Atomic Weapons Establishment (AWE) – Office for Nuclear Regulation (ONR) Assessment of AWE Aldermaston Site Safety Justification (SSJ) and Periodic Review of Safety (PRS)

ONR Assessment of AWE Aldermaston SSJ and PRS

Project Assessment Report ONR-OFD-PAR-21-015
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EXECUTIVE SUMMARY

Title

Office for Nuclear Regulation's (ONR) assessment of the Atomic Weapons Establishment's (AWE) Site Safety Justification (SSJ) for Aldermaston and Periodic Review of Safety (PRS).

Permission Requested

AWE has requested ONR's agreement to implement the Aldermaston SSJ under its Licence Condition (LC) 22 arrangements. This submission relates to reference SO1(2) on AWE's hold point control plan which requires the issue of a licence instrument.

AWE has also submitted a PRS under its LC 15 arrangements for the Aldermaston site-wide safety case. The submission relates to reference PRS 2.10 on AWE's hold point control plan. ONR's assessment has determined that the PRS submission is adequate, and AWE will be notified with a PRS decision letter.

This PAR presents conclusions for both submissions.

Background

AWE's SSJ for the Aldermaston site has been produced alongside its PRS. The PRS submission was originally due in December 2019 but was delayed by approximately 18 months when AWE determined the amount of work required for the SSJ was more significant than initially realised.

The SSJ presents AWE's safety justification for the operations within the Aldermaston site and demonstrates their ability to provide services to support safe operations and emergency response to all high hazard facilities. The SSJ includes:

- An assessment of engineered and people-based services claimed to support the safe operations and emergency response in AWE's high hazard facilities;
- A review of safety and environmental performance for the Aldermaston site;
- A description of the AWE company management arrangements important to nuclear safety;
- A consideration of the wider aspects of organisation, particularly in relation to their impact on risk for A-site. For example, overall resourcing levels, prioritisation of work, the management and oversight of major capital build and infrastructure renewal programmes.

The PRS reviews the SSJ and additional considerations. These include reviews of the site services and arrangements that support nuclear safety claims and emergency response requirements. The PRS also seeks to identify opportunities where plant, process or procedural changes can be made to reduce risks ALARP. The PRS is supplemented by an ageing and obsolescence review, a Leadership and

Management for Safety (LMfS) review and a review of AWE's corporate initiatives. The PRS seeks to establish whether the Aldermaston site will be able to deliver the expected programme of future demands safely during the next PRS period, from June 2021 to end December 2029, and includes a combined Forward Action Plan (FAP) that captures the shortfalls AWE identified during production of the SSJ and the PRS.

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

To help form a view on the adequacy of AWE's submissions, the project inspector benefitted from assessment input from specialist inspectors representing the following disciplines:

- Fault studies;
- Electrical engineering;
- LMfS;
- Management systems;
- Nuclear liabilities;
- Internal hazards;
- Mechanical engineering.

The project inspector also benefitted from advice from specialists representing external hazards and emergency response disciplines, although assessment reports were not produced by these inspectors.

The inputs from the specialists enabled the project inspector to sample technical elements of the SSJ and form a view on the following aspects of AWE's PRS submission for the Aldermaston site:

- The adequacy of the scope of AWE's PRS;
- The validity of the claims made in the SSJ;
- The maturity of AWE's progress in closing out the items on the FAP;
- The suitability of AWE's ALARP argument; and
- The adequacy of the case to justify continued operations for the next 10 year period.

Matters arising from ONR's work

Based on the evidence sampled, the specialist inspectors and the project inspector have identified several gaps to Relevant Good Practice (RGP). The following ONR recommendations have been raised following the specialist assessments and these are to be raised and tracked as regulatory issues:

- **Recommendation EE-1** – AWE to summarise the improvement measures to the utility electrical supply to the A** facility and share an outline programme of key dates to progress the improvements to implementation.
  (Regulatory issue #10513 has been raised to track this recommendation)

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- **Recommendation LMfS-1** – A Level 4 regulatory issue should be raised to address the issue that there are shortfalls in the arrangements for reviewing LMfS during a PRS.
  (Regulatory issue #10933 has been raised to track this recommendation)
- **Recommendation LMfS-2** – A Level 3 regulatory issue should be raised to address the issue that the improvement plan to address a shortfall in intelligent customer capability is of insufficient quality.
  (Regulatory issue #10933 has been raised to track this recommendation)
  Recommendation LMfS-3 – A Level 3 regulatory issue should be raised to address the issue that PRS shortfalls have been closed without adequate justification or evidence.
  (Regulatory issue #10933 has been raised to track this recommendation)
- **Recommendation MS-1** – AWE to consider how it would address the implied shortfalls on the management system arrangements for the delivery of future operations.
  (Regulatory issue #10456 has been raised to track this recommendation)
- **Recommendation MS-2** – AWE to consider developing its LMFS framework (scope) for the PRS review to include how the management system would be reviewed, taking guidance from IAEA SSG – 25 guidance (including specifically Safety Factor 10 – Management Systems & 11 – Procedures).
  (Regulatory issue #10796 has been raised to track this recommendation)
- **Recommendation NL-1** – The licensee to update the Sustainable Materials Management (SMM) strategy to reflect its development and include timescales for determining the full lifecycle management routes.
  (Regulatory issue #10933 has been raised to track this recommendation)
- **Recommendation ME-1** – In accordance with the expectations set out in MER587-001383 Issue 01 (dated 15/12/21), following the completion of due process AWE is to confirm and satisfy itself that the A* Fire Hazan makes a claim no higher than Class 3 on either nitrogen supply quantity or nitrogen supply quality to the A* facility.
  (Regulatory issue #10933 has been raised to track this recommendation)
- **Recommendation PI-1** – AWE's site safety case team to provide assurance that all hazards and risks from a site perspective and their impact to nuclear safety are understood. This should be supported by updated holistic analysis where required.
  (Regulatory issue #10933 has been raised to track this recommendation)

Conclusions

Having taken advice from specialist inspectors, the project inspectors' view is that these gaps to RGP do not present any immediate risks to nuclear safety and do not invalidate the main safety arguments articulated in the SSJ or PRS submission. Also, the gaps to RGP are expected to be readily addressed either by AWE's programme given in the combined FAP to close the shortfalls and observations identified in the submissions, or by the closure of the ONR recommendations. Each of the recommendations above will be formulated into regulatory issues and tracked to completion by the ONR specialist assessors and the PRS lead inspector.

From reviewing the SSJ and PRS, it is the view of the project inspector that AWE has justified a case for current and continued operations at the Aldermaston site. This is based on the suitable scope of the PRS, and the validity of the claims made in the SSJ. The inspector considers the SSJ aligns to modern standards expectations and AWE presents a credible ALARP argument that considers operations over the approaching 10-year period. The project inspector also considers AWE has demonstrated suitable progress toward addressing the items on the combined FAP and these actions are continuing.

Overall, and notwithstanding the issues to be addressed via the above recommendations, the project inspector notes the specialist assessors support permissioning the SSJ and a positive decision on the PRS adequacy. The project inspector's opinion is that it would be disproportionate to withhold the permissioning of the Aldermaston SSJ. Therefore, the project inspector considers ONR should agree to AWE's LC22 request to implement the SSJ and inform AWE that the LC15 PRS submission for Aldermaston is considered adequate.

Recommendation

The project inspector recommends that ONR should agree to AWE's LC22 request to implement the SSJ for Aldermaston. This will be done by issuing a licence instrument relating to reference SO1(2) on AWE's hold point control plan.

The project inspector also recommends that ONR should notify AWE that its LC15 submission for the Aldermaston PRS is considered adequate. This will be done by writing a PRS decision letter referencing the PRS 2.10 submission on AWE's hold point control plan.

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LIST OF ABBREVIATIONS

ALARP	As low as reasonably practicable
BSL	Basic Safety level (in SAPs)
FAP	Forward Action Plan
FSJ	Facility Safety Justification
HBSC	Human Based Safety Claims
HOW2	(Office for Nuclear Regulation) Business Management System
IAEA	The International Atomic Energy Agency
LC	Licence Condition
LCP	Licensee Control Plan
LMfS	Leadership & Management for Safety
ONR	Office for Nuclear Regulation
PAR	Project Assessment Report
PRS	Periodic Review of Safety
RGP	Relevant Good Practice
SAP	Safety Assessment Principle(s)
SIP	Structured Improvement Programme
SMM	Sustainable Materials Management
TAG	Technical Assessment Guide (ONR)

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1 PERMISSION REQUESTED

1. The licensee for the licensed site known as the Atomic Weapons Establishment Aldermaston, near Reading in Berkshire is AWE plc (AWE).

2. Nuclear site Licence Condition (LC) 15 ('periodic review'), requires licensees to make and implement adequate arrangements for the periodic and systematic review of safety cases. In accordance with its LC15 arrangements, AWE has produced a Periodic Review of Safety (PRS) for the whole of the AWE Aldermaston licenced site. The PRS submission relates to reference PRS 2.10 on AWE's hold point control plan. This was submitted to the Office for Nuclear Regulation (ONR) in July 2021 (Ref. 4), 18 months after the original planned submission date of December 2019, seeking to justify operations until December 2029. No licence instrument or formal permission is required to meet the requirements of LC 15. Instead, ONR's arrangements state a PRS decision letter will be issued by ONR advising AWE of the outcome of any regulatory assessment and identifying any further assessment findings that ONR considers AWE should address.

3. In parallel with undertaking its PRS, AWE has updated and revised its safety case for the Aldermaston site, producing a Site Safety Justification (SSJ) (Ref.5). In addition to the PRS, AWE submitted the SSJ for the Aldermaston site to ONR in July 2021. AWE has requested ONR's agreement to implement the SSJ, in accordance with its arrangements made under LC 22(1) ('modification or experiment on existing plant'). This ONR assessment will conclude whether the SSJ is considered fit for purpose in the context of recognising AWE's programme of work to further improve the safety case and address future site operations. The SSJ submission relates to reference SO1(2) on AWE's hold point control plan and ONR will need to issue a licence instrument to agree to AWE's LC22 request to implement the SSJ.

2 BACKGROUND

4. In the absence of an SSJ, AWE currently manages its site wide safety using a Licensee Control Plan (LCP), which is basically an Excel spreadsheet rather than a cogent safety justification. At the commencement of the site PRS, AWE determined that the LCP was not a suitable basis upon which to undertake the review and therefore set about producing a modern standards SSJ, which AWE judges represents a significant improvement.

5. The PRS was then undertaken against the new SSJ. The PRS submission was originally due in December 2019 but was delayed by approximately 18 months when AWE determined the amount of work required for the SSJ was more significant than initially realised.

6. In addition to assessing the SSJ, the purpose of this PAR is to detail ONR's assessment of AWE's PRS submission for the Aldermaston site. The PRS assessment was undertaken to form a view on the adequacy of the submission against the following criteria, as taken from TAG 50 (Ref. 3):

- The extent to which the Aldermaston site wide safety case conforms to modern standards and good practices;
- The extent to which the safety documentation remains valid;
- The adequacy of the arrangements in place to maintain safety until the next PRS (or the end of life);
- Safety improvements to be implemented to resolve safety issues.

7. TAG 50 (Ref. 3) provides detailed guidance on additional criteria to be considered in the assessment of the adequacy of a licensee's PRS submission. An overview of AWE's SSJ and PRS submissions are provided below.

2.1 SITE SAFETY JUSTIFICATION

8. The SSJ top-tier overview document presents AWE's safety justification for the operation of the Aldermaston site and demonstrates AWE's ability to provide services to support safe operations and emergency response to all its high hazard facilities. The SSJ includes:

- An assessment of engineered and human performance-based services claimed to support the safe operations and emergency response in AWE's high hazard facilities (Ref. 6);
- A review of safety and environmental performance for the Aldermaston site (Ref. 7);
- A description of the AWE company management arrangements important to nuclear safety;
- A consideration of the wider aspects of organisation, particularly in relation to their impact on risk for the Aldermaston site.

The SSJ also includes an extensive series of additional support files that are indexed in Reference 8. The SSJ document structure is summarised in Figure 1.

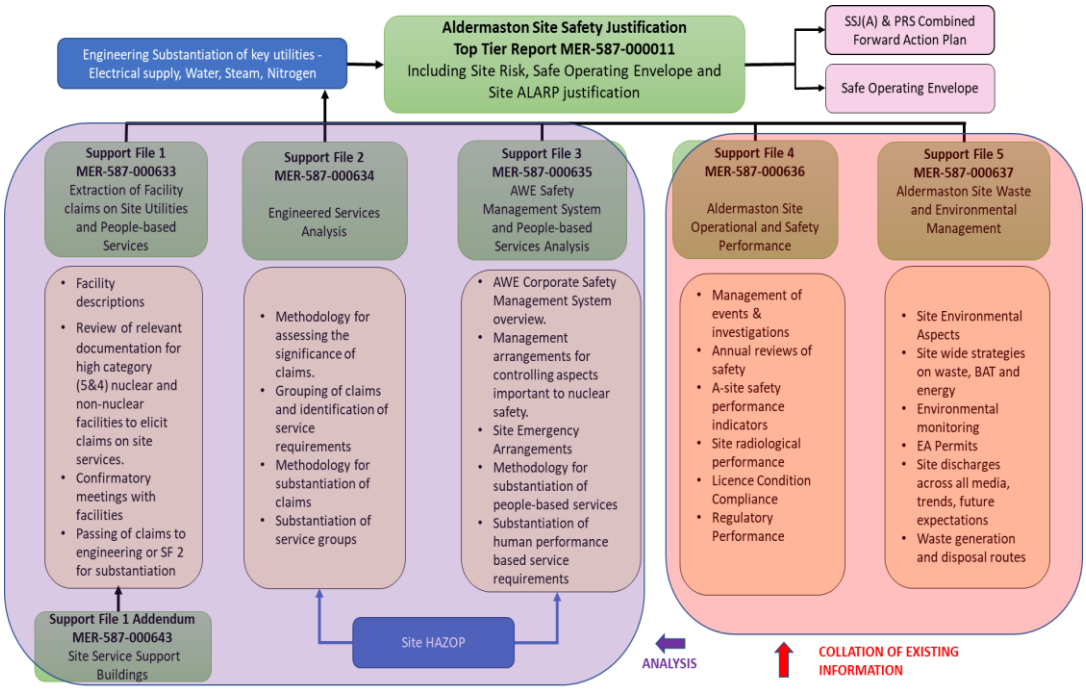

Figure 1: SSJ Document Structure

9. AWE's SSJ adopts a structured and systematic process to identify and extract the safety case claims made by the nuclear and other high hazard facilities (both on engineered and human performance-based services). AWE's process sought to capture both explicit and implicit claims for normal operations and during emergency response (Ref. 9). The claims were consolidated into 24 'service groups' to aid AWE's analysis. AWE's SSJ interrogates whether each of the service groups can be substantiated against the requirements which they are intended to fulfil. Each service group has been sentenced into either the 'engineered services' (for infrastructure-based services) (Ref. 10) or the 'safety management arrangements' analysis streams (for services which rely on human performance) (Ref. 6).

10. The analysis in the SSJ is complimented by reviews of the AWE company management arrangements as well as the influence of AWE's wider organisational aspects, safety and environmental performance reviews and a consideration of the risks to workers and members of the public from the Aldermaston site (Ref. 8).

11. Although various shortfalls are identified by AWE's reviews and analysis, the SSJ (Ref. 11) concludes that the assessed engineered and human performance-based services are suitable and sufficient to enable the high hazard facilities on the Aldermaston site to continue to operate safely. This

statement assumes all the identified shortfalls are addressed within the timeframes as set out within AWE's forward action plan (Ref. 12). The SSJ does not identify any reasonably practicable options which are available to reduce risks further in the short term and therefore AWE considers the risk from the Aldermaston site to be ALARP.

2.2 PERIODIC REVIEW OF SAFETY

12. AWE has developed the PRS submission in conjunction with the SSJ; the document structure is summarised in Figure 2.

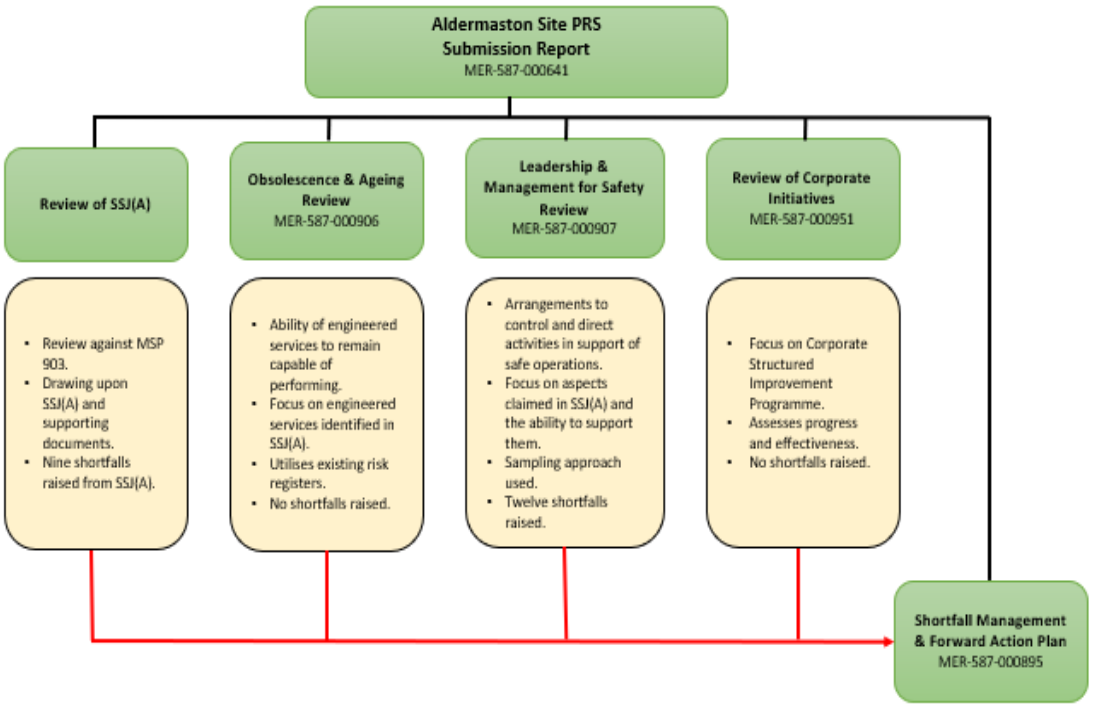

Figure 2: PRS Document Structure

The PRS (Ref. 13) reviewed the SSJ, including the site services and arrangements that support nuclear claims and emergency response requirements. The PRS also seeks to identify opportunities where plant, process or procedural changes can be made to reduce risk in accordance with the ALARP principle. In addition, the PRS seeks to establish whether the Aldermaston site will be able to deliver the expected programme of future demands safely during the approaching 10-year period.

13. In addition to the SSJ, AWE's PRS for the Aldermaston site has been supplemented by the following reviews of safety activities:

- Obsolescence and ageing review (Ref. 14);
- Leadership and management for safety (LMfS) review (Ref. 15);
- Review of corporate initiatives (Ref. 16);

- Development of the combined forward action plan (FAP) (Ref. 12).

14. AWE considers its PRS submission (Ref. 13) for the Aldermaston site and concludes:

- The case for current and continued operations has been made;
- The SSJ aligns with modern standards;
- Robust methods are in place to track and address obsolescence and ageing issues (and the link between these and the SSJ is clearly understood);
- Appropriate management arrangements are in place that demonstrate AWE is currently able to deliver safe operations;
- Corporate initiatives are proactively being used to improve safety and business efficiency;
- Where shortfalls have been identified, actions have been developed to resolve them (and resources assigned);
- It would be disproportionate to restrict site operations whilst the programme to address identified actions is undertaken;
- The risk of death associated with operations on the Aldermaston site is, and will continue to be, as low as reasonably practicable (ALARP).

2.3 INTERNAL REGULATION FEEDBACK

15. ONR notes the views from AWE's internal regulation are supportive regarding the SSJ and the PRS submission (Ref. 17).

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

16. The purpose of ONR's assessment of the PRS is to form a judgement on (Ref. 3):

- The extent to which the Aldermaston site wide safety case conforms to modern standards and good practices;
- The extent to which the safety documentation remains valid;
- The adequacy of the arrangements in place to maintain safety until the next PRS;
- Safety improvements to be implemented to resolve safety issues.

17. To help form a view on the adequacy of the AWE's submissions, I sought advice from the following specialist areas (as defined in my decision record for ONR's assessment for the Aldermaston site PRS and the SSJ (Ref. 18.)).

- Fault studies (Ref. 19)
- Electrical engineering (Ref. 20)
- LMfS (Ref. 22)
- Management systems (Ref. 23)
- Nuclear liabilities (Ref. 24)
- Internal hazards (Ref. 26)
- Mechanical engineering (Ref. 27)

Two further inspectors also considered AWE's submissions but determined further assessment was not considered proportionate for their specialist areas (with confirmation of the specialist inspectors' views recorded via email). These were:

- External hazards (Ref. 29)
- Emergency response (Ref. 30)

18. As discussed in section 2, the inputs from the specialists have been used to assist me while forming a view on the following aspects of AWE's PRS submission for the Aldermaston site:

- The adequacy of the scope of AWE's PRS;
- The validity of the claims made in the SSJ (I will not be focussing on the substantiation of plant and procedures as these are covered in the facility specific safety cases);
- The maturity of AWE's progress in closing out the items on the forward action plan (FAP);
- The suitability of AWE's ALARP argument;
- The adequacy of the case to justify continued operations for the approaching 10-years.

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4 MATTERS ARISING FROM ONR'S WORK

4.1 ASSESSMENT

19. While assessing the SSJ and PRS for the Aldermaston site, I noted the SSJ does not consider operations or faults within the individual facilities posing nuclear safety risks, it simply supports their safe operation, by:

- Identifying claims made in the facility safety cases against physical and operational site services;
- Demonstrating the suitability and sufficiency of the physical and operational provisions made by site services, including emergency response;
- Presenting information covering operational, safety and environmental performance for the site, and arrangements relating to the LMfS provisions.

AWE had communicated this feature of the safety case in advance of the submission and so it was not a surprise to the specialist assessors.

20. The high-risk facilities are each subject to Facility Safety Justifications (FSJ) and individual PRS programmes, each of which demonstrate individually that facility risks are reduced ALARP. The individual facilities' FSJ/PRS have previously been subject to appropriate targeted consideration by ONR and have not been revised while producing the SSJ and PRS for the Aldermaston site.

4.2 SPECIALIST ASSESSMENTS

21. To support the PAR, ONR specialist inspectors considered the SSJ and PRS submissions in conjunction with each other. The matters arising from the work carried out by the ONR specialists are summarised as follows:

4.2.1 FAULT STUDIES

22. The fault studies inspector reviewed AWE's submissions (Ref. 19) and reflected the structure of the SSJ (a top tier report with 5 support files) provides a clear and logical structure for the safety justification. The fault studies assessment focussed on AWE's approach for Support File 1 (Ref. 9), which covers the extraction of safety case claims from various FSJs. This was discussed during a remote interaction with AWE, whereupon an overview of the SSJ/PRS production process and applied governance was provided by AWE in advance of ONR specialists reviewing the submission.

23. The fault studies inspector acknowledges how AWE has focussed on facilities undertaking licensable activities under their nuclear site licence and any other facilities that could result in nuclear consequences within its N5 and N4 categories. These are the highest categories, relating to the potential for

significant offsite (N5) and onsite consequences (N4). AWE used the implemented safety cases and emergency response plans for these facilities to determine explicit and implicit safety claims upon essential site services (and the required safety system class). These included electrical power, permanently installed standby generation, nitrogen, and argon. Consideration was also given to the potential impact of external events upon essential services and their delivery of safety case requirements. The claims extracted by AWE were then subject to review with appropriate facility staff, to provide confidence in the output.

24. These extracted claims on essential services are fed for substantiation in Support File 2 (Ref. 10), which applied a site services categorisation tool to assist in the identification of the most significant claims on site services. The inspector reflects that, in general, service Class 1 (SC-1) claims are the highest category and link to DBA class 1 claims, SC-2 and SC-3 claims link to DBA class 2 and 3 claims respectively, and SC-4 claims are of the lowest safety significance. The service class (linked to DBA claims in facility safety cases) is used by AWE to determine the required level of substantiation, which ONR's fault studies inspector considers to be reasonable.

25. The inspector notes the bounding claim within the SSJ is for electrical power supplies within A** with 3 claims at SC-2, noting that the safety critical power supplies are backed by uninterruptible power supplies (UPS) and diesel generators. The substantiation of these electrical power supplies is considered in detail by ONR's electrical engineering specialist inspector (Ref. 20).

26. The fault studies inspector considers AWE's safety case claim extraction process and reported output to be reasonable (Ref. 19). They also consider that the SSJ provides a significant improvement over current arrangements and from a fault studies perspective they support implementation of the SSJ.

27. On the basis AWE recognised the requirement for a modern standards safety case and produced the SSJ as a baseline for the PRS. The inspector is also satisfied that AWE has undertaken a thorough review of the safety case. Based on their proportionate review of AWE's PRS submission (Ref. 19), they consider AWE has undertaken an adequate PRS, and from a fault studies perspective recommend that ONR should issue a PRS decision letter supporting continued operation over the next ten year period.

4.2.2 ELECTRICAL ENGINEERING

28. The electrical engineering specialist inspector undertook an assessment of AWE's PRS and SSJ (Ref. 20). The assessment scope covered the site electrical power system aspects of the adequacy of AWE's PRS report and associated SSJ report.

29. The inspector concluded from their assessment of the PRS that AWE has reviewed, developed, updated and improved the SSJ. The inspector considers that this has proportionately included the substantiation of the site electrical utility system (both the engineering and people-based aspects) to meet the claims made on it in the safety cases of the relevant higher hazard nuclear facilities. The inspector judged that the PRS meets RGP when assessed against ONR published guidance (Ref. 3).

30. The inspector considered the relevant aspects of the SSJ submission documents to judge if it clearly set out the trail from safety claims through arguments to evidence regarding the safety-related role of the engineering and people-based aspects of the electrical power system. The specific aspects sampled for adequacy included the SSJ structure and content (Ref. 11), the SSJ implementation plan, the sentencing of shortfalls, the combined FAP (Ref. 12) and AWE's internal regulation peer review reports (Ref. 21).

31. During the assessment of the SSJ, the inspector identified the key claim for the site electrical system is that the key Aldermaston facilities can withstand interruptions, so loss of site power would not initiate fault sequences that could lead to nuclear safety hazards. AWE's key argument to support this claim is that loss of power would not undermine the primary design basis assessment measures in high hazard nuclear facilities. Also, where necessary, AWE argues that recovery actions could be put in place before there is a significant degradation to safe conditions in these facilities.

32. The inspector highlights that the potential exception to AWE's argument is the electrical supply to A**. The safety case for this facility assumes the site power supply meets Class 2 expectations. However, it was identified during the facility specific PRS for A** that the site electrical power system could not be substantiated to meet Class 2 (and hence a shortfall was raised as part of the facility PSR). This shortfall was considered, and the inspector judges it is not ALARP for AWE to have to implement additional measures to address it. AWE's SSJ submission accepts this argument and has removed A**'s Class 2 claim on the site electrical power system. Since all other claims on the site electrical power are Class 3 or lower AWE did not consider it necessary to raise this shortfall again in the combined FAP (Ref. 12).

33. The inspector held further engagements with AWE to establish that the reliability of the electrical supply provision to A** meets regulatory expectations. During this engagement, AWE's A** safety case owner explained that since the freeze date of the SSJ, further reviews had considered the back-up power system to the facility and the position is as follows:

- Post facility PRS, A** reviewed the backup provision of the glovebox purge extract system and judged that it is reasonably practicable to improve the arrangement;
- The optioneering study determined the most likely solution was an auto-start and auto-connect diesel generator that maintains power to the UPS. The A** facility is also reviewing what should be powered from the proposed diesel generator (in addition to the purge extract system fans).

34. The inspector considers it is proportionate to engage further with regard to AWE's proposals in this area to ensure it progresses as intended. The electrical engineering inspector makes the following recommendation:

- **Recommendation EE-1** – AWE to summarise the improvement measures to the utility electrical supply to the A** facility and share an outline programme of key dates to progress the improvements to implementation.
  (Regulatory issue #10513 has been raised to track this recommendation).

35. Overall, the inspector judged that the SSJ adequately sets-out the trail from safety claims through arguments to evidence regarding the safety-related role of the engineering and people-based aspects of the electrical power system. Further, based on the information sampled, the inspector considers the SSJ defines the appropriate implementation aspects relating to the site electrical power system. The inspector concluded from their assessment that they judge the SSJ meets with RGP when assessed against ONR published guidance.

36. The electrical engineering inspector assigned a Green assessment rating for both the PRS and SSJ. Overall, the electrical engineering inspector judged, from an electrical engineering perspective, that AWE has performed an adequate PRS and has also made a valid case to implement its revised SSJ.

4.2.3 LEADERSHIP AND MANAGEMENT FOR SAFETY

37. The LMfS inspector undertook an assessment of AWE's PRS (Ref. 22). The SSJ was out of scope of the LMfS assessment, with the inspector focussing specifically on the LMfS aspects of the PRS.

38. The inspector's assessment specifically considered:

- The adequacy of the methodology followed by AWE for undertaking a LMfS PRS;
- The adequacy of the improvement plan for addressing the findings of the LMfS PRS;
- AWE's progress to date in implementing the improvement plan.

Adequacy of the Methodology

39. Overall, the inspector concluded that they are satisfied that the methodology followed by AWE for undertaking a LMfS PSR is broadly adequate. This has also resulted in an adequate assessment of the extent to which site services provided to the nuclear facilities conform to relevant good practice.

40. In the inspector's opinion, an opportunity was missed to explore whether several of the identified PRS shortfalls may be indications of broader systemic weaknesses. NS-TAST-GD-050, para. 5.49 (Ref. 3) notes that the PSR should include an assessment of the combined effects of individual shortfalls and their overall impact, for example common root causes. Therefore, the inspector recommended that this requirement is included in the guidance AWE is producing in response to its LMfS PRS shortfall 1b [AWE does not have a framework outlining the methodology or criteria against which to undertake an LMfS assessment]. The inspector recommended that a Level 4 regulatory issue is raised to track this recommendation to completion:

- **Recommendation LMfS-1** – A Level 4 regulatory issue should be raised to address the issue that there are shortfalls in the arrangements for reviewing LMfS during a PRS.
  (Regulatory issue #10933 has been raised to track this recommendation)

Adequacy of the improvement plan

41. Overall, the inspector considered the arrangements in place to maintain safety until the next PSR to be broadly adequate. The inspector also considered the categorisation of the shortfalls to be appropriate.

42. Following consideration of AWE's LMfS review (Ref. 15), the inspector reported that they are satisfied that in respect of shortfalls 1a, 1b, 2, 3, 6, 7, 8 and 9 and that AWE's improvement plan for addressing the findings of the LMfS PRS is considered broadly adequate. However, the inspector is not satisfied that the actions, to ensure that AWE establishes adequate arrangements for maintaining an intelligent customer capability (shortfall 8), include sufficient detail to provide the inspector with confidence that the shortfall will be adequately addressed. The inspector recommended that a Level 3 regulatory issue is opened to ensure there is adequate regulatory oversight of the actions that AWE is undertaking to address LMfS PRS shortfall 8 [arrangements for maintaining an intelligent customer capability].

- **Recommendation LMfS-2** – A Level 3 regulatory issue should be raised to address the issue that the improvement plan to address a shortfall in intelligent customer capability is of insufficient quality.
  (Regulatory issue #10933 has been raised to track this recommendation)

43. The inspector reports that, in their opinion, the review document and/or combined FAP would benefit from explicitly identifying the RGP which has not been met for each shortfall. This would clarify why the shortfalls have been assigned to a particular category. The inspector recommends that AWE includes this requirement into guidance it is producing, in response to shortfall 1b, for undertaking an LMfS PSR. This recommendation is included as part of 'Recommendation LMfS-1' discussed earlier in this report.

Progress implementing the improvement plan

44. The inspector judges that AWE's progress implementing its improvement plan (Ref. 13) is a significant shortfall against RGP. The inspector's rationale for their judgement is that AWE has failed to provide an adequate justification or evidence that LMfS PRS shortfalls 4, 5, 10 and 11 have been addressed even though these have been annotated as closed on the FAP (Ref. 12). Also, it is the inspector's judgement that shortfall 11 has been closed prematurely and this has also been acknowledged by AWE.

45. The inspector recommends that a Level 3 regulatory issue is opened to ensure there is adequate regulatory oversight of the closure of shortfalls 4, 5, 10 and 11. The actions associated with this issue should ensure that AWE does one of the following: (1) provides an adequate justification or evidence that each of the four shortfalls have been addressed; or (2): acknowledges that one (or more) of the shortfalls have been closed prematurely and re-opens the shortfall(s), providing details of the actions to be undertaken to address the shortfall(s) in the combined FAP.

46. Also, the inspector recommends that this Level 3 regulatory issue places actions to ensure that an effective control and monitoring process is in place to provide confidence that satisfactory close-out of all PSR-related work will be achieved within the programmed dates (see para. 5.52 of NS-TAST-GD-050 (Ref. 3)). Consideration should be given to ensuring there is an appropriate level of independent oversight of closure of the shortfalls identified in the LMfS PRS.

- **Recommendation LMfS-3** – A Level 3 regulatory issue should be raised to address the issue that PRS shortfalls have been closed without adequate justification or evidence.
  (Regulatory issue #10933 has been raised to track this recommendation)

LMfS summary

47. The inspector concluded that AWE's PRS, from a LMfS perspective:

- Has adequately established the extent to which site services provided to the nuclear facilities conform to relevant good practice;

- Has adequately established the adequacy of the arrangements in place to maintain safety until the next PRS;
- Has not provided sufficient evidence that the safety improvements to be implemented to resolve safety issues have or will be adequately addressed.

48. The inspector judges that, while AWE has broadly met RGP in producing the LMfS PRS, AWE has closed out the four shortfalls sampled by the LMfS inspector without sufficient justification or evidence for their closure and has failed to provide such justification or evidence to ONR despite several opportunities to do so. The inspector considers this to be a shortfall which has the potential to undermine a key purpose of a PRS: "*To determine, by means of a comprehensive but proportionate assessment, safety improvements to be implemented to resolve safety issues"* (NS-TAST-GD-050 para. 5.1 (Ref. 3)).

49. Given the above reasoning, the LMfS inspector assigned an AMBER assessment rating for the PRS, with the SSJ out of scope of the LMfS assessment. Overall, the LMfS inspector recommends that the PRS submission is accepted, contingent on there being appropriate regulatory oversight of AWE's closure of the PRS shortfalls.

4.2.4 MANAGEMENT SYSTEMS

50. The management systems inspector undertook an assessment (Ref. 23) of AWE's PRS (Ref. 13) and SSJ (Ref. 11). The inspector focussed their assessment on matters which affected the management system that were used to support the Human Based Safety Claims (HBSC).

51. The inspector identified several areas of strength relating to the production of the PRS, particularly in relation to the AWE specialists. The inspector also identified the following specific areas for improvement:

- The adequacy of the PRS scope for reviewing AWE's management system;
- The adequacy of the methodology used to gather evidence to infer the status of the management system;
- The adequacy of the review of the Structured Improvement Programme (SIP) workstream as it affects process;
- The conclusion of the inferred status of the management system for the delivery of future operations.

<u>The adequacy of the PRS scope for reviewing AWE's management system</u>

52. The inspector identified that the focus of the PRS review was to consider the coverage and implementation of two processes/business areas in AWE and how those supported delivery of HBSC. It did not include a review of the processes themselves nor of the associated procedures supporting them. The

inspector considered that this did not meet ONR's expectations outlined in NS-TAST-GD-050 (Ref. 3) and IAEA guidance in SSG-25.

The adequacy of the methodology used to gather evidence to infer the status of the management system

53. The inspector identified that the methodology used to gather evidence to infer the status of the management system arrangements was primarily through engagements with the leadership and management roles for two selected processes. The inspector noted that ONR's regulatory expectations for the assessment of the management system would be that it was wide ranging, comprehensive and proportionate, as per NS-TAST-GD-050 (Ref. 3) and IAEA guidance in SSG-25. The inspector judged that AWE's methodology did not meet these expectations.

The adequacy of the review of the SIP workstream as it affects process (Ref.16)

54. The inspector reported that ONR's regulatory expectation of the PRS review is that it should also examine whether weaknesses and obstacles in the management system have been identified, evaluated and remedied in a timely manner. This may include identified areas for improvement in the management system. However, AWE stated that improvements to the management system processes which were part of the SIP workstream were excluded from the PRS scope. As such, the inspector judged that the lack of the review of the improvements to the management system processes does not meet regulatory expectations.

The conclusion of the inferred status of the management system for the delivery of future operations

55. The inspector noted (Ref. 23) that a review of the AWE management system was excluded from the PRS (Ref. 13). However, AWE had inferred the status of the management system both for current and future operations. AWE had concluded that though the management arrangements that were reviewed as part of the HBSC, currently aided delivery of the SSJ, it was less able to successfully demonstrate that it can reliably sustain such delivery in the future. Therefore, the inspector judged that AWE PRS approach and conclusion do not present sufficient evidence as to whether or not AWE's management system could reliably sustain delivery of the SSJ for the future.

56. The identified improvements resulted in the inspector finding two overarching shortfalls in relation to the management system. These shortfalls have informed the recommendations outlined below:

- **Recommendation MS-1** – AWE to consider how it would address the implied shortfalls on the management system arrangements for the delivery of future operations.

(Regulatory issue #10456 has been raised to track this recommendation)

- **Recommendation MS-2** – AWE to consider developing its LMfS framework (scope) for the PRS review to include how the management system would be reviewed, taking guidance from IAEA SSG – 25 (including specifically Safety Factor 10 – Management Systems & 11 – Procedures).
  (Regulatory issue #10796 has been raised to track this recommendation)

57. ONR's management systems inspector considered an assessment note (Ref. 23) to be the appropriate means of assessment rather than an assessment report. Therefore, an assessment rating was not assigned for the SSJ or PRS assessment. However, the inspector notes that the shortfalls identified within the management systems assessment may impact ONR's decision to agree to the SSJ implementation and the PRS decision. Regulatory issues #104756 and #10796 have been raised to manage Recommendations MS-1 and MS-2 respectively.

4.2.5 NUCLEAR LIABILITIES

58. ONR's nuclear liabilities inspector undertook an assessment of AWE's PRS and SSJ (Ref. 24). The nuclear liabilities inspector focused their assessment on evaluating the most nuclear safety significant aspects to the submissions. The inspector concluded that these are the site-wide strategies for decommissioning, and the management of legacy nuclear material that is no longer required. The assessment specifically excludes individual facility plans associated with nuclear liabilities.

59. The inspector reviewed AWE's strategy for the management of legacy nuclear material that is no longer required and concluded that it broadly meets ONR's expectations. However, the review highlighted a shortfall with respect to the lack of definition of full lifecycle management routes.

60. The inspector recognised that full lifecycle management routes have not yet been established. The inspector noted that, in their opinion, this represents a shortfall against ONR's Safety Assessment Principle (SAP) RW.1 (para. 793) (Ref. 2). However, the inspector recognised that AWE is taking steps to rectify this shortfall through implementation of the sustainable materials management strategy. The inspector considers that the sustainable materials management strategy should be updated to include timescales for determining the full lifecycle management routes.

61. The licensee confirmed that the estate liabilities strategy (Ref. 25), and therefore the sustainable materials management strategy, is not due to be reviewed until 2023, which represents the standard 3-year review period for AWE documents. Given the progress made to date, the inspector considered

that the sustainable materials management strategy is no longer current and should be updated to reflect this. The inspector considered that, once the sustainable materials management strategy is more established, then the triennial review period should be enacted.

62. The inspector, overall, considered that the development of the new sustainable materials management strategy broadly meets the expectations of SAPs ENM.1 and RW.1 (Ref. 2) for material that may declared waste in the future. However, they have raised **Recommendation NL-1** to address the identified shortfall:

- **Recommendation NL-1:** The licensee to update the sustainable materials management strategy to reflect its development and include timescales for determining the full lifecycle management routes. *(Regulatory issue #10933 has been raised to track this recommendation)*

63. The Nuclear Liabilities inspector considered an assessment note (or "other report") to be the appropriate means of recording this assessment. Therefore, an assessment rating was not assigned for the assessment of the SSJ or PRS. However, the inspector concluded that they support permissioning from a nuclear liabilities perspective to proceed with the implementation of the SSJ and is content to support ONR issuing a confirmatory decision letter for the PRS.

4.2.6 INTERNAL HAZARDS

64. ONR's internal hazards inspector undertook an assessment of AWE's SSJ and PRS (Ref. 26). The internal hazards inspector focussed on the end-to-end golden thread of the nitrogen utility from the supply to the facility. Their sampling was targeted within the SSJ and PRS for Aldermaston, with supporting evidence from AWE's utilities group and the A** facility.

65. The inspector highlights that, as no new analysis was conducted in the submission, there are gaps in the demonstration of the Aldermaston site safety case on how the design is robust against internal hazards from a site perspective. However, the inspector gained confidence from the combination of their site interactions and the supporting information provided by AWE's utilities group and the A** facility.

66. The inspector reports that AWE's main argument for the nitrogen system focuses on reliability and its asset management arrangements. Also, the inspector identified AWE's utilities group reviews equipment failure and redundancy available for catastrophic scenarios in categories of 'one day', 'less than 1 week' and 'beyond a week'. Loss of supply and its impact to nuclear safety is considered. On this basis, the inspector is content that vulnerabilities in the nitrogen system have been identified which bounds challenges from internal hazards.

67. Based on the above and further supporting evidence from AWE's utilities group, the inspector confirms that they have been given adequate confidence that hazards affecting the supply and distribution which may have an impact to nuclear safety are adequately identified and addressed.

68. In relation to the A** facility, the assessment focusses on the nitrogen utility at the facility end. The inspector confirms that they have been given adequate confidence that hazards which may have an impact to nuclear safety at the facility are adequately addressed. This is based on the implementation to date and the response to the inspector's queries.

69. The inspector summarises that they have not identified any significant issues regarding the implementation of the revised SSJ as a baseline and concludes, from the internal hazards perspective, it is proportionate to permission the revised site SSJ.

70. The internal hazards inspector considered an assessment note (or "other report") to be a more appropriate means of assessment that an assessment report. Therefore, an assessment rating was not assigned for the SSJ or PRS assessment. However, the inspector confirmed that they support the permissioning from an internal hazards perspective for AWE to proceed with the updated SSJ and PRS.

4.2.7 MECHANICAL ENGINEERING

71. The mechanical engineering inspector has undertaken an assessment of AWE's SSJ and PRS (Ref. 27). The mechanical engineering inspector targeted their assessment on support file 2 of the SSJ (engineered services analysis) (Ref. 10), specifically those aspects related to mechanical engineering that presented the greatest risk. The inspector sampled the Service Groups SG.15.1and SG.15.2 relating to nitrogen supply quantity and quality respectively.

72. The inspector concluded that AWE demonstrated there are no mechanical site services that attract a Class 1 nuclear safety claim. The inspector sampled the nitrogen distribution system, as there have historically been Class 1 claims on elements of this system.

73. In respect of the A* facility, an earlier assessment concluded the nitrogen was evaluated as a Class 1 claim. However, following revised fire assessments completed since the recent facility specific PRS (which have been used to inform a subsequent fire Hazan), this was subsequently reduced to Class 3 by AWE. At the time of the assessment, the Hazan was still undergoing internal governance. So long as those governance stages accept the Class 3 claim, the inspector is content that this would be bounded by the Class 2 substantiation presented in the Design Assessment Report (DAR) (Ref. 28) covering the A* facility. However, if the Class 3 claim is not supported, this

conclusion would need to be reviewed. Therefore, the following recommendation is made:

- **Recommendation ME-1:** In accordance with the expectations set out in MER587-001383 Issue 01 (dated 15/12/21), following the completion of due process AWE is to confirm and satisfy itself that the A* Fire Hazan makes a claim no higher than Class 3 on either nitrogen supply quantity or nitrogen supply quality to the A* facility.
  (Regulatory issue #10933 has been raised to track this recommendation)

74. Overall, the inspector concluded that the nitrogen distribution network is being operated and maintained in accordance with RGP, and at a level commensurate with the nuclear safety claims placed on it.

75. Based on the submissions, the inspector considered that there are no other aspects of the SSJ or PRS with significant relevance to mechanical engineering that attract nuclear safety claims of Class 2 or greater that would justify further regulatory assessment at this point. The inspector concludes that the arguments and evidence that have led to this view remain at draft status while undergoing AWE's internal governance, and that the assumptions relied on while forming this judgement should be confirmed by AWE following formal issue of the Hazan.

76. The mechanical engineering inspector considered an assessment note (or "other report") to be the appropriate means of recording the assessment. Therefore, an assessment rating was not assigned for the SSJ or PRS assessment. While noting the recommendation, the mechanical engineering inspector concludes that they have no objection to the permissioning of the SSJ implementation plan in accordance with AWE's arrangements under LC22, as requested by AWE. Also, the inspector has no objection to ONR making a positive decision on the Aldermaston PRS.

4.2.8 PROJECT INSPECTOR

77. As discussed in Section 3 of this report, following the review of the suite of documentation supporting the SSJ and PRS and the input from specialist ONR assessors, the project inspector has sought to consider:

- The adequacy of the scope of AWE's PRS;
- The validity of the claims made in the safety case; (this does not include the substantiation of plant and procedures which are covered in the facility specific safety cases);
- The maturity of AWE's progress in closing out the items on the FAP;
- The suitability of AWE's ALARP argument; and
- The adequacy of the case to justify continued operations for the approaching ten years.

The adequacy of the scope of AWE's PRS

78. In terms of the scope of the PRS, the project inspector is content AWE's submission (Ref. 13) captures the main elements in order to satisfy the ONR's expectations for a PRS from TAG-050 (Ref. 3). These elements include reviews of the major hazards and controls, the site and operational history, the generation of radioactive waste and best available techniques, future operations, decommissioning, ageing and obsolescence review, LMfS, corporate initiatives, the PRS findings and compliance with modern standards.

79. The inspector observed the scope of the Aldermaston SSJ does not consider operations or faults within the individual facilities posing nuclear safety risks (instead referring out to individual facility safety justifications (FSJ)). On this basis, the inspector considers the SSJ does not analyse some topics which may have been expected within an established site wide safety case. For example, from discussions with ONR's external hazards inspector (Ref. 29), the project inspector notes the SSJ does not derive an integrated site risk arising from site-wide external hazards or analyse the capacity of site services to support all the facilities under a simultaneous demand.

80. The scope of the SSJ and PRS was shared with ONR in advance of the submission and the project inspector makes two observations about it. Firstly, the project inspector considers AWE's approach (of identifying the demands placed on site-wide services through the claims made in the facility safety cases) has been successful at demonstrating there are no formal safety case claims made on the site-wide services. Therefore, the inspector has gained confidence there is not a systematic element of the risk from facilities unaccounted for in the FSJs (as responsibility for nuclear safety risk is not transferred to the site infrastructure).

81. However secondly, the inspector also considers AWE's approach does represent a gap to ONR expectations regarding the potential scope for the SSJ. Following discussions with ONR's internal hazards specialist inspector (Ref. 26), the project inspector considers more extensive analysis of AWE's capacity to support multiple simultaneous demands on services (in scenarios such as site-wide external hazards) could have further informed AWE which systems can make the biggest contribution to risk reduction at the Aldermaston site. This could have enabled AWE to identify further reasonably practicable measures to improve the resilience of key site-wide services. That insight could then have enabled AWE to make site-wide safety decisions to further reduce risks as low as is reasonably achievable. The project inspector notes the internal hazards inspector's opinion (Ref. 26) that this topic did not warrant raising as a regulatory issue. However, in order to determine the scale of any unrevealed risk, the project inspector raises a recommendation as follows:

- **Recommendation PI-1:** AWE's site safety case team to provide assurance that all hazards and risks from a site perspective and their impact to nuclear safety are understood. This should be supported by updated holistic analysis where required.
  (Regulatory issue #10933 has been raised to track this recommendation)

82. This recommendation will be used to engage on potential future improvements to AWE's SSJ. The project inspector considers the new SSJ represents a significant improvement over AWE's existing arrangements, as outlined in paragraph 78. The inspector considers that the primary nuclear safety requirements have been captured in the new SSJ and that the scale of any unrevealed risks is sufficiently small that it would be disproportionate to withhold the SSJ permissioning process or the PRS determination at this time.

The validity of the claims made in the safety case

83. From discussions with ONR mechanical engineering inspector (Ref. 27), the project inspector is content with the process AWE undertook to extract claims from the FSJs across the site. Although the recommendation raised by the mechanical engineering specialist inspector to check whether the Class 3 claim on the nitrogen system in A** is appropriate (which is being tracked in a regulatory issue), the project inspector is content from the majority of the ONR specialist assessments with the validity and accuracy of the claims made within the SSJ.

The maturity of AWE's progress in closing out the items on the FAP

84. The project inspector considered AWE's progress in addressing the 21 shortfalls on the combined FAP (Ref. 12). Nine shortfalls were generated from the review of the SSJ (relating to engineered as well as people-based services) and twelve shortfalls were generated from the PRS (relating to LMfS). From ongoing interactions with AWE's project team and AWE's PRS management team, the project inspector is aware that AWE has now attempted to close just over half of the shortfalls. AWE arrangements require all shortfalls to be closed within three years of the PRS submission date (i.e. by June 2024). Although AWE appears on track to address the issues within this time scale, the project inspector is aware many of the engineering related shortfalls were identified during AWE's initial attempt at the PRS in 2019 and carried over into the submission that arrived 18 months later. Therefore, the inspector considers more focus could have been applied to expedite the resolution of various engineering related shortfalls. The inspector understands issues AWE may have had with resourcing constraints at this time and considers the significance of this observation to be low.

85. A more significant concern is borne from the assessment findings of the LMfS inspector reviewing the PRS (Ref. 22) who determined none of the shortfall

closure packs they sampled were adequate. This has led to the re-opening of various shortfalls by AWE. The project inspector alerted ONR's electrical (Ref. 20) and mechanical (Ref. 27) inspectors to this concern and they undertook some targeted sampling as part of their assessments. No further concerns were raised so the project inspector considers this problem to be specific to the LMfS discipline.

86. The project inspector notes the LMfS inspector has proposed recommendation ('LMfS-3') to address this issue. The project inspector anticipates influencing AWE through normal regulatory business to perform an independent review into the adequacy of the closeout process for all the shortfalls on the combined FAP (Ref. 12). ONR anticipates AWE will report on the review's findings within the PRS close out report. Because the recommendation raised will be tracked through a dedicated regulatory issue, the project inspector is content that the issue with the LMfS shortfall closure packs does not warrant withholding the SSJ permissioning or the PRS determination process.

The suitability of AWE's ALARP argument

87. Regarding the suitability of the ALARP argument, the project inspector notes the engineering and nuclear liabilities disciplines are content (assuming continued engagement from ONR) that AWE's SSJ and PRS adequately demonstrate that the procedures aim to ensure the ALARP principle. The project inspector notes this is based on AWE's plans and intent to eliminate hazards where possible across site, to minimise and control remaining hazards and to mitigate any consequences so far as is reasonably practicable. Although the project inspector considers more extensive analysis could have been performed regarding the site risk (as discussed previously), the risk values presented by AWE for workers are noted to be below the BSL and for members of the public are below the BSO. ONR considers these figures to be acceptable against SAPs numerical targets (Ref. 2) and this position is supported by the views of the fault studies specialist inspector (Ref. 19).

The adequacy of the case to justify operations for the approaching ten years

88. The project inspector has considered the opinions of ONR's specialist inspectors while forming a view on the adequacy of the PRS review of future operations. The inspector is satisfied AWE has adequately reviewed forecasted operations covering the period considered by the PRS (Ref. 13). This includes consideration of proposed changes to site operations (including decommissioning and the generation of Radwaste) as well as the future capability of the infrastructure.

89. ONR's assessment of the SSJ and PRS have led to the generation of nine recommendations. The project inspector does not consider any of the

shortfalls (which led to the recommendations) to be significant enough to warrant withholding the permissioning of the SSJ or to determine the PRS as being inadequate. Therefore, the project inspector proposes to monitor the recommendations through normal regulatory business via level 3 or level 4 regulatory issues.

90. Despite the requirement to raise those recommendations, based on the evidence sampled and the specialist inspectors' advice, the project inspector is of the opinion that AWE has provided an adequate site-wide safety case for Aldermaston and that the SSJ can be implemented. The project inspector is also of the opinion that AWE has performed an adequate PRS and that ONR should notify AWE by letter that the Aldermaston PRS is considered acceptable until December 2029.

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5 CONCLUSIONS

91. AWE has developed a SSJ for the Aldermaston and submitted it to ONR for permissioning under LC22 (Ref. 5). AWE has also undertaken a PRS for the Aldermaston site and submitted it for review under LC15 arrangements (Ref. 6).

92. ONR has undertaken a combined assessment of the SSJ and PRS, drawing on expertise from the following specialist inspector disciplines; mechanical and electrical engineering, fault studies, LMfS, management systems, nuclear liabilities, internal hazards, external hazards and emergency response. The assessors identified several gaps to RGP based on the evidence they sampled. Therefore, ONR raises a series of recommendations as follows:

- **Recommendation EE-1** – AWE to summarise the improvement measures to the utility electrical supply to the A** facility and share an outline programme of key dates to progress the improvements to implementation.
  (Regulatory issue #10513 has been raised to track this recommendation)
- **Recommendation LMfS-1** – A Level 4 regulatory issue should be raised to address the issue that there are shortfalls in the arrangements for reviewing LMfS during a PRS.
  (Regulatory issue #10933 has been raised to track this recommendation)
- **Recommendation LMfS-2** – A Level 3 regulatory issue should be raised to address the issue that the improvement plan to address a shortfall in intelligent customer capability is of insufficient quality.
  (Regulatory issue #10933 has been raised to track this recommendation)
- **Recommendation LMfS-3** – A Level 3 regulatory issue should be raised to address the issue that PRS shortfalls have been closed without adequate justification or evidence.
  (Regulatory issue #10933 has been raised to track this recommendation)
- **Recommendation MS-1** – AWE to consider how it would address the implied shortfalls on the management system arrangements for the delivery of future operations.
  (Regulatory issue #104756 has been raised to track this recommendation)
- **Recommendation MS-2** – AWE to consider developing its LMFS framework (scope) for the PRS review to include how the management system would be reviewed, taking guidance from IAEA SSG – 25 guidance (including specifically Safety Factor 10 – Management Systems & 11 – Procedures).
  (Regulatory issue #10796 has been raised to track this recommendation)

- **Recommendation NL-1** – The licensee to update the Sustainable Materials Management (SMM) strategy to reflect its development and include timescales for determining the full lifecycle management routes.
  (Regulatory issue #10933 has been raised to track this recommendation)
- **Recommendation ME-1** – In accordance with the expectations set out in MER587-001383 Issue 01 (dated 15/12/21), following the completion of due process AWE is to confirm and satisfy itself that the A* Fire Hazan makes a claim no higher than Class 3 on either nitrogen supply quantity or nitrogen supply quality to the A* facility.
  (Regulatory issue #10933 has been raised to track this recommendation)
- **Recommendation PI-1** – AWE's site safety case team to provide assurance that all hazards and risks from a site perspective and their impact to nuclear safety are understood. This should be supported by updated holistic analysis where required.
  (Regulatory issue #10933 has been raised to track this recommendation)

93. Having taken advice from specialist inspectors, the project inspectors' view is that these gaps to RGP do not present any immediate risks to nuclear safety and do not invalidate the main safety arguments articulated in the SSJ or PRS submission. Also, the gaps to RGP are expected to be readily addressed either by AWE's programme given in the combined FAP to close the shortfalls and observations identified in the submissions, or by the closure of the ONR recommendations. Each of the recommendations above have been formulated into regulatory issues and tracked to completion by the ONR specialist assessors and the ONR PRS lead inspector.

94. From reviewing the SSJ and PRS, it is the view of the project inspector that AWE has justified a case for current and continued operations at the Aldermaston site. This is based on the suitable scope of the PRS, and the validity of the claims made in the SSJ. The inspector considers the SSJ aligns to modern standards expectations and AWE presents a credible ALARP argument that considers operations over the approaching ten year period. The project inspector also considers AWE has demonstrated suitable progress toward addressing the items on the combined FAP (Ref. 12) and these actions are continuing.

95. Overall, and notwithstanding the issues to be addressed via the above recommendations, the project inspector notes the specialist assessors support permissioning the SSJ and a positive decision on the PRS adequacy. The project inspector's opinion is that it would be disproportionate to withhold the permissioning of the Aldermaston SSJ. Therefore, the project inspector considers ONR should agree to AWE's LC22 request to implement the SSJ

(Ref. 5) and inform AWE that the LC15 PRS submission for Aldermaston (Ref. 4) is considered adequate.

6 RECOMMENDATIONS

96. The project inspector recommends that ONR should agree to AWE's LC22 request to implement the SSJ for Aldermaston. This will be done by issuing a licence instrument relating to reference SO1(2) on AWE's hold point control plan.

97. The project inspector also recommends that ONR should notify AWE that its LC15 submission for the Aldermaston PRS is considered adequate. This will be done by writing a PRS letter referencing the PRS 2.10 submission on AWE's hold point control plan.

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