



Office for Nuclear Regulation (ONR) Six Monthly Site Report for Sellafield Site West Cumbria Sites Stakeholder Group (WCSSG)

Covering the period – 01 October 2017 to 31 March 2018



Foreword

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

Site inspectors from ONR usually attend West Cumbria Sites 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: contact@onr.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:

Period - 01 October 2017 31 March 2018	October 2017	November 2017	December 2017	January 2018	February 2018	March 2018
Special Nuclear Materials	30-31 October	01 14-15 28-30 November	13-14 December		15-16-20 February	
THORP	10-11 October	14-15 November		16-17 January	06-07 February	13-14 March
Decommissioning		07-08 November	05-06 December	09 January	06-17 February	20-22 March
Magnox	26 October	28-29 November	13 December		21-22 February	19-20 March
Operational Waste Facilities	3-5 October	03 7-8 09 14 16 November	5-7 December	16-18 January	13-15 February	01 13-15 March
Infrastructure	10-11 October	21 November	11 December	24-25 January	28 February	13-14 March
Corporate		30 November	01 December	30-31 January	22-23 February	

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 2017 (IRR17) 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 Ltd, 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 Ltd covered the following:

Sellafield Compliance, Intelligence and Enforcement (SCIE) sub-division.

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

Routine Matters - Corporate Inspection Programme

ONR's corporate inspection programme for the Sellafield site has three main areas of focus:

- Examining the adequacy of the arrangements that Sellafield Ltd has made to comply with its nuclear site licence, securing improvements as necessary; and
- Working with Sellafield Ltd to advise on, and support, its leadership and management for safety activities; and
- Overseeing Sellafield Ltd's organisational capability and management of organisational change.

ONR carried out a number of inspections of Sellafield Ltd's nuclear site licence compliance arrangements during the period covered by this report. ONR also continued to monitor and support delivery of the improvements identified during earlier inspections.

Licence condition arrangements inspections delivered during this period included Licence Condition (LC) 10; Training, LC 12; Duly authorised and other suitably qualified and experienced persons, LC 25; Operational records, and LC 15; Periodic review. ONR was satisfied that Sellafield Ltd's arrangements for compliance with Licence Conditions 10 and 12 are adequate. However in relation to Licence Conditions 25 and 15 ONR found significant shortfalls in the arrangements. With respect to Licence Condition 25, there were shortfalls in the clarity of roles and responsibilities, training and process assurance. With respect to Licence Condition 15, ONR found that Sellafield Ltd had revised its arrangements, previously approved by ONR, without seeking the required re-approval. Although ONR considers there is no safety impact here, this is a breach of licence condition requirements. In both cases ONR has raised Regulatory Issues to correct the compliance gaps.

During this period ONR closed Regulatory Issues relating to Sellafield Ltd's control and supervision of operations, management of temporary modifications, control and supervision of contractors, 'fit-for-purpose' approach to hazard and risk reduction, and implementation of the 2016 model change. Through other Regulatory Issues, ONR is seeking improvements in Sellafield Ltd's records management system, clarity of decommissioning strategy, and approach to disciplined operations.

ONR is continuing to monitor Sellafield Ltd's progress in addressing three open Regulatory Issues relating to leadership and management for safety (specifically: consistency of safety leadership, the design and implementation of the licensee's safety management system, and working level instructions). ONR is satisfied with Sellafield Ltd's progress on all three of these issues during this period.

During this period ONR has significantly increased its oversight of Sellafield Ltd's transformation plan. ONR is applying a targeted and proportionate approach to permissioning the organisational changes associated with this transformation. This includes Sellafield Ltd's introduction of a new operating model, later in 2018, which ONR will regulate via enhanced implementation, monitoring and control.

Routine Matters – Magnox

Within the Magnox Operating Unit (MOU), ONR carried out three planned Licence Condition (LC) Compliance Inspections within the wider Magnox OU, and one System Based Inspection (SBI) at the Magnox Reprocessing Facility. In addition an inspection was carried out for compliance with the Ionising Radiations Regulations 2017 (IRR17).

For the planned inspections, ONR judged that licensee compliance with LC22; Modification or experiment on existing plant; LC36; Organisational capability, LC35; Decommissioning and IRR17, were all rated Green (no formal action).

For the SBI of the glovebox containment and ventilation system in the Magnox Reprocessing Facility (MRF), the LCs inspected were the standard set for SBIs: LC10; Training, LC23; Operating rules, LC24; Operating instructions, LC27; Safety

mechanisms, devices and circuits, LC 28; Examination, inspection, maintenance and testing, and LC34; Leakage and escape of radioactive material and radioactive waste.

Five of the six LCs were rated as Green (no formal action), but LC 24 was rated as Amber (seek improvement). During the inspection, ONR noted that delays in the implementation of changed parameters, required to monitor glovebox system health through recording depressions, led to a loss of situational awareness, and hence degradation in the condition and related function of some of the system components. Whilst this did not result in an increased risk to operators, this was not to the standard ONR expects. Sellafield Ltd responded immediately to the finding, during the inspection, with a temporary remedy; however, ONR raised a level 3 Regulatory Issue to ensure that the changes are fully implemented. This Regulatory Issue was subsequently, promptly addressed and is now closed. ONR raised three further level 4 Regulatory Issues for Sellafield Ltd to address minor shortfalls, which we will follow up as normal business.

Overall, ONR judged that that the system adequately fulfils the requirements of the safety case.

Routine Matters – Infrastructure

During the period ONR, in conjunction with the Environment Agency, conducted a System Based Inspection of the Licensee's Segregated Effluent Treatment Plant (SETP). Although SETP is low consequence in terms of radiological hazards the continued safe operation of SETP is important in supporting the licensee's reprocessing operations and hence supports the licensee's overall hazard and risk reduction activities across the site.

Based on the sampling undertaken, ONR judged the safety case supporting SEPT to be adequately implemented.

Whilst some minor deficiencies against the licensee's compliance against LC10; Training, LC27; Safety mechanisms, devices and circuits, and LC28; Examination, inspection, maintenance and testing were identified, ONR considered the significance of these deficiencies to be low. The licensee provided an adequate level of assurance and evidence to demonstrate compliance against LC23; Operating rules, LC24; Operating instructions, and LC34; Leakage and escape of radioactive material and radioactive waste. As such, ONR awarded inspection ratings of Green (No formal action) for all the licence conditions for the SETP system.

During the period ONR, in conjunction with the Environment Agency, inspected arrangements for compliance with LC10; Training, and LC28; Examination, inspection, maintenance and testing, within the licensee's Utilities Water Treatment Plant. There were no significant findings identified during ONR's inspection of the licensee's implementation of arrangements for LC10; Training. ONR noted that the licensee had recognised that there was a shortfall in the provision of a Duly Appointed Person and had put in steps to rectify the situation. Similarly training programmes for new starters had been updated to reflect modern practices and were being implemented. For these reasons, and on balance, ONR considered an inspection rating of Green (no formal action) was merited against LC10 as a result of this inspection.

ONR considered the implementation of the licensee's arrangements for LC28 within the Water Treatment Plant was good in some areas. This was, however, offset by a number of shortfalls. In particular, the Plant Maintenance Schedule that did not fully align with the present safety case, specifically regarding the demineralised water supply system. For these reasons, and on balance, ONR considered an Inspection rating of Amber (seek improvement) was merited against LC28 as a result of this inspection.

During the period ONR conducted an LC7; Incidents on site, LC32; Accumulation of radioactive waste, and an unannounced inspection for compliance with LC11; Emergency arrangements, within the licensee's Analytical Service organisation. The organisation provides a number of important roles (e.g. material characterisation, chemical, physical and radiometric measurement and analysis) that support the safety of licensee's site-wide operating facilities, including its high hazard and risk reduction work.

During the LC7 inspection, ONR judged that, on the evidence sampled, the licensee had adequately implemented its processes to ensure the identification, reporting and investigation of events that occur within the facility and had demonstrated appropriate management of the corrective actions associated with such events. Therefore, an inspection rating of Green (no formal action) was merited.

ONR considered the implementation of the licensee's arrangements for LC32 within the Analytical Services organisation was good in several areas. For instance, it demonstrated it has adequately adopted the licensee's site-wide arrangements locally within the Analytical Services organisation. In addition, it has adopted a hierarchical approach to sentencing and disposal of its historical waste. However, the inspection identified shortfalls that related to the operational environment of a laboratory that was also being used to store numerous bottles of legacy waste. For these reasons, and on balance, ONR considered that an inspection rating of Amber (seek improvement) was merited against LC32 as a result of this inspection. ONR has raised a regulatory issue here, to track Sellafield Ltd back into compliance.

During the unannounced LC11 inspection ONR considered the implementation of the licensee's arrangements for LC11 within the Analytical Services Facility was good in several areas. For instance, Sellafield Ltd had adequately defined and substantiated the minimum safety manning levels for the facility. However, the inspection identified shortfalls relating to the licensee being able to demonstrate that the persons assigned to meet minimum safety manning levels are suitably qualified and experienced. In addition, the licensee was unable to demonstrate that Access Control Point equipment was able to reliably function on demand. For these reasons, and on balance, ONR considered that an inspection rating of Amber (seek improvement) was merited here, and we have raised a regulatory issue to track Sellafield Ltd back into compliance.

ONR also conducted a System Based Inspection of the Licensee's site wide compressed air system. The compressed air system forms an important duty system that enables many site operations, as well as facilitating hazard and risk reduction activities on the site.

ONR established that LC34; Leakage and escape of radioactive material and radioactive waste, as not being applicable to this specific System Based Inspection.

ONR considered the implementation of the licensee's arrangements for LC23; Operating rules, LC24; Operating instructions, LC27; Safety mechanisms, devices and circuits, and LC28; Examination, inspection, maintenance and testing were good in several areas. As such, ONR awarded inspection ratings of Green (no formal action) here.

ONR identified a shortfall that related to LC10; Training. The licensee provided limited evidence that it had established adequate training arrangements to demonstrate a Duly Appointed Person is suitably qualified and experienced. For these reasons, ONR considered that an inspection rating of Amber (seek improvement) was merited here.

During the period ONR inspected arrangements for compliance with LC22; Modification or experiment on existing plant, within the licensee's Package Management, Roads and Railways (PMR&R) organisation. PMR&R provides a number of important roles (e.g. flask maintenance, transportation of radioactive materials) that support the safety of licensee's operating facilities, including its high hazard and risk reduction work.

ONR considered the implementation of the licensee's arrangements for LC22 within PMR&R is good in several areas. PMR&R has been proactive to adopt a site-wide initiative to reduce the number of open Plant Modification Proposals, and has established and implemented transparent reporting arrangements. ONR found no significant shortfalls, and on balance, considered an inspection rating of Green (no formal action) was merited here.

ONR has continued to monitor the licensee's progress against a number of regulatory issues where shortfalls against legal requirements, or other actions, have been identified through previous inspections or other regulatory engagements. ONR is content with the progress being made here, and we will continue to monitor licensee performance until these matters are resolved.

Routine Matters – Special Nuclear Materials

Within the Special Nuclear Materials Operating Unit (SNM OU), ONR carried out three planned Licence Condition Compliance Inspections within the wider OU and one System Based Inspection (SBI) within the Special Nuclear Materials (South) facility.

For the planned compliance inspections, ONR judged that licensee compliance with LC11; Emergency arrangements, LC36 Organisational capability, and LC26 Control and supervision of operations were adequate, and awarded Green (no formal action) inspection ratings.

For the SBI which covered the Sellafield Product and Residue Store Containment System, ONR judged compliance with all six of the standard set of SBI licence conditions to be adequate and awarded Green (no formal action) ratings for each.

Routine Matters – Decommissioning

During this period, ONR undertook four planned Licence Condition Compliance Inspections against LC22; Modification or experiment on existing plant, LC4;

Restrictions on nuclear matter on the site, LC34; Leakage and escape of radioactive material and radioactive waste, LC3; Control of property transactions and LC36; Organisational capability. ONR also undertook a planned inspection against IRR17 in Decommissioning.

The LC22 planned inspection was carried out in the Magnox Swarf Storage Silo (MSSS). Here the facility's application of the Sellafield Ltd arrangements met our expectations and a Green (no formal action) inspection rating was awarded. ONR nevertheless identified some minor improvements, which will be followed up as routine regulatory business.

The LC4 inspection focused on the arrangements at the Active Handling Facility (AHF). ONR determined that application of the Sellafield Ltd arrangements did not meet legal standards and ONR is seeking improvements. ONR has raised a regulatory issue to track the delivery of Sellafield Ltd's action plan to address the identified shortfalls.

The LC34 inspection focused on the arrangements at the Active Handling Facility (AHF). ONR determined that application of the Sellafield Ltd arrangements did not meet legal standards and ONR is seeking improvements. ONR has raised a regulatory issue to track the delivery of Sellafield Ltd's action plan to address the identified shortfalls.

The LC3 inspection focused on the Remediation Directorate and the arrangements for the Active Handling Facility (AHF) because this facility is leased from Sellafield Ltd to National Nuclear Laboratories. Here the Directorate's application of the Sellafield Ltd arrangements met our expectations and a Green (no formal action) inspection rating was awarded. ONR nevertheless identified some minor improvements, which will be followed up as routine regulatory business.

The LC36 inspection focused on the implementation of the site's arrangements in the Retrievals Directorate to examine the preparedness for transition to waste retrieval operations. Here the Directorate's application of the Sellafield Ltd arrangements met our expectations and a Green (no formal action) inspection rating was awarded. ONR nevertheless identified some minor improvements, which will be followed up as routine regulatory business.

ONR also undertook one System Based Inspection (SBI) during this period. The SBI focused on the containment system serving the MSSS. ONR considered this system meets the requirements of the safety case and awarded a Green (no formal action) inspection rating for four of the six standard SBI licence conditions. However, for LC 24; Operating instructions and LC28; Examination, inspection, maintenance and testing, ONR determined that application of the Sellafield Ltd arrangements did not meet legal standards and ONR is seeking improvements. ONR has raised two regulatory issues to track the delivery of Sellafield Ltd's action plans to address these identified shortfalls.

ONR attended regular quarterly meetings to review Sellafield Ltd's environmental, safety, health and quality performance. ONR considers that these meetings have provided a good forum for monitoring the performance of the decommissioning organisation and to discuss and agree actions to address any adverse trends in safety. ONR noted that improvements in control and supervision of operations within

MSSS facility and AHF facility and suggested that the lessons learnt be shared across Sellafeld Ltd as well as improvements in the management of Plant Modification Proposals (PMPs).

Routine Matters – Operational Waste Facilities

Within this reporting period, ONR undertook planned compliance inspections in the Highly Active Liquor Evaporation and Storage (HALES) facilities, the High Level Waste Plants (HLWP), the Encapsulation and Effluent Plants (E&EP), and the Remediation Operating Unit (OUs).

Within the HALES OU, ONR carried out three planned Licence Condition Inspections and one System Based Inspection (SBI). For the planned Licence Condition Compliance inspections ONR judged that licensee compliance with LC 7; Incidents on the site, LC26; Control and supervision of operations, and LC34; Leakage and escape of radioactive material and radioactive waste, met the required standard and ONR awarded Green (no formal action) inspection ratings here.

For the SBI of the electrical system within HALES, ONR judged that the associated systems met the requirements of the safety case, and rated five of the six standard licence conditions as Green (no formal action). LC34 was not deemed relevant to this SBI and therefore was not rated.

Within the HLWP OU, ONR carried out three planned Licence Condition Inspections. For the planned Licence Condition Compliance inspections ONR judged that licensee compliance with LC26; Control and supervision of operations, LC28; Examination, inspection, maintenance and testing and LC34; Leakage and escape of radioactive material and radioactive waste, met the required standard and ONR awarded Green (no formal action) inspection ratings here.

Within the E&EP OU, ONR carried out three planned Licence Condition Inspections. For the planned Licence Condition Compliance inspections ONR judged that licensee compliance with LC 7; Incidents on the site, LC28; Examination, inspection, maintenance and testing and LC34; Leakage and escape of radioactive material and radioactive waste, met the required standard and ONR awarded Green (no formal action) inspection ratings here.

ONR also carried out two planned licence condition compliance inspections within the Remediation OU, covering: LC26; Control and supervision of operations, and LC28; Examination, inspection, maintenance and testing. ONR judged that compliance with both these licence conditions met the required standards and awarded Green (no formal action) inspection ratings here.

Routine Matters – THORP

Within this area of regulatory interest, which covers THORP and the Oxide Fuel Storage Group (OFSG), ONR carried out five planned Licence Condition compliance inspections, two System Based Inspections (SBIs), and a radiological protection inspection against the Ionising Radiations Regulations 2017 (IRR17). For the planned Licence Condition Compliance inspections ONR judged that licensee compliance with LC 12; Duly authorised and other suitably qualified and experienced persons, LC 26;

Control and supervision of operations, LC 32; Accumulation of radioactive waste, LC 35; Decommissioning, and LC 36; Organisational capability, were adequate and awarded Green (no formal action) inspection ratings. The IRR17 inspection was also awarded a Green (no formal action) inspection rating.

For the SBI of the Thorp Centrifuge Fines Management and zirconium explosion risk, ONR judged compliance with all six standard licence conditions to be adequate. The LCs inspected (a standard set for SBIs: LC10; Training, LC23; Operating rules, LC24; Operating instructions, LC27; Safety mechanisms, devices and circuits, LC 28; Examination, inspection, maintenance and testing, and LC34; Leakage and escape of radioactive material and radioactive waste) were all rated as Green (no formal action).

The SBI of THORP in respect of Reagent and Chemical Safety sampled the Medium Active Salt Free Evaporator (MASFE) systems and the associated safety measures. ONR judged compliance with five of the six standard licence conditions to be adequate. Hence those LCs were all rated as Green (no formal action). The exception was for compliance with LC 24; Operating instructions, which was given an amber rating (seek improvement). For LC24 ONR judged that there was a significant shortfall against relevant good practice with regard to SL's implementation of its arrangements. This was based on operational experience provided by SL attributable to an act of non-compliance with an Operating Instruction by a Duly Authorised Person. ONR undertook separate follow-up enquiries and concluded that the event did not warrant a formal investigation. A Regulatory Issue has been raised in order for ONR to retain oversight of the improvement actions Sellafield Ltd is making here.

2.2 Other work

Project Delivery sub-division

The ONR Project Delivery sub-division regulates the programmes, projects and activities, associated with the delivery of high hazard and risk 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-division also has a number of improvement themes, aimed at encouraging Sellafield Ltd 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 ONR's interventions with the licensee during this reporting period – 01 October 2017 to 31 March 2018 are described in the following paragraphs.

Strategic Improvement Themes

ONR continues to engage with Sellafield Ltd across a wide variety of areas to improve its processes for delivering projects on site. The key regulatory foci over the past reporting period have been influencing Sellafield Ltd to develop a fully integrated plan to improve the performance of its supply chain, to expedite hazard and risk reduction activities on site, and to develop fit for purpose engineering solutions and safety cases.

High Level Waste Plants

Following extensive interventions and assessment ONR issued Licence Instrument 506 in November 2017, agreeing to the commencement of active commissioning on Evaporator D. Active commissioning involves introducing radioactive materials to the Evaporator for the first time and the commencement of active operations under enhanced managerial controls. Over the course of the next year Evaporator D will go through an operational ramp up with a steadily increasing radiological challenge until full operations have been demonstrated. During this time the routine operations of Evaporators A, B and C will be phased out until Evaporator D is undertaking all Highly Active Evaporation on site. The operation of Evaporator D enables hazard and risk reduction through securing the completion of the reprocessing programmes, the Post Operational Clean Out (POCO) of the High Active Facilities on site, and safeguarding the reduction of HAL stocks.

Decommissioning

In November 2016 ONR issued Licence Instrument 910, agreeing to Sellafield Ltd's request to commence the demolition of the First Generation Reprocessing Plant stack. A self-climbing platform has now ascended to the top of the stack and following completion of planned physical reconfiguration Sellafield Ltd has commenced demolition of the structure. ONR has stressed the importance of safe and secure, timely delivery of this project. Sellafield Ltd has completed actions placed by ONR concerning planning and worker fatigue management which has allowed ONR to close regulatory issues 4903 and 4994. ONR continues to maintain regulatory focus in this area.

ONR continues to monitor closely the progress of work related to the demolition of the Pile 1 reactor chimney diffuser section. Removal of the diffuser from this legacy chimney forms part of Sellafield Ltd's hazard and risk reduction strategy. Sellafield Ltd has installed the foundation for a tower crane that will assist the demolition activity. This tower crane, which has been manufactured specifically for this project, is in storage at Sellafield. Sellafield Ltd has submitted a request to ONR, including provision of safety case documentation, to grant permission to the erection and operation of the tower crane. ONR's assessment and engagement continues here, to inform our regulatory

decision. Enabling work such as building access platforms is on-going and erection of the tower crane is scheduled to commence during 2018.

Sellafield Ltd's hazard and risk reduction strategy for the demolition of a legacy low active effluent treatment plant includes the transfer of residual flocculent for processing in an up-stream facility. ONR continues to monitor Sellafield Ltd's work to complete the design, manufacture, installation and operation of the transfer equipment; and ONR has introduced hold points into the licensee's programme. Sellafield Ltd is required to provide ONR with an adequate safety justification to progress beyond these.

Pile Fuel Cladding Silo (PFCS)

Within this reporting period, PFCS has completed the programme of work to remove the deflector plates within the silo and to cut the retrievals access penetrations in the side of the building. The last piece of the sixth and final deflector plate was cut and fell into the silo on 8 November 2018. The sixth and final access penetration was completed on 6 December 2018 with the confirmation that an airtight seal had been achieved on the containment door. These are both significant milestones that will enable the start of waste retrieval, expected in 2019. Although there were some additional short-term risks associated with both activities, the work has been completed safely, securely and broadly on-schedule and ONR recognises the good level of care and control that Sellafield Ltd has shown in the execution of both projects.

ONR assessed the Pre-Commencement Safety Report (PCSR) justifying the design and safety argument of the PFCS 'Early Retrievals' plant and equipment, that will see waste retrievals from the first of the six PFCS waste compartments. ONR was satisfied with the PCSR to enable us to grant permission for the first phase of the installation work, (the portion of the retrievals plant that will handle empty and filled waste containers). Permission was given on 20 December 2017 and construction activities are underway and on schedule. ONR did identify some areas for improvement in the developing safety case, and we will be engaging with Sellafield Ltd in the coming months to secure these improvements.

ONR has been continuing to engage with Sellafield Ltd on proposals to change the limits and conditions associated with the argon environment within the silo during active waste retrievals. Our discussions have been constructive and we are content that Sellafield Ltd is progressing towards making a safety case that could be used to support operating limit changes in the future, although the extent to which changes are needed will depend on the results from commissioning tests once the waste retrievals plant is complete. ONR is expecting to receive the first formal revision of this developing safety case by April 2018 for assessment.

ONR notes that Sellafield Ltd has now formally initiated the project that will seek to undertake waste retrievals from the remaining five PFCS waste compartments. This 'Full Retrievals' project will build on the learning gained during the Early Retrievals activities on the first compartment. Although the detailed approach has not yet been assessed by ONR, we have undertaken some engagement with Sellafield Ltd and we are broadly content that the strategy is suitable and remains focussed on achieving

safe and secure removal of the waste from PFCS as effectively and efficiently as practicable.

Magnox Swarf Storage Silo (MSSS)

Sellafield Ltd has commenced inactive commissioning of the Silo Emptying Plant (SEP2) at MSSS. Despite modifications still having to be made to SEP2, ONR currently considers that the overall schedule for availability of SEP2 is aligned with the expected availability of waste handling facilities being built or modified to accept MSSS retrieved waste. ONR recognises the complexity of SEP2 and is engaging with Sellafield Ltd to secure regulatory confidence in the licensee's delivery plans.

Sellafield Ltd is currently undertaking inactive commissioning of the First Extension Liquor Activity Reduction (FE LAR) plant that will reduce radioactivity in MSSS silo water. Sellafield Ltd has requested ONR's agreement to the operation of FE LAR, and ONR has engaged with Sellafield Ltd to assess the safe operation of this plant. ONR has now issued License Instrument number 509 giving permission to Sellafield Ltd to commence the activities described in the licensee's proposal, that will result in FE LAR commencing active commissioning and subsequent full operation.

ONR continues to engage with Sellafield Ltd on the detail of the improvements it is proposing and its overall delivery plans for retrievals, to ensure the licensee achieves safe, secure and sustained hazard and risk reduction at the site.

Infrastructure

ONR continues to remain focussed on Sellafield Ltd's work to secure improved long term resilience of the site's electricity, steam, compressed air, and water utility systems. Over the reporting period ONR has engaged with key managers to influence 'fit for purpose' solutions for new major electrical and steam improvement projects, needed to meet the long term requirements of the site. ONR has observed continuing progress in line with the declared Sellafield Ltd plans here.

Special Nuclear Material Projects

Through ONR's two Level 1 Regulatory Issues (i.e. ONR's highest level of issue) we continue to engage and influence the delivery of hazard and risk reduction activities regarding the Special Nuclear Material (SNM) facilities. Specifically, this includes asset care improvements on the First Generation Finishing Line (FGFL) facility and the delivery of capabilities to allow continued safe and secure storage of SNM.

With respect to FGFL asset improvement, we have released the regulatory hold point on installation of the ventilation inlet system diversion, which is a key enabler for future risk management projects. Sellafield Ltd has also now completed the further work required by ONR on nuclear ventilation Fans 6 and 7 to demonstrate that the risks have been reduced to as low as reasonably practicable.

The UK Government / Nuclear Decommissioning Authority policy is to consolidate the UK's un-irradiated SNM in one location. As part of this initiative, SNM from Dounreay is being transferred to Sellafield in a number of phases (each of which is subject to a

regulatory hold point). We have released the regulatory hold point for Sellafield Ltd to receive the next phase of fuel sub-assemblies (which has now been safely completed by Sellafield Ltd) and we continue to assess proposals to receive future shipments. We have also raised a Level 1 Regulatory Issue on this programme of work to ensure adequate oversight, and that Sellafield Ltd implements adequate capabilities to continue the safe and secure long term storage of this population of SNM.

Pile Fuel Storage Pond (PFSP)

ONR's regulatory focus continues to be on the retrieval, removal and export of intermediate level waste and bulk sludge from the pond.

Following ONR's agreement to PFSP sludge exports (Licence Instrument 906), Sellafield Ltd has exported a number of drums for encapsulation and safe interim storage on site. Sellafield has exported 115 drums this financial year, and hence exceeded the ONR Chief Nuclear Inspector Milestone of 100 drums.

Following a series of plant interventions and assessment of the licensee's safety submission to export the second phase of ILW (with higher dose rates) to a suitable on-site storage facility, ONR released the hold pint to grant permission to the export. This enables Sellafield Ltd to remove higher hazard wastes to a more suitable storage facility and further reduces hazardous inventory within the PFSP.

First Generation Magnox Storage Pond (FGMSP)

The ONR regulatory focus continues to be on the retrieval, removal and export of fuel, intermediate level waste, and bulk sludge from the pond.

Within this period Sellafield Ltd has continued to make progress in all of the ONR key areas of focus.

- Sellafield Ltd has successfully removed and disposed of the first magazines from the Magazine Transfer Bay (MT Bay), opening up a new waste stream with a route for disposal, and achieved the Key Decommissioning Milestone (KDM) of processing 5 magazines this year.
- Sellafield Ltd has exported over 6 tonnes of solid fuel to a more suitable modern facility thereby ensuring safer interim storage, and consolidated further fuel ready for future export.
- Following a proportionate assessment, ONR released the hold point to export a number of Uranium Bit Bins (UBBs) to a more suitable modern facility for temporary storage. This has enabled the licensee to export nearly 27 tonnes of fuel within these UBBs. Engagements continue with the licensee to support future decisions on longer term storage and eventual disposal options.
- Overall the licensee has exported over 33 tonnes of fuel from the pond this year, significantly exceeding its target of 8 tonnes.

Waste Handling Facilities

Sellafield Ltd is progressing a number of new build and existing facility modification activities that will directly support waste retrievals from the legacy silos (MSSS and PFCS). ONR has engaged with Sellafield Ltd to gain regulatory confidence that these facilities can be delivered in time to meet the overall programme for timely, safe waste retrievals from these legacy silos. In particular, ONR has focussed on the Box Encapsulation Plant (BEP), Box Encapsulation Plant Product Store / Direct Import Facility (BEPPS/DIF), Waste Transfer Route (WTR), Silo Maintenance Facility (SMF), and other key waste retrieval and storage enablers. ONR's regulatory focus will continue in this area to ensure we have the necessary regulatory confidence in these aspects of Sellafield Ltd's hazard and risk reduction programmes.

Essential Operations Inspections

ONR's regulatory strategy for Sellafield Ltd is focussed on stimulating, facilitating, and expediting safe and secure hazard and risk reduction. ONR has a number of planned interventions in place to ensure these activities are delivered safely and securely. There are also a number of supporting functions at the site that play a key role in delivering this hazard and risk reduction. ONR is keen that such functions have sufficient reliability and resilience such that they can appropriately support these activities. ONR therefore undertakes interventions, termed Essential Operations Inspections, to gain regulatory confidence that such supporting functions can safely and adequately facilitate sustained hazard and risk reduction activities on site.

During the report period ONR undertook two essential operations inspections in relation to: radiometric instrument provision in radiological controlled area change rooms, and Lillyhall warehousing, goods receipt and secure dispatch arrangements. Overall adequate confidence was gained in relation to availability and reliability of these supporting functions that underpin prioritised hazard and risk reduction activities. Minor areas for improvement were noted during the Lillyhall inspection: for instance the management of spare maintenance and storage arrangements for strategic process chemicals. ONR will monitor progress against these findings via regulatory issues.

3 NON-ROUTINE MATTERS

Non-Routine Matters - Corporate Inspection

During this period ONR maintained regular engagement with Sellafield Ltd on its preparations for, and handling of, industrial action at the site. ONR was satisfied that Sellafield Ltd has given due priority to safety and security in the development and implementation of its contingency plans.

Non-Routine Matters - Conventional Health & Safety

Legionella management at HALES and across the Sellafield site has continued to remain a regulatory priority for ONR. An investigation into legionella management at HALES has now been completed, and ONR is currently in the process of determining an appropriate regulatory outcome. A number of interventions have also been undertaken in this reporting period to ensure legionella risks are being effectively controlled by Sellafield Ltd. In January 2018 ONR received a response to an enforcement letter that provided clarity as to how the necessary oversight and support is being provided by Sellafield Ltd leaders and senior managers in relation to legionella management. ONR will maintain focus on this issue, to ensure risks are being effectively controlled.

Asbestos management across the Sellafield site has also continued to remain a regulatory priority for ONR. In January 2018 ONR received a response to an enforcement letter that confirmed the Sellafield Site Director was accountable for the delivery of the Sellafield asbestos management strategy. It also confirmed the four key topic areas Sellafield Ltd is focussing on to ensure management of the site wide asbestos inventory is prioritised according to risk.

Non-Routine Matters – Operational Waste Facilities

During the period of this report ONR conducted follow up enquiries on an event relating to the detection of elevated gamma monitor readings on a pipe in the medium active basement within HALES. Whilst ONR concluded that the event itself did not meet the formal investigation criteria, ONR is closely monitoring the recovery actions being undertaken by Sellafield Ltd.

Due to the cold weather on 01 March, there was a raw water leak in a water pipe on a pipe bridge in the separation area of the Sellafield site. This resulted in water running into nearby pipe trenches and from there into the basement of a redundant building. This resulted in the spread of historical contamination from this building into the water flow and adjacent areas. The volume of water resulted in discharge through a number of non-routine discharge routes including to ground.

ONR is satisfied with the response of Sellafield Ltd to the incident, and considers the impact to safety on the site to have been very low. We will however engage with Sellafield Ltd going forwards to ensure that it undertakes an appropriate level of investigation, and to ensure that any lessons are learned as appropriate.

Non-Routine Matters – Infrastructure

An ONR team of inspectors assessed compliance with LC11; Emergency arrangements, via the annual safety led on-site demonstration exercise. ONR concluded that the licensee had provided an adequate demonstration, and would have coped if this had been a real event. The demonstration highlighted a number of areas where improvement is required, and ONR issued a formal enforcement letter requiring the licensee to undertake a review of its arrangements in relation to the findings identified.

During the period ONR conducted follow up enquiries that related to a chemical event within the licensee's Analytical Services facility. ONR determined that the licensee took prompt and appropriate action, and adopted a precautionary approach once the nature of the chemical hazard and its risk had been identified. ONR also considered that the licensee took timely and appropriate action to establish the extent of the issue across the site. Fundamentally the licensee responded well to the event once it occurred, but should have made and implemented arrangements to avoid having the event in the first place.

ONR concluded that the proportionate regulatory action was to issue a formal enforcement letter, and to require the licensee to undertake a review of its arrangements for managing waste chemicals within the Analytical Services facility, and across all other site-wide operating units.

During the period ONR also conducted follow up enquiries relating to the identification of a positive bio assay sample of an individual within the licensee's Analytical Services facility. ONR concluded that it would not be proportionate to take any further enforcement action here.

ONR continues to engage with Sellafield Ltd over the need to secure long term provision of analytical services for the Sellafield site. This is necessary to support the safety of ongoing operations, and specifically, hazard and risk reduction across the site. ONR has also continued to engage with Sellafield Ltd to regulate the reduction of legacy waste presently stored within the Analytical Services facility. ONR has been encouraged that Sellafield Ltd has continued to make significant progress in the removal of legacy wastes (both aqueous and solvent) during 2017/18 financial year.

Non-Routine Matters – Special Nuclear Materials (SNM)

During the period of this report ONR completed the formal investigation into the contamination event in SNM (South). The investigation report is now complete, and ONR is currently in the process of determining an appropriate regulatory outcome.

Non-Routine Matters – THORP

In January ONR undertook follow-up enquiries relating to a uranium trioxide power spillage in the THORP facility. Based on the findings ONR concluded that the event did not warrant an ONR formal investigation. The adequacy of SL's learning from the event will be followed up as part of routine regulatory business.

Non-Routine Matters – Decommissioning

ONR has undertaken an intervention into the shortfall in the delivery of safety improvement projects by NNL in the AHF under the supervision and control of the Remediation Division. Our intervention highlighted a number of concerns in NNL's capability and capacity to deliver these safety improvement projects and, in the application of Sellafield Ltd's corporate arrangements for the supervision and control of NNL. In consequence, we have formally requested an action plan from NNL to address these shortfalls and raised a Regulatory Issue to track their resolution.

Non-Routine Matters – General Permissioning

ONR's permissioning process continues to monitor Sellafield Limited's planned submissions in accordance with its Hold Point Control Plan, which forms part of its arrangements.

Non-Routine Matters – Magnox

During this period, ONR conducted follow-up enquiries on several minor events reported by Sellafield Ltd in the Magnox Reprocessing Facility (MRF). Whilst none of these resulted in a judgement that further investigation was required, the intelligence gained led ONR to observe that a number of the minor events related to behaviours of individuals, some of whom were in leadership or supervisory roles. ONR raised this observation with Sellafield Ltd, who had independently noted the apparent trend and already started to undertake a self-assessment using a number of data sources. Sellafield Ltd has responded positively to this situation and is implementing a number of initiatives to drive improvements to the safety culture. At the end of February, Sellafield Ltd extended an unplanned shutdown of the MRF, following an instrument failure, to take the opportunity to undertake some of the improvement activities identified, prior to restarting the plant. Sellafield Ltd is also using its internal regulator to provide feedback, which is independent from the operational management chain. ONR is, where appropriate, supporting Sellafield Ltd and sharing knowledge to assist in improving the safety culture in the MRF. We consider the response to the current action positively, whilst monitoring proposed activities and outcomes, in case further intervention is required.

Non-Routine Matters – Periodic Review of Safety

Sellafield Ltd's Periodic Safety Review (PSR) programme remains on schedule and the licensee's new arrangements continue to bed-in well. These arrangements are resulting in better attention being applied to those improvements which have the greatest impact on nuclear safety.

The THORP facility is currently moving towards the end of its operational life and parts of the facility are scheduled to transition from commercial operations into Post Operation Clean Out (POCO), shortly after the planned final fuel shearing operations in November 2018. ONR has interacted with Sellafield Ltd at an early stage on the THORP & Finishing Line 6 (FL6) POCO Event Driven Review (EDR). The interactions have included monthly progress updates, a workshop which was well attended by

ONR and Sellafield Ltd staff, an inspection of the processes being proposed to achieve POCO, an inspection of the facility, and the production of a Project Assessment Report. ONR acknowledges the considerable progress that Sellafield Ltd has made with the THORP & FL6 POCO EDR in the period, but considers that the EDR has not yet developed far enough to provide adequate confidence in the proposed approach. However, Sellafield Ltd has developed and presented a credible plan for transitioning parts of the THORP & FL6 facility into POCO and we expect the necessary regulatory confidence will be generated as the plan is delivered.

ONR carried out a Licence Condition 15; Periodic Review, inspection of the Alpha Residues Recovery Plant to ensure that Sellafield Ltd has adequately reviewed the extant safety case and considered the capability of the facility to support future safe operations, (whilst recognising that it is undergoing a long term decommissioning programme). ONR concluded that Sellafield Ltd has carried out an adequate Periodic Safety Review here.

ONR has continued to interact with Sellafield Ltd on a number of safety case initiatives to review the methodology, implementation, and adequacy of its arrangements in this respect.

4 REGULATORY ACTIVITIES

Licence Instruments and Enforcement Notices Issued by ONR during this period

Date	Type	Ref No	Description
09/11/2017	Agreement	506	LC22(1) - Agreement to actively commission Evaporator D
29/03/2018	Agreement	509	LC22(1) – Agreement to active commissioning of First Extension Liquor Activity Reduction (Magnox Swarf Storage Silo)

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

5 NEWS FROM ONR

In January, ONR received the results of its first external stakeholder survey which was undertaken by YouGov on behalf of ONR. A broad range of stakeholders were invited to participate in an online survey, with 351 responses received. In addition to the online survey, a number of in depth interviews were also completed with stakeholders. While overall the results demonstrate ONR is seen as a high performing organisation with good levels of stakeholder confidence, there are areas where improvements can be made and we will be working with our divisions on those in the coming months. Further details about the survey results can be found in our March 2018 newsletter which is available on ONR's website.

In February, ONR held its first webinar following the publication of the 'Guide to enabling regulation in practice.' Chief Nuclear Inspector, Mark Foy and Deputy Chief Inspector, Mike Finnerty, were on hand to answer questions about the guide which has been designed to illustrate working examples of enabling regulation in practice. This is a new channel of communication for ONR and we'll be holding further webinars on different topics over the coming months. If you would like to join future webinars then please get in touch with the ONR Communications team via contact@onr.gov.uk

In March, ONR held the first of two meetings this year with representatives from across the NGO community. Held in Birmingham, the meeting was attended by 15 NGO representatives from 11 different organisations. Topics discussed included: Domestic Safeguards pending the withdrawal of the UK from Euratom; Emergency Planning Arrangements; and the ONR Stakeholder Survey results. The next meeting is scheduled to take place in October 2018. We are keen to increase the number of people engaging with ONR on nuclear safety and security issues and would like to invite members of SSGs, and LCCs to join our engagement programme. For more details please get in touch via contact@onr.gov.uk

For the latest news and updates from ONR visit the website and sign up for the ONR Newsletter (<http://www.onr.org.uk/ebulletin/index.htm>).

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