



# Office for Nuclear Regulation (ONR) Quarterly Site Report for Sellafield, Calder Hall and Windscale West Cumbria Sites Stakeholder Group (WCSSG)

Report for period 01 April 2015 – 30 June 2015



(Picture courtesy of Sellafield Limited)

## Foreword

This report is issued as part of ONR's commitment to make information about inspection and other regulatory activities relating to the above site available to the public. Reports are distributed quarterly to members for the West Cumbria Sites Stakeholder Group and are also available on the ONR website (<http://www.onr.org.uk/lrc/>).

Site inspectors from ONR usually attend West Cumbria Site Stakeholder Group Scrutiny Meetings and will respond to any questions raised there. Any person wishing to inquire about matters covered by this report should contact: [ONREnquiries@onr.gsi.gov.uk](mailto:ONREnquiries@onr.gsi.gov.uk)

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## 1 INSPECTIONS

### 1.1 DATES OF INSPECTION

ONR nuclear safety inspectors made inspections on the following dates during this quarter:

<b>Plutonium</b>	<i>21 – 22 April</i>	<i>19 – 21 May</i>	<i>21 – 23 June</i>		
<b>Thorp</b>	<i>5 -6 May</i>	<i>5 June</i>	<i>9 - 11 June</i>		
<b>Decommissioning</b>	<i>22 April</i>	<i>24 April</i>	<i>12 – 14 May</i>		
<b>Magnox</b>	<i>27 – 30 April</i>	<i>19 - 21 May</i>	<i>9 – 10 June</i>	<i>17 – 18 June</i>	
<b>Infrastructure</b>	<i>14 April</i>	<i>12 May</i>	<i>13 May</i>	<i>10-11 June</i>	<i>17 June</i>
<b>Corporate</b>	<i>20 – 22 May</i>				
<b>Project Delivery</b>	<i>14 – 16 April</i>				
<b>Waste, effluent disposition directorate</b>	<i>21 – 22 April</i>	<i>27 - 28 May</i>	<i>29 May</i>	<i>23 – 24 June</i>	

## 2 ROUTINE MATTERS

### 2.1 Inspections

Inspections are undertaken as part of the process for monitoring compliance with:

- The conditions attached by ONR to nuclear site licences granted under the Nuclear Installations Act 1965 (NIA65) (as amended);
- The Energy Act 2013
- The Health and Safety at Work (etc.) Act 1974 (HSWA74); and
- Regulations made under HSWA74, for example the Ionising Radiations Regulations 1999 (IRR99) and the Management of Health and Safety at Work Regulations 1999 (MHSWR99).

Inspections entail monitoring the licensee’s actions in relation to incidents, operations, maintenance, projects, modifications, safety case changes and any other matters that may affect safety on the site.

The licensee, Sellafield Limited, is required to make and implement adequate arrangements under the conditions attached to the licence in order to ensure legal compliance. Inspections seek to judge both the adequacy of these arrangements and their implementation.

In general, ONR judged the arrangements made and implemented by the site in response to safety requirements to be adequate in the areas inspected. However, where improvements were considered necessary, the licensee made satisfactory commitments to address the issues, and our inspectors will monitor progress during future visits. Where necessary, ONR will take formal regulatory enforcement action to ensure that appropriate remedial measures are implemented to reasonably practicable timescales.

In this period, routine inspections at Sellafield Limited covered the following:

#### **Sellafield Compliance Intelligence and Enforcement (SCIE) sub programme.**

The SCIE sub-programme's objective is to seek evidence-based confidence that Sellafield Limited is complying with its statutory obligations and that workers and the public are protected from the hazards of the site.

#### **Magnox**

During the period, ONR carried out one System Based Inspection (SBI) on the criticality detection and neutron monitoring system in the Magnox reprocessing separation plant. ONR judged that this system met the requirements of the safety case and that implementation of Sellafield Limited's compliance arrangements was adequate for Licence condition (LC) 10 'Training', LC23 'Operating rules', LC24 'Operating instructions' and LC34 'Leakage and escape of radioactive material and radioactive waste'. However, it is ONR's opinion that implementation of Sellafield Limited's compliance arrangements was below standard for LC27 'Safety mechanisms, devices and circuits' and LC28 'Examination, inspection, maintenance & testing'.

Sellafield Limited has committed to address the shortfalls identified during the SBI in a timely manner and ONR will monitor progress during future visits.

At Magnox, ONR also carried out seven LC compliance inspections. At the Fuel Handling Plant, ONR judged that compliance with LC22 'Modification or experiment on existing plant', LC24 'Operating instructions', LC27 'Safety mechanisms, devices and circuits' and LC34 'Leakage and escape of radioactive material and radioactive waste' was adequate; however, for LC28 'Examination, inspection, maintenance & testing' it was below standard. At Magnox reprocessing plants, ONR judged that compliance with LC11 'Emergency arrangements' is adequate but against LC7 'Incidents on the site' it is below standard. Sellafield Limited has committed to address the shortfalls identified during ONR's inspections within the Magnox facilities in a timely manner and ONR will monitor progress during future visits.

During the period, ONR supported Sellafield Limited's internal regulatory function to develop a proportionate and targeted assurance plan for the forthcoming Magnox Reprocessing periodic shutdown. ONR will take this planned work by the internal regulator into account when determining what regulatory activities ONR should undertake during the periodic shutdown.

#### **Corporate inspection Programme**

In May, ONR carried out a site wide 'Licence Compliance Arrangements Inspection' (LCAI) of Sellafield Limited's processes for investigating incidents under LC7. LCAI inspections examine whether the company's arrangements are adequate, building on the intelligence ONR gathers from our LC implementation compliance inspections. ONR found that Sellafield Limited has good arrangements for

capturing reports on unsafe conditions and incidents, however, improvements were required in the way the category of investigation was assigned. Sellafield Limited has an improvement plan in place to address these concerns.

In late April, ONR and Sellafield Limited began a joint exercise to gather the views and experiences of Sellafield staff concerning systemic factors, including leadership, culture and management with regard to:

- Efficient hazard reduction through fit-for-purpose solutions;
- Consistency of standards;
- Conduct of operations;

The exercise will be completed in July following interviews with engineering and major projects staff. The output from the work will be joint analysis and recommendations which will be discussed with Sellafield Limited's senior management to inform their improvement plans.

ONR and Sellafield Limited are continuing to engage with regulators on the work necessary to ensure a safe transition to new ownership in 2016.

### **Infrastructure**

During this quarter ONR inspected Sellafield Limited's compliance against LC16; site plans, designs and specifications. The licensee's implementation of its arrangements was considered generally adequate, with good use of IT systems to capture much useful information. ONR commented that some improvements could, however, be made to formalise processes and procedures associated with compliance with this LC.

ONR also undertook an inspection at the Fellside Combined Heat and Power plant on the licensed site, although this plant is operated by a separate organisation, Sellafield Limited retains responsibility for compliance with site licence conditions. This plant is important to safety since it provides steam to facilities across the site. This steam is used to transfer radioactive liquids within process plants, as well as being used for heating and evaporation functions. ONR identified a good standard of compliance against LC 26; control and supervision of operations, and an adequate standard of compliance against LC28; examination, inspection, maintenance and testing of structures and equipment important to safety.

ONR also undertook an inspection for organisational capability within on-site utilities. This group covers the provision of site wide services, such as water, electricity, and steam, to facilities on the Sellafield site. ONR considered that Sellafield Limited demonstrated a good understanding of its utilities organisation, recognising strengths and weaknesses, and is planning effectively for the future.

ONR also undertook a SBI on civil assets and bridges during this quarter. Civil and structural aspects of pipe bridges on the Sellafield site under the control of the Infrastructure organisational unit, as well as road and rail bridges on the site were targeted in this inspection. ONR is satisfied that the licensee has a generally adequate understanding and control of these aspects, although we identified a specific weakness relating to the lack of crash barrier protection for the supporting towers of a pipe bridge at one location. Sellafield Limited responded promptly at the location and adequate protection is now in place. The licensee will now follow this matter up across the site, under regulatory oversight, to ensure there are no other similar shortfalls at other locations.

During this quarter, ONR assessed the Sellafield Limited level 1 emergency exercise demonstration. The scenario was centred on hazard and risk reduction activities in the legacy ponds and silos area, and was representative of work presently underway and planned in the future. Sellafield Limited provided an adequate demonstration during this exercise, although some weaknesses were identified

in the provision of health physics support during this simulated crisis situation. ONR will follow up the need for improvements in this area.

ONR has continued to engage with Sellafield Limited to assess and secure improvements to the fire fighting arrangements on the site, with a focus on nuclear resilience.

### **Plutonium Management**

During this Period ONR carried out one SBI on Sellafield Limited's PMF (South) Finishing Line 6 ventilation system and found that the system was an adequate implementation of the requirements set out in the safety case. ONR established a small number of minor improvements that should be considered relating to recommended good practice for glove box operations and maintenance. ONR also noted that the fans and main ductwork part of the system are owned and operated by another facility, THORP. Consequently, ONR recommended that a boundary document should be produced to ensure the ownership, responsibilities etc. for all parts of the system are clearly defined and agreed.

ONR carried out an inspection in May, to check the progress of the PMF (N) improvement projects. ONR has seen a number of significant improvement projects initiated in the Plutonium Management Facilities (North) facilities PMF(N), principally aimed at improving nuclear safety in these ageing first generation facilities. ONR considers that Sellafield Limited has made good progress in consolidating the revised project scope to provide fit for purpose solutions to much shorter timescales than the original proposals. Improvements were also evident in the consolidation of the various project work streams into a unified and holistic forward plan for asset care of the PMF (N) facilities. ONR has yet to see the final plan, however, it is expected to be completed for the finishing line 3 facility (FL3) by the end of the next quarter.

ONR attended a Joint Regulators Forum Meeting (JRF) in May. This meeting allowed all the key regulatory and Sellafield personnel to interact on a number of issues on plutonium finishing and storage (PF&S) and the wider plutonium strategy. It proved very useful, informative and facilitated a pro-active and constructive debate. It was agreed to continue these meetings as a forum to promote PF&S operations and strategy for the safe storage of Plutonium into the future. It was also evident that Sellafield Limited had made good progress against the current regulatory issues.

### **Decommissioning**

ONR undertook a planned inspection against LC11 and LC7 to gain confidence regarding the implementation of Sellafield Limited's arrangements for dealing with emergencies and incidents on site. As part of the inspection, ONR witnessed an emergency drill in a Decommissioning Division facility. Although our findings regarding LC11 were considered to be adequate, there were opportunities to improve Sellafield Limited's alignment with the relevant ONR guidance.

With regards to LC7, it was ONR's opinion that the findings from this inspection were adequate. However, some specific procedural weaknesses have been identified, which Sellafield Limited has recognised and is implementing an improvement programme which will address ONR's concern.

ONR also undertook a SBI of the electrical system serving the Magnox Swarf Storage Silos (MSSS). This system was considered to meet the requirements of the safety case and that implementation of Sellafield Limited's compliance arrangements was adequate for LC10 Training, LC23 Operating Rules, LC24 Operating Instructions and LC27 Safety Mechanism, Devices and Circuits. ONR, however, considered that compliance with LC28; Examination, inspection maintenance and Testing, was below standard. ONR identified the need for improvements in the planning and supervision of the system's maintenance. Sellafield Limited has committed to address the shortfall identified and ONR will monitor progress during future visits.

ONR attended the regular Level 4 quarterly meeting to review Sellafield Limited's environmental, safety, health and quality performance. ONR considers that Sellafield Limited's performance has remained adequate.

Sellafield Limited has continued to provide evidence of progress against the remaining outstanding Level 4 Regulatory Issues, while several issues have been closed. One new Regulatory Issue was raised during this period.

### **Waste and Effluent Disposition**

During this quarter, ONR undertook planned compliance inspections against LC11; emergency arrangements, LC12; duly authorised persons, and LC36; organisational capability. These inspections were undertaken against implementation of the arrangements within the Solid Waste Operating Unit (LC11 and LC12) and the Waste Vitrification Plant (LC36). From these inspections, a good standard of compliance was noted against LC12, and an adequate standard against both LC11 and LC36.

ONR has continued to monitor the safe disposal of legacy waste within the present Analytical Services facility. It is ONR's opinion that Sellafield Limited has made good progress in this area, and now has a disposal route in operation. Progress will need to be maintained over the coming years to deal effectively with this legacy.

ONR continued discussions with Sellafield Limited regarding the long term provision of Analytical Services and noted that progress has been made in terms of defining the scope of the project which is likely to involve the transfer of Analytical Services to a more modern facility on the Sellafield site.

### **Permissioning**

During this quarter ONR conducted a two day, Long Term Periodic Review (LTPR) inspection within the Plutonium facility against the Finishing Line 5 facility (FL5) LTPR submission. This joint inspection found that Sellafield Limited had appropriately identified a significant number of potential nuclear safety improvements that should be implemented and which it intends to progress through its LTPR improvement programme as part of on-going work streams. The inspection did not reveal any matters of substantive concern that had not already been identified by the licensee in its own review. It did, however, identify three additional areas for improvement that Sellafield Limited agreed to address, the progress of which will be monitored by ONR.

### **THORP**

In May, ONR carried out an inspection of the implementation of arrangements for compliance with LC7; incidents on site, within THORP and found that they are adequately implemented with only minor areas for improvement.

In June, ONR carried out a SBI of the Wet Inlet Facility pond containment and supporting systems. It was found that the Wet Inlet Facility provided adequate containment with evidence found of an appropriate maintenance and condition monitoring programme. During this inspection it was particularly pleasing to observe examples of exemplary Foreign Material Exclusion and very high standards of general housekeeping.

## 2.2 Other work

### Project Delivery sub-programme

The ONR Project Delivery sub programme regulates the programmes, projects and activities, associated with the delivery of risk and hazard reduction on the Sellafield site.

This includes projects in the legacy ponds, legacy silos, decommissioning, high level waste and infrastructure areas of the site. In addition to regulating these areas, the sub programme also has a number of improvement themes, aimed at encouraging Sellafield Limited to accelerate risk and hazard reduction, namely;

- Prioritisation
- Use of resources
- Removal of blockers
- Removal of diversions and distractions
- Incentivisation
- Fit for purpose solutions.
- Risk Appetite
- Communications

Key points from our engagements with the licensee during this quarter were:

Legacy Ponds: ONR remains encouraged with the progress that Sellafield Limited continues to make on risk and hazard reduction in the legacy ponds, specifically the transfer of sludge from the First Generation Magnox Storage Pond (FGMSP) to Sludge Packaging Plant 1 (SPP1) and the export of canned legacy fuel from the Pile Fuel Storage Pond (PFSP).

In April, ONR was made aware that the Key Decommissioning Milestone (KDM) for the export of canned legacy fuel would be adversely impacted when an additional 25 cans of legacy fuel was identified. ONR has assured itself that Sellafield Limited and the National Nuclear Laboratory (NNL) remain proactive in maintaining a challenging schedule for the export, re-canning and characterisation of this additional fuel. Part of this assurance was that Sellafield Limited / NNL completed the 163 cans of canned fuel a few weeks earlier than the original declared KDM date.

Following ONR's advice that we had no outstanding issues to prevent commencement of the inactive safety commissioning of the PFSP Drum Filling Plant (DFP) and the installation of the pipe bridge linking facilities to the DFP, Sellafield Limited continues to make progress with the installation and testing of the DFP capability which will support sludge export from PFSP, a key risk reduction project.

Legacy Silos: ONR has been providing regulatory advice regarding the alternative Intermediate Level Waste (ILW) options for the Magnox Swarf Storage Silo (MSSS) being developed under the collaborative approach adopted by the six key organisations sharing the common objective of accelerating hazard and risk reduction on the Sellafield site

Following ONR's advice that we had no outstanding issues to prevent commencement of inactive safety commissioning of Silo Emptying Plant (SEP) at works, Sellafield Limited has started to transfer this equipment to the Sellafield site in preparation for installation.

ONR is concerned that Sellafield Limited has not adequately integrated the hazard reduction schedule for the Pile Fuel Cladding Silo (PFCS) across the individual associated projects. ONR is seeking to gain regulatory confidence that this is being adequately addressed and has requested an integrated schedule to provide this reassurance and underpin the Key Decommissioning Milestones dates associated with this programme.

Decommissioning: As reported in the last quarter, ONR remains concerned with Sellafield Limited's rate of delivery and management of risks associated with the Head End Stack demolition project. During this period ONR has stressed the importance of timely delivery of this project while continuing to manage safety risks appropriately. This is a significant hazard reduction project and ONR is working to encourage Sellafield Limited to adopt a fit for purpose solution to achieve a timely outcome.

High Level Waste Plants: The development of a safety case for the continued use of Evaporator C remains on schedule. A key factor for this safety case is related to confidence in the delivery schedule of Evaporator D, which will provide replacement for the current, ageing evaporator capacity. The Evaporator D programme continues to make progress in addressing shortfalls in risk management identified from a previous ONR inspection.

Infrastructure: ONR is disappointed that Sellafield Limited has open recommendations, findings and considerations with regard to it completing the first phase of its resilience improvements. ONR is engaged with Sellafield Limited to understand the reasons for this, and to identify an appropriate way forward to gain regulatory confidence that the improvements identified have a suitable schedule for delivery.

General:

During this quarter, ONR has continued to embed our regulatory strategy for Sellafield:

- ONR, via senior level discussions, has highlighted and challenged Sellafield Limited on the importance of our improvement theme 'Fit for Purpose' solutions. ONR provided legal guidance and examples (both positive and negative) of our observations where this has had an impact of the delivery of risk and hazard reduction. Sellafield Limited has produced and is executing a plan to proactively address this across the site.
- ONR holds a monthly Regulatory Interface Meeting (RIM) with Sellafield Limited where ONR discusses all aspects within its regulatory remit. This includes nuclear safety, security, conventional safety, safeguards and transport safety.
- A collaborative approach continues to be adopted between the six key organisations sharing the common objective of accelerating hazard and risk reduction on the site. This has now been running for more than a year and has facilitated several of the risk and hazard reduction projects described above, to reinforce messages through sharing of examples.
- A conference is planned in July to help embed the collaborative working messages across the Sellafield site. ONR remains committed to this collaborative approach.

### 3 NON-ROUTINE MATTERS

### **Criticality incident detection**

During the criticality detection and neutron monitoring SBI undertaken in April, ONR established that the Medium Active Evaporation and Thermal Denitration plant (part of Magnox reprocessing) had neither a Criticality Incident Detection Alarm System (CIDAS) nor a CIDAS-omission case even though it is credible that a criticality incident can occur within the plant.

Sellafield Limited responded promptly and identified and implemented a ‘fit for purpose’ solution to this issue that will ensure that the Magnox reprocessing plants are suitably safe and able to continue reprocessing the UK’s stockpile of Magnox fuel in a timely manner. ONR conducted a series of interventions within Magnox reprocessing during June and has confirmed that the fit for purpose solution has been adequately implemented. ONR is satisfied that Sellafield Limited has undertaken all reasonably practicable measures to close the risk gap presented by not having a traditional CIDAS and that continued operation of the plant is safe.

### **Compliance with Operating Instructions**

ONR served Sellafield Limited with an Improvement Notice in June requiring improvements in the company’s arrangements for ensuring compliance with operating instructions at the Magnox reprocessing separation plant on the Sellafield site. The Improvement Notice followed our judgement that Sellafield Limited has not ensured that all operations that may affect safety, including those subject to limits and conditions necessary in the interest of safety identified in the safety case, are carried out in accordance with written instructions. ONR came to this judgement following careful consideration of a number of incidents that took place in the Magnox reprocessing Separation plant during 2014 and 2015. Sellafield Limited is required to comply with the notice by 30 September 2016.

### **Minor contamination leak**

During a routine contamination survey, minor levels of contamination were found to have leaked from a redundant 22” ventilation line on the roof of the PMF (N) facilities. The contamination was quickly and safely removed and containment re-established. Plutonium finishing and storage have initiated a project to survey the ventilation line and either ensure its continued integrity or decommission and remove it.

Sellafield Limited is currently investigating the cause of some traces of corrosion in the Sellafield Product and Residue Storage facility. Arrangements have been made to provide increased monitoring of the ambient conditions in the store and to take samples. There is no immediate risk in the short term; however it is important to determine if there is any potential for issues arising in the longer term over the lifetime of the facility. ONR is maintaining a watching brief on the investigation programme.

### **Analytical Services laboratory**

There was a minor contamination event associated with waste bagging operations in the Analytical Services laboratory during the quarter. Sellafield Limited informed ONR promptly of the occurrence, and ONR are satisfied it took prompt and appropriate action to ensure the safety of the workforce. ONR will follow up this event, with an inspection for compliance against the Ionising Radiations Regulations 1999 planned in July.

### **ONR meet officials from Irish regulatory bodies**

In April, ONR met with officials from Irish regulatory bodies; the Office of Radiological Protection and the Environmental Protection Agency (Ireland), and Sellafield Limited to update them on hazard and risk reduction on the Sellafield site. The Irish regulators were very interested in the changes to our regulation of Sellafield Limited’s stockholding of highly active liquor and plutonium. Following a plant visit to high level waste plants and the separation area the Irish officials stated that they were pleased with what they had seen on site and with the progress that had recently been made in addressing legacy waste etc. They expressed their support for the way in which ONR’s new Sellafield strategy had facilitated the productive engagement of key stakeholders to accelerate the commencement of retrievals.

#### **Loss of control**

In April Sellafield limited notified ONR that the location of one of its radioactive sources had not been appropriately documented for several days. The small source, routinely used in THORP to check the function of safety equipment was quickly retrieved and returned to safe storage. In response to this event, ONR carried out an inspection to determine Sellafield Limited’s compliance against the Ionising Radiations Regulations 1999 (IRR99) and found that compliance was adequate at the time of our inspection. ONR has written to Sellafield Limited to express our concern regarding the event, our regulatory expectations and the enforcement consequences of a repeat event.

## **4 REGULATORY ACTIVITIES**

ONR inspectors may issue formal documents to ensure compliance with regulatory requirements. Under nuclear site licence conditions, ONR issues regulatory documents, which either permit an activity or require some form of action to be taken; these are usually collectively termed 'Licence Instruments' (LIs), but can take other forms. In addition, inspectors may issue Enforcement Notices to secure improvements to safety.

During this quarter, ONR issued the following formal regulatory documents:

**Licence Instruments and Enforcement Notices Issued by ONR during this period**

**Sellafield Ltd - Sellafield (and Calder Works) – Nuclear Site Licence no. 31G**

Date	Type	Ref No	Description
29/5/2015	Approval	LI 888	The substitution of the document titled: Production and Maintenance of Key Decommissioning Milestone Schedules, SLSP 1.07.01 Issue 5, Dated 04/2015. For the document titled Production and Maintenance of Key Decommissioning Milestone Schedules, SLSP 1.07.01 Issue 2, Dated 09/2010.  In accordance with Condition 1(3) of the said Schedule 2, Licence Instrument No. 791, which was granted under Site Licence 31G on 27 May 2011 by the Health and Safety Executive is hereby withdrawn.
29/6/2015	Enforcement Notice	SEL 77548R	Improvement Notice I/2015/ONR/PSJ/001 - under LC24 Operating Instructions

Reports detailing the above regulatory decisions may be found on the ONR website at <http://www.onr.org.uk/pars/>.

## 5 NEWS FROM ONR

Insight into ONR’s work as an independent regulator of the nuclear industry can be found in ONR's [Quarterly News](#). The online publication reports on the key themes and developments in each of ONR's regulatory programmes and provides an update about the on-going changes at ONR. For the latest news and updates from ONR visit the [website](#) and sign up for our [ebulletin](#).

## 6 CONTACTS

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Published 2/15

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