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Title: Agreement to Implement the Active Handling Facility's New Operational Safety Case

B New Operational Safety Case**

Agreement to Implement the Active Handling Facility's New Operational Safety Case

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Project Assessment Report ONR-SDFW-PAR-16-038
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EXECUTIVE SUMMARY

Agreement to Implement the Active Handling Facility's New Operational Safety Case

This Project Assessment Report has been written to document the basis of ONR's regulatory decision to issue an 'agreement' in the form of a Licence Instrument to implement the Active Handling Facility's (AHF) new Operational Safety Case.

Permission Requested

In accordance with its arrangements made under Licence Condition 22(1), Sellafield Limited (SL) (the licensee) has requested the Office for Nuclear Regulation's agreement to implement the Active Handling Facility's new Operational Safety Case.

Background

AHF was built in the late 1940s as part of a complex of three buildings supporting operation of the Windscale Pile Reactors. It has operated subsequently as a Research & Development facility, principally for Post-Irradiation Examination activities. It has also recently been used for the repackaging of legacy material and waste generated by the United Kingdom nuclear industry. Operations are expected to continue until ~2035.

The main processing area of AHF comprises a number of ventilated, heavily shielded caves, all linked by an active service corridor in which a trolley on rails (the Fuel Element Transporter) can transfer fuel/components to the majority of caves. Each cave has multiple workstations, which comprise a shielded viewing window and a pair of Master-Slave Manipulators to remotely handle in-cave materials and tools.

AHF has received significant regulatory attention in past years, particularly in relation to the quality of its Operation Safety Cases and Long Term Periodic Reviews. The current submission represents the culmination of a process to implement an adequate safety case for the whole facility that began in 2004.

Assessment and inspection work carried out by ONR in consideration of this request

Given the potential radiological risks from fault scenarios present in the AHF safety case, specialist assessments were conducted by several disciplines; human factors, control & instrumentation, mechanical engineering, fault studies and criticality.

ONR specialist inspectors held several engagements with SL and the National Nuclear Laboratory Limited (NNL, who run the facility) to allow discussion of technical and project matters and walk-down the facility. ONR also undertook a readiness review.

ONR also undertook a routine Licence Condition 28 (examination, inspection, maintenance and testing) compliance inspection at the facility which has informed this assessment.

Matters arising from ONR's work

The criticality and control & instrumentation specialist inspectors found no significant issues and raised no recommendations.

However, the mechanical engineering, human factors and fault studies specialist inspectors all raised recommendations requiring NNL and/or SL to complete further work, albeit following implementation of the Operational Safety Case.

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The areas targeted by the specialists' recommendations include:

- Improving the reliability of maintenance activities and the quality of human factors substantiation (including an analysis to show operational controls are suitably independent)
- Reviewing training and competence management on the facility
- Fully aligning the Engineering Schedule with the Radiological Safety Assessment
- Evaluating the effects of the primary in-cave filters on fault sequences and consideration of their maintenance/replacement in line with relevant good practice
- Confirming that the claims made regarding plant evacuation are met
- Prompt future replacement of the Red Extract fan system

As a result of this advice, I have recommended that a letter be sent to NNL to inform the facility's management of the totality of the specialists' findings. The letter will ask NNL to consider ONR's findings and either have made appropriate safety improvements or include these topics in the next Short Term Periodic Review of the AHF safety case (due within 12 months of the implementation of the Operational Safety Case).

Conclusions

Three of the five specialist inspectors have awarded the submission an AMBER rating, resulting in Regulatory Issues being raised to capture their recommendations. However, none of the specialists judged that there was a matter significant enough to prevent ONR giving agreement to implement the Operational Safety Case. Generally the specialists found that the new case provides a simpler, clearer basis for safety in the facility, which was welcomed.

It is my opinion that whilst the submitted case contains a number of shortfalls (and thus requires further work to clearly demonstrate that the risk to workers is as low as reasonably practicable), the new Operational Safety Case provides an overall safety benefit to the facility. In combination with the specialist's findings, I judge that none of the shortfalls are significant enough, either jointly or separately, to warrant withholding the requested permission.

Regulatory scrutiny of the facility (and thus of the improvements required) will be maintained by means of continued engagements by the site inspector in matters of compliance and the permissioning lead in matters of future permissioning activities, including examination of the next Short Term Periodic Review (for which SL has committed to providing ONR the opportunity to examine the outcome). These activities will be informed by the Regulatory Issues raised in respect of this work, which will be used to track NNL's and SL's responses.

Recommendations

The project assessment report makes two recommendations:

- Recommendation 1: ONR should send a letter to NNL detailing the recommendations and observations raised by ONR specialists during the course of the Operational Safety Case assessment process. The letter should set an expectation that the recommendations should either be addressed by the time of the next Short Term Periodic Review, or considered during the Short Term Periodic Review itself.
- Recommendation 2: ONR should issue Licence Instrument 541 to give agreement to implement the new Operational Safety Case for the Active Handling Facility.

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LIST OF ABBREVIATIONS

AHF	Active Handling Facility
C&I	Control & Instrumentation
DAP	Duly Authorised Person(s)
FSG	Fault Sequence Group
HF	Human Factors
HOW2	(Office for Nuclear Regulation) Business Management System
LC	Licence Condition
LI	Licence Instrument
LTPR	Long Term Periodic Review
NII	Nuclear Installations Inspectorate
NNL	National Nuclear Laboratory
OCM	Operational Control Manager
ONR	Office for Nuclear Regulation
OSC	Operational Safety Case
PAR	Project Assessment Report
PMP	Plant Modification Proposal
STPR	Short Term Periodic Review
SL	Sellafield Limited
SM	Safety Mechanism
SRE	Safety Related Equipment
UKAEA	United Kingdom Atomic Energy Authority

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1 PERMISSION REQUESTED

1. In accordance with its arrangements made under Licence Condition 22(1)^a, Sellafield Limited (SL) (the licensee) has requested^[1] the Office for Nuclear Regulation's (ONR) 'agreement'^b to implement the Active Handling Facility's (AHF) new Operational Safety Case (OSC). The principal (controlling) document of the submission is the category 'B'^c Plant Modification Proposal (PMP), PMP-B**-2015-872, issue 1, 'Implementation of the AHF Safety Case'^[2].
2. However, as a result of delays in delivery of a key safety improvement project that was expected to be complete by the time of the new safety case's implementation, SL has also submitted a further (category 'C'^c) PMP to address the shortfall; PMP/B**/2016/955, issue 1, 'To allow continued operation of B** under the current configuration of the Red Extract ventilation system'^[3].
3. This Project Assessment Report (PAR) has been written to document the basis of ONR's regulatory decision to issue an 'agreement'^b in the form of a Licence Instrument (LI)^[4]. This report has been written in accordance with the requirements of the relevant guides in HOW2^[5].

2 BACKGROUND

2.1 GENERAL

4. National Nuclear Laboratory (NNL) Limited is the sole occupant of AHF, which is located on the Windscale nuclear licensed site^d. NNL is a tenant on the licensed site, not a licensee. SL maintains accountability as the licensee under the nuclear site licence and applies command and control measures via the SL Operations Control Manager (OCM). Therefore, NNL has only prepared the safety case submission. SL (via the OCM) has reviewed and accepted the documentation and submitted it to ONR under its own arrangements, made under Licence Condition (LC) 22(1).
5. AHF was built in the late 1940s as part of a complex of three buildings supporting operation of the Windscale Pile Reactors. AHF has operated subsequently as a Research & Development facility, principally for post-irradiation examination activities. AHF has also recently been used for the repackaging of legacy material and waste generated by the United Kingdom nuclear industry. Its operations are expected to continue until ~2035.
6. The main processing area of AHF comprises a number of ventilated, heavily shielded caves, all linked by an active service corridor in which a trolley on rails (the 'fuel element transporter') is used to transfer fuel/components between the caves. Each cave has multiple workstations, which comprise a shielded viewing window and a pair of master-slave manipulators to remotely handle in-cave materials and tools.
7. The facility is a laboratory rather than a typical process plant, and as such handles many discrete packages of work. It therefore requires an adaptable safety case that can be readily modified where necessary (albeit through an appropriate due process)

^a SL's arrangements for LC22 have not been 'Approved' by ONR; that is, ONR has not frozen them. SL's LC22 arrangements were last examined in October 2014 and found to be adequate^[31].

^b In this instance, 'agreement' is a use of a derived power (i.e. one given to ONR through the licensee's arrangements), rather than a primary power (i.e. one given to ONR through law).

^c On a scale of 'A' to 'D', where 'A' is the most safety significant and 'D' the least. 'B' implies a high consequence to a worker, and minimal consequence to the public. 'C' implies a lower risk to a worker and minimal consequence to the public.

^d The Windscale nuclear licensed site is directly adjacent to the Sellafield nuclear licensed site and shares the general site infrastructure. SL is the licensee for both sites; therefore its arrangements apply to both sites.

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to reflect the hazards of individual projects. On occasion it has to deal with poorly characterised material, sometimes received in a poor condition.

2.2 REGULATORY

8. AHF has received significant regulatory attention in past years in relation to the quality of its OSCs and Long Term Periodic Reviews (LTPR). The current submission represents the culmination of a process to implement an adequate safety case for the whole facility that began in 2004. The majority of the regulatory history is captured in previous PARs^[6, 7] and is summarised below.
9. When the AHF OSC expired on 31 December 2004, its replacement (the '2004 OSC') was not adopted by the licensee due to a number of outstanding Nuclear Installation Inspectorate (NII) issues. Instead, the facility began operating under a 'Care and Maintenance Safety Case' (permissioned via LI507), restricting permitted facility operations to a limited number of very low risk operations. The Care and Maintenance Safety Case was only valid until 31 December 2006.
10. In January 2007, NII issued Agreement LI523 that allowed the then licensee, the United Kingdom Atomic Energy Authority (UKAEA), to proceed with limited adoption of the 2004 OSC (i.e. a limited set of operations judged by NII to be adequately controlled by the 2004 OSC). Alongside LI523, NII also issued Acknowledgment LI525 allowing implementation of a modification to the 2004 OSC to restrict permissible operations, and Specification LI524 to establish the need for the licensee to send safety documents associated with specified operations to NII. In effect, LI524 ensured that when UKAEA wished to undertake one of the restricted operations, it had to demonstrate explicitly to NII that the operation would be adequately controlled. Based on the submission made, NII could then make a standalone regulatory decision to permission the activity (or not).
11. The facility operated in this restrictive manner from January 2007 until October 2014. At that point, following adoption of ONR's changed regulatory strategy for Sellafield, and based on the nuclear safety performance of AHF over that time, ONR considered that LI524 added an unnecessary layer of bureaucracy and thus prevented swift and efficient delivery of hazard and risk reduction in which AHF was then playing a significant part. ONR further considered that the licensee had adequately demonstrated appropriate control of the operations specified in LI524; therefore ONR informed SL that we would no longer enforce LI524.
12. In September 2015, ONR completed its assessment of the 2013 AHF LTPR, concluding that NNL had not undertaken an adequate review of the 2004 OSC as adopted in 2007; the project inspector judged that this was likely caused by NNL intending to move imminently to a new (2014) OSC and thus the LTPR scope had been reduced. Moreover, a peer assist review around the same time facilitated by the SL Safety Case Improvement team found that the 2014 OSC was not fit for purpose. NNL accepted SL's finding and began work on the 2016 OSC, to which this permission relates.
13. In summary, the 2004 OSC had been adopted in a limited manner in January 2007, with restricted operations only permitted through a regulatory permissioning process. As AHF began to take a more significant role in hazard and risk reduction of the site, and the facility demonstrated effective self-governance (through embargoing the restricted operations) ONR informed the licensee that we no longer saw the need to enforce the Specification. The licensee intends to replace the 2004 OSC with the OSC currently under consideration.

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3 ASSESSMENT AND INSPECTION WORK CARRIED OUT BY ONR IN CONSIDERATION OF THIS REQUEST

14. ONR's assessment and inspection work in respect of this submission was agreed with the ONR Delivery Lead and undertaken in accordance with the associated Decision Record ^[8].
15. In support of SL's request ^[1] to implement the new OSC, it has submitted a number of documents, of which three are considered central to the submission:
 - PMP-B**-2015-872, issue 1: "Implementation of the AHF Safety Case" ^[2]
 - PMP/B**/2016/955, issue 1: "To Allow Continued Operation of B** Under the Current Configuration of the Red Extract Ventilation System" ^[3]
 - IMS-WF-OSC-001, issue 1: "Safety Case Summary Report" ^[9]
16. The Safety Case Summary Report lists eight main Fault Sequence Groups (FSG):
 - All of which have potential for high worker doses (unmitigated: five >1Sv, three <1Sv)
 - Two of which have potential for high public doses (unmitigated: <100mSv, <1mSv), and
 - One which has potential for low public doses (unmitigated: <0.1mSv).
17. It was noted in the Decision Record that, despite some of the fault sequences having significant potential unmitigated dose consequences to the public, the category of PMP was 'B'. This is because the engineering and operational controls involved in the protection from the fault sequences that would have seen the PMP be categorised as an 'A' are not being changed.
18. Given the potential radiological risks presented to the workers and the public (and noting that the facility has also submitted a Criticality Incident Detection omission case), it was clear that seeking advice from ONR specialist inspectors was appropriate. In line with the Decision Record, I therefore sought specialist assessment from the disciplines identified below; each lists the areas of focus within their assessments:
 - Fault studies
 - Adequacy of the radiological assessment for, and protection against, flask drop faults
 - Adequacy of the radiological assessment for, and protection from, in-cave faults (including fire)
 - Claims made on the main ventilation system
 - Outstanding items and shortfalls
 - Mechanical engineering
 - Adequacy of the protection in place to protect against dropped loads
 - Adequacy of the protection in place to protect against loss of Red Extract ventilation
 - Human factors
 - Human factors integration
 - Safety case screening and scope of NNL's human factors (HF) assessment
 - Substantiation of operational claims
 - Control and supervision
 - Human factors design support
 - Maintenance error
 - Training and competence management

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- Control & instrumentation (C&I)
 - General review of the revised safety case, with a focus on claims made on C&I Safety Mechanisms (SM) and Safety Related Equipment (SRE).
 - Criticality
 - Balance between operational and engineered safety measures
 - Identification and suitability of operational safety measures
 - Determination of fissile and moderator mass limits
 - Adequacy of the Criticality Incident Detection omission case
19. In support of the assessment work undertaken by each specialist ^[10-14], several engagements ^[15-21] were held to allow myself (as project inspector) and the specialists to discuss technical and project matters with SL and NNL. Some of these engagements included plant walk downs, and ONR also undertook a readiness review ^[21].

4 MATTERS ARISING FROM ONR'S WORK

20. Having received assessment reports from each of the specialists, their significant findings/recommendations are summarised in the sub-sections below.

4.1 CRITICALITY ASPECTS

21. The criticality specialist inspector concluded that adequate criticality safety and Criticality Incident Detection omission cases have been made for AHF and that from a criticality safety perspective, the specialist has no objection to an LI being issued to allow the OSC to be implemented.
22. In their assessment, the inspector suggests that the criticality documentation should be updated to SL terminology (noting that a conversion document has already been prepared) soon after the radiological documentation is implemented. The inspector suggests a timeframe of approximately a year for completing this task.
23. The criticality specialist has rated the submitted case as GREEN, with no further action required.
24. Whilst the specialist made no direct recommendations, I agree with the inspector that the criticality documentation should be updated into SL terminology in a suitable timeframe. In doing so, opportunities for confusion between the Windscale and Sellafield systems will be eliminated.
25. As a result of this (and other specialist's recommendations, see later sections) I recommend that a letter be sent to NNL (copied to SL) to inform the AHF management of the totality of our specialists' findings. The letter will ask NNL to consider our recommendations and include these in the topics considered at the next Short Term Periodic Review (STPR) (which is due within 12 months of the implementation of the OSC). The criticality specialist's finding will form a part of that letter.

RECOMMENDATION 1: ONR should send a letter to NNL detailing the recommendations and observations raised by ONR specialists during the course of the OSC assessment process. The letter should set an expectation that the recommendations should either be addressed by the time of the next STPR, or considered during the next STPR itself.

26. SL has committed ^[22] that ONR will have the opportunity to engage with SL and NNL at the STPR of the OSC (STPRs are not customarily examined by ONR). This engagement will provide an opportunity to judge the adequacy of NNL's response to

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our recommendations and for NNL to provide appropriate evidence to enable close out of the Regulatory Issues raised.

4.2 HUMAN FACTORS ASPECTS

27. The specialist inspector considers that NNL has undertaken a structured and targeted assessment of the HF aspects of the OSC and that a range of useful and constructive improvements have been made as a result. Despite finding a number of deficiencies in the submission, the specialist did not identify any shortfalls significant enough to withhold the permission and therefore considered that the deficiencies could be addressed by NNL in a timely manner following implementation of the OSC. To that end, the specialist has raised two Regulatory Issues (#5068 & #5069) to ensure that the recommendations (below) are addressed appropriately by NNL and SL.
28. The four recommendations made by the human factors specialist are:
 - NNL should perform a more thorough review of maintenance to determine whether there are any steps which can be taken to improve the reliability of maintenance activities.
 - NNL should review the SL improvement work on the quality of the HF substantiation, and over time look to update the HF substantiation report to bring it in line with modern standards.
 - NNL should undertake a structured analysis of dependency (particularly where both basket safety measures are dependent upon operational controls) to provide confidence that the controls are sufficiently independent and robust and appropriately reflected in the human error modelling.
 - NNL should undertake a review of the training and competence management in the AHF against relevant good practice and provide ONR with a milestone plan to address deficiencies identified.
29. The human factors specialist has rated the submitted case as AMBER as a result of the shortfalls identified; as previously mentioned, two Regulatory Issues have been raised.
30. Having reviewed the specialist's assessment report, I am content to support the recommendations arising from it. Regulatory Issues have been demonstrated to be a robust method of ensuring licensees adequately address concerns/recommendations raised by specialists during assessment and inspection work. Recommendation 1 (above) provides for a letter to be sent to NNL summarising the specialists' findings and setting an expectation for completion; the HF specialist's findings will be included in that letter.
31. Whilst the regulatory issues will allow for continued monitoring of the progress made on the human factors specialist's recommendations, a further judgement will be made at the STPR.

4.3 CONTROL & INSTRUMENTATION ASPECTS

32. The C&I specialist inspector noted that there are no physical modifications to C&I equipment and no operational C&I equipment currently designated as SRE is to be re-categorised to perform a higher safety duty. The specialist recommended that ONR should grant agreement to implementation [of the OSC].
33. In the assessment, the specialist noted that the AHF maintenance manager is required to confirm that all newly designated SMs have been tested prior to implementation. Whilst there was no C&I equipment in this category, he brought the matter to my attention to ensure it did not affect any other assessments.

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34. The C&I specialist has rated the submitted case as GREEN, with no further action recommended.
35. Having compared the current Engineering Schedule ^[23] to the version to be implemented ^[24], I agree that there are no items that have been upgraded to SM status that fall within the scope of the current permission. Three items are nominally upgraded to SM status, but one relates to the Red Extract fans and the other two relate to neutron rod cutting rigs. All three items have been amended (i.e. downgraded or embargoed) by the supplementary PMP 955 ^[3] as a result of the Red Extract fan system not having been upgraded. Therefore I am content that no other assessments are affected.

4.4 FAULT STUDIES ASPECTS

36. The specialist inspector is satisfied that the OSC represents an adequate safety case in terms of its layout, presentation of safety arguments and accessibility. The specialist further considers that there are benefits from the implementation of the OSC as it provides a clear basis for the operational controls that are required to maintain nuclear safety. The specialist is content to support the implementation of the OSC subject to the recommendations below.
37. The specialist has made four recommendations:
 - Given the importance of the Red Extract ventilation system in mitigating the consequences of in-cave faults, ONR should examine NNL's proposal to modify the Red Extract ventilation system and this should be progressed without undue delay.
 - As part of the close out of Regulatory Issues #5086 and #5087 (see below), ONR should ensure that NNL confirms that the claims made in FSG04 [relating to evacuation] are met or, if not, that FSG04 is adequately reviewed and updated.
 - At the STPR, ONR should confirm that NNL has completed Table 1.2 of the Radiological Safety Assessment with references to the Engineering Schedule, to confirm that all claims are appropriately reflected therein and subject to appropriate examination, inspection, maintenance and testing.
 - NNL should provide an evaluation of the condition of the primary (in-cave) filters and consider their potential effect on the fault sequences modelled in FSG04. This should consider any potential contribution to airborne releases in the event of an in-cave fault and the confidence that they will not prejudice the successful delivery of ventilation and filtration functions [needed for worker safety].
38. The fault studies specialist has rated the submitted case as AMBER as a result of the shortfalls identified; as previously, we will use our Regulatory Issues process to track NNL's progress in these regards.
39. Having reviewed the fault studies specialist's assessment report, I am content to support its recommendations. ONR already intends to examine the proposal for the replacement of the Red Extract fan system – this is captured in SL's Hold Point Control Plan ^[25] at line #113, and reflected in ONR Decision Record 16-007 ^[26].
40. I note that the specialist has raised Regulatory Issue #5161 to capture the recommendation regarding the primary in-cave filters. Recommendation 1 (above) provides for a letter to be sent to NNL summarising the specialists' findings and setting an expectation for completion; the fault studies specialist's findings will be included in that letter.

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41. Whilst the Regulatory Issue raised will allow for continued monitoring of NNL's progress made on the fault studies specialist's recommendations, a further judgement will be made at the STPR.

4.5 MECHANICAL ENGINEERING ASPECTS

42. The mechanical engineering specialist inspector considers that NNL has undertaken a structured and detailed assessment of the mechanical engineering aspects of AHF and has no objection to the implementation of the OSC. However, the specialist judged that there are a number of shortfalls and observations associated with the submission, where further work should be undertaken.
43. The specialist made four recommendations:
 - NNL should review and amend the handling and turnaround of its A2 Cuboid Flasks working instructions to ensure that all lid bolts are correctly torqued before being lifted in the AHF. This needs to be completed within 12 months of OSC implementation.
 - NNL should review and provide a programme of work to address the AHF crane shortfalls and observations identified in the Engineering Level of Confidence Statement Reports for the 15t, 25t, 60t and miscellaneous cranes within 12 months.
 - NNL should review the observations made relating to the condition of the in-cave primary filters and address the identified shortfalls against relevant good practice. This needs to be completed in the next 12 months.
 - NNL should promptly implement installation and rebalance the new Red Extract system as described in the Red Extract Milestone Programme.
44. The mechanical engineering specialist has rated the submitted case as AMBER as a result of the shortfalls identified.
45. All of the specialist's recommendations are founded on a solid evidential basis and I am content to support them. It is worth noting that two of the recommendations (relating to the Red Extract and the in-cave filters) were also raised in the fault studies specialist's assessment. Recommendation 1 (above) provides for a letter to be sent to NNL summarising the specialists' findings and setting an expectation for completion; the mechanical engineering specialist's findings will be included in that letter.
46. Whilst our Regulatory Issues will provide for continued monitoring of the progress made on the mechanical engineering specialist's recommendations, a further judgement will be made at the STPR.

4.6 PROJECT INSPECTION ASPECTS

47. It was disappointing to note that the first formal submission (under cover of ONR/14/11592/07^[27]) still took credit for a new Red Extract fan system, even though the project itself had not entered the design stage and was clearly not going to be complete before OSC implementation. A second (the current) submission (under cover of ONR/14/11592/09^[1]) was therefore required to amend the first, removing the SM designation of the Red Extract system and justifying continued operations with the existing system (achieved via embargo of certain operations as described above).
48. At the readiness review^[21], I therefore examined NNL's process for identifying and tracking shortfalls, which I found to be generally acceptable. I found the NNL has a comprehensive tracking spreadsheet in place to capture all shortfalls (e.g. from the 2014 LTPR and the new OSC) as well as holding regular internal meetings to discuss progress made on projects in place to address them. One aspect that I later brought

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up with the NNL company safety manager was that some of the shortfalls were marked as 'completed' when in fact all that had happened was a project was in place to address the shortfall. The NNL response was positive; the company safety manager had noted the same thing and was intending address the behaviours. I was content with the response, though I may choose to follow this up at future interactions with AHF.

49. Given the number of recommendations arising from the specialist assessments, I have raised Recommendation 1 to capture them and communicate them to NNL and SL by means of a letter. I have also raised a Regulatory Issue (#5177) to ensure the letter (and the work it anticipates) is tracked. The specialists have, where appropriate, also raised Regulatory Issues to enable the monitoring and closeout of their specific recommendations.
50. Having discussed the matter with the SL OCM, SL has committed to providing ONR with a formal opportunity to examine the output of the STPR (customarily this would not be examined by ONR). The specialists' recommendations that ONR should agree to the implementation of the OSC were made knowing there would be an opportunity to revisit their issues in ~12 months.
51. In my opinion, despite the number of specialist recommendations raised, implementation of the new OSC will bring with it an overall significant safety benefit. Given that the activities to be undertaken in the facility are not changing and the relative simplicity of the case (when compared against the extant OSC), I consider the primary safety benefit to be that of accessibility of the new OSC to the operational staff. For instance, the safety case summary document produced now enables operational staff to quickly and easily identify the engineering and operational controls in place for their safety. The reduced number of overall fault sequence groups also contributes to this accessibility.
52. It was evident from discussions with plant operational staff at the plant walkdowns that understanding of the facility's safety case had been enhanced as a result of the production of the new OSC. The improved accessibility aspect of the case was also noted by several of the specialist inspectors.
53. On the day prior to my readiness inspection, the ONR site inspector conducted an LC28 (examination, inspection, maintenance & testing) compliance inspection at AHF^[28], which resulted in two safety-significant shortfalls being identified and an AMBER (seek improvement) inspection rating being raised. These shortfalls related to the ability of the plant's Duly Authorised Person(s) (DAP) to promptly initiate a plant evacuation following a loss of Red Extract ventilation and in regard to conducting adequate proof tests on the Red/Amber Extract interlock. The inspector has raised Regulatory Issues #5086 and #5087 to regulate these shortfalls (Note: the fault studies specialist has made the same recommendation with regards to plant evacuation and thus the fault studies recommendations includes these Regulatory Issues).
54. The new OSC makes no new claims in regard to these two shortfalls; i.e. the relevant activities and protection on plant will be the same following its implementation as was the case before ONR's inspection. Nonetheless these Regulatory Issues provide sufficient means to track the necessary improvements and I am content that neither are matters that either undermine the assessments ONR has undertaken or are significant enough to warrant withholding permission. I note that my view here is consistent with the site inspector's AMBER (seek improvement) inspection rating. These issues will nevertheless be captured in the letter to NNL suggested in Recommendation 1.

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55. The C&I specialist who accompanied the site inspector on the LC28 inspection also sent me an email ^[29] detailing a number of other observations. Having reviewed the eight points raised in the email, I am content that none have an impact that should prevent ONR from agreeing to the implementation of the new OSC. This is for the reasons given below:
- There is no direct indication in the DAP's office of the Red/Amber fan interlock or the Cave XX fan differential pressure interlock
 - No new claims are placed on these two interlocks; therefore implementation of the new OSC has no effect on the activities or protection provided on plant. However, I agree that given the safety significance of the systems, indication should be provided.
 - ONR has identified the Red Extract fan replacement project as significant enough to be subject to regulatory permissioning; I would expect relevant indications to be provided in suitable locations as part of that project.
 - Alarm annunciators for Red Extract system-related alarms are only designated as Normal Plant
 - The Engineering Schedule for the new OSC has maintained these items as SRE and as such the new OSC does not affect the protection provided on plant. However, I agree that the Engineering Schedule should include the totality of the alarm system, including the annunciators. This will therefore be captured in the letter provided for in Recommendation 1.
 - 'Running' status lights in the DAP's office are dim making it hard to identify configuration
 - A systematic obsolescence review for SRE has not been conducted
 - Existing instrumentation has not been subject to SL's Technical Basis of Maintenance process
 - The issues identified in the preceding three bullet points are not directly related to the implementation of the new OSC and are either routine maintenance issues or processes that should be scheduled in line with the licensee's/dutyholder's own arrangements.
 - DAP office alarm panels are blank when no alarms are indicated, thus a local power failure could mask alarm indications; the test button is only exercised monthly
 - There is little a new OSC could do here. Reasonably practicable improvements (taking into account the safety-related nature of some of the alarms) will be examined by NNL and SL separately from this permission. This matter is better regulated under the relevant Regulatory Issue raised in the inspection.
 - The new Red Extract fans will be driven by variable speed drives which have no safety designation
 - ONR has identified the Red Extract fan replacement project as significant enough to be subject to regulatory permissioning; I would expect the variable speed drives to be designated as part of that project.
 - A suggested review for the proof test for the Red/Amber extract fan interlock (as a result of the interlock being regularly challenged during Red Extract fan changeover) has not yet been conducted.
 - ONR has identified the Red Extract fan replacement project as significant enough to subject to regulatory permissioning; I would expect the Red/Amber interlock 'challenge' issue to be addressed as part of that project, in particular as NNL's proposals include an improved fan auto-changeover system.

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4.6.1 OTHER STAKEHOLDERS

56. Given that implementation of the new OSC does not fundamentally change the activities conducted on the facility, I chose not to engage with other departments within ONR i.e. Civil Nuclear Security, Safeguards or Transport.
57. However, as NNL produced a new environmental case in support of the new OSC, I contacted the Environment Agency and provided it an opportunity to comment on the permission. I received a response from the Environment Agency ^[30] stating that it had no objections to ONR permissioning the introduction of the new OSC.

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5 CONCLUSIONS

58. SL has requested ONR's 'agreement' to implement the new OSC for AHF. This PAR has summarised the assessment and inspection work carried out by ONR in consideration of that request as well as the matters arising.
59. Three of the five specialist inspectors have awarded the submission an AMBER rating, resulting in one or more Regulatory Issues being raised to capture their recommendations. However, none of the specialists judged that there was a matter significant enough to prevent ONR giving agreement to implement the OSC. The Environment Agency also has no objection to ONR granting the permission. Generally the specialists found that the new OSC provides a simpler, clearer basis for safety in AHF, which is welcomed.
60. Given the number of recommendations raised by the specialists, I have recommended that a letter be sent to NNL summarising the specialists' findings and setting an expectation for consideration and subsequent close-out. In support of this approach, SL has committed to providing ONR with an opportunity to examine the outcome of the AHF STPR, which is due within 12 months of the implementation of the OSC. The specialists and I have judged that, along with the Regulatory Issues raised, this will provide a suitable opportunity to make a judgement on the improvements made or the forward plans for those not yet completed.
61. It is my opinion that whilst the submitted case contains a number of shortfalls (and thus requires further work to clearly demonstrate that the risk to workers is as low as reasonably practicable), the new OSC provides an overall safety benefit to the facility. In combination with the specialist's findings, I judge that none of the shortfalls are significant enough, either jointly or separately, to warrant withholding the permission.
62. Regulatory scrutiny of the facility (and thus of the improvements required) will be maintained by means of continued engagements by the site inspector in matters of compliance and the permissioning lead in matters of future permissioning activities, including examination of the STPR (for which SL has committed to providing ONR the opportunity to examine the outcome).

6 RECOMMENDATIONS

63. The project assessment report makes two recommendations:
 - Recommendation 1: ONR should send a letter to NNL detailing the recommendations and observations raised by ONR specialists during the course of the OSC assessment process. The letter should set an expectation that the recommendations should either be addressed by the time of the next STPR, or considered during the next STPR itself.
 - Recommendation 2: ONR should issue LI541 to give agreement to implement the new OSC for AHF.

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