

HIGHLAND SAFETY SCHEME

‘ Highsafe ‘

Nuclear Powered Submarine Emergency Response Plan

Highsafe Plan - Public

2012

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INTRODUCTION

This plan has been produced to **outline the response** to an incident involving a Royal Navy nuclear submarine at the MOD Operational Berth in Loch Ewe in the Highland Area. The plan outlines the roles and responsibilities of the emergency services and other agencies and summarises their expected response.

While this plan is type specific, it is entirely consistent with the Principles of Command and Control. These principles have been agreed nationally by all agencies and would form the basis of the response to any major incident.

Once an incident has developed, each agency would then refer to and implement their own generic plan as an element of a multi-agency response to ensure that their own area of responsibility is fulfilled.

Thus this plan has the advantage of being a multi-agency document, with each responding agency using the same plan.

This plan has been prepared with regard to and in compliance with the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPiR) by Highland Council Emergency Planning in collaboration with the Ministry of Defence, and under the auspices of the Highlands and Islands Emergencies Co-ordinating Group.

The following organisations and Agencies were consulted as part of the plan creation, compilation and production process.

Food Standards Agency
Scottish Fire and Rescue Service
Maritime and Coastguard Agency
Centre for Radiations, Chemical and Environmental Hazards (CRCE)
Ministry of Defence
NHS Highland
Police Scotland
Office for Nuclear Regulation
Scottish Ambulance Service
Scottish Environment Protection Agency
Scottish Water

SECTION 1 : AIMS AND OBJECTIVES

1.1 TERMS OF REFERENCE

- 1.1.1 The Highland Safety Scheme **has been produced by Highland Council Emergency Planning in conjunction with the Ministry of Defence (HM Naval Base Clyde).**
- 1.1.2 The primary object of the scheme is to safeguard the public in the unlikely event of a nuclear powered warship reactor emergency at a Scottish Operational Berth in the Highland Region of Scotland, which might lead to a spread of radioactive contamination to an extent that may interfere with the normal activities of the public.
- 1.1.3 The aims of the plan are to:
1. **Preserve life**
 2. **Protect the public.**
 3. **Safeguard the environment**
 4. **Allay public fear.**
 5. **Protect property.**
 6. **Co-ordinate public information**
- 1.1.4 This document is unclassified and is for use by authorities and persons concerned with public health and safety.

SECTION 2 : OPERATIONAL BERTH – LOCH EWE

2.1 BERTH DEFINITIONS

- 2.1.1** Berths for nuclear powered warships are in two categories, Authorised Sites and Operational Berths (OB). At Authorised Sites, such as operational **Naval Bases** and building / refitting yards, there is a Health Physics Department which looks after the radiological safety of routine operations. Because of the frequency of nuclear operations of these berths, the probability, although still exceedingly remote, of a nuclear emergency occurring is greater. The Ministry of Defence (Navy Department) monitoring policy is, therefore, to provide the staff and facilities in order that a local Nuclear Emergency Monitoring Team (NEMT) is formed.
- 2.1.2** An OB is a location which is endorsed by the Defence Nuclear Safety Committee (DNSC) as being suitable for operational visits or stand offs by nuclear powered warships. It is not suitable for the repair of nuclear plant or machinery and such uses, in an extreme emergency, would require the prior approval of the Defence Nuclear Safety Regulator (DNSR).
- 2.1.3** At OBs, which are used only infrequently, there is no resident monitoring capability but a team of the Nuclear Emergency Monitoring Organisation (NEMO), a Health Physics Adviser and a Technical Adviser will be co-located throughout the period the berth is occupied.

2.2 HAZARD IDENTIFICATION AND RISK EVALUATION (HIRE) REPORT

2.2.1 INTRODUCTION

The Radiation (Emergency Preparedness and Public Information) Regulations 2001 require a Hazard Identification and Risk Evaluation (HIRE) to be undertaken for any premises containing more than the quantity of radioactive material specified in the Regulations. A Report Of Assessment (ROA) of the HIRE is also required. The nuclear submarines are defined as premises under the Regulations, at Loch Ewe OB and the HIRE and ROA are produced in full compliance with the REPPPIR legislation. The Report of Assessment, together with such supporting information as deemed necessary by the Health and Safety Executive (HSE), is provided to enable the HSE to assess the risk to the health or safety of persons who could be affected by the work with ionising radiation undertaken at the Defence Fuel Group Depot Loch Ewe.

NOTE: Some sections of this Report Of Assessment necessarily contain information in an abbreviated form and with limited technical detail. This has been done in the interest of national defence and public security and is in accordance with the agreement of the Health and Safety Executive (HSE) who have exercised their powers under regulation 16 (6) of REPPPIR. The HSE have access to fuller and more detailed information to enable them to satisfy themselves on the acceptability of this assessment.

2.2.2 LOCATION AND ENVIRONMENT

- 2.2.2.1 Operator Name:** Commander-in Chief Fleet, Ministry of Defence.
- 2.2.2.2 Operator Address:** Ministry of Defence
(Sponsor, Director HM Naval Base Clyde, Helensburgh,
Dumbartonshire, G84 8HL).

2.2 HAZARD IDENTIFICATION AND RISK EVALUATION (HIRE) REPORT (Cont'd)

2.2.2.3 Address of Premises: Loch Ewe, Wester Ross, Scotland
OS Grid References:
a. Defence Fuel Group Jetty: NG 872 876

GIS References:
a. Defence Fuel Group Jetty: 1872 8876

2.2.3 HISTORY: The Loch Ewe Operational Berth has been used since 1963.

2.2.4 GENERAL DESCRIPTION:

2.2.4.1 The Loch Ewe Operational Berth is located at the Defence Fuel Group Jetty. The meteorological conditions are typical for the West of Scotland with a prevailing west to south westerly wind and above average UK rainfall.

2.2.4.2 The local authority responsible for the area surrounding the Loch Ewe berth is The Highland Council.

2.3 ACTIVITIES ON THE PREMISES

2.3.1 The OB provides berthing facilities for nuclear submarines to visit this location for operational or recreational purposes.

2.3.2 Nuclear submarines which visit the Loch Ewe berth contain more than the quantity of radioactive material specified in Schedule 2 of the Regulations. A HIRE has been conducted for such visiting nuclear submarines.

2.4 SAFETY ASSESSMENT PROCESS

2.4.1 Internal Regulation

A nuclear submarine visiting the Loch Ewe OB is not subject to licensing under the Nuclear Installations Act. However, the MoD operates an internal regulatory and approval system for the operation of submarine nuclear reactors.

2.4.2 Naval Pressurised Water Reactor (PWR)

The Design Authority for the Naval PWR, Rolls Royce Naval Marine, is charged with producing a Reactor Plant Safety Justification (RPSJ) covering all classes. This safety case is based on deterministic and probabilistic safety assessment of the PWR and its associated systems. The RPSJ is independently peer reviewed and then subjected to Independent Nuclear Safety Assessment (INSA) by Serco Assurance (formerly part of AEA Technology). They produce a Nuclear Safety Clearance Document for each submarine with a class review, which is formally reviewed by the Chairman of the Naval Nuclear Regulatory Panel. When satisfied, DNSR issues a Safety Clearance Letter to MoD's Central Plant Control Authority who authorises the operation of each submarine.

- 2.4.3** There are engineered and procedural safeguards to prevent and mitigate any Emergency scenario. All equipment is designed and constructed to a high specification, and undergoes thorough examination, testing and regular planned maintenance. Operation of all equipment is conducted according to operating procedures, by suitably qualified and experienced staff.
- 2.4.4** The safety responsibilities of all personnel are defined in Submarine Operating Documentation. All submarine personnel and the MoD personnel that support the visit of a nuclear submarine to Loch Ewe are suitably qualified and experienced for the work that they are expected to perform. A continuous process of audit and review is used to ensure that procedures remain current and effective. Minimum manning levels have been assessed and are documented in submarine Operating Procedures. This ensures that there are adequate staff and resources available at all times to enable safe plant operation and provide a robust emergency response capability.

2.5 HAZARD IDENTIFICATION AND RISK EVALUATION

2.5.1 Introduction

The Radiation (Emergency Preparedness and Public information) Regulations define the term “radiation emergency”. A radiation emergency requires immediate action to prevent or reduce the exposure to ionising radiation of employees or other persons; a radiation emergency is an event that is likely to result in a member of the public being exposed to ionising radiation, as defined in the Regulations. Hence a submarine reactor emergency may, but will not necessarily, result in a radiation emergency.

2.5.2 Submarine Reactor

A number of potential emergency scenarios have been analysed, the majority of which would not result in a release of radioactivity by virtue of the engineering and procedural safeguards described previously. The analysis considered those factors that could lead to a loss of cooling capability, as well as those which could give rise to an unintended self-sustaining nuclear chain reaction or the loss of control of an intended self-sustaining chain reaction. For a significant release to occur it is necessary for there to be a plant failure followed by breach of the multiple containment barriers between the radioactive fission products contained within the fuel and the outside environment. These barriers include the high integrity fuel cladding, the primary coolant sealed circuit, the containment structure and the submarine hull.

The HIRE for the submarine reactor has identified a “Reference Accident”, which could lead to an off-site release of radioactive material. A radiation emergency, as defined within the Regulations, can result from a submarine reactor emergency.

Accidental releases from the site could occur over periods of several hours, depending on the circumstances and the level of damage.

In order to develop an emergency response strategy, the analysis considered the probability of the emergency sequence occurring and the consequences of the fission product release resulting from that sequence. A two stranded approach has then been used to determine an appropriate strategy: an analysis of the probability and magnitude of any radiation exposure given that a radiation emergency has been declared: and an analysis of the optimum countermeasure strategy for protection of individuals from any potential radiation exposure.

Both analyses have considered all of the identified emergency sequences. The appropriateness of introducing countermeasures has been determined on the basis of published advice from the Centre for Radiation, Chemical and Environmental Hazards (CRCE). This approach has resulted in a recommended emergency response strategy based on a range of emergency scenarios and analyses.

2.6 IMPLICATIONS FOR RADIATION EMERGENCIES

In the event of a radiation emergency, the likely exposures to those members of the public within the zone extending approximately 1.5km from the location of the plant could exceed 5mSv. It is very unlikely that exposures in excess of 5 mSv could be received beyond this zone, however a small number of lower probability scenarios have been identified with more significant consequences. In addition, personnel on the premises and intervention workers could exceed the current statutory dose limits for radiation workers as a result of a radiation emergency.

In deriving the recommended countermeasures strategy, due account has been taken of all identified emergency scenarios.

The recommended response strategy to a radiation emergency would be implemented in two stages. Immediate countermeasures are set out within the submarine Emergency Operating Procedures (forming an Operator's Emergency Plan), affecting only those personnel within the submarine and out to a distance of approximately 400m. Implementation of the recommended off-site response would affect individuals in the Detailed Emergency Planning Zone (DEPZ) out to approximately 1.5km downwind from the emergency site. These individuals would be advised to shelter to reduce any potential radiation exposure and to take stable iodine tablets to minimise the radiation exposure received as a result of inhalation of any radioactive iodine released. Both the on-site and off-site plans would be implemented as precautionary measures prior to the detection of any release of radioactivity.

The basis for food controls applied by the Food Standards Agency (FSA) will be against food intervention levels required by EC Regulations.

2.7 CONCLUSIONS

The Hazard Identification and Risk Evaluation has been conducted for Loch Ewe OB. This assessment has indicated that a submarine reactor emergency could lead to a radiation emergency.

The probabilities and consequences of the potential emergency have been analysed and a response strategy developed to address them. The management of the on-site response to the unlikely event of a radiation emergency will be implemented through the submarine Emergency Operating Procedures and the MOD Collocated Team Emergency Instructions that together constitute the Operator's Emergency Plan. The appropriateness of implementing countermeasures off-site has been assessed in the light of national legislation and guidance, and a precautionary strategy has been recommended to a distance of approximately 1.5km downwind from the site as detailed in this Highsafe Off-Site Emergency Plan. The planning for a submarine reactor emergency is valid in outline for a nuclear weapon emergency even though it is not reasonably foreseeable. Emergency planning for the Loch Ewe OB berth is addressed by a multi-agency Emergency Planning Group. This enables the planned co-ordinated response strategy to be regularly reviewed and updated as required.

2.8 MOD CO-LOCATED STAFF

2.8.1 The MOD will collocate the following specialists to Loch Ewe area for the duration of a visit of a Nuclear Powered Warship.

- Health Physics Adviser
- Marine Engineering Officer (Technical Adviser)
- Nuclear Emergency Monitoring Team
- MOD Police Officers (2)

2.8.2 The role of the above MOD specialists is to support and advise all civilian authorities at the site and to ensure reports are forwarded to the Strategic Co-ordinating Centre and Tactical Centre, Inverness, HMNB Clyde and the MOD Nuclear Emergency Response Headquarters.

2.8.3 The MOD co-located staff will work jointly with, and provide specialist support to, Local Authority and Emergency Services in the local area, Tactical Control and at the Strategic Control Centre (SCC).

SECTION 3 : STATES OF ALERT AND ACTIVATION OF NUCLEAR EMERGENCY ARRANGEMENTS

3.1 INTRODUCTION

- 3.1.1** A nuclear emergency will be declared on the occurrence of any event causing, or likely to cause, the release and spread of radioactive material in such a way that there would be interference with the normal activities of the public.
- 3.1.2** The design, manufacture and operation of reactor plants are extremely carefully supervised and controlled to reduce the risk of any form of emergency to the absolute minimum. However, should such an emergency occur, the effect would, at worst, be a release over a 24-hour period of a radioactive cloud of gaseous and volatile fission products, the most significant of which is radioactive iodine. It is emphasised that it is **impossible** for a reactor emergency to result in an atomic bomb type explosion. It is against this background that the Highland Safety Scheme has been prepared.

3.2 DEFINITION

- 3.2.1** A nuclear emergency will be declared on the occurrence of any event causing, or likely to cause, the release and spread of radioactive material in such a way that there would be interference with the normal activities of the public.

3.3 NUCLEAR EMERGENCY CATEGORIES

- 3.3.1** There are two nuclear emergency categories:

- (a) Reactor Safety Alert (RSA) – An abnormal event which poses a threat to, or causes serious concern for, reactor plant safety. This is a technical event occurring within the submarine reactor plant or associated systems. This does not constitute a reactor accident.

Note: At declaration of a Reactor Safety Alert the Local Authorities will be informed via the Police 'for information only' at the time.

- (b) Off Site Nuclear Emergency (OSNE) – A hazardous condition which requires the implementation of urgent countermeasures to protect the public. This constitutes a reactor accident.

3.4 DECLARATION OF AN OFF-SITE NUCLEAR EMERGENCY (OSNE)

- 3.4.1** An OSNE will be declared by the Commanding Officer or the submarine Duty Officer (having the delegated authority to fulfil this function) by alerting the MOD.

3.5 INITIAL ALERT NOTIFICATION

- 3.5.1** Warning of a submarine Reactor Safety Alert will be given by the submarine. (See Appendix 4A).
- 3.5.2** External MOD authorities will be alerted by signal, radio or telephone from the submarine. The co-located Health Physicist and NEMT **at the berth** are required to supplement this with a telephone alert.

3.6 IMPLEMENTATION OF OFF-SITE EMERGENCY PLAN

- 3.6.1** Area Control Room - ACR Head of Operations - Senior Police Commander will initiate the activation of the Off-Site Emergency Plan following verification of the initial alerting message from the MOD authorities.

SECTION 4 : ZONES, COUNTERMEASURES AND CONTROLLED ACCESS

4.1 ZONES

4.1.1 The Ministry of Defence have identified three zones around the Operational Berth:

- The emergency site extending to 400 metres around the submarine. This circular zone around the reactor requires site personnel within it to take specified measures in the event of an emergency being declared.

Potassium iodate tablets (PITS), also known as Stable Iodine Tablets (SITS), would be issued automatically to all personnel within the 400 metre zone at the time of the emergency. Evacuation of the zone would also be implemented.

- **A Detailed Emergency Planning Zone (DEPZ)** extending to 1.5km around the Emergency site.

In this zone Ministry of Defence advice to the emergency services and local authorities would be to implement shelter and advise the population on the taking of the pre-distributed Potassium Iodate Tablets (PIT's), also known as Stable Iodine Tablets (SIT's), in a maximum of two adjacent 15° sectors downwind. It would also be appropriate to consider evacuation depending on the prevailing weather conditions.

- **An extendibility zone.** This zone does not have a defined extent. Countermeasures within this zone are not likely to be of an immediate concern, but are more likely to be implemented as the incident develops. Outline planning within this zone should establish broad principles for countermeasures, such as sheltering and advice in relation to the consumption of dairy products and food.

4.2 COUNTER MEASURES

4.2.1 Safety planning in the early stages, before definitive monitoring results are available, will concentrate on the protection of those within the emergency site (400 metre area) and on measures to regulate the consumption of foodstuffs which may have been exposed to contamination within a rather broader area.

(a) **The Protection of those within the Emergency Site 400 Metre Zone**

- The Loch Ewe location in The Highland Council area has been chosen on the basis that no members of the general public live within 400 metres. Special care is also taken to ensure that the berth is sited as far away as practicable from schools and hospitals.
- The crew of the nuclear powered warship and any other military or civilian personnel in the very close proximity to where the emergency occurred will be evacuated to the Defence Fuel Group Depot.
- Potassium Iodate tablets should be issued immediately to any personnel remaining within the 400 metre zone at the time of the emergency.

(b) Contamination of exposed and growing foodstuffs may occur in the downwind sector and may be a hazard beyond 1.5km from the emergency. The contamination is unlikely to build up to significant proportions during the first few hours after the emergency. **The Scottish Government Rural Payments and Inspections Division - (SGRPID)** may advise the civil authorities to warn the general public of this ingestion hazard (i.e. eating of contaminated foodstuffs) and to close, temporarily, outdoor markets etc within this area.

- (c) Contamination of cows and goats milk by radioactive iodine will similarly affect the downwind sector, but it may occur out to several kilometres. The contamination levels on pasturage are likely to be very low and could not possibly cause any harm to the general public directly. However, cows and goats are very efficient grazers and can cover a considerable area of land each day and have the ability to concentrate iodine in their milk. Any build-up of radioactive iodine in milk, whilst not affecting the health of the young animal, could be hazardous to the health of humans, especially young children. It takes at least 24 hours for the radioactive iodine to appear in milk and there must be arrangements to prevent the consumption of milk which is known to be, or likely to be, contaminated to a higher than acceptable level, having regard to the CRCE guidance for emergency conditions in their Emergency Data Handbook.
- (d) Contamination of the downwind sector from deposited activity may occur and subsequent monitoring after the radioactive cloud has passed may indicate that evacuation of the general public from certain areas 1 or 2 km from the reactor plant is advisable, until the levels of ground and building contamination can be reduced.

4.2.2 Monitoring Teams and Back Up Support

A Nuclear Emergency Monitoring Team is at immediate notice to commence monitoring in the unlikely event of an OSNE occurring. This team will subsequently be supported and reinforced by teams from other **Naval Bases** and other authorities.

4.2.3 Immediate Countermeasures

In the event of a release of radioactivity from a nuclear powered warship:

- (a) **Monitoring**
The NEMT(N) monitoring team, assisted by other teams from the Nuclear Emergency Monitoring Organisation will assess the hazard following a suspected release of radioactivity.
- (b) **Advice**
Advice on the possible consequences of and necessary actions to be taken in the event of a release will initially be provided **by the MOD Co-located Health Physicist, Monitoring Team and Engineering Officer at Loch Ewe. This will subsequently be reinforced by the deployment of the MOD Nuclear Emergency Back Up Support Team (NEBUST) and relevant civil authorities.**
- (c) **Distance**
The distances mentioned in the following paragraphs are based on average radioactivity releases and weather conditions. These distances are to be used by the civil authorities for planning purposes. In the event of an emergency, actual distances will be notified to the Local Authority and other organisations concerned, using the appropriate chain of communications.

The civil authorities are responsible for the implementation of public protection countermeasures.
- (d) **Evacuation**
If an "OSNE" alert is received, early evacuation from around the berth site to designated Reception Centres is the preferred option of both the Police Scotland and The Highland Council. The decision to evacuate will be made at the Strategic Co-ordinating Centre, Inverness. Evacuation procedures would only be commenced following confirmation from the MOD co-located Health Physicist that there is no possibility of an imminent radioactive release.

(d) (Cont'd)

Evacuation is a Police responsibility and the decision to proceed with this rests with the Chief Constable/Overall Incident Commander, based largely on the technical advice received, and will be co-ordinated by the Police and Local Authority.

(e) Sheltering

When sheltering is considered an appropriate countermeasure, advice will be given to **stay indoors with doors and windows shut and ventilation systems turned off.** This would be done by employing the undernoted means:

- Broadcast messages being passed by local television and radio networks - STV, BBC TV (Scotland), Moray Firth Radio 97.4 FM, 102.5 VHF, 1107 KHZ and BBC Radio Scotland 92.4 - 94.7 VHF, 810 MW.

This advice would be delivered by the Police.

(f) Pre-Distributed Potassium Iodate (Stable Iodine) Tablets

In conjunction with the advice to shelter the public may also be advised to take their pre-distributed Potassium Iodate (Stable Iodine) Tablets following the instructions enclosed with the tablets and which will be repeated as part of the broadcast messages.

This advice will be initiated by NHS Highland.

(g) Issue of Potassium Iodate (Stable Iodine) Tablets to Evacuees

Any civil population evacuated from within a radius of 1.5km of the nuclear emergency vessel may be issued with Potassium Iodate (Stable Iodine) Tablets (accompanied by a leaflet as provided at Appendix 3), if NHS Highland, acting on advice from the MOD and the CRCE, deem this to be an appropriate action dependent on the status of the event.

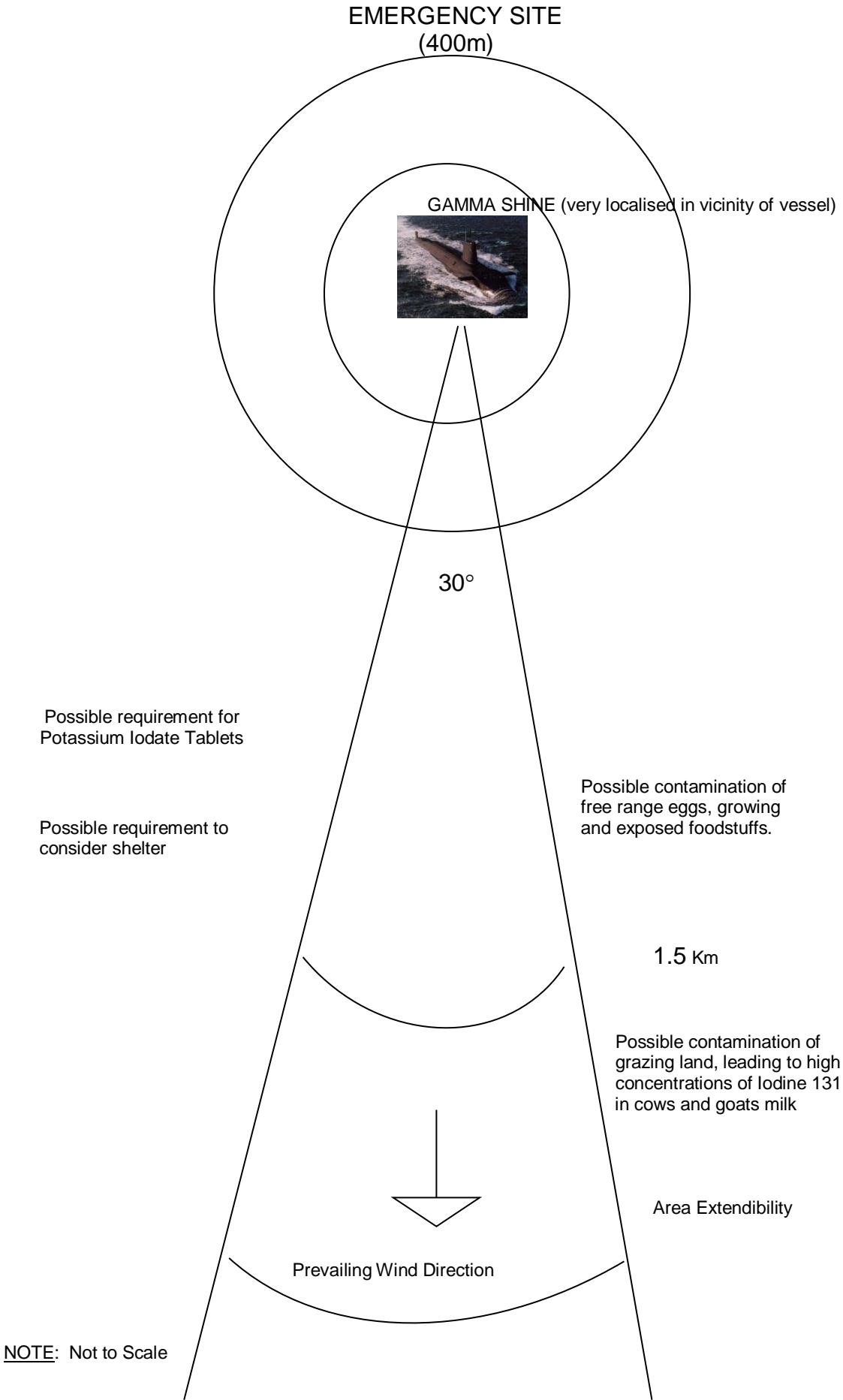
(h) Medical

Should a casualty who is contaminated by a radioactive substance require urgent medical treatment, NHS or Ambulance personnel in emergency attendance require to be fully briefed before deciding what action should be taken and adequately protected from contamination (see section 4.3).

(i) Casualties

- (a) Minor injuries will be assessed and treated at the Radiation Health Screening Unit or local facility.
- (b) Serious casualties, and personnel assessed as having received significant radiation doses or intake of radioactive material will be transferred as a priority to hospital.

COUNTERMEASURES



4.3 RADIATION DOSES - LIMITS

- 4.3.1** The CRCE recommends that for each countermeasure an Action Level is selected which is appropriate to the particular site, these are detailed at Section 7. For each countermeasure a lower and an upper Emergency Reference Level (ERL) have been specified. Doses which have already been received through normal occupational sources are not relevant to these considerations.
- 4.3.2** All authorities involved in a response to a nuclear emergency may have pre-determined radiation dose limits stricter than those recommended at Section 7 and specific radiological protection requirements. The specific requirement of each authority is to be implemented.

4.4 RECORDS TO BE KEPT

Comprehensive records are to be kept by all authorities involved in a nuclear emergency, in order that the necessary information may be available for a subsequent inquiry to the cause and effects. The records are also needed to assist in dealing with any claims which may arise in connection with loss, damage or injury attributable to the emergency. 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 movement within affected areas.
- (d) Decisions taken and the information on which these decisions were based.
- (e) Weather conditions.
- (f) Information on the causes and effects.
- (g) Authorisation for access to controlled areas.
- (h) Details of personnel entering controlled areas.

Authorities are requested to forward copies of these records to the Police Scotland Force Headquarters as soon as possible after an emergency.

4.5 PROCEDURE FOR ENTRY/RE-ENTRY TO CONTROLLED AREAS

4.5.1 It is essential that all personnel requiring access to the following areas are managed correctly and are not allowed unauthorized and uncontrolled access through any cordon:

- (a) On or near the submarine
- (b) Any other location within the Emergency Site (Approximately 400m from the submarine).

4.5.2 The following authorities or groups of personnel could be expected to require access in the timescales as indicated below. It is emphasised that although personnel may require access through a cordon for official and authorised duties they may not be required to approach or enter a hazardous area. Nevertheless, full management and control procedures are required for all access through a cordon:

a. Immediate Accident Emergency Response

- (1) Nuclear Emergency Monitoring Teams.
- (2) Police.
- (3) Fire Service.
- (4) Ambulance.
- (5) Medical Staff.
- (6) MOD support and technical staff.
- (7) Crews of vessels.

b. Intermediate Response Phase (Hours to Days)

- (1) Nuclear Emergency Monitoring Teams.
- (2) Police.
- (3) Fire Service.
- (4) MOD support and technical staff.
- (5) Relevant Civil Authorities.
- (6) Crews of vessels.

c. Recovery Phase

- (1) Radiation Monitoring Teams (All authorities).
- (2) Police.
- (3) MOD support and technical staff.
- (4) Relevant civil authorities.
- (5) Crews of vessels.

4.5.3 The following Access Control Procedures are required to be implemented:

a. Emergency Rapid Access

This is required for essential emergency procedures only. eg. firefighting, saving of life, radiation monitoring, implementation of immediate automatic countermeasures.

- (1) Ensure rapid access.
- (2) Personnel are to be briefed quickly by MOD personnel at the Forward Control Point on the location of the hazardous areas (if present), the designated safe route INTO and OUT of the area and safety requirements whilst in the area. (Confirmation of all requirements may be obtained from the MOD Health Physicist).

- (3) Personnel are to be issued with Thermoluminescent Dosimeter (TLD badge) at the Exclusion Zone Reception Centre (EZRC).
- (4) Personnel are to be issued with a Personal Electronic Dosemeter (PED) at the EZRC.
- (5) Personnel are to be instructed to retire from the area if the AUDIBLE and VISUAL alarm on the PED activates.
- (6) Personnel are to be issued with Personal Respiratory Equipment face mask at the EZRC.
- (7) Personnel are to be instructed to maintain communications with the required control room.
- (8) The Tactical Headquarters is to be informed of the access commencing.
- (9) The time of ENTRY and EXIT of all personnel to and from the area is to be recorded at the Forward Control Point.

NOTE: The Fire Service, Monitoring Teams and Ambulance Crew may attend the access cordon already in possession of pre-issued equipment and briefing. In this case ensure a rapid safety briefing is issued, by the MOD, and allow rapid entry to the area whilst recording all required details.

b. **All subsequent authorised access.**

- (1) All entries are to be authorised by the Police Incident Officer at the Forward Control Point in liaison with the Health Physics Advisor.
- (2) The PERMIT TO ENTER CONTROL ZONE Authorisation Form is to be completed and signed at all sections before access is authorised. The Radiation Safety information is to be obtained from the MOD Health Physicist.
This authorisation form is required to be signed by the MOD Health Physicist, the Police Incident Officer at the Forward Control Point and the individual person requiring access.
- (3) Personnel are to be briefed, by the MOD at the Forward Control Point on the location of the hazardous areas (if present), the designated safe route INTO and OUT of the area and all safety requirements whilst in the area. (confirmation of all requirements may be obtained from the MOD Health Physicist).
- (4) Personnel are to be issued with Thermoluminescent Dosemeter (TLD badge) at the EZRC.
- (5) Personnel are to be issued with a Personal Electronic Dosemeter (PED) at the EZRC.
- (6) Personnel are to be issued with Personal Respiratory Equipment face mask at the EZRC.
- (7) Personnel are to be instructed to retire from the area if the AUDIBLE and VISUAL alarm on the PED activates.
- (8) Personnel are to be instructed to maintain communications with the required control room.
- (9) The Tactical Headquarters is to be informed of the access commencing.
- (10) The time of ENTRY and EXIT of all personnel to and from the areas to be recorded at the Forward Control Point.

SECTION 5 : COMMAND AND CONTROL

5.1 TACTICAL LEVEL : INCIDENT CONTROL POST

- 5.1.1** The tactical level of command will be established at the relevant Incident Control Post for the Operational Berth.

5.2 STRATEGIC LEVEL

- 5.2.1 The Strategic Co-ordination Centre (SCC): will be located at Inverness. The main functions of the SCC are:**

- To take responsibility for all activities not directly concerned with rectifying the situation at the site.
- To provide a central liaison and information exchange point for relevant organisations.
- To ensure that an adequate flow of information and specialist technical advice on the incident is provided to the emergency services, Local and Central Government and to the media and public.
- To manage the Strategic Level of response for the incident.

- 5.2.2** The Strategic Co-ordinating Centre would be set up as quickly as possible after a OSNE has been declared. All responding organisations should ensure that within their initial actions representatives from their organisation attend the Strategic Co-ordinating Centre at Inverness, as soon as possible. The representatives should be of appropriate standing to make strategic decisions. They would normally bring their Emergency Planning Officers or equivalent as advisers.

- 5.2.3** All services and agencies will initially receive technical advice from the submarine captain and MOD co-located staff via the Forward Control Point. Once the MOD Nuclear Emergency Backup Support Team (NEBUST) arrives at the Strategic Co-ordinating Centre advice to all the agencies will be through the Military Co-ordinating Authority (MCA).

5.2.4 Agencies Located at the Strategic Co-ordinating Centre (SCC)

The following people and agencies are located within the SCC at Inverness. A summary of their responsibilities are included.

Military Co-ordinating Authority:

- a. The Military Co-ordinating Authority (MCA) will be in overall administrative control of all Ministry of Defence staff and agencies during any post emergency procedures, following an incident at any Operational Berth.
- b. The MCA will provide authoritative advice to Police Scotland and other authorities, particular in matters concerning the off-site response.

- c. During the early response phase to an incident at an Operational Berth the role of the MCA will be executed from the HM Naval Base Clyde until the Naval Base Clyde Nuclear Emergency Back-Up Support Team (NEBUST) assemble at the Strategic Co-ordinating Centre (SCC) Inverness.
- d. Once the NEBUST have their designated staff in place at Inverness they will assume the role of the MCA.
- e. The MOD co-located staff at the scene (Health Physics, Engineering and Nuclear Emergency Monitoring Organisation (NEMO), all support the MCA with advice and monitoring information.

Scottish Government Rural Payments and Inspections Directorate (SGRPID) : SGRPID will provide a Government Liaison Officer (GLO). The role of the GLO will be to provide a direct link with Ministers and government departments in Edinburgh. This person will normally be a senior departmental officer. GLO will also provide a direct link with the Scottish Executive Emergency Room, which will be convened in Edinburgh.

The **Food Standards Agency (FSA)** will be represented in the SCC and has extensive powers to control the production and supply of contaminated or potentially contaminated food, and in co-ordination with **Scottish Government Rural Payments and Inspections Directorate (SGRPID)** can invoke restrictions on the movement of foodstuffs, milk and livestock.

Centre for Radiation, Chemical and Environmental Hazards (CRCE) : CRCE will advise government departments and other organisations on radiological protection and assessment of radiological hazards.

Officers from ONR will liaise with their emergency control room, passing them data for predicting the outcome of the release and its consequences.

Police Scotland : Police Scotland will be responsible for the co-ordination of the emergency services and other organisations responding to any matters with off-site implications during the emergency phase of an incident at a Royal Navy Operational Berth.

Scottish Fire and Rescue Service : Scottish Fire and Rescue Service will have responsibility for all on-site fire fighting and rescue in liaison with the Coastguard and Ship's Captain, only after a dynamic risk assessment has been carried out.

Scottish Ambulance Service : Scottish Ambulance Service (SAS) will be responsible for the initial treatment and first aid, and, thereafter, transportation of casualties to the designated hospitals and transport of the disabled/elderly from an affected area.

NHS Highland : NHS Highland responsibilities include; making arrangements for the treatment of casualties, including radiated casualties; having a designated hospital capable of dealing with radiation contaminated casualties; providing public re-assurance monitoring; providing advice and guidance on health issues, to the public and responding agencies' personnel.

The Director of Public Health is responsible for authorising the issue of and advice to consume potassium iodate (stable iodine) tablets; and chairing the Science and Technical Advice Cell (STAC) within the Strategic Co-ordinating Group structure.

The Highland Council : The Highland Council are responsible for the provision of social services, emergency transport, accommodation, feeding of the public affected and the co-ordination of all the civil authorities during the recovery phase of any incident.

Scottish Environment Protection Agency (SEPA) : The Scottish Environment Protection Agency (SEPA) is a single independent environment protection agency and its responsibilities will include monitoring radioactive discharges and waste and enforcement of countermeasures. It has a special responsibility for advising water authorities on the control of potable water. It will be supported in this matter by the **Radiological Incident Monitoring Network (RIMNET)**.

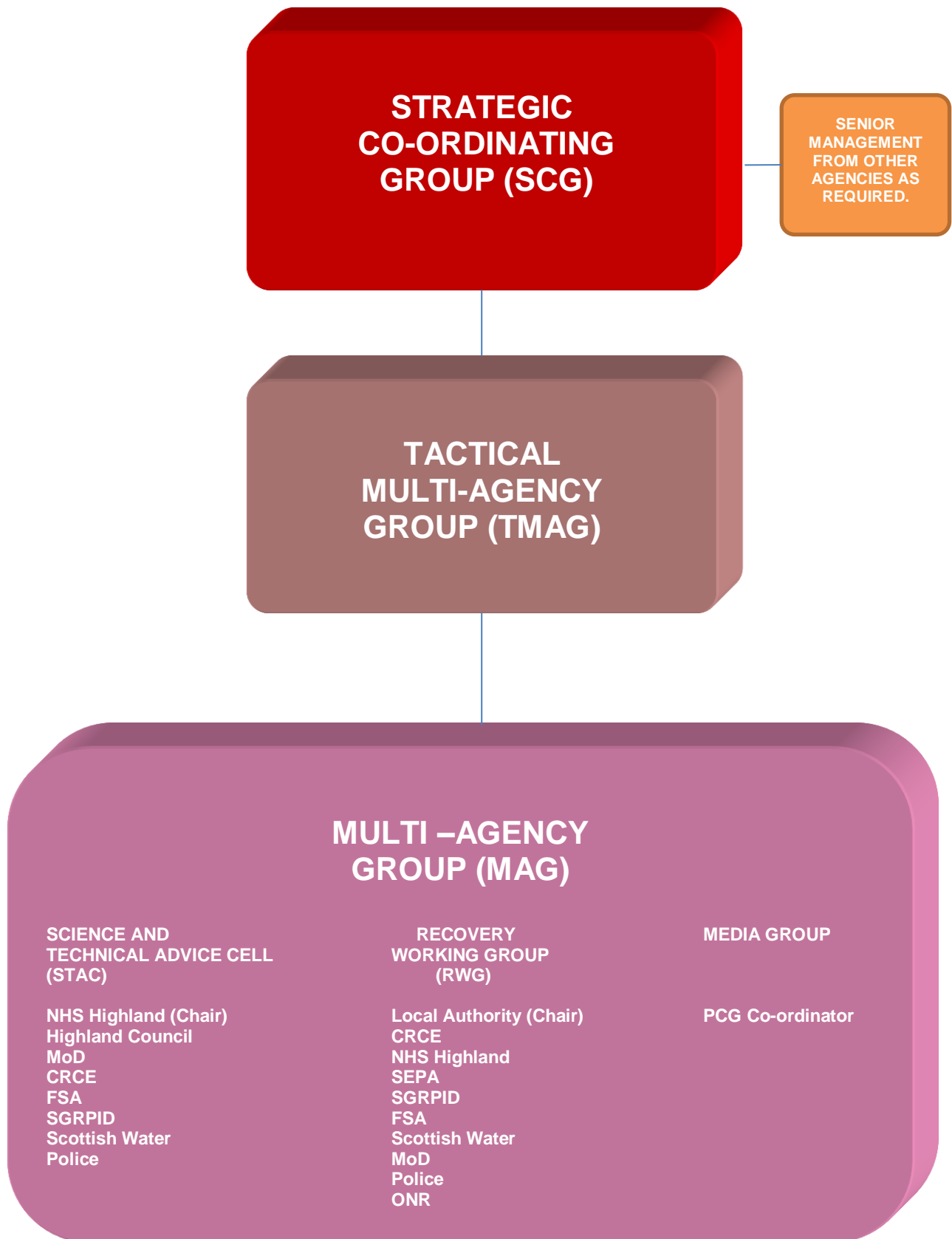
5.2.5 Strategic Co-ordinating Centre (SCC) Chairman

Role of the SCC Chairman:

The SCC Chairman will **co-ordinate** the integration of the expertise of all the agencies involved, with the object of effectively bringing the incident to a successful conclusion.

In the emergency phase of an incident at **an** MOD Operational Berth the Chief Constable of Police Scotland, or a Senior Officer nominated by him, will fulfil the role of the SCC Chairman. In the recovery phase of the incident the Chief Executive of The Highland Council will take over the role of the SCC Chairman. (See Section 11)

The Chairperson will be responsible for calling and chairing the main central table meetings in the SCC. The SCC Chairman is also responsible for ensuring that a record of any decisions is taken and displayed for the information of all agencies in the SCC. The Chairperson, in consultation with the Military Co-ordinating Authority (MCA), will decide which agencies will be represented at the central table. Representatives from each agency should be kept to a minimum.



5.4 INFORMATION FLOW WITHIN THE STRATEGIC CO-ORDINATING CENTRE

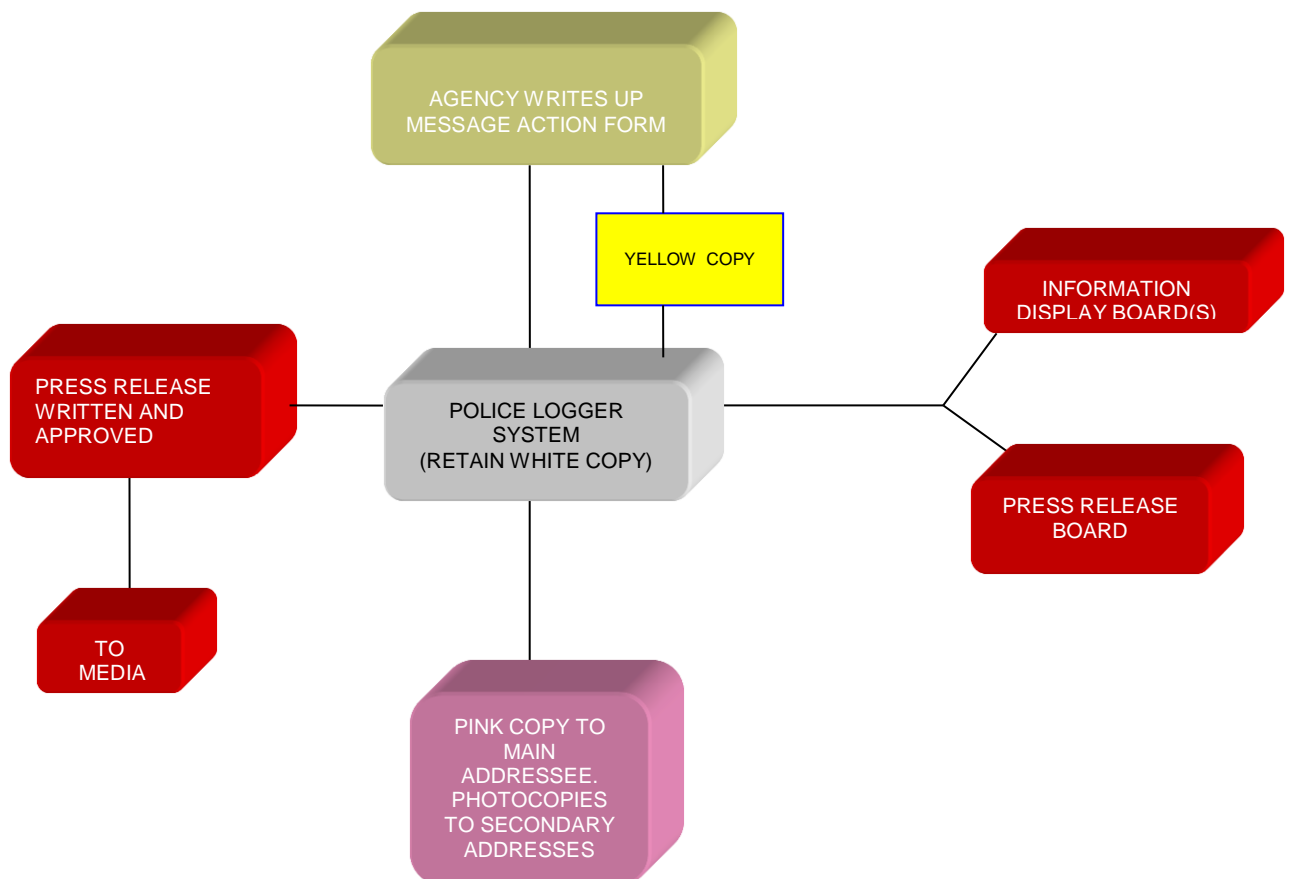
To ensure that all strategic information passed between the agencies present within the SCC is recorded and co-ordinated a Message/Action system will be administered by the Strategic Administration Team (SAT).

The Message/Action system is paper-based and agencies attending the SCC will be briefed on the use of the system. An SCC Information Booklet outlining the role of the SCC and its facilities, the role of the agencies located within the SCC, the instructions for the Message/Action system and a list of useful telephone numbers is available to all agencies.

As part of the Message/Action system the following information 'boards' are set up within the SCC, giving agencies immediate access to relevant information:

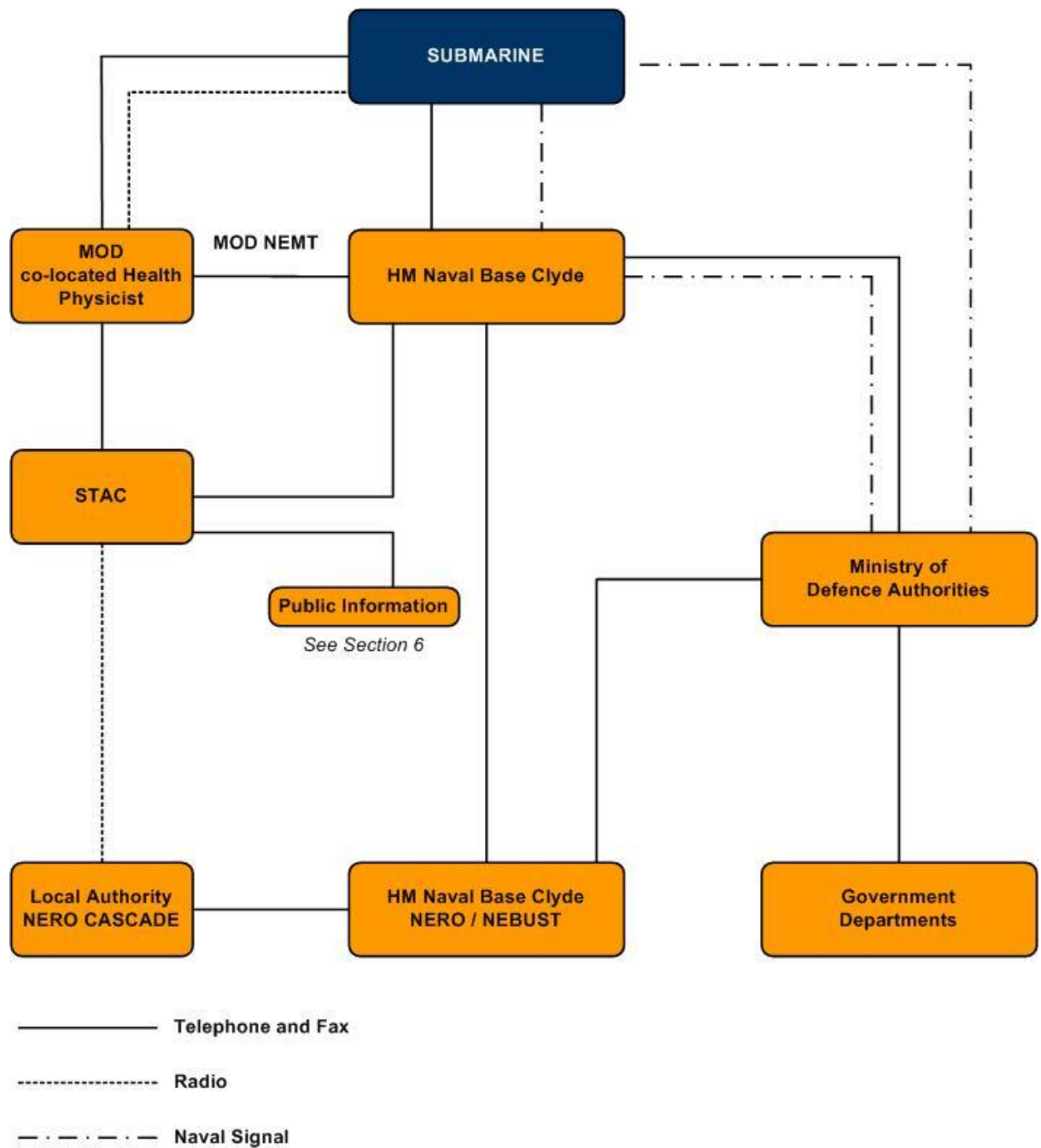
- Summary Board (copies of all Message/Actions raised)
- Press Releases Board (copies of all press releases)
- Minutes Board (copies of all minutes from the Strategic Co-ordinating Group meetings)

5.5 MESSAGE/ACTION FORM AND PRESS RELEASE FLOW CHART



5.6 COMMUNICATION PLAN AND DETAILS

a. Communication Plan



SECTION 6 : MEDIA MANAGEMENT

6.1 INTRODUCTION

- 6.1.1 The task of dealing with the media pressure of a major incident at an Operational Berth will be co-ordinated by the Police during the emergency phase of the incident. Media personnel will arrive at the scene of any incident very quickly, as they will often have heard of the disaster at the same time as the emergency services. They will expect to have instant access to the facilities they require and an instant response to their request for information and briefings. If these demands are not anticipated, media representatives are likely to add to the confusion.

6.2 PRE-PREPARED PRESS STATEMENTS

- 6.2.1 The media will be provided with an initial holding statement, issued by Police Scotland Area Control Room - ACR Head of Operations - Senior Police Commander. Pre-prepared press statements have been agreed between the Ministry of Defence (HM Naval Base Clyde) and the responding organisations. HMNB Clyde will assess the nature and likely rate of development of the incident, based on reports from the submarine and advise the duty officer at Police Scotland's Force Operations Room which of the following statements should be released to the media.

6.2.2 INITIAL STATEMENT 1

If HMNB Clyde has information to confirm that the incident has attained the level of an OSNE and is continuing, then the advice to the duty officer at Police Scotland Area Control Room - ACR Head of Operations - Senior Police Commander will be to release the following press statements:

'An incident occurred at (time, day and date) on board the Nuclear Submarine (HMS) which is currently berthed (at). Emergency Services have been alerted and are currently responding. As a precaution we are advising members of the public within 1.5 km of the site, including residents in (Aultbea / Mellon Charles as appropriate) to take shelter, the instructions for which are:

- **go indoors and stay there,**
- **close all doors, windows and ventilators,**
- **switch off any ventilation or air conditioning systems which draw air from outside the building,**
- **do not try to collect children from school, the school authorities will look after them,**
- **food that has been stored outside and water from private water supplies should not be consumed until advised otherwise.**
- **People in the Aultbea area who have been issued with Potassium Iodate Tablets (PITs) should locate these now but do not take them until further instructions are issued by NHS Highland.**
- **road blocks are being put in place on the A832 north and south of Aultbea to control access to the immediate area, people leaving the area will not be affected.**
- **A telephone helpline, to provide advice and guidance for members of the public affected by this incident, is being set up by the Highland Council, the number to call will be broadcast as soon as possible.**

Keep tuned to one of the following TV or Radio Channels: STV, BBC TV (Scotland), Moray Firth Radio - 97.4 FM, 102.5 FM, 1107 KHZ, BBC Radio Scotland - 92.4 to 94.7 VHF, 810 MW and an update will be given when further information becomes available.'

6.2.3 INITIAL STATEMENT 2

If the circumstances of the incident are not developing quickly, the initial holding statement will be:

'An incident occurred at (time, day and date) on board the Nuclear Submarine (HMS) which is currently berthed (at). Emergency Services have been alerted and are currently responding. Keep tuned to one of the following TV or Radio channels: STV, BBC TV (Scotland), Moray Firth Radio - 97.4 FM, 102.5 FM, 1107 KHZ, BBC Radio Scotland - 92.4 to 94.7 FM, 810 MW and an update will be given when further information becomes available.'

This statement will be issued to the media by the duty officer at the Police Scotland Area Control Room - ACR Head of Operations - Senior Police Commander immediately after being informed of an incident at an Operational Berth.

The purpose of this initial holding statement is to provide time to set up the Forward Media Information Point (FMIP) and the Media Briefing Centre (MBC). Copies of this initial statement should be sent to the Strategic Co-ordinating Centre (SCC) at Divisional Police Headquarters Inverness, Inverness when they are set up.

6.2.4 SUPPLEMENTARY PRESS STATEMENTS

Further press statements will be developed as part of the press strategy within the Public Communications Policy Group (PCPG) at the SCC, Divisional Police Headquarters Inverness, Inverness.

6.3 FORWARD MEDIA INFORMATION POINT (FMIP)

- 6.3.1** The Forward Media Information Point (FMIP) will act as a focal point for journalists, camera crews and photographers who want to get as close as possible to the site. It will offer shelter from the weather, a base from which to file copy and somewhere to receive copies of any media releases sent out from the MBC. News organizations and journalists will be advised that there will be no spokespersons available at this facility, and all enquiries should be referred to the Media Cell at the SCC in Inverness.

The main functions of the FMIP are to;

- Co-ordinate the media response at a local level;
- Provide copies of all media statements;
- Provide information packs;
- Provide 'pooling' arrangements for on-site visits.

Following the initial press release, prior to the MBC becoming operational, organisations should, where possible, consult the PCPG Co-ordinator before issuing media statements, to ensure that clear, accurate and non-conflicting information is provided.

6.4 MEDIA BRIEFING CENTRE

- 6.4.1** The Media Briefing Centre (MBC) for any major incident occurring at an Operational Berth will be in Inverness. The MBC will be set up simultaneously with the SCC. This will be the strategic level of response to the media.

A number of advantages are gained by setting up a MBC as soon as possible.

- It provides the media representatives with a known source for the most accurate and up to date information which the authorities can make available.
- Once spokespersons have been nominated, smooth flows of information can soon be established, compared and co-ordinated.
- There is a better chance of identifying and dealing with any potential differences in approach, and this can be quickly relayed to the emergency services and other control centres.

Once set up, all press conferences should take place within these premises, with appropriate personnel being transported to the MBC from the SCC by Police Scotland.

A Media Briefing Centre Manager will be appointed by Police Scotland, who will be responsible for the smooth running of the MBC. Close liaison will be necessary between the SCC and the MBC, and robust communications will be required.

Note: The MBC should continue to be available for as long as necessary. In some cases, this may be after the local authority takes over the co-ordinating role from the police.

6.5 MEDIA MANAGEMENT

- 6.5.1** The PCPG Co-ordinator, acting under the SCG Chairman's authority, will be responsible for ensuring co-ordination of all media matters until there is a handover. The handover phase of a major incident will include the handover of responsibility for all media matters. A multi-agency approach to the media will be practiced, with media representatives from all participating organisations based in the media cell at the SCC and the MBC. No statement will be given to the media without having first been vetted by the Police led media cell, in consultation with the appropriate members of the SCG. Media Statements will be distributed to all agencies at the SCC and the MBC.

Media representatives from the organisations operating within the SCC will be expected to work as part of a co-ordinated team, issuing joint statements.

The timing of media briefings will be agreed between the SCG Chairman and will take into consideration the views of all agencies, media interest and any media deadline, eg. different time zones, which may apply.

The SCG Chairman and the MCA should, as far as is reasonably practicable, be informed beforehand of the content of any media statement.

6.5 MEDIA MANAGEMENT (Cont'd)

Spokespersons at media briefings will be kept to a minimum. Spokespersons will be agreed in advance by the SCG Chairman, as appropriate, in the light of developments and the interests of the media, and taking into consideration the views of other agencies. The SCG Chairman will nominate the appropriate police press spokesperson, according to the status of the emergency, and will take on that role personally, when necessary.

Efforts should be made to provide a continuous supply of information (with a spokesperson being available, as appropriate) in order to recognise the needs of the broadcast media who will be the main recipients.

SECTION 7 : TECHNICAL INFORMATION

7.1 Reactor Information

- (a) A nuclear powered warship uses conventional steam turbine machinery for propulsion. The supply of steam for this machinery comes from a nuclear reactor plant instead of an oil-fired boiler. The nuclear reactor is therefore a heat source which is designed to generate steam, replacing the furnace of a conventional boiler. The nuclear reactor and associated plant are contained in a separate reactor compartment within the warship.
- (b) A nuclear reactor core is made up of fuel elements and control rods. To achieve criticality, selected **control** rods are slowly withdrawn from the core until the process of nuclear fission becomes self sustaining. The reactor can then be operated to produce useful energy in the form of heat which is removed from the core by the primary coolant water system and is transferred, in the **Steam Generators** (boilers), to the secondary system, where the steam produced is used to drive the propulsion system and other auxiliary machinery. The cooled primary coolant water is then recycled through the reactor core.
- (c) Nuclear fission also produces radioactive fission products, which emit radiations potentially hazardous to health. There is no hazard provided the fission products remain contained within the fuel elements, each of which is enclosed by a strong outer metallic case or cladding.

7.2 The Chances of Reactor Emergency:

- (a) A reactor emergency is defined as an unexpected event involving a nuclear reactor plant, which is likely to lead to, or has resulted in, a radiological hazard external to the reactor plant.
- (b) **It is impossible** for a reactor emergency to result in an atomic-bomb type explosion. It is, nevertheless, possible for certain untoward occurrences to lead to a situation in which there may be some measure of radiological hazard to individuals outside of the reactor plant itself. The design, construction and operation of reactor plants are rigorously controlled and supervised so as to reduce the risk of such an incident to the absolute minimum, and MOD(N) current estimates are that we should expect this sort of occurrence no more than once in anything between 10,000 and 1,000,000 years of reactor operation. Given that the total number of Royal Navy reactor operating years, to date, is less than 600, it will be appreciated how unlikely the chances are of such an incident. When it is remembered that shipboard reactors spend most of their operating life at sea well away from centres of population, it will be readily appreciated that the chances of an emergency happening in a place where it could directly affect members of the public are even more remote. Nevertheless, there must always remain some chance, however small, of an emergency happening at a time when a nuclear powered warship is berthed in a port.

7.3 RADIOLOGICAL HAZARDS

- 7.3.1** Should an **MOD nuclear reactor** suffer any emergency which results in rupture or melting of the fuel element cladding, the fission products that would be liberated would give off gamma radiation of such high energies that even if the fission products remain contained within the sealed primary coolant system the radiation would, nevertheless, penetrate both the primary and secondary containments and still be of sufficient intensity to pose a hazard to health for those within the immediate vicinity of the **emergency site**. In practice, no shelter in the immediate vicinity of the **reactor** is likely to afford adequate shielding against this radiation. In any emergency therefore it is essential that personnel are evacuated from inside the area at risk from the 'gamma shine', which could be up to 400 metres from the **reactor** in the worst possible case.
- 7.3.2** If radioactive fission products are released into the **reactor** primary containment and from there into the secondary containment and thence to atmosphere, it is unlikely that a significant radiation emergency health hazard will exist beyond 1.5km from the vessel. However, within this range these particles will represent a separate and distinct hazard to health. In general, this hazard may come about in one of three ways:
- (a) By persons being directly exposed to radiation from the cloud, or
 - (b) Inhaling radioactivity as the cloud passes over them; by consuming food products which have been contaminated by radioactivity from the cloud, or
 - (c) By subsequently being exposed to radiation from particles deposited on the ground or buildings during the passage of the cloud.

7.4 COUNTER MEASURES

- 7.4.1** The CRCE is responsible for specifying emergency reference levels of dose (ERLs) for the initiation of urgent countermeasures following an emergency release of radionuclides, and also for providing advice on radiological protection to those with responsibility for responding to an emergency. ERLs have been specified for the three urgent countermeasures of sheltering, evacuation and administration of potassium iodate (stable iodine). They are specified as pairs of numbers and indicate the level of dose averted for which it would be reasonable to introduce the countermeasure in different circumstances. For averted doses below the lower ERL, it is unlikely that the countermeasure would be warranted; above the upper level is almost certain that it should be implemented. Countermeasures include:
- (a) **Sheltering** or staying indoors with doors and windows shut and stopping all forced ventilation systems.
 - (b) **Stable Iodine:** If stable (non-radioactive) iodine, in the form of potassium iodate tablets, is taken within a few hours of the inhalation of radioactive iodine, or prior to the occurrence of such an incident the vast excess of stable iodine will substantially reduce the radiation dose to the thyroid gland.
 - (c) **Evacuation** protects predominantly against radiation from fission products deposited on the ground.
 - (d) The MOD requires that site specific intervention levels (SSILs) are calculated for each relevant site. The MOD SSILs are based on the lower CRCE emergency reference levels. CRCE consider that any emergency countermeasures should be carried out promptly. Other countermeasures, such as decontamination of buildings, are not so urgent; how quickly they are carried out, if at all, will depend on the exact circumstances of the emergency.

- (e) If an emergency occurs, it will, in the early stages, be extremely hazardous for even properly protected personnel to approach close enough to the submarine to observe the course of events in detail. The progress of the emergency and the consequent size, if any, of the release to the atmosphere must, therefore, be determined by radiation monitoring in the vicinity of the emergency site, and it may be some hours before monitoring teams can gather sufficient information. It is, therefore, imperative that there is a pre-determined plan to protect both people and the environment in the period before definitive monitoring information becomes available.

(f) **Meat, Vegetables and other exposed Foodstuffs including Sea and Freshwater Fish**

(Water sources need to be researched i.e. because water is delivered by mains does not mean that it cannot be contaminated)

The consumption of all unsealed foodstuffs, including sea and freshwater fish, free range eggs **and water from private water supplies within the potential affected sector** to a range of 1.5 km from the emergency berth, may be banned. Instructions will be given as to collection and safe disposal by the Food Standards Agency (FSA) and the Scottish Government Rural Payments and Inspections Directorate (SGRPID). (This may involve leaving contaminated vegetables in the ground to rot, thus allowing activity to decay).

If necessary, a statutory ban on harvesting, movement and sale of foodstuffs coming from the affected area will be imposed by the Scottish Government, by means of an emergency order under the Food and Environment Protection Act 1985 (FEPA 1985).

(g) **Milk Supplies**

- (i) Initially, restrictions are liable to be placed on the distribution and consumption of all milk produced in certain areas within a 10 Km radius and a 30° sector, drawn 15° either side of the prevailing wind direction, downwind of the emergency warship and subsequently as monitoring results indicate.
- (ii) All restrictions will be imposed, after consultation with the Naval Authorities, the representatives of the SGRPID, the FSA and the local area Health Authority.
- (ii) Representatives of SGRPID, the FSA and the Director of Public Health will be informed of the area concerned by the NEBUST, and will make the necessary arrangements to visit the farms and give advice on matters affecting milk supplies, crops, free range eggs and livestock.
- (iv) SGRPID and Environmental Health from The Highland Council are responsible for maintaining an up-to-date list of all dairy farms within 10 km of the berths and anchorages in The Highland Council area.

(h) **Movement and Slaughter of Livestock**

The responsibility for control of movement and slaughter of livestock lies with the SGRPID under powers invested by the Food and Environment Protection Act 1985 (FEPA 1985): Likewise, any decision on the need to restrict movement or slaughter would be taken by SGRPID.

(i) **Milk Sampling**

- (a) Arrangements will be made at the appropriate time for samples of milk to be taken from farms by Environmental Health officials from The Highland Council. If required, assistance in this connection will be given by officials from the Food Standards Agency (FSA) and SGRPID.
- (b) The result of monitoring and milk tests will be reported to the Director of Public Health, who, in consultation with officials from Central Government, the Chief Executive of The Highland Council and officials from other relevant departments, will review the position as to restrictions, distribution and imposition of controls.

(j) **Landing and Harvesting of Wild and Farmed Fish**

Responsibility for restricting the catching, landing and harvesting of fish, including freshwater species, shellfish and farmed fish, lies with SGRPID. Any decision to restrict the taking, distribution and sale of fish to protect human health will be taken by SGRPID.

(k) **Collection and Disposal of Condemned Supplies and Provision of Alternative Supplies**

Arrangements for collection and disposal of contaminated milk will be made by SGRPID. The Highland Council will arrange for the provision of fresh milk supplies to the affected area.

(l) **Evacuation, Reception and Accommodation**

It is unlikely that evacuation of members of the civilian population will become necessary. If, however, the civil authorities, acting on initial advice from the MOD co-located Health Physicist and subsequently from the NEBUST, consider it desirable, evacuation procedures will be put into operation by the police. It is anticipated that in such extreme circumstances the period of evacuation might be prolonged, therefore arrangements for meals and sleeping accommodation should also be made. Any decision to evacuate members of the general public will need to be implemented within 36 hours **of the initial incident**. Special consideration is needed for any school children evacuated during school hours. The names of people evacuated are to be recorded at Reception Centres. An opportunity should be given to persons to make their own private arrangements for accommodation and transport.

(m) **Restriction of 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 the Local Authority.

(n) **Private Vessels in the Area**

The Harbourmaster for the area concerned in conjunction with H M Coastguard will impose any early necessary restrictions on vessel movements based on advice from initially the MOD collocated Health Physicist and subsequently from the NEBUST.

(o) **Water Supplies**

Mains water supplies are most unlikely to be affected in any way. To reassure the public, however, sampling of main services and open reservoir water supplies will be arranged by Scottish Water. A team from the DSTL (Defence Science Technological Laboratory) will be available to assist in this task. In some areas, however, water is drawn from private wells, natural springs or running water and, therefore, there may be a risk of water being contaminated. For this reason a general ban on the use of water in the area may have to be considered until sampling has been carried out. The DSTL-RPS team will be able to advise whether water is safe to drink.

SECTION 8 : THE PRINCIPLES OF COMMAND AND CONTROL

Introduction

In order to achieve a combined and co-ordinated response to a major incident the capabilities of the emergency services should be closely linked with those of the Local Authority and other agencies, following the principles of integrated emergency management.

The management framework should always embody the same principles irrespective of its cause or nature but remain flexible to individual circumstances. The response can be divided into three levels – Operational, Tactical and Strategic – the Principles of Command and Control.

The requirement to implement one or more of the management levels will be dependent upon the nature of the incident.

Operational Level

The scene immediately after disaster has struck is likely to be confused. To bring some order to this confusion it is important that the emergency services establish control over the immediate area and build up arrangements for co-ordinating the contributions to the response. Experience has shown that an effective response depends on the timely receipt of accurate and complete information and on sound decisions being made and appropriate actions set in train at the onset.

It is generally accepted that the first member of an emergency service to arrive on the scene should not immediately become involved with the rescue but make a rapid assessment of the disaster and report to their own control.

The emergency services will concentrate on their specific tasks within their areas of responsibility. Should it be necessary, consideration should be given to assigning control for a specific task or area to a designated officer of the emergency services or particular agency subsequently called to the scene.

The command of the resources belonging to any agency and applied within a geographical area, or used for a specific purpose, will be retained by that agency. Each agency must liaise fully and continually with the others employed in the same area to ensure an effective and combined effort.

If appropriate, the Police will normally act as the co-ordinator of this response at the scene. These arrangements will usually be adequate for the effective resolution of most incidents. However, for more serious incidents which require significantly greater resources it may be necessary to implement an additional level of management.

Tactical Level

The tactical level of command exists to determine priority in allocating resources, to plan and co-ordinate when a task will be undertaken and to obtain other resources as required. Most, but not all, of the tactical functions will be discharged at the scene of the incident. Some agencies, particularly Local Authorities, will prefer to operate from their administrative offices and will normally send a representative to the scene to liaise with the Incident Officer.

When more than one agency is operating at the tactical level there must be consultation between the various Incident Officers. These Incident Officers should not become directly involved with the activities at the scene but concentrate on the overall general management. In order to effect co-ordination, an interagency meeting should be held at regular intervals attended by each Incident Officer. The establishment of inter-service communication links will support the running of the incident at the scene. The Police will maintain a written record and normally act as the co-ordinating agency.

Should it become apparent that resources or expertise beyond tactical level of command is required or should there be a need to co-ordinate more than one incident/scene, it may be necessary to implement a strategic level of management.

Strategic Level

The purpose of the strategic level of management is to formulate the overall policy in which the response to a major incident will be made.

A strategic co-ordinating group may be established which will be involved with ensuring priorities for demands by the tactical level of command are met, as well as setting out the plans for a return to normality once the incident has been brought under control. Tactical decisions are not the responsibility of this group.

The strategic co-ordinating group will also be aware of its wider role which may encompass a central government interest, handling requests for advice and assistance from individual services and agencies and formulating a media strategy.

It will be a police responsibility to establish and chair the strategic co-ordinating group during the emergency phase of any response. The group will comprise a nominated member from each agency involved. Each person must be able to make executive decisions in respect of resources within their agency and have the authority to seek the aid of other agencies in support of the role.

The strategic co-ordinating group should be based at an appropriate pre-planned location, normally away from the noise and confusion of the scene. As it is a Police function to chair this group, the strategic level of management will be located at Inverness.

SECTION 9 : ROLES/RESPONSIBILITIES OF RESPECTIVE AGENCIES

9.1 THE ROLE OF THE MINISTRY OF DEFENCE (ROYAL NAVY)

9.1.1 The Commanding Officer of a nuclear vessel is responsible for reactor safety at all times, and in the unlikely event of a reactor emergency he would assume the role of Incident Commander supported by the MOD Collocated Team and the Nuclear Emergency Back-up Support Team.

9.1.2 Should a nuclear reactor emergency occur at a berth where no full-scale Naval Command exists, it is MOD(N) policy that a Senior Naval Officer accompanied by **specialist** staff should proceed to the area as quickly as possible to become the Military Co-ordinating Authority (MCA). This Senior Officer and the support team will assist in controlling the emergency situation and advise the Civil Authorities on any radiological hazards affecting the general public. This team is known as the Nuclear Emergency Back-up Support Team (NEBUST). The NEBUST consists of the following specialists:

Military Co-ordinating Authority

Officer in Charge	Technical Adviser
Staff Officer	Communications Adviser
Health Physics Adviser	Public Relations Adviser
Medical Adviser	

9.1.3 **All initial radiological monitoring** activities are controlled by the Collocated Monitoring Control Officer on behalf of the Director, HM Naval Base Clyde, Faslane.

9.1.4 A Nuclear Emergency Monitoring Organisation is maintained within the Ministry of Defence (Royal Navy). Part of this Organisation is the Naval Emergency Monitoring Team (North) - NEMT(N) - which consists of Monitoring Units from within the HM Naval Base, Clyde.

9.1.5 The NEMT(N) headquarters is at Rhu and is manned continuously in order to carry out the following duties:

- (a) Provision of a 24 hour Emergency Monitoring Unit, which is able to determine the extent and hazard arising from an abnormal release of radioactivity, which may occur in the event of a nuclear reactor incident.
- (b) Provision of an on-site Emergency Monitoring Unit whilst a nuclear powered warship is located at an Operational Berth for longer than 12 hours.
- (c) Carry out reactor emergency planning reviews so that, in the event of a reactor emergency, the radiological hazard can be correctly assessed.

9.2 THE ROLE OF POLICE SCOTLAND

9.2.1 Responding to emergencies is a normal feature of the work of the police service. The normal role and responsibilities of the police encompass the protection of life and property. The Chief Constable is also responsible in the emergency phase of response to any major incident for the control and co-ordination of the emergency services and other agencies.

9.2.2 In responding to an incident at an Operational Berth the police responsibilities may be summarised as follows:

- (a) The saving of life in conjunction with the other emergency services.
- (b) Co-ordination of the emergency services and other organisations during the emergency phase of the incident. This applies to all three levels of response; operational, tactical and strategic. The SCC would be opened at Divisional Police Headquarters Inverness, Inverness, to allow all the strategic decision makers for the agencies involved to assemble and make arrangements for the effective management of the emergency response via the SCG.
- (c) The protection and preservation of the scene.
- (d) The investigation of the incident in conjunction with other investigative bodies, where applicable.
- (e) The collation and dissemination of casualty information.
- (f) Identification of the dead on behalf of the Procurator Fiscal who is the principal investigator when fatalities are involved.
- (g) Assist The Highland Council with the restoration of normality at the earliest opportunity.
- (h) To initiate the cascade call out system to alert essential services to either deploy or standby.

9.2.3 To comply with the principles of the European Convention of Human Rights Act 1998, Police Scotland will carry out their responsibilities to protect individual's rights. If there is a requirement to interfere with the rights of an individual, it will only be done:

- where the law allows; and
- where it is necessary to protect the rights and freedoms of others, prevent crime and disorder, to protect the health and morals of others, in the interests of national security or public safety; and
- the means used to achieve an objective will balance the general interests of the community against the rights of the individual and will use the least intrusive option available to meet the objective.

The identified actions for Police Scotland staff have been written in an open and transparent manner, however, should there be a requirement to disclose any or part of the information contained therein, CONFIDENTIAL information may be withheld.

The principle legislation pertaining to Police Scotland's actions are:

- REPPIR 2001
- Ionising Radiations Regulations 1999
- Management of Health and Safety at Work Regulations 1999

9.3 THE ROLE OF SCOTTISH AMBULANCE SERVICE

As one of the emergency services, the Scottish Ambulance Service receives emergency calls from the public and invariably provides the first National Health Service response to an incident. The Ambulance Service provides a comprehensive emergency service, non-emergency patient transport service and an integrated air ambulance service.

In keeping with agreements with the other emergency services regarding command and control, and in keeping with the concept of integrated emergency management, the Ambulance Service will liaise with the Incident Officers of other organisations at Incident Control Posts and between the permanent operations/control rooms of the emergency services.

The role of the Ambulance Service can be summarised as follows:

1. The saving of life and the provision of immediate care to patients at the scene of a major incident and in transit to hospital.
2. The alerting of hospital services and immediate care GPS.
3. The management of decontamination for people affected by hazardous substances, prior to evacuation from the scene.
4. The evacuation of the injured from the scene in order of medical priority.
5. Arranging and ensuring the most appropriate means of transport for the injured to the receiving hospital.
6. The supply of patient care equipment to the scene of a major incident.
7. The transport of appropriate medical staff and their equipment to the scene of a major incident.
8. Alerting and co-ordinating the work of the Voluntary Aid Societies acting in support of the ambulance service at the incident site.
9. The provision and maintenance of communications equipment for medical staff and appropriate Voluntary Aid Society personnel. At the scene of a major incident.
10. The restoration of normality.
11. The prior training of medical staff / VAS personnel in the use of ambulance communications equipment.

9.4 THE ROLE OF THE HIGHLAND COUNCIL

9.4.1 It is likely that a number of Council Services would become involved in a major incident at an Operational Berth.

9.4.2 In responding to an incident the local authority's responsibilities may be summarised as follows:

- (a) The selection of Reception Centres and to arrange for the transportation and reception of local residents in the event of evacuation from any area of risk.
- (a) Co-ordinate any necessary works required to ensure the effective and safe operation of Radiation Screening Units for re-assurance monitoring.
- (c) Co-ordinate any procedures, including decontamination, necessary to return the Radiation Screening Unit to normal function.
- (d) To provide assistance and resources to the emergency services as requested by them.
- (e) To liaise with the emergency services engaged at the scene.
- (f) Co-ordination of the emergency services and other organisations during the recovery phase of the incident.

9.5 THE ROLE OF NHS HIGHLAND

- 9.5.1 The normal work of the Health Board encompasses primary health care and the protection of public health. Emergency arrangements have been made by the Board to deal with the treatment of large numbers of casualties, public health incidents and the treatment of casualties contaminated with radiation or toxic materials.
- 9.5.2 In responding to an incident at an Operational Berth the Health Board responsibilities may be summarised as follows:
- (a) The care of casualties and those affected by the incident.
 - (b) The operation and use of the decontamination facility at Raigmore Hospital, Inverness.
 - (c) The provision of public health advice to those managing the response.
 - (d) The provision of a Site Medical Officer and Team when required.
 - (e) The provision of psychological support of victims and those responding to the incident.
 - (f) The staffing, by medical physics personnel, of radiation screening units if established.
 - (g) The implementation and control of radiation protection procedures for medical staff and casualties.

9.6 THE ROLE OF SCOTTISH FIRE AND RESCUE SERVICE

- 9.6.1 Responding to emergencies is a normal feature of the work of the Fire and Rescue Service. The normal roles and responsibilities of the Fire and Rescue Service are derived from its long experience in firefighting and rescue operations and encompass the saving of life and the protection of property.
- 9.6.2 In responding to an incident involving a nuclear powered submarine berthed at an Operational Berth, the Scottish Fire and Rescue Service's responsibilities may be summarised as follows:
- (a) Liaison with co-located MOD personnel to develop a strategy to prevent the further escalation of the incident by tackling fires, dealing with released chemicals and other hazardous situations;
 - (b) The rescue of trapped casualties;
 - (c) Liaison with the Medical Incident Officer and other medical services with regard to the provision of assistance at ambulance loading points and the priority evacuation of injured persons;
 - (d) Participation in investigations as appropriate and preparing reports and evidence for inquiries;
 - (e) Stand-by if necessary during the non-emergency recovery phase to ensure continued safety at and around the site.

9.7 THE ROLE OF THE MARITIME AND COASTGUARD AGENCY

9.7.1 The Maritime and Coastguard Agency is an Executive Agency of the Department of the Environment, Transport and Regions.

The Maritime and Coastguard Agency is responsible for:

- Minimising loss of life amongst seafarers and coastal users.
- Responding to maritime emergencies 24 hours a day.
- Developing, promoting and enforcing high standards of marine safety.

Minimising the risk of pollution of the marine environment from ships and, where pollution occurs, minimising the impact on UK interests.

9.8 THE ROLE OF OFFICE FOR NUCLEAR REGULATION (ONR)

The Office for Nuclear Regulations (ONR) is that part of HSE Nuclear Directorate that is responsible for regulating nuclear safety on licensed sites and REPPiR on non-licensed MOD sites. In the event of an emergency ONR is responsible for monitoring the activities of the operators and advising central government and devolved administrations.

Using its statutory powers, ONR will inspect and review the activities of the operator to ensure that they are taking all reasonable steps both to restore the plant to a safe state and to minimise the risk to the general public.

SECTION 10 : SCIENCE AND TECHNICAL ADVICE CELL (STAC)

10.1 INTRODUCTION

In the event of a radiation emergency, it is vital that clear authoritative advice on the effect of the emergency on public health and on the appropriate off-site countermeasures to be implemented is provided.

10.2 RESPONSIBILITY

It is the responsibility of the Director of Public Health Medicine to provide this advice. The purpose of the Science and Technical Advice Cell is to bring together the many agencies involved to develop such advice in a clear and coherent form.

10.3 PROCESS

In general advice given by the STAC will be given to the DPHM to present to the SCG for consideration.

STAC meetings must be timed to support the DPHM attendance at SCG meetings and should be at different times to the Recovery Working Group.

The following are key members of the STAC. Other agencies may be identified based on public protection need for specific information or skills.

10.4 COMPOSITION OF THE GROUP

Core Members:

CPHM –NHS Highland - Chair

ONR

Health Physicist - MOD

Medical Physics – NHS Highland

FSA

SGRPID

Environmental Health Officer – Highland Council

Scottish Water

Centre for Radiation, Chemical and Environmental Hazards (CRCE)

SEPA

SECTION 11 : CONSEQUENCE MANAGEMENT

11.1 INTRODUCTION

This section contains the procedure for the transfer of co-ordination and control of a nuclear incident from the Police to the local authority. It also details the organisation, advice and information on remediation procedures.

11.2 OBJECTIVES

- a. to define the criteria for the handover arrangements between the Police and The Highland Council;
- b. to describe the functions of the Recovery SCG;;
- c. to detail the membership of a Recovery SCG;
- d. to list information and advice on remediation and recovery;
- e. to highlight possible areas of public concern in the medium and long term.

11.3 CONSEQUENCE MANAGEMENT/RECOVERY

The response to most major incidents will essentially be in two phases.

EMERGENCY RESPONSE PHASE. The emergency response phase covers the actions taken to immediately minimise the consequences of the incident to the local populace and the environment. This phase will normally be controlled and directed by the Chief Constable. Recovery considerations will be dealt with by the formation, initially, of a Recovery Working Group as a sub-group of the SCG.

11.4 RECOVERY PHASE. The recovery phase is harder to define due to the extensive variety of potential circumstances resulting from an incident.

It is normally defined as the extended period, beyond the emergency response phase, when actions are taken to protect the public and the environment from longer term risks and promote an early return to normal life. In certain circumstances this may not necessarily equate to a restoration of pre-emergency conditions.

The boundary between the two phases cannot be rigidly defined and preparations, in the form of consequence management, for the recovery from an incident forms an integral part of this emergency response plan.

11.5 RECOVERY WORKING GROUP (RWG)

The RWG will be convened initially as a Sub Group of the SCG. (Chaired in the first instance by the Head of Environmental Health or his nominated Depute). The group will meet at regular intervals to consider the longer-term implications of the emergency and to formulate strategies for the return to normality. The group Chair will brief the SCG on a regular basis throughout the response phase of the emergency and this action will continue into the remediation phase. Once strategic co-ordination passes to the Local Authority, the RWG is subsumed into what now becomes the Recovery SCG under the LA Chief Executive.

Remediation issues will cover a wide range of concerns ranging from priority actions through to decontamination/clean-up measures and relocation implications. Key remediation considerations during the response phase will include:

- a. Characterising the extent and nature of off-site contamination arising from the emergency;
- b. preparing an environmental impact report;
- c. identifying options for clean-up of contamination and disposal of wastes;
- d. preparing a remediation plan for approval by the Strategic Group.

11.6 COMPOSITION OF THE GROUP. There will be a core membership and depending on the nature of the incident additional representatives from the optional members list will be seconded.

CORE MEMBERS

Environmental Health, Highland Council - Chair
Police
NHS Highland
SEPA
SGRPID
Food Standards Agency (FSA)
MOD
ONR
Scottish Water

OPTIONAL MEMBERS

Centre for Radiation, Chemical and Environmental Hazards (CRCE)
Forestry Commission
Health and Safety Executive (HSE)
Housing Service, Highland Council
Marine and Coastguard Agency (MCA)
National Farmers Union (NFU)
NRTE Vulcan
Scotrail
Scottish Natural Heritage (SNH)
Scottish Society for the Prevention of Cruelty to Animals (SSPCA)
Trading Standards, Highland Council
Utilities (gas, electricity, telephone etc)
Waste Management, Highland Council

Membership of the Group will be kept under review, by the Chairman, as the type of organisations needing to be involved will change as work progresses.

11.7 AIMS OF CONSEQUENCE MANAGEMENT

To initiate preparations, as an integral part of this Emergency Response Plan to mitigate the initial effects of the incident and facilitate the transition to and actions required during any Recovery Phase.

To protect the public and the environment from longer term risks and promote an early return to "normal" life.

11.8 PRINCIPLES OF JUSTIFICATION AND OPTIMISATION

The principles applying to recovery activities as a result of any incident should follow these recommendations:

- (a) "the proposed intervention should do more good than harm, ie. the reduction in detriment should be sufficient to justify the harm and costs, including social costs, of the intervention, **(the justification of intervention)**".
- (b) "the form, scale and duration of the intervention should be optimised such that the benefit of the intervention should be maximised **(the optimisation of intervention)**".

Generally, Consequence Management should:

- propose options for consideration and prepare plans for their implementation;
- identify priorities, timescales and costs for the options being considered;
- identify a strategy for public consultation and involvement;
- advise on, and assess, recovery monitoring so as to ensure that objectives and targets are being achieved;
- identify the extent and nature of any contamination;
- identify options and strategies for clean up and disposal of wastes;
- identify where applicable, options and strategies for long term re-location/re-housing of evacuees;
- maintain records and costs of recovery actions and provide briefing and information as necessary.

11.9 ISSUES DURING THE RECOVERY PHASE

The SCG has prepared a comprehensive guide to recovery and this should be referred to when formulating recovery strategies. It should also be used as a framework when planning the work of the Recovery SCG.

Issues during the recovery phase may include:

a. Immediate concerns:

- (1) Areas affected.
- (2) Number/types of properties (residential, schools, businesses).

b. Priority actions:

- (1) At risk groups (elderly, disabled, schools etc).
- (2) Cordons/security/public access to contaminated areas.
- (3) Public health issues (Health Authority).
- (4) Media/press advice.

c. Decontamination/clean-up Issues:

- (1) Recovery category countermeasures options (CRCE/Cats A-C).
- (2) Decontamination options (CRCE).
- (3) MOD support:
 - A. Specialist plant, equipment and manpower.
 - B. Disposal of radioactive waste.
 - C. Cost control mechanisms.

d. Relocation Issues:

- (1) Identification of affected properties.
- (2) Priorities/timescales.
- (3) Livestock and personal effects.
- (4) Emergency housing implications (external LA support).

e. Long-term relocation considerations:

- (1) Accommodation.
- (2) LA support arrangements (benefits/counselling etc).
- (3) Update bulletins (PR).
- (4) Phased reoccupation priorities.
- (5) Demolition of seriously contaminated homes (rebuild implications).
- (6) Collation of evidence for public enquiry.
- (7) Appeal funds.
- (8) VIP visits/memorial services (Royals etc).

f. Miscellaneous issues:

- (1) Finance/compensation claims.
- (2) Effects on tourism.
- (3) Specialist helplines.

11.10 EFFECTIVENESS OF RECOVERY COUNTERMEASURES

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.

11.11 ENVIRONMENTAL 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, Rotovating & 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 (ie. 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.

APPENDIX 1 (A)

PROCEDURE FOR CLAIMS FOR INJURY, DAMAGE OR LOSS

In the event of nuclear injury or damage arising during the operation of any of Her Majesty's nuclear powered submarines or their equipment, the following general arrangements will apply to the handling of claims or compensation:

- (a) The Ministry of Defence will deal with claims under the principles for nuclear injury or damage (including the sole and absolute liability of the operator) established by the Nuclear Installations Act 1965; the Act does not apply to nuclear vessels but claims will nevertheless be dealt with according to the same principles.
- (b) Claims by third parties are to be addressed to the Ministry of Defence, Defence Security – Nuclear Security & EP, MOD PLLS Claims, First Avenue House, LONDON. There is no set form for making claims. Full details of the circumstances will be required, and special instructions will be issued to the public as necessary. (Crown servants on duty should report any nuclear injury to their parent department).
- (c) In the event of nuclear injury or damage arising from the operations of United States nuclear powered warships, claims will be dealt with under special arrangements in consultation with the United States Authorities. Third party claims should however, be addressed to the Ministry of Defence as in paragraph b. above.
- (d) Claims arising in connection with special public safety measures taken (e.g. under arrangements made by representatives of Government Departments or Local Authorities in relation to milk, foodstuff, growing crops or animals), should be submitted in accordance with paragraph b. above and should be supported by detailed statements certified by the official or representative by whom instructions were issued or from whom instructions (e.g. as to disposal of produce) were received. Although there are no statutory powers to restrict the distribution of contaminated foodstuffs, authorised officers of local Authorities have powers under Section 9 of the Food and Drugs Scotland Act 1956 to seize food intended for sale for human consumption but unfit for such sale and to bring it before a Justice of the Peace who may condemn it and order it to be destroyed or so disposed of as to prevent it being used for human consumption. It might not always be possible to deal with an emergency rapidly enough under these powers, and restrictions on the use and sale of foodstuffs, etc, will if necessary, be imposed by Governmental Administration action in co-operation with various local bodies and agencies. This action is covered by the statutory power contained in Part 1 of the Food and Environmental Protection Act 1985 which empowers the Secretary of State for Scotland to investigate incidents involving an escape of substances (including radioactivity) and, if there is a possibility that the safety of food may be at risk, to make emergency Orders prohibiting various activities, including the movement of food or anything from which food could be derived, in designated areas of land or sea within Scottish fishery limits. The Secretary of State may authorise investigation and enforcement to assist him in carrying out these functions.
- (e) Director of Public Health and other local Officers may be required to act on the instructions of the Naval Officer-in-charge or of the Regional Representative of the relevant Government Department. In doing so, they will be regarded as the agents of HM Government (with the support of the Ministry of Defence) in any matter of liability arising from the discharge of the duties involved.

APPENDIX 1 (B)

REGISTRATION OF CIVILIANS IN AN AREA AFFECTED BY RADIOACTIVITY

If radioactivity affects areas outside MOD property, it may be necessary to arrange for civilians in the affected area to register so that it is possible to prove their presence in an affected area in connection with subsequent compensation claims. If it is considered that the circumstances of any particular emergency warrants this step, the Ministry of Defence will make the necessary arrangements for the forms to be made available through local post offices.

When the decision to issue registration forms is taken, release of the following public announcement will be authorised by the Ministry of Defence:

DRAFT PUBLIC ANNOUNCEMENT FOR PRESS AND BROADCASTING IN THE EVENT OF A NUCLEAR REACTOR EMERGENCY

"There has been an emergency in a nuclear powered vessel operated by the Ministry of Defence which has led to a release of radioactivity affecting the following areas

.....

Radioactivity can have effects which do not always show themselves immediately, and a person who considers that he or she may have been affected as a result of the radioactivity released can make a claim within 30 years of the emergency.

Any person would, of course, have to prove that they were in the affected area at the time and this might be very difficult to do many years afterwards.

The Ministry of Defence has, therefore, set up a register, and anyone who was in the area at the time can apply to be registered. The inclusion of a name in the register will not **prove** that the person was here, but it will provide evidence that the person was, and this can be disputed only if other evidence was produced which showed that the person was not.

Anyone who was in the area between andon whether they lived there, or were there only temporarily, may apply for registration on a form, which can be obtained from any post office in the area for the next month or from the Ministry of Defence.

The following points should be particularly noted:

- (a) A separate form should be filled in for each person who wishes to register.
- (b) Forms can be obtained only from post offices in the affected area or from the Ministry of Defence.
- (c) The function of the post office in this matter is purely and simply that of a distributing agency and ALL QUESTIONS ABOUT THE FORM MUST BE ADDRESSED TO THE MINISTRY OF DEFENCE, Defence Security – Nuclear Security & EP, MAIN BUILDING, WHITEHALL, LONDON SW1A 2HB".

APPENDIX 2 (A)

LETTER TO ALL OCCUPIERS OF AGRICULTURAL HOLDINGS PRODUCING MILK WITHIN THE MILK PRODUCING AREA

Tel No (as appropriate)

**Scottish Government Rural
Payments and Inspections
Directorate**
(Address as appropriate)

Date

Dear Sir

EMERGENCY TO A NUCLEAR WARSHIP – RESTRICTIONS ON THE USE OF MILK

Your farm is within the area to which restrictions on the use of milk for human consumption has been applied.

Until further notice milk produced on your farm must not be used for human consumption, nor may it be processed for butter or cheese.

Your milk may/may not be fed to livestock.

If you sell directly to a milk wholesaler or dairy company the milk will be collected as usual and all contaminated milk will be disposed of. You will be paid for it as usual.

If you produce milk for your own consumption only, then you should dispose of it by burying it in a trench specially dug for the purpose. The trench should be dug below the level of the farm buildings and sufficiently deep to provide a soakway. Care should be taken to ensure that water supplies can not be contaminated. Milk must not be discharged directly into streams.

If you normally produce and sell milk by retail directly, then SGRPID will arrange to collect and dispose of it during the period covered by the restrictions.

You will be informed by letter as soon as these restrictions can be removed. In the meantime, arrangements are in hand to import uncontaminated milk into the area for human consumption and supplies can be obtained from any milk retailer. Please notify your workers of this arrangement. Whilst the restrictions on the use of milk lasts, dairy cows must not be moved or brought to your farm without special permission from this Department.

Personnel who suffer financial loss as a result of the foregoing instructions will be informed as soon as possible of arrangements made for their compensation.

Yours faithfully

Principal Agriculture Officer

APPENDIX 2 (B)

STAND DOWN NOTICE TO FARMERS

Tel No (as appropriate)

**Scottish Government Rural
Payments and Inspections
Directorate**
(Address as appropriate)

Date

Dear Sir

EMERGENCY TO A NUCLEAR WARSHIP – REMOVAL OF RESTRICTIONS MILK

With reference to the restrictions on the use of milk produce on your farm given in the Departments letter of I am please to inform you that so far as your farm is concerned there is no longer any danger resulting from the recent emergency and the restrictions placed on milk produced on your farm are now lifted.

Similarly, the restrictions on movement of dairy cows to or from your farm is removed.

Yours faithfully

Principal Agriculture Officer

APPENDIX 2 (C)

NOTICE TO FISHERMEN AND OWNERS OF FISHING VESSELS

Date:

Dear Sir/Madam

EMERGENCY TO A NUCLEAR WARSHIP – RESTRICTIONS ON FISHING CLOSURE ORDER UNDER THE FOOD AND ENVIRONMENT PROTECTION ACT 1985

I am writing to inform you that there has been an emergency involving a nuclear powered warship at (name of area or precise co-ordinates). As a consequence the Food Protection (Emergency Prohibitions) (Pollution of Fish) Order 199() came into force at () hours on (date, month, year). The landing and use in the production of food or fish taken from the designated area after one minute past midnight on (date, month, year) is prohibited.

The Order designates an area within which fishing and taking fish is prohibited and prohibits the movement of fish out of that area (see maps/charts attached). Other restrictions are imposed throughout the United Kingdom including the use or supply of fish taken from that area.

You will be informed by letter as soon as these restrictions can be removed. Please ensure that the crew(s) of your vessel(s) are advised of these restrictions.

Yours faithfully

APPENDIX 2 (D)

NOTICE TO FISHERMEN AND OWNERS OF FISHING VESSELS

STAND DOWN NOTICE

Date:

Dear Sir/Madam

EMERGENCY TO A NUCLEAR WARSHIP REMOVAL OF RESTRICTIONS ON FISHING

I refer to the restrictions on fishing brought in by the Food Protection Emergency Prohibitions (Pollution of Fish) Order 199() details of which were given in the Departments letter of.....

I am pleased to inform you that the restrictions of the taking and landing of fish from the designated area were lifted from one minute past midnight on (date, month, year).

Yours faithfully

APPENDIX 3

POTASSIUM IODATE TABLETS (PITS) / STABLE IODINE TABLETS (SITS)

Nuclear Incidents

- If there is a nuclear emergency various radioactive materials may be released. Most radioactive substances can be kept away from the body by sheltering – going indoors and shutting doors and windows.
- Radioactive iodine is one of the substances which may be released following a nuclear emergency. It can enter the body by breathing in contaminated air.
- Iodine, whether radioactive or in any other form quickly enters the bloodstream and travels to the thyroid gland in the neck where it remains for some time.

Preventing Thyroid Cancer

- The increased risk of thyroid cancer can be greatly reduced by taking SITs. (This will ensure that your thyroid gland will absorb non-radioactive iodine and therefore will minimise any uptake of radioactive iodine).
- A significant number of children in the area around Chernobyl have developed thyroid cancer because they were not given SITs following the nuclear incident in 1986.

Who should take SITs?

- The radioactive iodine level in the air can be measured and if it is raised you will be asked to take SITs.
- Everyone in the affected area (called the DEPZ) should take SITs as soon as possible once they are told to do so. Unborn babies, babies, toddlers and children will get most benefit.
- By having SITs in your house there will be no delay should you be asked to take the tablets.
- Take the SITs dosage once only unless otherwise advised.

DOSAGE

- | | |
|---|-----------------------|
| • Adults (everyone aged 13 years and over)
(including pregnant women and women breast feeding) | - 2 tablets |
| • Children aged 3 – 12 years | - 1 tablet |
| • Children aged 1 month – 2 years 11 months | - Half a tablet |
| • Newborn babies (0 – 1 month) | - Quarter of a tablet |

NHS Highland and the Ministry of Defence will ensure that your supply of SITs will always be kept in date.

Side-effects of SITs

- The World Health Organisation has reviewed the use of SITs which were distributed extensively in Poland after the nuclear incident at Chernobyl. No serious side-effects were reported. There were some stomach upsets and skin rashes. The risk of getting one or the other of those side-effects was less than 1 in 10 million for children and less than 1 in 1 million for adults.

APPENDIX 4 (A)

NEW METHODOLOGY

REACTOR EMERGENCY DEFINITIONS

Reactor Safety Alert (RSA)

An abnormal event which poses a threat to reactor plant safety.

Note: An RSA does not result in an Off-Site Nuclear Emergency (OSNE).

Site Nuclear Incident

An abnormal event giving rise to a radiological hazard or potential radiological hazard which is confined in its effects to within the site boundary and which requires the site/operators response plan, or parts thereof, to be implemented.

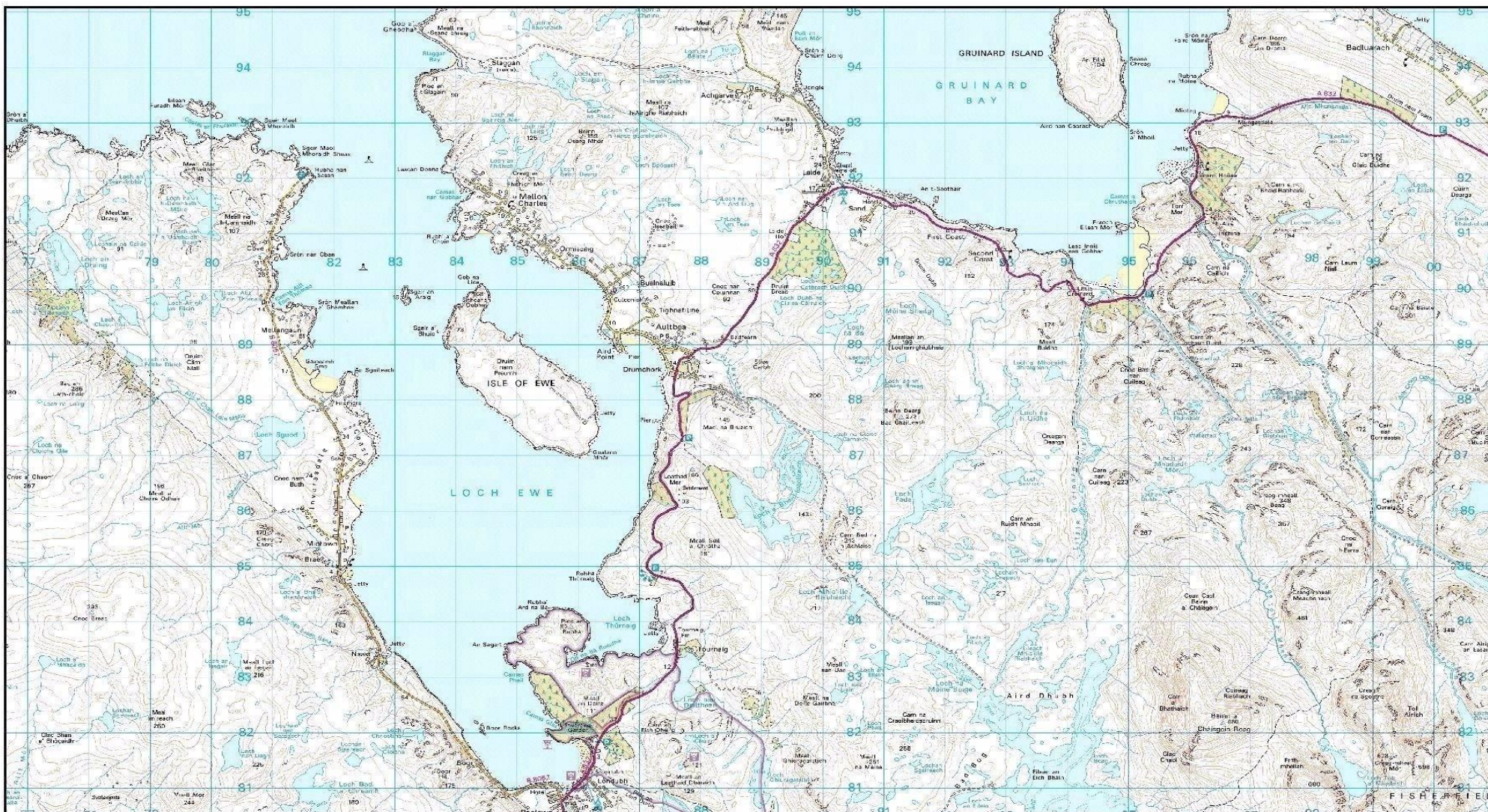
Off-Site Nuclear Emergency (OSNE)

A hazardous condition which requires the implementation of urgent counter measures to protect the public.

APPENDIX 5

INSTRUCTIONS FOR MASTERS / OWNERS OF ADJACENT SHIPS AND VESSELS

1. You are, as far as practicable, to shut down ventilation and hatches, scuttles and openings etc to minimise ingress of radioactive material.
2. All personnel whose presence onboard is not essential should be evacuated to the
3. The bearer of these instructions carries sufficient Potassium Iodate Tablets to enable every member of the crew who has to remain onboard to be given 2 tablets. An explanatory leaflet is provided and all crew members remaining onboard should be instructed to take the tablets immediately.
4. The master or his representative is to send a Liaison Officer to the local Police Scotland Divisional Police Headquarters Inverness, with a nominal list of those onboard.



LOCH EWE

Highsafe Plan (REPPi)

SUPPLIED BY HIGHLAND COUNCIL EMERGENCY PLANNING

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GLOSSARY OF TERMS

Emergency Site	400 metres from the submarine. In the event of an emergency all personnel within this distance are either evacuated outside it or sheltered within it prior to subsequent evacuation. These arrangements are automatic within a pre-arranged site plan, and include the administration of stable iodine.
Approved Dosimetry Service. (ADS)	The legally approved service for the provision and processing of personal radiation monitoring devices.
Authorised Site (AS)	A berth for nuclear submarines with comprehensive engineering, Health Physics and Monitoring Support (eg. an authorized Naval Base).
Becquerel (Bq)	Unit of quantity of radioactive material. 1 Bq = 2.7×10^{11} Ci or one disintegration per second.
CAM HQ RHU	Clyde Area Monitoring Headquarters at Rhu.
CRCE	Centre for Radiation, Chemical and Environmental Hazards
Chain Reaction	A process which, once started, provides the conditions for its own continuance. In a reactor, neutrons released in the fission process cause further fission and so on.
CINC Fleet	Commander in Chief Fleet - MOD Command Organisation responsible for operating and deploying submarines and all the vessels.
Cladding	The metal sheath (zircalloy in the case of a submarine PWR) within which the reactor fuel is hermetically sealed.
COMCEN	Communications Centre.
COMPLAN	Communications Plan.
Control Rod	Rod of neutron absorbing material inserted into the Reactor Core to soak up neutrons and either shut down or reduce rate of fission reaction.
Containment	<p>Primary Containment</p> <p>The compartment surrounding the reactor plant made up of the submarine's pressure hull and internal bulkheads designed to withstand the build-up of pressure after a severe reactor emergency.</p> <p>Secondary Containment</p> <p>The compartments within the submarine hull on either side of the Primary Containment which can contain internal leakage from the primary containment.</p>

Containment State	The state of integrity of the various containment boundaries within the submarine.
Contamination	Deposited radioactive particles.
Core	The region of a reactor containing fuel within which the fission reaction is occurring.
CPHM	Consultant in Public Health Medicine.
Critical	The reactor is critical when the fission chain reaction is self-sustaining and hence maintains power output from the reactor at a constant level.
Critically	The state of being critical.
Crud	Radioactive impurity deposits inside a reactor or its coolant circuit.
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	Removal of radioactive material from a person or surface.
DEPZ	Detailed Emergency Planning Zone – An area out to a distance of 1.5km from the submarine.
DNSR	Defence Nuclear Safety Regulator
Dose of Radiation	Radiation doses may be the “absorbed dose” which is the amount of energy deposited in a unit mass by ionising radiation’s, or the “equivalent dose” in which the absorbed dose is multiplied by a radiation weighting factor which takes account of the varying degree of biological damage caused by different radiation’s.
Down Wind Sector	Normally refers to the sector 15° either side of the prevailing wind direction downwind of the emergency site.
DPHM	Director of Public Health Medicine.
DSTL - RPS	Defence Science Technological Laboratory – Radiological Protection Service
EC	Emergency Centre
Effective Dose	
EMHQ	Emergency Monitoring Headquarters.
Emergency Reference Level (ERL)	Range of radiation doses below which countermeasures carry more risk than the dose, and above which countermeasures are always required.

EPO	Emergency Planning Officer
Equivalent Dose	
ERL	Emergency Reference Level
Exclusion Zone	The area consisting of the submarine and the immediate vicinity to which entry is restricted when the plant is operating.
EZRC	Exclusion Zone Reception Centre
FCP	Forward Control Point
Fission	Rupture of a nucleus into two lighter fragments (known as fission products) plus free neutrons – either spontaneously or as a result of absorbing a neutron plus energy.
Flashing Up Pulling Rods Going Critical	Terms often used to describe the action of making the reactor operate. The process of withdrawing the Control Rods from the reactor in a highly controlled manner to increase the rate of fission, hence power, until self-sustaining condition is reached.
AREA CONTROL ROOM - ACR	Force Operational Centre (Police Scotland)
FOSNNI	Flag Officer Scotland, Northern England and Northern Ireland.
FSA	Food Standards Agency
Fuel	The enriched uranium fabricated for use in the core. Fuel and cladding together comprise FUEL ELEMENTS.
Gamma Radiation	High energy electro-magnetic radiation of considerable penetrating power emitted by most radioactive substances.
Gamma Shine	The gamma radiation emanating from the reactor compartment of a submarine following a reactor emergency.
GRAY (Gy)	Unit of radiation absorbed dose.
GTA	Government Technical Advisor
Half-Life	Period of time within which half the nuclei in a sample of radioactive material undergoes decay.
IC	Incident Commander.
ICP	Incident Control Point
IO	Incident Officer

Iodine	As Iodine 131, biologically hazardous fission product of short half life (8 days) which tends to accumulate in the thyroid gland.
LAHQ	Local Action Headquarters.
LLG	Local Liaison Group.
MBC	Media Briefing Centre
MCA MCA	Military Co-ordinating Authority. Maritime and Coastguard Agency. Note: it is essential to avoid confusion between these two key organisations.
Meltdown	The melting of the fuel elements within the core. Produced when the cooling system is unable to remove the decay heat.
MIO	Medical Incident Officer
NEBUST	Nuclear Emergency Back-up Support Team.
NEHQ	Nuclear Emergency Headquarters.
NEMT	Nuclear Emergency Monitoring Team
NERO	Nuclear Emergency Response Organisation.
NEMO	Nuclear Emergency Monitoring Organisation.
NEMT	Nuclear Emergency Monitoring Team.
Neutron	Uncharged particle, consistent of nucleus – ejected at high energy during fission, capable of being absorbed in another nucleus and bringing about fission.
NPW	Nuclear Power Warship.
OB	Operational Berth – A berth used by nuclear submarines for limited periods with limited support. Restrictions are applied to operations at these berths.
ONR	Office for Nuclear Regulation
OSNE	Off Site Nuclear Emergency
Pasquill	Weather categories.
PDA	Pre Determined Attendance
PED	Personal Electronic Dosemeter
PITS	Potassium Iodate Tablets.
Plant State “A”	The state of the plant when the pressure and temperature are at or near to normal operating conditions.

Plant State "B"	The state of the plant when the pressure and temperature has been considerably reduced. The reactor may not be taken critical in this plant state.
Plume	Airborne contamination in downwind sector.
Pressuriser	Electrically heated boiler in the cooling system which boils water as necessary to maintain coolant pressure by means of a steam bubble.
PRO (C)	Public Relations Officer (Clyde).
PWR	Pressurised Water Reactor.
Radiation	Neutrons, Alpha and Beta particles or Gamma Rays which are emitted from radioactive substances.
Radioactivity	Behaviour of substance in which nuclei are undergoing transformation and emitting radiation. It is measured in the number of disintegration's per second.
RC	Reactor Compartment.
Reactor Critical	this is the normal operating state of the reactor with the control rods withdrawn sufficiently to give stable neutron population and fission rate.
Reference Accident	The most probably technical event leading to the declaration of an Off Site Nuclear Emergency.
RPV	Reactor Pressure Vessel.
RR&A	Rolls Royce and Associates.
RSA	Reactor Safety Alert
RVP	Rendezvous Point
SCC	Strategic Control Centre
Scram	Shutdown of fission process in reactor by inserting some or all of the control rods.
Self-Sustaining	The condition where the reactor is critical and is meeting the electrical demands of the submarine. A typical reactor power state on arrival in harbour and just prior to sailing.
SEPA	Scottish Environment Protection Agency
SGRPID	Scottish Government Rural Payments and Inspection Directorate.
Shielding	Material such as concrete, lead, special constructed polythene or water which attenuates radiation and reduces its intensity.

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.
Sievert (Sv)	Unit of both effective dose and equivalent dose.
SMT	Site Medical Team
Steam Generator	Boiler in which hot coolant from the reactor core raises steam to drive propulsion machinery and turbo generators
SRD	Safety and Reliability Directorate (UKAEA).
SLO	Site Liaison Officer.
Sub Critical	A reactor is sub-critical when the fission rate is insufficient to maintain a self-sustaining chain reaction.
TLD	Thermoluminescent Dosimeter - a radiation monitoring device for use by individual personnel or for monitoring the environment.
UHF	Ultra High Frequency
VHF	Very High Frequency
Whole Body Radiation Dose	The total radiation dose to the body received from all sources.
Zircalloy	Zirconium Alloy used for fuel cladding.