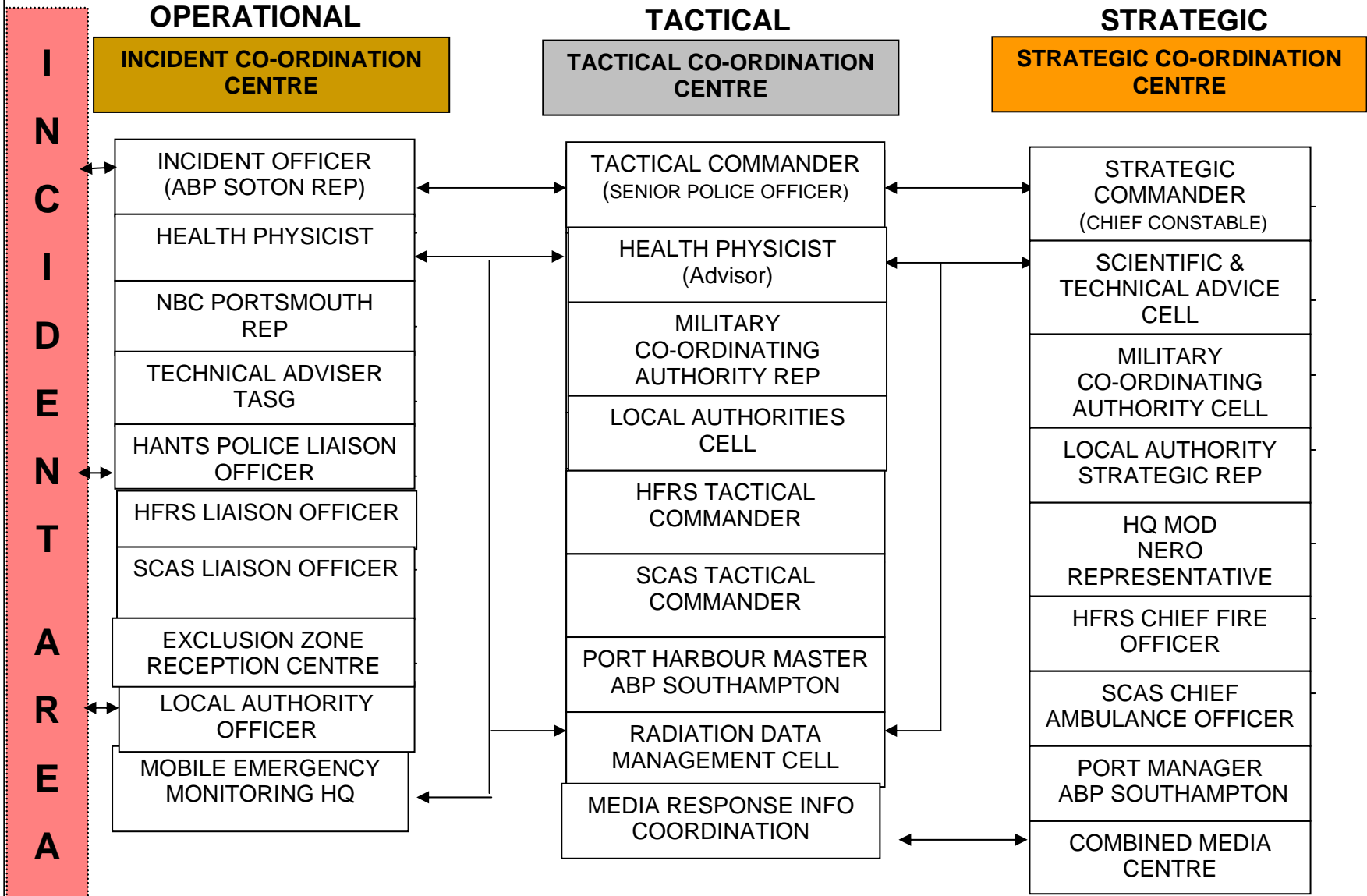
The Chair of the group will change to the Local Authority Chief Executive post-emergency to co-ordinate remediation issues. The location may also change site at that time e.g. to Civic Offices, Southampton.

The Strategic Co-ordination Centre, Netley comprises the Emergency Services, the Scientific and Technical Advice Cell, Local Authority, Government Agencies, Military Co-ordinating Authority (MCA) and a Media and Communications Group. The Director of Public Health leads the STAC along with a team of health advisers, Environmental Health Officers, radiological advisers and Environment Agency. The MCA will be led by the Naval Base Commander along with a team of technical and radiological advisers.

The purpose of the strategic level of management is to:

1. establish a framework of policy within which tactical commanders will work
2. give support to the tactical commander(s) by the provision of resources
3. give consideration to the prioritisation of demands and health requirements
4. determine plans for the return to a state of normality
5. consider intermediate time health requirements and monitoring once the incident is brought under control
6. liaise with the Government Offices and Ministers during the incident.
7. Set the media framework.

NUCLEAR EMERGENCY RESPONSE ORGANISATION



INCIDENT CO-ORDINATION CENTRE AT OCEAN GATE, ABP SOUTHAMPTON

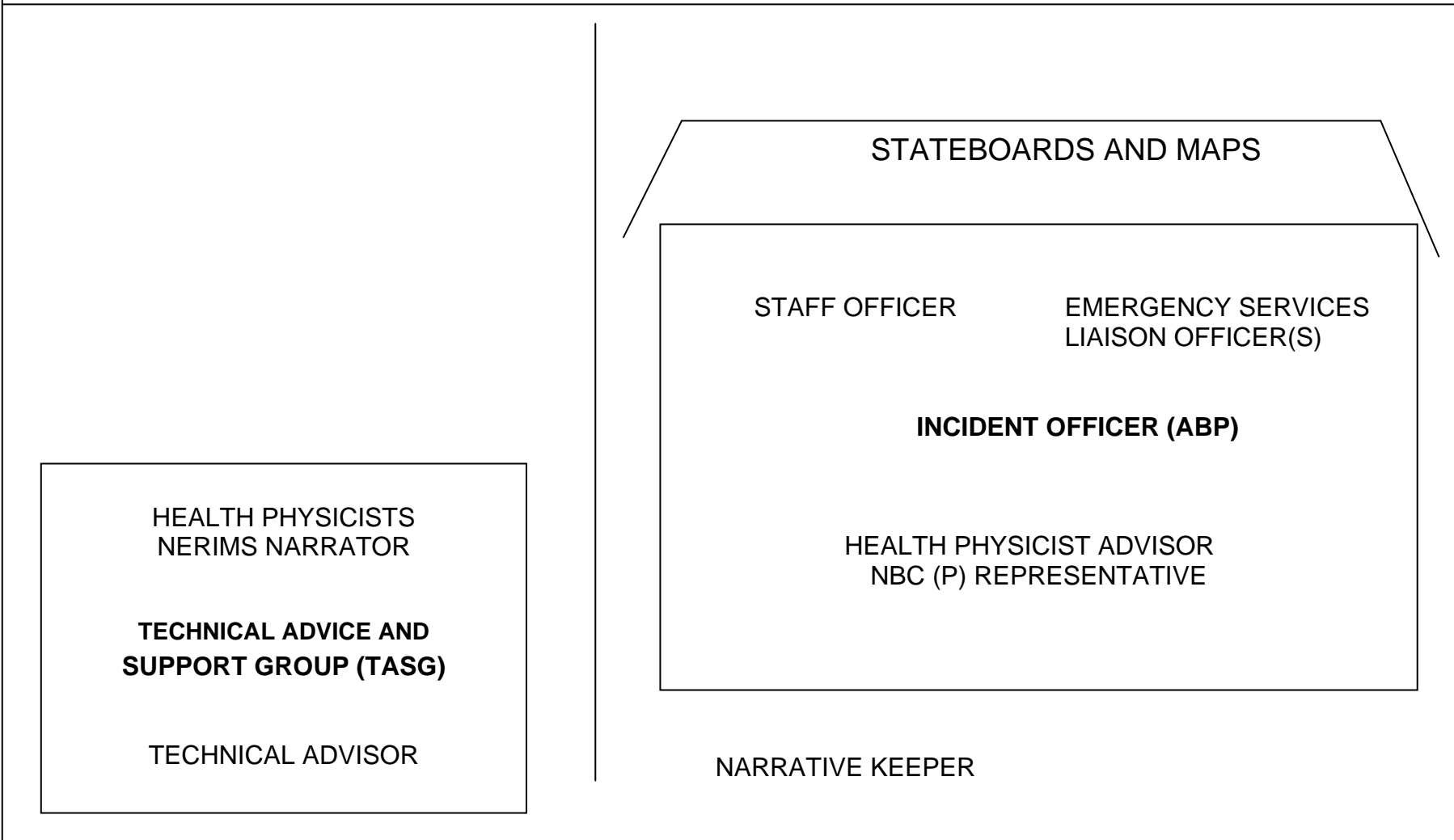


Figure 6 – Incident Command Centre – Ocean Gate - Floorplan

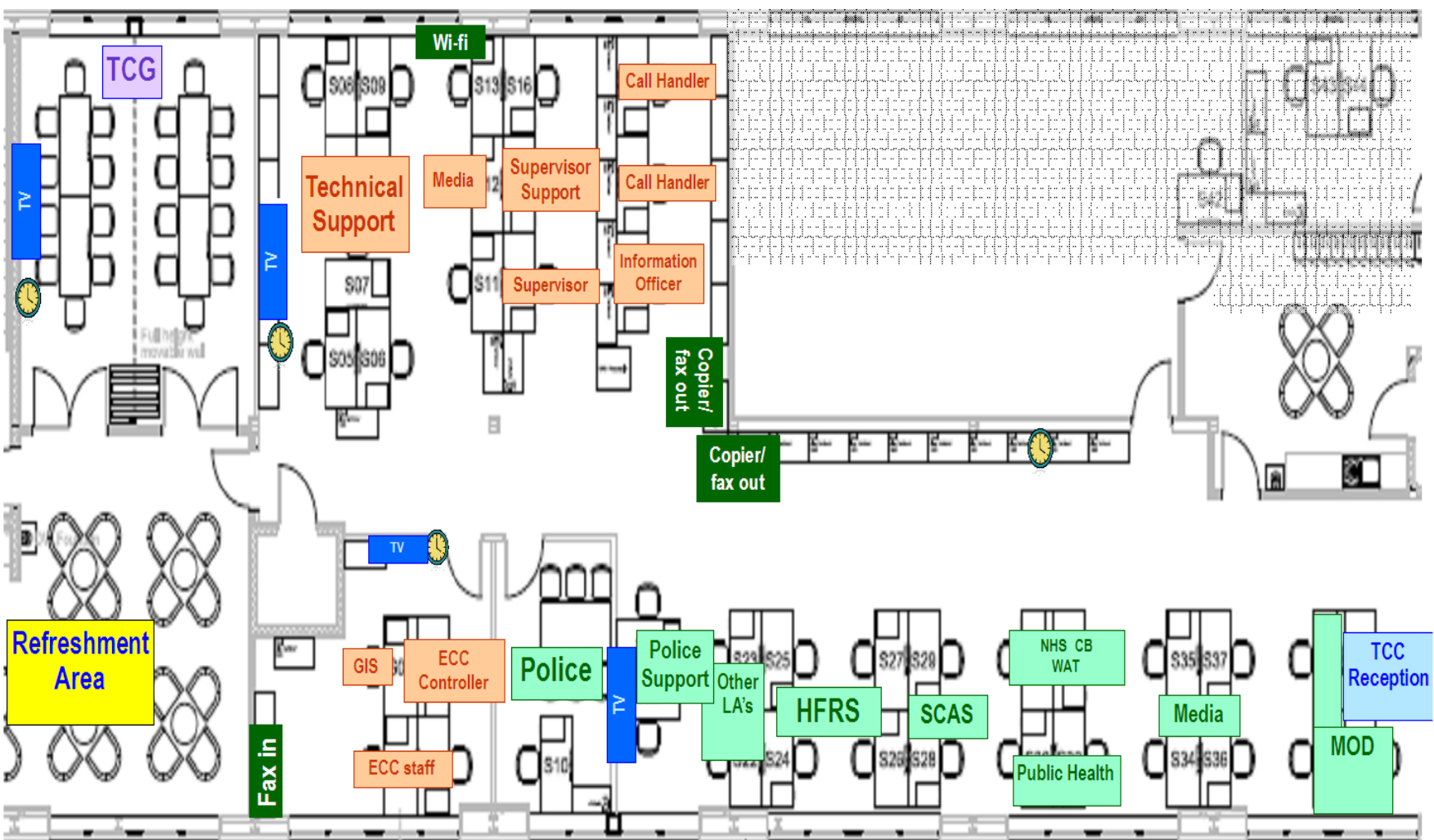


Figure 7 – Tactical Command Centre – City Depot – Floor Plan

3.2. FUNCTIONS OF KEY LOCAL NERO PERSONNEL

1. The Submarine Commanding Officer:

In the early stages of a nuclear reactor type emergency the Submarine Commanding Officer will be the Incident Officer until relieved by the Incident Officer (ABP). This officer is responsible for notifying the local NERO immediately in the event of a reactor emergency.

2. The Incident Officer (ABP):

They are responsible to the Tactical Commander for directing all activities within and around the docks area. Their duties will include:

- a) Establishing the scope of the emergency
- b) Minimising the consequences of the emergency
- c) Ensuring automatic countermeasures are implemented
- d) Ensuring casualties receive medical attention
- e) Ensuring unauthorised persons do not enter the area
- f) Ensuring that all personnel who are authorised to enter the area are subject to full health physics control
- g) Ensuring that reliefs are provided for essential personnel
- h) Authorising emergency radiation exposure levels for intervention staff (in consultation with the Health Physicists) and in accordance with the employers directives authorising such exposure
- i) Ensuring that appropriate instructions and advice are issued to other vessels within the area

3. The Tactical Co-ordination Centre:

As members of the emergency services and other agencies arrive they will concentrate on their specific tasks within their areas of responsibility. Each agency will liaise fully and continually with others employed in the response to the emergency to ensure an efficient and combined effort. This will include a designated member of each cell to receive and despatch information within the TCC and therefore ease communication flow. The Police will act as the co-ordinator of this response, resources will be needed outside those immediately available and therefore a tactical level of co-ordination is introduced. Its prime tasks are to determine the priority in allocating resources, to plan and coordinate the overall response and to obtain other resources as required.

4. The Military Co-ordinating Authority (MCA):

The MCA is in overall command of all local MOD post-emergency response and procedures. They will be located at the Strategic Co-ordination Centre at Netley together with a representative at Tactical and will be responsible for liaising with the local civil authorities and providing them with all relevant information and advice. The MCA reports to MOD HQ NERO and is responsible for keeping them informed as the situation develops.

5. The Strategic Co-ordinating Group:

The purpose of the strategic level of co-ordination will be to formulate the overall policy within which the response to the nuclear reactor emergency will be made. In addition the strategic co-ordination function will ensure that priorities for demands by the tactical co-ordination are met as well as setting out plans for a return to normality once the incident has been brought under control. The strategic co-ordination will also be aware of the wider role, which may encompass central government interests, handling requests for advice and assistance from individual services and agencies, and formulating a media strategy. The strategic response comes under the control of the Chief Constable or his representative and will normally be based at the Netley Police Support HQ. The MCA together with health physics and technical advisers will locate to the strategic level when it is established. If strategic level is established immediately, MCA will move there. The local MOD cell will be supplemented by personnel from HMNB Devonport (NEBUST) to achieve this.



Figure 8 - Key Locations in Relation to the Docks





Figure 9 - Location Strategic Coordination Centre, Netley



3.3. HEALTH PHYSICS AND MONITORING ORGANISATION

Monitoring Information

The immediate radiation protection advice and monitoring support is based on resources from within the Southampton and Portsmouth areas. Additional resources from Naval Bases, Civilian authorities, the Royal Air Force and the Army will become available over those hours following the emergency.

Health Physicists (formerly HPAs)

Health Physicists, (formerly known as HPA's) to the Incident Officer (ABP) and the Military Coordinating Authority (MCA) are provided by DSTL. The key objective for the Health Physicist is to provide radiation protection advice to protect workers, the public and the environment. They provide advice regarding the optimum response taking into account the particular circumstances of the emergency in order to minimise the hazards to both people and the environment.

Monitoring at Operational Level (Bronze)

Local Emergency Monitoring Organisation. This is a dedicated NERO team which is deployed in Southampton. The team is based around the Local Emergency Monitoring Team (LEMT (DSTL)). Its task is to gather radiological monitoring information, process and present it in a form on which decisions can be made, e.g. the need for shelter or evacuation, areas over which Potassium Iodate tablets should be distributed, stay times for re-entry to restricted zones etc. The monitoring organisation consists of three elements:

- a) Emergency Monitoring Headquarters (EMHQ). A mobile EMHQ, located at the car park area behind Ocean Gate directs the deployment of monitoring assets and co-ordinates the monitoring information gathered. The monitoring information is passed via the HP Cell at Ocean Gate to the Incident Officer (ABP) and Tactical Co-ordination Centre.

- b) Nuclear Emergency Monitoring Team (Alverstoke): One mobile monitoring team, consisting of a driver and a health physics monitor is available in a Monitoring Land Rover (MLR) during the initial stages of the emergency. Additional support is provided over the following 12 hours from the Naval Emergency Monitoring Teams from Devonport and Clyde (NEMT (Devonport) and NEMT (North)) and Civilian authorities. The initial monitoring team is deployed downwind to undertake air sampling as a priority and to provide the Health Physicists with the monitoring information so as to allow the Health Physicist (Advisor) in the Tactical Co-ordination Centre to assess the adequacy of the automatic countermeasures relating to shelter and PITs issue.

During the visit of a nuclear powered vessel to Southampton an Emergency Monitoring Team will locate in accordance with the Emergency Plan. The role of the team will be to undertake a pre-determined monitoring strategy in order to provide data relating to radiation and contamination levels in the area. The located team comprises a Monitoring Controller (MC), Assistant MC (AMC) and two field monitors, with a mobile EMHQ and Monitoring Land Rover (MLR) and is adequate to provide early monitoring data to back up automatically initiated countermeasures. Additionally, further resources are held at one hour's notice to deploy from Portsmouth (one team of field monitors) and Devonport (MC, AMC and two field monitors).

During the early stages of any incident the priority will be to undertake air sampling and ground deposition monitoring on the central axis of a postulated release plume in an area within the public domain (some 500-700 metres downwind of the submarine). Close-in monitoring for gamma radiation doserate is undertaken by the submarine and by a deployed automatic monitoring system. (Dose levels for gamma radiation are read from direct reading instruments and are plotted for use in deciding when there is a radiation hazard external to the submarine).

The monitoring team undertake air sampling as a priority and provide the Health Physicists with the necessary information to decide whether the

automatic countermeasures (for PITs issue and Shelter out to 1.5km) have been adequate. This information is provided as an absolute priority and to the Police Incident Commander and Local Authority to enable them to make a decision on the effectiveness of the automatically initiated countermeasures.

The monitoring information is loaded onto NERIMS at EMHQ and the distances out to where sheltering and issue of PITS are required in the downwind sector are automatically calculated based on the SSILs used for Southampton. This will enable an assessment to be made on the adequacy of the automatic countermeasures that were previously implemented and to provide any additional advice as required.

Ground monitoring is undertaken at the same time as air sampling, whilst a release is postulated or continuing, and after any release stops. Ground Monitoring results are also entered onto NERIMS at the EMHQ and will be used to facilitate decision making on a number of issues including the implementation of food bans and any remediation measures likely to be necessary during the recovery phase of the emergency.

Health Physicists to the Incident Officer (ABP).

The main priorities are to:

- a. On arrival confirm status of the reactor emergency (OSNE, OSNE radiation hazard confirmed, OSNE release of radioactive material confirmed) and ascertain wind direction.
- b. Check status of countermeasures for the Exclusion Zone (EZ), Automatic Countermeasure Zone (ACMZ), the remaining Port area including any ships, clearly identifying as far as possible how many personnel may still be in the exclusion zone and ACMZ
- c. Gain latest monitoring information and latest technical information available on the status of the nuclear powered vessel (NPV)
- d. Check if any intervention activities are planned and advise on whether they are justified

Health Physicist at the ICP

In addition to the priorities for the Health Physicist to the Incident Officer, the main priorities are to:

- a. Ascertain if any mitigation or lifesaving actions being considered
- b. Confirm the correct employees and intervention teams are available and where possible dressed, standing by and checking their equipment e.g. EPDs, communications?
- c. With OIC ICP, begin completing Permit to Enter forms and discuss possible interventions with the team and establish if they have any concerns.
- d. Follow the intervention procedure detailed in SOTNUSAFE”.

Dstl Health Physicist to Tactical Level (Silver)

The role of the Dstl Health Physicist is to provide specialist radiation protection advice and health physics support to the MOD contingent at Silver and to provide support to the whole Silver Command team. Note Dstl are appointed as the Radiation Protection Adviser (RPA) to MOD and other organisations involved in the response may have their own RPA appointed.

The main priorities of the Health Physicist Tactical are:

- a. On arrival, obtain latest information regarding status of reactor incident/emergency and category (e.g. RSA, ONSE etc), status of countermeasures for Shelter/PITs, latest technical information from Technical Advisory Support Group (TASG), TRAMS readings and contamination monitoring results from NEMT/NERIMS and the Wind direction.
- b. Establish contact with Dstl Health Physicists at Bronze and Gold to identify key priorities.
- c. Liaise with the MOD Senior Representative (MCA Liaison Officer) regarding: the likelihood of an off-site radiological hazard occurring, current monitoring results

and adequacy of current countermeasures, monitoring status and the capability to deliver the Gold/STAC monitoring strategy, status of any intervention tasks.

- d. Provide RPA advice to MOD essential workers including teams supporting issue of PITs.

Public Health Tactical Officer

The Public Health Tactical Officer provides public health input to the Tactical Co-ordinating Group. The PHTO will operate during the response phase, and in the recovery phase until other structures are established or residual tasks revert to individual agencies. A Consultant in Public Health from Southampton City Council will act as the PHTO.

The role of the PHTO is to:

- Act as the main point of contact between the Director of Public Health and the TCG
- Act as the main point of contact between the STAC and TCG.
- To work closely with the Health Physics Data Management Cell to provide public health advice to the TCG
- Providing the first point of contact for PITs related health queries and liaise with medical and public health partners to resolve queries
- Provide agreed STAC public health content for publication on local health and partner help lines, press and media releases

Strategic Level (Gold)

- a) Scientific and Technical Advice Cell (STAC)

The function of the Scientific and Technical Advice Cell (STAC) is to ensure that appropriate advice is given to the Police Strategic Commander on the health implications of the incident. The STAC Chair, usually the Public Health Director, will be responsible for ensuring that the expert members of the STAC provide appropriate advice to the Police Strategic Commander. The STAC is formed at the request of the Police Strategic Commander.

b) Members of the Scientific and Technical Advice Cell (STAC)

- Public Health Director – to chair the STAC
- Assistant Director of Public Health / Consultant in Public Health
- A PHE Representative (HIOW & Dorset PHE Centre)
- Health Physicist from MOD
- Fire & Rescue Service Hazmat Officer
- PHE Physicist
- Environmental Services and Consumer Protection (Southampton City Council)
- Environmental Health Officer (New Forest District Council)
- Food Standards Agency (FSA)
- Health Protection Agency (Radiation Protection Division)
- DEFRA
- Southern Water
- Environment Agency

c) Roles of the Scientific & Technical Advice Cell (STAC) Members

- To assess the medium to long-term consequences of the radiation exposure.
- To advise the Strategic Police Commander on the health implications of the incident.

- To advise the Strategic Co-ordinating Group on evacuation and containment.
- To agree with Strategic Co-ordinating Group advice given to the public on health aspects of the incident.
- To keep a written record of decisions made and the reasons for those decisions.
- To liaise with health cell at the SCG and other Health Authorities/PCTs.
- To provide public health personnel to participate in press conferences/briefings as members of the STAC.

Duties of the Health Physicist to the MCA at Strategic (Gold) level include:

The primary role of the Dstl Health Physicist at Gold is to provide specialist radiation protection advice and health physicist specialist support to the MCA and his team and to MOD responders. The secondary role is to provide information and support to the all agency response team. Note the all agency response team will have statutory and executive responsibilities and Dstl should be deferring to these agencies after MOD issues have been raised.

The main priorities of the Health Physicist Tactical are:

- a. On arrival, make contact with the MCA and his team and identify the MCA's key strategic priorities for MOD as the Lead Government Department, obtain latest information regarding status of reactor incident/emergency and category (e.g. RSA, ONSE etc), status of countermeasures for Shelter/PITs, latest technical information from Technical Advisory Support Group (TASG), TRAMS readings and contamination monitoring results from NEMT/NERIMS and the Wind direction.
- b. Establish contact with Dstl Health Physicists at Bronze and Silver.
- c. Provide support to 42 Geo with the generation of maps or monitoring plots

- d. Agree with the MCA the frequency for any meeting and discussions. Normally one HP supports the MCA and his team directly and the second HP supports the STAC and RWG.
- e. Attend STAC meetings and report back any key issues to the MCA.
- f. If there are sufficient resources attend the RWG meetings but the priority is to support the STAC.
- g. Brief the MCA or his Staff Officer just prior to attendance at STAC on any strategic issues including: Current monitoring results, adequacy of Current countermeasures, monitoring status and the capability to deliver the Gold/STAC monitoring strategy, RPA advice for MOD personnel.
- h. Liaise with MOD HQ NERO to inform of any key issues for consideration.
- i. Ensure Operations Log on NERIMS is kept up to date with details of significant events relevant to the emergency.

Role of DEFRA

DEFRA might seek assistance from specifically designated local authority officials to act as investigation officers to assist DEFRA with sampling and other activities which may include the collection of milk samples from farms in the affected area. Sampling is not necessary for some hours after the start of the emergency, but the times of milking and collection are important. Samples are to be one litre and each container is to carry the following information:

- Farmer's name.
- Farm address and telephone number.
- Date and time of milking.
- Date and time of collection.

Roles of Food Standard Agency

- To advise on risks to health from the food supply, short and long term.

- To advise on precautions and bans on fresh food movement, harvesting and dispersal.
- To advise on precautions and bans on food, animals, fish and birds.
- To support the STAC chair.
- To participate in press conference/briefings as required by the STAC Chair.
- To liaise/advise with other health professionals/national experts.

Roles of Public Health England - CRCE

- The provision of expert advice and information relating to the radiological protection aspects of an emergency to government and any strategic group..
- Deployment of staff to key locations including SCG, STAC and the RWG and media briefing centres.
- Activation of an emergency operations centre at CRCE HQ, Chilton.
- Deployment of radiation-monitoring teams capable of measuring environmental contamination and measurements of radioactivity on or in people.
- Undertake the role of national radiation monitoring co-ordination
- Provide expert advice on radiological issues for the recovery phase
- Liaise effectively with but not confined to other key stakeholders in the response at local, regional and national level including the FSA, the EA, the local authority and others.

Roles of Southern Water

- To advise on the quality of drinking water.
- To advise on precautions to be taken with the drinking water.

- To advise on the contingency plans that Southern Water have to provide safe quality drinking water.
- To advise on the contamination of sewage waste.
- To advise on the decontamination measures to be taken with sewage waste.
- To advise on precautions to be taken with sewage waste.
- To advise on contingency plans that Southern Water has to assist the region.
- To participate in press conference/briefings as required.
- To liaise/advise with other health professionals/national expertise.

Roles of the Environment Agency

During the Response Phase

- Investigate and/or assess the situation to ensure protection of people and the environment.
- Advise partners and other organisations on environmental contamination. Advice will be based on sound science where possible, recognising that this may not always be available at the early stages of an incident.
- Provide Environment Agency representatives who have specialist knowledge of radioactive substances at the necessary co-ordination and support centres.
- Advise on appropriate disposal of radioactive wastes.
- Advise Defra on technical and regulatory aspects of the response.
- Provide information to the public and the media, in consultation with other responders and the strategic command at the Strategic Co-ordination Centre.

- Manage flows of regulated waters if appropriate, to minimise impact. This operational response might include releasing water from reservoirs or altering river levels.
- Investigate in line with their statutory duties.

During the Response Phase

- Support the work of the Recovery Co-coordinating Group to assist the community in returning to normality.
- Advise on the impact of radioactive contamination in the environment.
- Work with partner organisations to identify feasible remediation options and support the development of a Recovery Strategy.
- Advise on the management and disposal of wastes contaminated with Radioactivity.
- Advise on the standards and criteria that will need to be satisfied by premises/locations where radioactive waste from remediation can be stored on a temporary basis.
- Advise Defra on any need for an Exemption Order under the Environmental Permitting (England & Wales) Regulations 2010 (as amended) to facilitate the efficient management and disposal of radioactive wastes.

4 Media – Warning & Informing

4.1 PRIOR INFORMATION TO THE PUBLIC

As part of the arrangements to keep the public informed, prior information will be given to the public up to 1.5 km (0.93 miles) from the Nuclear Powered Vessels Berth. This will be in the form of an information leaflet, distributed to homes and made available in the local area through libraries and the council website. The information that must be supplied during a radiation emergency is set out under the provisions of REPPiR and can be seen at para 4.3

Once the information has been disseminated it will be reviewed and reissued during the period not exceeding three years. A copy of the leaflet can be seen at Appendix 4.

4.2 PROVISION OF INFORMATION TO THE MEDIA

Communication – Media and Public Information

It is possible that news of a reactor emergency may become public before the authorities make any official announcement. Local people will notice unusual activity and the availability of mobile phones mean that personnel or contractors within the port at the time of the incident may alert relatives or friends. Interested parties need to be aware that there is the potential for a delay between the incident entering the public domain and their ability to respond. The media and public may contact the authorities before any operational response cells are running.

News media invariably respond to an incident rapidly. Journalists may arrive on the scene before the full emergency services, and a reactor emergency could result in hundreds of media enquiries within the first few hours of the incident becoming public.

We should also expect immediate calls from the public to both the Council and the Health Service asking for a wide range of information and seeking reassurance on health issues, safety precautions and evacuation of homes and schools. Any worries should be dealt with in as reassuring and honest a way as possible.

From a communications and information context, the priority should be to invoke the HIOW LRF Major Incident Media Plan which utilises all means of communication including social media to provide information to the public and establish a Communication and Information Cell (CIC) at the Tactical Co-ordination Centre immediately. This would draw in the City Council, the emergency services and the MOD and, at a later stage, other government agencies.

How the Cell Works

The Communication and Information Cell (CIC) provides the interface with the media and provides public information. It is the point of contact for all information for all agencies, and will be located with the Tactical Co-ordination Centre. It works alongside the help line service that will be set up to deal with calls from the public.

The CIC will be used by all agencies for the release of advice and information to both the public and the media regarding the incident. Specialist briefings by agencies on their own particular actions will be co-ordinated through the CIC. It is essential that agencies inform the CIC of the line they are taking before talking to the media or the public to avoid apparently conflicting information being given out. This should be set within the strategic framework formulated within the Strategic Co-ordination Centre (Gold)

Provision of Public Information

Enquiries from the public will be dealt with by a help line team operated and staff by the Council's Strategic Service Partner. Call handlers will be provided with information to enable them to answer most anticipated enquiries and they will liaise with the Tactical Co-ordination Centre staff where necessary. Calls from the public to the Docks should be re-routed to this number. Hampshire Police will handle all casualty enquiries and information.

Hampshire Constabulary Casualty Bureau (HCCB)

After a reactor emergency the Hampshire Constabulary Casualty Bureau will be activated and its telephone number(s) broadcast to the public.

All enquiries from the public concerning casualties will be directed to the Casualty Bureau. All information on casualties and missing persons from within the Eastern Docks will be passed to HCCB for collation.

Notification of Next of Kin

No information identifying casualties will be released until the next of kin have been informed.

The informing of next of kin will be carried out by military welfare organisations for those personnel in the armed forces. The notification of next of kin will be conducted in consultation with Hampshire Constabulary Casualty Bureau. Hampshire Police will inform the next of kin of civilians employed in the Port of Southampton.

Provision of Information to the Public

There is a requirement under REPIR 2001 for Local Authorities to provide information to the public in the event of a radiation emergency. This information is shown at para 4.3. and could be used to inform the public beyond the Pre-planned countermeasures zone if necessary. Existing media statements could be issued to the media for the public in the extendibility zone.

Pre-scripted initial press releases for use by the Tactical Co-ordination Centre during the stages of the emergency are contained in paragraphs 4.4 – 4.6.

Terminating the off-site emergency arrangements

The Strategic Co-ordinating Group will consider the timing and method of terminating the off-site emergency arrangements, including the content of final statements to the media.

4.3 INFORMATION TO BE SUPPLIED IN THE EVENT OF A RADIATION EMERGENCY

- a) Information on the type of emergency, if possible, how it occurred, where and when, and how it is developing.
- b) Advice on health protection measures, which depending on the type of emergency, might include:-
 - 1. Any restrictions on the consumption of certain foodstuffs and water supply likely to be contaminated;
 - 2. Any basic rules on hygiene and decontamination;
 - 3. Any recommendation to stay indoors;
 - 4. The distribution and use of protective substances;
 - 5. Any evacuation arrangements;
 - 6. Special warnings for certain population groups.
- c) Any announcements recommending co-operation with instruction or requests by the competent authorities.
- d) Where an occurrence which is likely to give rise to a release of radioactivity or ionising radiation has happened but no release has yet taken place, the information and advice should include the following:-
 - 1. An invitation to tune in to radio or television;
 - 2. Preparatory advice to establishments with particular collective responsibilities;
 - 3. Recommendations to occupational groups particularly affected.
- e) If time permits, information setting out the basic facts about radioactivity and its effects on persons and on the environment.

4.4 PRE-SCRIPTED INITIAL PUBLIC SAFETY / MEDIA STATEMENTS

Notes About Usage

These statements must only be used on the authority of the Tactical Commander.

The Police Control Room Inspector will determine the timing and nature of the release of the following public information statement. This will depend on the nature and severity of the incident reported and the delay in establishing the incident related strategic and tactical co-ordination centres.

“Off-Site Nuclear Emergency” At Southampton - Pre-Prepared Media Statement

Initial Statement:

A problem has occurred on board the nuclear-powered vessel HMS..... which is alongside at 38/39 Berth, Eastern Docks, Southampton. No radiation hazard has spread outside the vessel.

The emergency services, the Ministry of Defence, Southampton City Council, New Forest District Council and the Health Service have put their safety plan into operation. Therefore we are issuing precautionary safety instructions to members of the public living in (**define**), which includes the issue of preventative tablets known as Potassium Iodate Tablets (PITs) by Royal Navy personnel. Do not take these tablets until told to do so.

Please read the information leaflet about nuclear submarine visits that was delivered through your letterbox.

Please note that there is no danger whatsoever of a nuclear bomb type of explosion.

We are advising members of the public in the (**define**) area to:

- GO IN** - shut the windows and doors – shut down fans, fires, ventilators or any air conditioning system drawing air from outside the building.
- STAY IN** - don't collect your children from school until you are asked to collect them – the school will take care of them until then.
- TUNE IN** - to local radio or TV. Royal Navy personnel will deliver the Potassium Iodate tablets to your door. If you are out when they call they will leave a leaflet detailing a help line telephone number that you should call for further instructions regarding the issuing of Potassium Iodate Tablets (These arrangements will be confirmed by radio and television announcements).

We will issue more information, so please listen for announcements on:

TV: BBC1, BBC2, Meridian TV.

Radio: BBC Radio Solent (96.1 MHz FM, 99.9MHz)
The Breeze (107.8 MHz FM)
Heart (96.7, & 97.5 MHz FM)
Wave (105.2 MHz FM)
Capital (103.2 MHz FM)

If you need help, you can call the emergency help line on 0800 5 19 19 19.

If you have any health worries call the Non-emergency Health number 111.

Workers and visitors not in residential accommodation in the area are advised to leave to a point beyond **(define)** and not to return until they are informed that it is safe to do so.

If you live outside the area **(define)** you do not need to take any special safety precautions, but we would ask you to stay indoors and keep roads clear to allow easy access for emergency vehicles.

4.5 PRE-SCRIPTED INITIAL PUBLIC SAFETY / MEDIA STATEMENTS

Notes About Usage

These statements must only be used on the authority of the Tactical Commander and with the agreement of the Primary Care Trusts and Local Authorities.

“Off-Site Nuclear Emergency” At Southampton –Radiation Hazard Confirmed - Pre-Prepared Media Statement

A problem has occurred on board the nuclear-powered vessel HMS..... which is alongside at 38/39 Berth, Eastern Docks, Southampton. There is no radiation or contamination hazard to the public beyond the Eastern Docks..

We are advising the public in the (**define**) area to take Potassium Iodate tablets, which should have been delivered to your door by Royal Navy personnel. If you have not received your tablets you should telephone the emergency help line number: 0800 5 19 19 19 for advice.

The emergency services, the Ministry of Defence, Southampton City Council, New Forest District Council and the Health Service have put their safety plan into operation. Therefore we are issuing further safety instructions to members of the public living in (**define**), which includes the issue and taking of preventative tablets known as Potassium Iodate Tablets.

Please read the information leaflet about nuclear submarine visits that was delivered through your letterbox.

If you do not live in the affected area, please do not try to collect tablets – you do not need them and you will hinder safety efforts if you attempt to get them.

Please note that there is no danger whatsoever of a nuclear bomb type of explosion. But there is a radiation hazard in the immediate vicinity of the vessel, although no radioactive materials have escaped into the environment.

We have evacuated non-essential persons from a zone 500 metres around the vessel.

We are also advising members of the public in the (**define**) area to:

- GO IN** - shut the windows and doors – shut down fans, fires, ventilators or any air conditioning system drawing air from outside the building.
- STAY IN** - don't collect your children from school until you are asked to collect them – the school will take care of them until then.
- TUNE IN** - to local radio or TV. Royal Navy personnel will deliver the Potassium Iodate tablets to your door. If you are out when they call they will leave a leaflet detailing a help line telephone number that you should call for further instructions regarding the issuing of Potassium Iodate Tablets. These arrangements will be confirmed by radio and television announcements.

We will issue more information, so please listen for announcements on:

TV: BBC1, BBC2, Meridian TV

Radio: BBC Radio Solent 96.1 FM
Capital FM 103.2 FM
The Breeze FM 107.2 & 107.8 FM
Heart FM 96.7, & 97.5 FM
Wave 105.2 FM
Unity 101 101.1 FM
Jack FM 106 & 106.6FM

If you need help, you can call the emergency help line on 0800 5191919.

If you have any health worries call the Non-emergency Health number 111.

Workers and visitors not in residential accommodation in the area are advised to leave to a point beyond (**define**) and not to return until they are informed that it is safe to do so.

If you live outside the area (**define**) you do not need to take any special safety precautions, but we would ask you to stay indoors and keep roads clear to allow easy access for emergency vehicles.

4.6 PRE-SCRIPTED INITIAL PUBLIC SAFETY / MEDIA STATEMENTS

Notes About Usage

These statements must only be used on the authority of the Tactical Commander and with the agreement of the Primary Care Trusts and Local Authorities.

“Off-Site Nuclear Emergency” At Southampton – Release of Radioactive Material Confirmed- Pre-Prepared Media Statement

This text assumes that an earlier statement has been issued either at either the declaration of an OSNE or OSNE – Radiation Hazard Confirmed. If this has not happened, then modifications incorporating appropriate text from the earlier statements will be necessary.

The emergency services and the Ministry of Defence are still dealing with an emergency on board the vessel HMS in the Eastern Docks, Southampton. Despite efforts to contain the incident, some radioactive materials have now been released from the vessel into the environment. Personnel and equipment to monitor the radiation have been in place since the beginning of the incident and are now establishing the extent of the release of radioactive materials.

Please note that there is no danger whatsoever of a nuclear bomb type of explosion.

We have evacuated non-essential persons from a zone 500 metres around the vessel.

The emergency services, the Ministry of Defence, Southampton City Council, New Forest District Council and the Health Service have put their safety plan into operation. Therefore we are also issuing further safety instructions to members of the public living in (**define**), which includes the issue and taking of preventative tablets known as Potassium Iodate Tablets. If you have not received your tablets you should telephone the emergency help line number: 0800 5 19 19 19 for advice.

We are also advising members of the public in the (**define**) area to:

- GO IN** - shut the windows and doors – shut down fans, fires, ventilators or any air conditioning system drawing air from outside the building.
- STAY IN** - don't collect your children from school until you are asked to collect them – the school will take care of them until then.
- TUNE IN** - to local radio or TV. Royal Navy personnel will deliver the Potassium Iodate tablets to your door. If you are out when they call they will leave a leaflet detailing a help line telephone number that you should call for further instructions regarding the issuing of Potassium Iodate Tablets. These arrangements will be confirmed by radio and television announcements.

We will issue more information, so please listen for announcements on:

TV: BBC1, BBC2, Meridian TV

Radio: BBC Radio Solent 96.1 FM
Capital FM 103.2 FM
The Breeze FM 107.2 & 107.8 FM
Heart FM 96.7, & 97.5 FM
Wave 105.2 FM
Unity 101 101.1 FM
Jack FM 106 & 106.6FM

If you need help, you can call the emergency help line on 0800 5 19 19 19.

If you have any health worries call the Non-emergency Health number 111.

Workers and visitors not in residential accommodation in the area are advised to leave to a point beyond **(define)** and not to return until they are informed that it is safe to do so.

If you live outside the area **(define)** you do not need to take any special safety precautions, but we would ask you to stay indoors and keep roads clear to allow easy access for emergency vehicles.

5 Inter-Agency Response

5.1. Pre Visit Arrangements

Pre Visit Check Off Meeting

Before the arrival of the NPV at the Port of Southampton an interagency check off meeting is held to ensure all agencies are aware and prepared for the visit and to consider pre visit training & briefing of staff, availability of key response staff by agency, and to ensure key facilities & support equipment is available etc.

The NERO State of Readiness

The Port and local MOD NERO will be at an “alert” state of readiness throughout the visit; from arrival of the NPV at Nab Tower (inbound) until passing Nab Tower (outbound) on departure. The response times for the various elements of the organisation at the Alert State are as follows:

VTs Centre	- Immediate (manned at all times)
NBC's On-Site representative	- At 15 minutes during the working day (Within Port Area & contactable by Mobile Phone/ Radio Pager at 1 hours notice out of working hours)
Emergency Monitoring HQ	- Manned continuously throughout working day, at 30 minutes notice at other times.
Incident Officer's Cell Personnel (Located at Ocean Gate)	- at 1 hours notice.
Tactical Co-ordination Cell Personnel (Located at City Depot Dock Gate 20)	- at 1 hours notice
Strategic Co-ordination Cell Personnel (Located at Police Support HQ Netley)	- at 1 hours notice
Exclusion Zone Reception Centre	- Manned continuously throughout working day, at 30 minutes notice at other times.
PITs Distribution Team	- at 1 hours notice
Intervention MOD Personnel	- at 1 hours notice

The staffing arrangements for the emergency response cells is detailed in the VTS Duty Officers local plans for ABP personnel, SOTONSAFE for Local Authority personnel and as detailed in SOTNUSAFE orders for Military personnel. Nominated personnel will be recalled by the Cascade Call-out system as shown at Figure 10 page 5-4.

Communications

Before the arrival of the NPV at the Port of Southampton, sufficient telephone links are available at the Port to facilitate communications links between the following locations:

Visiting Nuclear Powered Submarine

VTS Tower

Incident Co-ordination Centre (Ocean Gate)

Tactical Co-ordination Centre (City Depot – Dock Gate 20)

Strategic Co-ordination Centre (Netley)

Local Emergency Monitoring Headquarters (LEMT)

Exclusion Zone Reception Centre

These lines will be tested prior to each visit of a nuclear powered vessel to Southampton. As an additional back-up, Airwave radio and MTPAS registered mobile phones will be provided.

Government Telephone Preference Scheme and MTPAS

In order to maintain the required access to the telephone system in a period of heavy telephone usage during the response to a Reactor Emergency it is necessary for all telephones (both fixed and portable) used in the operation of the Nuclear Emergency to be registered with British Telecom. Under the Government Telephone Preference Scheme for fixed telephone lines or under the Mobile Telephone Privileged Access Scheme (MTPAS – formerly ACCOLC) for mobile telephones, the latter of which would be invoked through the Strategic Co-ordination Centre. It is the responsibility of the organisation using the telephone to ensure that this is carried out.

5.2. Alerting Procedures

Declaration of a Radiation Emergency and MOD Alerting

The Commanding Officer of the submarine or his nominated Duty Officer will declare an “Off-Site Nuclear Emergency” (OSNE) and any qualifier concerned. This initial alert will be followed up with additional information including updates where appropriate of any qualifier classification, as it becomes available.

Cascade Alerting System

The Submarine Duty Officer will inform the VTS Duty Officer. The Duty VTS Officer will inform Hampshire Police of the classification of reactor emergency warning as defined in Part 2 para 2.4. The Duty VTS Officer will also initiate the MOD NERO radio pager cascade alerting system via NBC Portsmouth’s on-site representative. Hampshire Police are responsible for alerting the public and civil authorities through the cascade alerting system and advising of the classification of warning.

NBC’s on-site representative, when alerted by the VTS Duty Officer is responsible for alerting the following:

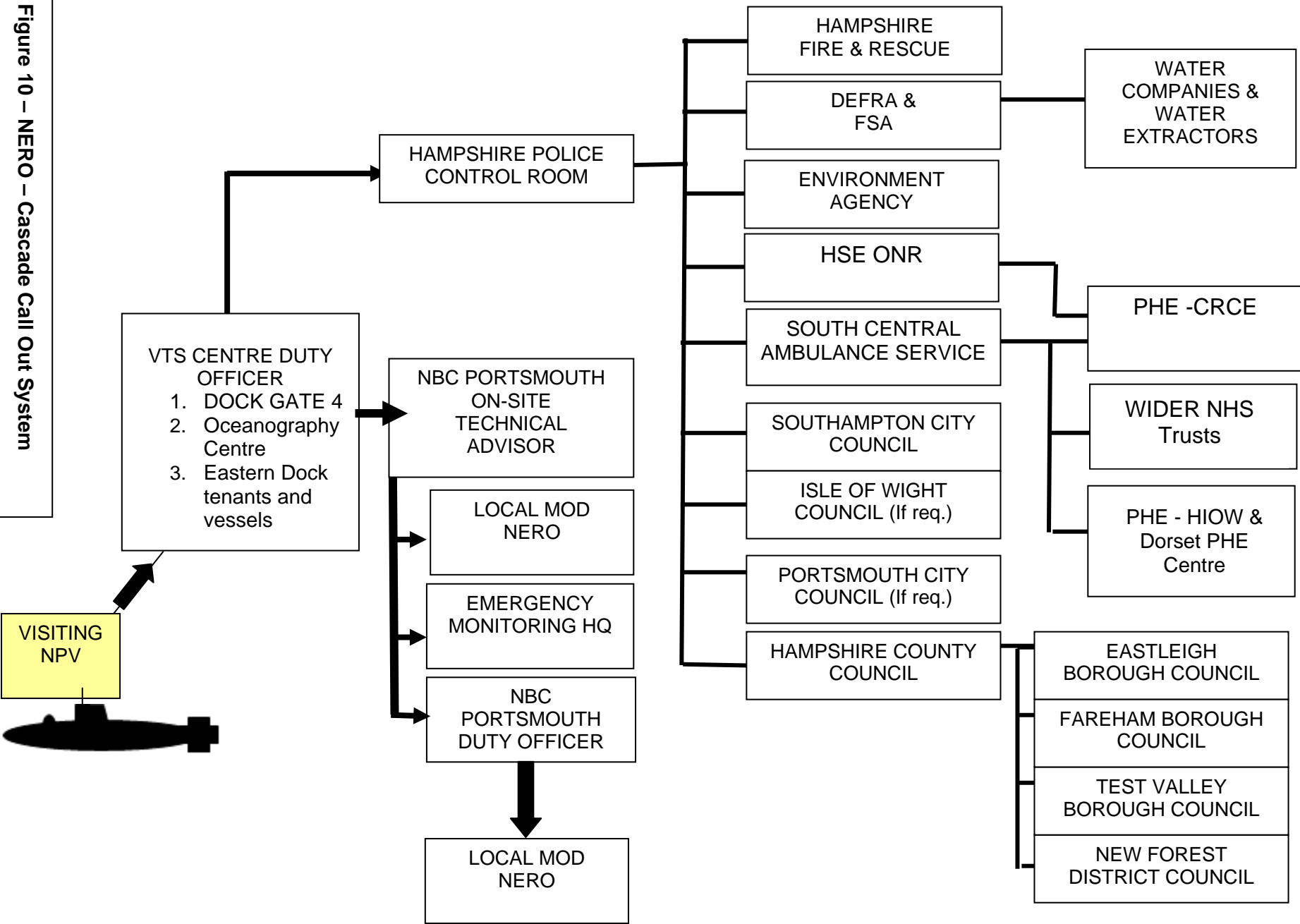
- a) Emergency Monitoring Team (DSTL Alverstoke LEMT)
- b) Local MOD NERO radio pager alert
- c) Naval Base Commander (Portsmouth) Duty Officer
- d) NEMT Devonport (for NEBUST alert)

A diagram of the alerting cascade follows on page 5-4

Activation of Control Centres

The method by which each respective agency activates and operates their respective emergency control centre is fully set out in the individual organisations generic Major Incident Plan.

Figure 10 – NERO – Cascade Call Out System



5.3. SUMMARY TABLE OF COUNTERMEASURES

Emergency Classification	Countermeasure
“Off-Site Nuclear Emergency” (OSNE)	Inside Port
	1. Evacuate the non essential crew of the submarine to the Exclusion Zone Reception Centre. (EZRC)
	2. With the exception of essential workers evacuate the rest of the Port via Dock Gate 4 and issue PITs for evacuees and essential workers to take.
	3. Restrict access to the Automatic Countermeasure Zone (ACMZ) around submarine both land and waterborne.
	4. Ensure warnings to shipping and activation of siren and P.A. capability in the Eastern Docks
	Outside Port
	5. Shelter residents in downwind sector to a distance of approximately 1.5km. Transient population (e.g. shoppers / visitors) in this area will be evacuated or dispersed.
	6. Distribute PITs to residents sheltering in the downwind sector (do not take them)
“Off-Site Nuclear Emergency”	7. As per OSNE above and take steps to evacuate essential crew remaining on board to the EZRC.
“Radiation Hazard Confirmed”	8. People in downwind shelter instructed to take PITs.
“Off-Site Nuclear Emergency”	9. As per OSNE Radiation Hazard Confirmed above.
“Release of Radioactive Material Confirmed”	10. Potential requirement to extend countermeasures, depending on radiation monitoring results and release duration.

5.4. Action required on receipt of an “Off-Site Nuclear Emergency Alert”

- a) **By Local Authorities** who will prepare for a “Radiation Hazard Confirmed” or “Release of Radioactive Material Confirmed” alert.
1. The Tactical Co-ordination Centre at the City Depot, adjacent to Dock Gate 20 will be activated and preparations for staffing by Local Authority and other agencies will be made.
 2. New Forest District Council will open their Control Centre at Appletree Court to coordinate the New Forest District Council response. Two liaison officers will be dispatched to the Tactical Co-ordination Centre at City Depot, adjacent to Dock Gate 20.
 3. The Southampton Major Incident Plan will be activated.
 4. The position of the vessel, the wind direction and the 500 metres Automatic Countermeasure Zone will be plotted on an Ordnance Survey Map. Schools, hospitals (if any) and other public utilities within a 1.5 kilometres radius should be identified.
 5. Inform schools, hospitals, open markets and any other essential services within 1.5 kilometres of the berth that an “Off-Site Nuclear Emergency” exists.
 6. Set up Scientific and Technical Advisory Cell (STAC) in liaison with gold/strategic co-ordination.
 7. Ensure that the RN PITs distribution capability is operating. PITs tablets will have been pre-positioned in accordance with Part 7.
 8. In the event that the Director of Public Health Director or deputy is unavailable to authorise the issue of PITs, pre-scripted letters of authorisation are included in this plan at Appendix 5.1 & 5.2.
 9. Set up and open City Information Help Line and advise media of the number.

b) By MOD/ Port Authorities

1. VTS Duty Officer will alert NBC (Portsmouth) on-site representative and the Hampshire Police, who will inform other civil authorities (see Figure 10 page 5-4). Additionally this officer will inform the crews of all ships berthed within the Eastern Docks of the Port of Southampton. NBC (Portsmouth) on-site representative will arrange activation of the portable siren. All personnel within the Port will be advised by loud hailer and/or siren of the need to evacuate.
2. All non-essential personnel from the submarine (within the exclusion zone) will be evacuated to the Exclusion Zone Reception Centre and take PITS if they have not already done so. All non-essential personnel in the Port will evacuate via Gate number 4 where they will be issued with Potassium Iodate Tablets and be instructed to take them. (See Appendix 7 –A7.4). All essential personnel remaining will also take PITS
3. VTS will notify the Oceanography Centre, Eastern Dock tenants and vessels to evacuate. The Oceanography Centre will activate its response, to include the issue of PITS to its own staff and occupants and report to the ICC accordingly.
4. VTS will be evacuated and will relocate to Calshot or Semaphore Tower, Portsmouth in accordance with the ABP Contingency Plan.
5. M.O.D Police will establish the ACMZ (500m waterborne cordon). *See also within Para 5.7 Restrictions on waterborne access*
6. The Military Coordinating Authority representative will provide details of the potential areas of hazard for shelter advice and the distribution of Potassium Iodate tablets.
7. The Nuclear Emergency Monitoring Team (Alverstoke) (NEMT (A)) will commence surveys in the immediate area of the potential hazard in accordance with established monitoring protocols.
8. The Incident Officer (ABP) will consult with the Tactical Co-ordination Centre on the release of pre-scripted announcements about the emergency.
9. ABP will ensure the warning and informing capability within the port.
10. Consider the closing of the port to all shipping

c) Hampshire Fire & Rescue Service.

1. On receipt of an “Off-Site Nuclear Emergency” alert, Hampshire Fire and Rescue Service will respond and/or stand by in the Eastern Dock via Gate number 4 as appropriate.
2. An Officer will report to the Incident Co-ordination Centre at Ocean Gate, Tactical Co-ordination Centre at City Depot, adjacent to Dock Gate 20 and Strategic Co-ordination Centre Netley
3. Will ensure their briefing, health and safety capability in liaison with LEMT.

See Also Part 6.4

d) South Central Ambulance Service .

1. On receipt of an “Off-Site Nuclear Emergency” alert, the Ambulance Service will report into the Port of Southampton via Dock Gate 4.
2. The Ambulance Service will also alert the PHE HIOW & Dorset PHE Centre, National Commissioning Board Wessex Area Team, Acute and Community provider Trusts
3. An Officer will report to the Incident Command Centre at Ocean Gate, Tactical Co-ordination Centre at City Depot, Dock Gate 20 and Strategic Co-ordination Centre Netley.
4. Will ensure their briefing, health and safety capability in liaison with LEMT.

See Also Part 6.5

e) Hampshire Police.

1. On receipt of an “Off-Site Nuclear Emergency” alert Hampshire Police are responsible for alerting the civil emergency organisations through the cascade alerting system (See Figure 10 at page 5-4).
2. In addition the Strategic Co-ordination Centre at the Netley Police Support HQ will be activated and preparations for staffing will be made to provide support to the Tactical Commanders. Open the Media and Information centre for a co-ordinated response to media.
3. Will ensure their briefing, health and safety capability in liaison with LEMT.
4. To support cordon capabilities.
5. To assist the traffic management in and adjacent to Dock Gate 4
6. To direct the evacuation process including the City Centre Evacuation Plan.
7. To ensure appropriate warning and informing of the public including the release of pre-scripted announcements as described within Part 4.

See also Part 6.3

5.5. Action required on receipt of an “Off-Site Nuclear Emergency” – “Radiation Hazard Confirmed” alert in addition to the actions above

a) By Local Authorities

1. Maintain close liaison with the Police, Department for Environment, Food and Rural Affairs etc, through their appropriate Liaison Officers within the TCC.
2. Maintain a close liaison with the Media and Communication group to keep them well briefed.
3. Ensure Media and Communication group keeps the media well briefed in information to the public.
4. Maintain accurate records of all events and times.
5. Establish and maintain good communications with the Strategic Co-ordinating group.

b) By MOD/ Port Authorities

1. The Incident Officer (ABP) will consult with the Tactical Co-ordination Centre on the release of pre-scripted announcements about the emergency.
2. LEMT will continue to monitor the nuclear powered vessel and the environment. MOD will provide additional resources from other sites to assist with this.

5.6. Action required on receipt of as “Off-Site Nuclear Emergency” – “Release of Radioactive Material Confirmed” alert in addition to the actions above

a) By Local Authorities

1. Maintain close liaison with the Police, Department of Environment, Food & Rural affairs etc., through their appropriate Liaison Officers within the TCC.

b) By MOD/ Port Authorities

1. The Incident Officer (ABP) will consult with Tactical Co-ordination Centre on the release of pre-scripted announcements about the emergency.
2. The LEMT (DSTL) will continue monitoring and will be assisted by a Naval Emergency Monitoring Team from Devonport. Further monitoring support by "back-up" authorities will be provided.

5.7. Access to the Eastern Docks

In order to cater for any initial response by the emergency services access to the Eastern Docks area is outlined in paragraph 6.2. Access to the Eastern Docks will be restricted by the ABP Security personnel who will ensure that only persons carrying “Essential Personnel” cards, emergency services, invited regulatory and advisory bodies or relief personnel, as authorised by the Incident Officer (ABP), are permitted to enter.

- a) All personnel making such entries will be issued with Potassium Iodate tablets (PITs) at Dock Gate 4 as directed by the Incident Officer’s (ABP) Health Physics Cell.
- b) The officer co-ordinating the Exclusion Zone Reception Centre will ensure that all persons making authorised re-entries to the ACMZ are given appropriate briefing, appropriate clothing and personnel dosimetry, issued with PITs if appropriate, and administratively and radiologically controlled on

entry and exit from the area and the appropriate record maintained using the Permit to Enter system. Full details are provided in SOTNUSAFE.

- c) The doses accrued by all personnel forming the emergency response organisation (including the emergency services and other non-Naval personnel) are to be maintained at a level which is “As Low as Reasonably Practicable” (ALARP).

5.8. Community Impact

Distribution of Potassium Iodate Tablets. (See Part 7)

Medical Services to the Public

It is not envisaged that any special medical arrangements will be required for the local population, other than the distribution of Potassium Iodate tablets. Ambulances and coaches may, however, be required for movement of the aged and sick.

Water Supplies

Mains water supplies are most unlikely to be affected in any way. To reassure the public, however, sampling of main service and open reservoir water supplies will be arranged as required by Southern and Portsmouth Water companies.

The acceptable levels for radioactivity in public water supplies are established by the Department for Environment, Food and Rural Affairs (DEFRA). Any restriction even under the worst circumstances envisaged is most unlikely. A DSTL team has the capability of collecting water samples but the responsibility for imposing a ban lies with the appropriate water authority.

Food Supplies

Intervention levels for food are promulgated by the European Commission and are very low, being based on doses that individuals would receive if they consumed such food for a year following the emergency. It is probable therefore; that in the event of a reactor emergency that did release fission products, food and farm restrictions could extend to distances significantly greater than those to which emergency countermeasures have been taken. The Food Standards Agency (FSA) is responsible for assessing the risk and imposing the necessary controls.

Evacuation, Reception and Accommodation

If the decision to evacuate is taken by the Strategic Co-ordination Centre the procedures outlined in the Southampton Major Incident Plan and in the New Forest District Council's Emergency Plan should be considered.

Relocation is the term used to describe the movement of the public from contaminated areas to avoid long-term radiation exposure or to allow decontamination to take place. It is therefore distinct from evacuation, which is an emergency countermeasure aimed at providing immediate public protection. There are no national criteria for the implementation of relocation. Any requirements for relocation would be determined by discussion among relevant local and national agencies with the aim of optimising the protection of the public. The protection provided by adequate emergency countermeasures would allow the required time to assess the need for relocation.

Restrictions on Land Access

It may be necessary in the interests of public safety to restrict access to contaminated areas. Arrangements will be made and implemented by the Police in conjunction with ABP Security personnel as appropriate, and the Local Authority.

Restrictions on Waterborne Access

The Incident Officer (ABP) will assess the hazard to shipping in the Port and impose any restrictions, which may be necessary. MOD personnel will be responsible for policing the waterside area of the ACMZ.

5.9. Record Keeping

Comprehensive records are to be kept by all authorities involved in a reactor emergency in order that the necessary information may be available for subsequent inquiry into the cause and effects. The records are also needed to assist in dealing with any claims that may arise in accordance with loss, damage or injury attributable to the emergency. (See Part 9.7). In particular, the following information is required:

- a) Times of reports or orders being given or received.
- b) Times when other authorities are informed of occurrences
- c) Details of persons exposed to any hazard and doses received, if possible, in addition to their movements within affected areas.
- d) Weather conditions.
- e) Decisions and actions taken and the information on which these were based.
- f) The protocol for the MCA recording information is the Nuclear Emergency Response Information Management System (NERIMS).

6 Organisational Responses

6.1 Exposure levels

Emergency Exposures: There are two types of radiation exposure, which are relevant to a reactor emergency. The first is an emergency exposure (REPPIR 2001 Regulation 14 refers), which are exposures to intervention personnel which are necessary to put the emergency plans into effect. Emergency exposures permit an employee to exceed an IRR99 radiation dose limit (i.e. 20 mSv per year for radiation workers) for employees over the age of 18 years of age. Not all radiation emergencies will involve emergency exposures for intervention personnel. The emergency exposures and emergency dose levels which have been notified to the HSE are detailed in the Southampton Operators Emergency On-site Plan (SOTNUSAFE). The emergency exposures are justified for life saving or for preventing or reducing the radiation exposure of workers or the public. Emergency exposures are not exposures to personnel as a direct result of the radiation emergency. These exposures are covered by Regulation 23 of the Ionising Radiations Regulations 1999.

Non-Emergency Exposures: These are radiation exposures to employees in NERO roles supporting the Off-Site Emergency Plan. The radiation exposures for this group of personnel must not exceed the relevant IRR99 radiation dose limits. This will include personnel supporting the Gold, Silver and Bronze Command and Control organisations as well as emergency services personnel and doctors, nurses and local authority personnel etc.

6.2 Arrangements for accessing the Automatic Countermeasure Zone during an emergency.

In an emergency intervention personnel will require access to the ACMZ.

Access to the ACMZ during an incident will operate via the Access Control Point, which will be established by the emergency services in liaison with LEMT, and be adjacent to the Emergency Monitoring Headquarters (EMHQ) within the Car Park at Ocean Gate. All personnel wishing to access the ACMZ must report initially to the EMHQ where personnel will be briefed, issued with essential personnel cards, Potassium Iodate tablets and electronic dosimetry equipment. Each individual will be registered at this point so a record of personnel within the ACMZ is achieved. There are two methods of access to the ACMZ:-

Fast Track Access to the ACMZ

The Incident Officer (IO) (ABP) has pre-authorised Fast Track entries for the emergency services for "Off-Site Nuclear Emergency" incidents and below. The emergency services will receive a short brief from LEMT together with their emergency grab bags containing respiratory protection equipment, dosimetry and PITs.

All other Entries to the ACMZ

All other entries to the ACMZ will be controlled using the Permit to Enter system described in SOTNUSAFE.

For re-entries into the ACMZ, the health physicist in the IO cell will provide general advice to the IO on whether the entry is justified. The IO will then approve the entry subject to an appropriate dose limit and constraints for the task and a satisfactory risk/dose assessment being undertaken by the EZRC health physicist.

The health physicist in the EZRC will then undertake a detailed assessment of the potential radiation exposure to identify whether the task can be achieved within the dose limit and constraints specified by the IO. If this is the case then the EZRC team will progress the entry and the corresponding task. If not the EZRC health physicist will liaise with the IO health physicist to review whether the task can be completed within amended parameters.

Authorised personnel will move to the ACMZ via the Access Control Point and then the Cordon Control Point staffed by Hampshire Police situated at Central Road j/w European Way. All other routes to the ACMZ will be blocked. Personnel from the nuclear submarine evacuated to the EZRC will attend the EMHQ to be registered if they need to re-access the ACMZ at any stage during the incident. On the individual's return from the ACMZ they will report back to the EZRC, for radiation monitoring equipment to be collected and radiation exposure assessed and recorded.

A communication link from experts based at the Incident Co-ordination Centre to personnel working within the ACMZ will be set up in order to

- a) maintain continual updates on the emergency and the tasks being undertaken and
- b) gain information regarding the emergency radiation dose levels that each individual is receiving to help enable experts to manage the health and safety of personnel working in the ACMZ.

A system for post-incident monitoring of personnel who have accessed the ACMZ during the incident will be put into place, with appointed doctors monitoring the health of each individual that has been subject to emergency radiation exposure.

6.3 HAMPSHIRE POLICE

Notification.

VTs Tower Port of Southampton will inform Hampshire Police - Force Control Room.
The message will be in plain language in the following format:

RADIATION EMERGENCY

“OFF-SITE NUCLEAR EMERGENCY”

and where necessary qualified by the classification

“RADIATION HAZARD CONFIRMED” OR

“RELEASE OF RADIOACTIVE MATERIAL CONFIRMED”.

(for definitions see PART 2, PARAGRAPH 2.3)

NAME OF VESSEL

TYPE OF VESSEL

LOCATION OF VESSEL

PREVAILING WEATHER CONDITIONS – in order to inform the required response,
warning and City Centre Evacuation Plan implications.

Deployment.

On receipt of the warning the Supervisory Officer in the Hampshire Police Control Room will authenticate the message with the VTS Control Tower at the Port of Southampton.

Hampshire Police will then activate Tactical Co-ordination Centre (City Depot, adjacent to Dock Gate 20) and proceed with the Cascade Call Out system as indicated at Figure 10 page 5-4.

The Duty Assistant Chief Constable may proceed to the Strategic Co-ordination Centre, Police Support HQ Netley, to establish the Inter-agency Co-ordinating Group. A Hampshire police officer of the rank of Chief Inspector or above will proceed to the Tactical Co-ordination Centre situated at City Depot, First Avenue, Southampton, unless the prevailing weather conditions dictate a move to another location (to be determined at that time).

An officer of the rank of Inspector will attend the Incident Co-ordination Centre (Ocean Gate). A unit will be deployed to Dock Gate 4 to form the Forward Control Point (FCP).

Reception

Police Officers are not considered intervention personnel under the terms of REPIIR Regulation 14 and are not required to set emergency exposure levels. Wherever possible contingency plans should not seek to place police officers in a situation where they will receive additional levels of radiation. As such, normal activity in response to this plan will be to seek to avoid it e.g. by placing a cordon of officers at an agreed safe distance from a release, having arranged for the evacuation or shelter of those in the affected area as is appropriate to the circumstances.

Where an unforeseen circumstance arises which requires a police presence, a dynamic risk assessment will be undertaken at the time.

Response

Given the nature of such an emergency, all officers deployed in response to such an incident will be appropriately briefed and supported. In order to ensure their roles and responsibilities are clear they should only proceed into the port beyond the Access Control Point adjacent to the EMHQ, if safe to do so and on issue of the grab bags located at the EMHQ. An incident inner cordon will be established at 500 metres around the berth (which will form the Automatic Counter-Measures Zone) and a Cordon Control Point will be set up by police and emergency services in liaison with LEMT and ABP.

The police will be responsible for warning and informing the public external to the port, the potential activation in part or whole, of the City Centre Evacuation Plan and the establishment of an outer cordon. Bags and other equipment issued must be returned once the incident is resolved.

Contaminated vehicles within the Automatic Countermeasures Zone (ACMZ) will remain within the 500m cordon and advice and guidance will be sought with regard to decontamination. The Government Decontamination Service (GDS) can be contacted 24/7 and will be able to provide necessary advice and guidance if required.

When appropriate, Hampshire Police will implement traffic control in order to manage traffic movement within the 1.5 km pre-planned countermeasure zone and elsewhere if necessary. This may include management of traffic outside and adjacent to Dock Gate 4 to ensure free entry and exit using a green/red route system.

6.4 HAMPSHIRE FIRE & RESCUE SERVICE

Notification.

Hampshire Police Operations (Force Control) will notify Hampshire Fire & Rescue Service (HFRS). It will be clear that the call is to attend a reactor emergency situation.

Note: It is important to note that the alert may come from sources other than Hampshire Police and it may not be evident at the outset that the subject involves a reactor source. Hampshire Fire and Rescue Service Control will be provided with telephone contact details for the vessel to enable an alert from a third party to be verified.

Deployment.

Minimum first attendance will be an appropriate number of appliances. Additional attendance will depend on the extent of the situation. All HFRS attending will enter the Eastern Docks via Dock Gate 4 unless otherwise directed.

Reception.

Upon arrival at the EMHQ, all HFRS personnel will be issued with a "Grab Bag". Each personal Grab Bag contains:

- (a) 1 x personal electronic dosimeter (PED)
- (b) 1 x thermoluminescent dosimeter (TLD)
- (c) 2 x potassium Iodate tablets (PIT's)
- (d) 1 x particulate respirator

The PED must be switched on using the black 'on' button, which is located at the top right hand side of the dosimeter. HFRS staff must monitor their PED's and make regular report of the readings to the control point. If the PED alarms then HFRS staff must take two PIT's, put on the particulate respirator (if not already in BA) and evacuate to the holding area. The fact that the their PED has alarmed must be reported to the HFRS Liaison Officer in the ICC, who should in turn notify the IO (ABP) and the HFRS Tactical Commander at Silver.

Should the incident present a radiological threat, appliances and personnel will proceed to the Access Control Point at the Car Park at Ocean Gate to receive a briefing and enable a risk assessment to be completed by HFRS personnel. Only then will personnel and appliances be deployed to the scene via the Cordon Control Point at Central Road / European Way. Grab Bags and other equipment issued must be returned once the incident is resolved.

Response.

Officers from HFRS will be provided at the following locations:

- a) Strategic Co-ordination Centre (Police Support Headquarters, Netley).
- b) Tactical Co-ordination Centre, Southampton City Council (City Depot, Dock Gate 20).
- c) Incident Co-ordination Centre (Ocean Gate, Eastern Docks).

Emergency Exposure

As required by REPPiR Regulation 14 Hampshire Fire and Rescue Service have identified the possible need for some of its employees to be subject to radiation exposures.

It may be permissible for informed volunteer male fire-fighters from Hampshire Fire & Rescue Service to be exposed to a dose of up to 100 mSv for **life saving operations** or to **maintain critical infrastructure**. The authorisation for the disapplication of dose limits (i.e. allowing emergency exposure to take place) must be given by an officer or manager within the Fire and Rescue Service who has received appropriate training. Female fire-fighters will not be subjected to any radiation exposures.

Fire and Rescue Service Operational Guidance – Generic Risk Assessments 5.5 – Incidents involving Radiation dated January 2011

6.5 SOUTH CENTRAL AMBULANCE SERVICE (SCAS)

Notification.

Normally, South Central Ambulance Service (SCAS) will be alerted by the Hampshire Police Control Room. It will be clear that the call is to attend a nuclear reactor emergency situation.

Note: It is important to note that the alert may come from sources other than Hampshire Police and it may not be evident at the outset that the subject involves a reactor source.

Deployment.

Initial first attendance will be an appropriate number of vehicles as well as Ambulance Officers. The number and type of vehicles will depend on the extent of the incident. In the absence of any clear information of the nature or extent of the nuclear emergency, the predetermined attendance will be:

- a) 5 Emergency and Urgent (E&U) Ambulances
- b) 1 Ambulance Officer

All SCAS personnel will enter the Eastern Docks via Dock Gate 4 unless otherwise directed.

Reception.

All SCAS personnel will be met at EMHQ and will be briefed by LEMT before proceeding any further. Depending on the extent and progress of the incident, arriving SCAS resources may be directed to a holding area alongside the Access Control Point at the car park of Ocean Gate. Upon arrival at either the holding area, or the access control point, SCAS personnel will be issued with a Grab Bag.

Each Grab Bag contains;

- a) 1 x Personal Electronic Dosimeters (PEDs)
- b) 1 x Thermoluminescent Dosimeters (TLDs)
- c) 2 x Potassium Iodide Tablets (PITs)
- d) 1 x Particulate Respirator

The PED must be switched on using the black “on” button, which is located at the top right hand side of the dosimeter. Ambulance staff must monitor their PEDs and make regular reports of the readings to the SCAS officer in the Tactical Co-ordination Centre. If the PED alarms, then the ambulance staff must take two PITs, put on the particulate respirator and evacuate to the Holding Area. The fact that their PED has alarmed must be reported to the SCAS Officer in the Tactical Co-ordination Centre (TCC), who in turn will report this to the SCAS Officer in the Incident Co-ordination Centre. Grab bags and other equipment issued must be returned once the incident is resolved.

Response.

SCAS Officers will be deployed to the following locations:

- a) Tactical Co-ordination Centre (TCC)
- b) Incident Co-ordination (ABP) Centre, (Ocean Gate)
- c) Exclusion Zone Reception Centre

Following a dynamic risk assessment in conjunction with other responding agencies, SCAS personnel may operate within the Automatic Countermeasures Zone (ACMZ) while the incident is classified as an “Off-Site Nuclear Emergency”. If the incident escalates to “Off-Site Nuclear Emergency”- “Radiation Hazard Confirmed”, all SCAS personnel must withdraw beyond this 500m cordon.

Contaminated casualties will normally be decontaminated (using current procedures) **before** transportation to hospital. This decontamination will take place at a safe distance from the incident and will occur before any secondary triage or clinical intervention. (Other than basic life support and/or airway protection.)

Contaminated casualties **with life threatening injuries** may be transported to hospital before decontamination.

Triage

Triage will be carried out by the Triage Team of SCAS, as detailed in its own Major Incident Plan.

Emergency Exposure

In an emergency situation, involving a radiation emergency, any radiation dose received by SCAS personnel will not be any greater than the dose detailed in REPPIR 2001.

The maximum dose for life saving operations where the casualty cannot be immediately removed from the area of high dose rate or contamination is 100 mSv; all ambulance staff can volunteer to be exposed to this level provided that they have been fully briefed and understand the implications.

NHS Emergency Planning Guidance – The Ambulance Service Guidance on dealing with radiological incidents and emergencies issued 23/03/2010.

These procedures do not supersede the SCAS Major Incident Plan which will be used alongside these procedures in the event of an incident covered by SOTONSAFE.

6.6 **SOUTHAMPTON CITY COUNCIL**

Notification.

Hampshire Police (Force Control) will notify Southampton City Council. It will be clear that the call is for response to a reactor emergency situation.

Note: It is important to note that the alert may come from sources other than Hampshire Police and it may not be evident at the outset that the subject involves a reactor source.

Response.

Officers from Southampton City Council will attend the following locations as detailed within its emergency response team policy documentation:

- a) Strategic Co-ordination Centre (Police Support Headquarters, Netley)
- b) Tactical Co-ordination Centre (City Depot adjacent to Dock Gate 20)
- c) Incident Co-ordination Centre (Ocean Gate, Eastern Docks)
- d) SCC EPU will be responsible for activating the interagency Tactical Co-ordination Centre in accordance with its Major Incident Plan. (See MIP App. 5).

As required by REPPiR Regulation 14 Southampton City Council has considered the possible need for some of its employees to be subject to emergency exposures, and consequently has concluded it will seek to avoid any exposure.

Southampton City Council has identified those employees who have a role to play in the management of the emergency plan because their skills are required to achieve foreseeable actions.

Southampton City Council has given them appropriate training and such information and instruction as is suitable and sufficient for them to recognise the risks to health from the emergency, and the precautions to be taken.

Professional medical guidance will be sought prior to any deployment of Southampton City Council staff within affected areas in order to negate this risk.

6.7 HEALTH RESPONSE

NHS National Commissioning Board Wessex Area Team

Notification

In the event of an incident, SCAS Emergency Operations Centre will cascade the alert to NHS National Commissioning Board Wessex Area Team (WAT).

Deployment and Response

A Representative from the WAT will attend the Strategic Co-ordinating Group.

The WAT will ensure a health representative attends the Tactical Co-ordination Centre established at City Depot, First Avenue, Southampton (See MIP Appendix 5).

Coordinate Hampshire and Isle of Wight Health Service response.

Public Health (Local Authority)

Notification

In the event of an incident, WAT will notify the on-call Director of Public Health.

Deployment and Response.

The Public Health Director will be present in the Scientific & Technical Advisory Cell (STAC) at the Strategic Co-ordination Centre, Netley (see Part 3.3 for details).

The Director of Public Health will authorise the distribution and taking of Potassium Iodate tablets (see Part 7 & Appendix 5.1 & 5.2). In the absence of Director of Public Health authorisation the preauthorisation letter can be employed by the Strategic Co-ordination Group (or the TCG if the SCG is not established in time, if the decision to distribute PIT's is urgent)

A Public Health Consultant or deputy will be present in the Tactical Coordinating Group and will act as the Tactical Public Health Officer.

Public Health England

Notification

In the event of an incident, SCAS Emergency Operations Centre will cascade the alert to Public Health England.

Deployment and Response

Appropriate specialists from Public Health England will be present in the Scientific & Technical Advisory Cell (STAC) at the Strategic Co-ordination Centre, Netley (see Part 3.3 for details).

Provide health advice to the STAC, responding agencies and public

NHS Provider Trusts

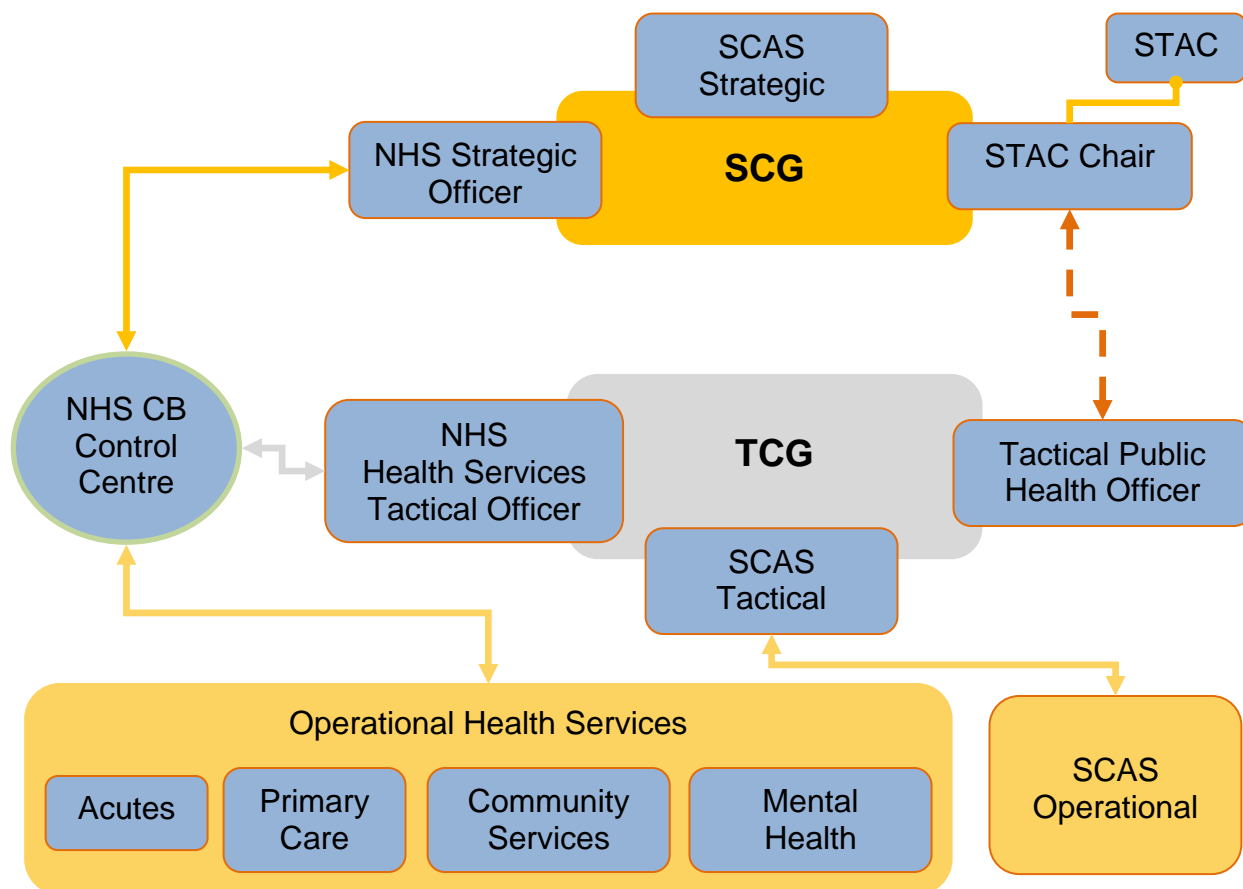
Notification

In the event of an incident, SCAS Emergency Operations Centre will cascade the alert to NHS provider trusts.

Deployment and Response

Respond at the operational level to support the wider health system response

Structure of Health Response



Radiation Monitoring Unit

The H&IOW Plan for the Establishment and Operation of a Radiation Monitoring Unit is an Operational Plan for long term monitoring of the population affected by an incident.

An RMU is used to determine levels of radioactive contamination in or on people and any subsequent requirement for decontamination. It will also inform decisions regarding the need for any medical interventions for persons contaminated with radioactive material.

The plan forms part of the emergency planning arrangements of the Thames Valley And Hampshire & Isle of Wight Local Resilience Fora and will be used in conjunction with those arrangements.

The coordination of the monitoring of people in general (apart from at site specific locations) is the responsibility of the NHS.

Coordination of resources is carried out in accordance with a monitoring strategy agreed at the Strategic Coordinating Group (SCG) passed via the Scientific and Technical Advice Cell (STAC). This coordination and monitoring strategy depends upon on the source of the radiation, the type of event and the number of people affected.

Whilst the focus of this plan is in relation to known radiation sources for the establishment of Radiation Monitoring Units (RMU) at which reassurance monitoring of the public may be carried out after an incident involving radiation takes place – whether accidental or deliberate.

6.7 NEW FOREST DISTRICT COUNCIL

Notification

Hampshire Police Operations (Force Control) will notify New Forest District Council. It will be clear that the call is for response to a reactor emergency situation.

Note: It is important to note that the alert may come from sources other than Hampshire Police and it may not be evident at the outset that the subject involves a reactor source.

Response

Officers from New Forest District Council will be at the following locations:

- a) Strategic Co-ordination Centre
- b) Tactical Co-ordination Centre
- c) New Forest District Council, Appletree Court Control Room (if considered necessary).

As required by REPIR Regulation 14 New Forest District Council has considered the possible need for some of its employees to be subject to emergency exposures, and consequently has concluded it will seek to avoid any exposure.

New Forest District Council has identified those employees who have a role to play in the management of the emergency plan because their skills are required to achieve foreseeable actions.

New Forest District Council has given a number of those identified appropriate training and guidance to manage a response to a nuclear submarine emergency.

6.8 HAMPSHIRE COUNTY COUNCIL

Notification

Hampshire Police Operations (Force Control) will notify Hampshire County Council. It will be clear that the call is for response to a reactor emergency situation.

Note: It is important to note that the alert may come from sources other than Hampshire Police and it may not be evident at the outset that the subject involves a reactor source.

Response

Personnel from Hampshire County Council will be at the following locations:

- a) Strategic Co-ordination Centre
- b) Tactical Co-ordination Centre
- c) Such other locations as may be deemed appropriate.

As required by REPPiR Regulation 14 Hampshire County Council has considered the possible need for some of its employees to be subject to emergency exposures, and consequently has concluded it will seek to avoid any exposure.

Hampshire County Council has not sought the agreement of staff to undergo emergency exposure as it has not identified foreseeable actions that will require it. The County Council will plan to avoid such a necessity.

6.9 **HEALTH & SAFETY EXECUTIVE - OFFICE for NUCLEAR REGULATION**

For an off-site nuclear emergency at a MoD site, including Designated Operational Berths, ONR will deploy staff to the affected site, the Incident Co-ordination Centre (Tactical Co-ordination Centre), and the Nuclear Accident Information and Advisory Group (NAIAG) in London. ONR will provide advice to these teams during the event.

ONR will witness, monitor and record operator's actions; take enforcement action if appropriate; and provide independent information/advice to senior staff in HSE, relevant authorities and other government departments. ONR's response will be led and managed by the ONR Response Centre Director

ONR will ascertain the facts surrounding the emergency, assess the safety of the affected site, including the licensee's or operator's proposed actions, deploy ONR staff as required, and formulate ONR strategy and response.

The **ONR Site Team** will:

- a) Ascertain the facts on the emergency including establishing the adequacy of actions taken to secure a safe plant state and the advice given to the authorities off-site,
- b) Submit routine reports on events at site to the ONR Response Centre,
- c) Represent ONR at or near the site if required

The **ONR Off-site Facility Team** will:

- a) Provide advice and support to the ONR Response Centre Director,
- b) Consider all aspects of the emergency which affect the site,
- c) Provide advice to the Off-Site Facility (OSF) strategic coordination group,
- d) Represent ONR at local press briefings.

6.10 ABP SOUTHAMPTON

Notification.

In the event of a Nuclear Reactor Emergency occurring, the Submarine Duty Officer will inform the VTS Duty Officer who in turn will inform Hampshire Police Force Control Room having established the following details of the emergency from the submarine:

RADIATION EMERGENCY –

Classification of Nuclear Emergency

Containment State

Number of personnel remaining onboard, essential and non-essential.

Confirm number of casualties

NAME OF VESSEL

TYPE OF VESSEL

LOCATION OF VESSEL

PREVAILING WEATHER CONDITIONS

The VTS Duty officer will also undertake the cascade alerting criteria shown at Figure 10 page 5-4.

Additionally inform:

Duty Harbour Master, who will assume role of Incident Officer who in turn will inform Harbour Master.

ABP Head of Safety & Security Manager.

Southampton Patrol (SP) Launch

ABP security at Dock Gate No 4 of the incident and instruct them to evacuate the Automatic Countermeasures Zone.

Deployment.

On receipt of the warning the ABP Duty Harbour Master (IO) and Head of Security will muster and establish the Incident Co-ordination Centre (ICC) at Ocean Gate, Eastern Docks.

On completion of initial actions the Duty VTS Officer will evacuate VTS building having allocated VTS staff to the patrol launch (SP), Calshot, Gosport Pilot Station or Semaphore Tower Portsmouth in accordance with ABP Contingency Plan.

The Duty VTS Officer having completed his actions will proceed to Incident Co-ordination Centre to brief the Incident Officer and assist as necessary.

Harbour Master will proceed to the Tactical Co-ordination Centre situated at City Depot, First Avenue, Southampton unless the prevailing weather conditions dictate a move to another location (to be determined at that time) and make contact with Incident Officer.

Reception.

Access for all responders will be via Dock Gate 4. Emergency Services will be directed initially to the EMHQ access control point and holding area adjacent to the car park of Ocean Gate, where they will be briefed. Lead officers from each responding agency will be directed to the ICC. Grab Bags will be allocated to emergency response crews at the EMHQ.

Response.

Initiate a public address warning of an emergency and ensure that all port staff immediately evacuate the Eastern Docks via Dock Gate 4 using the message: "an emergency has occurred please leave the Eastern Docks immediately via Dock Gate 4".

Instruct the MOD police launch by VHF to maintain a 500m cordon around the emergency area.

In conjunction with Port Security staff, contact ships crews on all vessels in Eastern Docks instructing them to evacuate via Dock Gate 4, and take the PITs tablets issued there.

Alert all vessels entering port and stop entry if practicable.

Evacuate VTS centre of non-essential personnel, instruct to take PITs.

As required by REPPIR Regulation 14 ABP Southampton has considered the possible need for some of its employees to be subject to emergency exposures, and consequently has concluded it will seek to avoid any exposure.

ABP Southampton has identified those employees who have a role to play in the emergency plan because their skills are required to achieve foreseeable actions.

ABP Southampton has given them appropriate training and such information and instruction as is suitable and sufficient for them to recognise the risks to health from the emergency, and the precautions to be taken.

Ensure the Oceanography Centre has been evacuated via Dock Gate 4 and PITs instructions given.

7. POTASSIUM IODATE TABLET DISTRIBUTION

7.1 PITs Distribution Plan.

This chapter specifically details the arrangements for PITs distribution to:

- a. Evacuating crew and civilian personnel from the NPV Exclusion Zone.
- b. Evacuating personnel from within the Automatic Countermeasures Zone (ACMZ).
- c. Those otherwise evacuated from the Eastern docks
- d. Members of the public living within the Pre - Planned Countermeasures Zone (PCMZ).

In the highly unlikely event of an emergency occurring to the nuclear reactor onboard a visiting Nuclear Powered Vessel (NPV) in the port of Southampton, the following actions will be undertaken to allow distribution of Potassium Iodate Tablets (PITs) to those directly affected. For the purposes of this plan, priority allocation will be made to those residents situated downwind of the emergency within a 30° sector, extended to 45° to accommodate potential varying wind conditions, to a distance of 1.5 kilometres.

7.2 Potassium Iodate tablet Distribution Policy - General.

The decision to issue PITs to the public will be taken at Strategic/ Tactical Coordination in liaison with the Director of Public Health. In the early stages of a nuclear emergency where the Director of Public Health, or his representative, are unavailable a letter of pre-authorisation for PITs has been agreed. It is the responsibility of the Director of Public Health to give authorisation for issuing and taking of PITs. This is detailed at Appendix 5.1 & 5.2.

The policy for issuing and taking of Potassium Iodate tablets is set out below summarising when individuals in each zone will be issued with and take this medication.

a) Exclusion Zone (The Nuclear Powered Vessel)

On the declaration of an “**Off-Site Nuclear Emergency**” (OSNE) or higher classification all non-essential persons on the submarine will be evacuated to the Exclusion Zone Reception Centre (EZRC) and are to be issued with and take their Potassium Iodate Tablets immediately.

b) Automatic Countermeasure Zone (ACMZ) – 500 metre radius

On the declaration of an “**Off-Site Nuclear Emergency**” (OSNE) or higher classification the ACMZ will be evacuated of all personnel. Evacuation will be via Dock Gate 4 where PIT’s will be issued and personnel directed to take them immediately.

c) Automatic Evacuation Zone (Eastern Docks)

On the declaration of an “**Off-Site Nuclear Emergency**” (OSNE) or higher classification the Eastern Docks area will be evacuated via Dock Gate 4. All additional evacuees to (b) above will be evacuated via Dock Gate 4 where PIT’s will be issued and personnel directed to take them immediately. All personnel within the Oceanography Centre, situated in this area, will take their pre-positioned PITs and will self evacuate via Dock Gate 4, to shelter within or disperse beyond the 1.5km zone.

Ships berthed in the Eastern Docks area will be told to evacuate all personnel. Crew members will be evacuated to the Seafarers Joint Centre in Queens Terrace. Others will be catered for under the Southampton City Council evacuation arrangements as set out in the Major Incident Plan. Evacuation will be via Dock Gate 4 where PITs will be issued and personnel directed to take them immediately. The control and audit capability will be the responsibility of the MoD in liaison with ABP staff.

d) Pre-planned Countermeasures Zone (PPCZ) – 1.5 kilometre radius

Following the declaration of an “**Off-Site Nuclear Emergency**” (OSNE) or higher classification, transient public i.e. shoppers, workers or visitors, up to 1.5km downwind of the nuclear emergency will be evacuated away from the area to a safe location by police, from where they will be permitted to disperse. Residents within the affected area will be advised to go to shelter, stay in and listen to the radio for further instructions. A variety of means will be used by the police to alert the public to potential risk. This may include the use of store and business link telecommunications and radio systems, public address systems, radio broadcasts etc.

Pre-identified Royal Navy personnel will distribute PITs in accordance with pre-agreed route schedules in the detailed distribution plans. Those within pre-positioning sites will be allocated PITs by their site co-ordinators. These pre - positioned sites are detailed at Para 7.8.

Following the declaration of “**Radiation Hazard Confirmed**” the procedure will be as for the initial “**Off-Site Nuclear Emergency**” with the addition that the public issued with tablets will be advised to take them. Once those members of the public in the downwind sector have been issued with tablets an assessment will be made as to whether there is a need to issue tablets to other sectors in the pre-planned countermeasure zone.

Following the declaration of “**Release of Radioactive Material Confirmed**” the procedure is the same as for “**Radiation Hazard Confirmed**”. The public in the downwind sector will be issued with PITs and advised to take them. Once those members of the general public in the downwind sector have been issued with PITs, an assessment will be made as to whether there is a need to issue PITs to other sectors in the Pre-Planned Countermeasure Zone, or on the basis of the monitoring results, extend the existing countermeasures beyond the Pre-Planned Countermeasure Zone.

7.3 Potassium Iodate Tablet Distribution Policy for Schools

During term time, Potassium Iodate Tablets will be pre-positioned to all schools sited within and adjacent to the pre-planned countermeasures (1.5km) zone by Southampton City Council Emergency Planning Staff. These schools are detailed in a schedule at 7.8.

Southampton City Council and New Forest District Council will alert schools following the declaration of a nuclear emergency and parents/guardians will be advised not to collect their children from school at any nuclear emergency classification. The children will shelter at their schools during any classification of “**Off-Site Nuclear Emergency**”. Teachers will be advised regarding the issue of Potassium Iodate tablets and the Public Health Director will give authorisation for issue of tablets to pupils and staff.

7.4 Nurseries

Any childcare or nursery premises within the distribution area will be shown within Navy distribution route plans.

7.5 Notification.

Information regarding the issue and taking of Potassium Iodate tablets will be broadcast on local radio and TV in accordance with the procedure for the release of media statements shown at Part 4.

7.6 Public Health England Representative Call-out for advice and information contact the PHE Representative. Call-out will be initiated via a telephone call from South Central Ambulance Service to Hampshire, Isle of Wight & Dorset Public Health England Centre.

7.7 Pre-visit arrangements

At least 48 hours prior to the arrival of a nuclear powered vessel in the Port of Southampton, the Ministry of Defence (Royal Navy) will deliver Potassium Iodate Tablets with explanatory leaflets to the Southampton City Council Emergency Planning Unit. These will then be delivered to the pre-positioning sites of high-density occupation detailed below.

7.8 Pre-positioning Sites

organisation	address	no of PITs
Central		
City Terminal	Solent Road, Western Docks	5,400
Mayflower Terminal	Herbert Walker Avenue, Western Docks	8,200
Ocean Terminal	Ocean Gate	7,500
St Johns Infant & Nursery School	Castle Way	400
Lucia Foster Welch College Student village	Royal Crescent Road	1,800
Play away Day Centre (Nursery)	Andersons Road	300
National Oceanography Centre	European Way	3,300
		26,900
Woolston & Weston		
St Elizabeth Rest Home	115 Swift Road	100
Woolston Community Pre-school	The Woolston Centre, Church Road	100
		200
Hythe		
Homeborough House (Residential)	Brinton Lane	200
Hythe Primary School	School Road	900
Jack & Jill Pre-school, Community Centre	Brinton Lane	100
West Clif Hall Care Home	West Street	300
		1,500
Other		
Fire, Police & Ambulance and reserve	Emergency Planning Unit, City Depot	1,400
		30,000

Rounded up delivery of PITs to:			
DG4	Dock Gate 4		1,000
Naval Distribution	Ocean Gate		37,000
Pre-positioned	City Depot		30,000
	Total PITs		68,000

NB The telephone contact point for each pre-positioning site will appear in the pre-visit contact list which will be prepared and distributed beforehand.

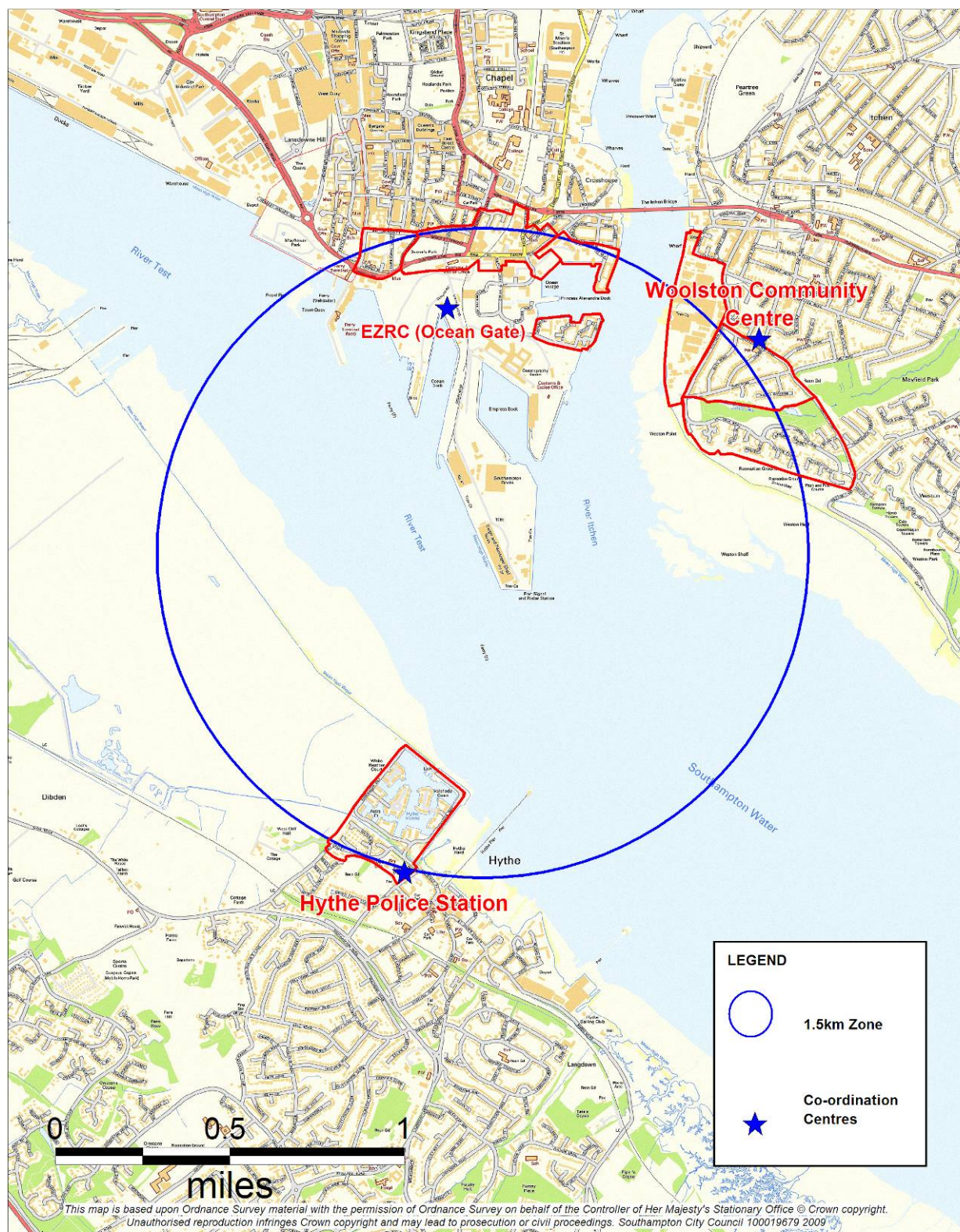


Figure 11 - Pits Distribution Areas and Co-ordination Centres



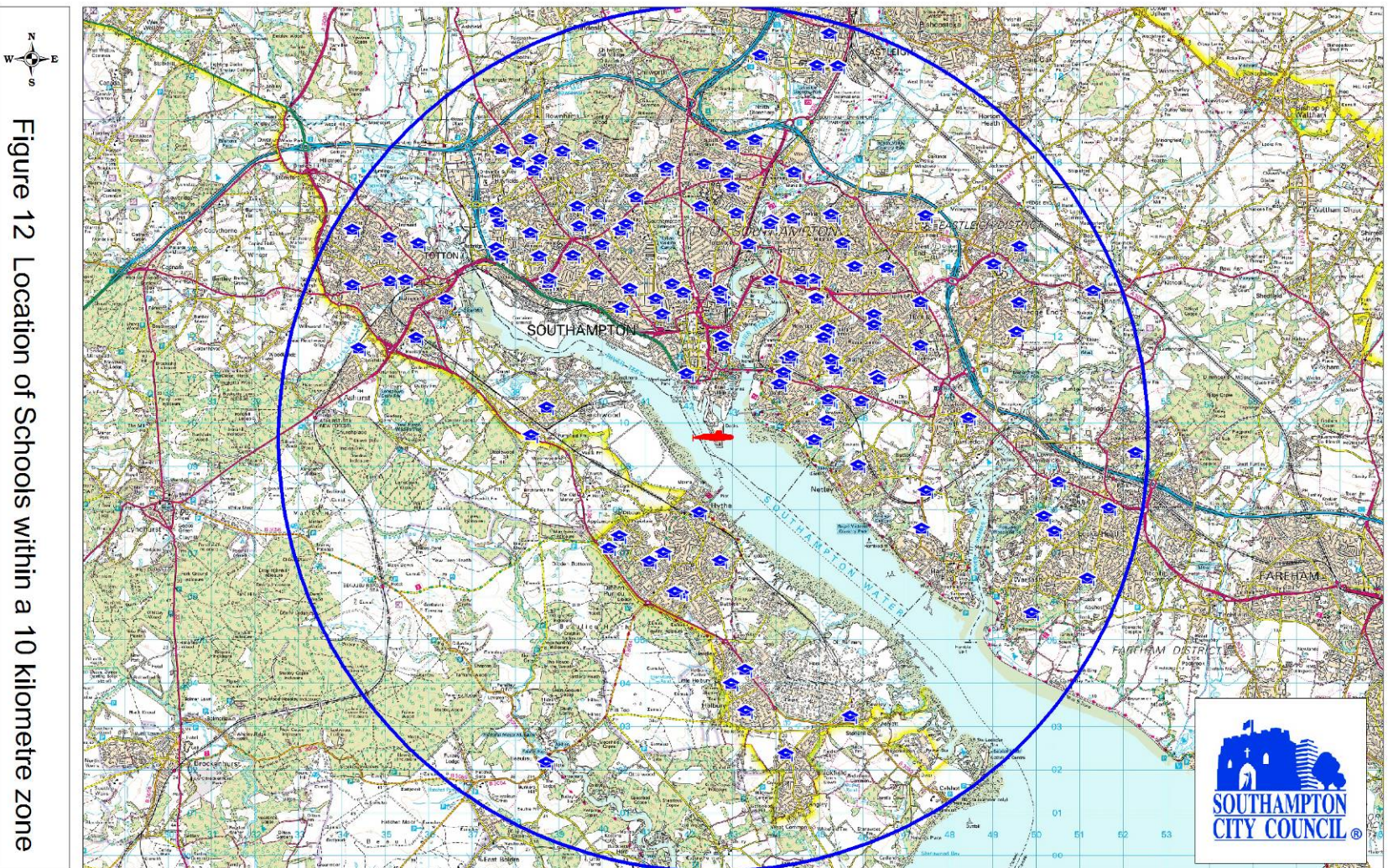


Figure 12 Location of Schools within a 10 kilometre zone

This map is based upon Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office © Crown copyright.

Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Southampton City Council 100019679 2011

7.9 Navy PITs Distribution Team

Pre-identified Ministry of Defence personnel will distribute those tablets that have not been pre-positioned, see 7.8. A total of 50 staff including team leaders and a PITs Co-ordinator will be on one-hour notice to do so and therefore be resident locally in Southampton for the duration of any such visit to the port. The rendezvous location has been designated as the EZRC. The Co-ordinating Officer will be located at the Tactical Coordination Centre at City Depot, adjacent to Dock Gate 20. This section outlines the arrangements for distribution in two phases, pre-visit and during an emergency.

All personnel involved in the distribution will be fully briefed as to their duties within the plan.

The location and stand-by arrangements for activating the teams are shown above and within the supplementary RN PITs Operational Procedures Manual.

Team members will be issued with the necessary personal equipment, tablets and documentation as detailed at Para 7.11.

Note: A named Royal Navy PITs Co-ordinating Officer will be identified and be responsible for the planning obligation to distribute PITs within affected areas. The Navy PITs Operational Procedures Manual, supplementary to the main SotonSafe Plan, will be prepared and maintained by this officer in liaison with Southampton City Council, Emergency Planning Unit who will be provided with a copy in order to ensure their obligation to public safety under REPPIR is compliant.

7.10 Navy Co-ordinating Centres and Walk Routes

In fulfilling the Navy personnel requirement to distribute PITs at the 500m cordon, Dock Gate 4 and within the broader 1.5km pre-planned countermeasure zone (PCMZ), the area has been divided into manageable residential distribution areas and walk routes.

There are seven walk routes identified within the 1.5km Pre-Planned Countermeasures Zone as follows:

Walk routes 1- 3 - Central Southampton

Walk routes 4 - 6 – Woolston & Weston

Walk route 7 - Hythe

NB. An up to date list of roads within these areas to which PITs are distributed is contained in the PITs distribution plan and is not reproduced in the main plan as the routes are amended on a regular basis taking into account building development in these areas.

Pre-identified Royal Navy personnel will fulfil this role from the three pre-agreed Co-ordination Centres (as detailed below). The Navy PITs distribution co-ordinator will be provided with the keys to each facility pre-visit.

The centres are:

EZRC

ABP Southampton

– Central Area

WOOLSTON COMMUNITY CENTRE

75 Church Road

Woolston

– Woolston & Weston Area

HYPHE POLICE STATION

Jones Lane

Hythe

- Hythe Area.

The process for PITs distribution within the PCMZ is shown on the following diagram.

DIAGRAMMATIC REPRESENTATION OF PITs DISTRIBUTION

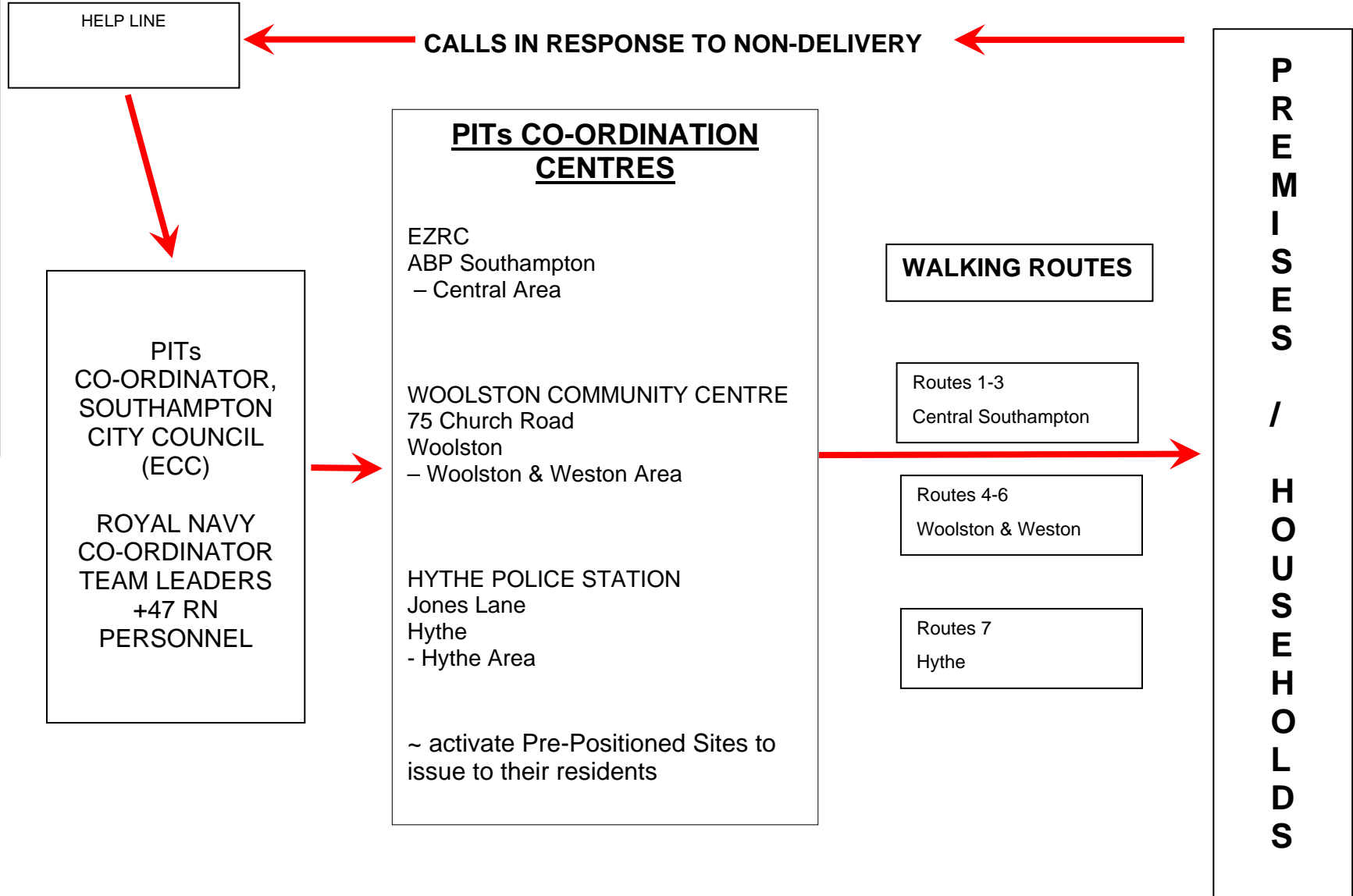


Figure 13 PITs Distribution Flow Chart

7.11 PITs Centre Boxes

Each box that is delivered in advance to each PITs pre-positioning point will contain the following:

- Sufficient number of Potassium Iodate tablets (PITs) for the area/location.
- Sufficient number of accompanying explanatory medication leaflets to the PITs (one per household).
- Telephone Numbers of the Emergency Control Centre at City Depot
- Advisory notes/allocation list

Each box that is pre-delivered to Navy personnel distribution teams will contain in addition to the aforementioned:

Personal Safety Packs for Navy personnel containing:

Thermoluminescent Dosemeter	01
Personal Electronic Dosemeter	01
Potassium Iodate Tablets (Personal Use)	02
Safety Instruction Leaflet	01
Personal Respiratory Protection Mask	01
(to be worn on "Release of Radioactive Material" OSNE declaration)	
Naval Uniform (Action working dress No 4's)	
Smock Foul Weather (High visibility strips)	
Mobile phone/radio for PITs DT (Individual)	01
Identification for Staff	01

PITs Distribution Route Packs containing:

Potassium Iodate Tablets (as per route)
Potassium Iodate Tablet Leaflets (as per route)
Copy of PITs Distribution Plan
Distribution Instructions
Distribution Route Matrix
Distribution Route Guide
Distribution Route Map
AZ Map of Distribution Area
Chinagraph markers

7.12 Distribution

Royal Navy personnel will deliver Potassium Iodate tablets door to door within the designated area, with the exception of specific locations, which have been identified as a pre-distributed site. Detailed arrangements to ensure this function are contained within the additional Royal Navy PITs Operational Procedures Manual.

PITs delivery management will be coordinated from the Tactical Coordination Centre at City Depot, adjacent to Dock Gate 20. Within that centre a PITs coordination cell will be established and staffed by Southampton City Council, Royal Navy personnel and health professionals. A help line, operated by the Council's strategic service provider, will be established to provide a point of contact from which the local community can inquire of and receive information concerning the emergency. The role of the PITs coordination cell will be to:

- i) Coordinate the distribution throughout the pre-planned countermeasure zone.
- ii) Provide a central record of all PITs deliveries.
- iii) Collate queries from addresses where distribution of PITs has been unsuccessful and coordinate the delivery to these addresses via each Navy co-ordination centre (see Figure 13 Page 7.11)
- iv) To ensure NHS interface using the Non-emergency Health number 111.

7.13 Dosage, Allocation and Total Requirement

Dosage of PITs should conform with the following guidance:

Adults (including pregnant women and women who are breastfeeding)	Two tablets
Children aged three to twelve years	One tablet
Children aged one month to three years	Half of a tablet

Birth to one month

Quarter of a tablet

Ten tablets will be issued by the Royal Navy Distribution Team to each household, by alerting their presence and the placing of relevant items including, dosage and explanatory leaflets, through the letterbox. All pre-allocated site tablets will be issued by the site co-ordinator(s) as shown above, for the total number of persons in occupancy of their site.

The total number of PITs required to fulfil this plan is:

(i)	Pre-positioned sites (including the 500 metres zone)	29,250
(ii)	Walk Routes	32,200
	• Central Southampton 18,600	
	• Woolston & Weston 10,000	
	• Hythe 3600	

Total tablets required	61,450.
-------------------------------	----------------

This page is intentionally blank

8 Remediation and Recovery

8.1. Introduction

This section contains the procedure in support of the formal transfer of the Chair of the Strategic Co-ordinating Group from the Chief Constable to the Chief Executive, Southampton City Council. It also provides the synopsis of the advice and information given by the PHE CRCE for the initiation of remediation procedures.

8.2. Remediation Working Group

At an appropriate time during the initial response phase, a Remediation Working Group should be convened as a Sub Committee of the Co-ordinating Group. The Working Group, when established, will meet at regular intervals to consider the long-term implications of the emergency and to formulate strategies for the return to normality. The Working Group will brief the Co-ordinating Group on a regular basis throughout the response phase of the emergency and this action will continue into the remediation phase.

Remediation issues may include:

- (a) characterising the extent and nature of off-site contamination arising from the emergency;
- (b) preparing an environmental impact characterisation report;
- (c) identifying options for clean up of contamination and disposal of wastes;
- (d) preparing a suggested remediation plan for approval by the Co-ordinating Group;
- (e) assessing the result of post-remediation monitoring in order to ensure objectives have been achieved;
- (f) preparing a post-remediation report.

8.3. Membership

The work of the Remediation Working Group will begin at the strategic level but once appropriate representatives become available, will move to an agreed local authority facility depending on the areas affected. Membership may comprise of representatives from the following agencies:

- (a) Southampton City Council;
- (b) New Forest District Council;
- (c) Hampshire County Council;
- (d) NHS
- (e) HIOW & Dorset Public Health England Centre - CRCE
- (f) Environment Agency
- (g) Department for Environment Food & Rural Affairs (DEFRA)
- (h) Food Standards Agency (FSA)
- (i) Southern Water
- (j) MoD/Portsmouth Naval Base
- (k) Associated British Ports (ABP)
- (l) Other agencies as appropriate.

8.4. Working Group Chair

The Chair of the Working Group will normally be undertaken by Southampton City Council, unless agreed otherwise by the Group.

8.5. Co-ordinating Group Chair

Following notification that the on-site emergency is over, the Strategic Co-ordinating Group will consider measures for the return to normality. At some point after resolution of the initial phase, the chair of the Strategic Co-ordinating Group will transfer from the Police to the appropriate local authority; based on the prevailing weather conditions this will normally be Southampton City Council's Chief Executive. This will happen only when the following criteria have been met:

- (a) the on-site incident has been contained and there is no significant risk of a recurrence.
- (b) public safety measures are in place.
- (c) no significant issues remain to be resolved from the post-incident phase;
- (d) the Strategic Co-ordinating Group activities are firmly established in a proactive role;
- (e) Southampton City Council (or other local authority) emergency centre and individual organisations are functioning effectively and have the necessary:
 - 1. resourcing,
 - 2. communication,
 - 3. logging and media co-ordination support;
- (f) that Central Government (Military Co-ordinating Authority, Nuclear Emergency Briefing Room) support hand-over.
- (g) that Southampton City Council (or other local authority) is able to accept the Chair of the Strategic Co-ordinating Group.

8.6. Issues During the Recovery Phase

Issues to be considered during the recovery phase may include:

- (a) the public health situation;
- (b) public access to contaminated areas;
- (c) decontamination procedures;
- (d) finance or compensation claims;
- (e) relocation of members of the public;
- (f) evidence for a public inquiry, etc.

8.7. Claims Procedures And Registration Of Persons Affected By A Reactor Emergency

Ministry of Defence will deal with claims under the principles for radiation injury and damage (including the sole and absolute liability of the operator) established by the Nuclear Installations Act 1965. The Ministry of Defence is prepared to consider any reasonable claim for compensation for any loss or damage, which can be shown to have been directly attributable to the incident concerned. Each claim will be considered on its merits, taking into account the full circumstances surrounding the incident. Any claim received will be dealt with as expeditiously as possible but no fixed timescale can be given in view of the wide and varied nature of any possible claim.

Any person or organisation suffering injury, damage or loss directly attributable to a Reactor Emergency will be entitled to claim compensation. The Department for Work and Pensions is also empowered to make various loans to persons who find themselves in urgent financial need as a result of a major emergency.

If radioactivity affects areas beyond the submarine it will be necessary to arrange for people in those areas to be registered so that it is possible to prove their presence in the affected areas and for health monitoring.

8.8. End of the Off-Site Emergency

The Strategic Co-ordinating Group will consider the timing and method of terminating the off-site emergency arrangements, including the content of final statements to the media.

8.9. Information and Advice

Appendix 6 contains information and advice (extracted from PHE CRCE (formerly RPD) Memorandum: M726) on critical planning issues for the implementation of remediation measures:

- (a) long term exposure pathways;
- (b) the purpose of remediation measures;
- (c) the re-instatement of pre-emergency conditions;
- (d) The various remediation measure options,
- (e) PHE CRCE principles for intervention;
- (f) the recommended remediation intervention criteria.

8.10. Effectiveness of Recovery Countermeasures

PHE CRCE advice on recovery countermeasures recognises the following categories of measures:

- (a) **Category A.** Those measures that are moderately dose-effective, incur relatively little disruption or resource, and which can be completed soon after the emergency.

- (b) **Category B.** Those measures that are more strongly dose-effective, but which incur significant disruption and/or resources, or can only be carried out over protracted periods.
- (c) **Category C.** Those measures that are either poorly dose-effective or are only moderately dose-effective and incur significant disruption and/or resources.

Examples of countermeasures likely to fall into each of these categories are listed in the Table at Appendix 6.2.

8.11. Decontamination Measures

The effect of decontaminating a particular surface on the dose received by an individual is dependent upon the contribution of that surface to the individual's total dose. The importance of a surface in contributing to dose depends on a number of factors. These include the relative deposition into different surfaces, how fast activity weathers off the surface, where it is redistributed to and where people spend their time. Some of the measures are listed below.

- (a) **Vacuum Sweeping & Fire Hosing.** Among the lowest cost countermeasures. They also have the advantage that they could be carried out relatively quickly, with little subsequent disruption to the population.
- (b) **Grass Cutting & Collection.** This is most effective following deposition under dry conditions, as a larger proportion of the deposited activity is intercepted by the grass. The effectiveness of this technique will depend on the length of the grass at the time of deposition, being less effective for recently mown grass, and on its implementation before substantial rain falls.
- (c) **Soil Removal, Ploughing, Rotorvating & Digging.** This can lead to relatively large dose reductions, of the order of 40-60%. The choice of measure would depend on the size of the individual areas affected.

- (d) **Tree Felling/Shrub Removal.** This procedure can lead to some reduction in dose in the first year, following dry deposition, but is generally only potentially worthwhile in certain specific situations (i.e., where deposition has occurred in spring or summer under dry conditions and where there is a high density of trees and shrubs around buildings).
- (e) **Restricted Access Measures.** The dose-effectiveness of restricted access measures will depend upon both the potential exposure rate and the length of time individuals would spend in an area if restrictions were not imposed.

This page is intentionally blank

Appendix 1 - CONTACT LIST

A detailed contact list is not provided at this point due to the complexity of co-ordinating the communication arrangements of more than fourteen organisations, and the fact that a pre-visit contact directory will have been prepared and distributed in advance of any visit.

In respect of Southampton City Council, attention is drawn to the contact details provided within Appendix 1 of the Major Incident Plan.

This space may be used by plan holders to retain any locally produced contact list relevant to SotonSafe and any visits of a nuclear powered submarine. In such cases this Appendix should be protectively marked Restricted and handled accordingly

This page is intentionally left blank

Appendix 2 BACKGROUND TO NAVAL REACTORS

	<u>Para</u>
<u>BACKGROUND</u>	1.1-1.5
<u>REACTOR PLANT AND OPERATION</u>	
The Pressurised Water Reactor	1.6-1.10
Reactor Containment	1.11-1.12
<u>HAZARD OF A REACTOR EMERGENCY</u>	
Biological Effects of Radiation	1.13-1.14
Radiation and Contamination	1.15
The Hazards	1.16
Release of Fission Products to Atmosphere	1.17-1.18
Release of Fission Products to Water	1.19-1.20
<u>PROTECTION OF THE PUBLIC FROM THE HAZARDS OF A REACTOR EMERGENCY FROM INFORMATION TO THE PUBLIC</u>	
Prior Information to the Public	1.21
Emergency Management	1.22
Emergency Countermeasures	1.23-1.28
Other Countermeasures	1.29

BACKGROUND

- 1.1. The Royal Navy operates a flotilla of nuclear powered vessels, which form a vital element of the defence of the UK. The nuclear reactor offers the vessel a level of speed and underwater endurance, which cannot be achieved by any alternative method of propulsion. Nuclear power is the only mechanism available to allow HM Submarines to carry out elements of the Navy's task.
- 1.2. The safety of naval reactors is given the highest priority and their design, operation and maintenance is authorised by the Secretary of State for Defence through approved Naval Regulations. A specialist committee, the Defence Nuclear Safety Committee (DNSC), whose membership includes independent nuclear and radiation safety experts from the civil nuclear industry, advised him on these matters. The MOD has all aspects of the Naval Nuclear Propulsion Programme (NNPP) independently assessed by safety and reliability experts from Serco Assurance (SRD) whose performance and conclusions are subject to the scrutiny of the Director Defence Nuclear Safety Regulator. The prime contribution to safety comes from engineered safeguards, good design, quality in construction, training and competence of staff in operations and maintenance.
- 1.3. Such measures ensure that the likelihood of a reactor emergency occurring is extremely remote. Indeed during more than 40 years of the Naval Nuclear Propulsion Programme there has never been a reactor emergency nor has any radiation incident resulted in a significant hazard to service personnel or a member of the public. Nevertheless, in accordance with UK statutory requirements and the recommendations of the International Commission on Radiological Protection (ICRP), it is MOD policy to have in place a Local Authority detailed reactor emergency contingency plans. These plans form an additional level of public protection for use in the extremely unlikely event of an emergency.
- 1.4 Ultimate responsibility for ensuring that the appropriate steps are taken to mitigate the effects of a disaster rests with the Chief Constable of the affected area. Co-ordination of central government actions is the responsibility of a lead government department who would keep the Prime Minister and the Cabinet informed in case

decisions were needed at that level. The department assuming the lead role is laid down in "Emergency Response & Recovery ", a document by HM Government. For emergencies involving Chemical, Biological, Radiological and Nuclear (CBRN) resilience, the lead department is the Home Office. For all defence related nuclear material emergencies, the Secretary of State for Defence is charged with ensuring the MOD fulfils this lead department role. The guidelines in "Emergency Response & Recovery" cover all levels of the national response, from the requirement for a central government contingency plan to the local management structures that are to be implemented. The document also requires that the response to all national emergencies should involve full consultation and co-operation between relevant departments. In the unlikely event of a submarine reactor emergency occurring, the MOD HQ Nuclear Emergency Response Organisation would fulfil this requirement for cross government co-operation by convening the Nuclear Accident Information Advisory Group (NAIAG).

- 1.5 At the local level, "Emergency Response & Recovery" nominates the area Police Chief Constable as being responsible for the co-ordination of all assets responding to the emergency. The police generally fulfil this responsibility by locating the heads of the various services and agencies at a Strategic Headquarters from which the overall implementation of the contingency plan is managed. To ensure that the MOD response is consistent with the guidelines in REPPIR and "Emergency Response & Recovery", it is a requirement that a local emergency plan is formulated in association with the emergency services and other civil authorities. Such a plan must exist for all berths that are cleared for occupancy by a Nuclear Powered vessel. This task is eased somewhat by the fact that the reactor plants in all submarines which use the berths are of a similar design, and this in turn enables a skeleton generic plan for the local emergency organisation and response to be formulated. Site-specific contingency plans can then be drawn up to take account of local conditions and facilities. In the unlikely event of a submarine reactor emergency occurring, the MoD Head Quarters Nuclear Emergency Response Organisation (MOD HQ NERO) would fulfil this requirement for cross government co-operation by convening the Scientific Advisory Group for Emergencies (SAGE).

REACTOR PLANT AND OPERATION

The Pressurised Water Reactor (See diagram following section 1.12)

- 1.6 A Royal Navy nuclear powered vessel is driven by steam turbine machinery. However, unlike a conventional steam driven vessel, which uses fossil fuels to fire its boilers, the source of heat within a nuclear powered vessel is provided by a nuclear reactor. The type of reactor used is known as a Pressurised Water Reactor (PWR).

- 1.7 The reactor core contains fuel modules and control rods. To achieve criticality, the state in which the reactor is able to provide useful power, the control rods are slowly withdrawn from the core until the fission reaction is established. The reactor is shut down by re-insertion of the control rods. The heat produced by the fission of the fuel is removed from the core by water contained in a sealed primary circuit. This water is pumped through steam generators where the heat is used to produce steam in a separate, secondary circuit. It is this steam, which is used to provide power to the submarine. The primary circuit is kept under pressure to prevent the coolant water from boiling.

- 1.8 As well as heat, the fission process also produces radioactive fission products. Unlike some civilian power reactor designs where the minor release of fission products into the primary circuit can be tolerated, submarine fuel modules are designed differently to avoid any such release during normal operation and there has never been an instance when fission products have been released from the fuel.

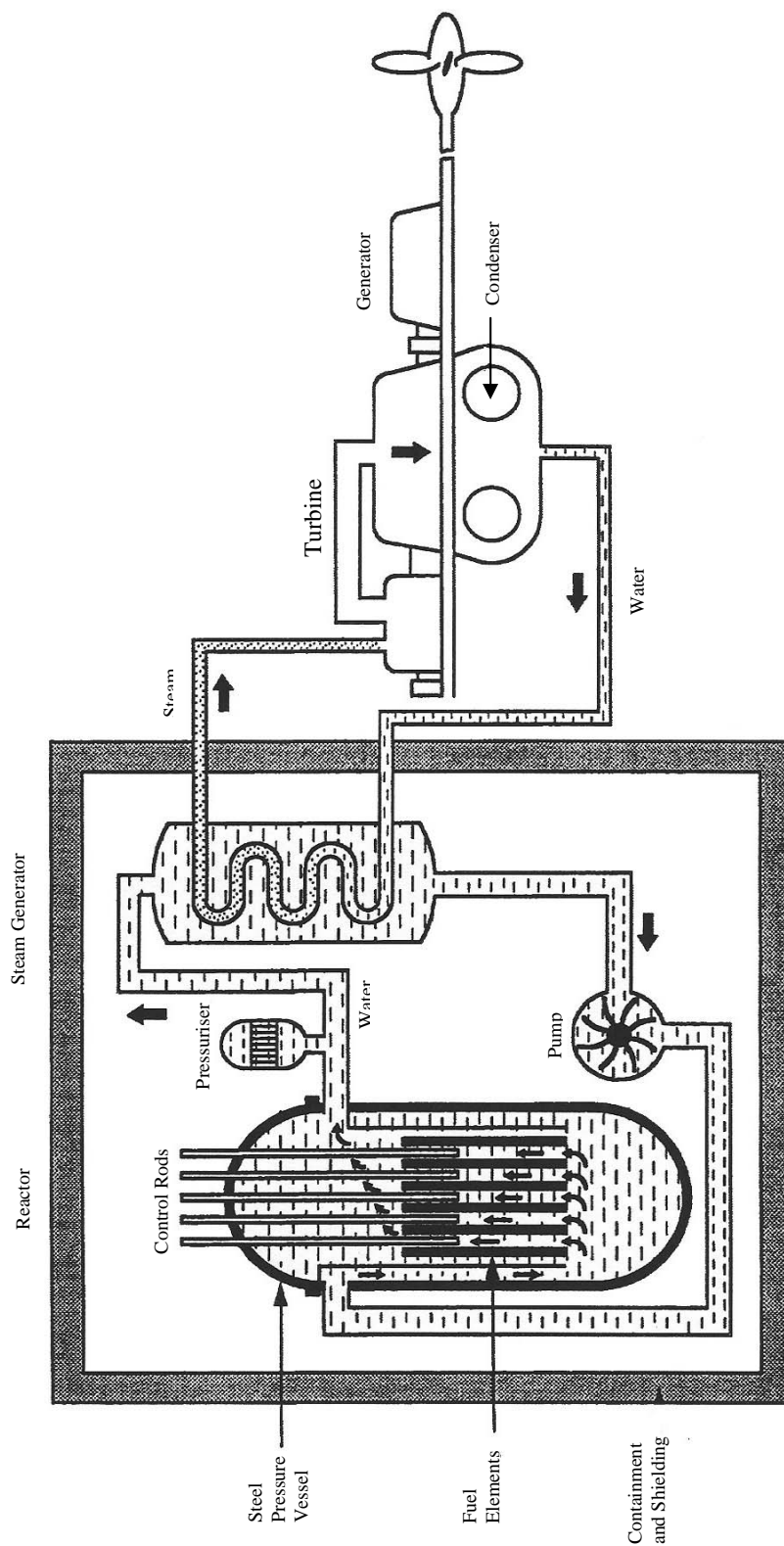
- 1.9 Although the fission products remain contained in the fuel, the gamma radiation that they emit is highly penetrative and thus there is a need for shielding to be fitted around the core and to be built into the submarine's reactor compartment. The shielding installed in RN nuclear powered vessels reduces the radiation levels within the manned compartments of the vessel to very low levels. Indeed the average levels of radiation dose received by members of the crew from reactor operation are less than the average natural background levels received by the UK population.

1.10 The heat produced by the fission process would be sufficient to melt the fuel modules if they were not cooled. Even after shutdown the radioactive fission products continue to generate heat, known as decay heat, and cooling is still necessary. To overcome this the vessel design incorporates a number of mechanisms that are able to supply cooling to the reactor. These include natural convection so that cooling would continue even on complete loss of electrical power.

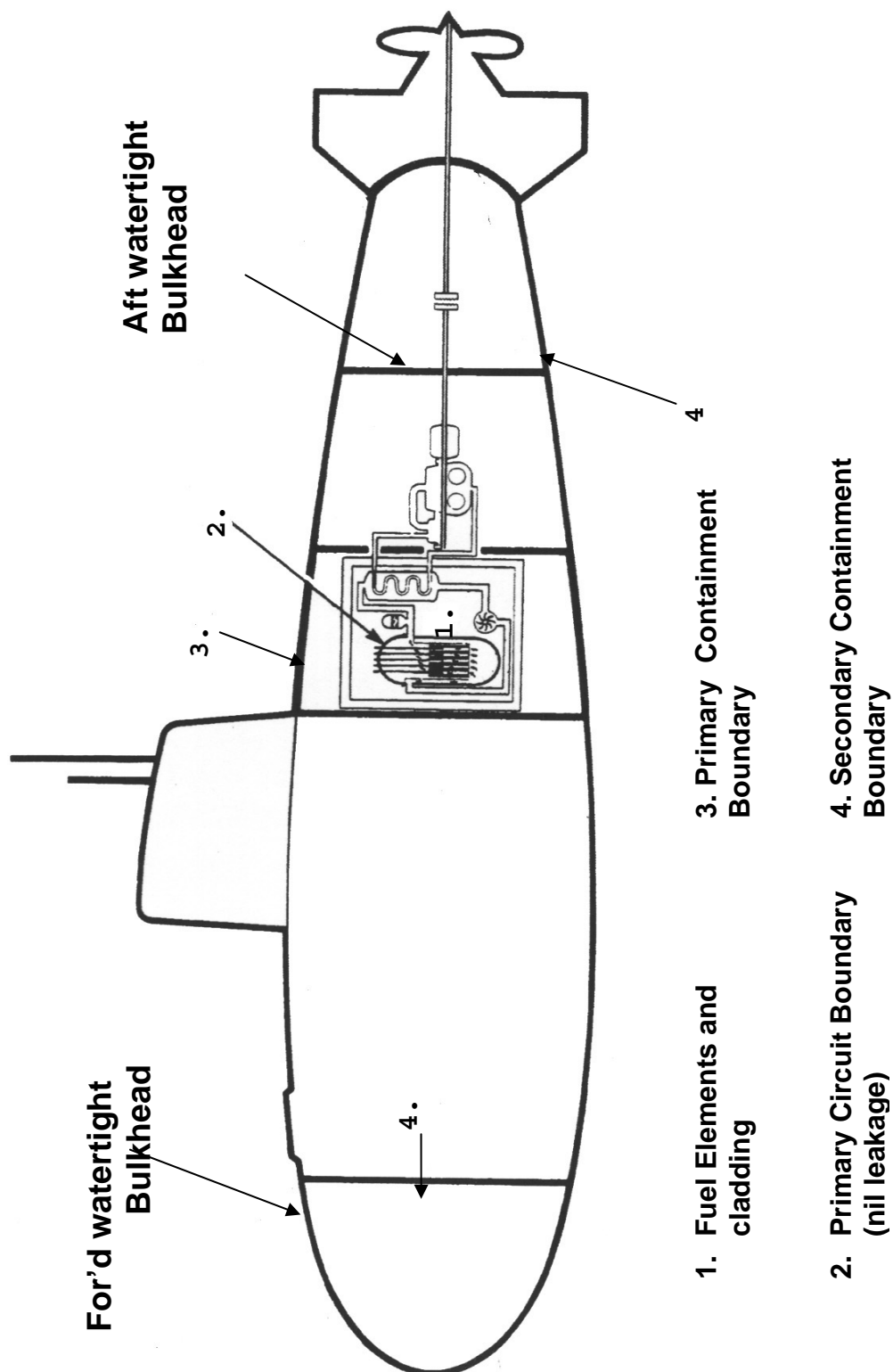
Reactor Containment (See diagram following section 1.12)

- 1.11 Following an emergency the main potential hazard associated with nuclear reactors would come from the release of fission products from the fuel. As already stated, in order to prevent this, submarine reactor fuel is encased in strong and very high integrity cladding. In addition, beyond this protection there are a number of further barriers designed to contain the fission products should an emergency situation develop. In the first instance, should the cladding fail the primary coolant system, which is a closed circuit, would contain the fission products and prevent further spread.
- 1.12 Beyond the primary coolant system, the submarine's reactor compartment is designed and constructed to meet the severe rise in pressure that could result from the very unlikely event of a complete failure of the primary system. This barrier to the release of fission products is termed the Primary Containment. Pipes, ducts and other penetrations between the primary containment and the remainder of the submarine are designed to be shut off automatically, but even if these openings were to allow a slow release of a proportion of fission products, they would still be contained by the immensely strong hull of the submarine which is, of course, designed to withstand the enormous pressures associated with operations at depth. The submarine's pressure hull is referred to as Secondary Containment.

Pressurised Water Reactor



Reactor Containment



HAZARDS OF A REACTOR EMERGENCY (See diagram following section 1.18)

Biological Effects of Radiation

- 1.13 It is the ionising radiation given off by the fission products that would pose the hazard following any reactor emergency. As the radiation passes through the human body, ionisation events occur which may damage or kill cells. The body is of course being subjected continuously to natural background radiation and has well-developed repair processes to deal with radiation damage. Different human cell types have very different radiation sensitivities but if the radiation dose is great enough and large numbers of cells are killed; signs and symptoms of acute radiation exposure would appear. These acute radiation effects include skin burns and most severely death, but all have a defined threshold of dose below which the effect will not take place.
- 1.14 At radiation doses below the thresholds acute effects cannot occur, although cells may have been damaged with the result that exposed individuals have a statistically increased risk of the development of cancer in years to come. Reproductive cells may also have been damaged so those children born to exposed individuals may have a very small increased risk of hereditary defects. For radiation protection purposes, the increased risk of these effects is assumed to be directly proportional to the radiation dose, without any threshold.

Radiation and Contamination

- 1.15 In order to understand the hazards of a reactor emergency, it is important to appreciate the meaning of and differences between the term's radiation and contamination. Even in a situation where the fission products remain contained, the penetrating radiation that they give off may still irradiate people in the vicinity. This is termed a radiation hazard. Protection against such a hazard would be afforded by reducing the time people spent close to the fission products, placing shielding between the individuals and the radiation source or increasing the distance between them and the source. If, however, personnel became contaminated with fission

products, either on the surface of their body or internally by breathing, eating or drinking, then the subjects carrying the source of the radiation around with them would continue to be irradiated until that source was removed. This is termed a contamination hazard. Some protection against such a hazard can be afforded by the use of protective clothing, and skin contamination can normally be removed by simple washing.

The Hazards

1.16 Following a severe reactor emergency involving the release of fission products outside the primary circuit, there are 2 distinct ways by which people could be irradiated:

- a) Gamma radiation from fission products retained within the submarine containment would be transmitted in all directions through the vessel's hull. The intensity of this pure radiation hazard would be diminished by both shielding and distance from the submarine, but excessive levels of radiation could be received by people within, or in close proximity to, the vessel. This hazard is referred to as Hull Gamma Shine.
- b) Less likely is the release of some of the fission products from the submarine to the surrounding atmosphere or water, albeit the secondary containment is intact.

Release of Fission Products to Atmosphere (See diagram following section 1.18)

1.17 If released to atmosphere the fission products would be dispersed in the area downwind of the vessel. The extent of the hazard and the distance to which such a fission product cloud could be detected would be highly dependent on the weather conditions during the period that the release took place. Such a cloud of radioactive contamination could irradiate people in 6 distinct ways:

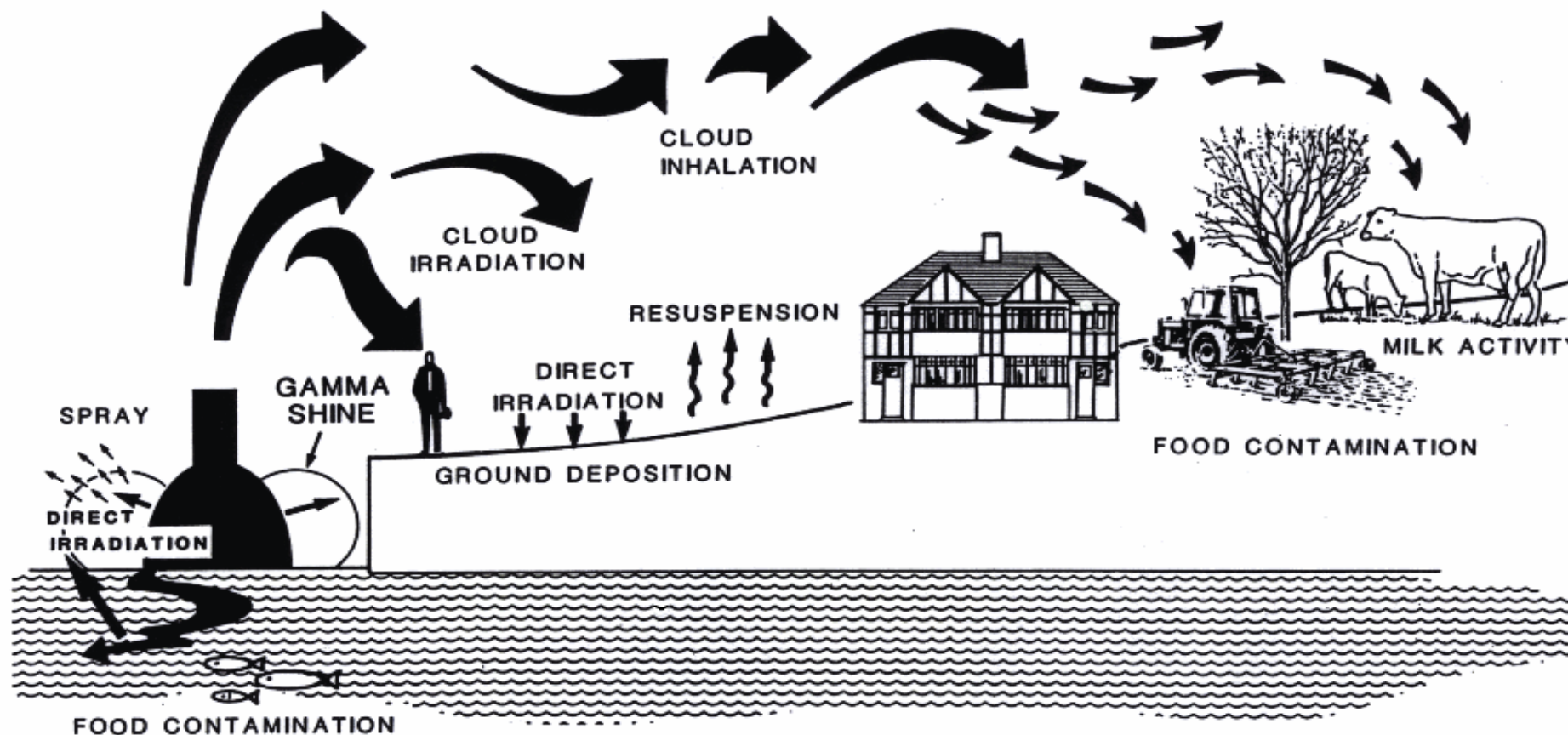
- a) Direct radiation from the cloud as it passes by.

- b) By inhalation of radioactive fission products from the cloud. The parts of the body receiving the greatest radiation doses would depend on the chemical and physical form of the individual fission products. It is possible that a significant dose could result from the inhalation of radioactive Iodine, which is readily absorbed and concentrated, in the thyroid gland. Another group of fission products, being largely insoluble, would remain in the lung. A third main group would be readily absorbed but would not be concentrated in any particular organ.
- c) Direct radiation from fission products, which have been deposited on the ground. This route, like a. above, would result in fairly uniform whole body radiation exposure.
- d) Direct radiation from beta and gamma emitting fission products, which have been deposited on the skin.
- e) Inhalation of fission products that have been re-suspended after deposition on the ground. This route has been shown to be insignificant compared with doses that would result from b and c.
- f) Consuming food or drink, which has been contaminated by fission products. As a radioactive cloud moves downwind, some of the radioactivity could be deposited onto the surface of food, either growing in fields or exposed on market stalls etc. This superficially contaminated food would cause internal contamination to those who consumed it in the immediate post emergency period. Fission products deposited on the ground may also be taken up by growing plants and animals, which may be eaten directly by man, causing subsequent internal contamination and radiation dose. The contaminated plants and animals may not be eaten directly by man, but may enter a food chain and pass through a number of stages before entering the human diet. For example, radioactive Iodine deposited on pasture would be concentrated in the milk of grazing dairy animals, which could present a hazard if the milk was consumed. Peak levels of radioactive iodine in milk would be reached 2 days after the release, with levels decaying over the next several weeks. After the decay of the Iodine, the dominant hazard via the

ingestion route would be the take-up of longer-lived fission products into the food chain.

- 1.18 In the very unlikely event of a release to atmosphere the principal short-term hazards would be direct irradiation from the cloud, inhalation of fission products and irradiation from ground deposition. Food chain contamination, although representing less of a hazard initially, would come to be of increasing significance in the longer term.

Hazards of a Reactor Emergency



Release of Fission Products to Water

1.19 The radiation effects from fission products released into water would be highly dependent on the state of the tide and the characteristics of the estuary into which the release took place. There are 4 ways in which people could receive a dose of radiation following such a release:

- a) Direct radiation from the water either to those immersed within it or to those in its immediate vicinity.
- b) Ingestion of the water or inhalation of spray.
- c) Irradiation from the deposition of fission products on banks and areas uncovered by the tide.
- d) Fission product contamination of marine food chains.

1.20 Following a reactor emergency, the overall hazards to the population resulting from a fission product release to water would be on a smaller scale than for the same magnitude of release to atmosphere. Significant hazards could arise in the localised area around the contaminated water, however, and this area would drift with the tide gradually diluting and dispersing. Food chain contamination could become of increasing significance in the longer term, as would the accumulation of radioactivity in the sediments and mudflats.

PROTECTION OF THE PUBLIC FROM THE HAZARDS OF A REACTOR EMERGENCY

Prior Information To The Public

1.21 Public information leaflets will be distributed to all postal premises within 1.5km of the Berth. The leaflets will inform members of the public what to do in the extremely unlikely event of a nuclear reactor emergency in the port. This guide has been produced by Southampton City Council, in consultation with the Ministry of Defence

and relevant Health Authorities, in accordance with the Radiation (Emergency Preparedness and Public Information) Regulations 2001. (See public information leaflet - Part 3).

Emergency Management

- 1.22 If a reactor emergency were to occur, emergency procedures would be followed by the submarine crew and shore engineering support with the aim of preventing or minimising core damage, maintaining the integrity of containment and minimising any release of fission products. This emergency management strategy would form an important element in the overall protection of the public.

Emergency Countermeasures

- 1.23 The entire population has always been constantly exposed to naturally occurring radioactivity, although as a general rule the levels of this radiation are so low as to be considered insignificant. In the event of a reactor emergency, increases in the radiation level above natural background would result and probably continue unless some form of intervention was to take place. For a serious emergency, intervention to reduce doses could be required in the form of emergency countermeasures which are implemented population-wide in the surrounding area. Since the implementation of widespread countermeasures, even in accordance with a pre-planned scheme, is not a risk-free activity, it follows that there must be some criteria on which to base any decision to take such measures following a reactor emergency.
- 1.24 The criteria for the implementation of emergency countermeasures following a reactor emergency are based on the principles that the countermeasures should achieve more good than harm and that introduction and withdrawal of the measures should be aimed to provide optimum protection. It is the risk to the individual, which is considered of greatest importance in determining the need for emergency countermeasures. The basic requirements for implementation criteria are as follows:

- a) Countermeasures should be introduced to ensure that no individual suffers acute effects of radiation.
- b) The increase in probability of the individual suffering cancer or hereditary effects from radiation exposure in the absence of the countermeasure should be balanced against the detriment from the countermeasure itself to determine the optimum protection of the individual.

1.25 Within the UK, guidance on emergency countermeasures to protect the public following reactor emergency is provided by the PHE - CRCE. Basic methods of reducing radiation exposure such as time, distance and shielding are still relevant in the mass countermeasure situation but they are incorporated into three countermeasures that are applicable to a population:

- a) Sheltering The public remaining indoors with doors and windows shut.
- b) Stable Iodine Administration If tablets containing stable Iodine (non-radioactive) are taken prior to or within a few hours of internal contamination with radioactive Iodine, the resultant radiation dose to the thyroid gland would be reduced substantially.
- c) Evacuation In the context of nuclear emergency contingency planning, the term evacuation refers to the movement of people out of an area as an emergency measure to provide short-term protection for durations of up to a few days. If carried out prior to the existence of any hazard, evacuation would prevent almost all the radiation exposure that would have resulted. The adverse effects and difficulties of population evacuation, however, are significantly greater than for shelter.

1.26 Public Health England - CRCE has recommended dose criteria for the implementation of these emergency countermeasures in an emergency situation. These intervention levels are known as Emergency Reference Levels (ERLs), and are specified in terms of the dose to an individual, which would be averted by taking the relevant countermeasure. ERLs are specific to each countermeasure because the detriment associated with each countermeasure is different, and are

promulgated as a range between two specified values. If doses that can be avoided by the measure are below the lower level for that measure, then the PHE - CRCE advises that the countermeasures should not be introduced because it would be unlikely to be justifiable. If doses that could be avoided were estimated to exceed the upper level, then the PHE - CRCE would expect every effort to be made to introduce the measure. The intervention level selected for a specific situation should therefore lie between the upper and lower ERL values.

- 1.27 PHE - CRCE also recommends consideration of precautionary countermeasures to be implemented automatically particularly where the potential risks are significant, to provide protection at an early stage without requiring the full circumstances of the emergency and of any release to be determined.
- 1.28 In considering emergency countermeasures following a release of radioactivity to the environment, it is important to recognise that radiation exposure or contamination does not necessarily end at the distance to which countermeasures have been implemented. It is simply that extension of emergency countermeasures beyond the implementation distance would not be justified and, indeed, could pose more of a threat to the public than the radiation doses they are intended to avert.

Other Countermeasures

- 1.29 In addition to emergency countermeasures for which ERLs are promulgated, a range of other longer term measures may be applicable to protect the public following a reactor emergency.

Appendix 3 - Training, Exercising and Validation

A.3.1. Introduction

Both REPIR and the CCA Regulations require any plan to include provision for the carrying out of exercises and for the training of staff or other persons. They clarify the requirement in regard to the training of persons involved in the response to a nuclear reactor emergency and the exercises to test those arrangements.

A.3.2. Training

All personnel involved in the response will receive regular training in their respective roles within the plan. Training will be reviewed and updated on a regular basis in order for all personnel to be fully competent in their particular role. New staff and staff whose roles have changed will also be given appropriate instruction and training.

Southampton City Council will ensure that staff who have roles and responsibilities within this plan, are given training commensurate with the tasks expected of them. Training will be extended to those not directly employed by the council, but who perform tasks and duties on their behalf, in support of the plan, i.e. contractors and other service providers.

A range of training methods will be adopted. These may include one-to-one training, group lectures, seminars and scenario based training. The council will take the opportunity to involve staff in training offered and provided by others where there is a clear benefit to the council's ability to respond to emergencies. An annual schedule of training and exercising will be created and reviewed regularly taking into account the needs of the council, staff and their experience.

The aim of training will be to ensure that staff are fully competent, so that the council is able to respond efficiently and effectively to any major emergency they may be called to assist with. The objective will be to ensure that all involved in the response to major emergencies understand their role and are capable of completing the tasks expected of them. Additionally they will need to have a broad overview of the whole plan and the functions of

other agencies. Training will also extend to those not directly employed by the council, but who support the council's response to emergencies i.e. voluntary organisations and other agencies. Training opportunities will be offered to relevant responders and agencies where this is appropriate.

A related training attendance database will be maintained.

A.3.3. Exercising

The plan is constantly under review by the SEPG who meet twice a year (or more often as visits may require) and any changes are incorporated and reflected in training. Under the regulations the plan must be reviewed and exercised every three years but if considered necessary it may be exercised at shorter time intervals. Any exercise that occurs may also include an evacuation exercise of the city centre given the correlation between this plan and the City Centre Evacuation plan. The appropriate Cabinet member will be briefed on the issues raised and lessons learned.

Exercises will ensure that our plan remains effective and will form a part of the training process. The aim of the individual exercises will be to test and validate those parts of the plan under scrutiny. Related schedules and reports will be maintained.

As such, the objective of the exercise will be to ensure that the element of the plan being tested actually works and achieves its purpose. As there may be many different elements capable of being exercised, objectives will be set for each individual exercise, and the measure of success will be whether those objectives were fully achieved, when and by whom. The results obtained will then drive the cycle of evaluation, review and training so that a process of continuous refinement and improvement is in place.

The council will ensure that inter-agency partners, the voluntary sector and elected members are engaged in the training and exercising process when appropriate. Their role, and the contribution they make to the emergency response, is recognised and valued.

Sample Training Schedule (Refer to ongoing training and exercise schedule maintained by the EPU)



Date Planned	Subject	Target Group	Type / Location
Oct 2008	Control Room Operations and individual roles	Identified ECC staff, Call handlers, EP Staff,	Demonstration and presentations to group and individuals. Southbrook Rise ECC.
Jul 2008	Nuclear Emergency Procedures Course	Those with role in incidents, incl. Emergency Services, RN, SCC, HCC etc.	Presentations and practicals RN Gosport
June 2008	Alerting and activation	Those with role in activation process. Incl. Executive Directors, senior council managers, Link and liaison officers, Community Alarms Staff.	Presentation and subsequent discussions. Committee Room 1. Civic Centre
Feb 2008	Communications methods during an emergency	ECC staff, link and liaison officers, EP staff Raynet, Police, PRC Staff, City Patrol	Presentation, discussion and practical demonstrations. Football Stadium conference suite
Feb 2008	Nuclear Incident Management Training (Tactical)	RN staff, SCC managers and support staff. Emergency Services, ABP, HCC staff	Presentation, discussions QE2 centre, Southampton Port
Jan 2008	Nuclear Incident Management Training (Strategic)	RN staff, Senior SCC staff. Emergency Services, ABP, HCC staff	Presentation, discussions Various
Jan 2008	Nuclear Incident Management Training (Operational)	RN staff, SCC support staff, Emergency Services, ABP, HCC staff	Presentation, discussions Various
Nov 2007	Roles and Responsibilities of Category 1 & 2 Responders	All available SCC staff with a function within the plan. Emergency Services and Utilities, ABP, Military	Presentation, discussion and practical demonstrations. Multi Choice question test. Football Stadium conference suite

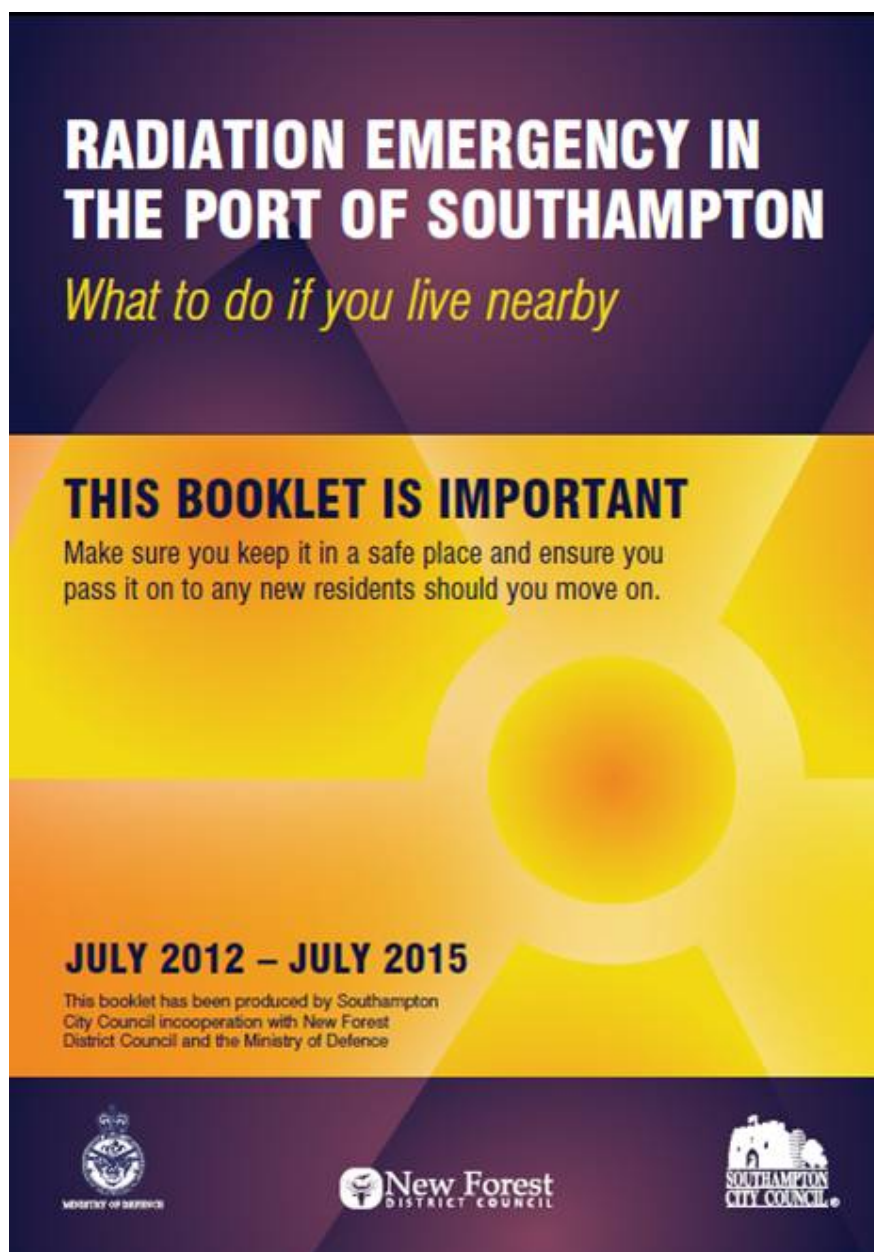
Sample Exercise Schedule



Date	Subject/Element Exercised	Groups involved	Coordinated By	Details of Training Exercise, Outcomes, and Main Follow-Up Actions
July 09	PRC Operation	PRC staff, WRVS, Police, BRC, EPU	A.N.Other	Live Exercise Objective: 1) To set up and staff PRC. 2) To accurately register 100 evacuees. 3) To re-unite separated persons. 4) Test problem solving abilities Assessment: Mostly achieved. 80% Follow Up: Reconsider layout of reception area to improve documentation ability, additional telephones for evacuee use.
Aug. 09	"Cold Call" Alert Exercise	EPU and on –call staff	J. Smith	Live Exercise Objective: To test the availability and response of key on-call staff. Assessment: 70% available within 2 hours Follow Up: Increase awareness of need to advise availability though EP Bulletin.
Dec 08	ECC Operation (in conjunction with Operation RedStripe)	All ECC staff, and senior managers	EPO	Live Exercise Objective: 1) To set up and test function of the ECC, 2) To test ECC communications equipment for 100% functionality, 3) To test staff ability in respect of message recording and decision- making process. Assessment: Mostly Achieved. 85% Follow Up: IT provision and access to be reassessed to ensure seamless access for all staff. Regular inspections of room whilst in stand-by mode and used as offices to ensure equipment is ready to use. (see also results of Exercise RedStripe)
Feb 08	Operators on-site Plan Pits distribution plan ECC Operation	RN, SCC, Emergency Services , ABP, HCC	RN	Live Exercise Objective: 1) To set up and test function of the ECC, 2) To test ECC communications equipment for 100% functionality, 3) To test staff ability in respect of message recording and decision- making process. Assessment: Mostly Achieved. 85% Follow Up: IT provision and access to be reassessed to ensure seamless access for all staff. Regular inspections of room whilst in stand-by mode and used as offices to ensure equipment is ready to use. (see also results of Exercise RedStripe)

Appendix 4 PUBLIC INFORMATION LEAFLET

A copy of the public information leaflet provided to all households within the Pre-Planned Countermeasures Zone (PCMZ). This is the area within 1.5km (0.9 miles) radius of the berth.





Hampshire and the Isle of Wight Local Resilience Forum

Southampton City Council is committed to supporting the work of the Hampshire & Isle of Wight Local Resilience Forum (HIOW LRF).

The HIOW LRF consists of representatives from emergency services, local authorities and any other organisations who would be involved in an emergency. The role of the HIOW LRF is to ensure that all of these organisations work together to prepare for, respond to and recover from emergencies.

The HIOW LRF is responsible for the development, maintenance and testing of plans and procedures for major emergencies and incidents to ensure all of the organisations are prepared to respond to a major incident in the county. This joined up approach helps to ensure the best possible service for people living in Hampshire and the effective fulfilment of legal obligations under the Civil Contingencies Act.

The following web sites contain information about Southampton City Council Emergency Planning and HIOW LRF:

www.southampton.gov.uk/emergencies

www.hiow-localresilienceforum.org.uk

These give:

- advice and guidance on protecting yourself and your business,
- assessment of local risks,
- information about emergency plans,
- current information
- contact information
- links to other relevant websites

As Britain's premier port, nuclear-powered vessels may occasionally visit Southampton.

This booklet provides essential safety information that you'll need in the **highly unlikely** event of a leak of radioactive material from a vessel. It is being distributed to all households within a 1.5 kilometre radius of the section of the Docks where these vessels would berth in accordance with emergency regulations.

**The drill in an emergency is simple:
GO IN • STAY IN • TUNE IN**

Follow instructions you are given.

Although the chance of ever having to use this booklet in an emergency is very slight, PLEASE PUT IT IN A SAFE PLACE WHERE YOU CAN FIND IT EASILY.

For more information on radiation safety, call the Emergency Planning Officer at Southampton City Council on 023 8083 2427.

This written information is available on request in other formats or languages. Please contact 023 8083 2427 for help.

WHAT DO YOU MEAN BY AN EMERGENCY?

The design of nuclear powered vessels means that an accident involving a vessel's reactor is extremely unlikely. However, if the reactor on board a vessel suffers a serious problem and begins to leak, radioactive particles might escape into the air. There is no possibility of a "nuclear bomb" type of explosion. As soon as the Royal Navy knows a nuclear powered vessel in or near the port has a problem, it will start a well-rehearsed emergency plan that it practices regularly with Southampton City Council, New Forest District Council, the emergency services and the health service. The plan gives you information to keep you safe until the problem has been dealt with.

HOW DO I KNOW IF I WILL BE AFFECTED?

In the unlikely event of an incident occurring it would probably only affect people living or working very close to or within the port. Legislation requires people living up to 1.5 km away to be given prior information about a nuclear emergency as provided in this booklet. The map opposite shows the 1.5 km zone.

HOW WILL I KNOW AN EMERGENCY HAS HAPPENED?

There will be an announcement on local radio and television and the advice in this book will be repeated. The Police may also issue warnings over loudhailers in the affected areas.



This map is based upon Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Southampton City Council LA1500166719 2005.

IN AN EMERGENCY

WHAT DO I DO IF I LIVE WITHIN 1.5 KILOMETRES (0.9 MILES) OF BERTH 38 EASTERN DOCKS?

1 GO IN

In the highly unlikely event of a nuclear incident the best thing to do is to go indoors and stay there. Don't go outside unless you are told to. Make sure you keep your pets indoors as well. If you have an elderly neighbour you may want to tell them that there is an emergency.

2 CLOSE THE WINDOWS AND DOORS

3 SHUT DOWN FANS, FIRES AND VENTILATORS

In fact anything that draws air in from outside.

4 STAY IN

Don't collect your children from school – they will be looked after there.

5 TUNE IN

To local radio or TV, which will be giving out emergency information. The frequencies for the local radio stations are shown on the back cover of this booklet.

6 DON'T USE THE TELEPHONE UNLESS YOU URGENTLY NEED HELP.

In an emergency the telephone system could become very busy. If you have to make a call, please keep it short.

7 DO NOT LEAVE THE AREA UNLESS YOU ARE TOLD TO DO SO

You will be much safer indoors. If you need to leave the area you will be told and you should follow the instructions given. If you try to leave earlier you may block the roads for emergency services.

8 POTASSIUM IODATE TABLETS - HOW TO GET THEM AND WHEN TO TAKE THEM

Listen to information about something called "PITs" – Potassium Iodate Tablets and how they will be distributed to you.

Most residential properties will receive PITs from Royal Navy personnel distributed to your door. If you are out when they call PITs will be left with a leaflet telling you what to do.

Some PITs will be pre-distributed locally to certain hotels, schools, high rise flats, residential care homes and Western Docks cruise terminals within and immediately adjacent to the 1.5 km zone.

Only take PITs when told to do so – these arrangements will be confirmed by radio and TV announcements.

Should you require further assistance you can contact Actionline on: 0800 5 19 19 19.

9 STAY TUNED

Wait for more information on when to take the tablets.

WHAT HAPPENS AFTER THE WARNINGS ARE GIVEN?

The local authorities will liaise with the Royal Navy and other agencies to deal with the release of information and, as soon as it is completely safe to go outside again, there will be announcements on local radio and TV, and by loudhailer.

In the days following the incident, health experts will carry out checks on the air, water and soil to make sure it is safe. There will be more information in all news media – including the newspapers – on what further action you need to take, if any. You can also call Southampton City Council Actionline on **0800 5 19 19 19** for information.

Remember - the risk of this sort of accident happening is extremely remote. But being prepared is never-the-less sensible.

WILL WE BE EVACUATED?

If a warning is given then the following items should be packed and ready to go:

- Clothing and bedding
- Medicines or special foods you might need
- Private documents and special valuables
- If you have children – baby food, clothing, toys and books
- If you have pets – leads, baskets/carriers, cages and food

Evacuated areas will be controlled, so don't worry if you have to leave your home.

In the event of an emergency, do not leave your home unless advised to do so – the best thing to do is to STAY IN.

I HAVE FRIENDS AND RELATIVES LIVING IN THE AREA BUT THEY ARE FURTHER THAN 1.5 KILOMETRES (0.9 MILES) FROM THE EASTERN DOCKS. SHOULDN'T THEY HAVE THE TABLETS TOO?

The authorities will continually monitor the situation. If the decision is taken that others outside 1.5 km (0.9 miles) zone require precautionary measures, they will be advised accordingly.

FOOD AND DRINK

It is unlikely that tap water and any food or drink that you have in your house that is covered and sealed will be affected.

As the emergency is dealt with further information will be given out on local radio and TV stations.

Helpful advice will also be given to farmers, fishermen and other food producers.

The following pages give you technical information about radiation and its possible effects, which you may find informative. They also tell you who to contact if you want to know more.

The most important thing to do, in the event of an emergency, is to follow the instructions given earlier in this booklet.

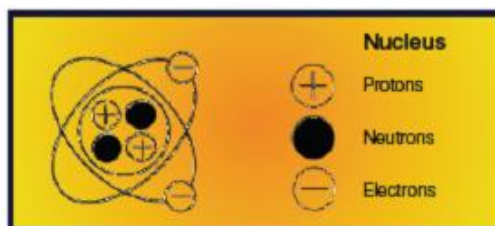


ATOMS

Everything is made up of tiny building blocks called atoms.

Each atom is made up of **electrons** which orbit around a **nucleus**. This contains **protons** and **neutrons**.

Atoms of the same substance or element have the same number of protons and electrons.



There can be different numbers of neutrons in the same element. An element which has a different number of neutrons is called an **isotope**.



For example, the element hydrogen has the isotopes hydrogen, deuterium and tritium.

When you know the number of protons and neutrons in the nucleus of a specific atom, it is often called a **nuclide**. An example is the nuclide carbon-16, which has 6 protons and 10 neutrons.

Atoms can link together to form **molecules**. Molecules can be made up of atoms of the same element or different elements. The molecule water (H_2O) is formed when two Hydrogen atoms join with one Oxygen atom.



RADIOACTIVITY AND RADIATION

Some atoms are naturally unstable. They can change into atoms of another element by getting rid of some of their protons, neutrons and electrons. When this happens, the atom gives off **radiation**. Everybody receives a small amount of natural radiation.

An atom is **radioactive** when it changes and gives off radiation.

This change is called decay. An atom which is decaying is known as a **radionuclide**.

Radionuclides can emit 3 types of radiation:

Alpha radiation



Heavy positively charged particles, each made up of 2 protons and 2 neutrons.

Beta radiation



High speed electrons (negatively charged).

Gamma radiation



Similar to X-Rays. They penetrate further.



HOW RADIATION COULD AFFECT YOUR BODY

Radiation can cause changes to molecules and tissue. One type of change that can be produced is **ionisation**.

For example, ionised water molecules in tissue are chemically very reactive and are called **free radicals**. Free radicals can damage other molecules. Ionisation can also change or affect DNA, the molecule which contains the information used to control our growth and development.

All this can lead to biological effects such as cell changes. It is possible that these changes may not show up until some time after exposure to radiation.

Different types of radiation can cause different effects. Some parts of the body are more sensitive to radiation than other parts of the body.

Studies have shown that the risk of an effect from exposure to radiation increases with the radiation dose.



HAZARDS FROM A RADIATION EMERGENCY

You could be exposed to radiation by:

1. Inhaling contaminated air and gases.
2. Having contact with contaminated surfaces.
3. Eating or drinking exposed contaminated food or water (ingestion).
4. Direct exposure to radiation.



1. Inhalation

2. Contaminated
surfaces

3. Ingestion

4. Direct exposure



COUNTERMEASURES

These are the actions you can take to minimise the effects of exposure to radiation and contamination as the result of a nuclear accident.

Sheltering by staying indoors is the best way to protect yourself in the short term. Doors and windows should be closed to help stop direct exposure, inhalation and contamination of surfaces inside buildings.

Stable iodine tablets (potassium iodate tablets) can help prevent radioactive iodine from concentrating in the thyroid gland. Issue of these tablets is combined with sheltering and/or evacuation.

Evacuation can help avoid exposure to relatively high doses. It can help protect you from direct exposure and inhalation.

Food bans of milk and other foods may be necessary. This will protect you from ingestion.



FURTHER INFORMATION

The Radiation (Emergency Preparedness and Public Information) Regulations 2001 say that this kind of guide has to be updated every three years in the interests of greater public information.

If you would like to find out more about the emergency plan for the area around the port you can find a copy of it at your library or on www.southampton.gov.uk/emergencies under Plans. It is a plan called **SOTONSAFE**.

You can get more information on radiation from the following websites:

www.hpa.org.uk/radiation

www.hse.gov.uk – search = Reppir

www.opsi.gov.uk – search = Radiation
(Emergency Preparedness and Public Information)

Further copies of this leaflet can be obtained from:

The Emergency Planning Unit

City Depot
First Avenue
Southampton, SO15 0LJ

Telephone 023 8083 2427



POTASSIUM IODATE TABLETS FOR USE AT THE TIME OF A NUCLEAR EMERGENCY

The use of these tablets has been advised by the National Health Service. They will protect your health if used as directed.

You may be advised not to take the tablets immediately. If so, tune in to local radio or television where further information will be available.

Adults Two tablets
(including pregnant women and women who are breastfeeding)

Children aged three to twelve years One tablet

Children aged one month to three years Half of a tablet

Birth to one month Quarter of a tablet

Special advice for babies and small children

Babies and small children unable to swallow tablets should have their dose crushed up in a teaspoon of jam, honey or yoghurt, or should have their dose dissolved in a small quantity of milk formula or juice. Ignore any traces of undissolved tablet.

The only people who should not take the tablets are those who know that they are allergic to iodine and those who suffer from the very rare conditions of hypocomplementaemic vasculitis or dermatitis herpetiformis. Your doctor will have told you if you suffer from one of these conditions.

If you have any queries relating to taking the tablets, contact NHS Direct on **0845 4647**

IF YOU HEAR AN EMERGENCY ANNOUNCEMENT

1. **GO IN** - shut the windows and doors - shut down fans, fires and ventilators.
2. **STAY IN** - and await distribution of tablets by the Royal Navy.
3. **TUNE IN** - to local radio or TV for information on when to take your tablets.
4. Don't use the phone unless you need urgent help.
5. Wait for the all-clear announcement.
6. Watch for long-term safety information in the news and in leaflets.

TELEPHONE HELPLINE

Actionline 0800 5 19 19 19

BROADCAST INFORMATION

Information will be broadcast on:

TV BBC1, BBC2, Meridian TV

Radio BBC Radio Solent (96.1 MHz FM, 999MW)

The Breeze (107.8 MHz FM)

Heart FM (96.7, 97.5 MHz FM)

Wave FM (105.2 MHz FM)

Capital FM (103.2 MHz FM)

If you would like more information please contact

Emergency Planning Unit

Southampton City Council
Civic Centre
Southampton, SO14 7LT

Telephone 023 8083 2427

Designed, printed & published by Southampton City Council 06.12.24157
www.southampton.gov.uk This booklet has been paid for by the Ministry of Defence.

This page is intentionally blank

Appendix 5 - PITs Letters of Authorisation

Appendix 5-1 – Southampton City Council

Public Health
Southampton City Council
Civic Centre
Southampton SO14 7LT



Direct dial: 023 8083 3204
Email: Andrew.mortimore@southampton.gov.uk
Please ask for: Dr Andrew Mortimore

Fax: 023 8083 4952
Our ref: AM/jw/20130401/DB

Dawn Baxendale
Interim Chief Executive
Southampton City Council
Civic Centre
Southampton SO14 7LY

1 April 2013

Dear Dawn

Re: Port of Southampton Off-Site Reactor Emergency Plan (SotonSafe)

In the event of a radiation emergency involving a nuclear powered submarine in Southampton Water, responsibility for authorising distribution and consumption of Potassium Iodate Tablets (PITs) to the public in Southampton rests with me as Director of Public Health.

In accordance with the SOTONSAFE Plan, the authorisation to distribute and then to consume PITs would be given by myself or my nominated deputy. However, in discussion with Public Health England (Hampshire Dorset and Isle of Wight Centre) and Southampton City Council Emergency Planning Unit (who are responsible for writing and updating the SOTONSAFE plan), it has been agreed that as a contingency, **I will pre-authorise the issuing and consumption of these tablets only in the circumstances that I, or my deputy, are not contactable.**

Therefore, in relation to the SOTONSAFE Plan:

1. I hereby authorise the issuing of Potassium Iodate tablets to defined members of the public if an off-site nuclear emergency (OSNE) is declared. At this stage, the public will be advised not to take the tablets but to await further instructions.
2. If a radiation hazard or release of radioactive material has been confirmed, I hereby authorise the issuing of Potassium Iodate Tablets to defined members of the public for immediate consumption.

Yours sincerely

A handwritten signature in blue ink, appearing to read "A Mortimore".

Dr Andrew Mortimore
Director of Public Health

Appendix 5-2- Hampshire County Council



Mr D. Yates
Chief Executive
New Forest District Council
Apple Tree Court
Beaulieu Road
Lyndhurst
Hampshire
SO43 7PA

Room 153
1st Floor, Ell Court South
Hampshire County Council
Winchester
SO23 8TG

Our ref: RM/CH/SotonSafe - NFDC

1 April 2013

Dear Mr Yates

Re: Port of Southampton Off-Site Reactor Emergency Plan (SotonSafe)

In the event of a radiation emergency involving a nuclear powered submarine in Southampton Water, responsibility for authorising distribution and consumption of Potassium Iodate Tablets (PITs) to the public in the Pre-planned Countermeasures Zone (PCMZ) on the Western side of Southampton Water rests with me as Director of Public Health, Hampshire County Council.

In accordance with the SOTONSAFE Plan, the authorisation to distribute and then to consume PITs would be given by myself or my nominated deputy. However, in discussion with Public Health England (Hampshire, Dorset and Isle of Wight Centre) and Southampton City Council Emergency Planning Unit (who are responsible for writing and updating the SOTONSAFE Plan), it has been agreed that as a contingency, I will pre-authorise the issuing and consumption of these tablets in the circumstances that I, or my deputy, are not contactable.

Therefore, in relation to the SOTONSAFE Plan:

- 1) I hereby authorise the issuing of Potassium Iodate tablets to defined members of the public if an Off-Site Nuclear Emergency (OSNE) is declared. At this stage, the public will be advised not to take the tablets but to await further instructions.
- 2) If a radiation hazard or release of radioactive material has been confirmed, I hereby authorise the issuing of Potassium Iodate Tablets to defined members of the public for immediate consumption.

Yours sincerely

A handwritten signature in black ink, appearing to read "Ruth Milton".

Dr Ruth Milton
Director of Public Health
Hampshire County Council

Appendix 6 - Information / Advice on Recovery Countermeasures

Appendix 6.1

PUBLIC HEALTH ENGLAND (CRCE) INFORMATION & ADVICE ON RECOVERY

COUNTERMEASURES

INTRODUCTION

A summary of the information and advice from PHE CRCE (formerly RPD) Memorandum:

M726 is contained in this Appendix

Long Term Exposure Pathways

The main potential pathways of exposure in the longer term after such emergencies are:

- (a) External irradiation from radionuclides deposited in the environment;
- (b) Inhalation of re-suspended radionuclides;
- (c) Ingestion of contaminated foods;

Purpose Of Recovery Countermeasures

The recovery phase is the period when less urgent countermeasures are implemented to protect the public from longer term, chronic risks. The recovery phase starts at the end of the emergency phase and continues until all those affected have resumed normal lifestyles.

Reinstatement Of Pre-Emergency Conditions

The most obvious way of facilitating the population's return to normal lifestyles is the reinstatement of pre-emergency conditions. Unfortunately, where an emergency occurs which is so large that recovery countermeasures are necessary, this will rarely be a practicable option. Unless the contaminated area is very limited, removal of all detectable

contamination is likely to have devastating environmental consequences. In other words, reinstatement of pre-emergency conditions, following a release of particulate radionuclides to atmosphere, is, at best, likely to be very difficult. A recovery strategy may well be more effective if it is developed in consultation with the affected population. This will be achieved by using existing mechanisms to consult with recognised Community Associations or Community Groups in the affected area.

Recovery Countermeasures

Recovery Countermeasures to be considered will normally take the following form:

- (a) **Decontamination Measures:** Decontamination techniques reduce exposure by treating contaminated areas directly. Techniques include removing contaminated materials from the area and redistributing or fixing radionuclides so that they are less available to contribute to exposure. Removal of contaminated soils or surfaces reduces the exposure of those living in a contaminated area, but results in contaminated waste for which an appropriate disposal route has to be found. On the other hand, redistribution or fixing of the contamination avoids waste disposal problems, but leaves the contamination in situ, as a potential long-term hazard.
- (b) **Restricted Access Measures:** Restricted access measures reduce exposures by removing people from areas of contamination, or by controlling the time spent in such areas. Such measures may range from preventing or limiting access to localised contaminated areas (e.g. the site of the emergency, or recognised hot spots), to relocation of the resident population from, and prohibition of all access to, an area for weeks, months, or even years, until general exposure levels have reduced to acceptable levels.

1. Examples of these are given in the table at Appendix 6.2.

Recovery Intervention Criteria

Doses for comparison with the criteria are as follows:

- (a) Those that are moderately dose-effective, incur relatively little disruption or resources, and which can be completed soon after the emergency; **Category A.**
- (b) those that are more strongly dose-effective, but which incur significant disruption and/or resources or can only be carried out over protracted periods; **Category B.**
- (c) those that are either poorly dose-effective or are only moderately dose-effective and incur significant disruption and/or resources. **Category C.**

Measures in the first category (**Category A**) would generally be completed within the first month following the end of the release, and, once completed, would incur no further disruption to the lives of those living in the area.

Recovery measures in the second category (**Category B**) are dose-effective measures that are difficult to complete within the first month following cessation of the release(s), or which continue to cause disruption after they are completed or which require very substantial resources.

Measures in the third category (**Category C**) would not, in general be justified on radiological protection grounds. However, they might be included in a recovery strategy, either because the circumstances of the emergency prevented other, less resource-intensive countermeasures being implemented, or for reasons other than dose reduction

Appendix 6.2

TABLE OF COUNTERMEASURE CATEGORIES, TECHNIQUES & EFFECTIVENESS

Category (Note a)	Technique	Dose Effectiveness (Note b)
A. Moderately dose- effective; relatively low resources/disruption; can be completed within about 1 month (with minimal continuing disruption after this time)	Ploughing large areas of grass (e.g. playing fields, parks).	20 to 40%
	Extended evacuation; short lived radionuclides	20 to 40%
	Vacuum sweeping - all metalled surfaces.	20 to 40%
	Fire hosing - all metal surfaces	20 to 40%
	Grass cutting and removal - public and private areas.	30 to 60%/20 to 40% <10%
	Temporary relocation for 1 month.	(Note c)
B. Highly dose-effective; high resources/disruption; timescale of months or years for completion (including cessation of disruption).	Turf removal and replacement - public and private areas	30 to 60%
	Rotovating all soil/grass areas (assumes all shrubs and plants removed and replaced).	30 to 60%
	Double digging all soil/grassed areas (assumes all shrubs and plants removed and replaced).	30 to 60%
	Turf and soil removal and replacement - all soil/grass areas (assumes all shrubs and plants removed and replaced).	30 to 60%
	Road planing and replacement	30 to 60%/20 to 40% (Note d)
	Prolonged or permanent relocation	30 to 60%

Category (Note a)	Technique	Dose Effectiveness (Note b)
C. Low – moderately dose-effective; moderate high resources/ disruption.	Fire hosing buildings	<10%
	Sandblasting walls	<10%
	Tree felling/plant and shrub removal and replacement	20 to 40%
	Stripple coating - metalled surfaced and buildings	<10%
	Ammonium treatment of buildings	<10%
	Roof replacement	<10%
	Cleaning of indoor surfaces.	<10%

Notes:

- (a) This grouping into categories is inevitably very broad; the actual dose effectiveness, disruption and resource requirements of the countermeasures would be highly dependent on the exact circumstances of the emergency and its aftermath.
- (b) Dose-effectiveness is defined as the reduction in the overall exposure from deposited gamma-emitting material from all surfaces in an urban environment:
- i. high dose-effectiveness (30 to 60%);
 - ii. moderate dose-effectiveness (20 to 40%);
 - iii. low dose-effectiveness (<10%).
- (c) Dose-effectiveness is very dependent on the effective half-lives of the radionuclides involved; for radionuclides with a half-life of a few days (e.g. iodine- 131) relocation for 1 month would be very highly dose-effective (i.e., approaching 100%).
- (d) High dose-effectiveness possible for deposition in wet conditions only, since relatively more dose arises from other surfaces following dry deposition.

This page is intentionally blank

Appendix 7 - Actioncards for Key Personnel

A.7.1 Actioncard for Submarine Commanding Officer / Incident Officer (ABP)

ACTIONS FOR “OFF SITE NUCLEAR EMERGENCY” (OSNE)

INITIAL ACTIONS

1. Has the submarine released an emergency signal?
2. Has the Emergency Alert been activated?
3. Has the Cascade Callout system been activated?
4. Has the Oceanography Centre been notified that an emergency has occurred?
5. Has MOD been informed by telephone?
6. Has the 500 metres ACMZ been cleared of non-essential personnel and the portable warning siren been activated?
7. Is the Nuclear Emergency Monitoring Team (NEMT) operational?
8. Is the Incident Co-ordination Centre receiving regular briefs?
9. Is the Tactical Commander in position and fully briefed on the situation?
10. Is entry to the emergency vessel possible? If so for how long?
11. Are whereabouts of Local Fire and Rescue services known?
12. Is primary/secondary containment intact?
13. What assistance is required by the emergency vessel and who is arranging?
14. Is additional assistance required (medical/physical/engineering)?
15. Has contact been established with staff of decontamination centre?
16. Are the Incident Co-ordination Centre staffing levels correct?

ADDITIONAL ACTIONS

17. What is the radiological situation?
18. Have essential personnel within ACMZ been accounted for?
19. Have any other vessels within Eastern Docks been informed?
20. Do any other vessels in the Port need more advice/help?
21. Are Potassium Iodate Tablets being issued at Dock Gate 4?
22. What protective measures are required for casualty handling teams?
23. Are casualties receiving attention?
24. Is Southampton General Hospital ready to receive casualties?
25. Have safe routes been prioritised for casualty evacuation? Inform South Central Ambulance Service (SCAS).
26. Have the names of casualties been ascertained?
27. Is the narrative being kept on Nuclear Emergency Response Information Management System (NERIMS)/are the stateboards up to date?

ADDITIONAL ACTIONS FOR OSNE –“RADIATION HAZARD CONFIRMED”

1. Has a radiation emergency external to the submarine been confirmed?
2. Is emergency vessel being evacuated, if yes to what degree?
3. Have stay times been calculated for essential personnel at risk?
4. Are weather conditions known, has PACRAM procedures been requested?
5. Are key personnel evacuated from the NPW being retained for debriefing by Technical Advisory Support Group (TASG)?
6. Should the vessel be moved or is other forms of mitigation appropriate?
7. Close lock gates at Hythe Marina
8. What protective measures are required for casualty handling teams?
9. Are casualties receiving attention?
10. Have safe routes been prioritised for casualty evacuation? Inform South Central Ambulance Service Trust (SCAS).
11. Have the names of casualties been ascertained?

**ADDITIONAL ACTIONS FOR OSNE–“RELEASE OF RADIOACTIVE MATERIAL
CONFIRMED”**

1. Is the release contained/continuing? What is the extent of the release?
2. Does the monitoring controller have a downwind plume prediction?
3. Have stay times been calculated for essential personnel at risk?
4. Should the vessel be moved or is other forms of mitigation appropriate?
5. What protective measures are required for casualty handling teams?
6. Are casualties receiving attention?
7. Have safe routes been prioritised for casualty evacuation? Inform South Central Ambulance Service (SCAS).
8. Have the names of casualties been ascertained?
9. Has a dump been established for contaminated vehicles/equipment?

A.7.2 Actioncard for Military Co-ordinating Authority (MCA)

ACTIONS FOR “OFF SITE NUCLEAR EMERGENCY” (OSNE)

INITIAL ACTIONS

1. Has initial emergency signal been sent to MOD?
2. Has MOD (CDS Duty Officer/HQ NERO) been alerted?
3. Is monitoring taking place outside the Dock area?
4. Have Local Authorities/Emergency Services been alerted?
5. Have Local Authorities been advised of recommended countermeasures to take?
6. Have the Nuclear Emergency Backup Support Team (NEBUST) been alerted?
7. Has the MCA spoken directly to the Incident Officer (ABP)?
8. Has a brief been obtained from Incident Officer (ABP)?
9. Has the MCA enough knowledge of the emergency to brief MOD, L.A./ Emergency Services/Media?
10. Is the weather situation known and correctly shown on stateboards?
11. Have monitoring reading as been received and passed to all concerned (LA and Aldermaston)?
12. Has an initial press statement been made by I/C? Is a copy held by MCA and MOD?
13. Are arrangements being made to receive the press?
14. Are arrangements being made to deal with telephone enquiries?
Do they know what to say?
15. Is the narrative on Nuclear Emergency Response Information Management System (NERIMS) being kept? / Are the stateboards up to date?
16. Is the MCA cell fully manned? Do the arrangements allow for a prolonged period of operation?
17. Is the MCA cell fully equipped? Are there enough phones/faxes/maps/ stateboards etc?
18. Has the PACRAM procedure been asked for (via Health Physics Cell)?

19. Has the MCA the latest casualty information report?
20. Has the Centurion casualty co-ordination cell been informed (for military personnel)?
21. Is there a need to implement Operation Highwayman to obtain more communications and/or equipment?
22. Is there a need to activate the Government Telephone Preference Scheme to guarantee communications?
23. Is a SITREP/Follow up signal being prepared for MOD?
24. Are preparations being made to receive support forces
25. Are arrangements being made for VIP visits?

ADDITIONAL ACTIONS

1. Do all concerned have a grasp of the radiological consequences of the emergency?
2. Have Local Authorities been advised of recommended countermeasures to take?
3. Is a Notice to Airmen (NOTAM) required for Southampton area?
4. Are the Incident Officer (ABP) requests for external support being met?
5. Is an update for the Press statement being prepared?
6. Is a SITREP/Follow up signal being prepared for MOD?

ADDITIONAL ACTIONS FOR OSNE –“RADIATION HAZARD CONFIRMED”

Have monitoring readings been received and passed to all concerned (LA and Aldermaston)?

ADDITIONAL ACTIONS FOR OSNE–“RELEASE OF RADIOACTIVE MATERIAL CONFIRMED”

Is radioactive contamination likely to spread beyond the Eastern Docks area?

A.7.3 Actioncard for Police Tactical Commander

ACTIONS FOR “OFF SITE NUCLEAR EMERGENCY” (OSNE)

1. What is the classification of the incident?
2. Has the wind direction been verified and a plume prediction obtained?
3. Has the site of the tactical co-ordination been decided in the light of above?
4. Have you adequate technical information from PM(Nuc), MOD or other experts?
5. Have a staff officer (Inspector), log keeper, communications officer and press officer been appointed?
6. Is inter-agency Tactical Co-ordination Centre fully staffed and responding?
7. Has a cordon area been identified?
8. Appoint cordons officer to obtain staff and establish cordon and cordon control point
9. Have access and egress routes been established for emergency vehicles?
10. Has the agreed public information been published?
11. Is it necessary to activate the City Centre Evacuation Plan in whole or part?
12. Has a media strategy been established?
13. Has ACC (OPS) been notified?
14. Appoint an officer to prepare traffic management plan
15. Has Strategic Co-ordination Centre been established?
16. Has Strategic Co-ordination been briefed?
17. Is media centre in place?
18. Consider RVP, Marshalling Area, FCP etc (major incident manual)
19. Has a time for a co-ordination meeting been arranged?
20. Is there casualty information?
21. Do you require casualty bureau?
22. Have protective facemasks for police officers and other responders been obtained from MOD?
23. Are other agencies deploying to Strategic Co-ordination Centre?
24. Is public information being kept up to date?
25. Is an update required on the public information being published?

A.7.4 Actioncard - ABP (Port Of Southampton) – General – Nuclear Emergency Instructions

Port Director

Were all personnel within Eastern Docks (ABP employees, contractors and lodging companies) aware in advance of the dates of the visit and the Evacuation Warning Plan and the warning mechanisms for the Eastern Docks?

ABP Security

On receipt of an “Off-Site Nuclear Emergency” alert automatically alert personnel within the Port (Eastern Docks area) by means of a van using a loud hailer and siren where appropriate. Priority will be given to the evacuation of the area within a 500 metre radius of the Nuclear Powered Vessel. A cordon control point will be located to control access to the ACMZ; at the junction of European Way and Central Road, which will be staffed by police on arrival.

All Staff

1. If the evacuation order is received, all personnel are to complete all tasks appropriate to the end of the working day, e.g. Security, Safety of Buildings etc, and all personnel are to leave the Automatic Evacuation Zone (Eastern Docks area) by Dock Gate 4.
2. At Dock Gate 4 Potassium Iodate tablets (PITs) (2 in number) will be issued together with instructions on when to take them. An explanatory leaflet will be issued by Royal Navy personnel.

Oceanography Centre

(Situated within the Eastern Dock approximately 600m from the Designated Operational Berth and may hold up to 1,000 personnel.)

1. Upon an “Off-Site Nuclear Emergency” being declared an orderly evacuation of the complex will be initiated by the **Facilities Manager** or his representative.
2. The Facilities Manager will ensure that upon leaving the building those present will be issued with PITs (already pre-positioned to the Centre) and directed to evacuate the docks via Dock Gate 4 to take shelter within, or disperse beyond the 1.5km zone.
3. The Incident Officer (ABP) **must** be informed once this action is complete.

VTS Tower

(The VTS is situated) within the ACMZ.)

The VTS Duty Officer (ABP) is responsible for the evacuation of the VTS. When the VTS is evacuated relocation will take place at either Calshot or Semaphore Tower in Portsmouth.

1. Evacuated staff will be issued with PITs by Royal Navy personnel at the cordon and directed to leave via Dock Gate 4

Visiting Ships

1. In the event of an “Off-Site Nuclear Emergency”, visiting ships berthed in the Eastern Docks will be alerted by the VTS Centre on VHF R/T Communication (Channels 12 and 16).
2. They will be directed, as far as practicable, to evacuate all personnel. Crew members will be evacuated to the Sailors Society Joint Centre at 12 – 14 Queens Terrace, SO14 3BP and the Society advised ASAP. Ventilation, hatches, scuttles and openings etc. should be shut down to minimise the possible ingress of radioactive material

A.7.5 Actioncard -Additional Crew Instructions In Event of “Off-Site Nuclear Emergency”

In addition to those normal emergency operating procedures adopted on board the submarine, the following actions will occur:

The Officer of the Day will:

1. Order evacuation of non-essential personnel to Exclusion Zone Reception Centre (EZRC) utilising any transport available. In the event of insufficient room on transport, evacuees remaining should begin to walk towards EZRC – **PRIORITY IS TO EVACUATE TO AT LEAST 500M FROM THE VESSEL A.S.A.P.**
2. Inform Incident Officer (ABP) at Ocean Gate (using the telephone numbers which will have been provided) of numbers of essential personnel remaining onboard.

Evacuees will:

1. From Berth, follow main dock road in direction of docks exit (Dock Gate 4). About 50 metres before Dock Gate 4 and having passed the Ocean Cruise Terminal to the left, turn left into the Car Park at the rear of Ocean Gate where the EZRC will be situated and signposted..
2. Whilst awaiting arrival of assistance from HMNB Portsmouth, EZRC OIC should undertake the following:
 - (a) Complete and keep list of personnel evacuated to the EZRC
 - (b) Inform the Incident Co-ordination Centre (using the telephone numbers which will have been provided) of arrival at EZRC and number of personnel evacuated
 - (c) **Ensure all personnel take PITs** (If not taken before evacuating vessel) and remain in the ‘dirty’ holding area

- (d) Use any suitable trained (Health Physics) personnel to commence contamination monitoring of evacuees using the equipment held in the storeroom and to segregate those proven to be contaminated from those uncontaminated. Additional advice and/or assistance should be sought from the EMHQ Monitoring Controller (using the telephone numbers which will have been provided).
4. Await further instruction from HMNB Portsmouth health physicist personnel on their arrival at EZRC.

A.7.6 Exclusion Zone Reception and Decontamination Centre (EZRC)

Requirement

1. The Exclusion Zone Reception and Decontamination Centre (EZRC) is required to provide initial reception, medical triage and decontamination facilities for all personnel evacuated from the Exclusion Zone. At the Southampton Designated Operational Berth this Exclusion Zone is effectively the vessel itself and the number of evacuees may be up to 150 personnel.

Description

2. The EZRC is a mobile decontamination unit sited in the Car Park at the rear of the Ocean Gate building.

Facilities

3. The building provides the following facilities:
 - a) Reception and 'dirty' holding area
 - b) Monitoring and Decontamination area (with toilet and shower facilities)
 - c) Storage area for decontamination equipment (to be pre-positioned)
 - d) Communications with Incident Commanders Centre at Ocean Gate.

Decontaminated evacuees will be transported to a 'clean holding' area via buses.

4. HMNB Portsmouth personnel (who will be present for the duration of the visit) will man the EZRC, with assistance as required by SCAS staff to administer medical triage. In the early stages of an incident and before HMNB Portsmouth personnel arrive on site, evacuees will be provided with equipment and instructions to enable them to 'self-help'.

This equipment will be pre-positioned by HMNB Portsmouth before the start of the NPV visit.

Two of the HMNB Portsmouth personnel will be contacted by NERO radio pager and will be instructed to proceed and man the EZRC immediately (30-40 minutes after alert), they will be joined by the remainder of the nominated Portsmouth team as soon as possible (90-100 minutes after alert).

5. To facilitate prompt evacuation to the EZRC by evacuees, the MOD will provide self-drive transport. This will be supplemented with instruction cards providing advice to the ships company on evacuation, EZRC location and procedures to be adopted on arrival at the EZRC (shown on the following pages).

Appendix 8 - Glossary of Terms

Definitions marked by an asterisk refer to definitions set out in the REPPIR Regulations

ABSORBED DOSE	Energy given by radiation to a given quantity of tissue. Unit: Gray. Symbol: Gy.
ACCESS CONTROL POINT	Access and egress point into a particular zone through which persons are logged and monitored. In this plan this is located at the rear of Ocean Gate. May in other plans also be known as a Cordon Control Point although in this plan the cordon control point is in another location and is the last control before entering the Automatic Countermeasures/Automatic Evacuation Zones
AUTOMATIC COUNTERMEASURES ZONE	An area extending to at least 500m from the berth in all directions, within which countermeasures will be taken automatically on declaration of a reactor emergency.
AUTOMATIC EVACUATION ZONE	This zone is the whole of the Eastern Docks area that lies beyond the ACMZ, includes the ACMZ and Oceanography Centre.
BECQUEREL (Bq)	Unit of amount of radioactivity, 1 Bq = 1 disintegration per second.
BETA RADIATION	Ionising radiation consisting of a stream of particles with a mass and charge equal in magnitude to an electron. The main hazard from beta radiation is to the surface of the skin.
CATEGORY 1 / CATEGORY 2 / CATEGORY 3	This wording is no longer used. – See “OFF-SITE NUCLEAR EMERGENCY”
CHAIN REACTION	A process that, once started, provides the conditions for its own continuance. In a reactor, neutrons released in the fission process cause further fission, and so on.
CLADDING	The metal sheath within which the reactor fuel is sealed.
CONTROL ROD	Rod of neutron-absorbing material inserted into the reactor core to absorb neutrons and either shut down or reduce the rate of fission reaction.
CONTAINMENT	<p><u>Primary Containment</u></p> <p>The compartment surrounding the reactor plant made up of the pressure hull of the submarine and internal bulkheads designed to withstand the build-up of pressure after a severe reactor emergency.</p> <p><u>Secondary Containment</u></p> <p>The compartment within the submarine hull on either side of the primary containment that can prevent internal leakage from primary containment to the atmosphere.</p>
CONTAINMENT STATE	The state of integrity of the various containment boundaries within the submarine.
CORDON CONTROL POINT	See ACCESS CONTROL POINT
CORE	The region of a reactor containing fuel and where the fission reaction happens.

CRITICAL	A reactor is critical when the fission chain reaction results in neutrons being produced at least as rapidly as they are absorbed or lost. A reactor can only produce useful power when it is critical.
DECAY HEAT	Heat produced by radioactive decay, particularly of fission products, in the reactor fuel. This continues to be produced after the reactor has been shut down. It cannot be shut off, but gradually dies away after the reactor has been shut down.
DECONTAMINATION	The removal of radioactive material from a person or surface.
DOWNWIND SECTOR	Normally refers to the area 3 x 15° astride of the prevailing wind direction downwind of the emergency site.
EMERGENCY COUNTERMEASURES	Measures consisting of shelter, evacuation or the administration of stable Iodine which may be instituted to protect the public in the emergency phase of a reactor emergency.
EMERGENCY EXPOSURE	The exposure of an employee engaged in an activity of or associated with the response to a radiation emergency or potential radiation emergency in order to bring help to endangered persons, prevent exposure of a large number of persons or save a valuable installation or goods, whereby one of the individual dose limits referred to in the Ionising Radiations Regulations 1999 could be exceeded. Such exposures require special authorisation as stated in REPIR Regulation 14.
EMERGENCY REFERENCE LEVELS (ERLs)	A range of intervention levels of averted dose advised by the HPA (RP) to provide guidance on the need for emergency countermeasures following a reactor emergency.
EQUIVALENT DOSE	Absorbed dose weighted for harmfulness of different radiations. For most practical purposes the same as Absorbed Dose. Measured in Sieverts; Symbol: Sv.
EXCLUSION ZONE	A special control area for personnel, established in the immediate vicinity of the Nuclear Powered Vessel. At Southampton, however the Exclusion Zone consists of the submarine itself.
EXTENDIBILITY ZONE	An area extending in all directions from the boundary of the Pre-Planned Countermeasures Zone to a distance 10km from the berth. Within this zone, outline contingency planning is required to facilitate monitoring and to provide a basis for extending countermeasures in the downwind sector in the very unlikely event that this is necessary.
FISSION	The breakdown of a nucleus into two lighter nuclei (known as fission products) plus free neutrons plus energy - either spontaneously or caused by the absorption of an extraneous neutron.
FLASHING UP } PULLING RODS } STARTING UP }	Term often used instead of 'GOING CRITICAL'
FUEL	The enriched uranium fabricated for use in the core.
GAMMA RADIATION	High-energy electro-magnetic radiation of considerable penetrating power emitted by most radioactive substances.
GAMMA SHINE	The gamma radiation that would emanate directly from a submarine following a reactor emergency.

GOING CRITICAL	The process of withdrawing control rods to increase the rate of fission, hence power, until the self-sustaining chain reaction is achieved.
GRAB BAG	Response bag for emergency service personnel and others containing dosimeters, PIT's and respirator.
INTERVENTION *	An activity that prevents or reduces the radiation exposure of personnel resulting from a radiation emergency or from an event that could lead to a radiation emergency.
HALF LIFE	Period of time within which half the nuclei in a sample of radioactive material undergo decay.
MELTDOWN	In a severe emergency the melting of the fuel elements within the core.
MEMBER OF THE PUBLIC *	Any person not being: <ul style="list-style-type: none"> (a) a person for the time being present upon premises where a radiation emergency is reasonably foreseeable or where a radiation emergency has actually occurred, or (b) a person engaged in an activity of or associated with the response to a radiation emergency.
NEUTRON	Uncharged sub-atomic particle, constituent of nuclei - ejected at high energy during fission, capable of being absorbed in another nucleus and bringing about further fission.
OFF-SITE EMERGENCY PLAN *	Plan prepared by the local authority if their area of responsibility includes premises where it has been assessed as reasonably foreseeable that a radiation emergency might arise.
"OFF- SITE NUCLEAR EMERGENCY" (OSNE)	a hazardous condition which requires the implementation of urgent countermeasures to protect the public – (Equates to former Category 1)
"OFF- SITE NUCLEAR EMERGENCY" (OSNE)	An Off-Site Nuclear Emergency in which a radiation hazard has been detected – (Equates to former Category 2)
<i>RADIATION HAZARD CONFIRMED</i>	
"OFF- SITE NUCLEAR EMERGENCY" (OSNE)	An Off-Site Nuclear Emergency in which a release of radioactive material to the environment has been detected – (Equates to former Category 3)
<i>RELEASE OF RADIOACTIVE MATERIAL CONFIRMED</i>	
OPERATOR *	Any reference to an operator is a reference to: <ul style="list-style-type: none"> (a) any premises other than a licensed site, where the person who is, in the course of a trade, business or other undertaking carried on by him, in control of the operation of premises, and (b) in the case of a licensed site, is the licensee
OPERATOR'S EMERGENCY PLAN *	An operator's emergency plan is required for the premises where it is reasonably foreseeable that a radiation emergency might arise.
PLANT STATE	An indication of the temperature and pressure of the reactor plant and hence of the potential for an emergency.

POTASSIUM IODATE TABLETS	Tablets containing stable Iodine, which would minimise the uptake of radioactive Iodine into the thyroid gland.
PREMISES *	The whole area under the control of the same person where radioactive substances are present in one or more installations.
PRE-PLANNED COUNTERMEASURES ZONE	An area extending in all directions from the boundary of the Automatic Countermeasures Zone to a distance of 1.5km from the berth as advised by the Health and Safety Executive NII.
PRESSURISER	Electrically heated boiler in the primary coolant system, which boils water as necessary to maintain coolant pressure by means of a steam bubble.
PRIMARY CIRCUIT	The completely sealed pipework containing the primary coolant connecting the reactor pressure vessel to the steam generator.
PRIMARY COOLANT	Water that is pumped through the reactor core to remove heat generated there and transfer it to the steam generator.
RADIATION ACCIDENT *	An accident where immediate action would be required to prevent or reduce the exposure to ionising radiation of employees or any other persons and includes a radiation emergency.
RADIATION EMERGENCY *	Any event likely to result in a member of the public exceeding an effective dose of 5 mSv in the following year and for this purpose any health protection measure to be taken during the 24 hours immediately following the event shall be disregarded
RADIATION (Ionising)	Neutrons, alpha or beta particles or gamma rays.
RADIOACTIVITY	Behaviour of substance in which nuclei are undergoing transformation and emitting radiation. It is measured in Becquerels, i.e. the number of nuclear disintegrations per second.
REACTOR PRESSURE VESSEL	The large container surrounding the reactor core.
REACTOR SAFETY ALERT (RSA)	An abnormal event which poses a potential threat to, or causes serious concern for, reactor plant safety. It is emphasised that a Reactor Safety Alert does not constitute a reactor emergency or require the initiation of either the On-Site or Off-Site plans, albeit VTS (ABP) and the Local Authority will likely be informed as a precaution
RELOCATION	The movement of members of the general public away from contaminated areas to avoid chronic long-term radiation dose.
REPPIR The Radiation (Emergency Preparedness and Public Information) Regulations 2001	Statutory Regulations relating to: a) the assessment of risks from installations holding large quantities of radioactive material b) the production of emergency plans to mitigate such risks c) informing the public about health protection measures to be taken in the event of a radiological emergency and the basic safety standards for the protection of the general public and workers against the dangers of ionising radiation.
SCRAM	Rapid shutdown of the fission process in the reactor by inserting control rods.

SECONDARY CIRCUIT	The system that takes steam from the steam generators to the turbines and returns feed water.
SELF-SUSTAINING	<p>With respect to the fission chain reaction: when neutrons liberated in the fission process are just sufficient to maintain the chain reaction.</p> <p>With respect to the submarine: when the reactor is producing enough power to meet the electrical demands of the submarine without the need for shore supply.</p>
SIEVERT Sv	The name of the unit of radiological equivalent dose and effective dose.
SHIELDING	Material that reduces the intensity of radiation passing through it. Materials give effective shielding against different types of radiation.
SHORE SUPPLY	An electrical supply to the submarine derived from a shore system and used to supply the submarine with electrical power when the reactor is shut down.
SHUTDOWN	The reactor state when all the control rods are fully inserted and the neutron chain reaction has ceased.
SITE SPECIFIC INTERVENTION LEVEL	Radiation dose selected from the ERL range at which a particular countermeasure would be implemented. To be expressed as an averted dose defined locally and detailed in local plans.
SotNuSafe	Operators emergency arrangements as controlled by the Naval Base Commander (Portsmouth) who is the MOD duty holder for the Southampton Designated operational Berth
STEAM GENERATOR	Boiler in which hot primary coolant from the reactor core raises steam in a separate secondary system to drive propulsion machinery and turbo-generators.
SUB-CRITICAL	A reactor is sub-critical when the fission is insufficient to maintain a self-sustaining chain reaction.

This page is intentionally blank

Appendix 9 - Abbreviations

ABP	Associated British Ports
ACC	Assistant Chief Constable
ACCOLC	Access Overload Control (See MTPAS)
ACDS (Pol)	Assistant Chief of the Defence Staff (Policy)
ACMZ	Automatic Countermeasures Zone
ADS	Approved Dosimetry Service
AEZ	Automatic Evacuation Zone
ALARP	As Low as Reasonably Practicable
AMC	Assistant Monitoring Controller
ASP	Area Safety Panel
CAC	Casualty Action Centre
CBRN	Chemical, Biological, Radiological, Nuclear
CIC	Communication & Information Cell
CINCFLEET	Commander in Chief - Fleet
CMC	Combined Media Centre
CPCA	Central Plant Control Authority
CPHP	Consultant Physician in Health Protection (See PHE Rep)
CRCE	Centre for Radiation, Chemical and Environment Hazards
D Sef Pol	Director of Nuclear Policy
DNSR	Defence Nuclear Safety Regulator
DEFRA	Department for Environment Food and Rural Affairs
DMS (N)	Director of Marine Services (Naval)
DNO	The Director of Naval Operations
DNSC	Defence Nuclear Safety Committee
DNSR	Defence Nuclear Safety Regulator
Dstl	Defence Scientific and Technology Laboratory
EA	Environment Agency

E&U	Emergency and Urgent (Ambulances)
EMHQ	Emergency Monitoring Headquarters
ERL	Emergency Reference Level
EZRC	Exclusion Zone Reception Centre
FCP	Forward Control Point
FSA	Food Standards Agency
HCCB	Hampshire Constabulary Casualty Bureau
HCMF	Health Control and Monitoring Force (RAF)
HFRS	Hampshire Fire and Rescue Service
HMNB	Her Majesty's Naval Base
HP Cell	Health Physics Cell
HPA's	Formerly Health Physics Advisors - now known as Health Physicists
HSE	Health and Safety Executive
IC	Incident Commander
ICC	Incident Command Centre (Bronze-Operational)
ICRP	International Commission on Radiological Protection
IRR99	The Ionising Radiations Regulations 1999
JOC	Joint Operations Centre in MODHQ
LA	Local Authority
LEHQ	Local Emergency (Action) Headquarters
LEMT	Local Emergency Monitoring Team
LOCA	Loss of Coolant Accident
MC	Monitoring Controller
MCA	Military Co-ordinating Authority
MDP	Ministry of Defence Police
MLR	Monitoring Land Rover
MoD	Ministry of Defence
MOD HQ NERO	Ministry of Defence Headquarters Nuclear Emergency Response Organisation

mSv	Millisieverts
MTPAS	Mobile Telephone Privileged Access Scheme (Formerly ACCOLC)
NEBUST	Nuclear Emergency Backup Support Team
NEHQ	Nuclear Emergency Headquarters
NEIAG	Nuclear Emergency Information and Advisory Group
NER Ops	Nuclear Emergency Response Operations Cell
NER Sec	Nuclear Emergency Response Secretariat Cell
NERO	Nuclear Emergency Response Organisation
NERIMS	Nuclear Emergency Response Information Management System
NBC	Naval Base Commander
NEMO	Naval Emergency Monitoring Organisation
NEMT	Naval Emergency Monitoring Team
NHS CB	National Health Service Commissioning Board
NHS LAT	National Health Service Local Area Team
NNPP	Naval Nuclear Propulsion Programme
NOTAM	Notice to Airmen
NPV	Nuclear Powered Vessel
OIC	Officer in Charge
ONR	Office for Nuclear Regulation
OOD	Officer of the Day
OPCON	Operational Control
OSF	Off Site Facility
OSNE	Off Site Nuclear Emergency
P.A.	Public Address systems
PACRAM	Procedures and Communications in the event of a release of Radioactive Materials
PCMZ	Pre-Planned Countermeasures Zone
PEDs	Personal Electronic Dosimeters
PHE	Public Health England

PHE Centre	Public Health England Centre
PHE Centre REp	The PHE Centre representative (Consultant Physician in Health Protection)
PHTO	Public Health Tactical Officer
PIC	Personnel Information Cell
PIO	Police Incident Officer
PITs	Potassium Iodate Tablets
PL (LS)	Personnel and Logistics (Legal Services), MOD
PM (Nuc)	Project Manager (Nuclear) – RN Nuclear Specialist
PPCZ	Pre-Planned Countermeasures Zone
PSP	Port Safety Panel
PTE	Permit to Enter
PWR	Pressurised Water Reactor
QHM	Queens Harbour Master
RAD POL SM	Radiation Policy for Submarines
REPIR	Radiation (Emergency Preparedness and Public Information) Regulations 2001
RN	Royal Navy
RNCCC	Royal Navy Casualty Co-ordination Centre
RPD	See CRCE
RPV	Reactor Pressure Vessel
RSA	Reactor Safety Alert
RVP	Rendezvous Point
SAR	Search and Rescue
SCAS	South Central Ambulance Service
SCG	Strategic Co-ordinating Group (Gold)
SCPCT	Southampton City Primary Care Trust
SEPG	Southampton Emergency Planning Group
SITREP	Situation Report

SPO	Senior Press Officer
SPRO	Staff Public Relations Officer
SRD	Serco Assurance
SSIL	Site Specific Intervention Level
STAC	Scientific & Technical Advisory Cell
SUBOPAETH	Submarine Operating Authority
TASG	Technical Advisory Support Group
TCC	Tactical Co-ordination Centre
TGG	Technical Guidance Group
TGGSG	Technical Guidance Group Support Group
TLDs	Thermo Luminescent Dosimeters
VHF	Very High Frequency
VTS	Vessel Traffic Services

This page is intentionally blank



Prepared by the
Emergency Planning Unit
Southampton City Council
2nd Floor
City Depot
First Avenue
Southampton
SO15 0LJ

023 8083 2427

April 2013