Highland Council

HIGHLAND SAFETY SCHEME

' Highsafe '

Nuclear Powered Warship
Accident Response Plan

REPPIR

CONTENTS

REVIEW RECORD

Review Date	Comments	Date of Next Review
January 2005		December 2005

INTRODUCTION

This plan has been produced to **outline the response** to an incident involving a Royal Navy nuclear submarine at a Z-berth 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.

This plan is intended as an initial response document only. 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
Highland and Islands Fire Brigade
Maritime and Coastguard Agency
National Radiological Protection Board
NHS Highland
Northern Constabulary
Nuclear Installations Inspectorate
Scottish Ambulance Service
Scottish Environment Protection Agency
Scottish Water

The plan will be reviewed at intervals of no greater than 12 months.

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 accident at a Scottish Z 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 : BERTHS

2.1 BERTH DEFINITIONS

2.1.1 Berths for nuclear powered warships are in two categories, X and Z. At X-berths, 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 reactor accident occurring is greater. The Ministry of Defence (Navy Department) monitoring policy is, therefore, to provide the Health Physics Department with additional staff and extra facilities in order that a local Naval Emergency Monitoring Team (LEMT) is formed.

2.1.2 A Z berth 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 Chairman of the Naval Nuclear Regulatory Panel (CNNRP).

2.1.3 At Z-berths, which are used only infrequently, there is no resident monitoring capability but teams from the Naval Emergency Monitoring Organisation (NEMO) 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. This document is the Report of Assessment of the HIRE for the nuclear submarines, defined as premises under the Regulations, at both the Broadford Bay and Loch Ewe Z Berths. The Report of Assessment, together with such supporting information as deemed necessary by the Health & 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 Broadford Bay.

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 REPPIR. 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:** Broadford Bay, Isle of Skye, Scotland
OS Grid Reference: NG 654 246
GIS Reference: 1654 8246

Loch Ewe, Wester Ross, Scotland
OS Grid References:
a. NATO Pol Jetty NG 872 876
b. A1 Buoy NG 849 904

GIS Grid References:
a. NATO Pol Jetty 1872 8876
b. A1 Buoy 1849 8904

2.2.3 HISTORY:

The Z Berths have been used since 1963.

2.2.4 General Description:

2.2.4.1 The Broadford Bay Z berth comprises an approved mooring buoy located within Broadford Bay on the south east coast of the Isle of Skye in the north west coast for Scotland. The meteorological conditions are typical for the West of Scotland. The prevailing wind occurs in an arc between south westerly to north westerly. Rainfall is above the UK average.

2.2.4.2 The local authority responsible for the area surrounding the Broadford Bay berth is The Highland Council.

2.2.4.3 The population distribution extending 2km from the berth at Broadford Bay, based on 2001 census, is detailed in Table below.

LOCATION	POPULATION DATA
Mooring Buoy	1153

2.2.4.4 The Loch Ewe Z berths comprise a NATO Pol Jetty and a buoy located on the north east coast. The meteorological conditions are typical for the West of Scotland with a prevailing west to south westerly wind and above average UK rainfall.

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

2.2.4.6 The population distribution extending 2km from the Loch Ewe berths, based on 2001 census, is detailed in Table below.

LOCATION	POPULATION DATA
A1 Buoy	393
NATO Pol Jetty	507

2.3 ACTIVITIES ON THE PREMISES

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

2.3.2 Nuclear submarines which visit the Broadford Bay or Loch Ewe berths 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. A brief description of the premises (ie. submarine) and the containment arrangements for the radioactive substances are described below.

Facility	Description	Containment
Submarine Reactor	Pressurised Water Reactor (PWR). Fission of uranium, contained in fuel elements, takes place in the reactor core. The resulting fission products including radioactive isotopes of iodine, caesium and krypton, are contained within the fuel cladding. The heat generated by the fission process is removed from the core by water contained in a sealed circuit. This water is pumped through steam generators where the heat is transferred to a separate, secondary circuit.	The fuel elements are contained within a high integrity cladding, designed to prevent the release of radioactive fission products. Should the cladding fail, the primary coolant system, a pressurised, sealed circuit, would contain the fission products. Beyond the primary coolant system, a third containment boundary exists which is designed and constructed to meet the rise in pressure that could result from a failure of the primary coolant system. The final containment boundary is the submarine pressure hull.

2.4 SAFETY ASSESSMENT PROCESS

2.4.1 Internal Regulation

A nuclear submarine visiting either the Broadford Bay or Loch Ewe Z Berths 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, CNNRP issues a Safety Clearance Letter to MoD's Central Plant Control Authority who authorises the operation of each submarine.

2.4.3 The containment arrangements for a nuclear submarine are described in the Table at 2.3.2. In addition, there are engineered and procedural safeguards to prevent and mitigate any accident 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 Broadford Bay or 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 is 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 terms “radiation accident” and “radiation emergency”. A radiation accident 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 radiation accident may, but will not necessarily, result in a radiation emergency.

2.5.2 Submarine Reactor

A range of potential accident 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 leave 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 number of scenarios, which could leave to an off-site release of radioactive material. A radiation emergency, as defined within the Regulations, can result from a submarine reactor accident.

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 accident response strategy, the analysis has considered the probability of each accident 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 accident has been declared: and an analysis of the optimum countermeasure strategy for protection of individuals from any potential radiation exposure.

2.5.2 Submarine Reactor (Cont'd)

Both analyses have considered all of the identified accident sequences. The appropriateness of introducing countermeasures has been determined on the basis of published advice from the National Radiological Protection Board. This approach has resulted in a recommended accident response strategy based on a range of accident 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 2km 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 low 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 accident 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 550m automatic countermeasure zone. Implementation of the recommended off-site response would affect individuals in the pre-planned countermeasure zone out to approximately 2km downwind from the accident 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.

These arrangements were developed and agreed in consultation with local authorities, and are articulated within the Off Site Emergency Plan for the Broadford Bay Z berth.

2.7 CONCLUSIONS

Hazard identification and risk evaluations have been conducted for both the Broadford Bay and Loch Ewe Z berths holding radioactive materials as required by the Regulations. These assessments have indicated that a submarine reactor accident could lead to a radiation emergency.

The probabilities and consequences of the full range of potential accidents have been analysed and a response strategy developed to address them. To cope with the unlikely event of a radiation emergency, the nuclear submarine has Emergency Operating Procedures (forming an Operator's Emergency Plan) in place detailing the on-site response. 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 2km downwind from the site. The planning for a submarine reactor accident is valid in outline for a nuclear weapon accident even though it is not reasonably foreseeable. Emergency planning for both the Broadford Bay and Loch Ewe Z berths 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 COLLOCATED STAFF

2.8.1 The MOD will collocate the following specialists to Loch Ewe or Broadford Bay for the duration of a visit of a Nuclear powered Warship.

- Health Physics Adviser
- Marine Engineering Officer (Technical Adviser)
- Naval 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, HMNB Clyde and the MOD Nuclear Accident Response Headquarters.

2.8.3 The MOD collocated 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 EMERGENCY ARRANGEMENTS

3.1 INTRODUCTION

3.1.1 An emergency will be declared on the occurrence of any accident 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 accident to the absolute minimum. However, should such an accident 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 accident 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 An emergency will be declared on the occurrence of any accident 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 DECLARATION OF AN EMERGENCY

3.3.1 An emergency will be declared by the Commanding Officer or the submarine Duty Officer (having the delegated authority to fulfil this function) by alerting the MOD.

3.4 EMERGENCY CATEGORIES

3.4.1 There are three emergency categories:

(a) **CATEGORY 1** – An event which is likely to lead to, or has resulted in, the release of fission products from the fuel within the warship. At this time organisations involved will come to a state of readiness.

(b) **CATEGORY 2** – An event which has led to a radiation hazard within the warship as a result of the release of fissions products from the fuel.

(a) **CATEGORY 3** – An event which has led to the release of fission products from the fuel to the environment outside the pressure hull of the warship.

NOTE: Under highly unlikely circumstances a Category 2 or Category 3 may be declared without Category 1 being declared beforehand.

3.5 INITIAL ALERT NOTIFICATION

3.5.1 Warning of a nuclear reactor accident of whatever category will be given by the submarine. (See Appendix 5A).

3.5.2 External MOD authorities will be alerted by - signal, radio or telephone from the submarine. The collocated Health Physicist and NEMT **at the MOD Z berth** could be required to supplement this with a telephone alert.

3.5.3 Northern Constabulary and Local Authorities will be notified via:

a. On passage - VHF Channel 16 the Coastguard.

b. Alongside - Telephone '999' call to Northern Constabulary.

c. Alongside - Telephone by the MOD collocated Health Physicist and Monitoring Team.

3.5.4 The alerting chain will proceed via the Cascade Callout system to all relevant authorities (See Appendices 5B, 5C and 5D).

3.5.5 The following MOD Authorities are authorised to release data in the form of MOD signal formats.

a. Submarine Commanding Officer or Duty Officer

b. HMNB Clyde

c. HMNB Clyde NABUST

d. MOD Nuclear Accident Response Organisation Headquarters

e. The MOD co-located Health Physicist and Technical Adviser are to forward processed data to the Clyde Off-Site Centre and the Northern Constabulary Strategic Co-ordinating Centre for action. The Clyde Off-Site Centre will release signals on his behalf.

3.6 IMPLEMENTATION OF OFF-SITE EMERGENCY PLAN

3.6.1 Northern Constabulary Force Operations Room will initiate the activation of the Off-Site Emergency Plan following verification of the initial 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 Z-berths:

- **An Automatic Countermeasure Zone (ACMZ)** extending to 550 metres around the **accident site**. 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 550 metre zone at the time of the accident. Evacuation of the zone would also be implemented.

- **A Pre-planned Counter Measure Zone** (PPCMZ) extending to 2 km around the accident 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 (PITS), also known as stable iodine tablets (SITS), in a maximum of two adjacent 30º sectors downwind. It would also be appropriate to consider evacuation depending on the prevailing weather conditions.

- **An extendibility zone** out to 10 km around **the accident site.** Countermeasures within this zone are not likely to be of an immediate concern, but are more likely to be implemented as the incident develops. 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 550 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 550 Metre Zone**

- All berths and l**ocations** in The Highland Council area have been chosen on the basis that few members of the general public live within 550 metres. Special care is also taken to ensure that the berths are 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 accident occurred will be evacuated to special reception centres.

- Potassium Iodate tablets should be issued automatically to any personnel within the 550 metre zone at the time of the accident.

(b) Contamination of exposed and growing foodstuffs may occur in the downwind sector and may be a hazard beyond 2 km from the accident. The contamination is unlikely to build up to significant proportions during the first few hours after the accident. **The Scottish Executive Environment and Rural Affairs Department - (SEERAD)** 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 NRPB 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 Naval Emergency Monitoring Team is at immediate notice to commence monitoring in the unlikely event of a reactor accident occurring. This team will 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 Naval 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 Collocated Health Physicist, Monitoring Team and Engineering Officer. This will subsequently be reinforced by the deployment of the MOD Nuclear Accident Back Up Support Team (NABUST) 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 accident,actual distances will be notified to the Local Authority and other organisations concerned, using the appropriate chain of communications.

The civil authorities are responisble for the implementation of public protection countermeasures.

(d) Evacuation
If a “Category 1” alert is received, early evacuation from around the berth site is the preferred option of both the Northern Constabulary 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 - Grampian TV, 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 initiated 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 directions enclosed with the tablets and which will be repeated as part of the broadcast messages.

This advice will be delivered by NHS Highland.

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

Any civil population evacuated from within a radius of 2 km of the nuclear accident 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 NRPB, deem this to be an appropriate action.

(h) Medical

Raigmore Hospital, Inverness is the only hospital in NHS Highland designated to receive and treat casualties who (may) have bee exposed to radiation, and who may require decontamination.

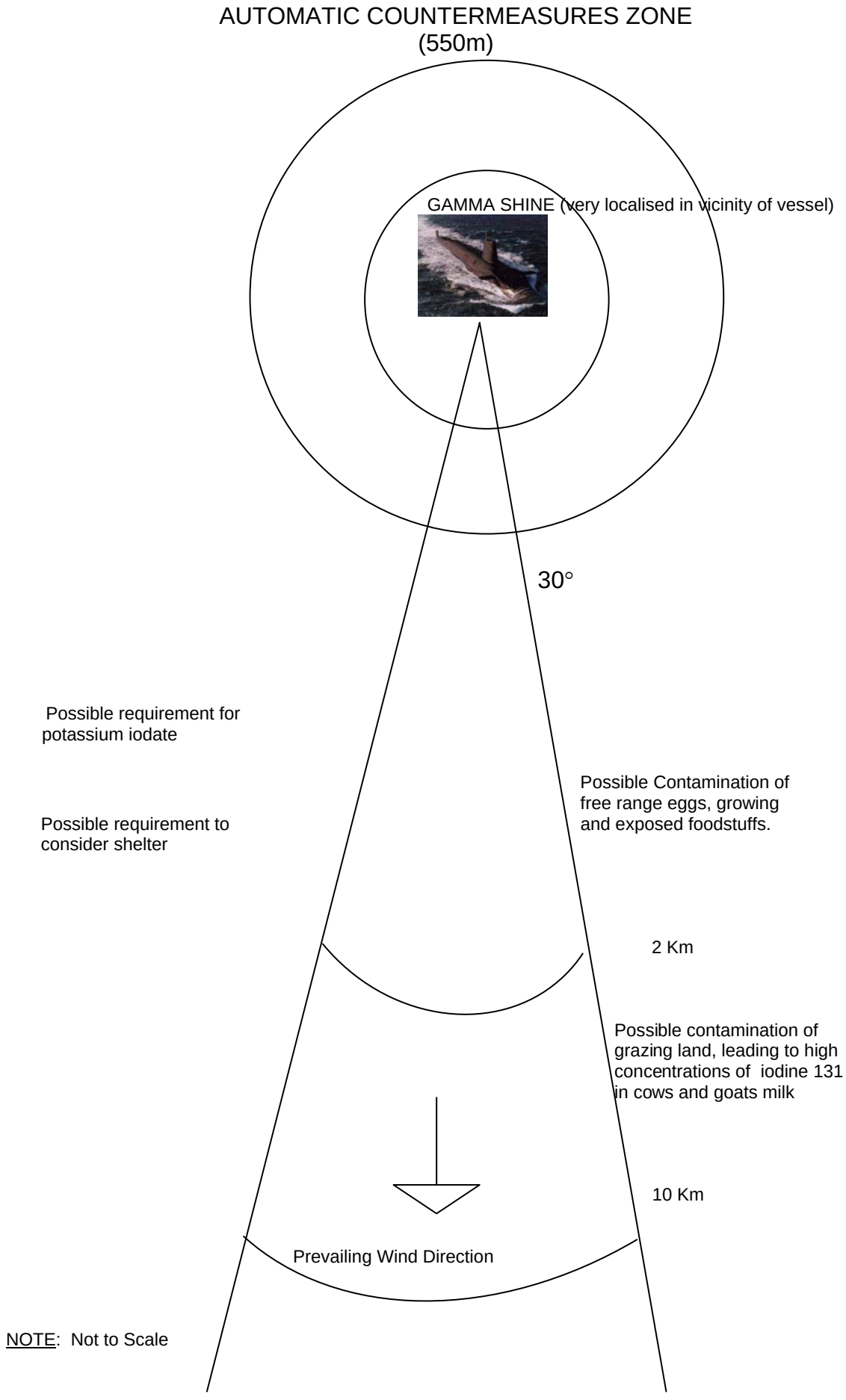
Medical Personnel in closer proximity to the Z berths are neither equipped nor trained to work in a radiation contaminated area, or with a contaminated casualty.

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 Raigmore Hospital, Inverness.

COUNTERMEASURES



4.3 PROCEDURE FOR ENTRY/RE-ENTRY TO CONTROLLED AREAS

4.3.1 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 Automatic Countermeasure Zone (Approximately 550m from the submarine).

4.3.2 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) Naval Emergency Monitoring Team.
(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) Naval 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.

4.3.3 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 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.

4.4 RADIATION DOSES - LIMITS

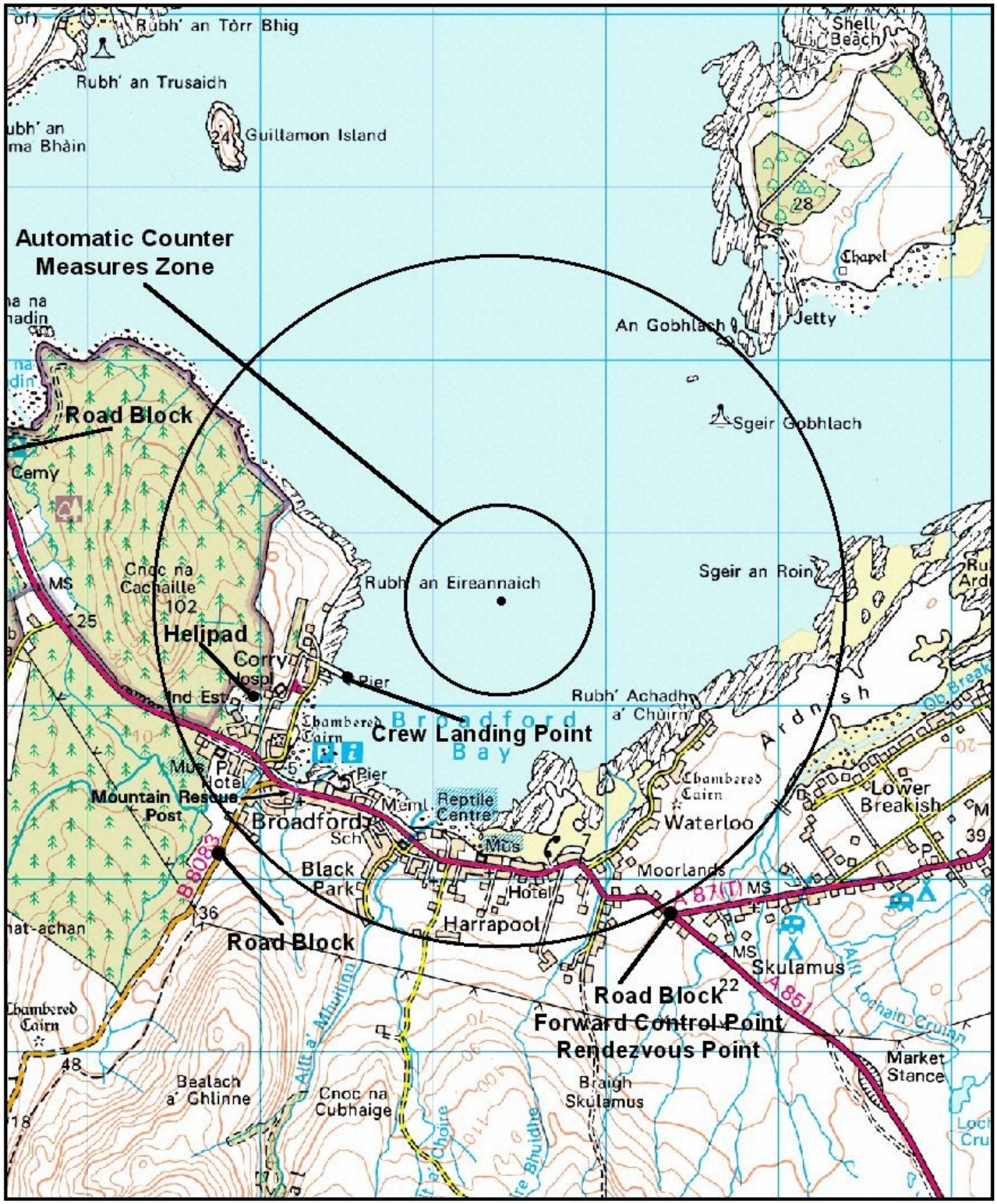
4.4.1 The National Radiological Protection Board recommends that for each countermeasure an Action Level is selected which is appropriate to the particular site, these are detailed at Section 8. For each countermeasure a lower and an upper Emergency Reference Level (ERL) have been specified. Doses which have already been received through normal occupational sources, are not relevant to these considerations.

4.4.2 All authorities involved in a response to a nuclear accident may have pre-determined radiation dose limits stricter than those recommended at Section 8 and specific radiological protection requirements. The specific requirement of each authority is to be implemented.

4.5 RECORDS TO BE KEPT

Comprehensive records are to be kept by all authorities involved in a nuclear accident, 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 accident. In particular, the following information is required.

(a) Times of reports or orders being given or received.
(b) Times when other authorities are informed of occurrences.
(c) Details of persons exposed to any hazard and doses received, if possible, in addition to their movements within affected areas.
(d) 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 area.
(h) Details of personnel entering controlled area.



The Highland Council
Comhairle na Gaidhealtachd

BROADFORD BERTH

Highsafe Plan (REPPIR)

SUPPLIED BY HIGHLAND COUNCIL EMERGENCY PLANNING

SECTION 5 : COMMAND AND CONTROL

5.1 OPERATIONAL LEVEL : FORWARD CONTROL POINT, RENDEZVOUS POINT, CORDONS ETC

5.1.1 As it will be impracticable to approach a Royal Navy submarine, the Forward Control Point and Rendezvous Point will often be one and the same place.

Inner and outer cordons will be deployed, as appropriate, to ensure that access is maintained to all key positions. This will include road blocks, and will be determined by the prevailing wind conditions at the time.

5.1.2 **Key Positions** – **Broadford Bay Berth** (see Page 91 for large scale map).

1. **Forward Control Point (FCP)**
   Initially the first emergency service vehicles at the Car Park beside Cemetery adjacent to the A87(T), will become Forward Control Point (1) but this could be changed to junction of the A87(T) and the A851 Forward Control Point (2) depending on circumstances (see map opposite).

2. **Rendezvous Point**
   There will be two Rendezvous Points in operation (see map opposite).

3. **Access Control Point**
   There will be two Access Control Points in operation (see map opposite).

4. **Outer Cordon**
   Variable and dependent on weather conditions however, in the first instance:
   Car park beside cemetery adjacent to the A87(T) and junction of A87(T) and A851 (see map opposite).

5. **Incident Control Post (ICP)**
   The Incident Officers of all services should be co-located, the preferred location being at Qinetiq, Kyle of Lochalsh

6. **SUBMARINE CREW RECEPTION CENTRE**
   Qinetiq
   Kyle of Lochalsh See maps Pages 87, 88 and 89

7. **Helicopter Landing Site**
   OS Grid Reference: NG 642 240
   GIS Reference: 2642 8240
   Dr Mackinnon Memorial Hospital, Broadford

8. **Forward Media Liaison Point**
   Kyle Public Hall
   Main Street, Kyle of Lochalsh

9. **Receiving Hospital**
   Raigmore Hospital, Inverness.

5.1.2 Key Positions – Broadford Bay Berth (Cont'd)

10. **Emergency Monitoring Co-ordination Centres**
(1) Broadford Fire Station, Broadford

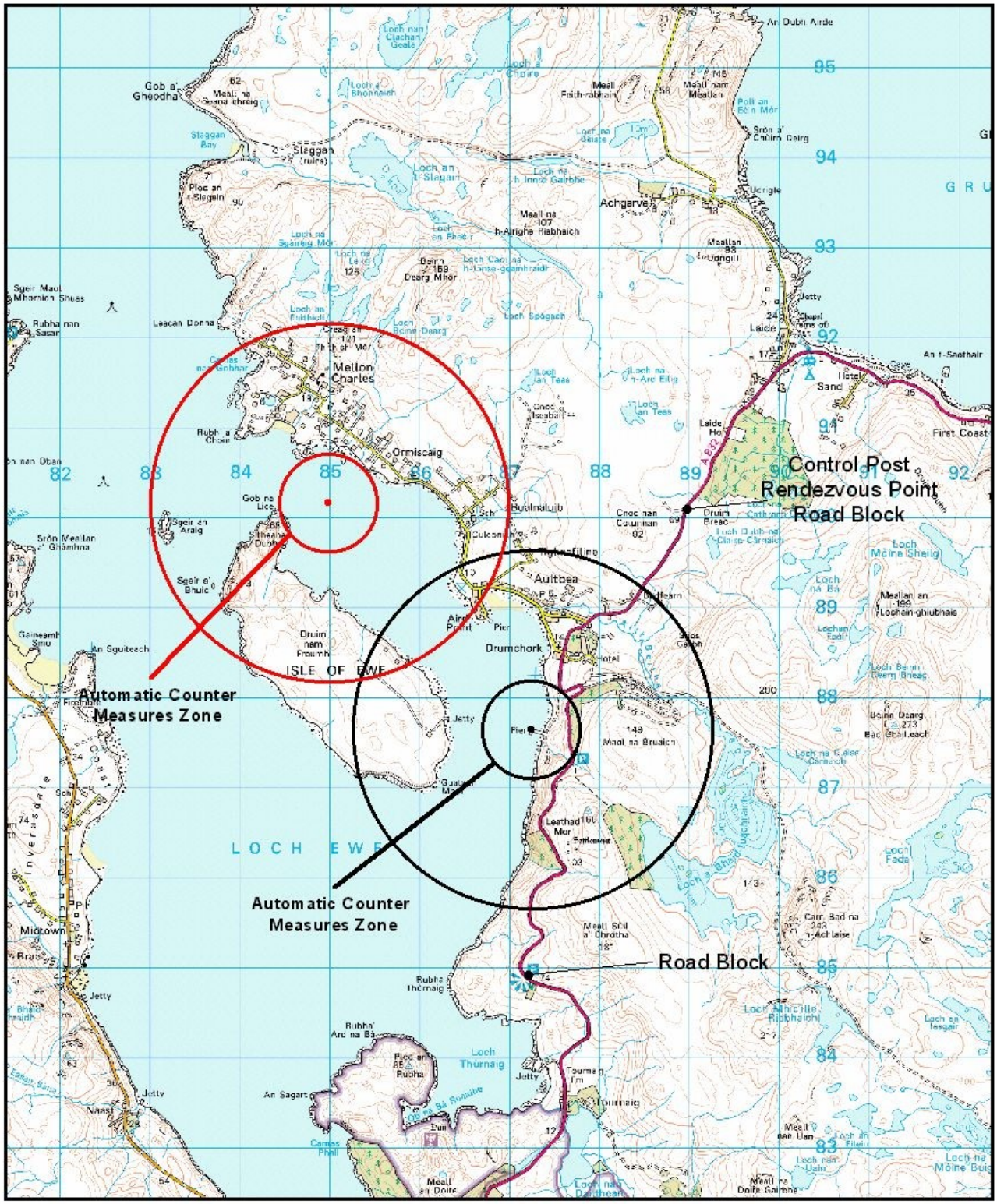
(2) Esso Garage, Broadford

11. **Evacuee Reception Centres**
Kyleakin Village Hall, Olaf Road, Kyleakin

Aitreabh Eilein, Camanachd Square, Park Road, Portree

Kyle Public Hall, Main Street, Kyle of Lochalsh

Whichever Evacuee Reception Centre(s) are deemed appropriate on the day will be activated by Emergency Planning, Highland Council.



The Highland Council
Comhairle na Gaidhealtachd

LOCH EWE BERTHS

Highsafe Plan (REPPIR)

SUPPLIED BY HIGHLAND COUNCIL EMERGENCY PLANNING

5.1.3 Key Positions - Loch Ewe Berths (1 NATO Pier, 2 Mellon Charles) (see Page 92 for large scale map).

1. **Forward Control Point (FCP)**
   Initially, the first emergency service vehicle(s) at the car park on the A832 north of Aultbea will become the Forward Control Point (see map opposite).

2. **Rendezvous Point**
   There will be two Rendezvous Points in operation (see map opposite).

3. **Access Control Point**
   There will be two Access Control Points in operation (see map opposite).

4. **Outer Cordon**
   Variable and dependent on weather conditions. However, in the first instance:
   The junction of A832 and Laide to Opinan Road and car park on A832 north of Tournaig (see map opposite).

5. **Incident Control Post (ICP)**
   The Incident Officers of all services should be co-located, the preferred location being in the Police Station, Dingwall

6. **Submarine Crew Reception Centre**
   NATO POL Depot
   or
   Mellon Charles Camp – see map page 90

7. **Helicopter Landing Site**
   To be selected when required as highly variable dependant on weather conditions

8. **Forward Media Liaison Point**
   Dundonnell Hotel, Dundonnell

9. **Receiving Hospital**
   Raigmore Hospital, Inverness.

10. **Emergency Monitoring Co-ordination Centres**
    (1) NATO POL Jetty
    (2) Mellon Charles Pier

11. **Evacuee Reception Centres**
    Aultbea Community Centre, Aultbea

    Poolewe Village Hall, Poolewe

    Loch Broom Leisure Centre, Ullapool

    Mellon Charles Camp (see map page 90)

    Whichever Evacuee Reception Centre(s) are deemed appropriate on the day will be activated by Emergency Planning, Highland Council.

5.2 TACTICAL LEVEL : INCIDENT CONTROL POST

5.2.1 The tactical level of command will be established at the relevant Incident Control Post for each of Z-berths, as follows:

Skye berths -	Broadford	:	Qinetiq, Kyle of Lochalsh
Loch Ewe berths	1 NATO Pier	:	Dingwall Police Station
	2 Mellon Charles	:	Dingwall Police Station

5.3 STRATEGIC LEVEL

5.3.1 The Strategic Co-ordination Centre (SCC) Inverness: will be located at Police Headquarters, Old Perth Road, 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.

5.3.2 The Strategic Co-ordinating Centre would be set up as quickly as possible after a category one incident has been declared. All responding organisations should ensure that within their initial actions representatives from their organisation attend the Strategic Co-ordinating Centre at Police Headquarters, 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.

5.3.3 All services and agencies will initially receive technical advice from the submarine captain and MOD collocated staff via the Forward Control Post. Once the MOD Nuclear Accident Backup Support Team (NABUST) arrives at the Strategic Co-ordinating Centre advice to all the agencies will be through the Military Co-ordinating Authority (MCA).

5.3.4 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 department and agencies during any post accident procedures, following an incident at any Z berth.

b. The MCA will provide authoritative advice to Northern Constabulary and other authorities, particular in matters concerning the off-site response.

c. During the early response phase to an incident at a Z berth the role of the MCA will be executed from the HM Naval Base Clyde until the Naval Base Clyde Nuclear Accident Back-Up Support Team (NABUST) assemble at the Strategic Co-ordinating Centre (SCC) Inverness.

d. Once the NABUST have their designated staff in place at Inverness they will assume the role of the MCA.

e. The MOD Collocated staff at the scene (Health Physics, Engineering and Naval Emergency Monitoring Organisation (NEMO), all support the MCA with advice and monitoring information.

Scottish Executive Senior Government Liaison Representative : The role of the government liaison representative will be to provide a direct link with Ministers and government departments in Edinburgh. This person will normally be a senior departmental officer. This Government liaison representative 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 Executive Environment and Rural Affairs Department** (SEERAD) can invoke restrictions on the movement of foodstuffs, milk and livestock.

National Radiological Protection Board : The National Radiological Protection Board will advise government departments and other organisations on radiological protection and assessment of radiological hazards.

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

NRPB will be responsible for co-ordinating the long-term monitoring and analysis in the wider area beyond the automatic countermeasure zones, and they will contribute to long term advice on measures to protect the public.

Northern Constabulary : Northern Constabulary 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 Z berth.

Highland and Islands Fire Brigade : Highland and Islands Fire Brigade (HIFB) will have responsibility for all on-site fire fighting and rescue in liaison with the Coastguard and Ships 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 reassurance 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 Joint Health Advisory Group (JHAG) within a 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 : The Scottish Environment Protection Agency (SEPA) are a single independent environment protection agency and their responsibilities will include monitoring radioactive discharges and waste and enforcement of countermeasures. They have a special responsibility for advising water authorities on the control of potable water. They will be supported in this matter by the **Radiological Incident Monitoring Network (RIMNET).**

5.3.5 Strategic Co-ordinating Centre (SCC) Chairman

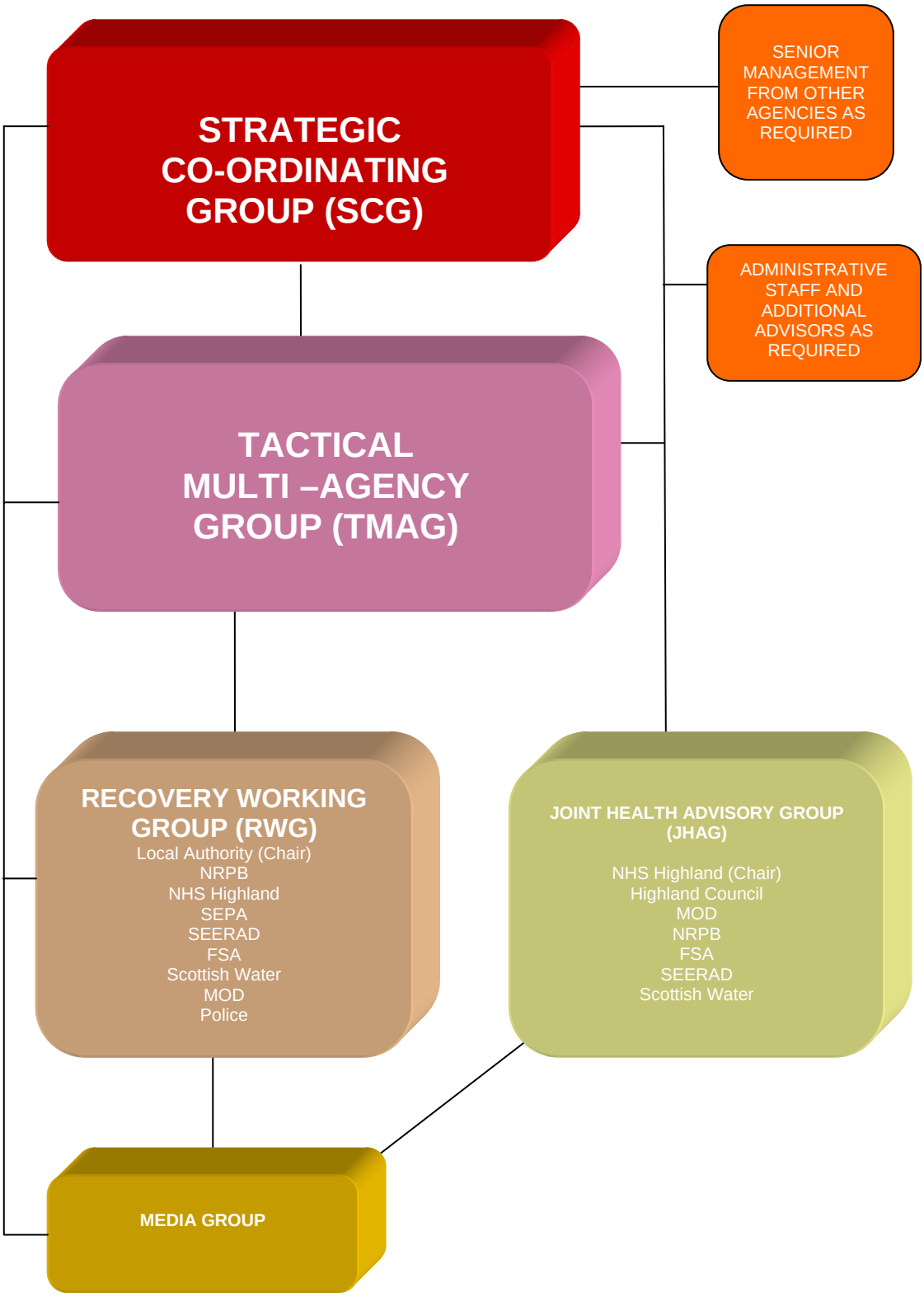
Role of the SCC Chairman:

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 Z berth the Chief Constable of Northern Constabulary, 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 12).

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 STRATEGIC AND TACTICAL MANAGEMENT



5.5 INFORMATION WITHIN THE STRATEGIC CO-ORDINATING CENTRE (SCC) : CO-ORDINATION OF INFORMATION

5.5.1 **Message/Action System :** To ensure that a record of all strategic information passed between agencies during a major incident/exercise is recorded a message/action system is administered by the Strategic Administration Team (SAT).

5.5.2 **Message/Action Form :** The message/action form is designed as a multi-purpose form which should be used for sending messages or requesting and replying to actions. Each agency present at the SCC will be supplied with a pad of the forms which are carbonised and produced in triplicate. After completing the message/action form the person raising the form should take it to the Quality Assurer, who forms part of the Strategic Administration Team (SAT), located in the atrium at Police Headquarters. The form is checked by the Quality Assurer to ensure that it has been completed satisfactorily and then passed to the Indexer who will give it a number and time received. Thereafter:

(a) the Indexer will retain the white copy of the form and return the pink and yellow copies to the person raising the form.

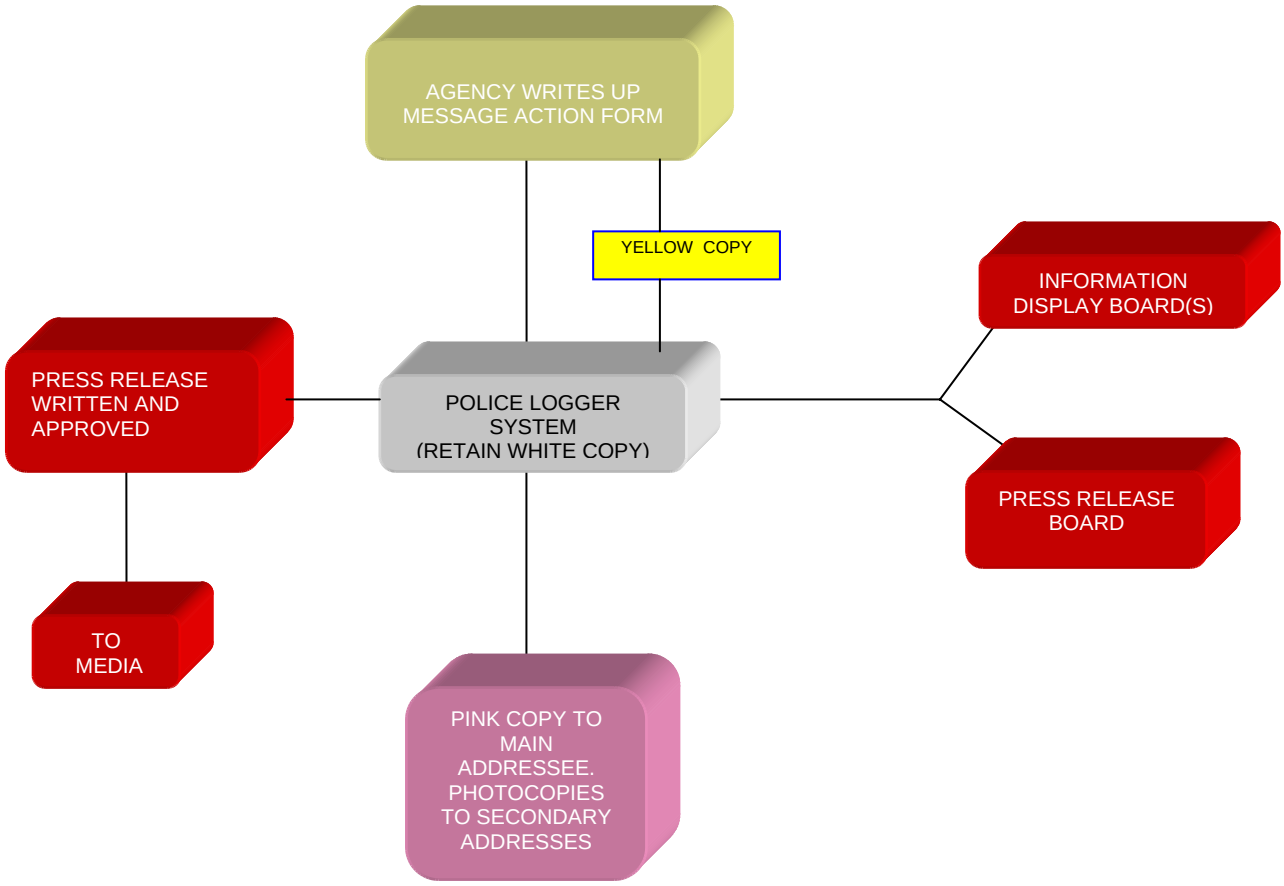
(b) The person raising the form should pass the pink copy to the addressee and retain the yellow copy for filing.

(c) The SAT will thereafter distribute the information copies, as required.

5.5.3 **Information Display** : All information recorded by the SAT will be displayed on the 'Incident Summary Board', located at the entrance to the multi-agency room. The Police Strategic Support will continually update the Status Board which is displayed in the multi-agency room. The Status Board will give an update on information such as wind direction, declaration of categories and a ban on food or water etc.

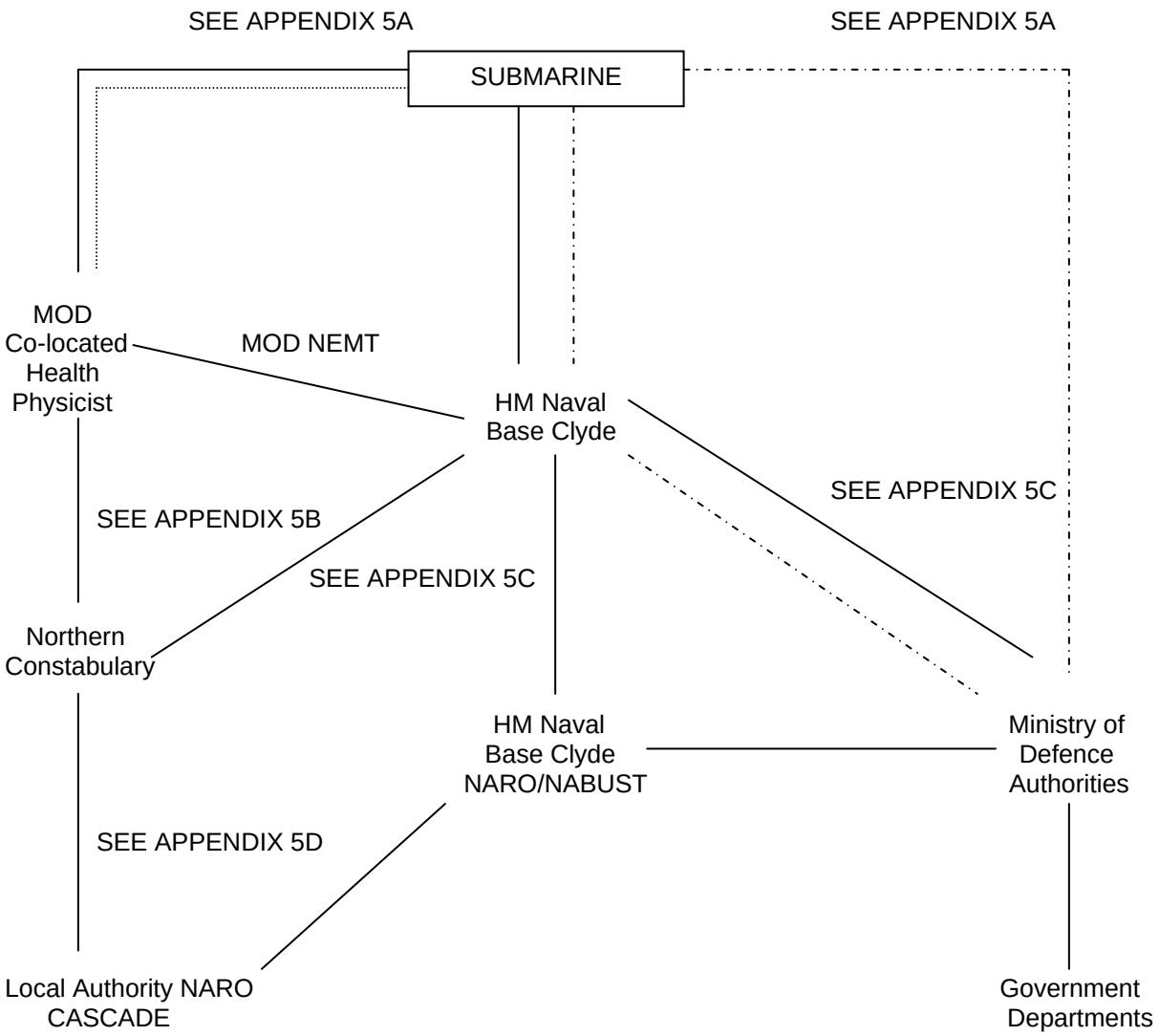
5.5.4 **Press Releases :** All press releases are approved by the Strategic Co-ordinating Group prior to being released to the media. The press releases will go through the SAT as described above and will be displayed in the atrium on the 'Press Releases' Board.

5.6 MESSAGE/ACTION FORM AND PRESS RELEASE FLOW CHART



5.7 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 a Z 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 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 Northern Constabulary's Force Operations Room which of the following statements should be released to the media.

All statements will be copied to Northern Constabulary Force Operations Room, Forward Media Liaison Point, Local Authority Emergency Centre, Police Incident Control and HMNB Clyde Maritime Operations Centre.

6.2.2 INITIAL STATEMENT 1

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: Grampian TV, 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 Northern Constabulary Force Operations Room immediately after being informed of an incident at a Z berth.

The purpose of this initial holding statement is to provide time to set up the Forward Media Liaison Point (FMLP) and the Media Briefing Centre (MBC). Copies of this initial statement should be faxed to the Police Incident Control Post at Dingwall Police Station and the Strategic Co-ordinating Centre at Police Headquarters, Inverness when they are set up.

6.2.3 INITIAL STATEMENT 2

If HMNB Clyde has information to confirm that the incident has attained the level of a category 1 accident and is continuing, then the advice to the duty officer at Northern Constabulary Force Operations Room 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 2 km of the site, including residents in** (Broadford or 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.**

Keep tuned to one of the following TV or Radio Channels: Grampian TV, 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.'

6.2.4 SUPPLEMENTARY PRESS STATEMENTS

Further press statements will be developed as part of the press strategy within the media cell at the Strategic Co-ordinating Centre, Police Headquarters, Inverness.

Copies will be faxed to the Northern Constabulary Force Operations Room, Forward Media Liaison Point, Local Authority Emergency Centre, Raigmore, Police Incident Control and HMNB Clyde Maritime Operations Centre..

6.3 FORWARD MEDIA LIAISON POINT

6.3.1 A Forward Media Liaison Point (FMLP) will be established at or near the berth involved in any incident. See Section 5 for locations at both Skye and Loch Ewe Berths. All media representatives should be directed there. Once the Media Briefing Centre has been set up in Inverness, the media should be encouraged to go there, where the strategic representatives from the responding organisations will be present to conduct press conferences. However, it must be recognised that some media will always remain at or near the scene, and the FMLP will require to remain operational.

Press releases will be issued from the Media Cell within the Strategic Co-ordinating Centre at Police Headquarters, Inverness. The FMLP is a component part of the overall press strategy determined by the Police Media Cell Co-ordinator at the Strategic Co-ordinating Centre, Inverness.

It is likely that early media attention will focus around the incident site. The FMLP spokesperson will be the Police Incident Officer/Area Commander. The Police Incident Officer should seek support and advice from the Media Adviser at Force Headquarters, prior to conversing with the media at the FMLP. MOD will seek support and advice on press statements to be issued from the Media Cell at the Strategic Co-ordinating Centre, Police Headquarters, Inverness, which will include a Public Relations Officer within the NABUST. If the NABUST has not arrived at the Strategic Co-ordinating Centre then advice would be sought from the Public Relations Officer at the HM Naval Base Clyde Off Site Centre.

The main functions of the Forward Media Liaison Point are to;

- Co-ordinate the media response at a local level,
- Provide 'pooling' arrangements for on-site visits,
- Provide one-to-one interviews,
- Provide early media briefing facilities until the strategic media briefing centre is set up in Inverness.
- Provide copies of all press statements.

Following the initial press release, prior to the Media Briefing Centre becoming operational, organisations should, where possible, consult the Media Cell Co-ordinator/Police Media Adviser before issuing media statements, to ensure that clear, accurate and non-conflicting information is provided.

6.4 MEDIA BRIEFING CENTRE

6.4.1 The Warner Village Cinema, Inverness Retail Park, Inverness, has been identified as the Media Briefing Centre (MBC) for any major incident occurring at a Z-berth. The MBC will be set up simultaneously with the Strategic Co-ordinating Centre (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 Northern Constabulary.

A Media Briefing Centre Manager will be appointed by Northern Constabulary, who will be responsible for the smooth running of the Media Briefing Centre. Close liaison will be necessary between the Strategic Co-ordinating Centre and the Media Briefing Centre, and robust communications will be required.

Note: The Media Briefing Centre 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 Northern Constabulary Media Cell Co-ordinator, acting under the SCC Chairman's authority, will be in overall co-ordination of the media. A multi-agency approach to media handling will be practised, with, where possible, media representatives from all participating organisations based in the media cell at the Strategic Co-ordinating Centre. 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 Strategic Co-ordinating Group. Media statements will be distributed to all agencies at the Strategic Co-ordinating Centre (SCC) and the Media Briefing Centre (MBC). Press statements will also be displayed at the SCC and the MBC. Copies will be faxed to Northern Constabulary Force Operations Room, Forward Media Liaison Point, Local Authority Emergency Operations Centre, Raigmore and the Police Incident Control Post.

Media representatives from the organisations operating within the Strategic Co-ordinating Centre 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 Strategic Co-ordinating Group and the Police Media Cell Co-ordinator, who should take into consideration the needs of the media.

The Strategic Co-ordinating Centre Chairman and the Military Co-ordinating Authority must, be informed beforehand of the timing and 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 Strategic Co-ordinating Group, in the light of developments and the interests of the media, and taking into consideration the views of the other agencies. The Strategic Co-ordinating Centre 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 spokespersons being available, as appropriate) in order to recognise the needs of the broadcast media who will be the main recipient of that type of information.

SECTION 7 : INITIAL ACTIONS

7.1 ACTIONS OF MINISTRY OF DEFENCE (ROYAL NAVY)

7.1.1 This section summarises the actions to be taken by the various Ministry of Defence (Navy) departments.

7.1.2 Submarine Commanding Officer and Crew

(a) Alert the following:
Ministry of Defence Headquarters London.
HM Naval Base Clyde Maritime Operations Centre.
Ministry of Defence (MOD) Collocated Health Physicist
Ministry of Defence (MOD) Collocated Naval Emergency Monitoring Team.
Northern Constabulary Force Operations Room.

(b) Establish and maintain communication with the HM Naval Base Clyde Maritime Operations Centre and Clyde Off-Site Centre for as long as possible.

(c) Carry out all possible radiological monitoring procedures onboard and report all results to the following authorities:

HM Naval Base Clyde Maritime Operations Centre.
MOD Nuclear Accident Response Organisation HQ
MOD Co-located NEMT Monitoring Controller at local Emergency Monitoring Headquarters (EMHQ)

(d) Evacuate all non-essential personnel from the submarine early, in accordance with emergency operating procedures.

(e) If, and when required, evacuate all remaining personnel from the submarine to the Submarine Crew Reception Centre. In this situation, and dependent on the prevailing personnel safety considerations, attempt to ensure that the submarine is left in a safe and secure state from a seamanship and navigation perspective.

(f) Ensure that ship's staff take with them all possible portable radiological monitoring equipment when evacuating.

(g) On arrival at the Reception Centre ensure the following key personnel are afforded **PRIORITY** processing and onward transfer to the Forward Control Point to brief and assist the response forces:

(i) Senior Officer onboard at the time of the accident
(ii) Duty Marine Engineering Officer
(iii) Duty Officer of the day
(iv) Any other key personnel who are in possession of vital information relevant to the incident and relevant to follow on actions to mitigate the consequences or to assist with the recovery actions.
(v) Health physics and medical staff
(iv) Submarine health physics monitors.

(i) Deploy any available Technical Officer and ship's health physics staff and emergency monitors to report to the Co-located Health Physicist at the Forward Control Point, in order to assist with the monitoring of personnel at the Submarine Crew Reception Centre and any other monitoring requirements.

(j) Ensure that all dosimetry worn by ship's staff are collected at the Submarine Crew Reception Centre for priority despatch and processing.

(k) If possible, deploy personnel to assist and support the local Incident Controller and monitoring team.

(l) Recall all personnel who are ashore and in communication, ie radio pager, mobile phone, nominated contact telephone number etc. It may not be possible or appropriate for all such personnel to return onboard. Therefore, all such personnel should report to the local Police Incident Controller to afford any possible assistance.

(m) Ensure a complete muster of all personnel on the ship's nominal list is completed, detailing if they were aboard and their whereabouts at the time of the incident.

(n) Ensure all reports and updates are made to the MOD collocated Health Physicist, collocated NEMT and HMNB Clyde

7.1.3 Director, HM Naval Base Clyde Faslane (DNBC) and Staff

(a) Verify the nuclear accident alerting message from the submarine.

(b) Establish and maintain communications with the accident vessel for as long as possible.

(c) Initiate the Nuclear Accident Response Organisation cascade callout to all MOD authorities.

(d) Alert the Northern Constabulary Headquarters at Inverness to initiate the cascade callout to all relevant civil authorities, and advise on appropriate initial press release.

(e) Activate the relevant elements of the Naval Base Nuclear Accident Response Organisation.

(f) Establish the MOD elements of the Clyde Off-Site Centre (COSC) and Media Briefing Centre.

(g) Establish and maintain communications with the following:

(i) MOD NARO HQ and associated authorities
(ii) MOD Co-located Health Physicist at the Forward Control Point.
(iii) NEMT Monitoring Controller at the site (emergency monitoring headquarters)
(iv) Northern Constabulary Headquarters (Strategic Co-ordinating Centre).
(v) Nuclear Accident Back Up Support Team (NABUST), both during transit, for essential updates, and permanently on arrival at the Strategic Co-ordinating Centre.

(h) Deploy the NABUST to Inverness in accordance with relevant procedures.

(i) Co-ordinate the alerting, reception, briefing and onward deployment of all relevant MOD response forces. Not all response forces will deploy from the HM Naval Base Clyde at Faslane.

(j) Ensure arrangements are made for the priority transport and processing of all dosimetry from the ship's staff. This action should be completed by utilising the most effective and available transport assets from the MOD, Northern Constabulary and commercial sources (taxis, airlines etc).

7.1.4 Collocated Military Coordinating Authority (MCA) and Nuclear Accident Back Up Support Team (NABUST)

(a) The MCA and NABUST will be transported from the HM Naval Base Clyde at Faslane by helicopter from 819 Naval Air Squadron based at RN Air Station Prestwick.

(b) The role of the NABUST is as follows:

(i) To carry out the responsibilities of the Military Co-ordinating Authority (MCA) at the Strategic Headquarters in support of the local authorities and emergency services.

(ii) To prepare and deliver regular briefings to the MOD NARO HQ, the Clyde Off-Site Centre and all relevant associated authorities.

(c) On receipt of alert the MCA and NABUST will muster in the Maritime Operations Centre for a **pre deployment** briefing and preparations for deployment.

(d) Deploy by air as follows:

(i) The following specialist officers, with the nominated responsibilities, will be transported to the Strategic Co-ordinating Centre at Inverness.

Military Co-ordinating Authority

Assistant MCA and Assistant MCA
Officer in Charge NABUST

Staff Officer	Co-ordinator of the NABUST activities
Health Physics Adviser	Radiological safety of the submarine crew, the general public and the environment.
Medical Adviser	Management of casualties. Medical welfare and protection of all personnel involved in the incident. Protection of the general public from radiological hazards.
Public Relations Adviser	Public relations briefings.
Communications Adviser	Communications between all authorities.
Reactor Adviser	Technical advice on the situation aboard.
Weapon Adviser	Technical advice on the situation aboard.

(e) The specialist advisers detailed above are to advise all authorities on all relevant issues liaising with all relevant authorities in pursuance of their tasks.

7.1.5 MOD Collocated Health Physicist

(a) To receive and interpret all available data from radiological surveys and sampling.

(b) To advise on automatic and pre-planned countermeasures in pursuance of the protection of the submarine crew, the general public and the environment.

(c) To operate in close liaison with the following:

(i) The Senior Police Officer at the scene.
(ii) All local authorities and emergency services
(iii) The MOD Collocated NEMT.
(iv) The MOD Collocated Technical Advisor.

(d) To advise the local Police Incident Controller of the procedures required receiving and processing evacuees from the submarine.

(e) To ensure that all dosimetry from ship's staff is collected for priority transport to the **Approved Dosimetry Service** for priority processing. This action should be completed by utilising the most effective and available transport assets from the MOD, Northern Constabulary and commercial sources (taxis, airlines etc)

(f) To keep all MOD authorities and the strategic headquarters informed of all decisions, actions and developments at the site.

(g) To provide health physics advice to the strategic HQ pending the arrival of the NABUST

7.1.6 Collocated Naval Emergency Monitoring Team

(a) **Alert all MOD authorities and** the local Police office.

(b) To implement monitoring procedures in accordance with current MOD directives and NEMT work instructions.

(c) To process all survey and sampling data in a timely manner and to report all results immediately to the MOD Co-located Health Physicist, all MOD authorities and the strategic headquarters.

(d) To co-ordinate the reception, briefing and deployment of incoming support monitoring assets.

(e) To establish and operate the Exclusion Zone Reception Centre. This function is to be supported by ships staff, HP staff and ships monitors.

7.1.7 MOD Collocated Technical Adviser

(a) To receive reports from the submarine.

(b) To advise all authorities in the local area.

(c) To keep all MOD authorities and the Strategic Co-ordinating Centre informed of all technical developments and advice as appropriate.

(d) To assist the Ship's Company as appropriate.

(e) To debrief Ship's Staff Technical Officers and other Duty Officers.

7.1.8 Ministry of Defence Nuclear Accident Response Organisation Headquarters (MOD NARO HQ)

(a) To co-ordinate the response of all MOD authorities.

(b) To record and co-ordinate all reports and data from the accident site.

(c) To prepare and co-ordinate briefings of all government departments.

(d) To prepare and provide reports for the Nuclear Accident Information Advisory Group (NAIAG).

(e) To prepare and provide material for public and media information and briefings.

7.2 ACTIONS OF NORTHERN CONSTABULARY

7.2.1 Actions by Area Command

Inform Force Operations Room, if not source of information.

Inform Senior Officer on duty.

Dispatch Officers (if appropriate) to relevant Rendezvous Point.

Inform Area Commander.

Set up Incident Control Post (tactical level of command - refer to Section 5.2)

Update IMPACT

7.2.2 Actions by Force Operations Room

If a Nuclear Accident alert is received by the Force Operations Room, then the duty officer will :-

Confirm that the alert is genuine by telephoning HM Naval Base Clyde and complete the checklist (See page 42)

Inform Area Commander

Inform Force Duty Officer

Inform Portree Police Station (if Skye berth) or Dingwall Police Station (if Loch Ewe berth)

Inform the following (if external agencies, invite them to send a representative to the Strategic Co-ordinating Centre, Police Headquarters, Inverness):

Scottish Ambulance Service

Highland and Islands Fire Brigade

Maritime and Coastguard Agency

Highland Council Emergency Planning Officer

NHS Highland

Northern Constabulary Emergency Planning Section

Northern Constabulary Media Advisor

Scottish Executive Justice Department (Civil Emergencies Division)

Scottish Executive Environment and Rural Affairs Department

Scottish Environment Protection Agency

Scottish Water

The Food Standards Agency

Procurator Fiscal

Incident Cell Co-ordinator : Chief Superintendent, Head of Operations.

Media Cell Co-ordinator : Superintendent Corporate Development Service Unit.

Issue initial statement S1 (or 2 as appropriate) completing blanks in message as per Section 6.

Investigation Cell Co-ordinator : Detective Superintendent Crime Support

Logistics Cell Co-ordinator : Head of Administration (to set up Strategic Co-ordinating Centre)

Casualty Bureau Cell Co-ordinator : Chief Inspector Operational Support

Deputy Chief Constable / Chief Constable

Scottish Executive, Justice Department, Fire Service and Emergency Planning Division

The Overall Incident Commander will liaise with the cell co-ordinators and decide to what level these cells should be implemented. However, the Off-Site Centre should be set up automatically on declaration of a Category 1 Alert.

Thereafter, if required, the duty officer Force Operations Room will:-

Call out Casualty Bureau Team

Call out emergency mortuary team

Call out the strategic administration team

Issue public warnings / emergency broadcasts (through Media Adviser)

Call out any other relevant specialist assistance

Obtain weather details from Aberdeen Weather Centre

Release relevant press statements as advised by relevant authorities if prior to Media Cell set up referring to Section 6.

7.2.3 Initial Actions by Incident Officer

At the start of the incident, the Incident Officer will be the first officer to arrive at the RVP. This officer will assess all the information available and pass it to his local Police Control Room for the information of the Area Commander or his depute. The first officer at the scene may find that the CHALET mnemonic will assist with gathering appropriate information.

Casualties - details, numbers, severity
Hazards - fires, explosives, chemicals, radiation etc.
Access - identify safe route for other services
Location - exact
Emergency Services - present / required
Type of incident - train / air crash / serious RTA / fire / flood / explosion

Once the Area Commander or his deputy arrive at the designated Incident Control Post, then this officer will take over the role of Incident Officer.

The Incident Officer will need to
1. Ensure Incident Control Post is being set up
2. Consider Rendezvous Point, cordons, road blocks
3. Request resources
4. Refer to generic plan for duties

7.2.4 Initial Actions at the Strategic Level

The Incident Cell Co-ordinator (Chief Superintendent Head of Operations) on arrival at Police Headquarters, will:-

Liaise with Administration Cell Co-ordinator and ensure that the Strategic Co-ordinating Centre set up plan had been implemented.

Arrange with Force Operations Room that an appropriate strategic administration team is called out.

Manage the strategic level of response to the incident until the arrival of the Overall Incident Commander (Deputy Chief or Chief Constable) who will assume the role of Strategic Co-ordinating Centre Chairman when the SCC is set up.

Ensure that all the cell co-ordinators have been called out and to liaise with them in relation to what extent their cell should be implemented.

Refer to "Strategic Command Cell" in Section 3 of the Northern Constabulary Generic Plan.

POLICE CHECK OFF LIST

ACTION	COMMENTS
1. Name of Vessel 2. Berth position 3. Time of Initial Accident Message 4. Accident Category 5. Has Gamma Shine been detected? 6. Has an airborne release been detected? 7. Weather conditions 8. Wind speed and direction 9. Whereabouts of vessel's crew 10. Actions taken by NEMT Monitoring Team: a. Stage 1 monitoring b. Stage 2 monitoring c. Stage 3 monitoring d. Sample analysis 11. Have any press releases been issued? If yes to whom? 12. Casualty Report 13. Support Forces requested.	

7.3 ACTIONS OF SCOTTISH AMBULANCE SERVICE

On receipt of a message indicating that a major incident involving casualties has occurred, the Service will implement major incident procedures as contained in the publication Scottish Ambulance Service Operational Arrangements – Civil Emergencies.

As a matter of course, the SAS will contact Northern Constabulary and Highland and Islands Fire Brigade to confirm that they have also been informed.

The predetermined attendance will be proportional to the scale of the incident.

Ambulances will be despatched to the RVP and will liaise with the Police Incident Officer. Until the arrival of the Ambulance Incident Officer, the first crew will act as Incident Officer and Communications Officer.

Liaise with the Site Medical Officer, if present and implement CSCATTT:

1. From the accident scene to the Casualty Reception Centre (a.k.a. Casualty Clearing Station).

2. From the Casualty Reception Centre (a.k.a. Casualty Clearing Station).

3. Until the arrival of the Medical Incident Officer, commence triage and treatment prior to transportation to the appropriate hospital.

4. Provide resuscitation and other emergency support equipment.

The SAS are responsible for notification, mobilisation and transport of a medical team.

Further ambulance vehicles, if available, can be mobilised by Inverness Emergency Dispatch Centre.

The SAS Airdesk will co-ordinate all Service aircraft as to availability and suitability.

The SAS are responsible for the notification and co-ordination of the Voluntary Aid Societies, such as Red Cross and St Andrew Ambulance Association at the scene of a major incident, who will provide support for the service.

7.4 ACTIONS OF THE HIGHLAND COUNCIL

7.4.1 Area Manager

The Area Manager upon receipt of a nuclear reactor accident alert from Emergency Planning will:

(a) Implement the callout procedure in the areas major emergency plan, set up and fully man the area EC.

(b) Until the Emergency Planning Officer arrives, arrange for a locally based Council Officer to attend at:

SKYE AND LOCHALSH AREA	ROSS AND CROMARTY AREA
Broadford Berth	Loch Ewe Berth
Qinetiq, Kyle of Lochalsh	Dingwall Police Station

(c) Ensure that the position of the warship is plotted on an Ordnance Survey Map, overprinted with the National Grid System, and that:

(i) a 550 metre circle, and
(ii) a 30° sector, downwind, of 10,000 metres radius, drawn 15° either side of the prevailing wind direction, are marked off (see Page 14).

(d) **Category 2 Accident**

(i) Ensure that all schools, hospitals and similar institutions within 2Km of the vessel are notified that there has been a Nuclear Reactor Accident.
(ii) Make arrangements for the evacuation of any persons resident within 550 metres of the accident vessel.
(iii) Arrange for a locally based Council Officer with communications eg. radio or cellular telephone to attend at forward control point (FCP) and liaise with Police until EPO arrives.

Incident at Broadford - Broadford Police Station.
Incident at Loch Ewe - Car park on A832 - north of Aultbea.

(e) **Category 3 Accident**

(i) Carry out d(1) to d(3) above plus the following.
(ii) In liaison with the Police, make preliminary arrangements to evacuate members of the general public from the area of hazard, or advise them to remain sheltered indoors with doors and windows shut, as advised by Director, HM Naval Base Clyde/NABUST.
(iii) Place a restriction, in liaison with Environmental Health, on the sale and consumption of meat, vegetables, free range eggs and other exposed foodstuffs, including farmed salmon and trout, shellfish and freshwater fish within the 30º sector and up to 2 Km downwind of the warship.

7.4.2 Emergency Planning Officer

(a) Set up, staff and operate the Council's Emergency Centre, Raigmore, Inverness.

(b) Despatch emergency control vehicle to Forward Control Point (FCP) at berth concerned, to liaise with police and monitoring controller in the monitoring headquarters.

(c) Despatch Emergency Planning Officer (EPO) to area Emergency Centre concerned.

(d) Instruct Emergency Planning to inform:

(i) Area Manager
(ii) Chief Executive

(e) Advise and assist the Area Manager concerned in:

(i) Communicating all information and advice, from the MOD co-located health physicist and NABUST via Police, to EC at Raigmore, Inverness.
(ii) Assistance to the Naval Authorities, uniformed emergency services, Health Board and any other relevant agencies as required from Council sources of manpower and equipment.
(iii) On completion of the emergency prepare a report for the Chief Executive Highland Council copying the report to the Area Manager involved and the Director, HM Naval Base Clyde, together with any recommendations.

(f) Arrange for senior official from Highland Council HQ to attend at Strategic Co-ordinating Centre (SCC) Inverness with all necessary support staff.

7.5 ACTIONS OF NHS HIGHLAND

7.5.1 Department of Public Health

Upon receipt of notification of a Nuclear Accident from Police HQ Control Room, the Director of Public Health or his duty Consultant in Public Health will alert the Accident and Emergency Consultant or duty Consultant at Raigmore Hospital to the possibility of injured and contaminated Royal Navy personnel arriving at the hospital.

(a) Category 1 Accident

The Health Board will be contacted by the Police to alert them to the developing situation.

(b) Category 2 Accident

In respect of a category 2 accident the duty Consultant in Public Health will immediately proceed to Strategic Co-ordinating Centre, Police Headquarters, Inverness where he/she will represent NHS Highland.

(c) Category 3 Accident

The Consultant in Public Health will:

- Advise on all public health matters.
- Advise on casualty and public evacuation where necessary.
- Advise on the banning of consumption of unsealed foodstuffs, liquids and free range eggs within affected sector in liaison with the FSA, SEERAD and Environmental Health representatives.
- Liaise with naval health cell members.
- Liaise with Scottish Water and SEPA representatives.
- Prepare for the authorisation to take the pre-distributed and the issue of additional Potassium Iodate (Stable Iodine) tablets.

7.5.2 Potassium Iodate Tablets

(a) The Director of Public Health through the Consultant in Public Health may be required to authorise the issue of potassium iodate tablets to identified sections of the community.

(b) Potassium Iodate tablets are carried by the NEMT and by the collocated naval monitoring team.

7.5.3 Contaminated Casualties

(a) The treatment and admission to hospital of contaminated casualties will be co-ordinated by the Military Co-ordinating Authority in consultation with the Consultant in Public Health.

(b) Decontamination and screening facilities are available at the Changing Rooms, King George V Playing Fields, Portree, and Qinetiq Base, Kyle of Lochalsh, for the uninjured and those with minor injuries.

(c) Patients who are injured and contaminated or are suspected of having inhaled a radioactive substance will be immediately transferred to the Radiation Screening Unit, Raigmore Hospital, Inverness, as the designated hospital for this area.

(d) The treatment of casualties should be on the basis that it is the requirement to treat life threatening injuries and conditions before carrying out any required decontamination procedures.

7.5.4 Medical Physics Team

A Medical Physics Team from Raigmore Hospital, Inverness will be made available if necessary to attend either of the Radiation Screening Units at Portree or Kyle of Lochalsh to provide public re-assurance monitoring.

7.5.5 Advice to the staff of the Health Board

Advice to the staff of the Health Board on radiation safety and protection issues for ambulance crews and casualties will be available from the following:

(a) Health Board Radiation Protection Adviser

(c) MOD Collocated Health Physicist at the Incident Control Post

(d) MOD Medical Officer deployed with the Nuclear Accident Back-Up Support Team (NABUST) at Inverness

(e) MOD Radiation Medicine Adviser at the Clyde Off-Site Centre, HM Naval Base Clyde.

7.6 ACTIONS OF SEERAD

7.6.1 Upon receipt of a nuclear reactor accident alert from Police HQ Control Room -

(a) Officer(s) to attend at Strategic Co-ordinating Centre, Police Headquarters, Inverness.

(b) Provide advice on milk supplies, crops, livestock and fishing.

(c) At the appropriate stage send out letters to farmers and fishermen in the format given in Appendix 2(A).

(d) Take any decisions on the need to restrict the movement or slaughter of livestock in an affected area.

(e) SEERAD Marine Laboratory Aberdeen to co-ordinate monitoring of sea fisheries and marine environment. SEERAD Freshwater Laboratory, Faskally to co-ordinate the monitoring of freshwater fisheries.

(f) Issue stand down notices to farmers, using the format given in Appendix 2, when advised to do so by the Strategic Group who would act on advice from the NABUST, FSA and the Joint Health Advisory Group (JHAG).

7.7 ACTIONS OF HIGHLAND AND ISLANDS FIRE BRIGADE

7.7.1 ACTIONS BY FIRE CONTROL

(a) Receive the call from Northern Constabulary.
(b) Immediately mobilize pre-determined attendance 124 to the designated Forward Control Point.
(c) Inform Duty Senior Officer
(d) Mobilise further resources as necessary.

7.7.2 ACTIONS BY OFFICER IN CHARGE OF FIRST ATTENDANCE

(a) Proceed to the designated Forward Control Point.
(b) Contact the responsible person at the Forward Control Point to gather all necessary information to allow an assessment to be carried out to decide on the strategy to be adopted.
(c) Hand over command and control of firefighting and rescue to the next senior HIFB Officer when they arrive.

7.7.3 ACTIONS BY DISTRICT OFFICER OR DUTY ADO

(a) Proceed to the Forward Control Point.
(b) Formally take charge of the incident from the HIFB Officer in charge of the first attendance, with regard to command and control of firefighting and rescue operations.
(c) Co-locate at the Forward Control Point with the Police Incident Commander and senior officials from other services and organisations.

7.7.4 ACTIONS BY DUTY OFFICER – TACTICAL LEVEL

(a) If there is more than one Wholetime Officer on duty, the Senior Officer will proceed to the Incident Control Post at Dingwall Police Station.
(b) Act as Fire Brigade Liaison Officer and, if necessary, take charge of the incident following a briefing from the Officer in charge of firefighting operations.

7.7.5 ACTIONS AT STRATEGIC LEVEL

(a) If the Chief Constable declares that the Strategic Level of command is to be established, and that the Strategic C-ordinating Group is to be set up, the Firemaster or his Deputy will proceed to Police Headquarters in Inverness to sit on the Group.

7.8 ACTIONS OF MCA - HM COASTGUARD

7.8.1

1. HM Coastguard will open an Incident in their Command and Control System, and establish communications with the Police Incident Control. The Coastguard station responsible for the District in which the incident occurs, will be alerted, to co-ordinate Coastguard actions on or near the scene.

2. If Inverness SCC is activated, MRCC Aberdeen may dispatch suitable personnel to attend. Until the arrival at the SCC of the CG liaison personnel, information flow will remain via the Police, either at the SCC, or Force Operations Room.

3. HM Coastguard will initiate alert broadcasts on Radio and Satellite Systems at the request of the Police Incident Commander/SCC Liaison Officer.

4. HM Coastguard will conduct enquiries to establish the safety of Vessels or persons which may be in potential danger areas, in consultation with the Police Incident Commander and SCC Liaison Officer.

5. HM Coastguard may task Coastguard units afloat and on shore to assist the other emergency services, and will respond to any other requests through the SCC Liaison.

7.9 ACTIONS OF NUCLEAR INSTALLATIONS INSPECTORATE

7.9.1 In any nuclear site emergency which has or could have off-site consequences including MoD sites and Z Berths, NII will deploy staff to the affected site, the Strategic Co-ordinating Centre (SCC) and the Nuclear Accident Information and Advisory Group (NAIAG) in London.

SECTION 8 : TECHNICAL INFORMATION

8.1 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.

8.2 The Chances of Reactor Accident:

(a) A reactor accident 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 accident 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 accident 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 accident happening at a time when a nuclear powered warship is berthed in a port.

8.2.1 Types of Reactor Accident and their Possible Development

(a) The least serious kind of accident would be one in which the cladding on one or more fuel elements in the reactor core failed and the primary coolant water, though remaining within the primary coolant water system, became contaminated with fission products.

(b) A more serious kind of accident would begin with a leak in the primary coolant system brought about, for example, by pipe failure. As a result of the loss of coolant water, the fuel cladding could eventually melt, releasing radioactive fission products into the compartment containing the reactor and its associated system, which is known as the ‘primary containment’.

(c) If, following these events, the submarines primary containment were itself to fail to some degree, fission products would become dispersed throughout the submarine. In practice, the large number of pipe and cable runs traversing the reactor compartment boundary mean that some minimal leakage is almost inevitable. A more drastic breach would lead to a more rapid release. This last sequence, which is the least likely of all developments with orders of probability in the region of once every million reactor operating years, is known as the primary containment failure accident (PCFA). Although the submarine hull is designed in all these circumstances to form a 'secondary containment', there must always be the chance of an open hatchway or other venting allowing a small proportion of the fission products to escape to the outside atmosphere where they will tend to form a cloud which may thereafter be borne along on the prevailing wind. If the accident involved the vessel sinking, then the fission products **could be released to sea where they could be dispersed by the prevailing currents.**

8.3 RADIOLOGICAL HAZARDS

8.3.1 Should an **MOD nuclear reactor** suffer any accident 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 containment's and still be of sufficient intensity to pose a hazard to health for those within the immediate vicinity of the **accident site.** In practice, no shelter in the immediate vicinity of the **reactor** is likely to afford adequate shielding against this radiation. In any accident therefore it is essential that personnel are evacuated from inside the area at risk from the 'gamma shine', which could be up to 550 metres from the **reactor** in the worst possible case.

8.3.2 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 health hazard will exist beyond 2km 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.

8.4 COUNTER MEASURES

8.4.1 The National Radiological Protection Board (NRPB) is responsible for specifying emergency reference levels of dose (ERLs) for the initiation of urgent countermeasures following an accidental release of radionuclides, and also for providing advice on radiological protection to those with responsibility for responding to an accident. 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 NRPB emergency reference levels. NRPB 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 accident.

(e) **Recommended ERLs of Dose**

COUNTERMEASURE	DOSE EQUIVALENT LEVEL (MSV)					
	LOWER			UPPER		
	WHOLE BODY	THYROID, LUNG OR OTHER SINGLE ORGANS	SKIN	WHOLE BODY	THYROID, LUNG OR OTHER SINGLE ORGANS	SKIN
EVACUATION	30	300	300	300	3000	3000
SHELTERING	3	30	30	30	300	300
PITS (SITS) ISSUE	N/A	30	N/A	N/A	300	N/A

In order to ensure similar standards of protection at all submarine berths, emergency action guidance levels (EAGLs) are recommended for each countermeasure. It should be noted that they only apply outside the evacuation distance. Within it, countermeasures are automatic, regardless of dose, as soon as an accident is declared.

(f) **Site Specific Intervention Levels**

- Site Specific Intervention Levels are required for all sites.
- The SSILs for the Scottish Z-berths are set at the lower Emergency Reference Levels.
- See Appendix 3 (A), Page 80.

(g) If an accident 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 accident and the consequent size, if any, of the release to the atmosphere must, therefore, be determined by radiation monitoring in the vicinity of the accident 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.

(h) **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 2 km from the accident berth, may be banned. Instructions will be given as to collection and safe disposal by the Food Standards Agency (FSA) and the Scottish Executive Environment and Rural Affairs Department (SEERAD). (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 Executive, by means of an emergency order under the Food and Environment Protection Act 1985 (FEPA 1985).

(i) **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 accident warship and subsequently as monitoring results indicate.

(ii) All restrictions will be imposed, after consultation with the Naval Authorities, the representatives of the SEERAD, the FSA and the local area Health Board.

(ii) Representatives of SEERAD, the FSA and the Director of Public Health will be informed of the area concerned by the NABUST, 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) SEERAD 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 anchorage's in The Highland Council area.

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

The responsibility for control of movement and slaughter of livestock lies with the SEERAD 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 SEERAD.

(k) **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 the Scottish Executive Environment and Rural Affairs Department.

(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.

(l) **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 SEERAD. Any decision to restrict the taking, distribution and sale of fish to protect human health will be taken by SEERAD.

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

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

(n) **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 collocated Health Physicist and subsequently from the NABUST, 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.

(o) **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.

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

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

(q) **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 DERA, (Radiation Protection Services) 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 DERA-RPS team will be able to advise whether water is safe to drink, but the responsibility for imposing a ban lies with the Director of Public Health.

SECTION 9 : 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 the Police Headquarters, Inverness.

SECTION 10 : ROLES/RESPONSIBILITIES OF RESPECTIVE AGENCIES

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

10.1.1 The Commanding Officer of a nuclear vessel is responsible for reactor safety at all times, and in the unlikely event of a reactor accident he would assume the role of Incident Commander until the arrival of the Nuclear Accident Back-up Support Team.

10.1.2 Should a nuclear reactor accident occur at a berth where no full-scale Naval Command exists, it is MOD(N) policy that a Senior Naval Officer accompanied by **specialis**t 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 accident situation and advise the Civil Authorities on any radiological hazards affecting the general public. This team is known as the Nuclear Accident Back-up Support Team (NABUST). The NABUST consists of the following specialists:

Military Co-ordinating Authority

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

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

10.1.4 A Naval 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.

10.1.5 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 a Z berth for longer than 12 hours.

(c) Carry out reactor accident planning reviews so that, in the event of a reactor accident, the radiological hazard can be correctly assessed.

(d) Assist the DERA Radiological Protection Service to carry out beach surveys, seabed surveys, collect marine organisms for radiochemical analysis etc, in order to check regularly the level of radioactivity. Record of both environmental surveys and reactor accident planning reviews in The Highland Council area are kept by the Director, HM Naval Base Clyde.

10.2 THE ROLE OF NORTHERN CONSTABULARY

10.2.1 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.

10.2.2 In responding to an incident at a Z 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 organisation during the emergency phase of the incident. This applies to all three levels of response, operational, tactical and strategic. The Strategic Co-ordinating Centre would be opened at Police Headquarters, 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 Strategic Co-ordinating Group.

(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.

10.2.3 To comply with the principles of the European Convention of Human Rights Act 1998, Northern Constabulary 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 Northern Constabulary staff has 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 Northern Constabulary's actions are:

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

10.3 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 accident and 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.

10.4 THE ROLE OF THE HIGHLAND COUNCIL

10.4.1 It is likely that a number of Council Services would become involved in a major incident at a Z berth.

10.4.2 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.

(b) Co-ordinate any necessary works required to ensure the effective and safe operation of Radiation Screening Units.

(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.

10.5 THE ROLE OF NHS HIGHLAND

10.5.1 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.

10.5.2 In responding to an incident at a Z 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.

10.6 THE ROLE OF HIGHLAND AND ISLANDS FIRE BRIGADE

10.6.1 Responding to emergencies is a normal feature of the work of the Fire Brigade. The normal roles and responsibilities of the Fire Brigade are derived from its long experience in firefighting and rescue operations and encompass the saving of life and the protection of property.

10.6.2 In responding to an incident involving a nuclear powered submarine berthed at a "Z" Berth, the Highland and Islands Fire Brigade'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.

10.7 THE ROLE OF THE MARITIME AND COASTGUARD AGENCY

10.7.1 The Maritime and Coastguard Agency is an Executive Agency of the Department of the Environment, Transport & 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.

10.8 THE ROLE OF NUCLEAR INSTALLATIONS INSPECTORATE

10.8.1 NII's response will be led and managed by the NII Response Centre Director.

NII will ascertain the facts surrounding the emergency, assess the safety of the affected site, including licensee's or operator's proposed actions. Provide independent information/advice. Formulate NII Strategy and response.

NII Site Team will:

- represent NII at or near the site.
- ascertain the facts on the emergency including establishing the adequacy of actions taken to secure a safe plant state and the advice given to authorities off-site,
- submit routine reports on event to the NII Response Centre.

NII Strategic Co-ordinating Centre Team will:

- consider all aspects of the emergency which affect the site;
- provide advice to the Strategic Co-ordinating Centre (SCC) Management Team;
- provide advice and support to the NII Response Centre Director.

SECTION 11: JOINT HEALTH ADVISORY GROUP (JHAG)

11.1 INTRODUCTION

In the event of a radiation emergency, if 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.

11.2 RESPONSIBILITY

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

11.3 PROCESS

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

JHAG 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 JHAG. Other agencies may be identified based on public protection need for specific information or skills.

11.3 COMPOSITION OF THE GROUP

Core Members:

CPHM –NHS Highland - Chair

NRPB

Health Physicist - MOD

Medical Physics – NHS Highland

FSA

SEERAD

Environmental Health Officer – Highland Council

Scottish Water

SECTION 12 : CONSEQUENCE MANAGEMENT

12.1 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.

12.2 OBJECTIVES

a. to define the criteria for the handover arrangements between the Police and The Highland Council;

b. to detail the membership of a Recovery Working Group;

c. to describe the functions of the Recovery Working Group;

d. to list information and advice on remediation and recovery;

e. to highlight possible areas of public concern in the medium and long term.

12.3 RECOVERY WORKING GROUP

The Group will be convened as a Sub Group of the Strategic Group. (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 accident and to formulate strategies for the return to normality. The group Chair will brief the Strategic Group on a regular basis throughout the response phase of the emergency and this action will continue into the remediation phase.

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 accident;

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.

12.4 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.

12.5 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-accident 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.

12.6 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.

12.7 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.

12.8 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
NRPB
MOD

OPTIONAL MEMBERS
Food Standards Agency (FSA)
Forestry Commission
Health and Safety Executive (HSE)
Housing Service, Highland Council
Marine and Coastguard Agency (MCA)
National Farmers Union (NFU)
Nuclear Installations Inspectorate (NII)
RNTE Vulcan
Scotrail
Scottish Executive Environment and Rural Affairs Department (SEERAD)
Scottish Natural Heritage (SNH)
Scottish Society for the Prevention of Cruelty to Animals (SSPCA)
Scottish Water
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.

12.9 ISSUES DURING THE RECOVERY PHASE

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 (NRPB/Cats A-C).

(2) Decontamination options (NRPB).

(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.

12.10 EFFECTIVENESS OF RECOVERY COUNTERMEASURES

NRPB 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 accident.

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.

12.11 DECONTAMINATION MEASURES

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

(a) **Vacuum Sweeping & Fire Hosing.** Among the lowest cost countermeasures. They also have the advantage that they could be carried out relatively quickly, with little subsequent disruption to the population.

(b) **Grass Cutting & Collection**. This is most effective following deposition under dry conditions, as a larger proportion of the deposited activity is intercepted by the grass. The effectiveness of this technique will depend on the length of the grass at the time of deposition, being less effective for recently mown grass, and on its implementation before substantial rain falls.

(c) **Soil Removal, Ploughing, 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, 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 accident 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 ACCIDENT

"There has been an accident 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 accident.

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 …….. and ……. …..on …….. 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, NUCLEAR POLICY AND SECURITY (BRANCH), 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 Executive Environment and Rural Affairs Department
(Address as appropriate)

Date ……

Dear Sir

ACCIDENT 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 SEERAD 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 Executive Environment and Rural Affairs Department
(Address as appropriate)

Date ……

Dear Sir

ACCIDENT 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 accident 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

ACCIDENT 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 incident/accident 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

ACCIDENT 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 / STABLE IODINE TABLETS

Nuclear Incidents

- If there is a nuclear incident various radioactive materials may be released. Most radioactive substances can be kept away from the body be sheltering – going indoors and shutting doors and windows.

- Radioactive Iodine is one of the substances which may be released following a nuclear accident. 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 Pre-planned Countermeasures Zone) 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) - 2 tablets
  (including pregnant women and women breast feeding)
- 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 3 (A)

DOSE LEVELS FOR EMERGENCY SERVICES PERSONNEL ATTENDING AT A RADIATION INCIDENT UNDER REPPIR

Responsibility
The responsibility for authorising the use of emergency dose levels will lie with the Officer in Charge, and decisions will be taken in consultation with health and/or medical physics personnel and an authorised person from the operator.

Application
All doses received by emergency services personnel should always be as low as reasonably practicable. However, during a radiation emergency as defined by REPPIR (Regulation 15), the dose limits described in IRR99 (Regulation 11) do not apply and therefore emergency dose levels have been adopted by the emergency services as described below. The figures given are intended as upper values and lower values only.

Emergency Service workers will only be allowed to receive emergency exposures for the purposes of:

saving life;
helping endangered people;
preventing large numbers of people from being exposed to ionising radiation; or
saving valuable installations or goods.

Emergency Dose Levels

Highland and Islands Fire Brigade
It is permissible for a male firefighter to receive up to the following emergency dose level during a radiation emergency under REPPIR where intervention will prevent the situation developing into a catastrophe, or if a life can be saved. Female firefighters of reproductive capacity will work to the lower dose limits described in IRR99 and will not work to these emergency dose levels.

Effective dose:	**100 mSv**

Scottish Ambulance Service
Where an Ambulance Service worker is involved in the interventional stage of an incident, they may receive up to the following emergency dose level.

Effective dose:	**100 mSv**
Equivalent dose to skin:	1000 mSv
Equivalent dose to eye lens:	300 mSv

For the purposes of saving a life, it may be decided in exceptional circumstances that it is desirable to apply the following maximum dose levels.

Whole body dose:	500 mGy
Dose to skin:	5000 mGy

Northern Constabulary
No police staff are to be subjected to emergency exposures of radioactivity in the event of an incident. Therefore Northern Constabulary officers and staff will work to the public dose limit of:

Effective dose:	1 **mSv**

APPENDIX 4

ABBREVIATIONS

CPHM	CONSULTANT IN PUBLIC HEALTH MEDICINE
DPHM	DIRECTOR OF PUBLIC HEALTH MEDICINE
EC	EMERGENCY CENTRE
EPO	EMERGENCY PLANNING OFFICER
ERL	EMERGENCY REFERENCE LEVEL
FCP	FORWARD CONTROL POINT
FSA	FOOD STANDARDS AGENCY
GTA	GOVERNMENT TECHNICAL ADVISOR
ICP	INCIDENT CONTROL POINT
IO	INCIDENT OFFICER
MBC	MEDIA BRIEFING CENTRE
MCA	MILITARY CO-ORDINATING AUTHORITY
MIO	MEDICAL INCIDENT OFFICER
NABUST	NAVAL BACKUP SUPPORT TEAM
NEMT	NAVAL EMERGENCY MONITORING TEAM
NRPB	NATIONAL RADIOLOGICAL PROTECTION BOARD
PDA	PRE DETERMINED ATTENDANCE
RVP	RENDEZVOUS POINT
SCC	STRATEGIC CONTROL CENTRE
SEERAD	SCOTTISH EXECUTIVE ENVIRONMENT AND RURAL AFFAIRS DEPARTMENT
SEPA	SCOTTISH ENVIRONMENT PROTECTION AGENCY
SMT	SITE MEDICAL TEAM

APPENDIX 5 (A)

CASCADE CALL-OUT SYSTEM

CASCADE CALLOUT – BY THE SUBMARINE

SUBMARINE

Radio ------- VHF Ch 13 ----------	COLLOCATED NAVAL EMERGENCY MONITORING TEAM
Radio ------- VHF Ch 16 ----------	COASTGUARD
Tel ---------- 999 ----------	NORTHERN CONSTABULARY
Tel ----------	HM NAVAL BASE CLYDE
Tel/Radio Ch13/Pager ----------	COLLOCATED HEALTH PHYCSICIST
Signal ----------	HM NAVAL BASE CLYDE
Tel/Radio Ch13/Pager ----------	COLLOCATED TECHNICAL ADVISER
Signal ----------	FLAG OFFICER SUBMARINES
Signal ----------	CINCFLEET
Signal ----------	MINISTRY OF DEFENCE (MODUK NAVY)

NOTES

1. Northern Constabulary and HM Naval Base Clyde are to call back the submarine to authenticate any accident message before proceeding further.

2. The Category of any accident (1,2,3) is important and should be given but it is emphasised that the initial response remains the same.

APPENDIX 5 (B)

CASCADE CALL-OUT BY THE MOD COLLOCATED HEALTH PHYSICIST AND MOD CO-LOCATED MONITORING CONTROLLER

SUBMARINE TO COLLOCATED STAFF - VHF CHANNEL 13

- TELEPHONE

- PAGER

MOD COLLOCATED HEALTH PHYSICIST AND COLLOCATED MONITORING CONTROLLER

NORTHERN CONSTABULARY

HM NAVAL BASE CLYDE
- MARITIME OPERATIONS CENTRE

- NAVAL EMERGENCY MONITORING TEAM HEADQUARTERS RHU

APPENDIX 5 (C)

CASCADE CALL-OUT – BY THE HM NAVAL BASE CLYDE

SIGNAL FROM SUBMARINE TO HM NAVAL BASE CLYDE

TELEPHONE FROM SUBMARINE TO HM NAVAL BASE CLYDE

Maritime Operations Centre	NUCLEAR ACCIDENT BACK-UP SUPPORT TEAM (NABUST)
	CLYDE NUCLEAR ACCIDENT RESPONSE ORGANISATION
	MOD AUTHORITIES AS PER LOCAL ORDERS
	NORTHERN CONSTABULARY HEADQUARTERS

APPENDIX 5 (D)

CASCADE CALLOUT - BY THE NORTHERN CONSTABULARY

SUBMARINE TO NORTHERN CONSTABULARY - TEL 999

HM NAVAL BASE CLYDE TO NORTHERN CONSTABULARY - TELEPHONE

MOD COLLOCATED STAFF AT BERTH TO NORTHERN CONSTABULARY - TELEPHONE

NORTHERN CONSTABULARY

HIGHLAND AND ISLANDS FIRE BRIGADE

SCOTTISH AMBULANCE SERVICE

MARITIME AND COASTGUARD AGENCY

NHS HIGHLAND

THE HIGHLAND COUNCIL EMERGENCY PLANNING OFFICER

NORTHERN CONSTABULARY EMERGENCY PLANNING SECTION

NORTHERN CONSTABULARY MEDIA ADVISER

SCOTTISH EXECUTIVE JUSTICE DEPARTMENT (CIVIL EMERGENCIES DIVISION)

SCOTTISH EXECUTIVE ENVIRONMENT AND RURAL AFFAIRS DEPARTMENT

SCOTTISH ENVIRONMENT PROTECTION AGENCY

SCOTTISH WATER

THE FOOD STANDARDS AGENCY

PROCURATOR FISCAL

APPENDIX 6

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 Northern Constabulary Police Headquarters, with a nominal list of those onboard.

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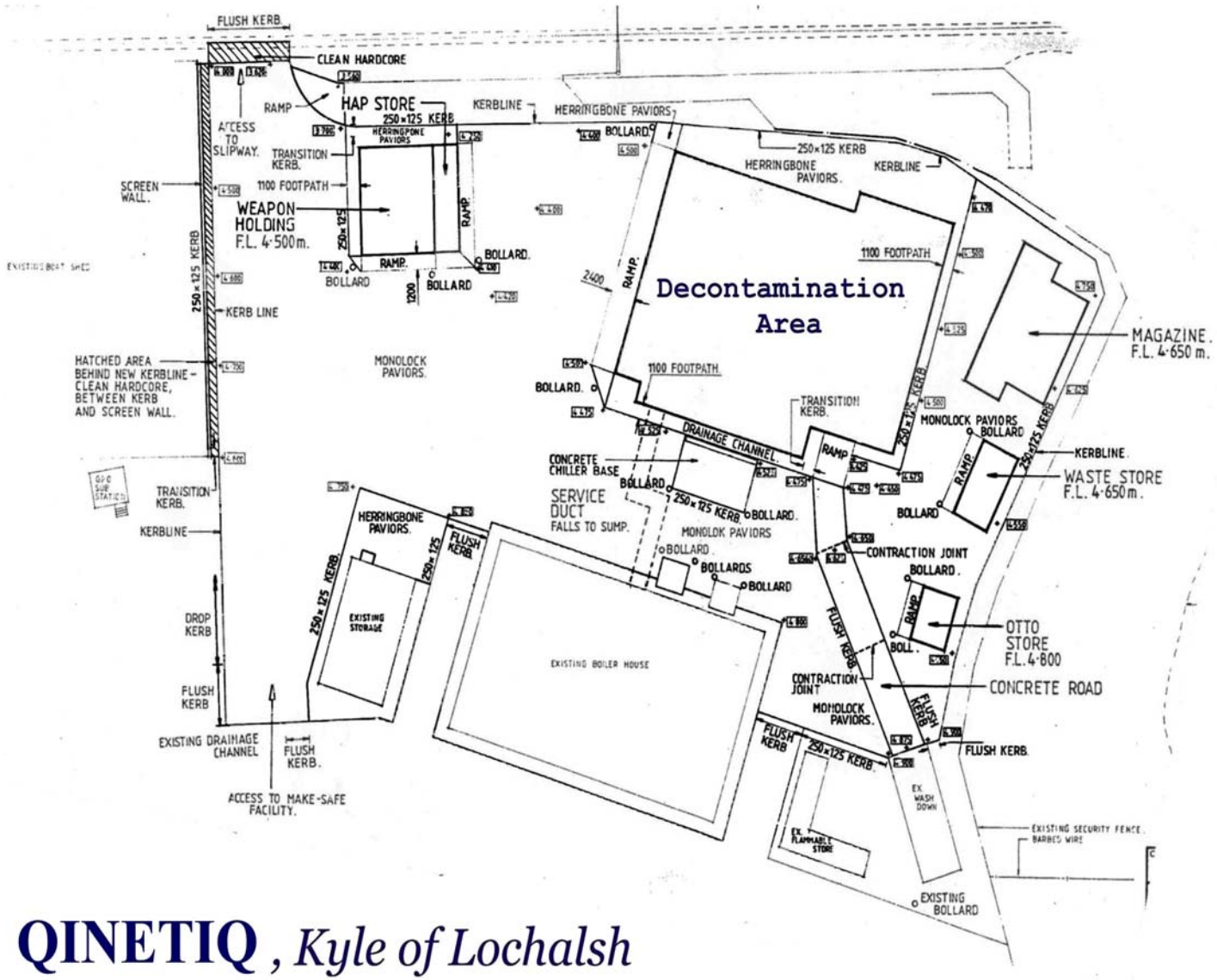
Location of Qinetiq

Highsafe Plan (REPPIR)

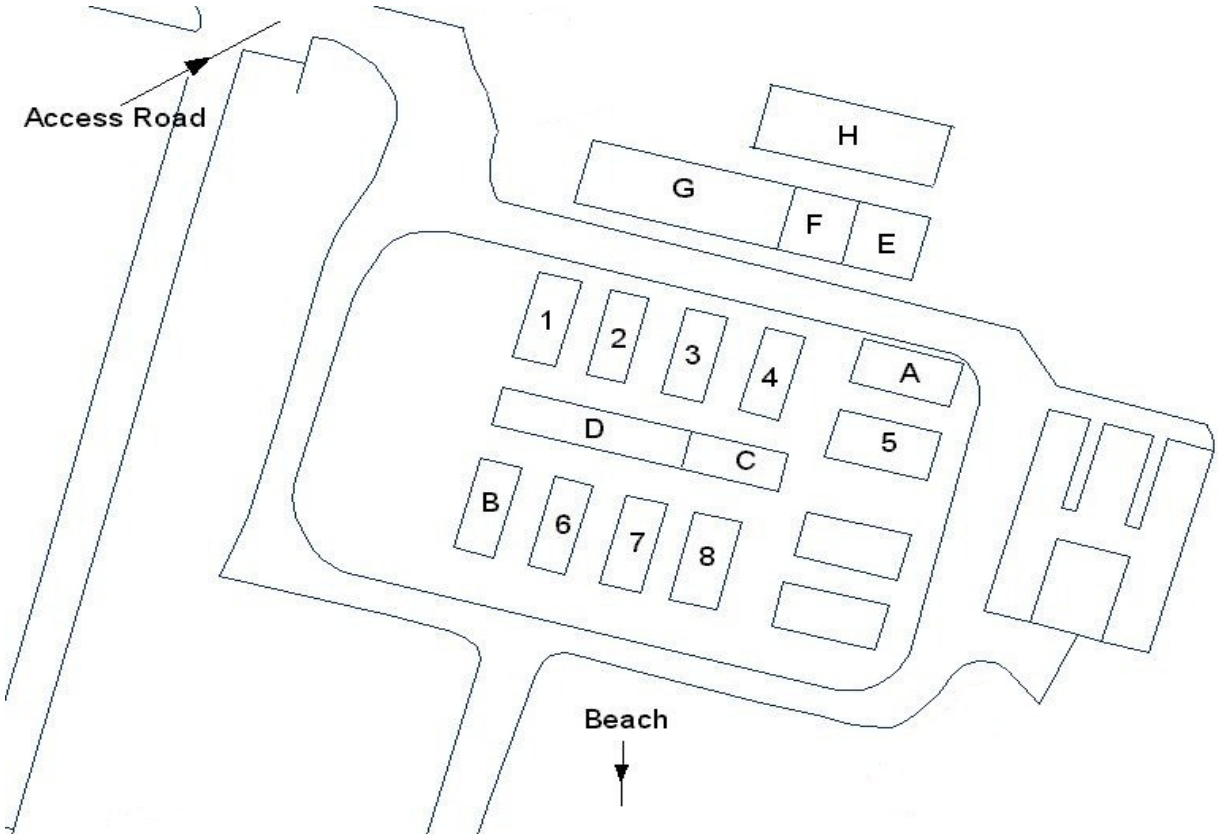
SUPPLIED BY HIGHLAND COUNCIL EMERGENCY PLANNING

QINETIQ, Kyle of Lochalsh
Decontamination Area
NORTH
Helo pad
High water
Low water
1
2
3
4
5
7
8
9
11
12
13
14
15
16
17
18
19
20



QINETIQ , *Kyle of Lochalsh*

MELLON CHARLES CAMP



1 - Drying Room

2 – 8 - Accommodation

A - Cabin Accommodation

B - Mattress Store

C - Female showers/toilets

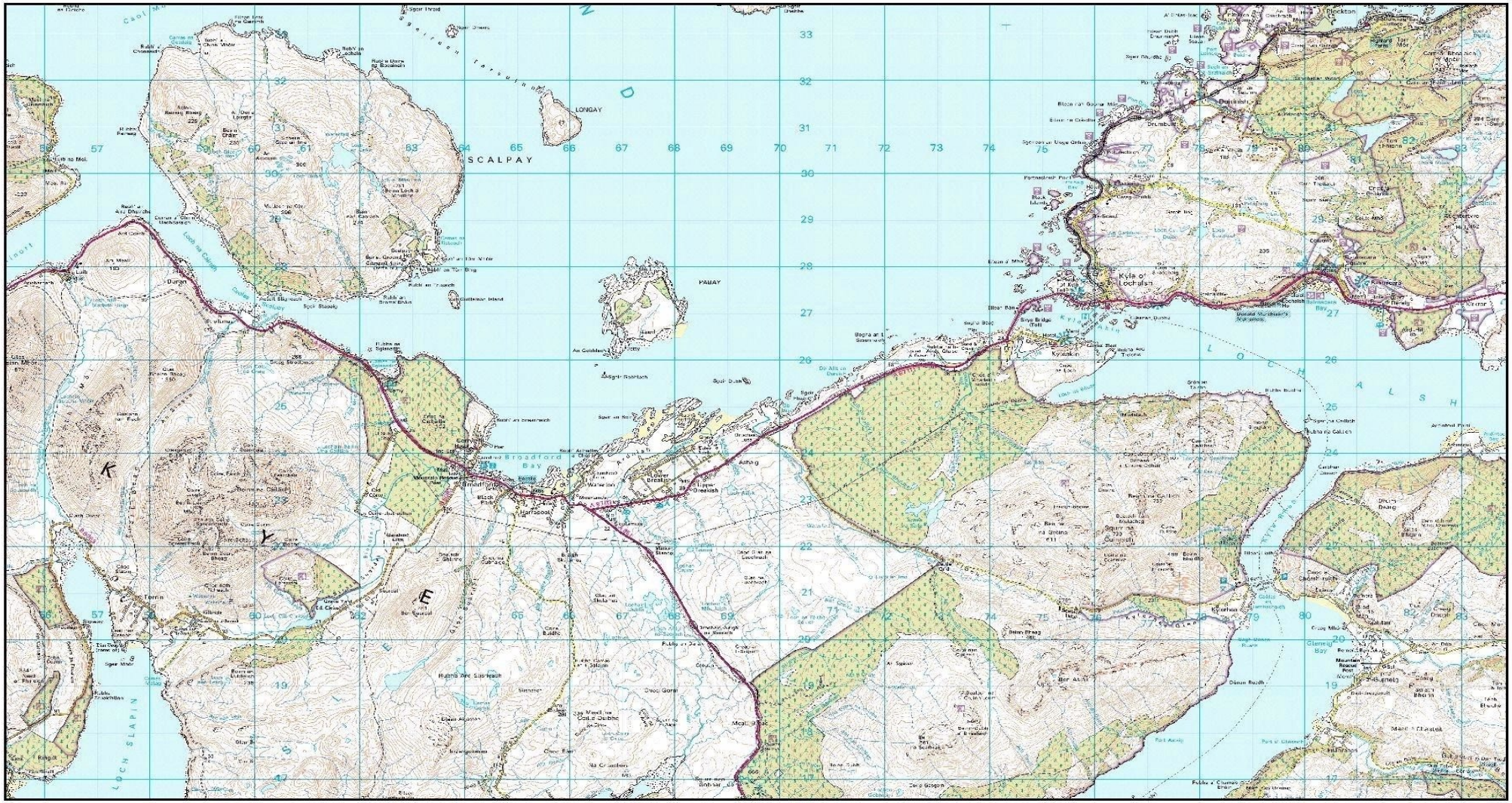
D - Male showers/toilets

E - D/room or HQ

F - Disused Galley

G - Main Dining Hall

H - New Galley (portacabin)



BROADFORD - KYLE of LOCHALSH

Highsafe Plan (REPPIR)

SUPPLIED BY HIGHLAND COUNCIL EMERGENCY PLANNING

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Serving the Highland Communities

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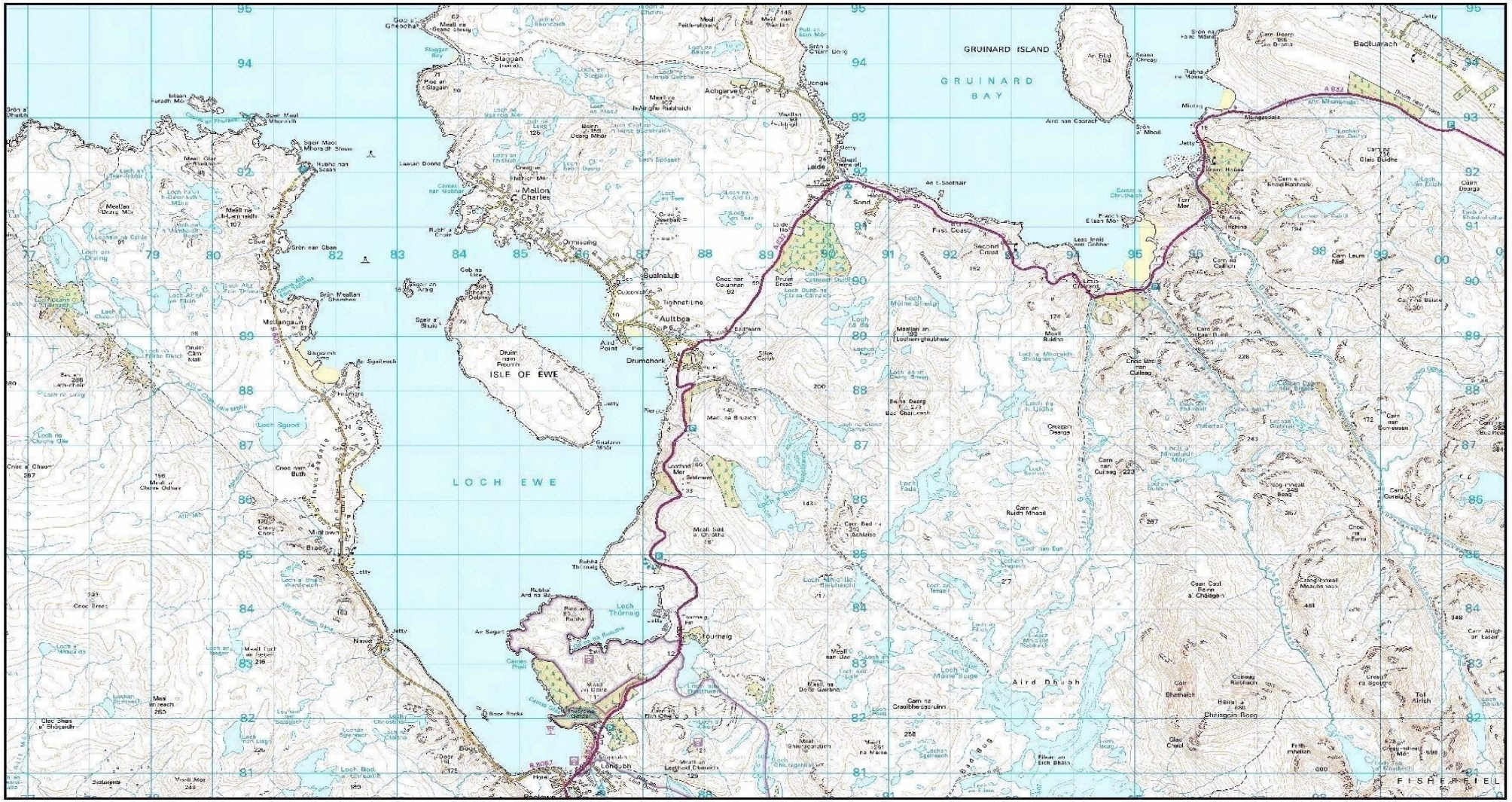

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LOCH EWE

Highsafe Plan (REPPIR)

SUPPLIED BY HIGHLAND COUNCIL EMERGENCY PLANNING

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GLOSSARY OF TERMS

Approved Dosimetry Service. (ADS)	The legally approved service for the provision and processing of personal radiation monitoring devices.
Automatic Countermeasure Distance (ACMZ)	550 meters from the submarine. In the event of an accident 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.
Becquerel (Bq)	Unit of quantity of radioactive material. 1 Bq = 2.7 x 10^{11} Ci or one disintegration per second.
CAM HQ RHU	Clyde Area Monitoring Headquarters at Rhu.
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.
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	Primary Containment 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 accident. Secondary Containment The compartments within the submarine hull on either side of the Primary Containment which can contain internal leakage from the primary containment.
Containment State	The state of integrity of the various containment boundaries within the submarine.
Contamination	Deposited radioactive particles.
CNNRP	Chairman Naval Nuclear Regulatory Panel.

Core	The region of a reactor containing fuel within which the fission reaction is occurring.
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 produces by radioactive decay, particularly of fission products, in the reactor fuel. This continues to be produced after the reactor had been shut down. It cannot be shut off, but gradually dies away after the reactor had been shut down.
Decontamination	Removal of radioactive material from a person or surface.
Dose of Radiation	Radiation doses may be the "absorbed dose" which is the amount of energy deposited in a unit made 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 accident site.
DERA - RPS	DERA - Radiological Protection Service.
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.
Equivalent Dose	
Exclusion Zone	The area consisting of the submarine and the immediate vicinity to which entry is restricted when the plant is operating.
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 Starting Up	Terms often used instead of "going critical".

FOSM	Flag Officer Submarines.
FOSNNI	Flag Officer Scotland, Northern England and Northern Ireland.
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 accident.
Going Critical	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.
GRAY (Gy)	Unit of radiation absorbed dose.
Half-Life	Period of time within which half the nuclei in a sample of radioactive material undergoes decay.
IC	Incident Commander.
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.
Maximum Design Accident (MDA)	An accident resulting in a meltdown of the reactor core and a release of fission products into the reactor compartment which remains essentially intact.
MCA	Military Co-ordinating Authority.
Meltdown	The melting of the fuel elements within the core. Produced when the cooling system is unable to remove the decay heat.
MLR	Monitoring Landrover.
NABUST	Nuclear Accident Back-up Support Team.
NAHQ	Nuclear Accident Headquarters.
NARO	Nuclear Accident 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.
NUSAFE	Nuclear Safety Orders.
Pasquill	Weather categories.
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.
Pre-planned Countermeasure Distance	An area out to 2 km from the submarine.
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.
QFD	Quartz Fibre Dosimeter.
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.
RPV	Reactor Pressure Vessel.
RMAS	Royal Marine Auxiliary Service.
RR&A	Rolls Royce and Associates.
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.
SEERAD	Scottish Executive Environment and Rural Affairs Department
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.
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.
X - berth	A berth for nuclear submarines with comprehensive engineering, Health Physics and Monitoring Support. (eg. an authorised Naval Base).
Z - berth	A berth used by nuclear submarines for limited periods with limited support. Restrictions are applied to operations at these berths.
Zircalloy	Zirconium Alloy used for fuel cladding.