

16 Feb 10

SITE EVENT REPORT COMMITTEE (SERC) - ANNUAL REPORT FOR 2009

References:

- A. NB BP 19 (Issue 3) - Reporting and Recording of Nuclear and Radiological Events.
- B. JSP 518 Issue 3 - Authorisation Condition 7 (Incidents on the Site).
- C. SERC annual report for 2008, BNSO/389/136/38.
- D. NRPA-3-11 (PORT) - NRP Event Reporting.

Purpose

1. The purpose of this report is to update the Site Safety Committee on nuclear and radiological event reporting and to provide a summary of trends and emergent issues at HM Naval Base Devonport during 2009.

Scope

2. This report covers all nuclear and radiological events that occurred on the MOD owned Naval Base Site during 2009 and that were reported in accordance with Reference A. This is a requirement for NBC to satisfy in accordance with Reference B. Also provided within the report is feedback concerning the SERC Targets set at Reference C and Targets for the SERC to work towards during 2010. Noting the continued favourable feedback received from the Site Safety Committee, this report follows a similar structure to the previous two years. It does not cover the DRDL Site for which the Company has separate arrangements.

Evolution of event reporting at HMNB Devonport

3. The arrangements for Nuclear and Radiological event reporting currently in use have remained largely unchanged since their introduction in the latter part of 2006. A key feature of these arrangements was the introduction of a single event report form in place of five earlier forms, simplifying the process. The changes introduced since 2006 have been evolutionary in nature, the most significant being the introduction of a new event cause code structure in 2007 when the previous arrangement was proving difficult to work with and of little benefit. With over two years experience of the revised code structure and as anticipated when it was developed, it has proved to be more easily understood, easier to work with and meets our needs. Indeed, Babcock is now considering revising its own cause coding arrangements and adopting a new structure based on an expanded version of the one currently in use on the MOD Site for nuclear and radiological events. During 2009, minor changes have been incorporated into Reference A to improve its clarity to staff unfamiliar with the process as a result of some of the lessons emerging from the November 2008 HMS TRAFALGAR PCD hose failure event (NSER 49/08). The arrangements for Nuclear and Radiological Events at the MOD Devonport Site were subject to a DNSR audit in early 2009. No findings or recommendations arose from this inspection, the audit reported that there was an effective process that was demonstrated as being properly and effectively implemented.

Event List

4. A list of nuclear and radiological events reported during 2009 is at Annex A. The list includes basic details, event cause, event consequence code and remarks where appropriate. In some cases the assessment is provisional pending ongoing investigation, implementation of recommendations and/or agreement by the SERC.

Event history analysis

5. As per the practice adopted since 2006, this report considers trends for nuclear and radiological events reported to the SERC over the preceding 5 years, in this case 2005 up to and including 2009. To enable a direct comparison, events prior to the introduction of the revised cause code structure in 2007 (BP19 Issue 1) have been re-assessed against the current tree structure for event cause (reproduced at Annex B). A high proportion of the events have been allocated more than one Immediate Cause (IC) and Underlying Cause (UC) code which should be considered when comparing the total number of events in any one year against the total number of IC codes for the same period.

6. **History.** A total of 54 events were reported during 2009. The 5 year history is:

Year	Total No of Events
2009	54
2008	55
2007	52
2006	32
2005	35

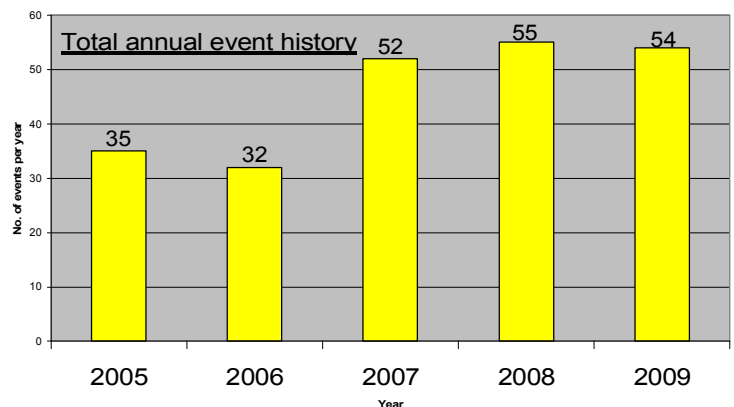


Table 1. No of events over past 5 Years.

It can be seen from the above event history that the number of events reported in 2009 is very similar to 2008 and 2007 and in line with expectations reported at Reference C. The 2006 report anticipated an increase from the 2005/2006 levels following the introduction of a less burdensome, less bureaucratic reporting system that was expected to encourage reporting. Initial indications are that 2010 is following a similar pattern to the past 3 years. There may be an increase in the number of events reported following the anticipated adoption of common event capture arrangements on the MOD and DRDL Sites later this year. (See also paragraph 29).

7. **Event Consequence (EC).** All events during 2009 were allocated an EC code in accordance with Reference A. This functions on a sliding scale from EC Code A, the most severe, to EC Code D. This is used in conjunction with a Task Frequency code in order to determine the Level of Investigation to be attached to the event; Trend, Root Cause Analysis (RCA) or Board of Inquiry. During the period 2005 – 2008, most events fell within the two lowest EC code categories. 2008 saw 4 NSERs categorised at Cat B¹,

¹ Cat B Consequence = Serious actual or potentially serious event. Cat B Description = Significant impact or potential for significant impact on safety or regulatory compliance. Investigation would be required to maintain compliance. Includes HSE reportable events.

(in all instances as a result of failure to meet regulatory compliance). In 2009, no events were categorised as Cat B.

8. RCA was undertaken for 27 events (50 percent). This included a number of events where only a trend investigation was indicated but where the SERC Chairman in consultation with the Responsible Officer judged that it would be beneficial to conduct a deeper investigation. This flexibility in the level of investigation was one of the changes introduced in late 2007 and continues to work satisfactorily.

9. **NRPA Event Reports.** NRPA Event Reports were introduced by the NRPA at the beginning of 2009, replacing Incident Reports and widening the scope of reporting. Ten events on the MOD Site at Devonport were reported in accordance with Reference D during 2009, slightly up on the 8 Incident Reports raised for events on the MOD Site during 2008. Although some event report assessments have yet to be received, 50 percent of the event reports identify poor or lack of control of nuclear related work. Two of these events required EOP action and in both instances operators were judged to have undertaken the correct actions. A further two events were associated with over age items in the Rod Control and Instrumentation (RC&I) suite, configuration control and lack of approved concessions. These RC&I events identified an issue that applied across the Trafalgar Class submarines and an audit of the state of instrumentation in all the T Class was conducted to establish a true baseline state. NPPT work is ongoing to resolve issues emerging from these events.

Breakdown of events by type and immediate cause code analysis

10. Events are categorised using the system described at Reference A. Three broad categories of cause are used for analysis of events.

- Equipment related event.
- Work control related event.
- Personnel failure event.

11. Each of these categories is then sub-divided to into three or four Immediate Cause (IC) codes. Applicable IC codes are allocated to each event. Thus it is possible that a single event may be allocated more than one IC code and could for instance be allocated more than one cause code under the personnel failure heading. The IC codes for events occurring over the past 5 year period are tabulated in Table 2.

IC code / description		2009		2008		2007		2006		2005	
		No.	%	No.	%	No.	%	No.	%	No.	%
1.1	Equipment Breakdown	13	17	6	6	6	8	2	4	3	5
1.2	Equipment not fit for purpose	4	5	2	2	5	7	2	4	0	0
1.3	Equipment correctly specified, incorrectly used	1	1	1	1	1	1	0	0	1	2
2.1	Preparation planning related event	7	9	9	10	16	21	10	20	9	16
2.2	Written control related event	11	15	20	20	18	24	12	24	17	31
2.3	Verbal control related event	1	1	6	6	6	8	3	6	2	4
3.1	Persons not adequately SQEP	5	7	4	4	4	5	7	14	6	11
3.2	Incorrect action taken despite suitable guidance	24	32	33	33	14	9	6	12	11	20
3.3	Persons not Available	1	1	5	5	0	0	2	4	1	2
3.4	Poor safety culture/ awareness	8	11	13	13	5	7	5	10	5	9

Table 2. Table illustrating the number of events for each IC code over the last 5 years².

12. A comparison of cause codes allocated for the year 2009 against the average for the period between 2005 - 2008 is illustrated in the pie charts below:

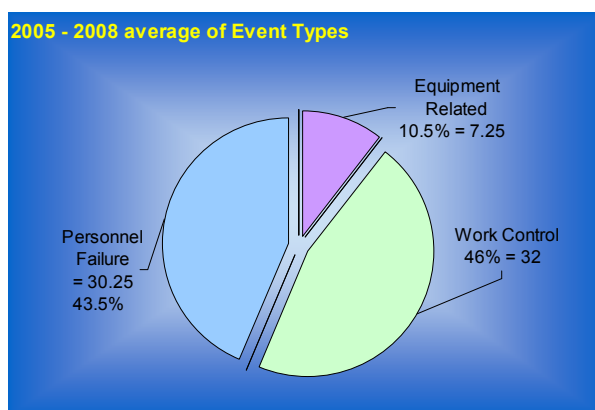


Chart 1.

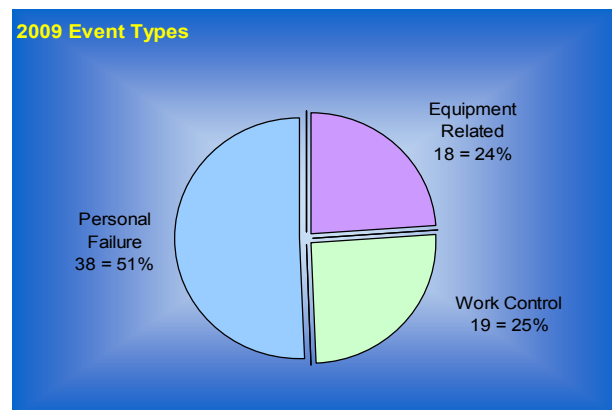


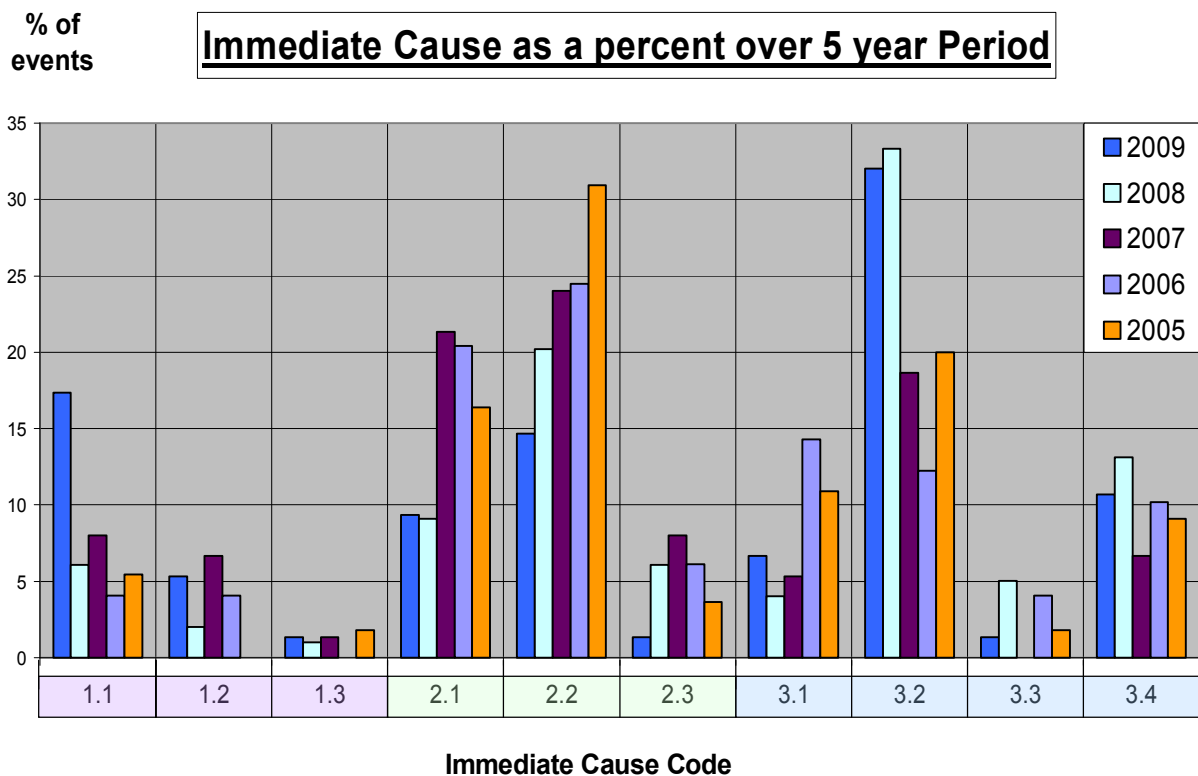
Chart 2.

13. These charts indicate that as a percentage of the total number of IC codes allocated, personnel failure (whilst down marginally on 2008) remains above the average of 2005 – 2008 and for the second year in succession work control related events have decreased. Since autumn 2008, there has been a marked increase in the number of equipment failure related events, 16 in total (3 in final quarter of 2008). The bulk of these relate to electrical shore supplies, the main problems being diesel derived supplies and breaker operations, both elements being a feature in some events. The SERC has some concern that this trend is indicative of ageing and degradation of infrastructure coupled with maintenance issues and/or lack of resource/investment over a number of years. A joint Babcock/MOD investigation to probe these issues involved with the electrical failure events was launched in September 2009 as a result of these events, but it has yet to report.

² It should be noted that due to the rounding up or down of % figures the total % for each year may not add up exactly to 100%.

14. In depth investigator training undertaken by some SERC members during the past 2 years has increased their awareness of human factors issues such as training, availability and performance. Events prior to the latter part of 2007 were retrospectively allocated IC codes from the current system by making a judgement based on the text of the investigation but without immediate knowledge of the events, thus perhaps failing to assign personnel failure codes that would now be allocated. These two factors may at least in part explain the step increase in the identification of personnel failure as a cause seen in 2008 and continued into 2009.

Immediate cause code analysis



Graph 1. Graph of IC codes reported over the last 5 years, shown as a percent of events.

15. **Trends.** Table 2 and Graph 1 give a breakdown of the Immediate Causes of these events. Incorrect action taken despite suitable guidance (3.2) remains the most significant IC allocated. Although still a significant element, written and verbal control related events (2.2 and 2.3) have declined which is perhaps indicative of increased efforts to address work control related events by reviewing and improving documentation to remove ambiguity and improve clarity; the current PAG Chairman has been particularly supportive of this effort. Of concern is the marked increase of equipment related events, namely equipment breakdown (1.1) and equipment not fit for purpose (1.2). Equipment breakdown events have more than doubled and equipment not fit for purpose has doubled over the past year. This trend has been recognised by the Authorisee and a joint Babcock/MOD investigation is underway to identify the extent of problem and provide recommendations to improve the services and infrastructure on the Authorised Site.

16. When considered in greater detail, the most frequent Underlying Causes³ for these particular IC codes are:

- Personal error (3.2.1)
- Ineffective written control (2.2.2)
- Maintenance related cause (1.1.2)
- Ineffective plan or preparation (2.1.2)
- Failure to comprehend risk present / impact on safety (3.4.2)
- No or insufficient training (3.1.2)

Event process performance

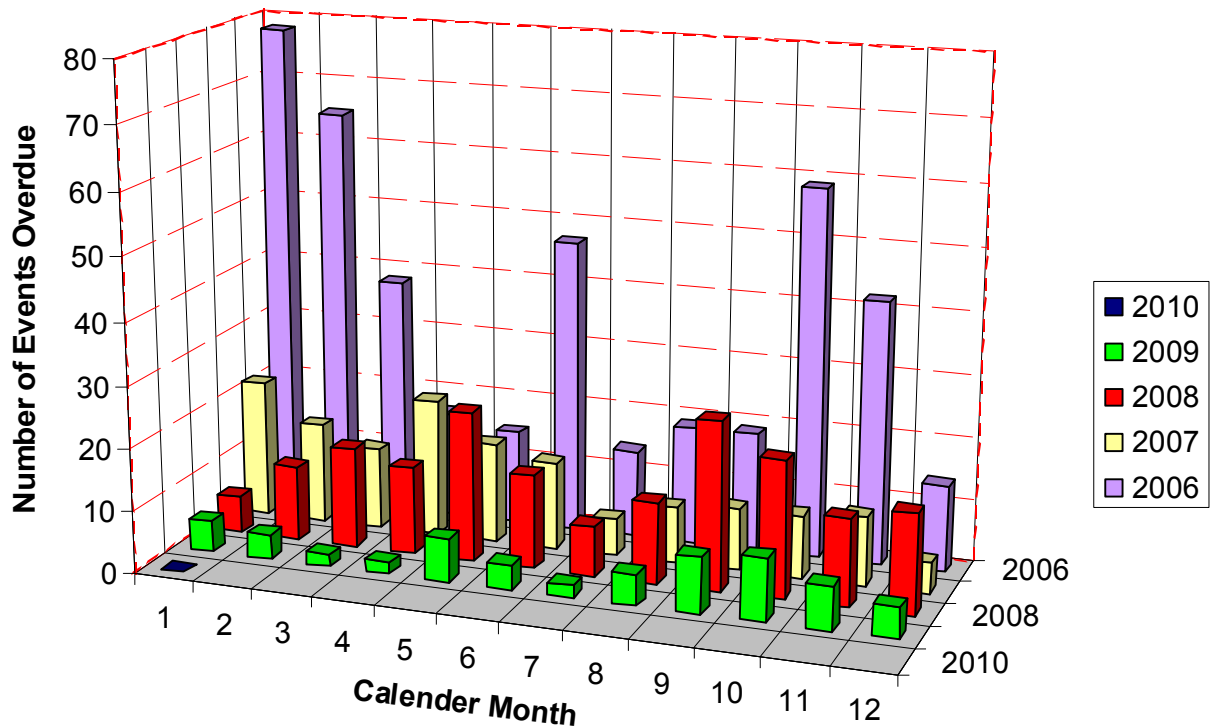
17. During the period 2007 to 2009, the SERC has devoted a significant amount of effort to reducing the backlog of long standing events that had not been closed and overdue events. This started with a change from bi-monthly to approximately monthly meetings of the SERC (11 meetings were held in each of 2008 and 2009) introduced at the end of 2006. It has also required a much more proactive approach from the current SERC Secretary and his predecessor to continually chase staff to deliver reports and address recommendations. This takes a significant amount of time and does not win him friends amongst the already heavily loaded staff that he is pursuing. The number of reported events is consistent with the previous 2 years but it is positive to note that the number of overdue events in 2009 has significantly decreased compared to previous years.

18. Noting that the SERC do not consider an event closed until the recommendations have been addressed and any consequent changes implemented and proven to work, historically some events had been open for up to 4 years. By the beginning of 2010 all but 2 of the 2008 NSERs (38/08 and 53/08) and 28 of 54 events raised in 2009 were closed. The closure of NSER 38/08 (accounting shortfalls with the transfer of effluent between sites) has experienced a delay generating and agreeing revised procedural documentation between MOD and Babcock, exacerbated by difficulty with transfer of draft documents for review between the Babcock and MOD IT systems following IT changes on both sites; this NSER is expected to be closed by Mar 10. NSER 53/08 (shore supply problem due to un-revealed shore breaker defect) was subject to a Babcock technical investigation with some recommendations that will be lengthy to implement. Typically, 6 months is allowed to address recommendations emerging from an event, noting that in some cases such as implementation of a design change or a technical investigation, longer may be required. Thus it is reasonable to expect that at any time there will be approximately 6 months worth of events open, 25 to 30 events on average.

19. The following two graphs demonstrate the performance that has been achieved by the SERC over the past four years as a result of improvements described at paragraph 17 above.

³ It should be noted that at the time of writing, the underlying causes allocated to a number of events including the electrical supply failures are a provisional assessment in the absence of final reports.

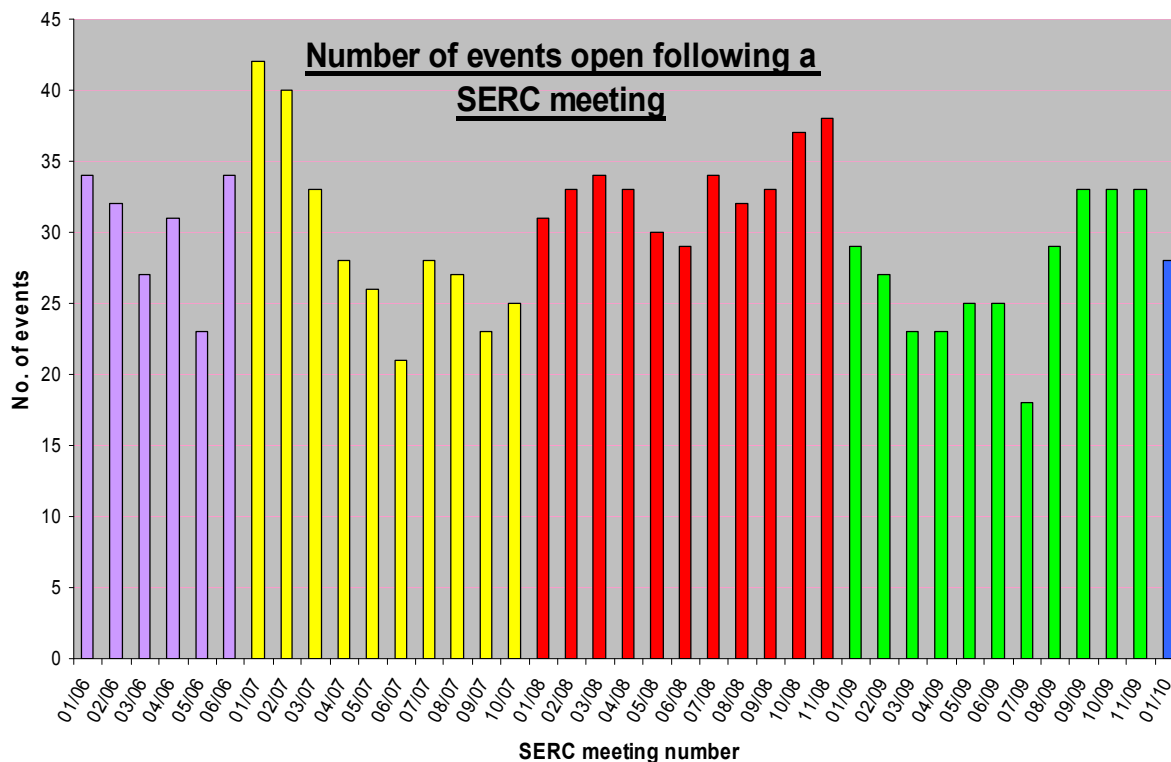
2006 to start of 2010 Overdue Events



Graph 2. No of events report submissions overdue each month⁴.

20. Graph 2 illustrates how the number of overdue event report submissions for a given calendar month has varied since 2006 when the revised reporting arrangements were introduced. In general, the performance during 2007, 2008 and 2009 has seen a significant improvement over 2006. It is evident that the effort and commitment by SERC members to process NSERs has materialised in a marked reduction of overdue events in 2009. January 2010 saw the number of overdue events fall to the lowest level that the SERC Chairman has experienced during his tenure. It will be difficult to maintain last year's performance with respect to overdue events and it is probably unrealistic to expect any further improvement. It is considered that the peaks for overdue events observed during spring and autumn 2009, whilst smaller than 2008, are attributable to the same issues. Resources available to address event reporting have been severely stretched at times such as seasonal leave and this was compounded by a heavy loading at the TXB during the summer and early autumn.

⁴ Overdue NSER submissions include overdue Part 1, Part 2, Part 3 and Part 4 aspects of the NSER.



Graph 3. No of NSERs remaining open following a SERC meeting⁵.

21. Graph 3 illustrates the number of events open following each SERC meeting. It can be seen that despite virtually the same number of events being raised in 2008 and 2009, overall, the number of events remaining open following a meeting has generally been lower in 2009. Typically, between 20 and 30 events have been open following a SERC meeting. The peak in the final quarter of 2009 is attributed in part to the same resource issues and TXB occupancy rates that contributed to the autumn peak of overdue events. What is not readily apparent from Graph 3 is that from autumn 2009 through to the time of writing the open event figure includes 9 NSERs associated with electrical supply failures for which the joint Babcock/MOD investigation report is still awaited. Whilst the SERC will strive to close events as soon as practicable, these 9 events may distort the open event figures for at least the early part of 2010.

Events of note

22. Interruption/loss of electrical shore supplies to the TXBs.

a. During 2009, 8 NSERs were raised as a result of the interruption/loss of shore electrical supplies to submarines berthed at the TXBs. None of these were attributable to submarine operator error or onboard machinery failure. Over a 2 day period in Aug 09, 3 NSERs (29/09, 30/09 and 31/09) were raised regarding the failure of the SRC Diesel Generators (DGs) supplying Primary and Alternative electrical supplies to a submarine to facilitate MG, DG and Main Battery release.

⁵ A nuclear site event report is deemed open until the SERC endorse the submitted Part 4 of the NBQ703 form. Endorsement is only granted once implementation of the recommendations are complete.

Two of these events (29/09 and 30/09) were initiated by high temperature alarms on the shore DGs which required the submarine to adopt a common AC shore supply line up; this configuration was not in accordance with the approved Cross Site Authorisation Group Temporary Operating Procedure or the Atomic Book requirements for the submarine machinery state. The second failure interrupted the onboard MG and DG maintenance/repair programme until satisfactory supplies were restored. The third failure (31/09) was due to insufficient fuel supplies to support DG operations until the next fuel delivery. Again this had an impact on the MG and DG maintenance programme. Three events (19/09, 41/09 and 49/09) were related to the failure of portable DGs on the jetty. The portable DGs were in use due to earlier failures of the shore infrastructure. Two of these events (19/09 and 41/09) were as a direct result of fuel starvation due to contamination in the fuel tanks blocking the fuel filters. On both occasions palliative action was taken to replace the fuel filters on a more frequent basis until the tanks could either be cleaned or replaced. NSER 49/09 was raised due to the unacceptable interaction between the shore diesel's protection control system and the submarine's monitoring system. This interaction did not provide Ship's Staff with the required level of confidence that a low Insulation Resistance (IR) on the submarine electrical system would be detectable. The shore diesel was subsequently replaced with a suitable alternative. The Babcock Control Engineer's task in dealing with some of these events was compounded by problems operating switchgear arising from defective battery chargers, failing batteries and battery derived supplies for breaker operating and mimic issues.

b. For a significant proportion of the year less than half of the 8 installed DG sets to support the DRDL and MOD sites have been available (at the lowest point only 2 sets were fit to run). At the time of writing and after many months of repair activity 4 sets are available with a fifth expected to be returned to service in the near future. The aforementioned NSERs are subject to a joint Babcock/MOD technical and managerial investigation (paragraph 13) and as previously mentioned this investigation has yet to report, therefore the SERC does not yet have a full picture of the problems or underlying causes. Nevertheless, conversation with the MOD investigators has suggested a number of features underlying the events. These include insufficient resources allocated to maintenance and repair (personnel and financial), lack of investment over a number of years, the maintenance regime, a culture of tolerating temporary arrangements and defects for lengthy periods rather than vigorous and timely prosecution and rectification, lack of visibility of the true material state of the machinery and thus the supplies that could be reliably supported. In turn this has meant that those planning work on submarines have not been aware of the risks to the supplies.

c. The SERC members have some concerns regarding the resources and management available to address recommendations likely to emerge from the electrical failures investigation in a timely manner since they are expected to predominantly fall in one already heavily loaded area. Additional resource and management are thought likely to be required. The SERC Chairman has notified CBS and DCBS(N) of these concerns.

23. **PCD hose arrangements.**

a. NSER 49/08 was raised in November 2008 following the release of a quantity of effluent to the environment due to a failure of a PCD hose. The joint MOD/Babcock investigation report into this event was completed in early 2009. The report made a substantial number of recommendations and these are being managed by the TXB Facility Operator under a Forward Action Plan (FAP). One key recommendation was to undertake a design review of the run/lead and support arrangements of PCD hoses from the submarine to the shore effluent facility as this was considered to play a part in the hose failure. Specific instructions regarding the minimum bend radii of the current PCD hose is now provided. During 2009, 2 NSERs have been raised (18/09 and 39/09) highlighting shortcomings with the rigging of PCD hoses including where the minimum bend radius limit has been infringed. In particular, NSER 39/09 sought to illustrate the bend radius and support issues and highlight the disappointing rate of progress towards satisfactory resolution. The SERC Chairman drew the attention of CBS to this event who subsequently briefed the Devonport Management Board. Since then, the “get well” process has been re-energised, a marked increase in effort by both MOD and Babcock staff to achieve satisfactory resolution of PCD hose issues has been evident. Some improvements have been implemented and others are in progress.

b. Following the November 2008 PCD failure, new PCD hose assemblies were manufactured including newly procured hose clamps of the type already in use. NSER 38/09 was raised due to the failure of one of the new PCD hose clamps revealed whilst blowing through the PCD hose following final flushing and prior to disconnection of the hose from the submarine. There was no evidence of water/effluent leakage from the defective hose clamp into the polythene containment surrounding the clamp and adjacent hose connection. The new clamps had been obtained from the same supplier as the original ones and were of the same appearance, zinc plated malleable cast iron. Babcock destructive and non-destructive metallurgical investigation of a sample of the new clamps identified that they exhibited brittle material properties and that they had hidden cracks, whereas clamps retrieved from old PCD hose assemblies behaved in a ductile manner. The new clamps have been quarantined and old clamps are being re-used subject to successful radiographic examination. Babcock is undertaking an audit of the process for purchasing safety implicated items in an attempt to understand how the brittle clamps entered service.

c. Following the events covered by NSERs 38/09 and 39/09, CBS has instituted a requirement that until further notice all PCD hose installations on the MOD Devonport Site are to be inspected and permissioned for use by a senior member of his directorate. These arrangements are likely to remain in place until confidence is gained that routinely hoses are being rigged and supported in a satisfactory manner.

24. **Water emerging from PCD discharge bend.** NSER 12-09 was raised following a near miss where water emerged from a PCD discharge bend into a temporary polythene catchment. The PCD hose had been flushed and disconnected from the submarine some minutes earlier. Water then unexpectedly emerged from the open end of the discharge bend as it was about to be disconnected. Prompt action by the HP staff

and fitters present ensured that all the water was contained in the catchment. The event was as a result of a discharge system valve line up error made by a tired member of ship staff who had been on duty for an excessive period of time. The submarine has taken managerial action to stop staff keeping excessively long duties.

25. **Power operations at the TXB.** After experiencing some issues in 2008, within a few days of each other in January 2009, two events involving problems with the conduct of critical operations jetty radiation monitoring surveys occurred (NSERs 02/09 and 04/09). Personnel failures and failures in procedure co-ordination featured in both events. As a direct result of this trend the nuclear procedure covering these surveys has been subject to extensive revision and the training of the monitors amended. No further events of this type have occurred since the revised procedure was introduced.

26. **Procedural non compliance.** 14 NSERs (26 percent) were raised in 2009 that feature procedural non-compliance as a factor for the event. A common weakness identified throughout is failure to follow the procedure as a result of human factor underlying causes. These events are by no means all similar. In some instances with the benefit of hindsight, it is apparent that the clarity of the nuclear procedure, the level of detail or its interaction with other documentation should have been better and changes have been/will be incorporated to address these lessons. Other instances under this heading relate to submarines operating without complying with the nuclear procedure or checking the nuclear logic issued to the submarine, again demonstrating that procedure shortfalls are not always the underlying cause but simply a failure to follow clear and concise documentation. The MOD site at Devonport is not unique in this respect; failure despite suitable guidance is understood to be a major contributory factor to events occurring on other MOD and civil sites.

Future Development 2009 - Review of Progress

27. Reference C identified 4 areas for future development:

- a. Further evolution of the event reporting process including minor changes to address recommendations emerging from an independent audit of the Naval Base AC7 arrangements undertaken to support the PRS and issues identified from routine SERC business and changes to address previously untested aspects of the reporting arrangements emerging from the November 2008 PCD Hose Failure event.
- b. Expansion of the number of trained investigators.
- c. Issue guidance for investigators/reporting officers in support of completing NSERs.
- d. The development and implementation of a common initial event capture arrangement in conjunction with Babcock should be taken forward.

28. Progress to varying degrees has been made in all 4 areas. The details are as follows:

a. The necessary changes to Reference A have been incorporated and the document up-issued to Issue 3. An AC 36 submission has been raised and approved to formalise the training requirement for the SERC Chairman and the SERC Secretary. Minor changes to the NSER form have been incorporated as a result of BR 3018 Incident Report instructions and requirements being superseded by Reference D.

b. A further four Naval Base Staff have completed the Independent Investigators Course at AWE Aldermaston in 2009. All have provided highly positive feedback on the course and have reported that they found the course broadened their mind and approach to investigations especially when considering the underlying causes of events.

c. The guidance on completing NSERs for Investigating Officers has been formalised and has been included in Reference A. Additionally the guide has been distributed to all SERC members who have provided positive feedback as to its clarity and usefulness.

d. Gapping of the NEO2 post for much of the year has limited the resource available to progress with the development and setting up of a common DRDL/MOD initial event capture arrangement, however, the work is moving forward. The Clyde Naval Base has recently adopted common capture arrangements, although, a visit to the Clyde highlighted a number of areas where problems were being experienced; some of the work currently underway is intended to avoid or mitigate similar problems when a common capture arrangement is introduced. The intention for Devonport, subject to satisfactory progress and resolution of issues is to introduce a common Babcock and MOD initial capture process for all events, not just nuclear and radiological, based on the Babcock Devonport OEF system. MOD users at Devonport can already access the Babcock OEF system, but access is through a convoluted route and functionality is limited. Work is underway to establish a more direct connection and test the full functionality that will be required by a small number of key MOD users. Consultation with MOD staff has identified a requirement for a limited number of modifications to menus within the Babcock system to cater for issues such as explosives events. To enable comparison of data, work is underway to establish common categorisation of events – from the SERC perspective the Category A to D events broadly correspond with the Babcock Category A to D but the Babcock system has two further categories, E and F for less significant events. Also forming part of this work, Babcock is investigating revising its own cause coding arrangements and adopting a new structure based on an expanded version of the one currently in use on the MOD Site for nuclear and radiological events, thus allowing common coding and valid comparison across the sites.

Future Development - 2010

29. The focus for development during 2010, resources permitting and subject to satisfactory commercial and contractual arrangements, is work towards the introduction of a common Babcock/MOD initial event capture process. There is a strong desire on

both sides to see this work through to success. The impact of such a change on event reporting on the MOD site is likely to be greatest for areas outside the remit of the SERC and it should not fundamentally change how the SERC functions. In some instances, through increasing awareness and hence use of the Babcock OEF system by MOD personnel, initial notification of a nuclear or radiological event on the MOD site is already provided through the Babcock OEF system and dialogue between the SERC Chairman and the Babcock OEF Manager. For the past few years, the Babcock OEF Manager has routinely ensured that all events captured under Reference A are entered into the Babcock system. It is anticipated, however, that the introduction of a common OEF capture system could see an increased number of lower category events reported that are of interest to the SERC.

30. Staff and course availability permitting, it is intended to provide investigator training to more SERC members.

FREEDOM OF INFORMATION (FOI) ACT REQUEST

31. Although during 2009, HMNB Clyde received a number of FOI requests relating to nuclear and radiological events, none were received at HMNB Devonport. As has become the practice since the receipt of an FOI request in 2007, a redacted version of the SERC Annual Report for 2008 (Reference C) has been forwarded to DE&S headquarters at Abbey Wood for publication on the internet.

MINISTERIAL REPORTING

32. There have been no requirements for Ministerial reporting under Reference A during 2009.

CONCLUSIONS

33. As anticipated, the number of events reported in 2009 was broadly in line with those reported during 2008 and 2007.

34. As observed during 2008, personnel failure features more strongly as an immediate cause than in earlier years. Although in some instances this has been due to poor performance by individuals, at least in part this change is considered to be due to increased awareness and probing of these issues by SERC members and those undertaking investigations. It is noted that this puts the Naval Base more in line with what is observed at other sites.

35. Incorrect action taken despite suitable guidance (IC 3.2) was the largest contributor when considering event immediate cause, followed by equipment breakdown (1.1) then written control related events (IC 2.2). ICs 2.2 and 3.2 have consistently contributed to the bulk of events reported over the previous 5 years.

36. The most marked change during 2009 has been the more than doubling of equipment failure related events (IC 1.1), particularly electrical supply failures. A joint Babcock/MOD investigation has been launched to understand the issues surrounding these events, but at the time of writing this investigation has yet to report.

37. The SERC performance improvements achieved in 2007 and 2008 have been sustained. The number of overdue events has been further reduced from previous levels; sustaining this achievement will be difficult.

38. The primary focus for development during 2010 will be work towards the introduction of a common Babcock/MOD initial event capture process.

Signed on Original

XXXXXXXXXXXXXXXXXX
Lieutenant Commander, Royal Navy
SERC Chairman

Annexes:

- A. Nuclear and Radiological Events Reported During 2009.
- B. Event Cause Classification Code Trees.

SERC ANNUAL REPORT 2009 GLOSSARY

Abbreviation	Definition
8W N	8 Wharf North
AC 6	Authorised Condition 6
AC 7	Authorised Condition 7
AMF	Active Materials Facility
AWE ALDERMASTON	Atomic Weapons Establishment Aldermaston
AWE IPR	AWE Independent Peer Review
BNSO	Base Nuclear Safety Organisation
CBS	Captain Base Safety
CCB	Cable Connection Box
COM 1 KPI	COM 1 Key Performance Indicator
COMDEVFLOT	Commodore Devonport Flotilla
CTCRM	Commando Training Centre Royal Marines
D/QHM	Deputy Queens Harbour Master
DCBS(N)	Deputy Captain Base Safety (Nuclear)
DDF	Devonport Distribution Facility
DEVNUSAFE	Devonport Nuclear Safe Plan
DG	Diesel Generator
DNSR	Defence Nuclear Safety Regulator
DRDL	Devonport Royal Dockyard Limited
DSC	Directorate of Safety & Claims
EA	Environment Agency
EMHQ	Emergency Monitoring Headquarters
EPD	Electronic Personal Dosimetry
FAP	Forward Action Plan
FOI	Freedom of Information [FOI Act 2000]
FOST	Flag Officer Sea Training
FP18-01-126	Functional Procedure 18-01-126
HMNB	Her Majesty's Naval Base
HMNB(D)	Her Majesty's Naval Base (Devonport)
HP	Health Physics
HPG	Health Physics Group
HPG(W)	Health Physics Group (WaterFront)
IC	Immediate Cause
IRR 99	Ionising Radiation Regulations 1999
LC 7	License Condition 7
MAXIMO	MAXIMO (trade name)
ME Staff	Marine Engineering Staff
MESM	Marine Engineering Submarine
MG	Motor Generator
MOD	Ministry of Defence
NABUST	Nuclear Accident Back-Up Support Team
NARO	Nuclear Accident Response Organisation
NB BP 24	Naval Base Business Process No 24
NB BP 68	Naval Base Business Process No 68
NBC	Naval Base Commander
NBQ	Naval Base Quality
NBQF	Naval Base Quality Form.

NBRSD	Naval Base Radiation Safety Department
NCF	Nucleonic Calibration Facility
NE02	Nuclear Engineer Officer 2
NESTLE	Normal Sea Going Line Up
NB BP 19	Naval Base Business Procedure 19
NP	Nuclear Procedure
NPPT	Nuclear Propulsion Project Team
NRPA	Nuclear Reactor Plant Authority
NSCC	Nuclear Safety Co- ordination Committee
NSER	Nuclear Site Event Report
OEF	Operating Experience Feedback
OPDOC	Operational Documentation
PAG	Procedure Authorisation Group
PCD	Primary Coolant Discharge
PET	Polyethylene terephthalate
PRS	Provisioning Review Statement
PSA	Probabilistic Safety Assessment
PSB	Plant State B
QHM	Queen's Harbour Master
RAMP	Revalidation Assisted Maintenance Period
RC&I	Reactor Control and Instrumentation
RCA	Request for Contract Action
Reg 28 of IRR 99	Regulation 28 of the IRRs 99
RPA	Radiation Protection Advisor
RPS	Review of Protective Security
S2022a	Material State Defect Report Form
SHP(RPA)	Senior Health Physicist (Radiation Protection Advisor)
SHPFO	Senior Health Physicist Facility Operator
SIRS	Ship Installed RADIAC System (Radiation Detectors)
SMA	Safety Management Arrangements
SOP	Standard Operating Procedures
SOUTH DSU	South Distribution/Supply Unit
SQEP	Suitably Qualified & Experienced Persons
SSHP	Ship Staff Health Physics
TLP	Torpedo Loading Party
TRAMS	Transportable Monitoring System
TXB	Tidal X Berth
TXBFO	Tidal X Berth Facility Operator
UC	Underlying Cause
UFF	Used Fuel Flasks
W024	Building W024

NUCLEAR AND RADIOLOGICAL EVENTS REPORTED DURING 2009

NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
01/09	10-Jan-09	When calibrating Primary Pressure Transducer SS were flushing primary coolant into a carbuoy when steam was seen at the carbuoy which resulted in the hose blowing off.	Equipment Related Event & Work Control Related Event	C	This NSER was subjected to an NRPA Event Report. The Part 4 was endorsed at the 07/09 meeting of the SERC. The Nuclear Procedure has been revised to Provide closer guidance with the venting process.
02/09	15-Jan-09	Jetty radiation survey not carried out as required by NP 97-009 by HPG(W) when a submarine went critical	Personnel Related Event	C	This NSER was subjected to an RCA Investigation and the Part 4 was endorsed at the 04/09 meeting of the SERC. Preventative actions included a review of FP18-01-126(3) and a training presentation is given to all staff employed within HPG(W) every 6 months.
03/09	16-Jan-09	Removal of significant amounts of shielding within the RC without authorisation.	Equipment Related Event & Work Control Related Event & Personnel Related Event	C	This NSER was subjected to an RCA Investigation and the Part 4 was endorsed at the 06/09 meeting of the SERC. A Dose Reduction Committee meeting was held in Jun 09 to discuss the issues and implement preventative actions.

⁶

Part 4 accepted means that the Part 4 of the submitted NBQ703 form has been endorsed by the SERC on the understanding that the implementation of the agreed recommendations has been completed. At this point in time the event is deemed closed.

Part 2 / 3 accepted means that the investigation and proposed recommendations detailed on the Part 2 / 3 of the submitted NBQ703 form have been endorsed by the SERC. At this point the event is still deemed open.

NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
04/09	21-Jan-08	HPF not in attendance at HPG(W) whilst planned critical ops were being conducted onboard HMS XXXXX and radiological surveys not correctly co-ordinated.	Personnel Related Event	D	This NSER received an RCA Investigation and the Part 4 was endorsed at the 05/09 meeting of the SERC. NP 76-001B(T) has been comprehensively reviewed and all the recommendations from the investigation have been incorporated. The procedure has been used on numerous occasions since without any events occurring.
05/09	05-Jan-09	A submarine conducted critical ops alongside with over age items in the RC&I suite without a valid concession.	Equipment Related Event & Work Control Related Event & Personnel Related Event	C	This NSER was subjected to an NRPA Event Report and the Part 4 was endorsed at the 06/09 meeting of the SERC. This event occurred as result of poor configuration of the NRP RC&I suite and a change to the submarine programme. Changes have been made to onboard procedures to ensure this incident is not repeated.
06/09	05-Jan-09	A submarine identified that they had operated for a 12 month period with overage components in the RC&I suite unknown to the maintainers and without valid concessions	Equipment Related Event & Work Control Related Event & Personnel Related Event	C	This NSER received an NRPA Event Report and the Part 4 was endorsed at the 03/09 meeting of the SERC. This event was raised for recording purposes as the investigation in NSER 05/09 will cover this event.
07/09	02-JFeb-09	Maintenance routines conducted at the CFCS resulted in an unplanned loss of AC shore supply to SSN 13 and SSN 14 at 8W(S) and 8W(N) respectively.	Equipment Related Event & Work Control Related Event & Personnel Related Event	D	This NSER received a Trend Investigation and the Part 3 was endorsed at the 03/09 meeting of the SERC. Completion of the Part 4 was extended to 12 months to allow progress of the recommendations in the Babcock Management Investigation (Event 13645)

NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
08/09	27-Jan-09	On review of waterfront ACW issues crystal reports it was noted that on 24th and 25th Jan dosimetry had not been drawn for routine source muster. According to HPG records source musters had been carried out.	Personnel Related Event	D	This NSER received a Trend Investigation and the Part 4 was endorsed at the 03/09 meeting of the SERC. The individual has been briefed on the requirement to draw and wear dosimetry and a sign has been placed reminding staff of this requirement.
09/09	06-Mar-08	Failure to fully distribute the Devonport Naval Base Nuclear Submarine Daily State Form due to coincident sickness absence by four BNSO staff.	Work Control Related Event	D	This NSER received a Trend Investigation and the Part 4 was endorsed at the 06/09 meeting of the SERC. A new routine for the distribution of the Daily State Form has been established and is working well.
10/09	18-Mar-09	On 18 Mar 09 3 Dirams heads were walked across from the NUB to HPG(W) in contravention of FSC600.	Work Control Related Event	D	This NSER received an RCA Investigation and the Part 3 was endorsed at the 05/09 meeting of the SERC. The Part 4 was extended until the 03/10 meeting to allow the RAM interface document to be reviewed.
11/09	18-Mar-09	Joint audit of Jet Vac operations has identified that recent Jet Vac decanting operations undertaken on 8WN and 9W were undertaken using the incorrect issue of Radioactive Waste Operating Procedure 281 - Issue 06 was used rather than the extant Issue 07.	Work Control Related Event & Personnel Related Event	C	This NSER received a Trend Investigation and the Part 4 was endorsed at the 07/10 meeting of the SERC. A review of the management arrangements and procedures associated with jet vac operations which resulted in a hold point being raised. This has subsequently been withdrawn and jet vac operations are now authorised on a case by case basis.
12/09	25-Mar-09	Following completion of flushing demineralised water iaw NP the Primary Coolant Discharge (PCD) hose was disconnected prior to sailing. A short while later a small quantity of water emerged from the goose neck pipework fitted to the submarine (not the PCD hose) into a catchment. The water was contained by Health Physics Staff in attendance and did not enter the Hamoaze.	Personnel Related Event	D	This NSER received an NRPA Event Report and the Part 4 was endorsed at the 10/09 meeting of the SERC. NP 98-073 was reviewed and managerial action was taken in connection with excessive working hours by a member of the submarine Ship's Company.

NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
13/09	01-Apr-08	Whilst adding a new pager number to the Devonport NARO Group call out list on 1 Apr 09 it was discovered that the contractual arrangements with Page 1 Communications for pagers covered by the NARO Group had been cancelled effective from 1 Apr 07. Despite cancellation of this contract Page 1 Communications had continued to page NARO Group pagers when requested at all times since 1 Apr 07.	Work Control Related Event	C	This NSER received a Trend Investigation and the Part 4 was endorsed at the 09/09 meeting of the SERC. The contract with Page One Communications has been reinstated, a desktop instruction has been produced to cover the management of the NARO pagers and a successful test of the pager system was carried out.
14/09	06-Apr-09	On 6 Apr 09 a new Serco Denholm vessel conducted Towed Array ops on a submarine in Plymouth Sound without having fully completed all necessary commissioning trials.	Work Control Related Event	C	This NSER received a Trend Investigation and the Part 4 was endorsed at the 07/09 meeting of the SERC. The tug successfully completed her trials programme and cleared for all Towed Array evolutions with SSNs in the Dockyard Port of Plymouth.
15/09	24-Apr-09	One of the stores (M046 - Unstow Store) was found to hold 4 radioactive items that had been transferred from RFA Argus. These were: 2 x Smoke Detectors (NSN 6350990516941); and 2 x electronic valves (Ref No. 038-0248). The items were stored in a suitable manner and identified with the correct warning notices. However, the M046 store is not designated to hold radioactive material and personnel working in the store are not appointed as Workplace Supervisors (WPSs) as such the items should not have been accepted in to the store. The other store identified as containing radioactive material was building S154 - Bulk Store. Within this facility three Sea Wolf Missile Launchers and one 20mm Gun Mount were identified as containing radioactive Gaseous Tritium Light Sources (GTLs). Again, this facility is not designated to hold radioactive material and there is no WPS appointed.	Personnel Related Event	D	This NSER received a Trend Investigation and the Part 4 was endorsed at the 09/09 meeting of the SERC. All items concerned were moved to a designated store for radioactive materials and the requirement for correct storage of radioactive materials have been re-iterated by the Base Logistics Commander to the required personnel. A routine programme of surveys has also been introduced.
16/09	29-Apr-09	Personal electronic dosimetry was not worn by Ships' Staff when conducting a nuclear procedure	Personnel Related Event	C	This NSER received an RCA Investigation and the Part 4 was endorsed at the 10/09

NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
		within a radiologically controlled area; i.e. the Stbd RSC.			meeting of the SERC. All DEVFLOT units have been briefed of the requirement to adhere to the RWCP when undertaking procedural work in controlled areas. Personnel have also been reminded of correctly wearing personal dosimetry in controlled areas.
17/09	04-May-09	At 041750Z May 09 whilst preparing to take the plant critical an Upstream Steam Leak in the RC occurred. Indications were a high RC Bilge Alarm and erroneous Tc indications. Ship's Staff conducted an RC Entry where it was apparent that there was a significant steam leak from the Port SG. The Manoeuvring Watchkeepers undertook EOP action (Upstream Steam Leak) and continued to cooldown to PSB. The Duty Pag Chairman was immediately informed. The PAG convened to discuss the event the following morning	Personnel Related Event	C	This NSER received an NRPA Event Report and the Part 4 was endorsed at the 10/09 meeting of the SERC. This event was a result of failing to comply with a nuclear procedure and inadequate control of nuclear implicated work. The ME Department were reminded about maintaining the required standards when carrying out nuclear implicated work. All Deputy Co-ordinators were reminded of their responsibilities concerning the control of work and the requirement to cross reference tag outs with nuclear procedures.
18/09	08-May-09	Primary Discharge Hose connected between the cope edge and the submarine at 8W(N) was found to have been rigged incorrectly against the latest DA guidance relating to minimum bend radius.	Work Control Related Event & Personnel Related Event	C	This NSER received a Trend Investigation and the Part 4 was endorsed at the 01/10 meeting of the SERC. A PCD Forward Action Plan has been produced which will address a number of issues regarding the connection and support arrangements of PCD hoses.
19/09	28-May-09	DC Shore supply lost to a submarine on 8W(S) on 28 May 09 at 0525 and re-energised at 0532. DC Shore Supply was connected due to Main Battery lay off.	Equipment Related Event	D	This NSER received a Trend Investigation and the Part 4 was endorsed at the 11/09 meeting of the SERC. The event was identified to fuel contamination within the generator's fuel tank. An upgrade package to empty and clean the fuel tanks will be implemented over the coming year and until all tanks have been cleaned, fuel filter inspections will be undertaken on a more frequent basis whilst the generators are running.

NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
20/09	02-Jun-09	The NRM Mk7 (Neutron Monitor) which had been used over the weekend for surveying a submarine on 9 Wharf had not been response checked for an unknown period of time.	Personnel Related Event	C	This NSER received an RCA Investigation and the Part 3 was endorsed at the 08/09 meeting of the SERC. All HPM staff have been re briefed on the correct requirements and importance of response checking of all radiac instrumentation. FP18-01-126(3) is currently going through the due process prior to issue and it is anticipated that the Part 4 will be closed out at the 03/10 meeting of the SERC.
21/09	03-Jun-09	A full SCRAM occurred during the conduct of in-life High Xenon Physics Tests. The SCRAM was due to operator error whilst the low power trips had been reset to 1.36%, in accordance with NP 99-095(13). The DME0 failed to recognise that he was now operating outside of the NP and without obtaining permission from the PAG Chairman, he gave permission to carry out a reactor start up.	Personnel Related Event	C	This NSER received an NRPA Event Report and the Part 4 was endorsed at the 11/09 meeting of the SERC. The Manoeuvring Room Supervisors and operators were appraised on their duties with regard to plant supervision. The DME0 was interviewed and fully appreciated of his failure to consult with the MEO and to inform the DNEO of the scram, and seek authorisation to take the reactor critical again.. Assurances were given to the Authorisee that this was an isolated event.
22/09	14-Jun-09	SSN16 was berthed at 8W(S) when she suffered a loss of DC Shore Supply at 17:20 during a period when the Main Battery was released for replacement under NP 71-007(T). This resulted in a loss of all DC supplies, the Stbd MG and Stbd Essential supplies and loss of flow in Stbd Loop.	Equipment Related Event	D	This NSER received an RCA Investigation and the Part 3 was endorsed at the 01/10 meeting of the SERC. Babcock conducted an investigation and recommendations have been entered onto the Babcock Q Pulse system for tracking. Actions have been placed against the Babcock Electrical Operations Manager.
23/09	16-Jul-09	On 06 Jun 09, two nuclear procedures (01-NDE-206(T), Surge Line Connection Inspection and 43-037T Rel/Reinstate Stbd Combined Cooler) were released, and work conducted, in contravention of the approved logic (issue 3 dated 03 Jul 09). The error was identified on 11 Jul 09, by the MEO on return from leave.	Personnel Related Event	C	This NSER received an NRPA Event Report and the Part 4 was endorsed at the 01/10 meeting of the SERC. A full QA audit onboard was undertaken by DEVFLOT which identified minor findings only. Additionally all Cat A watch keepers have been reminded about the requirement for hand overs to include a formal check of

NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
					nuclear procedures against the nuclear logic and parallel working log.
24/09	15-Jul-09	On Tuesday 14 July, during a period when the fixed Fresh Water (FW) main on 8 Wharf was undergoing replacement work, 2 submarines berthed at 8 Wharf North and South respectively, had no FW supply to their Emergency Cooler Tank (ECT) for approximately 4 hours.	Work Control Related Event	C	This NSER received a Trend investigation and the Part 4 is due by the 03/10 meeting of the SERC. A likely recommendation from the joint Babcock/MoD investigation is that the FWAG be constituted on a more formal basis to co-ordinate and control the work being carried out on the TXBs.
25/09	17-Jul-09	Whilst Ship Staff were conducting NP 05-138(T) (Release and Maintenance of the Primary Sampling Sink), they failed to follow the enclosed Nuclear Technical Instruction on 2 separate occasions (9 and 13 May). On the first occasion the cartridge was replaced but failed test. A second occasion NP was released to RxR the failed cartridge which passed test, however on both occasions the cartridge assembly was not replaced iaw the NTI attached to the NP. Therefore, doubt existed whether the cartridge was fitted correctly.	Personnel Related Event	D	This NSER received an NRPA Event Report and the Part 3 was endorsed at the 10/09 meeting of the SERC. The Nuclear Procedure has been amended to make it more explicit and the cartridge valve was changed a third time in accordance with the correct documentation. The Part 4 is due for endorsement by the 03/10 meeting of the SERC.
26/09	31-Jul-09	An ACCS submission to cover temporary changes to the site Nuclear Accident Emergency Arrangements (NAEA) because of Navy Days 2009 was produced but did not initially follow due process as defined in BP30. The error was identified and the submission was then scrutinised by the required bodies.	Personnel Related Event	D	This NSER received a Trend Investigation and the Part 4 is due for endorsement at the 03/10 meeting of the SERC. The recommendations in the Part 2 were for BP 30 to be amended to allow for parallel processing of documentation through the IPR and Safety Committees, and a reminder should be sent to all personnel involved in the production of safety justification documents to consult the latest version of BP 30 to ensure correct due process is followed.

NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
27/09	04-Aug-09	A Health Physics Monitor (HPM) was allocated to work at the Waterfront during nightshift but was not SQEP for the duties.	Personnel Related Event	C	This NSER received an RCA Investigation and the Part 4 was endorsed at the 01/10 meeting of the SERC. A joint audit of the Babcock HPM and HPF training processes and record keeping was conducted in Nov 09 which found that the training processes, training record keeping and training demonstrability was seriously lacking. These findings were entered onto the Babcock Q Pulse system and these are due to be closed by Mar 10
28/09	04-Aug-09	On the night shift of Sunday 2 nd August (running in to Monday 3 rd August) Babcock Marine provided two monitors to the waterfront Health Physics Group who were unable to wear respiratory protection because they were medically downgraded. This meant that they were not suitable to man the Primary Response Vehicle (PRV) in the event of a nuclear/radiological emergency occurring. In addition, at 0630 on Monday 3 rd August one of the monitors completed his shift and left the site with out being replaced. This meant that for a period of approximately 1 hour there was only one person present at the waterfront area and the PRV could not have been deployed within the mandated timescale.	Work Control Related Event & Personnel Related Event	D	This NSER received an RCA Investigation and the Part 3 was endorsed at the 10/09 meeting of the SERC. Recommendations from the Part 3 are currently being reviewed and implemented if appropriate and the Part 4 is due for submission at the 03/10 meeting of the SERC.
29/09	14-Aug-09	A submarine was connected to Primary and Alternative Electrical supplies to facilitate MG /DG and main battery release. The shore DG supporting the alternative supply suffered a high temperature alarm condition(Drive End Alternator Bearing). The 400 Amp Alternative AC shore supply to HMS XXXXXXXX at 8W(S) was re-aligned to a common source grid supply for a period of 20 mins to allow for the shutdown of the shore Diesel Generator and the run up and connection of a replacement DG (EPH 4 DG6).	Equipment Related Event	D	This NSER received a Trend Investigation. A joint Babcock/MoD investigation is underway and nearing completion and the findings and recommendations would be entered onto the Babcock Q Pulse System. In discussing this and other similar/related events, SERC members expressed concern that it was likely that many of the recommendations would fall on the Babcock Electrical Operations Manager. The SERC Chairman has written to DCBS(N)

NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
		This process took approximately 20 mins to complete during which time the configuration of the shore electrical system was not in accordance with the approved XSAG TOP or the AB requirement for the submarine machinery line up.			expressing member's concerns about the resource available for addressing these recommendations and overloading of the Babcock OEM. The Part 4 is due for submission at the 03/10 meeting of the SERC.
30/09	15-Aug-09	A submarine was connected to Primary and Alternative Electrical supplies to facilitate MG / DG and main battery release. The shore DG (SRC DG 6) supporting the alternative supply suffered a high temperature alarm and was shutdown. This resulted in the loss of the 400 Amp supply to HMS XXXXXX. Shore electrical system reconfigured to supply HMS XXXXXXX's 400 Amp supply from a common source to the 800A and DC supply. The programme to release Talent's Second MG and DG has been held subject to restoration of satisfactory supplies.	Equipment Related Event	D	This NSER received a Trend Investigation. A joint Babcock/MoD investigation is underway and nearing completion and the findings and recommendations would be entered onto the Babcock Q Pulse System. In discussing this and other similar/related events, SERC members expressed concern that it was likely that many of the recommendations would fall on the Babcock Electrical Operations Manager. The SERC Chairman has written to DCBS(N) expressing member's concerns about the resource available for addressing these recommendations and overloading of the Babcock OEM. The Part 4 is due for submission at the 03/10 meeting of the SERC.
31/09	15-Aug-09	HMS XXXXXX was connected to Primary and Alternative Electrical supplies to facilitate MG / DG and main battery release. Following the Shutdown of the SRC DG 6 supporting the alternative supply and rectification of the defect condition (report by separate NSER) it was noted that the fuel tank level was low and that there was insufficient fuel available to support DG operation until the next delivery could be achieved without running the risk of drawing sludge and debris from the lower part of the fuel tank into the DG fuel system. The submarine's supplies were left configured in the split line up with primary and alternative being supplied from a common source owing to the inability to run any of the 4 shore	Equipment Related Event	D	This NSER received a Trend Investigation. A joint Babcock/MoD investigation is underway and nearing completion and the findings and recommendations would be entered onto the Babcock Q Pulse System. In discussing this and other similar/related events, SERC members expressed concern that it was likely that many of the recommendations would fall on the Babcock Electrical Operations Manager. The SERC Chairman has written to DCBS(N) expressing member's concerns about the resource available for addressing these recommendations and overloading of the Babcock OEM. The Part 4 is due for

NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
		DGs that could be used to provide the alternative supply. The programme to release XXXXXX's second MG and DG has been held subject to restoration of satisfactory supplies.			submission at the 03/10 meeting of the SERC.
32/09	18-Aug-09	Non approved changes to nuclear related telephones were implemented on 17 Aug 09 without any notice to the ATO, who is the NB Intelligent Customer for telecommunications. Numbers were changed in advance of work to upgrade the telephone exchange without this information being promulgated or agreed (not following the process defined in NBBP 32).	Personnel Related Event	C	This NSER received a Trend Investigation. The recommendations at the Part 2 were supported by the SERC and the Part 4 is due for submission by the 03/10 meeting of the SERC.
33/09	11-Aug-09	The effluent discharge system cope edge connection point bunded area was found to contain water during a routine check of the jetty area by the Wharfmaster. At the time one submarine was connected to the effluent system connection point, but was not in the process of discharging. The cope edge valve, located in the bund was shut and the polythene protection around the flanged connection was intact with no evidence of water ingress. There was no indication that the bund overflowed.	Equipment Related Event	D	This NSER received a Trend Investigation. The EA visited the Naval Base to discuss draining from the bunded area. The control of the bunded area remains 'as is' and the TXB has a list of conditions which need to be implemented before the bunded drain valve may be left open when the PCD hose is not in use. The Part 4 is due for endorsement at the 02/10 meeting of the SERC.
34/09	20-Aug-09	On 20 Aug 09, a submarine failed to inform the requisite organisations prior to Ship's Staff disconnecting all communication lines, including Nuclear Implicated Direct Lines to the SRC Control Engineer and EMHQ in preparation for a vacuum test.	Work Control Related Event	D	This NSER received a Trend Investigation and the Part 4 was endorsed at the 11/09 meeting of the SERC. Due to a long standing defect the submarine has an interim ship along side fit for its communications. All Ship's Company have been briefed on the importance of informing the relevant sections before disconnecting communications.

NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
35/09	7-Sep-09	Failure to bring the NARO to the ALERT State when a T Class submarine went into PSA in preparation to sailing. The submarine entered PSA at 2220 on 6 Sep 09 and the NARO was brought to the ALERT State at 0935 on 7 Sep 09.	Personnel Related Event	D	This NSER received a Trend Investigation and the Part 4 was endorsed at the 01/10 meeting of the SERC. A system is now in place which prompts all members of the NCE&S Section of the requirement to bring the NARO to the ALERT State. This system appears to be working well.
36/09	8-Sep-09	During an air display for Navy Days 09 there was an infringement of the 230 m line by a fixed wing aircraft.	Personnel Related Event	D	This NSER received a Trend Investigation and the Part 4 was endorsed at the 01/10 meeting of the SERC. A copy of the NSER is filed in the Navy Days Pack to enable those planning future Navy Days type events to highlight that consideration should be given extend the display centre for future flying displays.
37/09	14-Sep-09	On a recent monthly muster of the Active Materials Facility it was discovered that HPG(W) receipt number R667/09 a carbouy was found to be missing. The carbouy was transferred to HPG(W) from a submarine on 4 Aug 09. The carbouy was empty and had been processed through the active waste monitor and had indicated no activity present.	Personnel Related Event	C	This NSER received an RCA Investigation and the Part 4 was endorsed at the 11/09 meeting of the SERC. All recommendations were supported by the SERC and have been implemented to ensure that the handling, processing and accounting of carbouys is improved.
38/09	12-Sep-09	Failure of a clamp on the PCD Hose when blowing through with air as part of the disconnection process.	Equipment Related Event	C	This NSER received an RCA Investigation . A Babcock metallurgical assessment of the clamps has identified defects from the manufacturing process. Babcock plans to conduct an audit in Feb/Mar 10 to look at the process of purchasing safety related items for nuclear facilities. The Part 4 is due for submission at the 03/10 meeting of the SERC.
39/09	14-Sep-09	The PCD hose connected between the submarine berthed at 8W South Inner and the installed effluent facility connection on the wharf structure was routed/supported such that the minimum bend radius requirement of 610 mm (laid down in NP98-071) was breached in a number of locations	Equipment Related Event	C	This NSER received a Trend Investigation . Recommendations from the investigation have been incorporated into the PCD hose Forward Action Plan. The rigging and connection of PCD hoses is now independently checked and authorised for

NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
		along the length of the hose. Additionally, the hose wall was partially crushed where it passed over the edge of the dockside and the catamarans.			use by nominated CBS staff. The Part 4 is due for submission at the 03/10 meeting of the SERC.
40/09	14-Sep-09	Broken clamp and swabs from PCD hose connected to a submarine had been removed from hose, double bagged and incorrectly placed in 8 Wharf North Exclusion Area hut.	Work Control Related Event	C	This NSER received a Trend Investigation and the Part 4 was endorsed at the 10/09 meeting of the SERC. All personnel were re-briefed on the correct procedure for handling radioactive material. In addition lockers have been sourced and positioned at the TXB for temporary storage of PCD associated equipment.
41/09	12-Sep-09	A submarine connected to Primary and Alternative electrical supplies as part of MG/DG and main battery work suffered a loss of electrical supplies (aggreko diesels) on 2 occasions on the same day.	Equipment Related Event	D	This NSER received a Trend Investigation and the Part 4 was endorsed at the 09/09 meeting of the SERC. As a result of the investigation individual fuel tanks were provided for each DG which were capable of providing 10 days continuous running.
42/09	18-Sep-09	Failure to implement suitable EMIT schedule for radon extraction pumps in MO49 - as required by IRR Reg 10(1).	Work Control Related Event	C	This NSER received a Trend Investigation. The recommendations were to devise a suitable job plan and maintenance schedule for the fans and to include these plans to the MAXIMO maintenance schedule. The Part 4 is due for endorsement at the 03/10 meeting of the SERC.
43/09	16-Sep-09	In support of 300KW MG work a piece of waste steam pipe work was removed out with the NTI.	Work Control Related Event & Personnel Related Event	C	This NSER received an NRPA Event Report. The report identified that the control of nuclear work and the control of contractor was not carried out correctly. All personnel involved have been re-briefed on the correct procedures and the importance of checking the scope of a contractor's work prior to any work commencing.

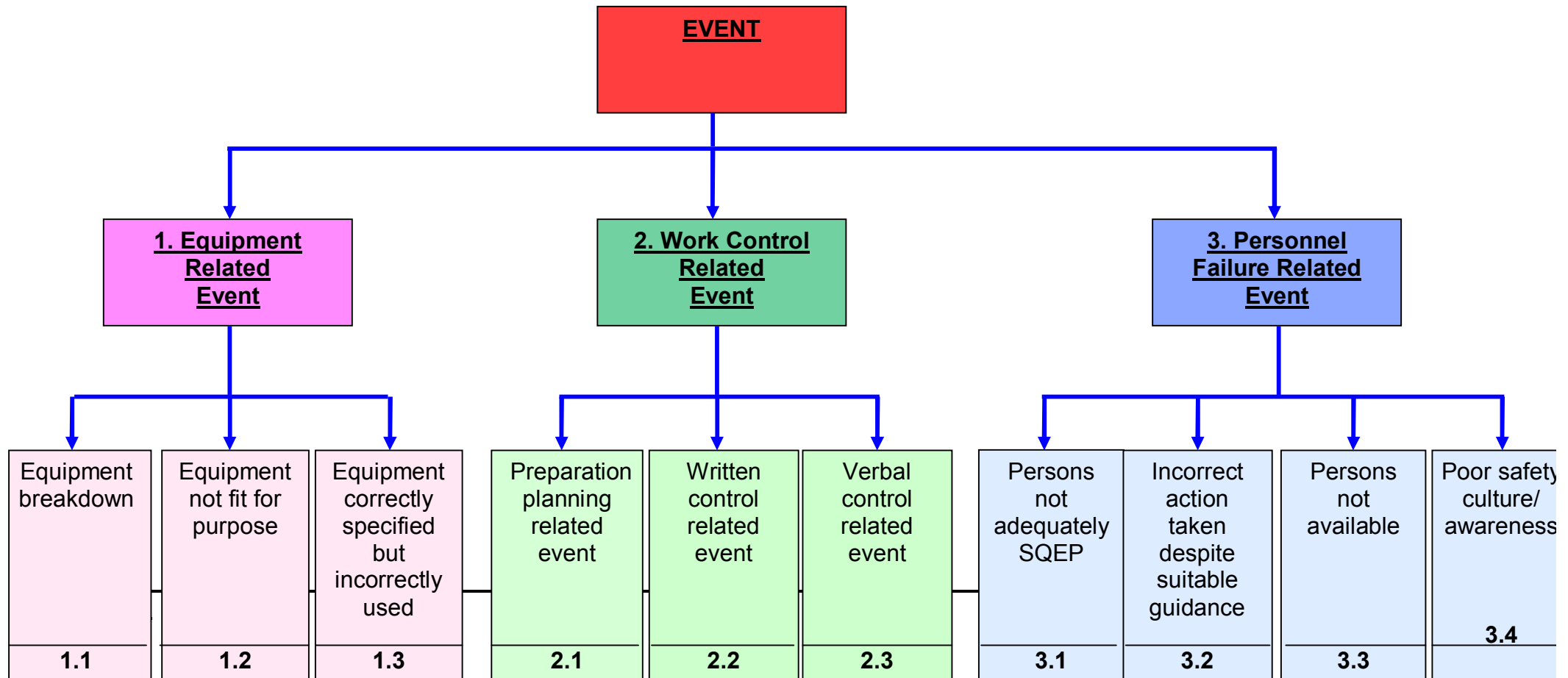
NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
44/09	21-Sep-09	Whilst secured to D Buoy awaiting high water to proceed up harbour, a submarine suffered a defect to a main feed pump discharge flexible which required the submarine to adopt single SG operations and Single Main Engine drive for the transit to the TXB.	Equipment Related Event	D	This NSER received a Trend Investigation and the event was closed out at the 09/09 meeting of the SERC. There were no recommendations from the investigation as the correct procedure was followed and the decision to allow the submarine to proceed up harbour was considered appropriate.
45/09	25-Sep-09	When carrying out a weekly radiation survey of the Non-Active Pressure Test Shop Facility the HPM was asked by a member of MESM to check some items that had been walked across from a submarine. These items consisted of a carbouy, an absolute filter and connecting hose, the equipment had been declared non active. When surveyed, it was discovered that the equipment was in fact active; a reading of 10cps was recorded using an ELECTRA.	Personnel Related Event	C	This NSER received an RCA Investigation and the Part 3 was endorsed at the 11/09 meeting of the SERC. The recommendations were supported by the SERC and have been implemented. The Part 4 for is due for endorsement at the 03/10 meeting of the SERC.
46/09	09-Oct-09	Incorrect stowage/accounting of radioactive source namely MK 13 NJ source, ser no. 0161 (Sr90; 11.1 kBq) Above source was found stowed in the office safe.	Personnel Related Event	D	This NSER requires an RCA Investigation and the findings and recommendations are due to be presented to the SERC by the 03/10 meeting.
47/09	15-Sep-09	A submarine was taken to emergency stations and emergency action taken for a downstream steam leak.	Equipment Related Event	D	This NSER received a Trend Investigation which identified that the material failure should be reported using the S2022 form. No further action is required. The Part 4 is due for endorsement at the 03/10 meeting of the SERC.
48/09	27-Oct-09	On Wednesday 14th October at 13:45 Emergency Monitoring Headquarters (EMHQ) reported a fault on the MITEL Direct Line telephone system to the British Telecom fault reporting centre. The requirement for Nuclear Safety Related telephone equipment is for the contractor to respond to the initial fault notification within 1 hour and if necessary have an engineer on site to rectify the fault within a further 4 hours. This direct line was	Equipment Related Event	D	This NSER received a Trend Investigation. A revised reporting regime will be incorporated into the EMHQ operating procedures. The contractor has been informed of the level of service required and will produce a full service level agreement in due course. The Part 4 is due for endorsement at the 04/10 meeting of the SERC.

NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
		not finally repaired until 1030 on Thursday 15th October – outside of the required defect response timescale. During this period EMHQ were always able to contact the vessel by several other telephone numbers. (Note: this event has also been recorded on the Babcock OEF System as number 16910).			
49/09	24-Oct-09	A submarine reported a low insulation on its Stbd electrical system. Initial investigation indicated the low insulation was somewhere on the 400 Amp Alternative supply being provided by shore diesels. The diesel supply was off loaded to allow investigation. The submarine was connected to a shore transformer supply from the same source as the Primary supply to maintain supplies during the investigation.	Equipment Related Event	C	This NSER received a Trend Investigation and the Part 4 was endorsed at the 11/09 meeting of the SERC. The shore diesel was replaced with a suitable generator and the service provider confirmed that all units provided in the future would not present the problem of low insulation.
50/09	14-Nov-09	A submarine was conducting NP 01-482(15) Primary System Hydrostatic Test. Following a soak at NOP +78 bar Ship's Staff lined up to discharge overboard to depressurise to NOP, when a leak from the system side flange of D7 (High Level Discharge Hull Valve) was identified. Approx 0.5 Litres of liquid leaked from the system but was contained within the Man Room Flat area.	Personnel Related Event	C	This NSER is supported by an NRPA Event Report which BNSO has commented on. The Part 3 is due for submission at the 03/10 meeting of the SERC.
51/09	27-Nov-09	Whilst carrying out flagging and tagging, a member of the ships staff leant over the deck plates on the lower level to check the state of a primary Valve. Whilst leaning over the edge he subsequently lost his balance and slipped, resulting in the shoulder of his coveralls coming into contact with the RC Bilge water. Subsequent monitoring by HP staff on exit from the RC revealed contamination on the shoulder of the PPE. No contamination was detected on removal of the PPE, and subsequent secondary monitoring using an IPM8 revealed no personal contamination.	Personnel Related Event	D	This NSER received a Trend Investigation. Recommendations were endorsed by the SERC to include the requirement of wearing wet protective clothing when working in the bilge area into the controlling documentation. The Part 4 is due for endorsement at the 05/10 meeting of the SERC.

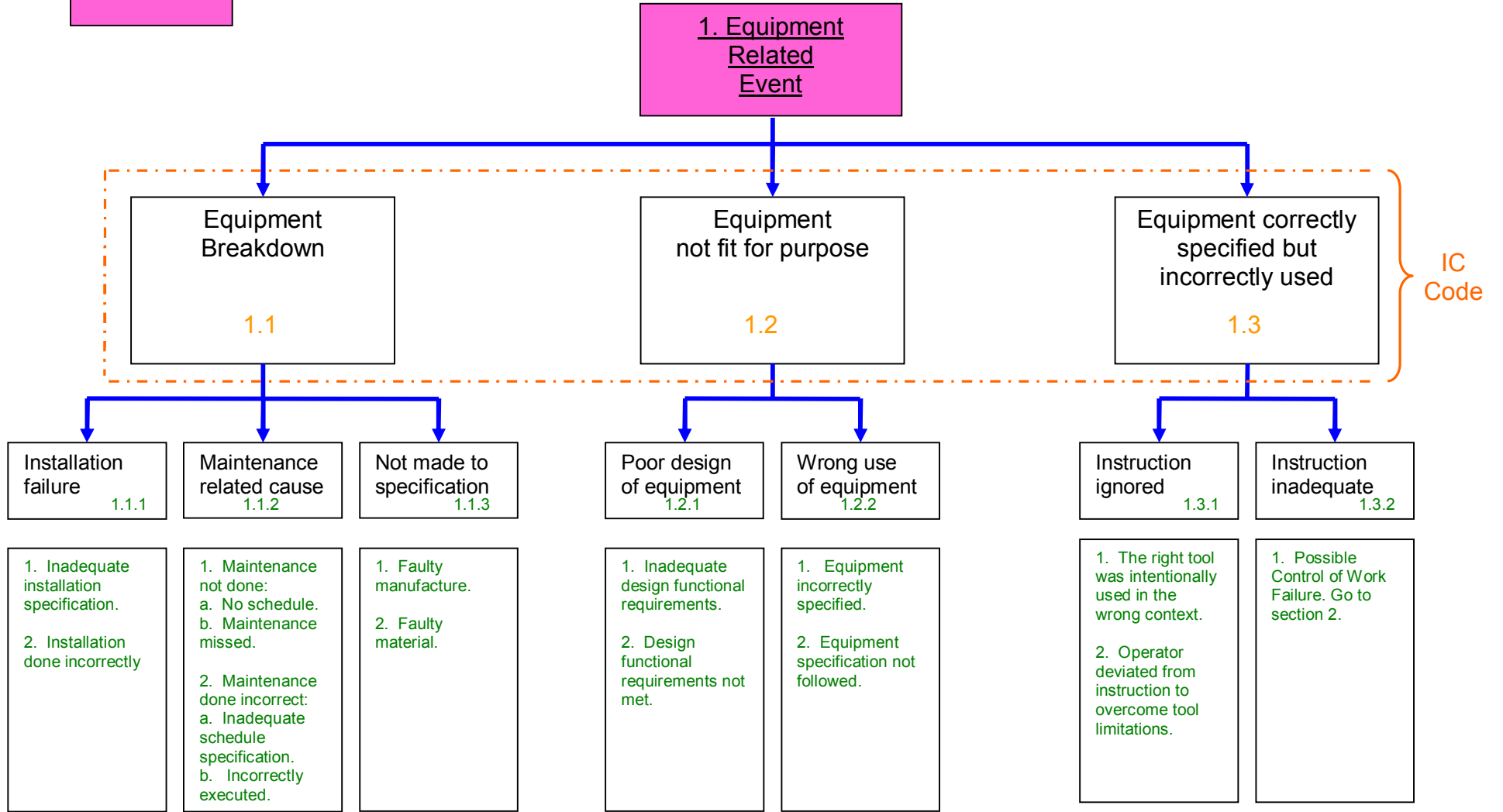
NSER number	Reported Date	Details	Cause	Event Consequence Code A-D	Remarks ⁶
52/09	04-Dec-09	On 2 Dec 09 at approximately 1430 SDU conducted diving operations on the propulsor and surrounding areas of a submarine without completing Part 2 and 3 of SFM QA 163E (SDU-1 Divers Clearance and Preparation Request Form). The form requires acknowledgement and approval signatures from the Health Physics Group (HPG) Supervisor, Officer Of Day (OOD) and Diving Supervisor. The Diving Team drew personal dosimetry from HPG(W) and proceeded to conduct the diving operations without obtaining the required Health Physics Brief from the Health Physics Foreman	Personnel Related Event	C	This NSER is subject to a Trend Investigation but is progressing slowly as a result of the Diving Supervisor being unavailable for interview. Further investigation will be carried out when the Diving Supervisor returns.
53/09	21-Dec-09	Mk7 NRM (Neutron Monitor) was not response checked on the 11th, 14th & 15th December 2009.	Personnel Related Event	C	This NSER requires an RCA Investigation which is due to be presented to the SERC at the 03/10 meeting. This event is similar to NSER 20/09.
54/09	31-Dec-09	A potentially contaminated vacuum cleaner was transferred from 9 dock Exit Monitoring Point (EMP) to a submarine. This transfer was carried out with the appropriate documentation but on foot and with an incorrect level of packaging i.e. only single bagged rather than double bagged.	Personnel Related Event	D	This NSER received a Trend Investigation which recommended that all HPF be re-briefed on the HPG(W) routines, with details recorded and a re-briefing periodicity agreed. The Part 4 is due for endorsement at the 06/10 meeting of the SERC.

EVENT CAUSE CLASSIFICATION CODE TREES

Nuclear Site Event Reporting Immediate Cause (IC) Code Determination Diagram

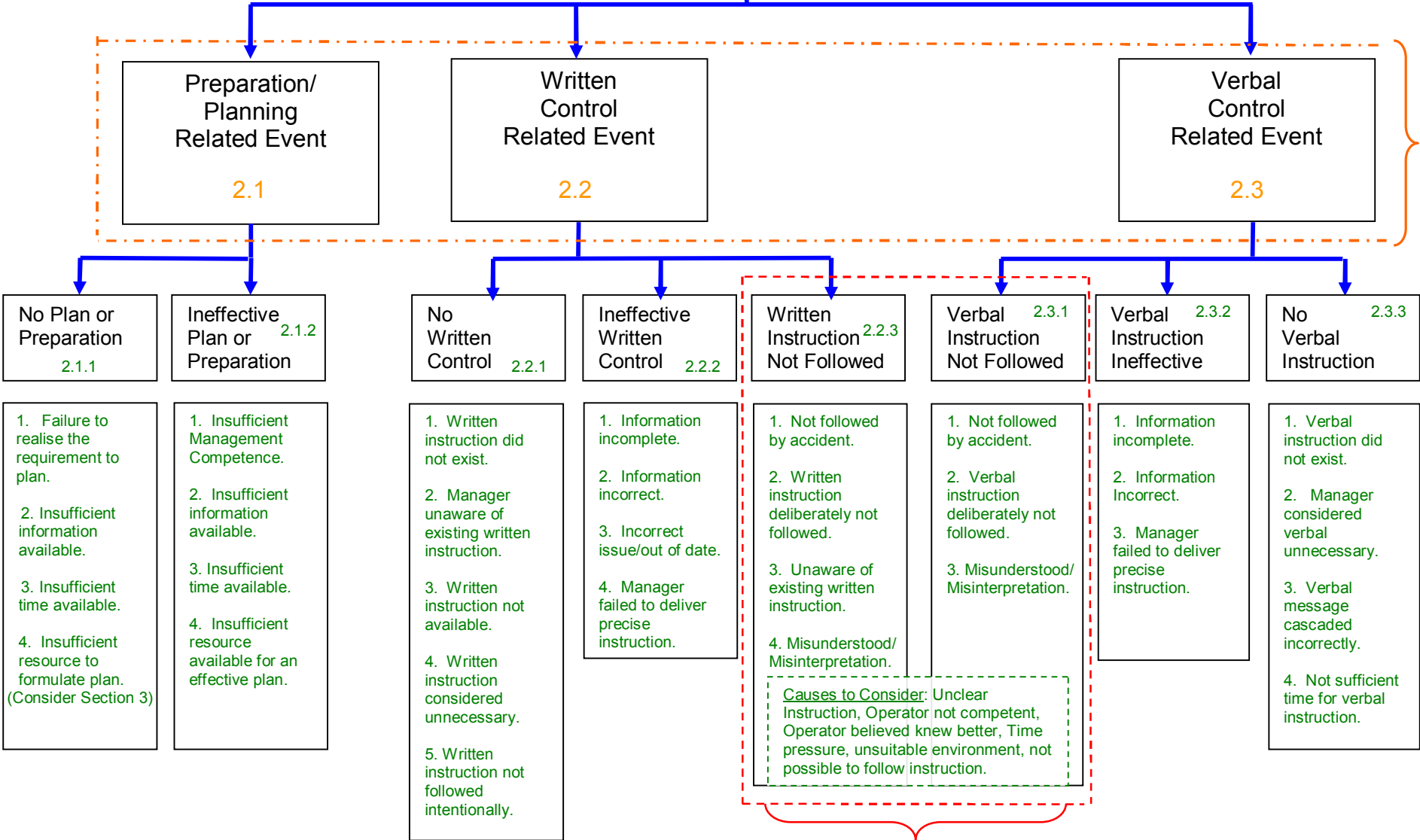


Section 1



Section 2

2. Work Control Related Event



IC Code

Section 3

3. Personnel Failure Related Event

