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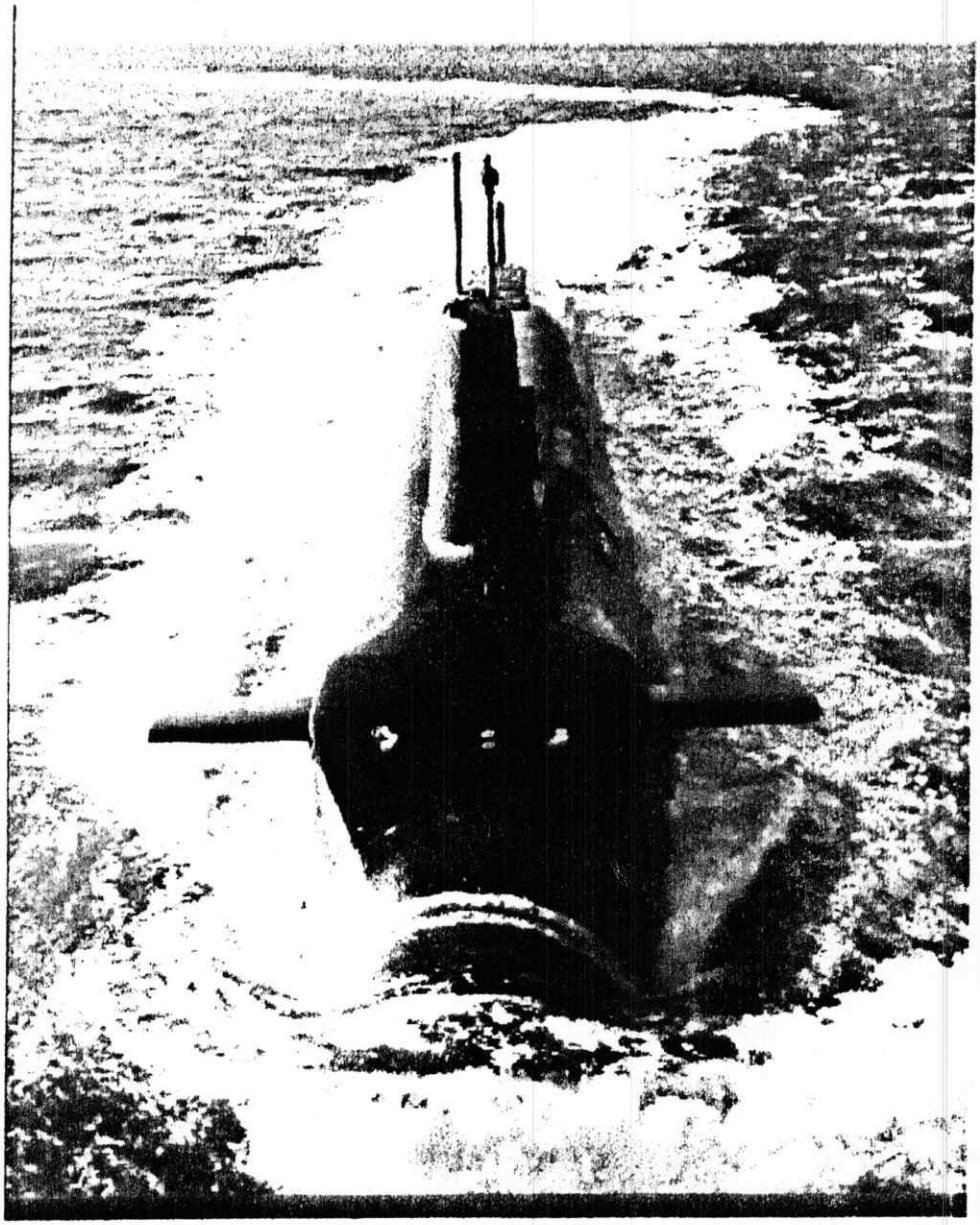
HM NAVAL BASE CLYDE

PUBLIC SAFETY SCHEME



CLYDE AREA PUBLIC SAFETY SCHEME

LETTER OF PROMULGATION

1. The Clyde Area Public Safety Scheme has been produced by HM Naval Base, Clyde, in conjunction with Local Authorities.

2. The primary object of the Scheme is to safeguard the public not only in the unlikely event of a submarine reactor accident, but also in the event of any other accident in the Clyde Area which might lead to a spread of radioactive contamination to an extent that may interfere with the normal activities of the public.

3. The Public Safety Scheme envisages that accidents involving nuclear reactors or nuclear weapons would be dealt with under the same arrangements except that, in the light of the circumstances, some of the detailed actions described in the Scheme might not be required.

4. Authorities proposing amendments are requested to forward them as they arise to:

Office of the Naval Base Commander Clyde
(for Director, Safety and Quality)
HM Naval Base Clyde
Helensburgh
Dunbartonshire
G84 8HL

5. This document is unclassified and is for the use of authorities and persons concerned with public safety. However, in order to ensure its viability its distribution is controlled and it should not be copied locally; additional copies will be made freely available on request to the above address.

6. This publication replaces all previous editions which should be destroyed locally.

H McFadyen OBE
Captain Royal Navy
Director, Safety & Quality

July 1997

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CLYDE AREA PUBLIC SAFETY SCHEME

(Short Title CLYDEPUBSAFE)

1. The Clyde Area Public Safety Scheme is designed to cover nuclear submarine accidents at the following berths:

FASLANE

COULPORT

LOCH GOIL

CAMPBELTOWN

ROTHESAY

LOCH STRIVEN

2. References (MOD)

BR 3019(1) & (4)
CLYDENUSAFE
What to do in a Radiation Emergency (PIRER Booklets)

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Civilian Authorities

Scottish Office Home Department (Emergency Planning) Saughton House, Broomhouse Drive EDINBURGH EH1 3XD	67-68	2
Scottish Environment Protection Agency (SEPA), West Region HQ, Rivers House Murray Road, EAST KILBRIDE G75 0LA	69	1
Scottish Nuclear - Hunterston Power Station, West Kilbride Ayrshire KA23 9QJ	70	1
Emergencies Planning Officer, Strathclyde Police, 173 Pitt Street, GLASGOW G2 4JS	71-85	15
Scottish Office Agriculture, Environment and Fisheries, Cameron House, OBAN PA34 4AE	86	1
Scottish Office Agriculture, Environment and Fisheries, 2 St Ninians Road, STIRLING FK8 2HR	87	1
Scottish Office Agriculture, Environment and Fisheries, Russel House, King St, AYR KA8 0BE	88	1
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Clyde Port Authority, 16 Robertson St, GLASGOW G2 8DS	116	1
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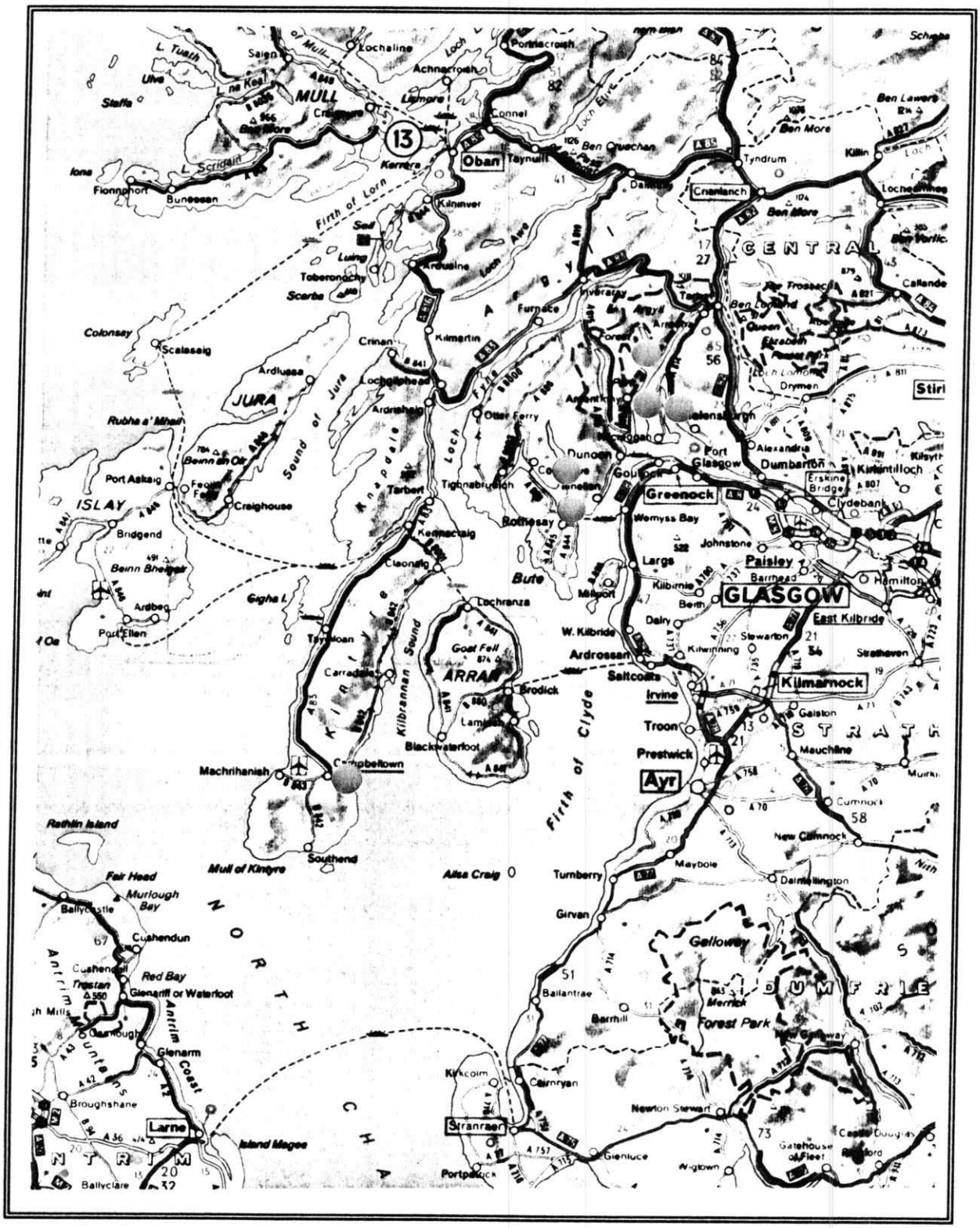

BERTH LOCATIONS COVERED BY THIS DOCUMENT

CLYDE AREA PUBLIC SAFETY SCHEME

BOOK CONTENTS

CLYDE PUBLIC SAFETY SCHEME

CHAPTER 1

PHILOSOPHY OF MOD REACTOR ACCIDENT CONTINGENCY PLANNING

Annex A GLOSSARY

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Fig

PHILOSOPHY OF MOD REACTOR ACCIDENT CONTINGENCY PLANNING

INTRODUCTION

1. The Royal Navy operates a flotilla of nuclear powered submarines which form a vital element of the defence of the UK. The nuclear reactor offers the submarine a level of speed and underwater endurance which cannot be achieved by any alternative method of propulsion. Nuclear power is the only mechanism available to allow HM Submarines to carry out elements of the Navy's task in support of the UK's independent nuclear deterrent, anti-submarine warfare and in the protection of maritime supply routes.

2. The nuclear safety of naval reactors is given the highest priority and their design, operation and maintenance is authorised by the Secretary of State for Defence through approved Naval Regulations. He is advised on these matters by a specialist committee, the Nuclear Powered Warship Safety Committee (NPWSC), whose membership includes independent nuclear and radiation safety experts from the civil nuclear industry. The MOD has all aspects of the Naval Nuclear Propulsion Programme (NNPP) independently assessed by safety and reliability experts from AEA Technology plc whose performance and conclusions are subject to the scrutiny of the Director of Safety of the United Kingdom Atomic Energy Authority (UKAEA).The prime contribution to nuclear safety comes from engineered safeguards, good design, quality in construction, training and competence of staff in operations and maintenance.

3. Such measures ensure that the likelihood of a reactor accident occurring is extremely remote. Indeed during more than 40 years of the Naval Nuclear Propulsion Programme there has never been a reactor accident nor has any radiation incident resulted in a significant hazard to service personnel or a member of the public. Nevertheless, in accordance with UK statutory requirements and the recommendations of the International Commission on Radiological Protection (ICRP), it is MOD policy to have in place detailed reactor accident contingency plans. These plans form an additional level of public protection for use in the extremely unlikely event of an accident.

4. Ultimate responsibility for ensuring that the appropriate steps are taken to mitigate the effects of a disaster rests with the Chief Constable of the affected area. Co-ordination of central government actions is the responsibility of a lead government department who would keep the Prime Minister and the Cabinet informed in case decisions were needed at that level. The department assuming the lead role is laid down in the Home Office document "Dealing with Disaster". For accidents involving civil reactor plants in England and Wales, the Department of Trade and Industry is the lead department whilst for civil reactor plants in Scotland, the Scottish Office directs the response. For all defence related nuclear material accidents, the Secretary of State for Defence is charged with ensuring the MOD fulfils this lead department role. The guidelines in Dealing With Disaster cover all levels of the national response, from the requirement for a central government contingency plan to the local management structures which are to be implemented. The document also requires that the response to all national emergencies should involve full consultation and co-operation between relevant departments. In the unlikely event of a submarine reactor accident occurring, the

MOD HQ Nuclear Accident Response Organisation would fulfil this requirement for cross government co-operation by convening the Nuclear Accident Information Advisory Group (NAIAG).

5. At the local level, Dealing with Disaster nominates the area Police Chief Constable as being responsible for the co-ordination of all assets responding to the accident. The police generally fulfil this responsibility by collocating the heads of the various services at a Strategic Headquarters from which the overall implementation of the contingency plan is managed. To ensure that the MOD response is consistent with the guidelines in Dealing with Disaster, it is a requirement that a local emergency plan is formulated in association with the emergency services and other civil authorities. Such a plan must exist for all berths which are cleared for occupancy by a Nuclear Powered Warship. This task is eased somewhat by the fact that the reactor plants in all submarines which use the berths are of a similar design , and this in turn enables a skeleton generic plan for the local accident organisation and response to be formulated. Site specific contingency plans can then be drawn up to take account of local conditions and facilities. The generic nature of the plan structure also ensures that a common basis, format and terminology for all Naval reactor accident response plans is adopted

6. The common reactor plant and generic plan also allow the production of a single document which provides all personnel who may be affected by a local plan with basic background information on naval reactors, reactor accident definitions, the hazards which arise, and the basis for, and details of, the contingency plan. The information detailed in Part 1 of this book is to be included in total as the first section of all local reactor accident orders.

REACTOR PLANT AND OPERATION

The Pressurised Water Reactor (Fig 1.1)

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

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

9. As well as heat, the fission process also produces radioactive fission products. Unlike some civilian power reactor designs where the minor release of fission products into the primary circuit can be tolerated, submarine fuel modules are designed differently to avoid any such release during normal operation and there has never been an instance when fission products have been released from the fuel. Although the fission products remain contained in the fuel, the gamma radiation which they emit is highly penetrative and thus there is a need for shielding to be fitted around the core and to be built into the submarine's reactor compartment.

The shielding installed in RN nuclear powered submarines reduces the radiation levels within the manned compartments of the submarine to very low levels. Indeed the average levels of radiation dose received by members of the crew from reactor operation are less than the average natural background levels received by the UK population.

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

Reactor Containment (Fig 1.2)

11. Following an accident the main potential hazard associated with nuclear reactors would come from the release of fission products from the fuel. As already stated, in order to prevent this, submarine reactor fuel is encased in strong and very high integrity cladding. In addition, beyond this protection there are a number of further barriers designed to contain the fission products should an accident situation develop. In the first instance, should the cladding fail the primary coolant system, which is a closed circuit, would contain the fission products and prevent further spread.

12. Beyond the primary coolant system, the submarine's reactor compartment is designed and constructed to meet the severe rise in pressure that could result from the very unlikely event of a complete failure of the primary system. This barrier to the release of fission products is termed the Primary Containment. Pipes, ducts and other penetrations between the primary containment and the remainder of the submarine are designed to be shut off automatically, but even if these openings were to allow a slow release of a proportion of fission products, they would still be contained by the immensely strong hull of the submarine which is, of course, designed to withstand the enormous pressures associated with operations at depth. The submarine's pressure hull is referred to as Secondary Containment.

REACTOR ACCIDENTS

Definitions

13. It is impossible for an accident in a pressurised water reactor to result in a nuclear explosion. The only reactor accident which can result in a hazard to personnel outside the nuclear warship is one which leads to a release of the fission products normally retained within the reactor fuel. A Nuclear Reactor Accident is therefore defined as:

> "an unexpected event which is likely to lead to, or has resulted in, a release of fission products external to the fuel".

14. This general definition is sub-divided into 3 categories of accident, which would be used to provide, in shorthand form, further information on the accident severity in the unlikely event that one were to occur. In increasing order of severity they are:

Category 1 - an event which is likely to lead to, or has resulted in, the release of fission products from the fuel.

Category 2 - an event which has led to a radiation hazard as the result of the release of fission products from the fuel.

Category 3 - an event which has led to the release of fission products from the fuel to the environment outside the pressure hull.

15. These categories are related to the functioning of reactor containment. The Category 1 definition allows for the precautionary implementation of contingency plans in a period before any hazard exists; it also refers to a situation where small amounts of fission products have been released from the fuel but remain contained within the primary circuit. In a Category 2 accident, fission products have been released from the fuel to cause a radiation hazard but containment remains effective in preventing the release of the fission products to the environment outside the pressure hull. It is normally an indicator of severe core damage. The definition of a Category 3 accident states clearly that a release of fission products outside the submarine has occurred. While it is convenient to discuss accident types in terms of accident Category, in the remote possibility that a severe accident were to develop it should be recognised that the Category could change with time as the accident progressed, or as more information became available. A Category 1 report might refer to an initial event, to be followed by a Category 2 report as a hazard inside the submarine was detected, and Category 3 as monitoring outside the vessel detected that a release had occurred. Such a progression is by no means automatic, however. Indeed, generic assessments demonstrate that for a given Category of accident the most likely eventual outcome is that the accident will not develop to the next Category.

16. It is MOD policy that the local plan, including the implementation of automatic countermeasures should be instigated in full following any declaration of a reactor accident, irrespective of Category.

Accident Probabilities

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

18. The development of MOD contingency plans takes account of the full range of potential accident scenarios, including those having a low probability of occurrence. It is not therefore designed against a single specified Reference Accident. This is consistent with ICRP recommendations. The overall probability of an accident severe enough to require the countermeasure of evacuation beyond 550m from the accident submarine is assessed to be

less than once in 50,000 years of reactor operation. More severe accidents are assessed to have a proportionately lower probability of occurrence.

HAZARDS OF A REACTOR ACCIDENT (Fig 1.3)

Biological Effects of Radiation

19. It is the ionising radiation given off by the fission products which would pose the hazard following any reactor accident. As the radiation passes through the human body, ionisation events occur which may damage or kill cells. The body is of course being subjected continuously to natural background radiation and has well developed repair processes to deal with radiation damage. Different human cell types have very different radiation sensitivities but if the radiation dose is great enough and large numbers of cells are killed, signs and symptoms of acute radiation exposure would appear. These acute radiation effects include skin burns and most severely death, but all have a defined threshold of dose below which the effect will not take place.

20. At radiation doses below the thresholds acute effects cannot occur, although cells may have been damaged with the result that exposed individuals have a statistically increased risk of the development of cancer in years to come. Reproductive cells may also have been damaged so that children born to exposed individuals may have a very small increased risk of hereditary defects. For radiation protection purposes, the increased risk of these effects is assumed to be directly proportional to the radiation dose, without any threshold.

Radiation and Contamination

21. In order to understand the hazards of a reactor accident, it is important to appreciate the meaning of and differences between the terms radiation and contamination. Even in a situation where the fission products remain contained, the penetrating radiation which they give off may still irradiate people in the vicinity. This is termed a radiation hazard. Protection against such a hazard would be afforded by reducing the time people spent close to the fission products, placing shielding between the individuals and the radiation source or increasing the distance between them and the source. If, however, personnel became contaminated with fission products, either on the surface of their body or internally by breathing, eating or drinking, then the subjects carrying the source of the radiation around with them would continue to be irradiated until that source was removed. This is termed a contamination hazard. Some protection against such a hazard can be afforded by the use of protective clothing, and skin contamination can normally be removed by simple washing.

The Hazards

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

Gamma radiation from fission products retained within the submarine containment would be transmitted in all directions through the vessel's hull. The intensity of this pure radiation hazard would be diminished by both shielding and distance from the submarine, but excessive levels of radiation could be received by people within, or in close proximity to, the vessel. This hazard is referred to as Hull Gamma Shine.

23. Less likely is the release of some of the fission products from the submarine to the surrounding atmosphere or water. The release of fission products, the actual radioactive material, would also constitute a contamination hazard.

Release of Fission Products to Atmosphere (Fig 1.3)

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

Direct radiation from the cloud as it passes by.

a. By inhalation of radioactive fission products from the cloud. The parts of the body receiving the greatest radiation doses would depend on the chemical and physical form of the individual fission products. It is possible that a significant dose could result from the inhalation of radioactive iodine which is readily absorbed and concentrated in the thyroid gland. Another group of fission products, being largely insoluble, would remain in the lung. A third main group would be readily absorbed but would not be concentrated in any particular organ.

b. Direct radiation from fission products which have been deposited on the ground. This route, like a. above, would result in fairly uniform whole body radiation exposure.

c. Direct radiation from beta and gamma emitting fission products which have been deposited on the skin.

d. Inhalation of fission products which have been resuspended after deposition on the ground. This route has been shown to be insignificant compared with doses that would result from b and c.

e. Consuming food or drink which has been contaminated by fission products. As a radioactive cloud moves downwind, some of the radioactivity could be deposited onto the surface of food, either growing in fields or exposed on market stalls etc. This superficially contaminated food would cause internal contamination to those who consumed it in the immediate post accident period. Fission products deposited on the ground may also be taken up by growing plants and animals which may be eaten by man, causing subsequent internal contamination and radiation dose. The contaminated plants and animals may not be eaten directly by man, but may enter a food chain and pass through a number of stages before entering the human diet. For example, radioactive iodine deposited on pasture would be concentrated in the milk of grazing dairy animals which could present a hazard if the milk was consumed. Peak levels of radioactive iodine in milk would be reached 2 days after the release, with levels decaying over the next several weeks. After the decay of the iodine, the dominant hazard via the ingestion route would be the take-up of longer lived fission products into the food chain.

In the very unlikely event of a release to atmosphere the principal short term hazards would be direct irradiation from the cloud, inhalation of fission products and irradiation

from ground deposition. Food chain contamination, although representing less of a hazard initially, would come to be of increasing significance in the longer term.

Release of Fission Products to Water

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

Direct radiation from the water either to those immersed within it or to those in its immediate vicinity.

a. Ingestion of the water or inhalation of spray.

b. Irradiation from the deposition of fission products on banks and areas uncovered by the tide.

c. Fission product contamination of marine food chains.

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

PROTECTION OF THE PUBLIC FROM THE HAZARDS OF A REACTOR ACCIDENT

Accident Management

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

Emergency Countermeasures

28. The entire population has always been constantly exposed to naturally occurring radioactivity, although as a general rule the levels of this radiation are so low as to be considered insignificant. In the event of a reactor accident, increases in the radiation level above natural background would result and probably continue unless some form of intervention were to take place. For a serious accident, intervention to reduce doses could be required in the form of emergency countermeasures which are implemented population-wide in the surrounding area. Since the implementation of widespread countermeasures, even in accordance with a pre-planned scheme, is not a risk-free activity, it follows that there must be some criteria on which to base any decision to take such measures following a reactor accident.

29. The criteria for the implementation of emergency countermeasures following a reactor accident are based on the principles that the countermeasures should achieve more good than harm, and that introduction and withdrawal of the measures should be aimed to provide optimum protection. It is the risk to the individual which is considered of greatest importance in determining the need for emergency countermeasures. The basic requirements for implementation criteria are as follows:

a. Countermeasures should be introduced to ensure that no individual suffers acute effects of radiation.

b. The increase in probability of the individual suffering cancer or hereditary effects from radiation exposure in the absence of the countermeasure should be balanced against the detriment from the countermeasure itself to determine the optimum protection of the individual.

30. Within the UK, guidance on emergency countermeasures to protect the public following nuclear accidents is provided by the National Radiological Protection Board (NRPB). Basic methods of reducing radiation exposure such as time, distance and shielding are still relevant in the mass countermeasure situation but they are incorporated into three countermeasures which are applicable to a population:

Sheltering The public remaining indoors with doors and windows shut.

Stable Iodine Administration If tablets containing stable iodine (non-radioactive) are taken prior to or within a few hours of internal contamination with radioactive iodine, the resultant radiation dose to the thyroid gland would be reduced substantially.

Evacuation In the context of nuclear accident contingency planning, the term evacuation refers to the movement of people out of an area as an emergency measure to provide short term protection for durations of up to a few days. If carried out prior to the existence of any hazard, evacuation would prevent almost all the radiation exposure that would have resulted. The adverse effects and difficulties of population evacuation, however, are significantly greater than for shelter.

31. The NRPB have recommended dose criteria for the implementation of these emergency countermeasures in an accident situation. These intervention levels are known as Emergency Reference Levels (ERLs), and are specified in terms of the dose to an individual which would

NAVAL REACTOR ACCIDENT CONTINGENCY PLANNING

Aims of the Naval Plan

35. The Naval reactor accident plan includes automatic and pre-planned response actions to mitigate the consequences of an accident and to protect the public to standards which accord with national guidance. In addition the plan involves the establishment of the required command, control and liaison organisation, at the local and national level, capable of the successful implementation of these early measures. This organisation allows consideration, by all relevant authorities, of the later follow-on and recovery aspects of the accident for which detailed pre-planning is not considered appropriate.

Planning Zones (Fig 1.4)

36. The basic Naval reactor accident plan used at all berths cleared for use by nuclear powered warships specifies 4 zones where differing actions would take place in the event of an accident.

The Exclusion Zone The Exclusion Zone is an area including the submarine itself in which people would be at greatest risk from the hazards of an accident. The size of this zone varies with local plans but the most basic consideration in its identification is that people within it, even if they took immediate automatic countermeasures, could still receive radiation doses above the upper ERL for evacuation. Within this zone, all people are accounted for and are provided with equipment by which their radiation dose can be assessed. The local plan must provide for an Exclusion Zone reception centre where personnel evacuating from the zone would have access to medical, radiation protection, monitoring and decontamination facilities. Stable iodine, in the form of Potassium Iodate tablets is also to be provided at the reception centre.

The Automatic Countermeasures Zone Beyond the Exclusion Zone is the Automatic Countermeasure Zone in which automatic actions would commence immediately on the declaration of an accident, irrespective of category. Within this zone all people not essential to the management of the accident would be evacuated and provided with Potassium Iodate tablets to be taken immediately. In a number of local plans, automatic countermeasures include initial shelter within pre-designated shelter stations followed by a controlled evacuation. All people living or working within this zone should be given instructions on what action they should take in the event of an accident. The extent of the automatic countermeasures zone is set at a distance of 550 metres from the submarine in all directions. Automatic measures provide the great advantage of early and complete public protection if they are in place prior to the existence of the hazard. The distance to which they are planned however, must represent a balance between this possible benefit and the detrimental effects resulting from their implementation for the more probable accidents producing either no hazard or hazards which would not require measures to be taken to such a distance. The approximate frequency of accidents for which the upper ERL for evacuation would be exceeded beyond the Automatic Countermeasure Zone is assessed as once in 50,000 years of continuous reactor operation.

be averted by taking the relevant countermeasure. ERLs are specific to each countermeasure because the detriment associated with each countermeasure is different, and are promulgated as a range between two specified values. If doses that can be avoided by the measure are below the lower level for that measure, then the NRPB advise that the countermeasures should not be introduced because it would be unlikely to be justifiable. If doses that could be avoided are estimated to exceed the upper level, then the NRPB would expect every effort to be made to introduce the measure. The intervention level selected for a specific situation should therefore lie between the upper and lower ERL values.

32. NRPB also recommend consideration of precautionary countermeasures to be implemented automatically particularly where the potential risks are significant, to provide protection at an early stage without requiring the full circumstances of the accident and of any release to be determined.

33. In considering emergency countermeasures following a release of radioactivity to the environment, it is important to recognise that radiation exposure or contamination does not necessarily end at the distance to which countermeasures have been implemented. It is simply that extension of emergency countermeasures beyond the implementation distance would not be justified and, indeed, could pose more of a threat to the public than the radiation doses they are intended to avert.

Other Countermeasures

34. In addition to emergency countermeasures for which ERLs are promulgated, other measures may be applicable to protect the public following a reactor accident:

Food Controls In the UK the public would be protected from the hazards of fission products in food stuffs by the control and disposal of the contaminated material. Intervention levels for food promulgated by the European Commission are mandatory in the UK and are set at very low levels, based on doses that individuals would receive if they consumed the food for a year following the accident. It is probable, therefore, that in the event of an accident involving a release of fission products, food and farm restrictions could extend to distances significantly greater than those to which emergency countermeasures were required.

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

Pre-planned Countermeasures Zone This zone extends from the Automatic Countermeasures zone out to a radius of 2km. The probability of countermeasures being required within this zone is very low in absolute terms. In the very unlikely event that an accident involving serious core damage (i.e. a Category 2 accident) actually occurs, however, the probability of requiring shelter and Potassium Iodate tablet distribution to be implemented over at least part of this zone becomes more significant. Recognising the uncertainties inherent in making precise assessments in the immediate aftermath of an accident, in order to provide the greatest practicable level of public protection it is MOD policy to notify civil authorities specifically in the event of a Category 2 accident that shelter and Potassium Iodate tablet distribution should be implemented in the downwind sector of the Pre-Planned Countermeasures Zone i.e. to a distance of 2km downwind. Separately, MOD will assist civil authorities as required in developing plans for implementing these countermeasures. There will also be a requirement for outline contingency planning for evacuation within this zone. The approximate frequency of accidents for which the upper ERL for shelter or Potassium Iodate tablet distribution would be exceeded beyond the Pre-Planned Countermeasures Zone is assessed as once in 50,000 years of continuous reactor operation, and for evacuation once in 200,000 years.

Extendibility Zone Assessments of the consequences of reactor accidents demonstrate that emergency countermeasures would only be required beyond the Pre-Planned Countermeasures Zone in the very improbable event of a large release of fission products to the atmosphere. The probability of this event is so low that detailed emergency plans are not required. However, in view of the need for some pre-planning to be carried out in order to achieve effective implementation should the need arise, MOD advises local planners to consider the production of outline contingency plans for this zone to provide a basis for the further extension of countermeasures. The zone extends in all directions around the Pre-Planned Countermeasures Zone but following an accident it is anticipated that the requirement for countermeasures would be confined to the downwind areas only. Advice on the need for these measures would be based on a technical assessment of the way in which the accident was developing and on an assessment of doses likely to be received by the public. The approximate frequency of accidents for which an upper ERL for any emergency countermeasure would be exceeded beyond the Extendibility Zone is assessed as once in 200,000 years of continuous reactor operation.

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

Site Specific Intervention Levels

38. Any extension of countermeasures beyond those preplanned within the 2 km Preplanned Countermeasures Zone should be based on a comparison of projected individual doses with Site Specific Intervention Levels (SSILs). Like ERLs, SSILs refer to the dose which can be averted by taking the countermeasure. SSILs should be selected from within the ERL range but should be drawn up locally in order to reflect local geography and other factors. SSILs should exist for evacuation within the Preplanned Countermeasures Zone, and for other countermeasures within the Extendibility Zone. MOD will assist civil authorities as required in defining SSILs. Details are to be included in local plans, together with the corresponding action levels which relate the SSILs to parameters which can actually be measured, expressed in terms of either plant conditions or radiation monitoring measurements.

Berthing Policy

39. The requirements to maintain nuclear safety and to have a site-specific local accident plan, determine that all berths used by nuclear powered warships require to be assessed and their use endorsed by the NPWSC. The berth assessment process examines the safety aspects of navigational hazards, the provision of tugs and other facilities and the existence of any other hazards in the local area. Because there must be effective evacuation of persons from the Automatic Countermeasures Zone, berths are chosen so that few members of the general public live within that area. Special consideration is given to the proximity of public utilities such as schools and hospitals.

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

X Berths X Berths are cleared for the building, commissioning, refitting, refuelling or defuelling of nuclear powered submarines or for the repair and maintenance of the nuclear plant together with tests and trials.

Z Berths Z Berths are cleared for operational or recreational visits by nuclear powered warships. These berths are not cleared for the maintenance or repair of the nuclear plant.

41. During all periods when a nuclear powered submarine is at a cleared berth in the UK or in a Dependant Territory there is a requirement for a number of personnel to be in the area. These specialists will either be part of local Naval Base organisations or will be collocated in the locality for the duration of the visit. They are:

a. Elements of the Naval Emergency Monitoring Organisation (NEMO), able to carry out radiation monitoring in the event of an accident. The activities of these monitors are co-ordinated from a pre-designated Emergency Monitoring Headquarters (EMHQ).

b. A qualified professional Health Physicist who is able to advise on the need for emergency countermeasures.

Elements of the Local Nuclear Accident Organisation

42. A Nuclear Accident Response Organisation (NARO) is established in all ports containing nuclear cleared berths, with the primary function of safeguarding the Service and civilian workforce and the local population in the event of a reactor accident in a nuclear powered warship. While the detailed composition of the NARO has some variation between sites, the key elements of the organisation remain the same.

43. The principal Naval elements of the NARO are the Military Co-ordinating Authority (MCA) and the Incident Commander (IC), both supported by teams providing advice on health physics, monitoring, public information and technical matters. The MCA is in overall administrative control of the MOD accident response locally, and reports directly to the MOD Headquarters organisation from where central government co-ordination is managed.

44. The MCA delegates responsibility to the IC for the control of the immediate situation on site, including the implementation of the automatic countermeasures and the continuing process of accident management. Within a Naval Base, this would be a largely Naval function, but in a civil port the IC would form the Naval element in an organisation including the Port Authority and Emergency Services, termed the Port Safety Panel, which would co-ordinate this on-site role.

45. The MCA co-ordinates the local MOD off site accident response . He is responsible for liaising with local and national civil authorities and providing them with all relevant information, particularly advice on public safety, and will therefore normally seek to collocate with them in a single Headquarters. He is also responsible for MOD input to the local media response and for ensuring that this is effectively co-ordinated with that of other agencies. A key element of the MCA role is advice to the police and to the local health authority on the need for emergency countermeasures. In order to provide independent validation of MCA advice, a senior member of NRPB staff will go immediately to the local headquarters. Another NRPB staff member is included within the central government organisation.

46. In addition to the Naval response to a reactor accident, the local plan describes the responses of local civil authorities, a number of which have statutory roles to carry out. These groups include the police, fire and ambulance services, the local health authority, water authority and the local authority itself. In addition to these bodies there are also the local or regional representatives of central government departments such as the Ministry of Agriculture Fisheries and Food, Scottish Office, Welsh Office and the Environment Agency. The local plans drawn up in consultation with these bodies reflect their requirements and responsibilities. In order to co-ordinate their response, all of these authorities together with the MCA should normally be collocated together in a single designated Headquarters.

Liaison with Civil Authorities and Public Information

47. Plans for the protection of the general public must be prepared allowing for consultation with the local civil authorities. This is facilitated by forming Local Liaison Committees (LLCs). These are formed at all X and Z berths in UK and Gibraltar, except for Z berths where contact between Naval authorities, civil emergency services and local authorities confirm the civil view that such a committee is not required. In certain areas, such as the Highlands and Islands of Scotland, a single LLC may apply to several berths.

48. LLC membership comprises naval authorities, local authority representatives, emergency services representatives and local representatives of central government departments. The purposes of the LLC are:

a. To inform the public on the scale of the hazards involved in operating nuclear submarines.

b. To produce and review local plans for the protection of the population in the unlikely event of a serious accident.

49. LLCs should meet at least annually but members may request the Chairman to call meetings at a greater frequency.

50. The policy for reactor accident response is established by the Ministry of Defence. Naval Base Commanders and other appropriate Senior Officers are responsible for drawing up response plans to reflect this policy whilst taking into account local factors. Public safety plans are to be unclassified documents and, once approved, they should be made available to the public, for example, by their placement by local authorities in public libraries.

Exercise Policy

51. It is Ministry of Defence policy that reactor accident response plans are exercised regularly in conjunction with civil authorities and emergency services.

Claims for Injury Damage or Loss

52. In the very unlikely event that a reactor accident did occur, injury, damage to property and other financial difficulties for members of the public could result. The Ministry of Defence will deal with claims under the principles for nuclear injury and damage (including the sole and absolute liability of the operator) established by the Nuclear Installations Act 1965. The Ministry of Defence is prepared to consider any reasonable claim for compensation for any loss or damage which can be shown to have been directly attributable to the incident concerned. Each claim will be considered on its merits, taking into account the full circumstances surrounding the incident. Any claim received will be dealt with as expeditiously as possible but no fixed timescale can be given in view of the wide and varied nature of any possible claim.

CLYDE AREA PUBLIC SAFETY SCHEME

CHAPTER 2

LOCAL ORGANISATION

ILLUSTRATIONS

Fig

APPENDICES - ROLES AND RESPONSIBILITIES OF CIVIL AUTHORITIES

CLYDE AREA PUBLIC SAFETY SCHEME

PART 2

LOCAL ORGANISATION

INTRODUCTION

1. The local Nuclear Accident Response Organisation (NARO) is established in accordance with MoD regulations for the management of events onboard an accident vessel and MoD property. The civil response operates under the nationally established principal of 'Police Primacy' with all necessary assistance provided by the MoD.

2. Under this policy, control of the Off Site response is the responsibility of the Chief Constable, Strathclyde Police during the initial emergency phase. Once the safety of the public has been ensured, control passes to the Chief Executive, Argyll & Bute Council, so that remediation of the effects of the accident may be progressed.

3. Civil Authorities have prepared an outline of their roles and responsibilities; these are given as Appendices to this Chapter and should be read in conjunction with the emergency actions given in Chapter 4.

4. All sections of the NARO are regularly exercised and assessed by independent MoD and civil authorities.

5. It should be noted that the entire Clyde NARO will be established for an accident at any location in the Clyde area. Detailed orders for this are contained within the Clyde Nuclear Safety Orders (CLYDENUSAFE).

DESCRIPTION

Berths

6. The Naval Base Clyde has seven Category X berths, a Floating Dock, Ship Lift and one Holding Berth.

7. In the Clyde Area there are operational Z berths at the following locations:

a. Coulport
b. Loch Goil
c. Campbeltown
d. Rothesay
e. Loch Striven

8. Z Berths also exist in Brodick (Arran) and the Holy Loch. However, as there are no plans to place vessels at these locations the berths have been declared dormant and may not be used without a six month consultation process with the appropriate civil authorities.

Response

9. Initial actions onboard the accident vessel will at all locations be the responsibility of its Commanding Officer. If his position onboard becomes untenable, interim command will be assumed by the Maritime Operations Centre (MOC) at Faslane pending establishment of the full NARO as described in this Part. This will involve the Nuclear Accident Headquarters for the on site response to accidents at Faslane or Loch Goil, or Depot Emergency Headquarters for an accident at Coulport. Forward control at other Z Berths will be directed by the local Police assisted by RN staff. Strategic control of the Off Site response at all locations will be directed from the Clyde Off Site Centre at RHU, with Police Forward Control Points established as per Chapter 5.

LOCAL LIAISON COMMITTEE

Composition

10. The Local Liaison Committee is established under the chairmanship of the Naval Base Commander and is responsible for the preparation of detailed plans for civil action in the unlikely event of a nuclear accident. Meeting annually, it consists of representatives from the Naval Base and other MoD Departments, together with senior representation from civil authorities and emergency services. A list of members is given in Annex 1A.

LOCAL NAVAL NUCLEAR ACCIDENT RESPONSE ORGANISATION

11. The elements of the local NARO are summarised in Table 2.1 below:

Table 2.1 - Elements of the Clyde NARO

Section	Responsibility	Location
Operations Room	1. Alerting of Clyde NARO 2. Initial Command & Control	Maritime Operations Centre Faslane
Nuclear Accident Headquarters (NAHQ)	Command & Control of all activities within the Clyde Naval Base (see Fig 2.2)	Naval Base
Technical Advisory Support Group	Consideration of technical situation onboard the accident vessel	NAHQ
Exclusion Zone Reception Centre (EZRC)	Recording and contamination monitoring of personnel evacuated from the accident site.	Naval Base (Sportsdrome) General Services Building
Clyde Off-Site Centre (COSC)	Command & Control of all off-site activities (see Fig 2.3)	Rhu
Military Coordinating Authority (MCA)	Naval input into COSC, including situation reports, technical information and countermeasures advice.	COSC
Press & Media Briefing Centre	Provision of information to public and media (see Fig 2.4)	COSC
Families Incident Centre	Provision of information and care to concerned families.	Drumfork Club Churchill MQ Estate
Casualty Action Cell	Coordination of casualty information	In accordance with HMS NEPTUNE Standing Orders
Emergency Monitoring Team	Provision of all monitoring data (see Fig 2.5)	COSC

Naval Base Response

12. Detailed arrangements for the management of the response within the Naval Base are contained in the Clyde Nuclear Safety Orders (CLYDENUSAFE).

13. Command & Control of all activities within the Base, including control of local shipping, is vested in the Incident Commander in the Nuclear Accident Headquarters (NAHQ). All responding units entering the Naval Base automatically come under the authority of the Incident Commander, who is responsible for the Health & Safety of all persons on the Base.

RNAD Coulport

14. For an accident at RNAD Coulport all actions and responsibilities remain the same other than that the Depot response will be directed by an Incident Commander at the Depot Emergency Headquarters (DEHQ) at Coulport. All orders detailed in this Chapter for NAHQ Faslane translate to DEHQ Coulport.

Commanding Officer of the Accident Vessel

15. The Commanding Officer of a nuclear vessel is responsible for that vessel until a category 1 (or greater) accident is declared when command passes to the nominated Incident Commander. At a Z Berth this may still be the original Commanding Officer.

Off Site Response

16. The Naval Base will be represented by a senior officer acting as the Military Coordinating Authority (see Part 1). He will be assisted by the following personnel:

Assistant MCA
Staff Officer & Assistant
Reactor Adviser
Weapons Adviser
Health Physics Adviser
Medical Adviser
Administration Staff
MoD Police

17. As already stated, coordination of all off site actions in the Emergency Phase is the responsibility of the Chief Constable, Strathclyde Police. Whilst all interested authorities may attend the COSC, it is the Chief Constables's decision as to which will be invited to participate in the strategic decision making process. However, the following civil authorities will automatically be alerted and may attend at the levels shown:

a. Strathclyde Police - Emergency Phase

Strategic Control	-	Chief Constable. Deputy/Asst Chief Constable in his absence.
Staff Officer	-	Inspector
Press Officer	-	Supt (Media & Information Services)
Tactical Control	-	L Division Cdr (Ch Supt) 8 Officers
Communications Unit	-	3 Officers
Administration	-	3 Officers

b. Strathclyde Police - Recovery Phase

As for Emergency Phase with exception of Chief Constable. To be represented at a lower rank.

c. Argyll & Bute Council

The Chief Executive will assume control from the Chief Constable for the Recovery Phase. Before that time he will be represented in the OSC at Director level. Senior Managers from the following departments may attend the COSC directly:

Environmental Services
Roads & Transportation
Social Work
Education
Housing
Public Relations
Emergency Planning

d. Other Local Authorities

Senior representation from:

West Dunbartonshire Council
Inverclyde Council
North Ayrshire Council
South Ayrshire Council
Renfrew Council

e. Strathclyde Fire Brigade

Three senior officers will attend the OSC in the Emergency Phase. These will be of the rank:

Senior Divisional Officer
Divisional Officer
Asst Divisional Officer

f. Argyll & Clyde Health Board

Director of Public Health
Emergencies Planning Officer

g. Scottish Office

Emergencies Planning Officer
Agriculture, Fisheries & Food
Other sections as required

h. HM Coastguard

Liaison Officer, reporting back to the Coastguard Maritime Rescue & Coordination Centre, Greenock.

i. National Agencies

National Radiological Protection Board
Defence Radiological Protection Service
Ministry of Defence
Nuclear Installations Inspectorate

Augmentation of the COSC

18. The Ministry of Defence and the Scottish Office will send representatives from the Scottish Office Emergency Planning Division and Information Directorate whose primary purpose will be maintaining liaison with the Scottish Office Emergency Room and the Ministry of Defence.

19. The MoD will establish a central NARO within the MoD Main Building to coordinate national support to the IC and MCA as required. Included with this will be the Nuclear Accident Information & Advisory Group (NAIAG) with representation from all central government departments with a possible role in the accident response. This ensures that lines of communication are kept as simple as possible.

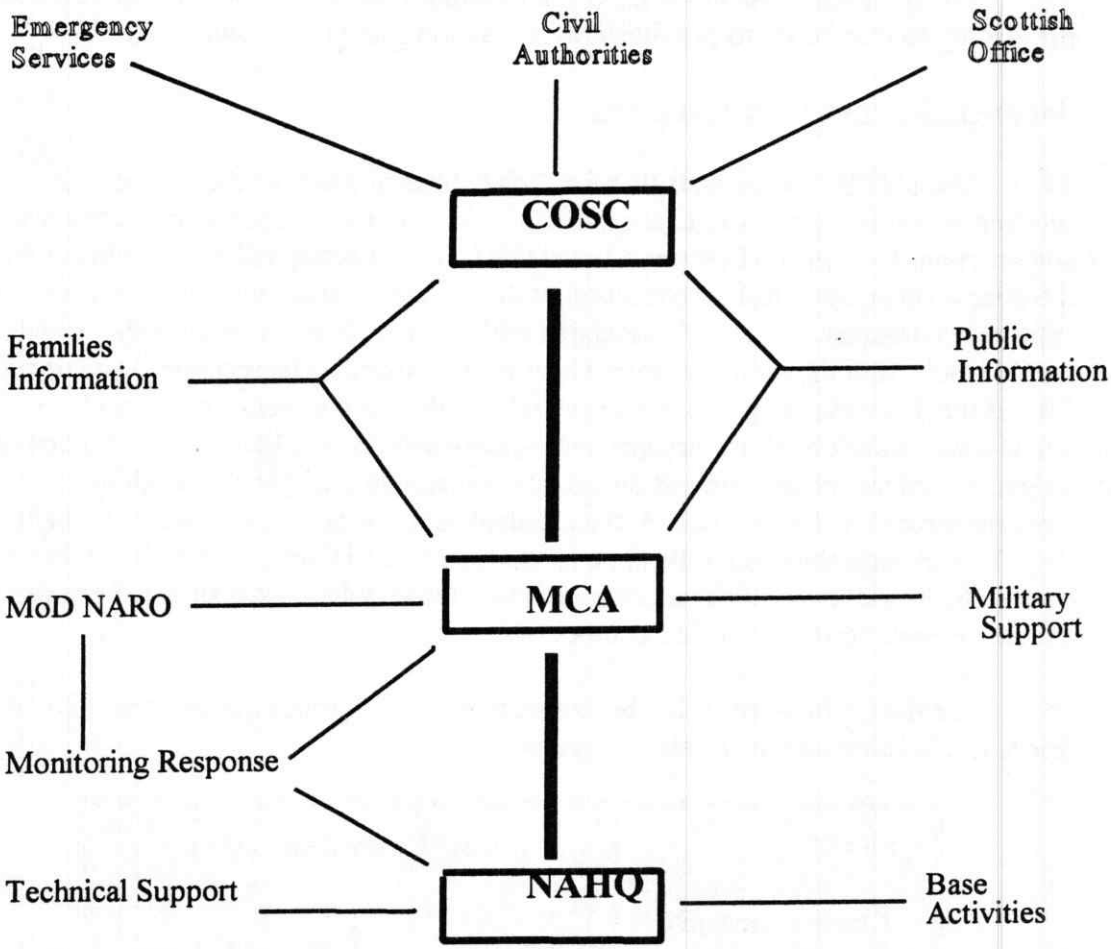


Figure 2.1 - Elements of the Clyde NARO

Health Physics & Monitoring

20. Properly evaluated monitoring information provides the essential basis for long term countermeasures. Direction of the monitoring effort is carried out from the Radiation Health Cell in the COSC, staffed by Health Physicists from the MoD and the independent NRPB. It will also include Specialists in Radiation Medicine provided from local Health Boards and the defence Radiological Protection Board.

21. The Monitoring itself is conducted by the Naval Emergency Monitoring Team, collocated with the COSC. It is equipped with dedicated Monitoring Landrovers which may be despatched as required, and also with a fixed Perimeter Monitoring System which automatically shows radiation levels at a variety of locations around the edge of the Gareloch. Monitoring results are made available to all interested agencies.

22. The Naval Base also has a contract with the Scottish Universities Reactor Research Council to provide airborne monitoring plots of the affected area.

23. For submarine visits to Z Berths, a Health Physicist and Monitoring Team will pre-deploy to that berth, to provide a rapid reaction should an accident occur.

Radiation Doses - Intervention Levels

24. The NRPB recommends that for each countermeasure an Action Level is selected which is appropriate to the particular site. For each countermeasure a lower and an upper Emergency Reference Level (ERL) have been specified. The lower ERL is the dose level below which introduction of the countermeasure would not normally be appropriate because the hazard associated withe its introduction exceeds that which would result from the radiation dose which would otherwise be received. The upper ERL is the dose level at which it is expected that the countermeasures would be introduced regardless of the circumstances. Between the two ERLs there is scope for judgement on the introduction of the countermeasure in the light of prevailing circumstances (the development of the accident, site characteristics, weather conditions, etc). In each case the dose to be compared to the ERLs is the dose which would be *averted* by introduction of the countermeasure. Doses which have already been received are not relevant to these considerations.

25. For the Clyde Areas it has been agreed with civil authorities that the following Site Specific Intervention Levels will apply:

Countermeasure	**Dose Equivalent (mSv)**	
	Whole Body	**Thyroid, Lung Skin**
Evacuation	30	300
Shelter	3	30
Stable Iodine	-	30 (thyroid only)

Table 2.1 Site Specific Intervention Levels

Civil Response Units - Entry into the Naval Base

26. The Incident Commander may request direct support from civil emergency services such as Ambulance or Fire. If this is urgently required prior to the proper establishment of NAHQ it will be facilitated by conventional lines of communication. However, if NAHQ is established then the deployment of units will be coordinated between the COSC and appropriate cell in NAHQ.

27. A request for support will be passed from NAHQ to the MCA, and subsequently relayed to the appropriate authority. Health Physics advice will be sought both at the COSC and NAHQ, and a point of entry to the Base decided. A subsequent rendezvous point within the Base may also be selected, dependent on the situation. MoD Police Officers present in the Strathclyde Police Cell in the COSC should be used to assist, as may the Strathclyde Police Liaison Officer present in NAHQ.

28. All units entering the Naval Base after the declaration of a nuclear accident come under the operational control of NAHQ. This is to ensure that their actions are properly integrated with the Base response and that the Health & Safety of their personnel may properly be safeguarded.

Additional Support

29. This may be provided by a variety of national units dependent on the situation. Their arrival will be coordinated by the MCA cell in the COSC, in liaison with civil authorities as required. Table 2.1 below details those units likely to be despatched:

Table 2.2 - Anticipated Response Forces

Unit	Purpose	Method of Arrival	Responsible Section	ETA (hours)
Scottish Nuclear	Monitoring	Road	Monitoring Controller	2
Defence Radiological Protection Service	Health Physics Support	Air	Health Physics MCA	6
NEMT(D) / LEMT (DRPS)	Monitoring	Air/Road (Operation INNOVATE)	Monitoring Controller	6
National Radiological Protection Board	Health Physics	Air/Road	Health Physics MCA	6-8
42 Survey Regt Royal Engineers	Mapping	Road	Health Physics MCA	8
36 Regt RE	Civil Engineering	Road	MCA	24
RAF Health Control Monitoring Force	Monitoring	Road	Health Physics MCA	8
RAF Tactical Comms Wing	Communications	Road	MCA	When requested.
MoD NARO	MCA liaison	Air	MCA	6
MoD NARO	Claims & Legal	Air	MCA	12
MoD NARO	Press Support	Air	SPRO	6
HSE (NII)	Advice & Assistance	Air/Road	Reactor Adviser MCA	8
British Telecom	Communications (incl. HIGHWAYMAN)	Road	MCA	When requested
VIP's		Air/Road	MCA	

ANNEX 2A

CLYDE LOCAL LIAISON COMMITTEE - MEMBERSHIP

Strathclyde Police

Strathclyde Fire Brigade

Argyll and Bute Council

North Ayrshire Council

South Ayrshire Council

Inverclyde Council

Renfrewshire Council

Greater Glasgow Health Board

Argyll and Clyde Health Board

Ayrshire and Arran Health Board

The Scottish Office Home Department

The Scottish Office Agriculture, Environment and Fisheries
(Clyde & Central
South Western
Argyll)

Clyde Port Operations plc

Scottish Nuclear Ltd, Hunterston

Scottish Ambulance Service

UKAEA (Safety and Reliability Directorate)

Scottish Environment Protection Agency (SEPA)

West of Scotland Water

Clyde Port Operations plc

Scottish Nuclear - Hunterston

Scottish Nuclear - Director of Safety

Nuclear Installations Inspectorate

MOD/Naval Representatives

Director, HM Naval Base CLYDE (Chairman)

Director, Safety & Quality

Chief Staff Officer (Nuclear)

Superintendent Royal Naval Armament Depot, Coulport

Chairman, Naval Nuclear Technical Safety Panel

Naval Medical Officer of Health for Scotland

Senior Public Relations Officer Clyde

Base Radiation Protection Adviser

Nuclear Emergency Planning Officer (Secretary)

NOTE: Additional representation may be allowed if required.

APPENDIX 2.1

ROLES & RESPONSIBILITIES

NB. This Appendix prepared by civil authority concerned. No changes are permitted without their express permission.

STRATHCLYDE POLICE

GENERAL

Responding to emergencies is a normal feature of the Police Service. The role and responsibilities of the Police encompass the protection of life and property.

In responding to a nuclear accident in the Clyde Area Police responsibilities may be summarised as follows.

1. The saving of life in conjunction with the other emergency services.
2. The control and direction of the civil population in the event of an emergency.
3. The initial co-ordination of operations at the Off-Site centre and Media Briefing Centre.
4. Co-ordination of the emergency services and other subsidiary organisation during the emergency phase of the incident.
5. Application of countermeasures to protect the public, e.g. sheltering, evacuation.
6. Arrange for the protection of relevant property.
7. Isolation and control of access to affected/potentially affected areas through the provision of appropriate traffic control points.
8. Control of re-entry into evacuation area.
9. The protection and preservation of the scene.
10. The investigation of the incident in conjunction with other investigative bodies where applicable.
11. The collation and dissemination of casualty information.
12. Identification of the dead on behalf of the Procurator Fiscal who is the principal investigator where fatalities are involved.
13. The restoration of normality at the earliest opportunity.

14. To call or place on standby essential services.

OFF SITE CENTRE CO-ORDINATOR

ROLE

The Off-Site Centre (OSC) Co-ordinator will harmonise the integration of the expertise of all the agencies involved, with the object of effectively and efficiently bringing the incident to a successful conclusion.

In the Emergency Phase of an incident the Chief Constable, Strathclyde Police will fulfil the role of OSC Co-ordinator. In the recovery phase of an incident the Chief Executive of the appropriate Council will fulfill the role of the OSC Co-ordinator. The transfer of co-ordination will be by mutual agreement and will be recorded in writing.

RESPONSIBILITIES

1. The OSC Co-ordinator is responsible for declaring when the Off-Site Centre and Media Briefing centre (MBC) are operational.

2. The OSC Co-ordinator is responsible for all policy decisions relating to off-site activities which concern the safety of the public. The OSC Co-ordinator will call and chair the co-ordinating meetings and ensure policy decisions are recorded in writing.

3. The OSC Co-ordinator will have overall responsibility for the management of the MBC and determine the timing and representation at multi agency briefings. The views of appropriate organisations will be taken into consideration.

4. The OSC Co-ordinator will appoint a Media Briefing centre manager and all media representatives from all organisations will be expected to work as a co-ordinated team.

APPENDIX 2.2

ROLES & RESPONSIBILITIES

NB. This Appendix prepared by civil authority concerned. No changes are permitted without their express permission.

ARGYLL & BUTE COUNCIL

1. CHIEF EXECUTIVE

Based at the Clyde Off Site Centre, Rhu.

Responsible for the overall co-ordination of the local authority response, takes over from the Chief Constable after mutual agreement that the initial emergency phase is completed.

Will notify the convenor and Leader of the Council

2. EMERGENCY PLANNING OFFICER

a. Based at the Off-Site Centre, Rhu

b. Responsible for initiating the call out procedure for officers of Argyll & Bute Council.

c. Responsible for the provision of relevant maps, overprinted with the National Grid System and the plotting of the warship on the map, with a 550 metre circle and 30° downwind, of 2 and 10 km radius, drawn 15° either side of prevailing wind direction.

d. Arrange for the Emergency Centre at Kilmory to be opened and staffed.

e. Notify West of Scotland Water Authority.

f. Assist the Naval Authorities as required from Council resources.

3. DIRECTOR OF ENVIRONMENTAL SERVICES

a. Based at the Clyde Off Site Centre, Rhu.

b. Responsible for initiating a restriction or ban on the sale of free range eggs, and other d foodstuffs within 1.5 km downwind of the warship if deemed necessary.

c. Will arrange, if required, with the assistance of the Scottish Office Agriculture, Environment and Fisheries Department, for milk sampling from local farms, taking samples to appropriate centres.

d. On receipt of results, and in consultation with the appropriate authorities, review the position as to a restriction on the distribution of milk supplies and the imposition of controls.

e. Will make available designated council halls for use as Rest Centres, if required.

4. DIRECTOR OF EDUCATION

a. Based at the Council Offices, Dunoon.

b. Responsible for the safety and care of children in schools in the affected area.

c. Will make available designated schools for use as Rest Centres.

5. DIRECTOR OF PROPERTY & TECHNICAL SERVICES

a. Based at the Council Offices, Dunoon.

b. Responsible for the provision of Catering Staff for the Rest Centres.

6. DIRECTOR OF SOCIAL WORK

a. Based at the Council Offices, Lochgilphead.

b. Responsible for the co-ordination of the voluntary agencies.

c. Responsible for the management of Rest Centres.

7. DIRECTOR OF ROADS

a. Based at the Council Offices, Lochgilphead.

b. Responsible for assisting the police and the Naval Authorities in restricting access and provision of alternative routing.

8. PUBLIC RELATION OFFICER

a. Based at the Clyde Off Site Centre, Rhu.

b. Responsible for liaison with Police and Naval PROs in the co-ordination of press releases to the media.

APPENDIX 2.3

ROLES & RESPONSIBILITIES

NB. This Appendix prepared by civil authority concerned. No changes are permitted without their express permission.

SOUTH AYRSHIRE COUNCIL

1. To ensure the interests of South Ayrshire council are recognised and promoted at all stages of the planning process as well as in the event of an incident covered in this plan

2. To provide appropriate support to the Emergency services in their response to the emergency.

3. To provide care and support to victims of and staff responding to an incident both in the short and long term.

4. To provide care and support to the families and friends of the victims.

5. To provide temporary accommodation to local residents or holiday makers who require to be evacuated by the Police from their homes/accommodation.

6. In liaison with the other authorities, to ensure the public are kept adequately informed with regular and accurate information.

7. To endeavour to return the situation to normal as soon as possible without jeopardising the effectiveness of the emergency response.

APPENDIX 2.4

ROLES & RESPONSIBILITIES

NB. This Appendix prepared by civil authority concerned. No changes are permitted without their express permission.

NORTH AYRSHIRE COUNCIL

1. To ensure the interests of North Ayrshire Council are recognised and promoted at all stages of the planning process as well as in the event of an incident covered by this plan.

2. To provide appropriate support to the Emergency Services in their response to the emergency.

3. To provide care and support to victims of and staff responding to an incident both in the short and long term.

4. To provide care and support to families and friends of the victim.

5. To provide temporary accommodation to local resident orholiday makerss who require to be evacuated by the police from their homes/accommodation.

6. In liaison with other authorities, to ensure the public are kept adequately informed with regular and accurate information.

7. To endeavour to return the situation to normal as soon as possible without jeopardising the effectiveness of the emergency response.

APPENDIX 2.5

ROLES & RESPONSIBILITIES

NB. This Appendix prepared by civil authority concerned. No changes are permitted without their express permission.

INVERCLYDE COUNCIL

1. To ensure the interests of Inverclyde Council are recognised and promoted at all stages of the planning process as well as in the event of an incident covered by this plan.

2. To provide appropriate support to the Emergency Services in their response to the emergency.

3. To provide care and support to victims of and staff responding to an incident both in the short and long term.

4. To provide care and support to families and friends of the victim.

5. To provide temporary accommodation to local resident or holiday makers who require to be evacuated by the police from their homes/accommodation.

6. In liaison with other authorities, to ensure the public are kept adequately informed with regular and accurate information.

7. To endeavour to return the situation to normal as soon as possible without jeopardising the effectiveness of the emergency response.

APPENDIX 2.6

ROLES & RESPONSIBILITIES

NB. This Appendix prepared by civil authority concerned. No changes are permitted without their express permission.

STRATHCLYDE FIRE BRIGADE

In the event of a nuclear accident occurring under the Clyde Area Public Safety Scheme, Strathclyde Fire Brigades roles and responsibilities may be summarised as follows;

1. To respond when requested by the Naval Authorities with a pre-determined attendance, to a specified rendezvous point.

2. Establish and maintain liaison with Senior Naval personnel and the MOD Fire Service.

3. Assess the situation taking account of all available information

4. Through liaison with Health Physics personnel and Senior Naval personnel, determine the parameters within which Brigade personnel will operate as directed by the Firemaster (or the most Senior Brigade Officer with executive authority).

5. The Brigade's priorities will be:

   a. Rescue of trapped casualties

   b. Extinguishment of fire

   c. Containment of the situation

   d. Implementation of fire prevention measures as appropriate.

   e. To provide as far a reasonably practical, Brigade resources both in personnel and equipment to assist the Naval Authorities.

   f. Participation in investigations as appropriate and preparing reports and guidance for enquiries.

   g. Stand by during the non emergency recovery phase.

Brigade Officers at all levels of command (operational, tactical and strategic) are responsible for liaison with other agencies to ensure a safe co-ordinated response to the incident.

APPENDIX 2.7

ROLES & RESPONSIBILITIES

NB. This Appendix prepared by civil authority concerned. No changes are permitted without their express permission.

SCOTTISH AMBULANCE SERVICE

Responding to emergencies is a normal feature of the work of the Ambulance Service

The primary responsibilities of the Ambulance Service are:

1. The saving of life and the provision of immediate care to patients at the scene of a major incident and in transit to the hospital.

2. The alerting of hospital services.

3. The evacuation of the injured from the scene in order of medical priority.

4. Arranging and ensuring the most appropriate means of transport for the injured to the designated receiving hospital.

5. The supply of patient care equipment to the scene of a major incident.

6. The transport of appropriate medical staff and their equipment to the scene of a major incident.

7. Alerting and co-ordinating the work of the Voluntary Aid Societies acting in support of the Ambulance Service at the incident site.

8. The provision and maintenance of communications equipment for medical staff and appropriate Voluntary Aid Society personnel at the scene of a major incident.

APPENDIX 2.8

ROLES & RESPONSIBILITIES

NB. This Appendix prepared by civil authority concerned. No changes are permitted without their express permission.

HM COASTGUARD

1. HM Coastguard has a statutory duty under the Coastguard Act 1925 by Order of the Secretary of State for Transport, laid before Parliament on 9 March 1992, for the initiation and co-ordination of civil maritime Search and Rescue (SAR) within the United Kingdom Search and Rescue Region (UKSRR). This includes the mobilisation, organisation and taking of adequate resources to respond to persons either in distress at sea, or to persons at risk of injury or death on the cliffs or shoreline of the United Kingdom.

2. Rescue Teams are equipped with vehicles, lighting, cliff rescue equipment and VHF (Maritime) radio communications, with full search capabilities.

3. HMCG rescue teams are trained to set up and control 'local' landing sites, having direct communications with HM Coastguard and Military rescue helicopters, also Nimrod fixed wing aircraft.

4. MRCC Clyde can initiate radio/Inmarsat broadcasts/alerts to shipping.

5. For non coastal incidents, Rescue Teams will carry out duties delegated to them by the other Emergency Services.

APPENDIX 2.9

ROLES & RESPONSIBILITIES

NB. This Appendix prepared by civil authority concerned. No changes are permitted without their express permission.

ARGYLL & CLYDE HEALTH BOARD

1. To provide a 24 hour on call cover to respond to an alert from Strathclyde Police under the CLYDEPUBSAFE Scheme.

2. To provide a Consultant in Public Health Medicine to attend the multi-agency Clyde Off-Site Centre.

3. To alert the Potassium Iodate Tablet Holder to the distribution of tablets to population deemed to be at risk.

4. To provide the Director of Public Health with information to authorise the distribution of Potassium Iodate tablets.

5. To provide follow up monitoring and Epidemiology to the population at risk.

APPENDIX 2.10

ROLES & RESPONSIBILITIES

NB. This Appendix prepared by civil authority concerned. No changes are permitted without their express permission.

AYRSHIRE & ARRAN HEALTH BOARD

ROLE

Provision is made for a response to medical emergencies as a normal feature of the work of the Health Board. The role of the Health Board encompasses 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 with radiation or toxic materials, ie:

a. Ayrshire and Arran Health Board Standing Orders for Major Accidents

b. Ayrshire and Arran Health Board Standing Orders for Incidents Involving Ionising Radiation

RESPONSIBILITIES

In response to an incident aboard a nuclear powered warship the Health Board responsibilities within their area and as necessary may be summarised as follows:-

1. The reception and treatment of casualties, both contaminated and uncontaminated.

2. The co-ordination of NHS arrangements with the emergency services, local authorities and the Royal Navy including the implementation of countermeasures.

3. The provision of a Medical Incident Officer and/or a Site Medical Team, if required.

4. Where applicable the monitoring of sections of the public who may have been affected by the incident.

5. The provision of post incident psychological support.

Additionally there is in Ayrshire and Arran a group of doctors who attend incidents on a voluntary arrangement (Ayrshire and Arran Immediate Care Scheme) to provide skilled medical help when requested by the ambulance service.

CLYDE AREA PUBLIC SAFETY SCHEME

CHAPTER 3

PUBLIC SAFETY ARRANGEMENTS

ANNEXES

CLYDE AREA PUBLIC SAFETY SCHEME

CHAPTER 3

PUBLIC SAFETY ARRANGEMENTS

PLAN FOR THE PROTECTION OF THE PUBLIC

Automatic Countermeasures Zone

1. As described in Chapter 1 the Automatic Countermeasures Zone (ACMZ) nominally extends in a 550m radius from a nuclear berth. The only berths in the Clyde Area with an ACMZ impinging on the civil population are those at Faslane and the NATO Fuel Jetty at Campbeltown. As implied, all actions in this zone should be taken automatically.

2. The specific requirements are:

   a. Those outside seeking shelter in the nearest building.
   b. Taking of Potassium Iodate Tablets (PITS).
   c. No smoking, eating, drinking, or application of make-up.

3. Due to the large number of berths at Faslane the entire Base is deemed to be within the ACMZ; detailed orders are contained in the Clyde Nuclear Safety Orders (CLYDENUSAFE). However, members of the public within 550m of the berths include:

   a. Six Married Quarters at ROWMORE
   b. TIMBACRAFT Ltd
   c. A 814
   d. West Highland Railway Line

The Ministry of Defence Police have responsibility for ensuring that all non-mobile personnel in the above areas are advised of the actions to take and are provided with PITS where appropriate. Roadblocks and stoppage of trains would be carried out in consultation with Strathclyde Police.

4. Responsibility for notifying the 12 (at time of writing) properties within the ACMZ at Campbeltown rests with the OiC of the Fuel Jetty. Sufficient Potassium Iodate Tablets are held at the Jetty for local residents.

Pre-Planned Countermeasures Zone

5. The Pre-Planned Countermeasures Zone extends for a 2km radius around all berths. Specific details are included within Chapter 5 of this document.

6. As agreed in consultation with civil authorities, Potassium Iodate Tablets will be distributed to and taken by all persons in downwind sectors automatically on declaration of a Category 2 accident. This also will include advice to shelter indoors rather than self-evacuate the area. Residents in this zone will be strongly advised to remain where they are rather than place themselves at risk by driving in a concerned state in a possibly contaminated area. Whilst it is highly unlikely that immediate evacuation from this zone will be required on radiological grounds, monitoring will be conducted in order that the Police Strategic Controller may be properly advised.

7. Further site specific details are included in Chapter 5.

Extendability Zone

8. This zone extends out to 10km from a nuclear berth. Whilst detailed plans are not considered necessary for actions beyond 2km, this zone notes sensitive areas of population or other factors that may require consideration in a nuclear accident. These may be included for societal, rather than radiological, grounds. Appropriate berth specific details may be found in Chapter 5.

Arrangements for the Issue of Potassium Iodate Tablets

9. Potassium Iodate Tablets (PITS) are provided to the Health Board via the Naval Base Commander, Clyde. They are classed as medicines and have a shelf life. Their issue in the public domain may only be authorised by the appropriate Director of Public Health. The accompanying Instruction Leaflet is shown at Annex 3F.

10. Issue of PITS within the ACMZ is automatic, as stated above. By prior agreement with Argyll & Clyde Health Board, PITS will be issued out to 2km downwind in the event of a Category 2 accident being declared. Any subsequent enlargement of that area will be dependent on Health Physics advice.

11. Plans for the distribution of PITS at all Clyde berths are the responsibility of the Director of Public Health, Argyll & Clyde Health Board. Stocks of PITS are held centrally by the Health Board and by several General Practitioners in areas adjacent to nuclear berths. Volunteers from the local community (previously recruited by the Health Board) muster at the GP's surgery where they are issued with PITS and given a sector in which to operate. Prior to departure they receive a briefing from a Health Physics officer and are given radiation dosimetry and protective clothing (if required or requested). On return they are de-briefed, with their dosimetry removed for evaluation.

Evacuation, Reception and Accommodation

12. It is unlikely that any evacuation of the civilian population will be necessary. If, however, it should be required, evacuation procedures will be put into operation by the Police. It is anticipated that in such extreme circumstances the period of evacuation may be prolonged; therefore, arrangements for meals and sleeping accommodation will have to be made. The Local Authority will establish a Reception Centre where people may be

evacuated to and their details recorded. The decision whether to formally record names of evacuees rests with and is the responsibility of the Local Authority. Whenever possible, evacuees will be encouraged to make their own private arrangements for accommodation and transport and not use the Reception Centre. Details of site-specific Reception Centres are given in Chapter 5.

13. In the event of it being necessary to evacuate the Naval Base, close liaison will be maintained between NAHQ and Strathclyde Police as the operation may involve several thousand personnel. The process will be tightly regulated by NAHQ to ensure that the roads are not overwhelmed with vehicles. Buildings within the Base will be evacuated depending on their proximity to the accident vessel. Occupants will either be taken to their private vehicles or removed from the Base by naval transport. Civil buses will then meet the latter at a rendezvous point to be established dependent on the accident situation.

Shipping

14. Control of shipping in the Clyde area is vested in the Queen's Harbour Master. In consultation with Clyde Port Operations and HM Coastguard, any restrictions that may be necessary will be applied by QHM with any enforcement found necessary carried out by the Clyde Marine Police.

CONTROL OF FOODSTUFFS

Meat, Vegetables and other Exposed Foodstuffs

15. The consumption of all unsealed foodstuffs, free range eggs and liquids (except mains and piped water) within the sector and distance from the accident berth determined by the Scottish Office may be banned. Instructions will be given as to the collection and safe disposal of the produce. In addition, those persons in the affected area will be advised to thoroughly wash all cooking and eating utensils before use.

Movement and Slaughter of Livestock

16. The Scottish Office Agriculture, Environment & Fisheries Department is responsible for the control, movement and slaughter of livestock. Any decisions on the need to restrict movement or slaughter in the affected areas will be taken by SOAEFD.

Milk Supplies

17. 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 downwind of the accident vessel.

18. Representatives of SOAEFD and the Local Authority's Director of Environmental Services will make the necessary arrangements to visit the farms concerned and give advice on matters affecting milk supplies, crops, free range eggs and

livestock. These are also responsible for maintaining an up to date list of all farms within 10 Km of the Firth of Clyde, from the Cumbraes to the Tail of the Bank, Gareloch, Loch Long, Loch Goil, Loch Striven and Campbeltown

19. Arrangements will be made at the appropriate time by the Director of Environmental Services for samples of milk to be taken from farms. If required, assistance will be given by officials from SOAEFD and Scottish Milk Limited. Samples are to be taken to the COSC. Directions and assistance with transport may be sought from the MCA at the COSC.

20. The result of monitoring and milk tests will be reported to the Director of Environmental Services, who, in consultation with officials from Central Government, Local Authority and Health Board will review the restrictions, distribution and imposition of controls.

Collection and Disposal of Condemned Supplies and Provision of Alternative Supplies

21. Arrangements for collection and disposal of contaminated milk will be made by the Director of Environmental Services. Scottish Milk Limited will arrange for the provision of fresh milk supplies in the affected areas.

22. The Scottish Office Agriculture, Environment and Fisheries Department will be responsible for co-ordinating any action taken by the Scottish Milk Limited.

Water supplies

23. 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 West of Scotland Water. A team from the Defence Radiological Protection Service (DRPS) will be available to assist in this task. The acceptable levels of radioactivity in public water supplies are established by the Scottish Office; any restriction even under the worst circumstances envisaged is most unlikely. The DRPS team will be able to advise whether water is safe to drink, but the responsibility for imposing a ban lies with the Area Health Board.

ALERTING SYSTEM

Cascade System

24. The Maritime Operations Centre in the Naval Base will initiate the alerting system. Thereafter, each unit contacted will alert others in a system 'cascading' down the scale until all personnel required are alerted.

25. A schematic diagram of the system is shown at Annex 3A. Annex 3B details the Telephone Directory, but for reasons of confidentiality will be forwarded under separate cover to appropriate authorities.

COMMUNICATIONS

26. As detailed in Annex 3B, the Clyde Off Site Centre is equipped with a large number of telephones including Base Extensions and BT lines. Seven Facsimile machines are also provided.

27. Direct lines are also provided to the following location:

NAHQ
Naval Base Technical Information Centre
DEHQ Coulport
Scottish Office

28. The MCA's office also includes a Video telephone.

29. It is intended to install radio equipment in the Fire Brigade and Police sections.

PUBLIC INFORMATION

30. Public Information will be issued from a joint Public Relations Cell in the Clyde Off Site Centre under the leadership of Strathclyde Police. It may consist of Public Relations Officers from all Authorities responding to the accident but will always contain a Police and a Naval Base representative.

31. Although the Chief Constable will be the approving authority for press releases locally, the Ministry of Defence may release information centrally in liaison with the COSC.

32. Initial press statements have been agreed between the Ministry of Defence and Strathclyde Police which may be released by the Naval Base without reference to other authorities. These are given at Annex 3C.

MEDIA RELATIONS

33. Media Relations will be managed from the COSC under the direction of the PR cell as detailed above.

34. The COSC contains a Press & Media Briefing Centre which is manned by Naval Base staff. This provides Press Conference facilities for 250 (seated). In addition, extra telephones are provided as are briefing notes, photographs, etc.

35. As soon as practicable the MoD will provide a Senior Officer to the COSC whose primary task will be to keep the Press & Media informed of the progress of events. This Officer will observe the regular Strategic Level discussions and then brief the Press accordingly. The aim is to ensure that a knowledgeable and authoritative source of information is made readily available to the Press, encouraging them to focus their attention on the COSC thus ensuring consistency of information.

PROCEDURES FOR CLAIMS FOR INJURY, DAMAGE OR LOSS

36. The general arrangements about claims and compensation in the event of injury or damage resulting from a nuclear accident in a nuclear powered warship are given in Annex 3D.

REGISTRATION OF PERSONS AFFECTED BY A NUCLEAR ACCIDENT

37. To provide evidence for possible claims for compensation many years after an accident, members of the general public will be able to register the fact that they were in a controlled area at the time of the accident. Instructions for registration are given in Annex 3E.

RECORDS TO BE KEPT

38. It is essential that comprehensive records are to be kept by all authorities involved in a nuclear accident so that the necessary information may be available for the subsequent inquiry into the cause and effects. The records are also needed to assist in dealing with any claims that 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.

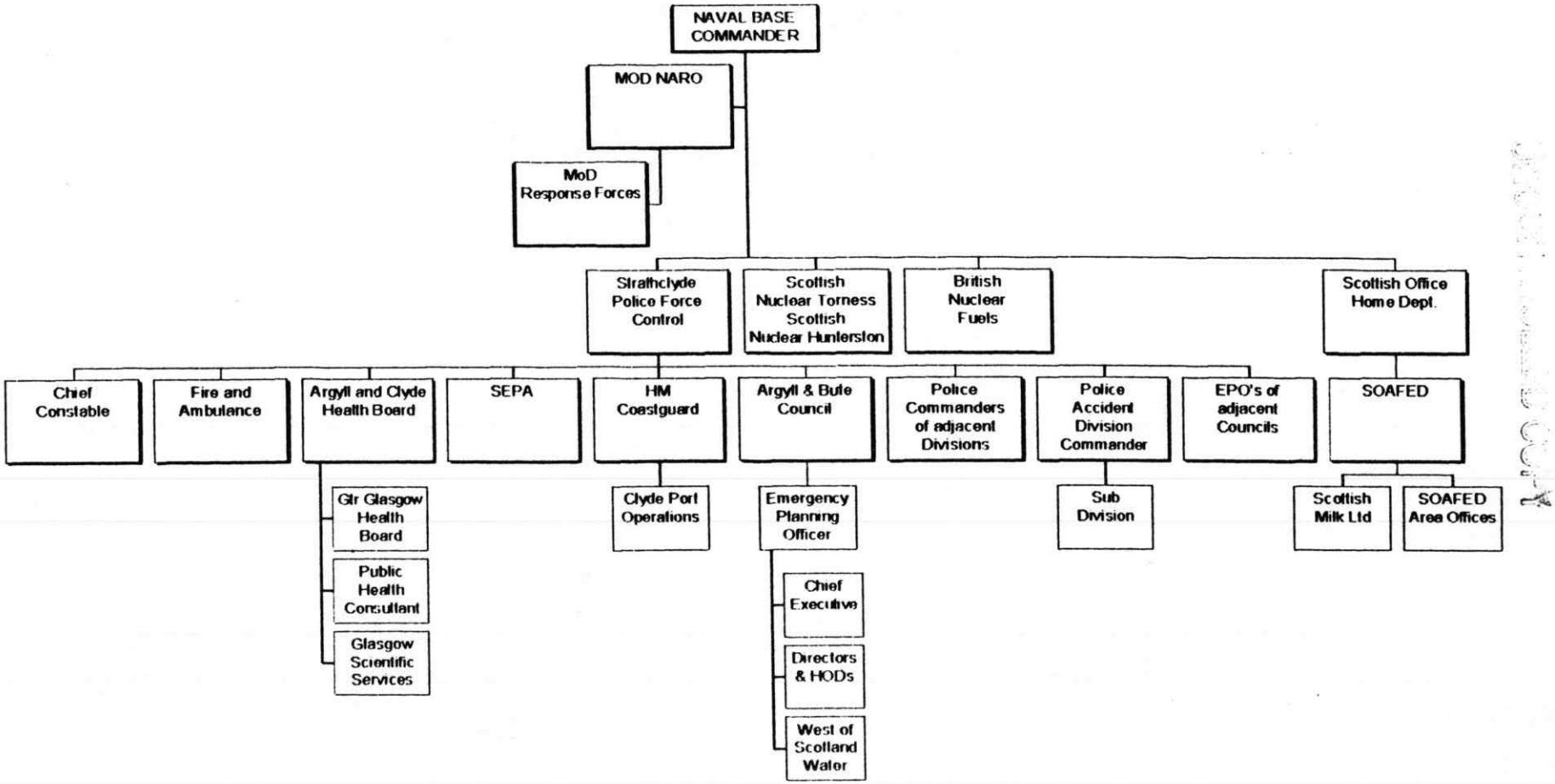
b. Times when other authorities are informed of occurrences.

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.

ANNEX 3A

CASCADE CALL-OUT SYSTEM



ANNEX 3B

TELEPHONE DIRECTORY

This item will be supplied to the appropriate authorities under separate cover.

ANNEX 3C

PRESS STATEMENTS

(To be provided)

ANNEX 3D

PROCEDURE FOR CLAIMS

1. In the event of nuclear injury or damage arising during the operation of any Royal Navy nuclear powered vessel or associated equipment, the following general arrangements will apply to the handling of claims and 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. Claims arising in connection with special public safety measures taken (e.g. under arrangements made by the Scottish Milk Limited or 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 Administrative 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 Environment 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

ANNEX 3D

PROCEDURE FOR CLAIMS

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or sea within Scottish fishery limits. The Secretary of State may authorise investigating and enforcement officers to assist him in carrying out these functions.

d. Chief Administrative Medical Officer 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.

ANNEX 3E

REGISTRATION OF AFFECTED CIVILIANS

1. 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 warrant this step, the Ministry of Defence will make the necessary arrangements for the forms to be made available through local Head Postmasters. When the decision to issue registration forms is taken, release of the following public announcement may 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.

He or she would, of course, have to prove that he was 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 there, but it will provide evidence that he was, and this can be disputed only if other evidence was produced which showed that he 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 about one month or from the Ministry of Defence.

2. 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 BRANCH, MAIN BUILDING, WHITEHALL, LONDON SW1A 2HB.

CLYDE AREA PUBLIC SAFETY SCHEME

CHAPTER 4

CIVIL AUTHORITIES - EMERGENCY ACTIONS

CLYDE AREA PUBLIC SAFETY SCHEME

CHAPTER 4

CIVIL AUTHORITIES - EMERGENCY ACTIONS

1. This section is designed to provide an overview of the actions that would be carried out by individual Civil Authorities and should be read in conjunction with Chapter 2. It is not intended to be prescriptive and is augmented in many cases by detailed Departmental Orders within the Authority concerned.

ANNEX 4A

STRATHCLYDE POLICE

1. **ON RECEIPT OF THE MESSAGE ALERTING POLICE TO THE INCIDENT IT WILL BE THE RESPONSIBILITY OF THE DUTY OFFICER, FORCE CONTROL, TO:**

   a. Confirm the alerting call

   b. Open a major incident file.

   c. Notify the Duty Officer at 'L' Division.

   d. Notify the Chief Constable who will attend the Clyde Off-Site Centre, Rhu with Staff Officer & Assistant.

   e. Notify the Media Information Officer and staff who will attend the Clyde Off-Site Centre.

   f. Notify on call HOLMES Manager who will attend the Clyde Off-Site Centre with support staff.

   g. Continue the alert call out.

2. **ON RECEIPT OF THE MESSAGE FROM THE DUTY OFFICER FORCE CONTROL IT WILL BE THE RESPONSIBILITY OF THE DUTY OFFICER, 'L' DIVISION, TO:**

   a. Deploy an Inspector, preferably the Section Inspector, Helensburgh, to go to the Nuclear Accident Headquarters at HM Naval Base, Clyde.

   b. Notify the Divisional Commander, 'L' Division, who will attend as Overall Police Incident Commander at the Clyde Off-Site Centre with Staff Officer and 9 trained Officers (mutual aid to be arranged if necessary).

   c. Deploy a supervisory Officer to establish a Forward Control Point.

   d. Notify the appropriate Sub-Divisional Officer who, as Police Incident Officer, will establish an Incident Control Post (ICP).

3. RESPONSIBILITIES OF THE POLICE INCIDENT OFFICER

Ensure action has been taken to establish:-

a. Rendezvous points.

b. Inner and outer cordons.

c. Adequate communications.

d. Casualty Bureau.

e. Senior Investigating Officer.

f. Deployment of police personnel as necessary, particularly with regard to:

Ambulance loading point
Casualty clearance
Survivor receipt centres
Body holding area
Receiving hospitals
Traffic control
Media liaison point

g. Liaison with Health Board and Local Authority regarding the tactical and operational matters relating to sheltering, evacuation and distribution of Potassium Iodate tablets.

4. THE INSPECTOR DEPLOYED TO THE NUCLEAR ACCIDENT HEADQUARTERS AT HM NAVAL BASE, CLYDE WILL ASSESS THE SITUATION AND INFORM THE DUTY OFFICER, 'L' DIVISION, WITH PARTICULAR EMPHASIS TO:

a. The category of the accident (1-3).

b. Location.

c. Hazards - present and potential.

d. Access.

e. Casualties.

f. Type of incident.

g. Other emergency services required.

5. RESPONSIBILITIES OF POLICE OVERALL INCIDENT COMMANDER:

1. Ensure the following command functions have been allocated:-

   Police Incident Officer
   Senior Investigation Officer
   Incident Control Post Co-ordinator
   Operations Centre Co-ordinator
   Mortuary Documentation Officer
   Mortuary Duty Officer
   Ante Mortem Co-ordinator
   Officer in Charge of Casualty Bureau
   Casualty Bureau Co-ordinator

2. Ensure that suitable action has been taken to control and co-ordinate the response of all emergency and support services.

3. Determine and authorise:-

   Inter divisional and mutual aid requirements
   The provision of technical and material resources

4. Oversee all matters relating to post mortem and identification processes.

5. Liaise personally with the Procurator Fiscal and submit interim reports as required.

6. Confirm the appointment of a supervising pathologist with the Procurator Fiscal.

7. Sit as head of the Identification Commission or designate a nominee.

8. Arrange for and control the flow of information to the media through the Police Media Spokesperson.

9. Submit full report to the Procurator Fiscal, and any other inquiry regarding the identification of the dead.

10. Brief the Chief Constable.

NB. **THE POLICE INCIDENT COMMANDER MUST NOT BE CONFUSED WITH THE NAVAL INCIDENT COMMANDER AT THE NUCLEAR ACCIDENT HEADQUARTERS (NAHQ) WITHIN THE NAVAL BASE.**

ANNEX 4B

ARGYLL & BUTE COUNCIL

In the event of a nuclear accident:

1. On receipt of a call from Strathclyde Police Force Control the Emergency Planning Officer is to:

    1. Notify the Chief Executive

    b. Notify Directors and Heads of Department

    c. Notify West of Scotland Water Authority

    d. Attend the Clyde Off-Site Centre

2. The Chief Executive, EPO and the Emergency Management Team will convene at the COSC to co-ordinate the Council response to the accident. They will be supported by other Senior Officers who will attend the COSC as required.

3. The Chief Executive will prepare to assume control and co-ordination from the Chief Constable at a mutually agreed time for the recovery phase.

ANNEX 4C

STRATHCLYDE FIRE BRIGADE

1. INITIAL CALL - ACTION BY BRIGADE CONTROL

On receiving the alert from Strathclyde Police, units will be mobilised as follows:

1. HM Naval Base Clyde - Mobilise a pre-determined attendance of 4 Fire Appliances, 1 Foam Salvage Tender, the Technical Support Unit and one Senior Officer (North Command) to the rendezvous point specified by Police Force Control. Notify the Duty Technical Support Team Officer (TST Officer), the Duty Senior Divisional Officer and the Duty Assistant Firemaster.

2. Z Berths - Mobilise 2 Fire Appliances, the Technical Support Unit and one Senior Officer to the rendezvous point specified by Police Force Control. Notify the Duty TST Officer and the Duty Assistant Firemaster

All relevant information will be conveyed to mobiles responding and notified officers.

2. ACTIONS OF FIRST OFFICER ATTENDING INCIDENT

1. Establish and maintain liaison with Senior Naval personnel, MOD Fire Service and Police Incident Officer.

2. Assess the situation taking account of all available resources.

3. Increase Brigade resources as required.

4. In consultation with Health Physics personnel determine the parameters within which Brigade personnel will operate.

5. Deploy personnel only after consultation with and advice from the Health Physicists and Senior Naval personnel.

(Female Firefighters must not enter any restricted zone)

3. ACTIONS OF FIRST SENIOR OFFICER ATTENDING INCIDENT

1. Receive brief from Officer in Charge

2. Take charge and re-assess the incident's requirements.

3. Maintain liaison with naval authorities and other agencies in attendance.

4. Ensure all safety measure relative to a nuclear accident are strictly adhered to.

4. BRIGADE ATTENDANCE AT THE CLYDE OFF SITE CENTRE (COSC), RHU

Actions By Brigade Control

1. Having mobilised the pre-determined attendance to the appropriate "rendezvous point" (Clyde Naval Base or Z Berth) Brigade Control will ensure the following attendance at the COSC:

   Senior Divisional Officer
   Senior Officer (Brigade HQ)
   Senior Officer (North Command)

2. The actions of the Officers staffing the COSC will be commensurate with activities relating to all off-site situations. In particular, this will be to liaise with other agencies and collect all information required to satisfy any inquiry for advice or information from whatever source. It is not anticipated a Brigade presence will be required during the recovery phase.

5. CLYDE NAVAL BASE NUCLEAR ACCIDENT HQ

Dependent on circumstances, and after liaison with Naval Authorities, a Brigade Officer may be despatched to the Clyde Naval Base Nuclear Accident Headquarters. This decision will be the responsibility of the Senior Brigade officer at the COSC.

ANNEX 4D

SCOTTISH OFFICE AGRICULTURE, ENVIRONMENT AND FISHERIES DEPT

In the event of a nuclear accident:

1. Provide advice on milk supplies, crops, livestock and fishing.

2. At the appropriate stage send out warning notices to farmers.

3. Assist the Director of Environmental Services, Argyll & Bute Council, with milk sampling as necessary.

4. Co-ordinate any actions taken by Scottish Milk Limited.

5. Issue stand down notices to farmers when advised to do so by the COSC.

ANNEX 4E

GLASGOW SCIENTIFIC SERVICES

In the event of a nuclear accident:

1. Subsequent to any release of fission products to the environment (Category 3 accident), milk samples will be collected from farms in the affected area by representatives of the Director of Environmental Services. Naval Authorities will be responsible for transporting the samples to Glasgow Scientific Services, 14 Everard Drive, Glasgow.

2. Glasgow Scientific Services will analyse the milk samples to determine the Iodine 131 contamination level in Bq/litre and forward the results by the quickest means possible to the MCA.

3. Grass samples from pasture land and water samples from reservoirs and lochs will also be collected by the Monitoring Teams working in the affected area. These samples will also be forwarded for full radioactive isotope analysis.

ANNEX 4F

ARGYLL AND CLYDE HEALTH BOARD

The Director of Public Health, on receipt of an alert, will:-

1. Record alert from Strathclyde Police.
2. Allocate a Public Health Consultant to attend the COSC.
3. Allocate 'Z' berth PITS holder to the incident and advise level of action to be taken.
4. Request PITS holder to attend the COSC or other designated site until the arrival of the CPHM
5. Receive update every 30 minutes from the COSC.
6. Activate Health Control at Ross House.
7. Request the presence of a Radiation Protection Adviser to Health Control at Ross House.
8. Alert PITS Distribution Teams (meet Police at Incident Control Post).
9. Authorise distribution of PITS to areas as required.
10. Issue health helpline numbers to distribution teams.
11. Activate helpline at Ross House
12. Receive summarised success for the distribution of PITS.
13. Authorise the establishment of radiation monitoring for the public.
14. Maintain progress reports to the Scottish Office.
15. Arrange the relief for staff in key roles.

ANNEX 4G

SCOTTISH MILK LIMITED

1. If a Category 3 accident is declared Scottish Milk Limited will arrange for the collection of contaminated milk and its disposal in accordance with MOD(N) instructions, and for the provision of supplies of uncontaminated milk.

ANNEX 4H

SCOTTISH AMBULANCE SERVICE (NHS) TRUST

1. Despatch an Accident& Emergency unit and an Ambulance Incident Officer to the site.

2. In addition to predetermined major incident procedures being implemented, particular actions will be taken to ensure compliance with Section 28 of the Scottish Ambulance Service Document 'Civil Emergencies Operational Arrangements'.

3. A Senior Ambulance Officer will attend the Clyde Off-Site Centre, Rhu to control and co-ordinate emergency procedures.

4. An Ambulance Press Officer will be sent to the Media Briefing Centre (COSC).

ANNEX 4I

AYRSHIRE AND ARRAN HEALTH BOARD

1. The Director of Public Health/Consultant in Public Health (DPH/CPHM) will attend the Clyde Off-Site Centre to co-ordinate the Health Board response. This will include:

   a. Liaison with MOD Radiobiologists.

   b. Liaison with and advice on countermeasures to other agencies.

   c. Liaison with:

      i. DPH or Senior AAHB Officer
      ii. Receiving hospital(s)
      iii. Arran War Memorial Hospital
      iv. Radiation Protection Adviser
      v. National Emergency Planning Officer
      vi. Local GPs
      vii. Community Health Care

2. Crosshouse Hospital and/or The Ayr Hospital will receive casualties whether contaminated or uncontaminated.

3. The DPH/CPHM will join with the Radiation Health Cell to consider the need for radiation monitoring for members of the public.

4. Community Health Care will consult with the local authority Social Work Department to consider the need to set up counselling arrangements.

ANNEX 4J

SOUTH AYRSHIRE COUNCIL

1. A Liaison Officer will attend at the Local Authority Emergency Control Centre (LAECC), located at Cunninghame House, Irvine. It will be the responsibility of this officer to receive briefings on the incident and report back regularly to Senior Officers of the Council.

   NB. South Ayrshire Council will not automatically send a representative to the Clyde Off-Site Centre. However, it has been agreed with North Ayrshire Council that their officer will act as a liaison link with the COSC staff on South Ayrshire Council's behalf.

2. The Liaison Officer will initiate and co-ordinate the necessary response of South Ayrshire resources as requested by the Police Incident Officer.

3. If necessary the Liaison Officer will set up the Emergency Management Team to co-ordinate the response of the Council in the recovery phase as per the Councils Civil Emergency Plan.

4. The Liaison Officer will, though the Chief Executive, keep the elected members of the Council informed.

5. The Liaison Officer will ensure that the Council takes all actions necessary to mitigate the effects of any pollution to the environment.

6. On completion of the incident, responding staff will carry out an internal operational debrief with those departments responding to the incident noting any amendments required to the plan and highlighting best practices. Necessary amendments will then be made to the multi-agency review.

ANNEX 4K

NORTH AYRSHIRE COUNCIL

1. CHIEF EXECUTIVE AND CORPORATE BUSINESS

   a. Despatch a representative(s) to the Off-Site Centre at Rhu. This officer will also provide a liaison link for South Ayrshire Council.

   b. Be represented at all inter agency meetings and briefings and at the forward Operational Control when established at the berth.

   c. Initiate and co-ordinate the necessary response of Council resources as requested by the Police Incident Officer.

   d. Inform Directors and Heads of Service as appropriate.

   e. Establish the Local Authority Emergency Control Centre and the Emergency Management Team to co-ordinate the response of the Council. A Liaison officer from South Ayrshire Council will also attend this centre.

   f. Keep elected members of the Council informed.

   g. The Principal Marketing & Publicity Officer will liaise with the Ministry of Defence and Police Public Relations Officers to ensure no conflicting press and media releases.

   h. On completion of the incident carry out an internal debrief with those Departments responding to the incident, notifying any amendments required to the plan and highlighting best practice.

   i. Incorporate the necessary amendments to the multi-agency review.

2. SOCIAL WORK DEPARTMENT

   a. The activation and staffing of the Emergency Rest Centre.

   b. The temporary care of evacuees at the Emergency Rest Centre.

   c. Arrange for the provision of emergency feeding.

   d. In conjunction with Strathclyde Police, carry out the documentation of the evacuees.

e. In conjunction with the Ayrshire and Arran Health Board initiate the Major Incident Counselling And Support Service.

3. PLANNING, ROADS & ENVIRONMENT DEPARTMENT

a. Consult with appropriate agencies regarding the control of food, milk and water supplies.

b. Sample milk, water or other products if required.

4. COMMERCIAL SERVICES DEPARTMENT

a. The provision of emergency feeding at the Emergency Rest Centre(s).

b. The provision of transport if required to take evacuees to/from the Emergency Rest Centre(s).

ANNEX 4L

INVERCLYDE COUNCIL

1. CHIEF EXECUTIVE

   a. Despatch a representative to the Off-Site Centre at Rhu. This officer will also provide a liaison link with other local authorities.

   b. Be represented at all inter agency meetings and briefings and forward Operational Control when established at the berth.

   c. Initiate and co-ordinate the necessary response of the Council as requested by the Police Incident Officer.

   d. Inform Directors and Heads of Service as appropriate.

   e. Establish the Local Authority Emergency Control Centre and the Emergency Management Team to co-ordinate the response of the Council.

   f. Keep elected members of the Council informed.

   g. To provide a Media Relations Officer to liaise with the Ministry of Defence and Police Public Relations Officers to ensure no conflicting press and media releases.

   h. On completion of the incident carry out an internal debrief with those Departments responding to the incident, notifying any amendments required to the plan and highlighting best practice.

   i. Incorporate the necessary amendments to the multi-agency review.

2. SOCIAL WORK DEPARTMENT

   a. The activation and staffing of the Emergency Rest Centre.

   b. The temporary care of evacuees at the Emergency Rest Centre.

   c. Arrange for the provision of emergency feeding.

   d. In conjunction with Strathclyde Police, carry out the documentation of the evacuees.

e. In conjunction with the Argyll and Clyde Health Board initiate the Major Incident Counselling And Support Service.

f. Liaison with voluntary agencies.

3. ENVIRONMENTAL SERVICES DEPARTMENT

a. Consult with appropriate agencies regarding the control of food, milk and water supplies.

b. Sample milk, water or other products if required.

4. CONTRACT SERVICES

a. The provision of emergency feeding at the Emergency Rest Centre(s).

b. The provision of transport if required to take evacuees to/from the Emergency Reception Centre(s).

c. The opening and functional maintenance of the Emergency Rest Centre.

d. To provide manpower and equipment if required.

5. DEPARTMENT OF TRANSPORTATION AND ROADS

a. Assist the Police and Naval Authorities in restricting access.

b. The provision of alternative routing.

c. The provision of signs.

ANNEX 4M

HM COASTGUARD

1. Confirm details known with Strathclyde Police Force Control, with particular regard to the activation of the COSC.

2. If COSC is activated, alert and despatch officer to it (NB. Until a Coastguard officer arrives at the COSC, information flow to HM Coastguard HMCG should be via Strathclyde Police).

3. HM Coastguard will initiate radio/Inmarsat broadcasts to inform shipping of dangerous situations and closed area only when directed to by the Police Incident Commander.

4. HMCG will conduct enquiries to establish the safety of small craft which may be in potential danger areas when directed by the Police Incident Commander.

CLYDE AREA PUBLIC SAFETY SCHEME

CHAPTER 5

SPECIFIC BERTH INFORMATION

CLYDE AREA PUBLIC SAFETY SCHEME

CHAPTER 5

SPECIFIC BERTH INFORMATION

SECTION 1 - FASLANE

General

5.1.1 Faslane Bay is encompassed within HM Naval Base Clyde, which is the primary operating base for Royal Navy nuclear powered warships. It is the Base Port for the 1st Submarine Squadron, operating both nuclear missile carrying vessels and conventionally armed submarines. It also regularly plays host to other RN submarines, and to nuclear submarines of other nations. Classed as an X Berth, maintenance work on nuclear facilities is permitted within the Base, subject to the most stringent safety controls.

5.1.2 The Base extends in a linear pattern north to south down the east shore of the Gareloch. Other than the small town of Garelochhead, and concentrated dwellings at Shandon, civilian residences are generally scattered and located along both shores of the Loch. Hill farming and grazing are undertaken in the area along with dairy farming; most of the milk is sold locally with small amounts being provided to Scottish Milk Ltd.

5.1.3 Associated Mapping:

a. Admiralty Chart No 3746.
b. Ordnance Survey Map No 56 (1:50,000).

5.1.4 Berth Location:

Berths in the Naval Base extend over a line approximately 2km long. Nuclear Berths are located at:

AFD 60	24458793
3 Berth	24458825
4 Berth	24458850
5 Berth	24488854
6 Berth	24498869
10 Berth	24588935
11 Berth	24568936
12 Berth	24448944
Shiplift	24418945

5.1.5 A map of the Faslane area, showing the 2km Pre-Planned Countermeasures Zones, is given at Figure 5.1 overleaf.

5.1.6 Potassium Iodate Tablet Location

Vale of Leven Hospital

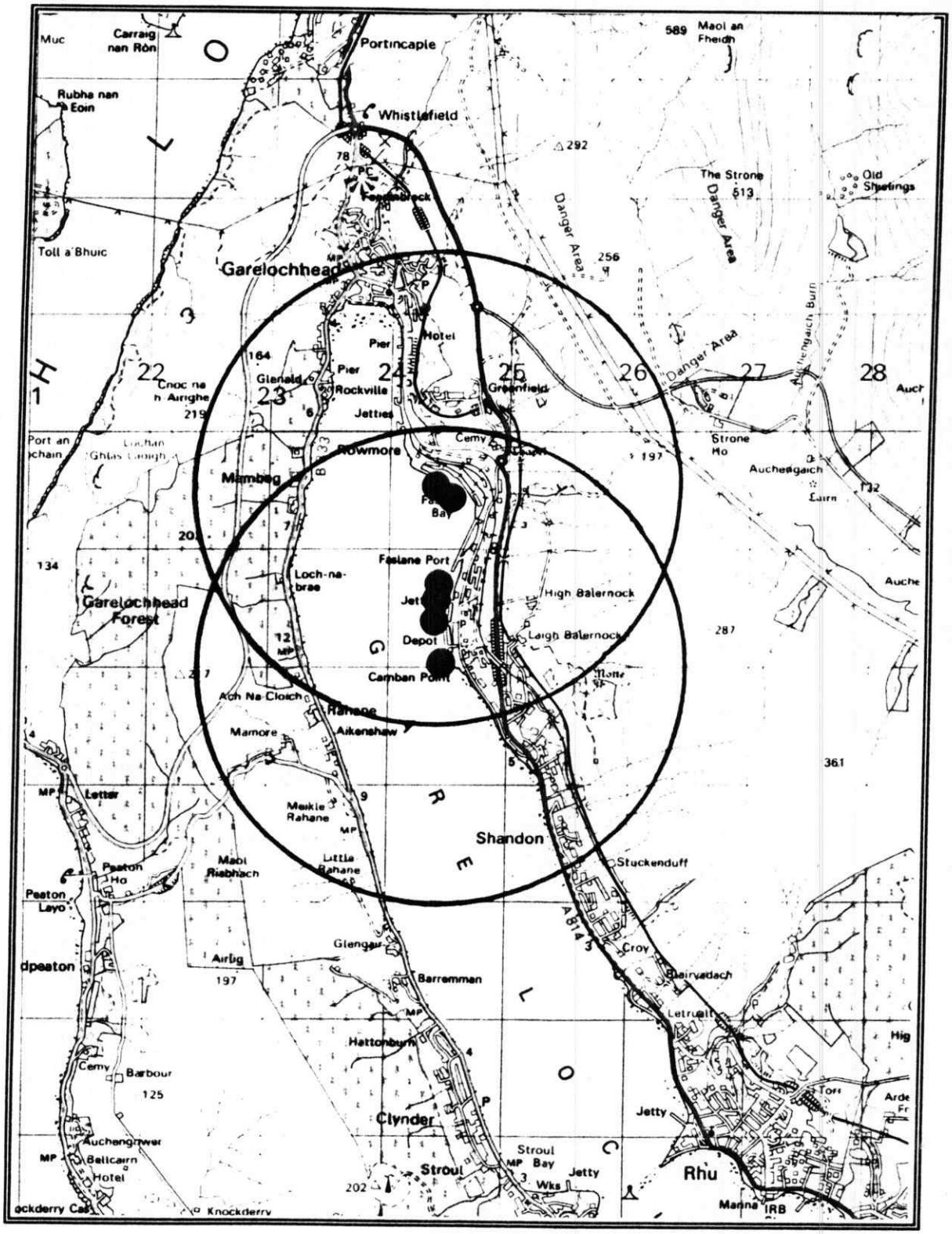

Fig 5.1 HM Naval Base Clyde - Berth Locations & 2km Radius

Population Information

5.1.7 As agreed with Civil Authorities, details have been restricted to centres of population only, rather than broken down into sectors. However, Argyll & Clyde Health Board maintain detailed figures for use by PITS Distribution Teams.

5.1.8 The following Table approximates centres of population with the numbers involved and the distance from the nearest nuclear berth at Faslane.

Table 5-1 Centres of Population

GARELOCHHEAD	
Grid Ref	240-910
Population	1800
Distance	1.7 km

KILCREGGAN & COVE	
Grid Ref	228-807
Population	1500
Distance	8.1 km

SHANDON	
Grid Ref	253-868
Population	600
Distance	1.5 km

ROSNEATH PENINSULA	
Grid Ref	260-823
Population	400
Distance	-

RHU	
Grid Ref	267-841
Population	1700
Distance	4.5 km

HELENSBURGH	
Grid Ref	29-82
Population	16000
Distance	7 km

CLYNDER & ROSNEATH	
Grid Ref	250-836
Population	1500
Distance	2.5 km

5.1.9 Vulnerable Communities within 2km

Garelochhead Primary School. Tel. 01436 810322

Garelochhead Outdoor Education Centre. Tel. 01436 820491

5.1.10 Private Water Supplies within 2km

None.

5.1.11 Ferries

None operate in the area.

KEY POSITIONS

5.1.12 Key positions will be determined on wind direction with the aim of remaining upwind of any potential hazard.

5.1.13 Monitoring Control

Clyde Off Site Centre.

5.1.14 Police Forward Control Point

POLICE FORWARD CONTROL POINT		
NAME	ADDRESS	TEL NUMBER
Blairvadach Outdoor Centre	Shandon	01436 820491/ 01436 820668
Garelochhead Police Office	Old School Road Garelochhead	01436 810222

5.1.15 Rendezvous Point

RENDEZVOUS POINT	
NAME	LOCATION
Kidston Car Park	Rhu Road Lower Helensburgh
Car Park	1/4 mile south of Whistlefield Roundabout Garelochhead
Loch Long Hotel	Main Road, Arrochar Tel. 01301 702424

5.1.16 Media Briefing Centre

MEDIA BRIEFING CENTRE		
NAME	ADDRESS	TEL NUMBER
Media Briefing Centre	Rhu	(01436) 821266 / 821268 / 821130

5.1.17 Police Incident Control Post

POLICE INCIDENT CONTROL POST		
NAME	ADDRESS	TEL NUMBER
L Divisional Police HQ	Stirling Road Overtoun Road Dumbarton	01389 822000
Clyde Off-Site Centre	Rhu	01436 821186 / 821185

5.1.18 Local Authority Rest & Reception Centres

REST/RECEPTION CENTRES		
NAME	ADDRESS	TEL NUMBER
Rhu Community Education Centre	Hall Road Rhu	01436 820451
Victoria Halls	Sinclair Street, Helensburgh	01436 673275
Arrochar Outdoor and Leisure Centre		01301 702355
Arrochar Primary School		01301 702261

5.1.19 Receiving Hospitals

RECEIVING HOSPITALS	
NAME	COMMENTS
GLASGOW ROYAL or GLASGOW WESTERN	IRRADIATED & CONTAMINATED CASUALTIES
IF A CASUALTIES INJURIES ARE SUCH THAT THE JOURNEY TO THESE RECEIVING HOSPITALS COULD PROVE FATAL, THAT PERSON SHOULD BE TAKEN TO THE NEAREST HOSPITAL WITH AN ACCIDENT AND EMERGENCY SERVICE. **IT IS ESSENTIAL THAT A RADIATION MONITORING SERVICE BE PROVIDED TO THESE OTHER HOSPITALS.**	
VALE OF LEVEN HOSPITAL or INVERCLYDE ROYAL HOSPITAL	

CLYDE AREA PUBLIC SAFETY SCHEME

CHAPTER 5

SPECIFIC BERTH INFORMATION

SECTION 2 - COULPORT

General

5.2.1 The Royal Naval Armaments Depot Coulport is located within the Command structure of HM Naval Base Clyde. Although principally concerned with nuclear weapons, it does occasionally host conventionally armed nuclear submarines.

5.2.2 No nuclear work is permitted on submarines whilst at Coulport.

5.2.3 Coulport itself is located mid-way up Loch Long, in a very sparsely populated area. However, in summer there may be a large influx of tourists camping on the Lochside opposite the Depot, and a large number of yachts regularly cruise the waters.

5.2.4 Associated Mapping:

a. Admiralty Chart No 3746.
b. Ordnance Survey Map No 56 (1:50,000).

5.2.5 Berth Locations:

a.	Polaris Jetty	207877
b.	Explosives Handling Jetty	206883

5.2.6 A map of the Coulport area, showing the 2km Pre-Planned Countermeasures Zones, is given at Figure 5.2 overleaf.

5.2.7 Potassium Iodate Tablet Location

Vale of Leven Hospital.

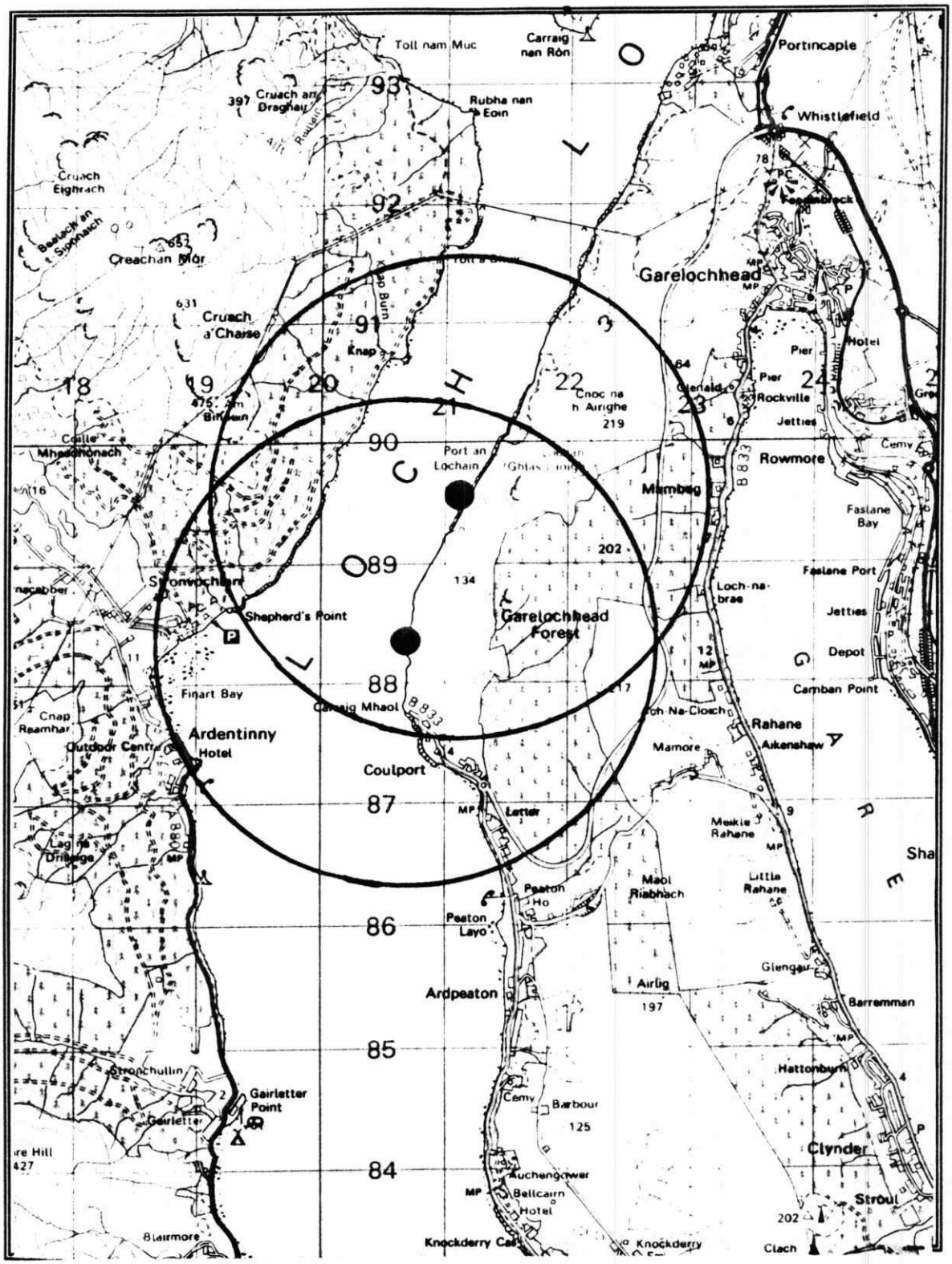

Fig 5.2 RN Armaments Depot Coulport - Berth Locations & 2km Radius

Population Information

5.2.8 As agreed with Civil Authorities, details have been restricted to centres of population only, rather than broken down into sectors. However, Argyll & Clyde Health Board maintain detailed figures for use by PITS Distribution Teams.

5.2.9 The following Table approximates centres of population with the numbers involved and the distance from the nearest nuclear berth at Coulport.

Table 5-2 Centres of Population

GARELOCHHEAD	
Grid Ref	240-910
Population	1800
Distance	4km

KILCREGGAN & COVE	
Grid Ref	228-807
Population	1500
Distance	7 km

ARDENTINNY	
Grid Ref	189-875
Population	50
Distance	1.7 km

ROSNEATH PENINSULA	
Grid Ref	260-823
Population	400
Distance	-

RHU	
Grid Ref	267-841
Population	1700
Distance	7 km

HELENSBURGH	
Grid Ref	29-82
Population	16000
Distance	9 km

CLYNDER & ROSNEATH	
Grid Ref	250-836
Population	1500
Distance	5.5 km

5.2.10 Vulnerable Communities within 2km

Garelochhead Primary School. Tel. 01436 810322

Garelochhead Outdoor Education Centre. Tel. 01436 820491

5.2.11 Private Water Supplies within 2km

Conservation Park, Peaton Hill (GR 223861).

5.2.12 Ferries

None.

KEY POSITIONS

5.2.13 Key positions will be determined on wind direction with the aim of remaining upwind of any potential hazard.

5.2.14 Monitoring Control

Emergency Monitoring Control Office within Depot.

5.2.15 Police Forward Control Point

POLICE FORWARD CONTROL POINT		
NAME	ADDRESS	TEL NUMBER
Blairvadach Outdoor Centre	Shandon	01436 820491/ 01436 820668
Garelochhead Police Office	Old School Road Garelochhead	01436 810222

5.2.16 Rendezvous Points

RENDEZVOUS POINT	
NAME	LOCATION
Kidston Car Park	Rhu Road Lower Helensburgh
Car Park	1/4 mile south of Whistlefield Roundabout Garelochhead
Loch Long Hotel	Main Road, Arrochar Tel. 01301 702424

5.2.17 Media Briefing Centre

MEDIA BRIEFING CENTRE		
NAME	ADDRESS	TEL NUMBER
Media Briefing Centre	Rhu	(01436) 821266 / 821268 / 821130

5.2.18 Police Incident Control Post

POLICE INCIDENT CONTROL POST		
NAME	ADDRESS	TEL NUMBER
L Divisional Police HQ	Stirling Road Overtoun Road Dumbarton	01389 822000
Clyde Off-Site Cente	Rhu Road Lower, Rhu	01436 821186 / 821185

5.2.19 Local Authority Rest & Reception Centres

REST/RECEPTION CENTRES		
NAME	ADDRESS	TEL NUMBER
Rhu Community Education Centre	Hall Road Rhu	01436 820451
Victoria Halls	Sinclair Street, Helensburgh	01436 673275
Arrochar Outdoor and Leisure Centre		01301 702355
Arrochar Primary School		01301 702261

5.2.20 Receiving Hospitals

RECEIVING HOSPITALS	
NAME	COMMENTS
GLASGOW ROYAL or GLASGOW WESTERN	IRRADIATED & CONTAMINATED CASUALTIES
IF A CASUALTIES INJURIES ARE SUCH THAT THE JOURNEY TO THESE RECEIVING HOSPITALS COULD PROVE FATAL, THAT PERSON SHOULD BE TAKEN TO THE NEAREST HOSPITAL WITH AN ACCIDENT AND EMERGENCY SERVICE. **IT IS ESSENTIAL THAT A RADIATION MONITORING SERVICE BE PROVIDED TO THESE OTHER HOSPITALS.**	
VALE OF LEVEN HOSPITAL or INVERCLYDE ROYAL HOSPITAL	

CLYDE AREA PUBLIC SAFETY SCHEME

CHAPTER 5

SPECIFIC BERTH INFORMATION

SECTION 3 - LOCH GOIL

General

5.3.1 Loch Goil is a remote sea Loch opening west off Loch Long. The population of the area is sparse with a total of approximately 2000 within a five mile radius, although the transient population may increase sharply in the tourist season. Farming in the area consists of hill farming and grazing, mainly sheep with a few cattle. There are no dairy farms in the area. White fish is caught in the Loch, but not in large quantities. Small amounts of shellfish are collected for human consumption.

5.3.2 Associated Mapping:

a. Admiralty Chart No 3746.
b. Ordnance Survey Map No 56 (1:50,000).

5.3.3 Berth Location:

56° 08.45' N 4° 53.35' W
GR Ref 205980

5.3.4 A map of the area, showing the 2km Pre-Planned Countermeasures Zones, is given at Figure 5.3 overleaf.

5.3.5 Potassium Iodate Tablet Location

The Surgery
LOCHGOILHEAD

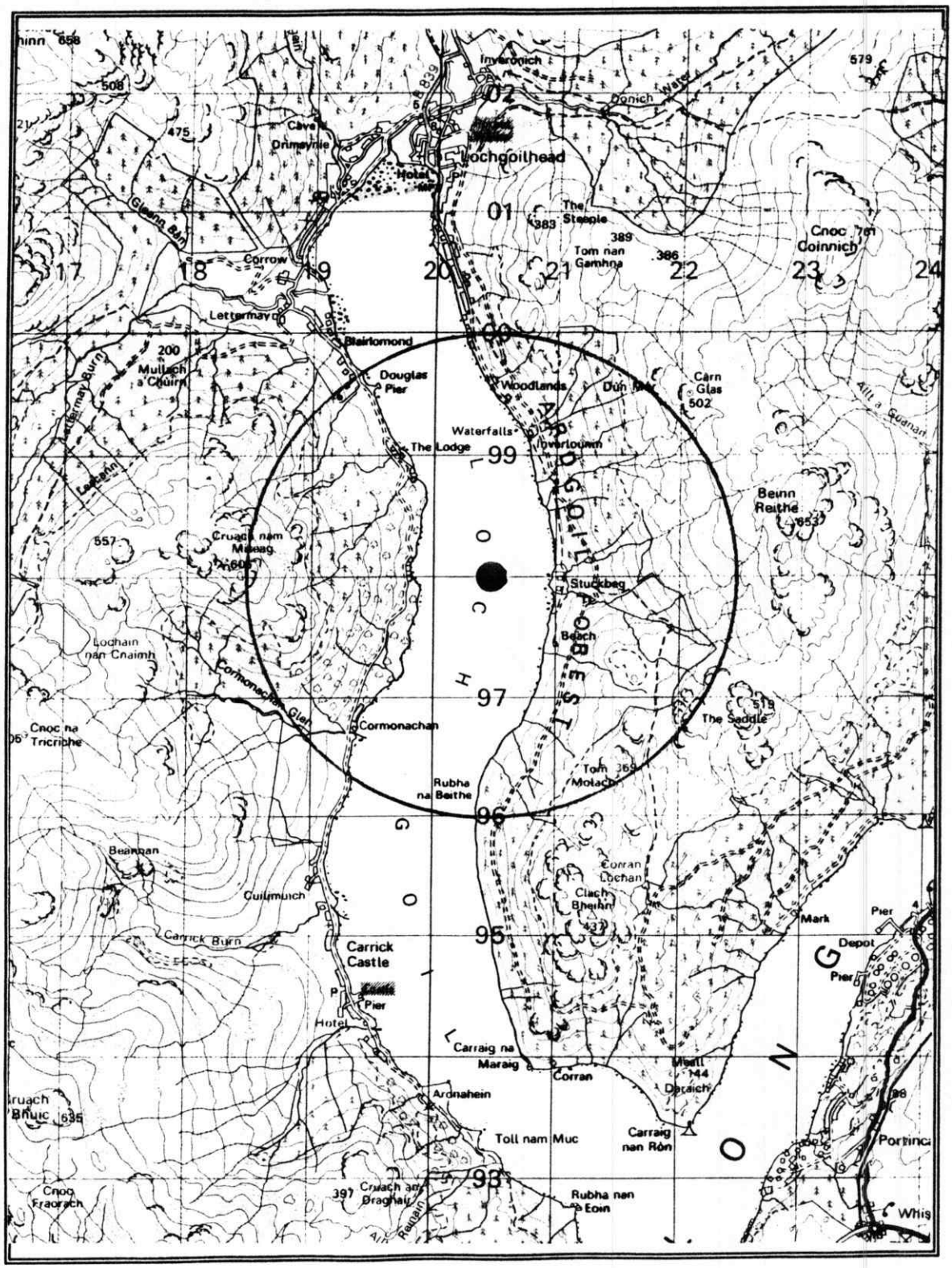

Fig 5.3 - Loch Goil Z Berth showing 2km PPCMZ

Population Information

5.3.6 As agreed with Civil Authorities, details have been restricted to centres of population only, rather than broken down into sectors. However, Argyll & Clyde Health Board maintain detailed figures for use by PITS Distribution Teams.

5.3.7 The following Table approximates centres of population with the numbers involved and the distance from the berth.

Table 5-3 Centres of Population

LOCHGOILHEAD			CARRICK	
Grid Ref	200-013		Grid Ref	193-945
Population	500		Population	60
Dist from Berth	3.5 km		Dist from Berth 2	3.4 km
GARELOCHHEAD			**PORTINCAPLE**	
Grid Ref	237-913		Grid Ref	235-934
Population	1600		Population	300
Dist from Berth	6.3 km		Dist from Berth	5.5 km

5.3.8 Vulnerable Communities within 2km

Stuckbeg Farm (Grid Ref 210-980).
0.5 km from berth.

CLYDE OFF SITE CENTRE TO CONFIRM THAT PITS HAVE BEEN ISSUED TO FARM BY NOISE RANGE STAFF.

5.3.9 Private Water Supplies within 2km

None.

5.3.10 Ferries

None.

KEY POSITIONS

5.3.11 Key positions will be determined on wind direction with the aim of remaining upwind of any potential hazard.

5.3.12 Monitoring Control Point

Within mobile Emergency Monitoring Control Vehicle established in:

a. Noise Range.
b. Adjacent to Carrick Castle.

5.3.13 Police Forward Control Point

FORWARD CONTROL POINT		
NAME	ADDRESS	TEL NUMBER
Lochgoilhead Primary School	Lochgoilhead	01301 703338
Carrick Castle Hotel	Lochgoilhead	01301 703251

5.3.14 Rendezvous Point

RENDEZVOUS POINT		
NAME	ADDRESS	TEL NUMBER
Car Park	Main Road Lochgoilhead	No phone available
Car Park	Carrick Castle Hotel Lochgoilhead	01301 703251

5.3.15 Media Briefing Centre

MEDIA BRIEFING CENTRE		
NAME	ADDRESS	TEL NUMBER
Media Briefing Centre	Clyde Off-Site Centre Port Rhu	(01436) 821266 / 821268 / 821130

5.3.16 Police Incident Control Post

INCIDENT CONTROL POST		
NAME	ADDRESS	TEL NUMBER
Dunoon Police Office	Argyll Road Dunoon	01369 702222
Clyde Off-Site Cente	Rhu	01436 821186 / 821185

5.3.17 Local Authority Rest / Reception Centres

REST/RECEPTION CENTRES		
NAME	ADDRESS	TEL NUMBER
Lochgoilhead National Activity Centre	Hall Road Lochgoilhead	
Lochgoilhead Public Hall	Lochgoilhead	
Carrick Castle Hotel	Carrick	01301 703251

5.3.18 Receiving Hospitals

RECEIVING HOSPITALS	
NAME	COMMENTS
GLASGOW ROYAL or GLASGOW WESTERN	IRRADIATED & CONTAMINATED CASUALTIES
IF A CASUALTIES INJURIES ARE SUCH THAT THE JOURNEY TO THESE RECEIVING HOSPITALS COULD PROVE FATAL, THAT PERSON SHOULD BE TAKEN TO THE NEAREST HOSPITAL WITH AN ACCIDENT AND EMERGENCY SERVICE. **IT IS ESSENTIAL THAT A RADIATION MONITORING SERVICE BE PROVIDED TO THESE OTHER HOSPITALS.**	
VALE OF LEVEN HOSPITAL or INVERCLYDE ROYAL HOSPITAL	

CLYDE AREA PUBLIC SAFETY SCHEME

CHAPTER 5

SPECIFIC BERTH INFORMATION

SECTION 4 - CAMPBELTOWN

General

5.4.1 Campbeltown is the main town on the Mull of Kintyre with a population of approximately 8,000. This increases considerably during the summer months. The town is the local centre for both farming and fishing industries. Dairy, arable and sheep farming all take place in the area. Milk is consumed locally and sent to the Campbeltown creamery where it is processed for local and national distribution. Fishing consists mainly of shellfish and some white fish, all landed at Campbeltown Jetty.

5.4.2 Associated Mapping:

a. Admiralty Chart No 1864.
b. Ordnance Survey Map No 68 (1:50,000).
c. Ordnance Survey Maps NR 71 & 72 (1:25000).

5.4.3 Berth Locations:

a. NATO Fuelling Jetty (Alongside)
55° 25.04 N 5° 34.22' W
Grid Ref 741-195

b. 152° Davaar Light 7.8 cables (Anchor)
Grid Ref 765-195

c. 105° New Quay Light 10 cables (Anchor)
Grid Ref 742-198

d. 109° New Quay Light 6.5 cables (Anchor)
Grid Ref 735-199

5.4.4 Potassium Iodate Tablet Location

Campbeltown Health Centre

5.4.5 A map of the area, showing the 2km Pre-Planned Countermeasures Zones, is given at Figure 5.4 overleaf.

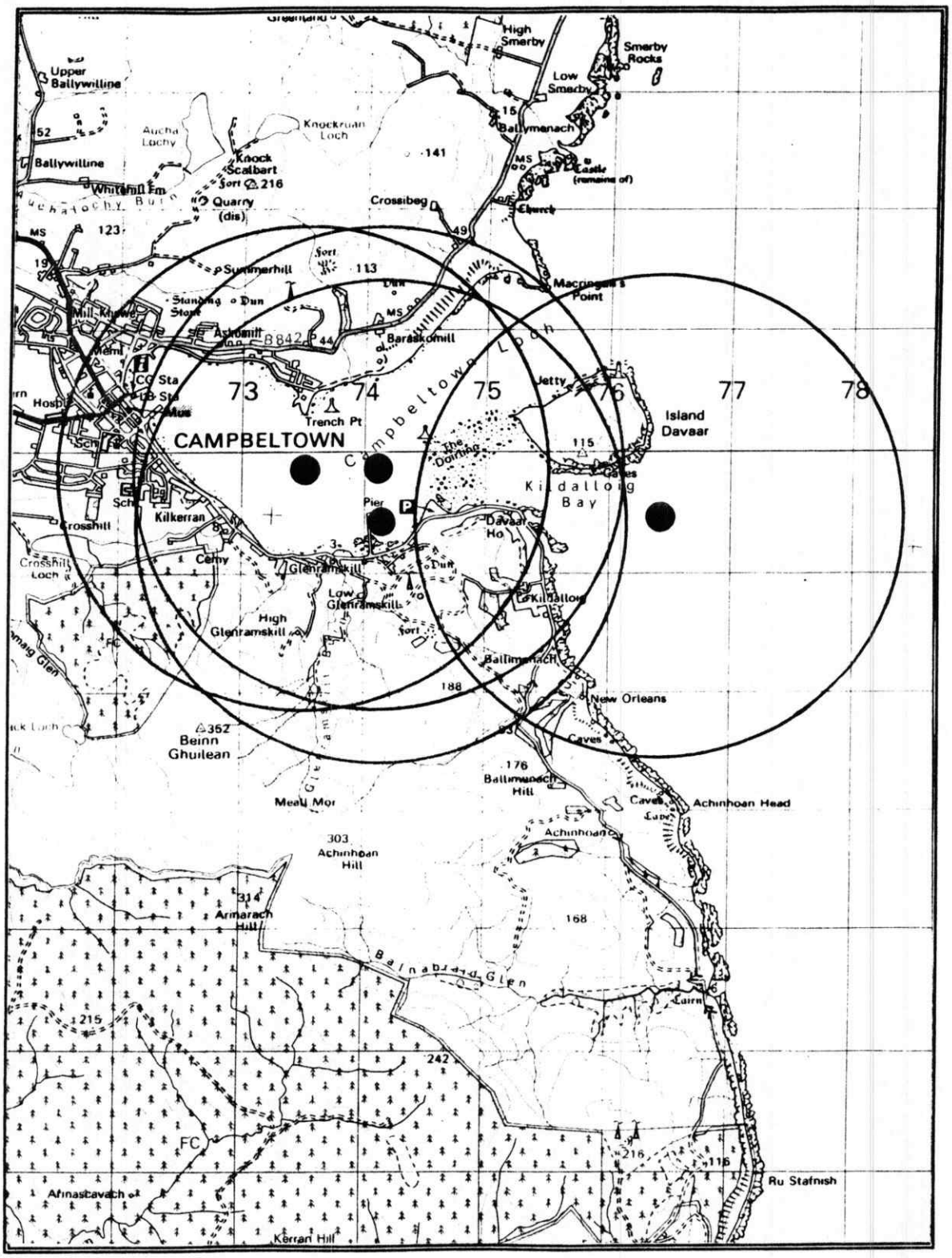

Fig 5.4 - Campbeltown Z Berths showing 2km PPCMZ

Population Information

5.4.6 As agreed with Civil Authorities, details have been restricted to centres of population only, rather than broken down into sectors. However, Argyll & Clyde Health Board maintain detailed figures for use by PITS Distribution Teams.

5.4.7 The town of CAMPBELTOWN has a population of approximately 8000 persons. It should be noted that there are 12 households within 550m (ie within the ACMZ) of the most frequently used berth alongside the Fuel Jetty. IT IS THE RESPONSIBILITY OF THE COSC TO ENSURE THAT FUEL JETTY STAFF HAVE DISTRIBUTED PITS TABLETS TO THESE RESIDENCES.

Ferries

5.4.8 Twice daily service to Northern Ireland.

5.4.9 Vulnerable Communities

VULNERABLE COMMUNITIES		
AREA	GRID REF	TEL NO
Dalintober Primary School	NR 719211	01586 552053
Castlehill Primary School	NR 717209	01586 553446
St Kieran's Primary School	NR 716207	01586 552903
Campbeltown Grammar School	NR 721197	01586 553648
Campbeltown Hospital	NR 719201	01586 552224
Castle Acres (Sheltered Housing)	NR 720205	01586 553182
Woodlands Hostel	NR 722205	01586 552515

Private Water Supplies within 2km

5.4.10 None.

KEY POSITIONS

5.4.11 Key positions will be determined on wind direction with the aim of remaining upwind of any potential hazard.

5.4.12 Monitoring Control Point

Within mobile Emergency Monitoring Control Vehicle established:

a. Campbeltown Police Station.
b. Old Quay.

5.4.13 Police Forward Control Point

FORWARD CONTROL POINT		
NAME	ADDRESS	TEL NUMBER
Campbeltown Police Office	Castlehill Campbeltown	01586 552253
RAF Machrihanish	Machrihanish Bay By Campbeltown	01586 554812

5.4.14 Rendezvous Point

RENDEZVOUS POINT		
NAME	ADDRESS	TEL NUMBER
RAF Machrihanish	Main Gate Machrihanish	01586 554812

5.4.15 Media Briefing Centre

MEDIA BRIEFING CENTRE		
NAME	ADDRESS	TEL NUMBER
Media Briefing Centre	Clyde Off-Site Centre Port Rhu	(01436) 821266 / 821268 / 821130

5.4.16 Police Incident Control Post

POLICE INCIDENT CONTROL POST		
NAME	ADDRESS	TEL NUMBER
Campbeltown Police Office	Castlehill Campbeltown PA 28	01586 552253
Clyde Off-Site Centre	Rhu	01436 821186 / 821185

5.4.17 Local Authority Rest / Reception Centres

REST/RECEPTION CENTRES	
NAME	TEL NUMBER
Victoria Hall, Campbeltown	01586 554469
Drumlemble Primary School	01586 810240
Drumlemble Village Hall	
Macrihanish Village Hall	

5.4.18 Receiving Hospitals

RECEIVING HOSPITALS	
NAME	COMMENTS
GLASGOW ROYAL or GLASGOW WESTERN	IRRADIATED & CONTAMINATED CASUALTIES
IF A CASUALTIES INJURIES ARE SUCH THAT THE JOURNEY TO THESE RECEIVING HOSPITALS COULD PROVE FATAL, THAT PERSON SHOULD BE TAKEN TO THE NEAREST HOSPITAL WITH AN ACCIDENT AND EMERGENCY SERVICE. **IT IS ESSENTIAL THAT A RADIATION MONITORING SERVICE BE PROVIDED TO THESE OTHER HOSPITALS.**	
VALE OF LEVEN HOSPITAL or INVERCLYDE ROYAL HOSPITAL	

CLYDE AREA PUBLIC SAFETY SCHEME

CHAPTER 5

SPECIFIC BERTH INFORMATION

SECTION 5 - ROTHESAY

General

5.5.1 Rothesay is the main town on the Isle of Bute and is a popular tourist location. The population is approximately 6300 and at nearby Port Bannatyne 1400, although these figures can be increased six fold during the summer months. There are some 90 farms on the island of all types including dairy farms. Milk is produced both for local consumption and for making cheese. No commercial fishing is carried out in Rothesay Bay.

5.5.2 Associated Mapping:

a. Admiralty Charts 1867 / 1907
b. Ordnance Survey Map No 63 (1:50,000).
c. Ordnance Survey Sheets NS 06 & 16 (1:25,000).

5.5.3 Berth Locations (all in Rothesay Bay):

a. SM1 Bouy - 55° 51.34' N 05° 02.90' W
Grid Ref 092-668

b. Anchorage - 55° 51.10' N 05° 02.50' W
Grid Ref 096-667

5.5.4 Potassium Iodate Tablet Location

The Health Centre
ROTHESAY

5.5.5 A map of Rothesay Bay, showing the 2km Pre-Planned Countermeasures Zones, is given at Figure 5.5 overleaf.

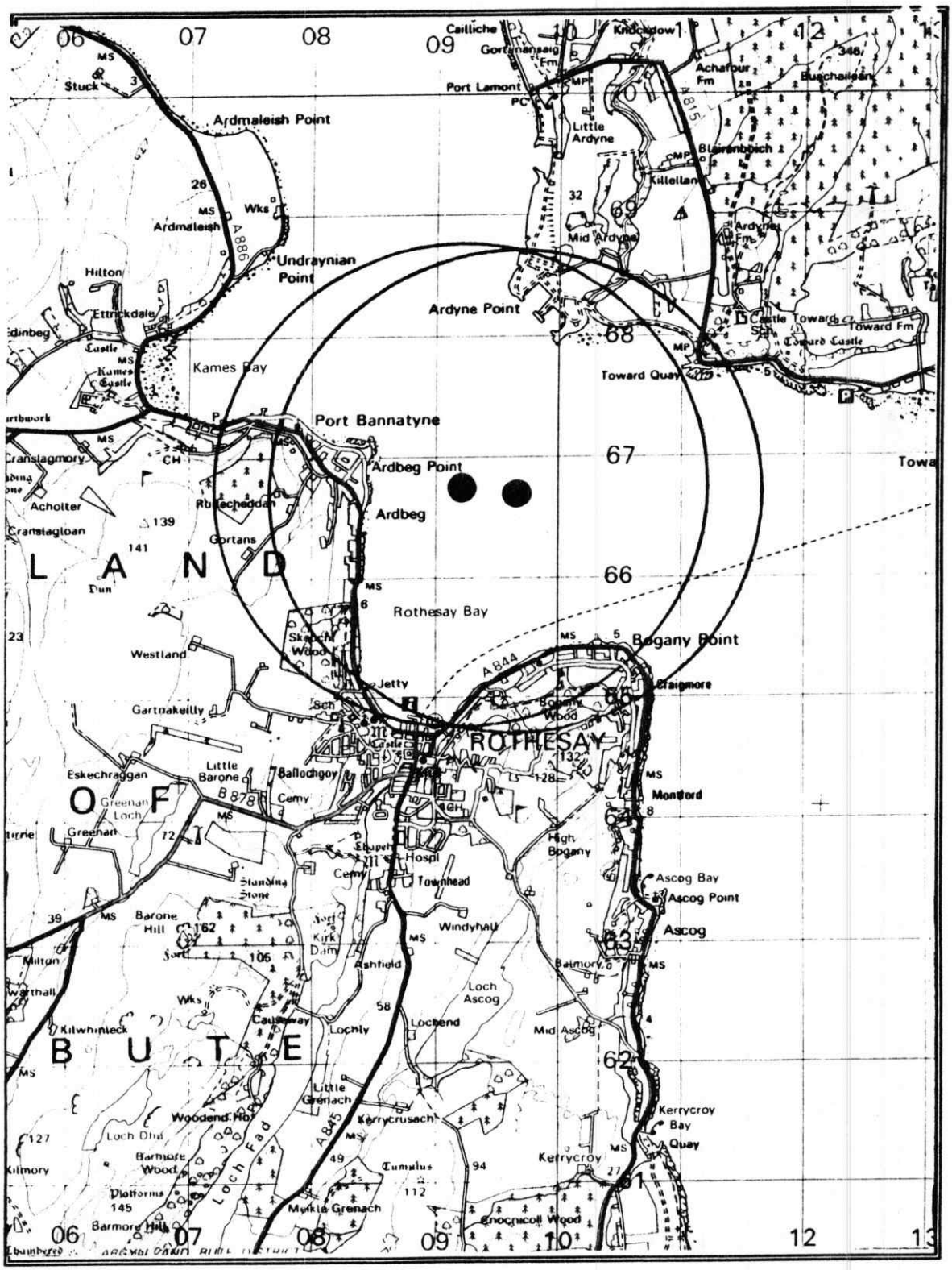

Fig 5.5 Rothesay Bay - Berth Locations & 2km Radius

Population Information

5.5.6 As agreed with Civil Authorities, details have been restricted to centres of population only, rather than broken down into sectors. However, Argyll & Clyde Health Board maintain detailed figures for use by PITS Distribution Teams.

5.5.7 The following Table approximates centres of population with the numbers involved and the distance from the berths.

Table 5-4 Centres of Population

ROTHESAY			PORT BANNATYNE	
Grid Ref (Square)	08-64		Grid Ref (Square)	07-67
Population	6300		Population	1400
Distance from Bouy	1.7 km		Distance from Bouy	1.6 km
Distance from Anchorage	1.4km		Distance from Anchorage	2 km
ARDBEG			**TOWARD / ARDYNE**	
Grid Ref (Square)	08-66		Grid Ref (Squares)	(Adjacent 10-68)
Population	763		Population	10-100
Distance from Buoy	0.75 km		Distance from Buoy	1.7 km
Distance from Anchorage	1.1 km		Distance from Anchorage	1.6 km

Ferries

5.5.8 Frequent departures from Rothesay Pier to Wemyss Bay. Vessels pass approximately 700m from Anchorage; 850m of Buoy.

5.5.9 Vulnerable Communities within 2km

VULNERABLE COMMUNITIES		
AREA	GRID REF	TEL NO
St Andrews Primary School	NS 086672	01700 503123
Ferfadd Court (Sheltered Housing)	NR 715207	01700 504795

5.5.10 Private Water Supplies within 2km

Castle Toward Outdoor Centre (100-687)

KEY POSITIONS

5.5.11 Key positions will be determined on wind direction with the aim of remaining upwind of any potential hazard.

5.5.12 Monitoring Control Point

Within mobile Emergency Monitoring Control Vehicle established in the car park of Rothesay Police Station.

5.5.13 Police Forward Control Point

POLICE FORWARD CONTROL POINT		
NAME	ADDRESS	TEL NUMBER
Craigmore Tea Room	Mount Stuart Road Rothesay	01700 502867
Ardbeg Road	Marine Parade Rothesay	No phone available
Main Pier	Rothesay	01700 502707

5.5.14 Rendezvous Point

RENDEZVOUS POINT		
NAME	ADDRESS	TEL NUMBER
Rothesay Primary School	High Street Rothesay	01700 503227
Ardbeg Bowling Club	Ardbeg Road Rothesay	01700 502164

5.5.15 Media Briefing Centre

MEDIA BRIEFING CENTRE		
NAME	ADDRESS	TEL NUMBER
Media Briefing Centre	Clyde Off-Site Centre Rhu	(01436) 821266 / 821268 / 821130

5.5.16 Police Incident Control Post

POLICE INCIDENT CONTROL POST		
NAME	ADDRESS	TEL NUMBER
Rothesay Police Office	High Street Rothesay	01700 502121
Clyde Off-Site Centre	Rhu	01436 821186 / 821185

5.5.17 Local Authority Rest / Reception Centres

REST/RECEPTION CENTRES			
NAME	ADDRESS	TEL NUMBER	GRID REF
The Pavilion	Argyll Street Rothesay	01700 504250	NS 089-646

5.5.18 Receiving Hospitals

RECEIVING HOSPITALS	
NAME	COMMENTS
GLASGOW ROYAL or GLASGOW WESTERN	IRRADIATED & CONTAMINATED CASUALTIES
IF A CASUALTIES INJURIES ARE SUCH THAT THE JOURNEY TO THESE RECEIVING HOSPITALS COULD PROVE FATAL, THAT PERSON SHOULD BE TAKEN TO THE NEAREST HOSPITAL WITH AN ACCIDENT AND EMERGENCY SERVICE. **IT IS ESSENTIAL THAT A RADIATION MONITORING SERVICE BE PROVIDED TO THESE OTHER HOSPITALS.**	
VALE OF LEVEN HOSPITAL or INVERCLYDE ROYAL HOSPITAL	

CLYDE AREA PUBLIC SAFETY SCHEME

CHAPTER 5

SPECIFIC BERTH INFORMATION

SECTION 6 - LOCH STRIVEN

General

5.6.1 Loch Striven is a long sea Loch opening north from the Isle of Bute. Port Bannatyne on Bute and Innellan on the Cowal Peninsula are the two nearest centres of population to the berth and have approximate population figures of 1,300 and 1,500 respectively. The increase during the summer months may be in the order of six fold. Farming in the area consists mainly of grazing and hill farming. The few dairy farms supply milk locally or despatch it to the creameries at Rothesay or Dunoon. Fishing consists of mainly white fish, although some salmon may be taken. Small amounts of shellfish are also collected from the loch for local consumption.

5.6.2 Due the local topography winds in the Loch can be fierce, funneled down between the high hillsides.

5.6.1 Associated Mapping:

a. Admiralty Chart Nos 1867 / 1907
b. Ordnance Survey Map No 63 (1:50,000).
c. Ordnance Survey Sheets NS06 / NS16 (1:25,000).

5.6.2 Berth Location:

55° 55.10' N 5° 04.00' W
GR Ref 085-736

5.6.3 Potassium Iodate Tablet Location

The Health Centre
ROTHESAY

5.6.4 A map of the area, showing the 2km Pre-Planned Countermeasures Zone, is given at Figure 5.6 overleaf.

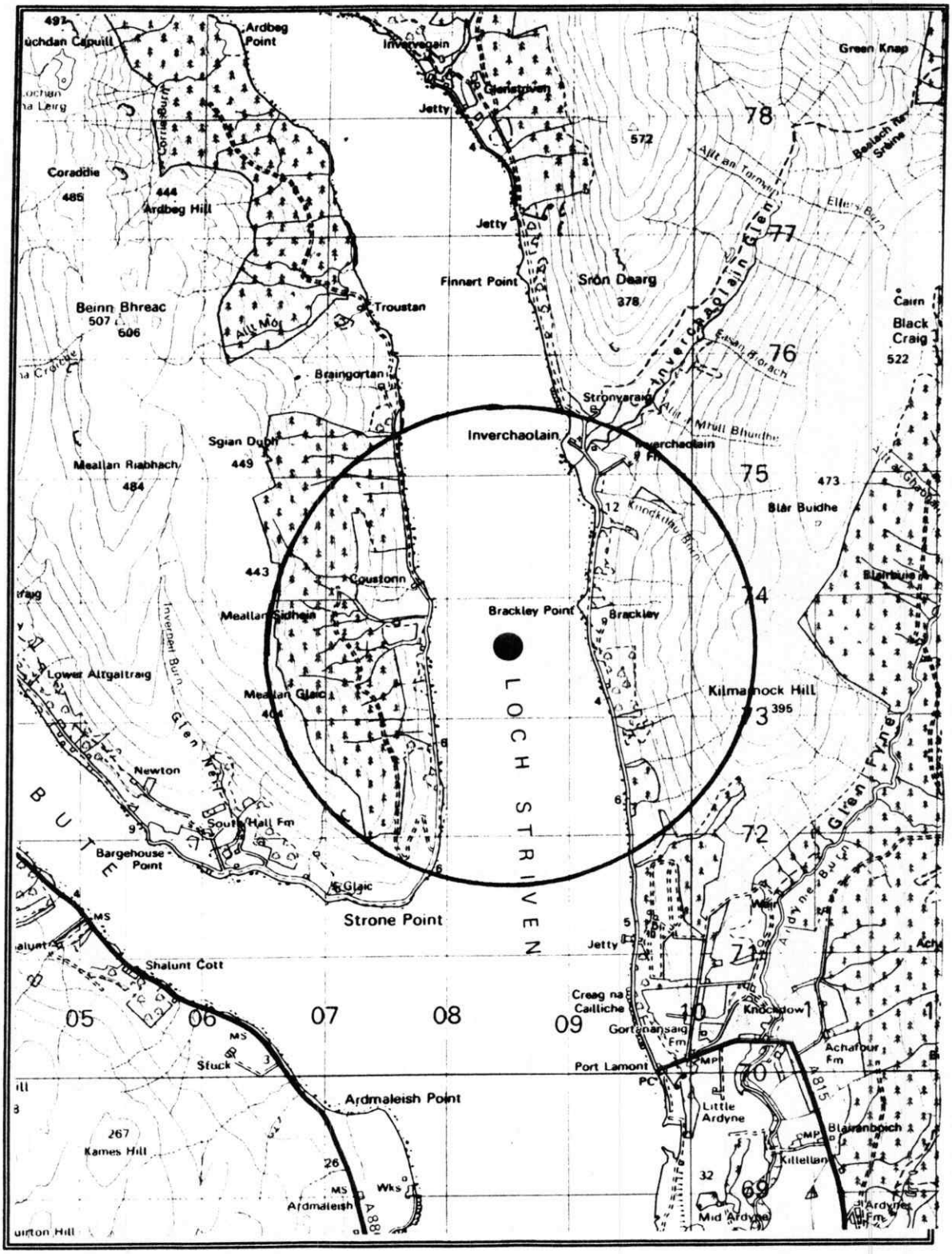

Fig 5.6 - Loch Striven Z Berth showing 2km PPCMZ

Population Information

5.6.5 As agreed with Civil Authorities, details have been restricted to centres of population only, rather than broken down into sectors. However, Argyll & Clyde Health Board maintain detailed figures for use by PITS Distribution Teams.

5.6.6 There are no large communities within the 2km PPCMZ, and no population within 550m. The following Table gives details of villages within 10km.

Table 5-5 Centres of Population

PORT BANNATYNE			INNELLAN	
Grid Ref (Square)	07-67		Grid Ref	147-697
Population	1400		Population	1300
Dist from Berth	7.5 km		Dist from Berth	7.5 km

5.6.7 Ferries

None.

5.6.8 Vulnerable Communities within 2km

None.

5.6.9 Private Water Supplies within 2km

PRIVATE WATER SUPPLIES	
AREA	GRID REF
INVERCHAOLIN	
Old School House	NS 090-753
Brackleymore	NS 093-738
Strone Peninsula	NS 075-713
Coustonn	NS 075-741

KEY POSITIONS

5.6.10 Key positions will be determined on wind direction with the aim of remaining upwind of any potential hazard.

5.6.11 Monitoring Control Point

Within mobile Emergency Monitoring Control Vehicle established in the NATO Fuelling Jetty (094-711).

5.6.12 Police Forward Control Point

FORWARD CONTROL POINT		
NAME	ADDRESS	TEL NUMBER
Private Entrance Road	at Old School House Inverchaolian	No phone available
Private Entrance Road	at Inverchaolian with single track road	No phone available

5.6.13 Rendezvous Point

RENDEZVOUS POINT	
NAME	ADDRESS
Toward Sailing Club	Toward Point

5.6.14 Media Briefing Centre

MEDIA BRIEFING CENTRE		
NAME	ADDRESS	TEL NUMBER
Media Briefing Centre	Clyde Off-Site Centre Rhu	(01436) 821266 / 821268 / 821130

5.6.15 Police Incident Control Post

INCIDENT CONTROL POST		
NAME	ADDRESS	TEL NUMBER
Dunoon Police Office	Argyll Road Dunoon	01369 702222
Clyde Off-Site Centre	Rhu	01436 821186 / 821185

5.6.16 Local Authority Rest / Reception Centres

REST/RECEPTION CENTRES			
NAME	ADDRESS	TEL NUMBER	GRID REF
Colintraive Hall	Colintraive	Keyholder (Hotel) 01700 841207	NS 037-743
Mill House	Tighnabruich	Keyholder (Hotel) 01700 811220	NR 978-728
Castle Toward Outdoor Centre		01369 870249	
Toward Primary School		01369 870259	

5.6.17 Receiving Hospitals

RECEIVING HOSPITALS	
NAME	COMMENTS
GLASGOW ROYAL or GLASGOW WESTERN	IRRADIATED & CONTAMINATED CASUALTIES
IF A CASUALTIES INJURIES ARE SUCH THAT THE JOURNEY TO THESE RECEIVING HOSPITALS COULD PROVE FATAL, THAT PERSON SHOULD BE TAKEN TO THE NEAREST HOSPITAL WITH AN ACCIDENT AND EMERGENCY SERVICE. **IT IS ESSENTIAL THAT A RADIATION MONITORING SERVICE BE PROVIDED TO THESE OTHER HOSPITALS.**	
VALE OF LEVEN HOSPITAL or INVERCLYDE ROYAL HOSPITAL	

CHAPTER 1

ANNEX A

GLOSSARY OF TERMS

AUTOMATIC COUNTERMEASURES ZONE	An area extending to at least 550m from the berth in all directions, within which countermeasures will be taken automatically on declaration of an accident.
BECQUEREL (Bq)	Unit of amount of radioactivity 1 Bq = 1 disintegration per second.
BETA RADIATION	Ionising radiation consisting of particles with a mass and charge equal in magnitude to an electron.
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 within which the reactor fuel is sealed.
CONTROL ROD	Rod of neutron-absorbing material inserted into the reactor core to absorb neutrons and either shut down or reduce the rate of fission reaction.
CONTAINMENT	**Primary Containment** The compartment surrounding the reactor plant made up of the pressure hull of the submarine and internal bulkheads designed to withstand the build-up of pressure after a severe reactor accident. **Secondary Containment** The compartment within the submarine hull on either side of the primary containment which can prevent internal leakage from primary containment to the atmosphere. Ultimate secondary containment comprises the entire immensely strong pressure hull of the submarine.
CONTAINMENT STATE	The state of integrity of the various containment boundaries. within the submarine
CORE	The region of a reactor containing fuel within which the fission reaction is occurring.
CRITICAL	A reactor is critical when the fission chain reaction is in a self-sustaining state.

CURIE
Old unit of amount of radioactivity.

Now superseded. See **BECQUEREL**.

1 Curie = 3.7×10^{10} BECQUEREL

DECAY HEAT
Heat produced by radioactive decay, particularly of fission products in the reactor fuel. This continues to be produced after the reactor has been shut down. It cannot be shut off, but gradually dies away after the reactor has been shut down.

DECONTAMINATION
The removal of radioactive material from a person or surface.

DOWNWIND SECTOR
Normally refers to the area 15° either side of the prevailing wind direction downwind of the accident site.

EMERGENCY COUNTERMEASURES
Measures consisting of shelter, evacuation or the administration of stable iodine, which may be implemented to protect the public in the emergency phase of an accident.

EMERGENCY REFERENCE LEVELS (ERL)
A range of intervention levels of averted dose advised by the NRPB to provide guidance on the need for emergency countermeasures following a nuclear accident.

EXCLUSION ZONE
A special control area for personnel, established in the immediate vicinity of the NPW.

EXTENDABILITY ZONE
An area extending in all directions from the boundary of the Pre-Planned Countermeasures Zone to a distance of 10km from the berth. Within this zone, outline contingency planning is required to facilitate monitoring and to provide a basis for extending countermeasures in the downwind sector in the very unlikely event that this is necessary.

FISSION
Disintegration of a nucleus into two lighter fragments (known as fission products) plus free neutrons - either spontaneously or as a result of absorbing a neutron.

FLASHING UP } PULLING RODS } STARTING UP }	Terms often used instead of `GOING CRITICAL'
FUEL	The enriched uranium fabricated for use in the core
GAMMA RADIATION	High energy electro-magnetic radiation of considerable penetrating power emitted by most radioactive substances.
GAMMA SHINE	The gamma radiation which would emanate directly from a submarine following a reactor accident.
GOING CRITICAL	The process of withdrawing control rods to increase the rate of fission, hence power, until the self-sustaining chain reaction is achieved.
HALF LIFE	Period of time within which half the nuclei in a sample of radioactive isotope undergo decay.
MELTDOWN	In a severe accident the melting of the fuel elements within the core.
NEUTRON	Uncharged sub-atomic particle, constituent of nucleus-ejected at high energy during fission, capable of being absorbed in another nucleus and bringing about further fission.
PLANT STATE	Refers to the pressure and temperature of the reactor.
POTASSIUM IODATE TABLETS	Tablets containing stable (i.e. non-radioactive) iodine which would minimise the uptake of radioactive iodine into the thyroid gland.
POWER RANGE TESTING (PRT)	A series of tests carried out after the initial criticality of a new core and designed to provide assurance of its integrity at all power levels.
PRE-PLANNED COUNTERMEASURES ZONE	An area extending in all directions from the boundary of the Automatic Countermeasures Zone to a distance of 2km from the berth. MOD will advise precautionary shelter and Potassium Iodate tablet distribution in the downwind sector of this zone immediately on detection of serious core damage, i.e. a Category 2 accident.
PRESSURISER	Electrically heated boiler in the primary coolant system which boils water as necessary to maintain coolant pressure by means of a steam bubble.
PRIMARY CIRCUIT	The completely sealed pipework containing the primary coolant connecting the reactor pressure vessel to the steam generator
PRIMARY COOLANT	Water which is pumped through the reactor core to remove heat generated there
RADIATION (Ionising)	Neutrons, alpha or beta particles or gamma rays
RADIOACTIVITY	Behaviour of substance in which nuclei are undergoing transformation and emitting radiation. It is measured

RADIATION DOSE

Absorbed dose - Energy imparted by radiation to unit mass of tissue. Unit: Gray. Symbol: Gy (Formerly expressed as RAD)

Equivalent Dose - Absorbed Dose weighted for harmfulness of different radiations. Unit: Sievert. Symbol: Sv. (Formerly expressed as REM)

Effective Dose - Equivalent Dose weighted for susceptibility to harm of different tissues.

Collective Effective Dose - Effective Dose to a group from a source of radiation

REACTOR CRITICAL

This is the normal operating state of the reactor with the control rods withdrawn sufficiently to give a self sustaining neutron population and fission rate

REACTOR PRESSURE VESSEL

The large container surrounding the reactor core

RELOCATION

The movement of members of the general public away from contaminated areas to avoid chronic long term radiation dose

SCRAM

Rapid shutdown of the fission process in reactor by inserting the control rods

SECONDARY CIRCUIT

The system that takes steam from the steam generators to the turbines and returns feed water

SELF-SUSTAINING

With respect to the **fission chain reaction**: when neutrons liberated in the fission process are just sufficient to maintain the chain reaction.

With respect to the **submarine**: when the nuclear plant is producing enough power to meet the electrical demands of the submarine without the need for shore supply.

SHIELDING

Material which attenuates radiation, i.e. reduces its intensity. Different materials provide effective shielding against different types of radiation

SHORE SUPPLY	An electrical supply to the submarine derived from a shore system which is used to supply the submarine with electrical power when the reactor is shut down
SHUTDOWN	The reactor state when all the control rods are fully inserted and the neutron chain reaction has ceased.
SITE SPECIFIC INTERVENTION LEVEL	Radiation dose selected from the ERL range at which a particular countermeasure would be implemented. To be expressed as an averted dose defined locally and detailed in local plans.
STEAM GENERATOR	Boiler in which hot primary coolant from the reactor core raises steam in a separate secondary system to drive propulsion machinery and turbo generators
SUB-CRITICAL	A reactor is sub-critical when the rate of fission is insufficient to maintain a self-sustaining chain reaction.

ANNEX 3F

INSTRUCTION LEAFLET TO ACCOMPANY ISSUE OF POTASSIUM IODATE TABLETS

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

The use of these tablets has been advised by HM Government's Health Departments. They will protect your health if used as directed.

Take the following dose immediately:

Adults (including pregnant women and women who are breast feeding)	two tablets
Children aged three to twelve years	one tablet
Children aged up to three years	half a tablet

The tablets should be swallowed with water

Special advice for babies and small children

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

Babies in hospital will be given a medically approved liquid preparation.

The only people who should not take the tablets are those who know that they are allergic to iodine and those who suffer from the very rare conditions of hypocomplementaemic vasculitis or dermatitis herpetiformis.

Your doctor will have told you if you suffer from one of these conditions.