



HM NUCLEAR INSTALLATIONS INSPECTORATE
SELLAFIELD, CALDER HALL AND WINDSCALE
WEST CUMBRIA SITES STAKEHOLDER GROUP

QUARTERLY REPORT FOR 1 JANUARY 2009 – 31 MARCH 2009

FOREWORD

This report is issued as part of the Health and Safety Executive's commitment to make information about inspection and regulatory activities relating to the above sites available to the public. It is for distribution to members of the West Cumbria Sites Stakeholder Group (WCSSG) and covers activities associated with the regulation of safety at Sellafield, Calder Hall and Windscale.

These reports are distributed quarterly and will be available on the Internet. Site Inspectors of HM Nuclear Installations Inspectorate (NII) attend WCSSG meetings and will be happy to respond to any questions raised there. Any other person wishing to inquire about matters covered by this report should contact HSE, Nuclear Safety Directorate Information Centre on 0151 951 4103.

This report will be put onto the HSE Website at <http://www.hse.gov/nsd/nsdhome.htm> under "Local Liaison Committee Reports"

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The format and contents of this report for the WCSSG is dictated by the range and scope of plants on the licensed sites reported therein and is structured along the following lines:

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1 INTRODUCTION

1.1 Changes to HSE's Nuclear Directorate

In early 2008 the Government initiated a review into the UK's nuclear safety regulatory regime, led by Dr Tim Stone. The recommendations and the UK's Government response were published at the end of January 2009. One of the major recommendations is the decision by Government to establish the Health and Safety Executive's (HSE) Nuclear Directorate (ND) as a Statutory Corporation under the auspices of the HSE.

The creation of this new, autonomous body, (which will continue to incorporate the Office for Civil Nuclear Security and the UK Safeguards Office) will facilitate a more sustainable approach to regulating nuclear safety and security within a rapidly changing global nuclear environment and recruitment of high calibre staff within a hardening market place for highly specialised skills.

The restructuring will not change the substance or standards of regulation or compromise the independence of the nuclear regulatory body, and will not affect the decisions it takes or the international obligations the Government requires it to meet.

Enabling work continues for the initial scoping and planning of the work-streams and programmes necessary for the Statutory Corporation to come into being from April 2010. This project has required the temporary enhancement of ND's senior management capability in order to deliver existing regulatory work and to create the Statutory Corporation.

1.2 Number of Site Visits by Inspectors

NII Inspectors made a total of 78 visits to the Sellafield, Calder Hall and Windscale sites during the quarter. This involved a total of 224 days on site (see Table 1 for details). The more significant issues identified during these inspections are summarised below.

2 SELLAFIELD LTD

2.1 GENERAL MATTERS

2.1.1 Sellafield Ltd PBO Transition

Following share transfer on 24 November 2008 we have continued to monitor the changes to the structure at executive level within Sellafield Ltd, which have been necessary to integrate the full quota of PBO secondees into the new organisation. These changes were anticipated and planned as part of the original bid by NMPL and were concluded by the end of March 2009.

We have also monitored the activities of the Partner Assess Innovate Sustain (PAIS) teams which consisted of Sellafield staff and members of the consortium companies of NMPL. Their aim has been to review site operations and key support functions, and make proposals for beneficial change to improve the effectiveness of activities including nuclear safety. NII has also sought to engage with these teams to ensure

regulatory concerns are captured, given due consideration and reflected in the recommendations and subsequent actions from the reviews. The work of the PAIS teams concluded at the end of March 2009 and their final report is awaited.

NII recognises that the major impact of the transition has yet to be felt and the work and changes to address the PAIS team recommendations are likely to be significant, and we will continue to focus a proportion of our regulatory effort in this area to ensure nuclear safety is given due consideration.

2.1.2 Stobarts Ltd - Improvement Notice

Following NII's formal investigation of the event in July 2007 in the Central Waste Handling Facility (CWHF) within the Product Finishing and Storage facility at the Sellafield, which resulted in the exposure of two Stobarts Ltd employees to ionising radiation, an Improvement Notice was served on Stobarts Ltd, the employer of the two contractors exposed in June 2008.

The Improvement Notice was served due to the ongoing contravention of the Health & Safety at Work etc. Act 1974, Section 2(1) and the Management of Health and Safety at Work Regulations 1999, Regulation 5(1) since Stobarts Ltd had not made and given effect to arrangements appropriate for the effective organisation and control of preventative and protective measures required for the work activities undertaken by them on the Sellafield licensed site.

Following a series of inspections by NII during January 2009, we are now satisfied that Stobarts Ltd has successfully demonstrated compliance with the Improvement Notice served in June 2008. Stobarts Ltd have demonstrated significant improvements in safety management and behavioural safety throughout the company operating on the Sellafield site and we consider that Stobarts Ltd is progressing towards exemplary safety standards, behaviours and performance as a contractor on the Sellafield site.

2.1.3 Radiation (Emergency Preparedness and Public Information) Regulations (REPPiR) – Sellafield Off-Site Emergency Plan

NII is undertaking a review of Local Authority Off-Site Emergency Plans, prepared under REPPiR. It is being carried out against the Nuclear Emergency Planning Liaison Group (NEPLG) good practice guidance for the UK and the IAEA safety requirements, standards and guides. The work is part of NII's intervention strategy for the regulation of REPPiR sites and seeks to:

- determine whether the content of the off-site emergency plans satisfies the requirements of the regulations;
- reach conclusions on the adequacy of the arrangements described in the off-site emergency plans and so inform Local Authorities where there are areas for improvement in the plans, and;
- inform NII in the development of its programme for Emergency Arrangements.

The review has shown that the Sellafield Off-Site Emergency Plan is compliant with REPPiR. A few minor omissions were found that can be readily resolved at an update of the plan and do not detract from its effectiveness. The plan adopts good practice in many areas, typically: its very clear structure and ease of understanding; the comprehensive methodology for providing the public with up to date information about the nuclear emergency via a regularly updated website; the way Key Emergency

Action Charts are used to visually depict the stages in an emergency response. It was found that the Sellafield Off-Site Plan presents the Emergency Arrangements in a comprehensive and clear manner, and the number of good practices evident will be communicated to other Local Authorities for their consideration.

2.1.4 Lifetime Plan

We have recently received Lifetime Plan 09 and are reviewing it. NII is aware that a number of key dates for major projects have been delayed in the plan. We will continue to focus on the ongoing safety of the site and we are currently waiting for Sellafield Ltd to submit impact assessments that it has undertaken at the request of NII for the high hazard plants, which will consider the impact of the revised LTP programmes on these facilities and the need for any additional work and measures to ensure continued safety in light of the delays.

We have also been advised that the site will soon look to develop LTP 10. It will be the first plan to be fully developed under the new Sellafield Ltd executive. It is intended to cover the next 17 years in sufficient detail to be used as the baseline against which the performance of the new Sellafield executive and PBO will be measured and fee earned, via performance improvements against LTP 10. NII will maintain oversight of the development of LTP 10 to ensure safety is not compromised.

2.1.5 Heads of Manufacturing Forum

NII is pleased to see that the licensee has taken steps to establish a Heads of Manufacturing Forum on site, which will meet on a monthly basis. This is a forum for Sellafield Ltd senior managers who have responsibility for plant operations. This development has been partly influenced by NII's interventions and we see it as an extremely important group that should have a positive influence on activities and ensure that good practice and sustained improvements in safety performance are consistently implemented across the whole of the site. We will continue to monitor progress in this area to ensure the forum achieves its objectives and delivers against expectations.

2.1.6 Management of Contractors

Over the last few months our intervention on Sellafield Ltd's arrangements for the management of contractors working on the site has continued, with unannounced inspections of contractors work activities being pursued. Some of the issues that have come to light are lack of clarity on which duty holder is the Radiation Employer when working on the Sellafield licensed site, weaknesses in the training and appointment of personnel to specific roles, adequacy of communications between organisations and the lack of challenge from contractor companies to Sellafield Ltd. The licensee has been made fully aware of the issues and is taking measures to ensure they are addressed. An area worthy of note is the series of half day seminars that Sellafield Ltd has arranged for its own staff and contractors that aims to communicate some of the issues and highlight some of the learning from previous events on-site that have involved contractors. These will be tripartite presentations involving licensee, regulator and contractor, which will hopefully stimulate improvements in approach in both the licensee's and contractor's organisations.

2.1.7 Operational Experience Feedback Inspection

At the end of March, a team of NII inspectors undertook an inspection of Sellafield Ltd's Operational Experience Feedback (OEF) arrangements, which falls under the scope of Licence Condition 7.

Although there has been considerable progress in the collection of feedback data that has been facilitated by the introduction of the new ATLAS system, which has broadened the types of experience reported, the inspection team found a number of issues that need to be addressed by the licensee. It was apparent that the OEF process needs further development, as there was little evidence of analysis and trending of the data collected by the ATLAS system, which is important if adverse trends are to be identified and corrective actions implemented. The team also found evidence of failures to establish the 'root' cause of events, which is essential if repeat events are to be avoided. Other issues related to closing out of corrective actions and the capture and communication of good practices. These have been highlighted to the licensee who is now looking at how best to address them.

2.2 INCIDENTS

2.2.1 WVP Line 3 Shield Door Event

We have previously reported on the Waste Vitrification Plant (WVP) Line 3 shield door interlock event that occurred on the 18 September 2008. Our investigation into the event is ongoing, and as part of this process we wrote to the licensee in January 2009 to explore the wider issues in order to determine the underlying cause of the event and to understand the adequacy of safeguards against a repeat event. Sellafield Ltd's reply is being reviewed and we are considering appropriate enforcement options.

Line 3 is essential for the timely reduction of Highly Active Liquor stocks. Hence NII is working closely with the licensee on the development of a robust safety case to ensure a timely resumption of operations. During the quarter, NII considered the licensee's strategy for test work and restoration of shield and trap door operations and indicated our intention to examine an associated modification that is key to the resumption of HAL feed into Line 3.

During this reporting period an unrevealed fault was encountered on gamma radiation monitors linked to safety related interlocks: recommendations to address this issue are being implemented to allow the continued use of these monitors on WVP lines 1, 2 and 3.

2.2.2 First Generation Magnox Storage Pond – Movement of Gantry Refurbishment System (GRS)

On 26th February 2009 we served an Improvement Notice on Sellafield Ltd following an incident in the First Generation Magnox Fuel Storage Pond involving the uncontrolled movement of the skip handler in November 2008. The incident was reported in the last quarterly report. Following our investigation into the incident we formed the opinion that Sellafield Ltd had failed to make suitable and sufficient assessment of the risks to health and safety associated with the commissioning work on the skip handler and therefore served the Improvement Notice. Sellafield Ltd has responded positively to the Notice and has proposed a number of operational improvements which we are

currently monitoring.

2.2.3 THORP Flask Incident

At the end of the quarter the investigation by HSE into the event that occurred on 10th April 2008 involving a worker receiving serious crush injuries was still ongoing. The injured party has since returned to work.

2.2.4 HALES Disruption of Cooling Water Supply 1 April 2009

On 1st April 2009 NII was informed of an event that resulted in the temporary disruption of cooling water supply to HALES. NII inspectors responded immediately and carried out an initial investigation over the following few days. It appears that a valve was inadvertently opened causing cooling water to be transferred to a delay tank via an underground pipeline instead of the components within HALES. The event led to a quantity of inactive cooling water being discharged to ground because of a breach in the underground pipeline, which resulted from borehole drilling activity.

Cooling water was restored quickly and the licensee's response to the event was good. Nevertheless, NII regards the event as a matter of serious concern and has launched a formal investigation and we are considering enforcement options. We will provide a further update in our next report to the stakeholder group.

2.2.5 HAST 9 Cooling Disruption

During the period NII was made aware of an event wherein cooling water to the jacket of Highly Active Storage Tank (HAST) 9 was absent for an extended period. There has been no indication of concerns with control of the temperatures of the highly active liquor within HAST 9. However, NII aware of the potential significance of the event and we are currently engaging with the licensee to ensure we have a full understanding of its origins and implications.

2.2.6 Magnox - Contaminated Water Leak from Condensate Pipe

In January a small leak of radioactively contaminated water from a ventilation condensate pipe was eventually identified and repaired by the licensee. Ground beneath the pipe had been contaminated and will need to be cleaned up. The leak occurred well within the boundary of the site and there was no potential for contamination beyond the site boundary. No emergency measures were necessary although access to the immediate area of the leak has been restricted. The event was of minor safety significance, and no workers were affected. No immediate regulatory action was judged necessary, but as the incident has revealed a number of deficiencies the Environment Agency and NII are working together to investigate the incident and consider regulatory action.

2.2.7 Medium Active Tank Farm Condensate Pipe Contamination

An area of contamination on the steam condensate line in the compound of the Medium Active Tank Farm was identified by the licensee, with further evidence of splashing on the adjacent wall and ground area. The contamination was identified during a pre-operational survey as part of the preparation tasks to empty the internal sump in the compound. The contamination was confirmed to have originated from a leak on

redundant pipework fixed to a wall adjacent to the compound. A temporary repair has been carried out to the redundant pipework and there is no evidence to indicate continued leakage.

Sellafield Ltd has confirmed that the intention is to replace the leaking line with new pipework in the next few weeks. The licensee's Land Reclamation Team is advising on the removal of contaminated material in the ground. Calculations indicate the activity released by the leak will be greater than ministerial reporting levels and the event has currently been given an INES 1 classification because of the radioactive quantities involved. NII is satisfied that the incident did not result in a release off-site nor did any additional dose or personal contamination result.

2.2.8 PF&S Stores Redundant Ductwork Contamination

An area of contamination was identified on and around redundant ductwork from the PF&S Stores to the ventilation fans in the Analytical Services compound. There was also evidence of a spread of contamination on to adjacent concrete stands and on to an adjacent area of ground. The contamination was identified during a survey as part of the preparation for an inspection of the ductwork. Sellafield Ltd suspects that the source of the contamination is a joint in the ductwork, which appears to have been repaired in the past.

Sellafield Ltd is in the process of estimating whether the level of contamination will breach ministerial reporting levels, samples have been sent for analysis in order to carry out a spillage assessment. PF&S are carrying out further investigations to confirm the source of the contamination and to determine how the ductwork should be repaired. The contamination is in an area of low occupancy and the incident did not result in a release off-site nor did any additional dose or personal contamination result.

The three leakage/contamination events reported here demonstrate a lack of control by the Licensee and we have asked Sellafield Ltd to undertake a review of the events to establish if there are any common cause issues and ensure it is able to address them and prevent further reoccurrences.

2.3 MAGNOX REPROCESSING OPERATIONS

2.3.1 General

Decanning and reprocessing of Magnox fuel resumed at the start of this quarter, after a four-month outage. The outage allowed an extensive programme of inspection and maintenance, intended to help the plants fulfil their task of completing the reprocessing of the UK's Magnox fuel by 2016.

2.3.2 Magnox Product Finishing and Storage Facility (Magnox PF&S)

Stores Inventory Retrieval Project (SIRP)

SIRP has experienced delays since March 2008 following the identification of a fault scenario that had not been addressed during production of the safety case. This omission was addressed and additional engineered interlocks were installed on equipment involved in the transfer process. NII received a Plant Modification Proposal (PMP) for consideration and formal acknowledgement and our assessment of the

proposal was completed at the start of the year, in addition NII inspectors completed a readiness inspection and a formal Acknowledgement of the PMP (LI no 729) was issued to Sellafield on the 19th January and SIRP operations re-started in late January.

PF&S Stores Continued Operation Safety Report (COSR)

We have previously advised the WCSSG of delays by the licensee in implementing the recommendations arising from the PF&S Stores COSR. NII has continued to monitor Sellafield Ltd's progress in this area, and a further inspection against the PF&S stores COSR implementation programme was carried out early in the New Year. In general, the outcome of this inspection was satisfactory, and it was recommended that the COSR be closed out with the exception of civil improvements, subject to provision of additional information regarding certain work items requested during the inspection. Sellafield Ltd stated that it would aim to fast-track completion of the strategy for civil improvements and develop work programmes for their implementation, so that civil improvements might be dealt with as a project outside the COSR, and the COSR finally closed.

2.3.3 Magnox East River

In the Fuel Handling Plant we have continued to assess the licensee's safety case for safety systems that prevent exposure of workers to high dose rates, and for improvements to some of those systems. Our assessment of the integrity of the fuel storage ponds in that building also continues.

The licensee wishes to store more AGR fuel by moving to triple stacking of containers, though this still involves much less fuel than the plant is designed for. We subsequently issued Licence Instrument No 735 which allows the plant to make better use of its fuel storage ponds by adopting triple stacking.

We have inspected the licensee's programme for removing the solid radioactive waste (most of it low-level) that has been allowed to accumulate in the MER plants. We are pleased that the programme is now available and has started to have an impact but the programme has encountered delays, the most notable cause being the unavailability of an export route for waste liners containing beta/gamma waste due to the absence of a safety case. NII is actively encouraging the licensee to ensure a safety case is provided at the earliest opportunity to allow the waste to be exported to the waste facility.

2.4 THORP OPERATIONS

2.4.1 THORP OU ACTIVITIES

Shearing Operations

Sellafield Ltd resumed fuel shearing in mid January, which continued intermittently until the end of the quarter.

Reprocessing Operations

The active commissioning of the medium active salt free evaporator (MASFE) started in mid January, which allowed the restart of the reprocessing plant. However, the restart was curtailed because of problems with chiller units on the plant. The latter

problems were resolved and reprocessing began in mid March and continued for the rest of the quarter.

Plutonium Operations

The processing of plutonium nitrate liquor, held in tanks from the previous reprocessing campaign, was recommenced in mid January following the rectification of the sealing problems we mentioned in our previous report. Around 4 tanks of the nitrate had been processed at the end of the quarter.

Pond Operations

Sellafield Ltd has identified two leakage paths for the ingress of rainwater into the receipt and storage ponds which could give rise to increased chloride levels and hence fuel corrosion. One route via roof vent covers was addressed by sealing the covers, and the other via two sumps was eliminated by re-routing discharges from the sumps to active drain lines.

The increased pond purging, permitted by the Environment Agencies temporary variation notice to discharge levels of caesium, has resulted in very low caesium levels (around 10 Bq/ml) being achieved and has reduced chloride levels to almost zero. The increased purging caused a drop in pond water and concrete temperatures which increased pond leakage rates. The increased leakage rates were not unexpected and this, together with other matters related to the integrity of pond structures, will be progressed by NII with the licensee during the next quarter.

Fuel Integrity

Sellafield Ltd continued to look into various options to deal with AGR fuel corrosion. Progress on dealing with these options will be checked by NII during the next quarter.

2.4.2 Multi-Element Bottle Export Facility (MEBXF)

Sellafield Ltd applied in late December 2008 to extend the scope of active commissioning from 50 to 150 MEBs to provide them with sufficient data to enable them to justify the safe operating envelope of the plant. This application was processed by us and a Licence Instrument (No 730) granting the extension was issued in mid January 2009.

By the end of the quarter a further 8 MEBs had been removed and placed in the MEB Interim store.

2.4.3 Medium Active Salt Free Evaporator(MASFE)

As mentioned above, Sellafield Ltd commenced the active commissioning of the plant in mid January and no significant matters arose during the quarter. The unexplained sounds identified during inactive commissioning were found to be process noise, and the source of this is being investigated further. Sellafield Ltd plans to take the plant into routine operation during the next quarter.

2.4.4 General THORP Matters

Event Reporting and Investigation

THORP OU recognises that improvements are needed to ensure the timely completion

of investigations following events. Improvements are in hand and progress will be checked during the next quarter. The reporting culture continues to improve and the fundamental framework to facilitate this is in place.

Emergency Arrangements

The nomination of a Manager to coordinate and lead the OU's emergency response arrangements is welcomed by NII, such dedicated resource in high hazard facilities is seen as important to progress improvements and embed good practice across the OU in this area. NII was also pleased to see the re-introduction of breathing air training for operational staff. Both of these initiatives have come about as a result of the NII inspectors input.

Routine Consents

The introduction of routine Consents linked to restarts for the operation of THORP was discussed and a way forward agreed. The introduction of this is being pursued by NII as means of ensuring the licensee gives due consideration to the future justification for the continued operation of Thorp on a regular basis that will require a justification to be submitted to NII on a regular basis, which will in turn require and an associated Consent from us – each submission and consent will cover a fixed period of operation extending over a number of years.

Fire Hazard

Sellafield Ltd continued to address NII concerns regarding the need for improvements to deal with fires leading to nuclear events, and we have taken steps with the licensee to ensure future improvements to the site wide process for considering such fires.

The licensee has introduced additional nuclear controls on the ventilation system regarding the control and operation of dampers, this as a result of issues highlighted during NII inspection activities.

Resource Baseline

THORP OU continued to make improvements to their arrangements for the production of a resource baseline.

2.4.5. Oxide Operating Strategy Regulatory Forum (OOSRF)

The fifth meeting was held in February and chaired by the NDA. Discussions were held on the various forums that deal with related topics, such as high level waste and non standard fuels, and how information from these forums was used to develop the reprocessing schedule for THORP.

Further discussions were also held on the oxide fuel strategy for the site being developed by NDA and the target date for the delivery of the strategy. We agreed to provide comments on the current draft and this has been done. Operational performance issues that could affect the strategy were also covered in the meeting.

2.5 HIGH ACTIVE LIQUOR WASTE PLANTS

2.5.1 Highly Active Liquor Evaporative Capacity

Existing HA Evaporative Capacity: Evaporators A, B and C

Three evaporators within HALES (referred to as Evaporators A, B and C) are used to evaporate High Active (HA) raffinate produced during reprocessing and to process effluent from WVP. Once concentrated through evaporation, the raffinate is called Highly Active Liquor (HAL). HAL is stored in the HALES facility prior to feeding to WVP for vitrification, which immobilises the waste for long term storage and eventual disposal. The status of the evaporators early in 2009 was:

- **Evaporator A:** is shut down but available for use on HALES/WVP effluents and Magnox raffinates at low throughput rates since the only heating surface available is the base jacket.
- **Evaporator B:** restarted the processing of Magnox raffinates mid January 2009 after being permissioned for use on HALES/WVP effluents and Magnox raffinates through the issue of a Licence Instrument in July 2008.
- **Evaporator C:** has operated successfully on its permissioned oxide and Magnox duty.

New HA Evaporative Capacity: Evaporator D

NII is working closely with Sellafield Ltd, the Environment Agency and the Nuclear Decommissioning Authority to ensure that the strategic safety drivers for Evaporator D are understood, and is pushing for prompt decision making to ensure that the project momentum continues. NDA has since provided the funding necessary to allow the relevant projects to progress at the necessary pace to their next stage.

NII is assessing the pre-construction safety case for Evaporator D which was received in December 2008. The intention is to permission the commencement of construction of the structural foundation in advance of the main build to minimise the project timescale. In parallel, the Evaporator D project is looking at a modification that can be made to the design of Evaporator D to enhance its solids-handling capability for post-operational clean out: a decision will need to be made within the next six months on the viability of these modifications and whether they are deliverable without causing excessive project delays.

2.5.2 HAL Stocks

A NII Specification has been in place since 2001 to limit the amount of Highly Active Liquor (HAL) that can be stored at any time and to promote HAL stocks reduction. A revised Specification (No 679), replacing Specification 343, was issued on 29th October 2007 to lock in gains arising from the unplanned shutdown of Thorp, following the Feed Clarification Cell event, which is available on HSE's HAL Storage web page (<http://www.hse.gov.uk/nuclear/halstorage.htm>).

The latest (2008) biennial NII review of HAL stocks has now been completed. In this review, NII has considered, among other things, whether the long-term steady state (post 2015) limits used in the Specification are set too tightly to allow HALES to operate efficiently. The review has concluded that some loosening of this aspect of the Specification will be necessary in order to maximise the rate at which HAL can be vitrified. However, the extent of this loosening will depend on further technical analysis now being undertaken by Sellafield Ltd.

The review also considered, in the light of Sellafield Ltd's operational experience

working with the revised Specification, whether the forms of limit used therein can be improved upon in the interests of safety. Specifically, the review looked at adopting limits based on the mass of uranium in the unprocessed fuel from which the HAL was derived (as per the Oxide limit in Specification 679) rather than limiting the volume of HAL. Changing the Specification in this manner will facilitate the Post Operations Clean Out (POCO) of redundant Highly Active Storage Tanks (HASTs) since the wash-out liquors necessary for clean-out (predominantly water and acid), which currently make a significant contribution to the volume of HAL, contain very little uranium. Early progress with POCO will also allow blending of the wash-out liquors with HAL, which should minimise the ultimate volume of vitrified waste. NII's review concluded that changing the Specification to use uranium masses does have safety advantages and so is to be pursued.

Discussions have been initiated with Sellafield Ltd in regard to the timing of any change to Specification 679, which ideally will take place coincident with the changes to the long-term steady state limits discussed above. In view of the need for Sellafield Ltd to complete further supporting technical analysis, no change to the Specification will therefore be made until the second half of 2009 at the earliest.

Sellafield Ltd continues to provide NII with monthly reports summarising the quantities of HAL contained in the HASTs. These figures, supported by our inspection activities, are used by NII to confirm that Sellafield Ltd is complying with the HAL Stocks Specification.

2.5.3 Highly Active Storage Tanks (HAST)

Previous NII reports have indicated that HAST cooling components have suffered over the years from corrosion. A number of cooling coils have been declared failed. A failure causes a breakthrough of activity into the cooling water circuits which can lead to a radioactive release if not properly managed. HAST cooling coil failure rates and (specifically) the location of the most recent failed coils have led to uncertainties over the ability of the newer HASTs to continue to service the needs of the HAL stocks strategy. If the HASTs start to deteriorate more quickly, then the ability of HALEs to receive raffinates will be prejudiced (with important knock-on consequences). The rates of failure of cooling coils will determine the volumetric capacity of HASTs to store HAL and has the potential to constrain raffinates receipt.

Sellafield Ltd's contingency plans had previously placed considerable reliance upon a project to dose the cooling water circuits with nitrates as a way of stopping, or at least reducing the rate of, corrosion failures. However, in the light of technical information relating to nitrate dosing, Sellafield Ltd has decided not to pursue this option further. Instead, Sellafield Ltd's revised strategy for the future safe storage of HAL includes providing replacement HASTs as a contingency against further cooling component failures and as a means of increasing the rate at which HAL can be vitrified. NII is supportive of Sellafield Ltd's revised strategy and the work now being undertaken to review the design options for new replacement HASTs.

2.5.4 HALEs Overdue Plant Maintenance Schedule items

On 28 November 2007 NII was informed that a significant number of activities on the Plant Maintenance Schedule (PMS) for HALEs were overdue. Some had been overdue over an extended time period.

NII has finished its formal investigation and reporting of the incident and has conveyed to Sellafield Ltd the outcome of our work and requested action against a number of recommendations. It is our opinion that the HALES overdue maintenance incident was caused by the failure of the teams within HALES to undertake examination, inspection, maintenance and testing of the HALES facility in a timely manner. The reasons for this were that there was a chronic lack of experienced engineers and the teams were poorly managed and under resourced. There were several key underlying causes, including a management failure to recognise the developing resource problem, and poor management of change.

In early February NII issued a Specification under LC6(5) placing a duty on Sellafield Ltd to submit to HSE a bi-annual report of maintenance delivery. NII's decision to opt for a Specification was as a result of consideration of the HSE's Enforcement Management Model. NII gave thought to alternative enforcement action because of the gravity of the incident. However the considerable work by Sellafield Ltd once the incident was discovered indicated to us that further enforcement action would be disproportionate and not in the public interest. Meanwhile NII continues to engage with Sellafield Ltd on the development and implementation of its improvement plan.

2.5.5 Waste Vitrification Plant Operations

Line 1 operated successfully through most of the quarter. Line 2 returned to HAL feed in March 2009 after an extended planned outage. Line 3 remains shut down to undertake outage work and because of the shield door event in September 2008 which is covered elsewhere in this report.

The shield door event caused Sellafield Ltd to revise downwards the forecast of WVP container production in 2008/09, and NII anticipates that the 2009/10 production forecast could be affected as well. However this is unlikely to impact on Sellafield Ltd's ability to comply with the HAL stocks Specification.

Reliable operation of the vitrification lines is an essential component of the drive to reduce HAL stocks, and NII continues to engage Sellafield Ltd on issues associated with plant reliability. We note that Sellafield Ltd is investing in improvements to the throughput and reliability of the vitrification process via its links with COGEMA: the recent success of Line 1 underlines the importance of this work.

2.5.6 Residue Export Facility (REF)

The Waste Vitrification Plants convert Highly Active Liquor (HAL) into a solid glass sealed in stainless steel containers which are then transferred to the Vitrified Product Store (VPS) until a request to export them off-site is received. The containers destined for export will then be moved to the Residue Export Facility (REF) where they will undergo additional surface cleaning and testing prior to loading into an export flask and shipment to the customer.

Active commissioning of REF and the export of the first containers off site is being progressed through three permissioning phases. Phase 1 has been successfully completed and in December NII issued a Licence Instrument to permission the commencement of Phase 2 active commissioning. This will demonstrate the effectiveness of the equipment, shielding and the arrangements associated with the

retrieval, inspection and testing of active product containers followed by their loading and sealing into export flasks. The third and final stage of commissioning will involve commissioning the transport facilities on and off the Sellafield site, the finalisation of national and international agreements, processes and protocols associated with the movement of active material and ultimately the movement of the first filled product flask overseas.

The purpose of commissioning is to identify shortcomings in equipment and procedures under safe, controlled conditions. The progress of Phase 2 has been punctuated by several instances where problems with equipment have been found and dealt with safely. Significant commissioning events include:

- The hoist associated with a flask used to move product containers from REF to the vitrified product store suffered a mechanical failure that necessitated the container being retained inside the flask.
- During the testing/commissioning programme, the gamma radiation monitors inside the REF cells were found to give inappropriate readings.

NII is working with the licensee on both these issues to ensure that the underlying issues are fully understood and addressed.

2.6 MOX OPERATIONS

2.6.1 Sellafield MOX Plant (SMP)

NII is due to commence assessing the first in a series of submissions from the licensee that will scope a number of modifications to the plant to allow it to finish the latest fuel campaign. The work will culminate in a final submission in July of this year, which will look to enable the site to commission the SMP export route and allow the export of fuel to its customer.

2.7 WASTE TREATMENT & DECOMMISSIONING

One of the legacy radioactive waste stores is the subject of an NII Specification (No.324.c), which seeks to ensure the waste contained within the legacy store is removed and stored in an appropriate manner. NII's site inspector has actively engaged with the licensee to discuss its programme for meeting the Specification and he believes that the programme of work should achieve compliance by the required date and that Sellafield Ltd is currently making progress against the programme of work.

2.8 LEGACY PONDS & SILOS (LP&S)

NII issued two Licence Instruments to enable Sellafield Ltd to progress the removal of redundant heat exchangers and a tipping machine from the operational floor of the Magnox Swarf Wet Storage Silo. Progress with these heavy lifting operations was necessary to enable the earliest safe removal of mobile waste from the silos and NII Specification 326 to be met. The lifting operations were subsequently carried out safely in early March 2009.

We continue to engage with Sellafield Ltd on programmes for the removal of hazardous waste from LP&S plants and have expressed concern at the recent delays arising from funding, resource, technical and other delivery constraints. This is of

particular concern given the deteriorating and uncertain condition of some of these facilities, allied to the potential consequences of failure. For example, potentially significant and avoidable delays have been introduced into the programme for the removal of waste from the Pile Fuel Cladding Silo, without prior safety justification, and we have therefore required Sellafield Ltd to provide a justification. In addition, from discussions on the development of Sellafield Lifetime Plans we are concerned that the desire to produce more robust and reliable expenditure predictions for these facilities could result in overly conservative programmes which may not deliver the earliest removal of hazardous waste. As indicated earlier, we are in discussion with Sellafield Ltd and Nuclear Decommissioning Authority on the development of the Sellafield Lifetime Plans and the potential impact on LP&S programmes.

The delays, or potential delays, have highlighted that Sellafield Ltd is unlikely to meet the requirements of at least the nearer ILW Specifications by the due dates. In our last quarterly report we stated that we had written to Sellafield Ltd regarding project delays in LP&S and the potential non-compliance with the Specifications, and were expecting a full written response by the end of May 2009. This remains our understanding of the position. We are considering how best to respond in the light of these delays and the likelihood of Sellafield Ltd not meeting some of the ILW Specification requirements.

2.9 INFRASTRUCTURE – PLANT SERVICES & SITE SERVICES

2.9.1 General

Discussions have been held with Sellafield Ltd to discuss the proposed organisational changes within the Infrastructure management structure and we believe that they will improve management responsibility and accountability within the organisation. NII has also been involved in discussions relating to the introduction of a new management organisation for the National Nuclear Laboratory (NNL) and the potential further organisational/operational changes associated with NNL operations at the Sellafield Technology Centre and the Active Handling Facility on the Windscale Site, these arrangements have still to be fully established.

2.9.2 Plant Services - Analytical Services

NII has sought clarification from the licensee regarding the operations within the Analytical Services Laboratories including the plans for further implementation of the facilities Continued Operations Safety Report (COSR), potential future significant Plant Modification Proposals (PMP) and the current and future decommissioning work within the facility. We now have better clarity on the programmes of work in these areas, although completion of the activities is somewhat a little slower than we would have anticipated.

During the report period NII has held meetings with Sellafield Ltd relating to a minor deflagration “event” in the Analytical Services Laboratories during a recent campaign of rebottling of Plutonium liquor analysis bottles. Sellafield Ltd confirmed that there was no release of radioactive material or contamination arising from the incident. The NII Site Inspector considered that Sellafield Ltd Sellafield had taken appropriate action following the event and further discussions are envisaged once the final investigation report into this “event” is completed.

2.9.3 Plant Services – Active Area Services

NII has sought to establish the current situation relating to improvements to the supply of clothing at the various change rooms across the site following a number of complaints from the workforce. Overall Sellafield Ltd Sellafield claimed that although the situation regarding supply of clothing/lockers at changerooms was far from perfect, the ongoing initiatives were improving the situation slowly. It was agreed to hold regular meetings every 2 to 3 months to monitor progress in addressing this issue.

Discussions have been held on the findings of the investigation into an event where a number of “out of date” canisters were fitted to respirators. Although further tests and investigations are still ongoing, Sellafield Ltd has stated its belief that the actual impact of this incident has been minimal. Further NII consideration of the circumstances of the event and the proposed improvements to prevent any reoccurrences will be carried out when the final investigation report is forwarded to NII.

2.9.4 Plant Services – Flask Maintenance Transport and Railways (FMTR)

NII has pursued various issues during the report period relating to FMTR improvement projects, particularly within the Flask Maintenance Facility e.g. the Paint Booth Improvement project, Decontamination Tanks effluent system improvement project and the proposals to build a replacement maintenance facility. We have also followed up recent incidents in this area to confirm that the site has responded appropriately.

2.9.5 Plant Services – Utilities

We have followed up an event that occurred in February when the site compressed air supply system failed. The feed/header system to the compressor cooling water system has been identified as source of the problem. The NII Site Inspector will continue to monitor Sellafield Ltd’s progress in designing and installing a replacement water supply system. The failure of the compressed air system did create a number of operational problems for plants across the site, although safety was not compromised, investigations are being carried out by these facilities to establish the full impact of the event.

2.10 EFFLUENT & ENCAPSULATION

2.10.1 Floc Storage Tanks

In preparation for re-suspension and transfer of the contents of a second tank of ILW floc, NII has given permission to reuse radioactive liquor already held in another tank to dilute the floc in the second tank in preparation for re-suspension. The aim is to minimise consumption of clean water and minimise demands on effluent treatment, encapsulation and waste storage and ultimate disposal facilities.

NII has also agreed to a modification to allow reinstatement of motorised spillback rotation at the floc storage tanks. This modification is required to provide additional protection against breach of the containment cabinets by rotating equipment during re-suspension and transfer of floc for encapsulation in cement.

NII hopes that the licensee will be able to commence re-suspension and transfer of the

floc from the second tank in the next few months. Once complete, this will mean that a major part of the radioactive inventory from this facility will have either been recovered and transferred to an appropriate storage tank of known integrity, or treated and encapsulated in concrete within ILW stainless steel drums. This will be a notable achievement in terms of waste remediation once completed.

3 CALDER HALL

3.1 General

Calder Hall used to stand apart from the Sellafield site because it is a reactor site, and as such it managed its own emergency response in a similar manner to other reactor sites. As part of the transition process to incorporate Calder Hall into Magnox Reprocessing, now that it is shutdown and waiting for defueling, Sellafield agreed to demonstrate that Magnox Reprocessing has adequate arrangements to deal with an emergency situation at Calder Hall. We observed an exercise to demonstrate these arrangements on 13th January 2009. Although Sellafield Ltd coped with the scenario, there were some shortfalls in the arrangements and their implementation and we welcomed Sellafield's response that it was not satisfied with its own performance and that it would offer another demonstration after making improvements.

4 SELLAFIELD LTD WINDSCALE

4.1 General

NII has continued to monitor the progress made by Sellafield Ltd (Windscale) on the various work streams relating to the further integration of the Windscale site into the main Sellafield Site.

During the report period a series of inspections of the Sellafield Ltd (Windscale) LC23 (Operating Rules) and LC27 (Safety Mechanisms, Devices and Circuits) arrangements and their implementation was completed. Overall it was considered that although there were no fundamental major issues raised from the inspection there were a number of areas where the implementation of the LC23/LC27 arrangements could be improved e.g. reviewing the current set of "operating rules" to make them "smarter", clearer definition of the scope of equipment identified as "safety related". These are being addressed by the licensee.

We have met with the licensee to discuss issues associated with the processing and implementation of the Management of Change Assessment (MOCA) relating to the change of a number of ATOH responsibilities at Windscale. NII has raised a number of concerns relating to the implementation of the site LC36 (Control of Organisational Change) arrangements in relation to this MOCA. Further meetings with Sellafield Ltd Windscale are envisaged to discuss the way forward on the issues raised.

4.2 Piles Decommissioning Projects

Progress on the Pile 1 & 2 decommissioning project work continues to be discussed with Sellafield Ltd (Windscale) in various meetings and visits throughout the report period. Topics discussed included the results of the most recent trials on the Pile 1 prototype Fuel Retrieval Equipment, the West Air Inlet Duct (WAID) removal work, the B12 Main Roof Base Protection Panel Removal work, the B12 Structural Design

Modification, and the Sellafield Ltd Windscale proposals for the implementation of the forthcoming Pile 1 Decommissioning Safety Case (DSC).

4.3 WAGR/Western Areas Projects

The ongoing work on the Western Areas Decommissioning projects at WAGR and B14 continue to be discussed with Sellafield Ltd Windscale. Discussions on the proposed National Nuclear Laboratory (NNL) request to extend the period of NNL occupancy within B14 (beyond the previously agreed withdrawal date - September 2009) were undertaken. The NII Site Inspector reiterated the NII's disappointment that NNL had requested yet another extension to their B14 occupancy. NII is keen for NNL to vacate B14 to ensure that the forward decommissioning programme for B14 is not delayed.

4.4 Active Handling Facility

We continue to monitor the extensive programme of improvement projects within the Active Handling Facility. Progress is being made in many of the Integrated Safety Improvement Programme (ISIP) projects although some of the project work has encountered some delays/difficulties.

During the period a number of the recorded Unusual Occurrence Reports (UNORs) relating to the Active Handling Facility operations were reviewed with Sellafield Ltd (Windscale) including the UNOR relating to the discovery of a "non-compliant" source in a can within a waste basket, during the checks prior to export. Another UNOR discussed was related to a possible "breach" of a Key Safety Management Requirement (KSMR) ("Operating Rule") in Cave 5. It is considered that Sellafield Ltd Windscale undertook adequate immediate actions following the occurrence and has subsequently undertaken a thorough investigation into this event. Further discussions on this UNOR are planned when the final investigation report has been completed.

HM NUCLEAR INSTALLATIONS INSPECTORATE

TABLE 1

**QUARTERLY RETURNS FOR SELLAFIELD, CALDER HALL AND WINDSCALE
DURING THE QUARTER**

1 JANUARY 2009 – 31 MARCH 2009

	Sellafield Ltd – Sellafield (including Calder Hall)	Sellafield Ltd – Windscale
Number Of Visits	73	5
Inspection Days On Site	212	12
Incidents in the quarter likely to be published in HSE’s quarterly “Statement of Nuclear Incidents at Nuclear Installations”	0	0
Consents, Approvals, Specifications	2	0
Enforcement Actions ¹	1	0
Licence Instruments	7	2

¹ Enforcement action may be a Direction issued by HSE under the nuclear site licence, an Improvement Notice, or a Prohibition Notice, or the laying of information in pursuit of a prosecution.

TABLE 2**CONSENTS, APPROVALS, SPECIFICATIONS AND ENFORCEMENT ACTIONS
ISSUED DURING THE QUARTER****1 JANUARY 2009 to 31 MARCH 2009**

Date	Type	Ref. No.	Description
Sellafield Ltd - Sellafield (and Calder Works) – Nuclear Site Licence no. 31G			
09/02/2009	Specification	727	Issued Under LC 6(5) – The HSE specifies that a document demonstrating compliance with LC 28(1) and 28(6) in respect of HLWP's shall be furnished to the Executive.
6/03/2009	Improvement Notice	GSS001/2009	You have failed to make a suitable and sufficient assessment of the risks to health and safety associated with the commissioning of the Butterley Skip Handler located in the First Generation Magnox Storage Pond.
31/03/2009	Consent	736	LC3 - Application for Consent to Assignment of Underlease from BIL Solutions Ltd to VT Nuclear Services Ltd
Sellafield Ltd – Windscale – Nuclear Site Licence no. 83			

TABLE 3**AGREEMENTS & ACKNOWLEDGEMENTS ISSUED DURING THE QUARTER****1 JANUARY 2009 TO 31 MARCH 2009**

Date	Ref. No.	Description
Sellafield Ltd – Sellafield (and Calder Works) – Nuclear Site Licence no. 31 G		
19/01/2009	729	Acknowledgement of Modification - B209 SIRP
13/01/2009	730	Agreement to Extend Active Commissioning of the B560 MEB Export Facility
11/02/2009	731	Acknowledgement of receipt of safety documentation for modification to an existing plant and notification to examine - waste vitrification plant, line 3 shield door recovery project
03/03/2009	732	Acknowledgement of Receipt of Overarching PMP Strategy Paper Associated with Modifications within the B38 Wet Storage Silo to Allow Removal of the Compartments 11 Tipping Machine & Compartment 16 & 20 Heat Exchangers
03/03/2009	733	Agreement to Commence the B38 Import and Export of Items in Excess of 5.6te, via the Central or any Load in the West End Hoistwells using the Building Crane
11/03/2009	734	Acknowledgement - Modification to Allow Temporary Storage of Low Inventory Plutonium Bearing Waste Bottles in Existing Fumehoods in Lab 192 B229
20/03/2009	735	Acknowledgement - Fuel Handling Plant: Triple Stacking of Fuel Containers in Pond
Sellafield Ltd – Windscale – Nuclear Site Licence no. 83		
19/01/2009	513	Agreement - Revised SEOR for Removal of Waste from the B13 Roof & PCSR/PCMSR for Phase 1 Operations
13/03/2009	514	Agreement to Proceed with Active Commissioning for Neutron Probe Processing in B13