

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

REPORT FOR THE PERIOD 1 DECEMBER 2010 - 28 FEBRUARY 2011

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 Ltd, Calder Hall and Windscale.

These reports are distributed 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 are 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 Proposed Changes to HSE's Nuclear Directorate

Transforming our business

Following an announcement on 8th February 2011, the Government intend to bring forward legislation to create a new independent statutory body outside of the HSE to regulate the nuclear industry. The new statutory corporation would be known as the Office for Nuclear Regulation (ONR) and would take on the relevant functions currently carried out by the Health and Safety Executive and the Department for Transport.

The ONR would be a new independent regulator, formally responsible in law for delivering its regulatory functions. The creation of the ONR would consolidate civil nuclear and radioactive transport safety and security regulation in one place.

The proposal will not affect the current regulatory requirements or standards with which industry must comply, and the vast majority of the costs of the regulator would continue to be recovered in charges from operators in the nuclear industry rather than funded by the public purse. Additional organisational costs will be entirely met by the nuclear industry.

Pending the legislation, the Health and Safety Executive is taking steps to establish the ONR as a non-statutory body from 1 April 2011, signalling our commitment to securing an appropriately resourced and responsive regulator for the future challenges of the nuclear sector. The Government will review the functions and processes of the interim body in order to inform its planned legislation.

Following this announcement, work is ongoing within Nuclear Directorate to implement the move to ONR. However, business as usual remains unaffected. If you have any further questions, please contact ndenquiries@hse.gsi.gov.uk.

1.2 INSPECTIONS

NII Inspectors made a total of **45** visits to the Sellafield Ltd (SL), Calder Hall and Windscale sites during this period. This involved around **83** person days on site. Issues arising from these and previous inspections will be progressed by NII. The more significant issues identified during these inspections are summarised below.

2 ROUTINE MATTERS

2.1 Nuclear Decommissioning

2.1.1 Legacy Ponds & Silos (LP&S) Operational Nuclear Safety

We have continued with our programme of planned inspections to gain assurance of compliance with licence conditions. In particular, no significant concerns were raised following our inspection of Licence Condition 22 (Modification or Experiment on Existing Plant) in the First Generation Magnox Storage Pond (FGMSP) and Licence Condition 23 (Operating Rules) in the Magnox Swarf Storage Silo (MSSS).

On the 11 October 2010 we served an Improvement Notice on SL following recent events reported to us regarding safety mechanisms not properly connected in the MSSS facility. Following our consideration of the facts we formed the opinion that SL had failed to put in place arrangements that provide safe systems of work for plant modification work activities that are, so far as reasonably practicable, safe without risks to health. SL has responded positively to the Notice and has proposed a number of operational improvements which we are currently monitoring.

SL has successfully completed a number of projects in the FGMSP which supports overall facility risk reduction. Work completed safely includes isolation of redundant pipe work and high level service lines.

2.1.2 Legacy Silos Projects

We continued to monitor progress made by SL towards retrieval of the inventory from these facilities.

On permissioning related activities, active commissioning of the MSSS 3rd Extension Liquor Activity Reduction Project was completed, the final commissioning report prepared, and a number of successful transfers completed without incident. This contributes to the reduction of mobile activity in this part of the silos. In addition, SL is in the process of applying for permission to use the building crane for lifts of up to 55t as currently the crane is restricted to lifts of up to 10.5t. This is required to support both the installation of the Silo Emptying Plant and the removal of waste flasks out of the building. SL has also recently submitted a safety case in support of an application to construct a lateral restraint for the building which both provides support to the building in the event of a seismic event and supports key retrieval activities. We carried out an inspection of the QA arrangements for the design and manufacture of the mobile caves to be used for retrieval of wastes from MSSS, and concluded that SL has implemented adequate arrangements in this area. We also granted a licence instrument (LI 796) to permission the commencement of construction, installation and inactive commissioning of the Box Transfer Facility, this new facility being an integral part of the MSSS retrieval stream.

Furthermore, along with the Environment Agency (EA) we are working with SL on the development of a more robust leak containment strategy for MSSS which needs to be consistent with SL's long term retrieval programme.

2.1.3 Legacy Ponds Projects

We continued to monitor progress being made by SL with the projects aimed at hazard and risk reduction, and those required to enable the retrieval of the inventories from these facilities. Key activities will be subject to permissioning by us prior to work commencing on the facilities.

Of particular note is where we are monitoring SL's proposals for carrying out work to remediate degradation associated with the FGMSP which involve the use of novel techniques. Also, proposals associated with transferring fuel from the Pile Fuel Storage Pond (PFSP) and FGMSP to the Fuel Handling Plant (FHP) which provides a more modern pond storage facility. FHP is important to several safety related programmes including the Magnox Operating Programme and therefore, together with the EA, we have been discussing with SL the demands and priorities on FHP to

ensure that SL is optimising its use to safely support risk and hazard reduction activities.

In addition, we continued to monitor progress on the related major construction projects, Sludge Packaging Plant 1 and Local Sludge Treatment Plant. No significant safety issues relating to these projects have been raised since the last report.

Regarding FGMS, we are still considering our enforcement position with respect to SL's failure to meet the requirements of Specification 325(b) – please see our previous report for details.

2.1.4 Site Remediation and Decommissioning Projects

We have carried out routine site inspection of the various plants and projects underway in the Decommissioning Directorate's Site Remediation and Decommissioning Projects (SRDP) unit. On the basis of these sampling inspections, we are satisfied that SRDP has shown adequate compliance with the Site Licence Conditions.

Together with the EA, we have continued to engage with SL on the decommissioning of the Pile 1 Chimney that was contaminated in the 1957 Windscale fire and which is now an ageing structure. We have welcomed SL's re-assessment of the timescale for decommissioning this structure, which has led to SL's proposals to develop an accelerated programme.

Construction of the major structures forming the Separation Area Ventilation facility is moving forward, and we are satisfied with SL's progress in constructing this important safety related plant.

Along with EA we continued to engage with SL to ensure that progress with the radioactively contaminated land and groundwater management programme remains satisfactorily. We are currently reviewing SL's site wide ground characterisation reports and also SL's proposal for deferring further characterisation and remediation of the Solid Active Waste Disposal Trenches.

2.1.5 Windscale

We have met with SL on several occasions to discuss the impact of the deferral of decommissioning work at Windscale, and are satisfied that relevant changes will be justified and implemented in accordance with Licence Condition 36 (Control of Organisational Change). One of the main changes that we have welcomed is SL's decision to merge Windscale into Sellafield's Decommissioning Directorate as this facilitates sharing of resource, experience and knowledge of decommissioning. Presently, Windscale and Sellafield are separate licensed sites and in the future we expect SL to seek to merge them into a single licensed site.

2.1.6 Licence Condition 35 – Decommissioning

In line with our revised regulatory strategy for Decommissioning at Sellafield, we issued a licence instrument (LI 790) requiring SL to submit for our approval its arrangements under LC35 for the production and maintenance of key decommissioning milestone schedules. This will improve our monitoring of SL's performance in delivering the necessary decommissioning programmes across site.

2.2 SITE WIDE MATTERS

2.2.1 Performance Plans

By the end of March 2011, SL will have issued Performance Plans for the whole of its future activities on the Sellafield Site. At the end of the reporting period, revised Performance Plans had already been produced by SL for the Legacy Ponds and Silos programmes. These show acceleration of retrievals periods from the original LTP10 Contract Baseline and improve on those indicated in the initial October 2010 draft of the LP&S Performance Plans. We have had regular engagement with SL during the development of the Performance Plans and we are pleased that plans are being produced that SL is committed to deliver and against which we can measure progress.

To gain assurance regarding the content of the Performance Plans we have sought to utilise the Nuclear Decommissioning Authority (NDA)'s assurance process, and we have attended a number of its reviews. Our view is that the plans represent ambitious but credible programmes of work. There is a degree of variability in the underpinning, but we recognise the commitment being demonstrated by SL, and we will work with the licensee to facilitate programme delivery.

We will be seeking evidence on whether SL is able to meet the resource capability demands required by its programmes of work. It is an important issue and we wish to ensure that it is able to minimise potential vulnerabilities in this area.

We recognise the improving trend within the Performance Plans and SL's excellent work in developing a credible plan that demonstrates understanding of the numerous programme interdependencies, and what is required to remediate these facilities. However, we believe that there are opportunities for further accelerations and it is our expectation that SL will continue to look to consolidate opportunities for reducing the period of retrievals into the Performance Plans. This area will form the focus of future regulatory attention.

The Performance Plan accelerations will not re-establish remediation timescales indicated in earlier Lifetime Plans which were not developed with the current degree of understanding or demonstrated performance, and we are currently seeking to ensure SL provides appropriate justifications for the facilities that underpin the defined periods for retrievals. It is essential that SL provides these to support the Performance Plan timescales that it is now committing to deliver.

We have monitored SL's Integrated Change Programme (ICP), which introduces improvements via Performance Improvement Action Plans (PIAPs). The PIAPs underpin the Performance Plans which deliver accelerated delivery relative to the Contract Baseline.

2.2.2 Voluntary Severance Programme (VSP)

Following the November joint inspection with SL assurance staff of the implementation of the VSP change action plans, we have continued to monitor the close out of all the actions arising from the inspection.

In February we also met again with SL to consider their revised proposals for developing an improved nuclear safety baseline.

2.2.3 Organisational Review and Self Evaluation (ORSE 2)

Over the period we discussed with SL its Organisational Review and Self Evaluation process (ORSE 2). We have advised SL that ORSE 2 should explicitly cover operational nuclear safety issues, and that all the lessons from recent events should be incorporated.

2.2.4 Leadership and Management Intervention

As part of our revised approach to the inspection of leadership, management and supervision (LMS) across the site, we met with SL's senior management in December 2010 and January 2011 to agree a way forward. SL presented the initial outline of proposals to improve LMS, and further work is in progress to develop these into an implementation plan.

2.2.5 Management of Working Hours

We wrote to SL requesting improvements to systems that manage the working hours of staff performing safety roles. We are content with SL's response, which commits to implementing UK and international good practice.

2.2.6 Level 1 Demonstration Exercises

Currently two Level 1 Demonstration Exercises are witnessed by us each year. However under these arrangements it could be many years before a Level 1 Demonstration Exercise is undertaken on a specific high hazard facility. In order to gain confidence in SL's ability to deal with emergencies on high hazard facilities, each year we will aim to witness four emergency exercises on high hazard facilities. These facility exercises, the majority of which will utilise planned shift exercises, will be in addition to the two annual Level 1 Demonstration Exercises. The longer term aim is to reduce the number of Level 1 Demonstration Exercises to one per year.

The Level 1 Demonstration Exercise "Magpie", originally planned for 4 November, was postponed due to the site having to deal with an actual event (the loss of Wastwater). The Exercise was rescheduled and unfortunately, due to severe weather, the Exercise was not carried out. As SL's performance at the previous Level 1 Demonstration Exercise in May had been good, and as the SL Emergency Management Team had a high workload due to preparations for the OSCAR exercise in March, we decided to cancel the exercise. The Event Action Plan, resulting from the loss of Wastwater event, was shared with us at the Emergency Exercise Review Group (EERG) on 15 December, and we will monitor progress in clearing the actions via the EERG.

The scenario for the next Level 1 Demonstration Exercise, planned for 12 May, was agreed in principle at the EERG in December. Since then a detailed scenario, which will present a challenge for the teams involved, has been agreed with SL.

2.2.7 Emergency Management Improvement Programme

We have continued to monitor progress in the delivery of the programme. SL has now completed a review of the Severe Accident Management Strategies (SAMs) and is in the process of issuing improved SAMs. We are pleased that SL has also initiated a programme of work on severe accident analyses (SAAs), to better underpin the guidance given in the SAMs.

We continue to work with SL to clarify the way Hazard Identification & Risk Evaluation (HIRE) reports are reviewed in accordance with the Radiation (Emergency Preparedness and Public Information Regulations 2001 (REPPIR)).

2.2.8 Sellafield Ltd Joint NII/EA ILW Solid Waste Management Inspection

A joint NII/EA Intermediate Level Waste (ILW) Inspection took place during February. The inspection, which was led by NII, covered 11 plants that deal with waste creation to interim storage. The inspection concluded that SL was managing ILW in an adequate manner and a number of minor issues were identified which SL is currently addressing.

2.2.9 Internal Regulation

We held a constructive meeting with SL on the need for robust internal regulation, and we will continue to work with SL on addressing the need to strengthen internal regulation within SL.

2.2.10 LC 23 (Operating Rules) Guidance

SL is keen to explore the way forward on the draft NII guidance on LC 23 and has undertaken a pilot study on two plants. A workshop will be held with SL in the next reporting period to discuss the study and to look for an appropriate way forward.

2.2.11 Annual Reviews of Safety (AROS)

In the past we have reported on the need to improve the AROS process. A productive meeting was held with SL on this topic. Subsequently, SL intends to align an improved AROS process with its business planning process. Progress with SL will be reviewed later in the year.

2.3 Operations

2.3.1 Magnox Operating Programme (MOP)

Together with the EA, we continued to engage with SL, Magnox Limited and the NDA on delivery of the Magnox Operating Programme (the MOP is the NDA programme to manage the end of life of the UK's Magnox Reactor Programme). In our previous report, we highlighted that several factors had led to slippage of the MOP in the last few years. We have continued to pursue this important issue and are satisfied that our concerns are shared by the licensees and the NDA. The MOP Management Team is carrying out a review to explore the impact of possible further slippages and to identify alternative ways forward.

In previous reports we have mentioned our support for the work SL is carrying out to develop contingencies in the event that reprocessing ceases to be available. We have continued to engage on this work, including the development of a contingency based upon dry storage of Magnox fuel. We have advised SL of some the key issues that we would expect the relevant safety cases to address.

2.3.1.1 Reprocessing Operations

We continued our programme of planned inspections in Magnox Operating Unit (OU), including a joint inspection with the EA that examined process control in Magnox Reprocessing. The inspection benchmarked performance against the aspects of the [IAEA Conduct of Operations Standard](#). The inspection provided a benchmark which will allow Inspectors to measure the effectiveness of SL's programme to improve the conduct of operations across the site.

In our previous report we mentioned some potential improvements, for loss of containment faults, which we raised with SL. SL has since provided a satisfactory response on this matter.

2.3.1.2 Plutonium Finishing and Storage (PF&S)

During the period covered by this report we issued licence instrument 795, agreeing to the replacement of a number of HEPA filters within the Plutonium Operating Unit.

2.3.2 THORP (Thermal Oxide Reprocessing Plant) Operations

As part of our site wide co-ordinated inspections, inspections of the arrangements for investigating, reporting and learning from events and incidents on the THORP OU were carried out. Generally the processes were good.

We also carried out a facility based inspection in the feed pond area and inspections of Operational Decision Making / Conservative decision making. Minor observations were raised that SL agreed to address.

Trials to prove the safety and efficacy of nitrate dosing of the THORP Receipt and Storage Pond, in order to prevent fuel corrosion, are ongoing and are likely to be extended. We continued to liaise with SL on progress.

LI no 789 covering the substantiation of the TR&S sluice gates was issued in December 2010.

SL completed their engineering substantiation review of THORP to programme as part of the Long Term Periodic Review. We informed SL that the requirements of the Improvement Notice, issued in August 2008 against engineering substantiation, had been met and the Notice was therefore closed.

We continued to assess SL's Long Term Periodic Review of the Wet Inlet Facility submitted in September 2010, and held meetings with SL on its process and progress for Long Term Periodic Reviews of other pond storage facilities in the THORP OU.

2.3.3 High Level Waste Plants Operations

2.3.3.1 Highly Active Liquor Evaporative Capacity

Evaporator A: The unit successfully recommenced Magnox operations at the start of this period. After operating for a short period the unit was shut down due to the lack of an upstream supply of feedstock.

Evaporator B: The unit has not operated during the period.

Evaporator C: The evaporator underwent a routine endoscopic inspection of the coils to provide data for use in an assessment of the remnant life of the coils and base. The resulting report will be issued to us for assessment and comment. The unit was successfully returned to service before the end of this reporting period.

Evaporator D: The main civil construction is now nearing completion and preparations are being made to construct a gantry that will be used to hoist process plant modules, which are being built off-site, into place. We are assessing the safety case for construction of the gantry, which will be adjacent to several high hazard facilities including a route used for fuel transport flask movements.

2.3.3.2 HAL Stocks

HAL stocks have been suitably controlled throughout the period. We expect in the near future to issue a new Specification, relating the stock of HAL to the quantity of fuel from which it was derived, and an 'end of normal reprocessing' limit (steady state) level structured to facilitate hazard reduction during clean up activities

2.3.3.3 Waste Vitrification Plant (WVP)

There have been few periods of uninterrupted production from lines 1 and 2. The engineering work to return line 3 to duty appears to be proceeding to plan.

2.3.3.4 Residue Export Facility (REF)

The plant has continued to prepare the 2nd tranche of returns to Japan (3 flasks) and to consolidate operations in preparation for an application to move from the commissioning phase to routine operations. We expect to receive this application in late spring.

2.3.4 Effluent & Encapsulation Plants

A meeting took place in February to discuss progress with the inspection of drums in the Encapsulation Product Store 1. SL is currently developing an inspection programme to establish the extent of drum bulging that has been identified with some drums.

2.4 MAJOR PROJECTS

2.4.1 Sellafield Product & Residue Store (SPRS)

We carried out a second readiness inspection associated with SPRS commencing active commissioning. This inspection provided evidence that significant progress had been made since our previous readiness inspection in October 2010. In addition, we carried out an inspection of PF&S and THORP, and were satisfied with their arrangements for exporting product cans from these facilities to SPRS. Overall, we were satisfied that SL had presented an adequate case and subsequently on 24 December 2010 we issued a licence instrument (LI 794) to allow SL to commence the active commissioning of SPRS.

3.0 NON ROUTINE MATTERS

3.1 Shutdown of Magnox Reprocessing Operations

During inspections of the pipebridge, which houses the pipes used to transfer high active liquors from the Magnox Reprocessing Plants to the High Level Waste Plants, SL identified a number of concerns relating to the tray which forms part of the primary containment leak detection system. SL subsequently placed an embargo of high active liquor transfers until the impact of the concerns was investigated and rectified. We have engaged with SL on the ongoing work to rectify the problems, and on the associated safety arguments required to support the return to service of the pipebridge. Discussions were continuing at the end of this reporting period.

3.2 Hospitalisation of 4 Persons

In our previous report we mentioned this conventional safety event that occurred during the draining of a line on the THORP Uranium (IV) plant. The Field Operations Directorate of HSE is investigating the event.

3.3 Leakage of Liquor

On 2 February 2011, SL reported that it had found during an inspection a small amount of contaminated liquor (a few cubic centimetres) in the now redundant Plutonium Purification Plant. An analysis of the liquor revealed that it exceeded the limits in Schedule 8 of the Ionising Radiation Regulations (1999) and therefore, was reportable to the Minister. It was a Level 1 Event on the International Nuclear Event Scale (INES). Although the leakage was in a radiologically controlled area of plant, the level of contamination exceeded the limit for the area. We are satisfied with the steps taken by SL to clean up the leakage, to investigate the cause and to learn the lessons. We are still investigating this event as the cause has yet to be established. The Plutonium Purification Plant is a legacy plant awaiting decommissioning, and we are now discussing the timing of its decommissioning and asset care issues with SL.

4.0 REGULATORY ACTIVITY

TABLE 1

**CONSENTS, APPROVALS, SPECIFICATIONS AND ENFORCEMENT ACTIONS
ISSUED BY NII DURING**

1 December 2010 – 28 February 2011

Date	Type	Ref. No.	Description
Sellafield Ltd - Sellafield (and Calder Works) – Nuclear Site Licence no. 31G			
28/02/2011	790		Specification covering Sellafield's arrangements under LC35 for Production and Maintenance of Key Decommissioning Milestone Schedules
Sellafield Ltd – Windscale – Nuclear Site Licence no. 83			

TABLE 2

AGREEMENTS & ACKNOWLEDGEMENTS ISSUED BY NII DURING

1 December 2010 – 28 February 2011

Date	Ref. No.	Description
Sellafield Ltd – Sellafield (and Calder Works) – Nuclear Site Licence no. 31 G		
03/12/2010	789	Acknowledgement of Safety Documentation to support the implementation of a revised Safety Case for TR&S Sluice Gates
24/12/2010	794	Agreement to Commence Active Commissioning for the Sellafield Product and Residues Store (SPRS)
22/02/2011	795	Agreement to proceed with the primary HEPA filter change as described in PMP: PU/0009
04/02/2011	796	Agreement to the construction, installation and inactive commissioning of the box transfer facility
Sellafield Ltd – Windscale – Nuclear Site Licence no. 83.		