



2015 Magnox Reprocessing Periodic Shutdown

Review of Regulatory Approach for the 2015 Magnox Reprocessing Periodic Shutdown

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EXECUTIVE SUMMARY

This report presents the findings of an assessment to review whether the Office for Nuclear Regulation's (ONR) existing approach to regulating Sellafield Limited's Magnox Reprocessing periodic shutdown remains appropriate. The existing approach requires ONR to issue a consent under primary powers (Licence Condition 30 'Periodic shutdown') prior to plant restart.

Background

Periodic shutdowns of Magnox Reprocessing take place approximately every three years. The shutdowns provide an opportunity for Sellafield Limited (SL, the licensee) to maintain, test and inspect plant and equipment that is inaccessible during reprocessing operation.

In September 2014 SL asked ONR to reconsider how the Magnox Reprocessing periodic shutdowns are regulated; specifically the licensee considers the requirement to obtain a consent from ONR prior to restarting the plants to be disproportionate.

ONR's approach in response to the request

ONR's strategy for regulating the Sellafield site was significantly revised in 2014. Whilst the licensee's request initiated this review of the regulatory approach for the periodic shutdown, the review is timely because of ONR's change in regulatory strategy for the Sellafield site. This review has sought to establish whether the existing approach is:

- consistent with ONR's guidance on Licence Condition (LC) 30 compliance;
- consistent with ONR's enforcement policy principles; and
- consistent with ONR's revised strategy for regulating the Sellafield site.

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

The choice of plants and processes which are regulated under LC30 are subject to ONR's discretion and are not specified in LC30 or in ONR's LC30 guidance. The licensee will undertake Examination, Inspection, Maintenance and Testing (EIMT) in accordance with its Plant Maintenance Schedule (PMS) during the periodic shutdown in order to comply with LC28 'Examination, Inspection, Maintenance and Testing'; this will be the case whether or not ONR regulates the periodic shutdown under LC30. The 'added value' of ONR regulating the periodic shutdown under LC30 is that ONR has the opportunity to satisfy itself that the licensee's judgement that the plant is safe to restart is well-founded before allowing the plant to restart.

Within Magnox Reprocessing there is significant reliance on a comprehensive and well-founded EIMT programme to underpin the safety case for continued (safe) operation. The consequences of plant failure can be significant (the safety case identifies fault sequence groups which could lead to doses to the public of above 10mSv).

ONR has previously raised concerns in regard to the PMS at Magnox Reprocessing. SL has advised that ONR's issues here have been resolved. However, ONR does not yet have direct evidence confirming the adequacy of the PMS (which would drive a well-founded EIMT programme) is adequate. Therefore moving away from formal regulation of the periodic shutdown is not judged to be appropriate at this time.

ONR's revised strategy for regulating the Sellafield site includes seeking to optimise existing approaches that may be placing a disproportionate burden on ONR or the licensee. Historically ONR required the licensee to progress safety initiatives and undertake outstanding nuclear safety improvements (including on plants at the Sellafield site other than Magnox Reprocessing) prior to issuing a consent to the restart of operations. Historically ONR and the

licensee have worked to a Magnox Reprocessing periodic shutdown protocol that mirrored the regulatory approach adopted for operating reactor outages. The protocol required a number of formal meetings, reports and interactions. Implementing the protocol is resource intensive for ONR and the licensee, and the proportionality of continuing to work to the existing protocol is debatable. Discontinuing the practice of seeking safety improvements on plants other than Magnox Reprocessing prior to issuing the consent and discontinuing use of the existing engagement protocol are both proportionate and will not result in a safety detriment or reduce ONR's ability to regulate Sellafield Limited.

It remains proportionate and legitimate for ONR to retain regulatory interest in the results of EIMT undertaken in the periodic shutdowns given the age of the Magnox Reprocessing plant and the potential on and off-site consequences of significant faults. Further, it is consistent with ONR's leverage model to support and facilitate the development of licensees' internal regulatory functions, and to take account of the work of the internal regulators where appropriate when targeting our resources. ONR will support the licensee's internal regulatory function (SLIR) to develop and implement a proportionate and targeted assurance plan for the periodic shutdown. ONR will take the work of the internal regulator into account when determining what activities we should undertake and whether issuing a consent to restart the plant following the periodic shutdown is justified.

Magnox Reprocessing operations on the Sellafield site are due to cease within the next five years. Given the periodic shutdowns occur approximately once every three years; there will likely be one further periodic shutdown before the plants cease operations. It is possible that ONR will have gathered sufficient evidence by the next (potentially 2018) periodic shutdown to justify removing formal regulatory control under LC30. This may be considered in the future, if deemed to be consistent with ONR's strategy at that time and resources allow.

Conclusions

I am of the view that ONR should continue to formally regulate the Magnox Reprocessing periodic shutdowns, but that ONR's involvement should be reduced compared to previous periodic shutdowns. ONR should support the licensee's internal regulatory function to develop and deliver a proportionate and targeted assurance plan for the periodic shutdown. ONR should take this assurance work into account when determining what activities we should undertake and whether issuing a consent is justified. If resources permit, and this is considered consistent with our regulatory strategy for Sellafield at that time, ONR should consider whether removing formal regulatory control under LC30 is justified for future periodic shutdowns, using evidence gathered during the 2015 periodic shutdown.

Recommendations

I recommend that ONR continues to formally regulate the Magnox Reprocessing periodic shutdown under LC30 and:

- 1) Supports SLIR to develop and deliver a proportionate and targeted assurance plan for the 2015 periodic shutdown that ONR can take into account when determining what activities we should undertake and whether issuing a consent is justified.
- 2) Discontinues the practice of seeking wider safety improvements on facilities other than Magnox Reprocessing as a condition for granting a consent for restart.
- 3) Discontinues the use of the protocol agreed in 2003 between ONR and the licensee for the regulation of periodic shutdowns.

LIST OF ABBREVIATIONS

AGR	Advanced Gas-cooled Reactor
EIMT	Examination, Inspection, Maintenance and Testing
IN	Improvement Notice
LC	Licence Condition
NII	Nuclear Installations Inspectorate
ONR	Office for Nuclear Regulation
PAR	Project Assessment Report
PMS	Plant Maintenance Schedule
SLIR	Sellafield Limited Internal Regulator
SQEP	Suitably Qualified and Experienced Person
THORP	Thermal Oxide Reprocessing Plant
TIG	(ONR) Technical Inspection Guide

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1 INTRODUCTION

1. This report presents the findings of an assessment to determine whether Office for Nuclear Regulation's (ONR) existing approach to regulating Sellafield Limited's Magnox Reprocessing periodic shutdown remains fit for purpose or should be modified. The existing strategy requires ONR to issue a consent under primary powers (Licence Condition 30 'Periodic shutdown') prior to plant restart following a periodic shutdown.

2 BACKGROUND

2. The Magnox Reprocessing plants operating on the Sellafield site comprise a Separation Plant and a Medium Active Evaporation and Thermal Denitrification Plant. Both were commissioned in 1964 and are scheduled to complete reprocessing operations within the five years. Continued Magnox reprocessing is fundamental to progressing hazard and risk reduction on the site. Reprocessing chemically separates spent fuel rods received from Magnox reactors into their component parts of uranium, plutonium and fission products. The initial phase of reprocessing is dissolving the spent fuel rods in nitric acid within a dissolver vessel.
3. The design of the plants and the radioactive nature of the plants' inventory limits Sellafield Limited's (the licensee) ability to undertake certain Examination, Inspection, Maintenance and Testing (EIMT) whilst the plants are operating. As a consequence, the licensee periodically shuts down the plants (and washes out the inventory) to undertake necessary EIMT.
4. ONR's guidance on LC30 'Periodic shutdown' is the LC30 technical inspection guide (TIG), Reference 1. This confirms that the purpose of LC30 to be as follows:
 - LC30(1) – to ensure that, where it is necessary to do so, a licensee periodically shuts down plant in order to carry out any LC28 requirements that require plant to be out of service.
 - LC30(2) allows ONR to agree an extension of the period between such regular shut downs.
 - Where a specification under LC30(3) has been issued and ONR has to formally consent to the restart, this consent will only be given when the licensee has both satisfied itself and ONR that the plant may be safely started up and operated until the next periodic shutdown.
5. In 2002 a specification (Ref. 2) was placed under Licence Condition 30(3) stating that 'the Licensee shall not without the consent of the Executive, resume feeding of irradiated fuel to the B*** dissolver following a full plant washout of B*** for the purposes of Condition 30(1).' In 2003 the licensee also agreed to undertake subsequent plant shutdowns in accordance with a protocol arrangement (Ref. 3).
6. ONR reviewed the approach for regulating the Magnox Reprocessing periodic shutdown in 2012 (Ref. 4). Reference 4 concluded the existing approach was appropriate for the forthcoming (2012) and future planned periodic shutdowns; however this review did not present any justification for continuing with the existing approach other than that it was perceived to be in accordance with custom and practice.
7. In September 2014 the licensee asked ONR to consider how the Magnox Reprocessing periodic shutdown was regulated; specifically the licensee considered the requirement to obtain a consent from ONR to be disproportionate.

8. ONR's strategy for regulating the Sellafield site (Ref. 5) was significantly revised in 2014. Whilst the licensee's request initiated review of the regulatory approach for the periodic shutdown, a review is timely because of ONR's change in strategy for the Sellafield site. This review has sought to establish whether the existing approach is:
 - consistent with ONR's guidance on Licence Condition (LC) 30 'Periodic shutdown' compliance.
 - consistent with ONR's enforcement policy principles; and
 - consistent with ONR's revised strategy for regulating the Sellafield site;

3 MAGNOX REPROCESSING PERIODIC SHUTDOWN REGULATORY HISTORY

9. For this review it is relevant to consider the regulatory history of the Magnox Reprocessing periodic shutdowns. ONR has issued a consent under primary powers to resume feed of irradiated fuel to the B*** dissolver after a Magnox Reprocessing periodic shutdown since at least 1994. A summary of the regulatory approach is presented in Annex 1. In brief:
 - In 1994 and 1997 ONR granted consents to resume feed of irradiated fuel to the B*** dissolver. It is possible that consents were issued for Magnox Reprocessing periodic shutdowns prior to this (this has not been reviewed).
 - In 2000 ONR opted to mirror the regulatory approach for regulating operating reactor periodic shutdowns (outages) for Magnox Reprocessing, continuing the requirement for a consent.
 - In 2002 a specification was issued requiring the licensee to seek a consent to resume feeding irradiated fuel to the B*** dissolver for the 2002 and future Magnox Reprocessing periodic shutdowns. In 2003 a protocol was agreed that mirrored the regulatory approach adopted for operating reactor outages.
 - ONR required the licensee to progress safety initiatives and undertake outstanding nuclear safety improvements including on plants at the Sellafield site other than Magnox Reprocessing prior to issuing a consent for the 2000, 2002, 2005 and 2008 periodic shutdowns.
 - In the 2012 periodic shutdown ONR required the licensee to make nuclear safety improvements to plants within Magnox Reprocessing, and also to progress a number of safety initiatives not associated with the periodic shutdown.
10. ONR's regulatory approach for the Magnox Reprocessing periodic shutdown appears to be based on custom and practice, and a decision to mirror the approach adopted for operating reactor outages. Based on the information reviewed, the regulatory approach does not appear to be based on explicit safety concerns. This, and the practice of requiring the licensee to make nuclear safety improvements not associated with the Magnox Reprocessing periodic shutdown, may explain the licensee's suggestion that ONR's regulatory approach is not proportionate.

4 ASSESSMENT CARRIED OUT BY ONR IN CONSIDERATION OF THIS REQUEST

4.1 CONSISTENCY WITH ONR'S GUIDANCE ON LC30 COMPLIANCE

11. ONR's guidance on LC30 is the LC30 technical inspection guide (TIG), Reference 1. LC30 does not specify particular plants or process required to be regulated under LC30, nor does it recommend types of plants and process that should be considered as candidates for regulation under LC30. This omission leaves the choice of plants and processes which are regulated under LC30 subject to ONR's discretion.

12. There is a direct link between LC30 and LC28 'Examination, Inspection, Maintenance and Testing'. Reference 1 states 'The arrangements should identify plant or processes which it is necessary to shut down to carry out examination, inspection, maintenance and testing required by the maintenance schedule. The arrangements should ensure that all such maintenance schedule activities, and other safety related activities or requirements are systematically identified, planned, actioned, reviewed and recorded.'. Therefore if the Plant Maintenance Schedule (PMS) of a facility is adequate, ONR regulating a periodic shutdown under LC30 serves to confirm the licensee has undertaken EIMT in accordance with the PMS, and that the licensee's conclusion that the plant is safe to restart is justified.
13. In 2010 Nuclear Installations Inspectorate (NII) [the predecessor organisation of ONR] undertook a LC28 compliance inspection which identified significant deficiencies with the Magnox Reprocessing PMS (Ref. 6) relevant to LC30(1), including 'Detailed inspection of Civil/Structural features providing a nuclear safety function are not usually on the PMS'.
14. The licensee has undertaken a programme of work (References 7 and 8) to remedy the deficiencies identified by NII. For the 2012 periodic shutdown, ONR opted to link the satisfactory close out of the more significant deficiencies with the PMS to the issuing of the consent to restart (Ref. 9). The full scope of work was not completed, but ONR deemed that sufficient progress had been made by the end of the 2012 periodic shutdown that withholding the consent would be disproportionate (Ref. 10).
15. The licensee has recently provided a progress statement (Ref. 11) and claims to have addressed 80% of the issues raised by NII in 2010 and to have rectified all the significant deficiencies in the Magnox Reprocessing PMS. The current position could therefore now be adequate, but to date ONR has not undertaken any interventions to verify that the improvements to the PMS have indeed been implemented adequately, or that the improvements made address our original concerns.
16. The licensee will undertake EIMT in accordance with their PMS during the periodic shutdown in order to comply with LC28; this will be the case whether or not ONR regulates the periodic shutdown under LC30. The 'added value' of ONR regulating the periodic shutdown under LC30 is that ONR has the opportunity to satisfy itself that the licensee's judgement that the plant is safe to restart is well founded before allowing the plant to restart.

4.2 CONSISTENCY WITH ONR'S ENFORCEMENT POLICY PRINCIPLES

17. ONR's Enforcement Policy is set out in the Enforcement Policy Statement (Ref. 12) which sets out five principles for enforcement. ONR's regulatory approach for the Magnox Reprocessing periodic shutdown has been assessed against each in turn.

4.2.1 PROPORTIONALITY

18. The Magnox Reprocessing plants are more than 50 years old, are not built to modern standards and are inevitably subject to ageing effects. The safety case identifies fault sequence groups which could lead to doses to the public of above 10 mSv. EIMT undertaken during periodic shutdowns provides the licensee and ONR with confidence that the plants remain safe to operate. It is proportionate and legitimate for ONR to retain regulatory interest in the results of EIMT undertaken in the periodic shutdowns given the age of the plant and the potential on and off-site consequences of significant faults.
19. If the PMS of a facility is adequate, ONR regulating a periodic shutdown under LC30 serves to confirm the licensee has undertaken EIMT in accordance with the PMS, and that the licensee's conclusion that the plant is safe to restart is justified.

Unfortunately ONR has not yet confirmed that the Magnox Reprocessing PMS is adequate after identifying significant deficiencies in 2010 (as noted above, the licensee recently reported 80% completion of the PMS improvement work). A focussed intervention to confirm whether or not the significant deficiencies have indeed been remedied and the PMS can be judged adequate would support an argument to move away from formal regulatory control of the periodic shutdown. However, in the absence of firm evidence confirming the PMS is adequate; it is not judged proportionate to reduce the level of regulatory control applied to the Magnox Reprocessing periodic shutdown.

20. ONR required the licensee to progress safety initiatives and undertake outstanding nuclear safety improvements (including on plants at the Sellafield site other than Magnox Reprocessing) prior to issuing a consent to the restart of operations following the 2000, 2002, 2005 and 2008 periodic shutdowns. Applying such an “indirect levering” approach is not considered proportionate, and may have contributed to the licensee’s adverse view of ONR’s existing regulatory approach. This approach will be discontinued starting with the 2015 Magnox Reprocessing periodic shutdown, and the licensee provided with relevant assurances. However, in some instances, where the safety of another plant or process directly and significantly impacts on Magnox Reprocessing, it may be necessary to regulate improvements by linking these to the restart consent. An example of such a direct link would be if ONR had a significant concern regarding the emergency arrangements for the Sellafield site and we deemed that increasing the overall site risk by consenting to restarting Magnox Reprocessing operations would not be sensible in the circumstances.
21. In 2003 a Magnox Reprocessing periodic shutdown protocol was agreed that mirrored the regulatory approach adopted for operating reactor outages. The protocol introduces the requirement for a number of formal meetings, reports and interactions. Implementing the protocol is resource intensive for ONR and the licensee, and the proportionality of continuing to work to the existing protocol is debatable. From the ONR perspective, all that is necessary is for the licensee to clearly communicate to ONR what EIMT will be undertaken during the periodic shutdown, ONR to identify (using a risk based approach) what EIMT will be scrutinised, and for the licensee and ONR to engage to ensure that ONR can undertake the necessary assurance activities in a timely manner. Provided ONR and the licensee engage in a proactive and open manner there is no added value in expending additional resource to implement the protocol as it stands. Continuing to work to the protocol in these circumstances would not be consistent with ONR’s revised strategy for regulating the Sellafield site without distracting the licensee from important hazard and risk-reducing activities. Use of the protocol will therefore be discontinued starting with the 2015 periodic shutdown, and the licensee provided with relevant assurances.
22. Discontinuing the practice of using the restart consent to lever safety improvements on plants other than Magnox Reprocessing, and discontinuing use of the protocol will not result in a safety detriment or reduce ONR’s ability to regulate Sellafield Ltd. Conversely, doing so will make ONR’s regulation of the periodic shutdown more proportionate.

4.2.2 TARGETED

23. The resources available to ONR and the licensee are finite, with resources from both organisations being prioritised towards activities that will progress hazard and risk reduction on the Sellafield site. Continuing with the existing regulatory approach for the Magnox Reprocessing outage is resource intensive primarily due to the reactor outage style protocol arrangement agreed between NII and the licensee in 2003.

24. During a Magnox Reprocessing periodic shutdown, the assurance activities undertaken by ONR typically include:
 - Review of the maintenance programme to verify that all activities scheduled for completion have been completed, and that all planned modifications are complete.
 - Confirm the findings of key EIMT justify start up and operation until the next LC30 periodic shutdown
 - Seeking specialist advice confirming the acceptability of any adverse findings.
25. Project Assessment Reports (PARs) documenting the assurance activities undertaken by ONR during the 2000, 2002, 2005, 2008 and 2012 Magnox Reprocessing periodic shutdowns have been reviewed. These confirm that ONR has consistently concurred with the licensee's judgement that the plant was safe to return to service, providing reassurance that the licensee's internal processes and judgements are consistent with ONR's expectations.
26. Given the safety case confirms there are a number of fault sequences associated with Magnox reprocessing that have consequences to the public of greater than 10 mSv, some degree of independent assurance that the plants are safe to restart and operate to their next periodic shutdown would be desirable (and proportionate). There are a number of ways of achieving independent assurance, including the use of the licensee's internal assurance function (SLIR).
27. SLIR's assurance activities for the 2012 periodic shutdown were relatively limited in scope and focussed on assessment of discrete activities rather than on confirming completion of key EIMT and that the outcomes supported a safe return to service. Though SLIR is at present still building its regulatory capability and is not yet fully resourced, it is ONR's view that it is well on the way to becoming a strong and effective internal regulator. In the longer term, the licensee is committed to increasing SLIR resources, and making available a pool of technical specialists.
28. It is consistent with ONR's leverage model to support and facilitate the development of licensees' internal regulatory functions, and to take account of the work of the internal regulators where appropriate when targeting our resources. SLIR could undertake more focussed assurance activities which could include sampling the outcome of key EIMT. One barrier to ONR being able to take credit for the work of SLIR for the 2015 periodic shutdown is SLIR's resourcing levels do not include Suitably Qualified and Experienced Persons (SQEPs) in technical disciplines that would be required to assess the outcome of key EIMT. For the 2015 Magnox Reprocessing periodic shutdown, ONR will therefore target its specialist resources in those areas where SLIR is currently unable to undertake suitable assurance, but will otherwise reduce the level of specialist attention we apply.
29. It is likely that for a future (after 2015) Magnox Reprocessing periodic shutdown, SLIR will be a fully effective and well-resourced internal regulator and be capable of undertaking the full range of assurance activities expected by ONR.

4.2.3 ACCOUNTABILITY

30. ONR's mission is to provide efficient and effective regulation of the nuclear industry, holding it to account on behalf of the public. ONR is accountable to the public, and decisions made by ONR are open to challenge.
31. ONR has formally regulated the Magnox Reprocessing periodic shutdown under LC30 since at least 1994. In order to change regulatory approach ONR would have to be content that there was no safety detriment to the public, and justify this.

32. ONR has not yet confirmed the Magnox Reprocessing PMS is adequate after significant deficiencies relevant to EIMT undertaken during periodic shutdowns were identified in 2010. SLIR is judged not presently capable of providing a fully robust independent challenge to the licensee's judgement that the plants are safe to restart and operate until the next periodic shutdown. Since the 2012 periodic shutdown, the effectiveness of SLIR has increased and ONR's confidence in the degree of independent assurance provided by SLIR has grown. For the 2015 periodic shutdown, ONR will work alongside SLIR as described in the previous section.
33. It is not considered justifiable, based on the evidence currently available for ONR to cease to formally regulate the Magnox Reprocessing periodic shutdown under LC30. However, if this evidence becomes available at a future date, moving away from formal regulation of the periodic shutdown may be justifiable. It is however justifiable (based on the evidence available now) for ONR to adopt a modified approach with improved targeting and demonstrable proportionality whilst continuing to formally regulate the periodic shutdown under LC30. Adopting the modified approach will enable ONR to collect evidence that may support a future decision to move away from formal consents to periodic shutdown restarts.

4.2.4 CONSISTENCY

34. ONR have not issued any other specifications under LC30(3) for plant or processes on the Sellafield site, including the Thermal Oxide Reprocessing Plant (THORP). THORP is closer to modern standards than the Magnox Reprocessing plants. Periodic shutdowns (which entail a plant wash out) interspersed with minor shutdowns are undertaken within Magnox Reprocessing and THORP. The Magnox Reprocessing safety case identifies fault sequence groups which could lead to doses to the public of above 10 mSv. One reason for the inconsistency in regulatory approach to periodic shutdowns may be because the THORP safety case does not identify fault sequence groups which could lead to doses to the public of more than 10 mSv.
35. ONR have not issued specifications under LC30(3) to other licensees in the United Kingdom other than those operating commercial power reactors; i.e. the Magnox reactors, the AGRs and the Sizewell B Pressurised Water Reactor. The Magnox reactors (whilst operating), AGR and Sizewell B undertake statutory outages (for significant EIMT) interspersed with refuelling outages; the specifications apply to the statutory outages. All Magnox reactors were subject to regulatory control under LC30(3) whilst operating.
36. The Magnox Reprocessing periodic shutdown has been treated (in terms of regulatory approach) as being analogous to an operating reactor statutory outage. A key difference is that Magnox Reprocessing has routine minor shutdowns (not requiring wash out of the plant inventory) at which EIMT that does not require a plant wash out is undertaken. The licensee works to the same arrangements for periodic shutdowns and minor shutdowns (which are not subject to ONR consents), including the same plant restart procedures. The key difference between the periodic and minor shutdowns is the nature of EIMT undertaken.
37. It is worthwhile to compare the extent of EIMT undertaken during the Magnox Reprocessing periodic shutdown to that undertaken during the statutory outage of a typical AGR. The number of PMS entries specific to statutory outage EIMT for a typical AGR is approximately 300. The equivalent number for the Magnox Reprocessing 2015 periodic shutdown is approximately 120. If the number of PMS entries can be equated to complexity of the EIMT activities undertaken, this suggests that statutory outage related EIMT at an AGR is significantly more complex than Magnox Reprocessing periodic shutdown related EIMT.

4.2.5 TRANSPARENCY

38. ONR's existing regulatory approach for the Magnox Reprocessing periodic shutdown is analogous to that adopted for an operating reactor statutory outage, with the agreed protocol mirroring that adopted by ONR for operating reactors. Whether this approach was initially adopted by ONR in response to safety concerns or in order to gain leverage to secure safety improvements on the Sellafield site has not been established.
39. If ONR's decision to formally regulate the periodic shutdown was a policy decision rather than a response to safety concerns, the decision could be reversed if ONR now has confidence that there would be no safety detriment as a result.
40. It is a statement of fact that as plants age the potential for failure of plant components increases, and there is thus greater reliance on a comprehensive and well founded EIMT programme to underpin the case for continued (safe) operation. This is undoubtedly the case within Magnox Reprocessing where the consequences of plant failure can be significant (the safety case identifies fault sequence groups which could lead to doses to the public of above 10 mSv).
41. If ONR wishes to move away from formal regulation of the periodic shutdown there would be a need, in the interests of transparency, to confirm there would be no safety detriment as a result. Undertaking such an assessment would not be a trivial exercise for ONR or the licensee. Magnox Reprocessing operations on the Sellafield site are due to cease within the next five years. Given the periodic shutdowns occur approximately once every three years; there will likely be one further periodic shutdown before the plants cease operations. Expending the resource to undertake the assessment may not prove to be a good use of ONR's resources given there is only one more periodic shutdown before the plants cease operations.

4.3 CONSISTENCY WITH ONR'S REVISED STRATEGY FOR REGULATING THE SELLAFIELD SITE

42. In January 2014, ONR published a revised strategy (Ref. 5) for regulating the Sellafield site. The strategy seeks to secure three key outcomes:
 - Accelerated hazard and risk reduction across the Sellafield site.
 - Evidence-based confidence that the licensee is complying with its statutory obligations and that workers and the public are protected from the hazards of the site.
 - Stakeholder confidence that ONR's regulatory approach is appropriately targeted, risk-based, proportionate and effective.
43. Whilst all three outcomes are relevant to Magnox Reprocessing, in the context of the forthcoming (2015) periodic shutdown the third is of particular significance, and merits further consideration.
44. Requiring a consent to commence feeding irradiated fuel to the B*** dissolver after a Magnox Reprocessing periodic shutdown has historically given ONR leverage to secure wider nuclear safety improvements on the Sellafield site, rather than issuing specifications and Improvement Notices (INs) (as these were not perceived to be as effective in securing timely improvements). This is no longer the case, with the licensee demonstrating good progress in recent times in delivering safety improvements in a timely manner.

45. It is consistent with ONR's revised strategy for regulating the Sellafield site to optimise existing approaches that place a disproportionate burden on ONR or the licensee for no proportionate safety benefit. This assessment has determined that discontinuing the practice of using consents to secure indirect safety improvements, and discontinuing use of the protocol is proportionate and will not result in any safety detriment or reduce ONR's ability to regulate Sellafield Ltd.
46. Further, it is consistent with ONR's revised strategy for ONR to support SLIR to undertake proportionate and targeted assurance of key EIMT undertaken during the periodic shutdown, and then to take account of SLIR's work when targeting our resources.
47. Within Magnox Reprocessing there is significant reliance on a comprehensive and well founded EIMT programme to underpin the case for continued (safe) operation. The consequences of plant failure can be significant (the safety case identifies fault sequence groups which could lead to doses to the public of above 10 mSv). Given ONR does not have direct evidence confirming the Magnox Reprocessing PMS (which would drive a well-founded EIMT programme) is adequate; moving away from formal regulation of the periodic shutdown cannot be justified at this time.
48. Magnox Reprocessing operations on the Sellafield site are due to cease within the next five years. Given the periodic shutdowns occur approximately once every three years; there will likely be one further periodic shutdown before the plants cease operations. It is possible that ONR will have gathered sufficient evidence by the next (potentially 2018) periodic shutdown to justify removing formal regulatory control under LC30. This may be considered in the future, if deemed to be consistent with ONR's strategy at that time and resources allow.
49. Environment Agency do not regulate the Magnox Reprocessing periodic shutdowns but have an interest on the EIMT undertaken on environmental plant. Environment Agency have confirmed (Ref. 13) there is no objection to ONR adopting a revised regulatory strategy for the 2015 Magnox Reprocessing periodic shutdown.

5 CONCLUSIONS

50. I am of the view that ONR should continue to formally regulate the Magnox Reprocessing periodic shutdowns, but that ONR's involvement should be reduced compared to previous periodic shutdowns. ONR should support the licensee's internal regulatory function to develop and deliver a proportionate and targeted assurance plan for the periodic shutdown. ONR should take account of this assurance work when determining what activities we should undertake and whether issuing a consent is justified. If resources permit, and this is considered consistent with our regulatory strategy for Sellafield at that time, ONR should consider whether removing formal regulatory control under LC30 is justified for future periodic shutdowns, using evidence gathered during the 2015 periodic shutdown.

6 RECOMMENDATIONS

51. I recommend that ONR continues to formally regulate the Magnox Reprocessing periodic shutdown under LC30 and:
 - 1) Supports SLIR to develop and deliver a proportionate and targeted assurance plan for the 2015 periodic shutdown that ONR can take into account when determining what activities we should undertake and whether issuing a consent is justified.
 - 2) Discontinues the practice of seeking wider safety improvements on facilities other than Magnox Reprocessing as a condition for granting a consent for restart.

- 3) Discontinues the use of the protocol agreed in 2003 between ONR and the licensee for the regulation of periodic shutdowns.

7 REFERENCES

1. NS-INSP-GD-030 'LC30 Technical Inspection Guide', Revision 2 (http://www.onr.org.uk/operational/tech_insp_guides/index.htm)
2. SEL 75358N, Licence Instrument No. 405 'Specification under Condition 30(3): Requirement for a consent before resuming irradiated fuel feed to the B*** dissolver', 4th October 2002 [TRIM Ref. 2011/239832]
3. NII/BNFL Protocol for regulating Magnox Reprocessing Maintenance Shutdowns, 3rd July 2003 [TRIM Ref. 2014/0448662]
4. ONR-SEL-AR-2011-1115 'Regulatory control of Magnox reprocessing plant periodic shutdowns', 19th July 2012 [TRIM Ref. 2012/286326]
5. ONR's Strategy for regulating the Sellafield site [TRIM Ref. 2014/141419]
6. SEL 77180R 'NII inspection of LC28 compliance within Magnox OU: 23-27 August 2010', 17th January 2010 [TRIM Ref. 2011/564]
7. NII/11/10235/01 'Sellafield Ltd response to recommendations following a NII inspection of LC28 compliance in Magnox OU', 7th February 2011 [TRIM Ref. 2011/118662]
8. NII/11/10235/02 'Sellafield Ltd response to recommendations following a NII inspection of LC28 compliance in Magnox OU', 29th March 2012 [TRIM Ref. 2012/139487]
9. SEL 77272N 'ONR regulatory requirements and expectations – Magnox reprocessing periodic shutdown 2012', 13th December 2011 [TRIM Ref. 2011/635383]
10. ONR-SEL-PAR-12-050 'ONR consent to resume feeding of irradiated fuel to the Magnox dissolver', July 2012 [TRIM Ref. 2012/241743]
11. ONR/14/11542/01 'Confirmation of the closure of RTS:NII/11/10598 and ONR/11/10597, 14th November 2014 [TRIM Ref. 2014/422336]
12. ONR's Enforcement Policy Statement [<http://www.onr.org.uk/documents/2014/enforcement-policy-statement.pdf>]
13. 'Confirmation of 'no objection' to Magnox Reprocessing periodic shutdown – revised ONR regulatory strategy', 5th March 2015 [TRIM Ref. 2015/0096332]
14. Project Assessment Report 158/00 'Periodic shutdown of B*** magnox reprocessing – report to justify issue of a licence instrument specifying that NII's consent will be required before BNFL proceed with the feeding of irradiated fuel to the B*** dissolver', September 2000 [TRIM Ref. 2014/0448793]
15. SEL 74368N ' Conditions for Restart', 14th September 2000 [TRIM 2014/0448778]
16. Project Assessment Report 153/02 'Magnox reprocessing 2002 outage - consent to resume irradiated fuel feed to the B*** dissolver', October 2002 [TRIM Ref. 2014/0448209]
17. Project Assessment Report 128/05 'Magnox reprocessing 2005 shutdown - consent to resume irradiated fuel feed to the B*** dissolver' – Appendix 2, September 2005 [TRIM Ref. 2014/0448612]
18. SEL 76775N 'Issues to be addressed in B205 restart submission', 20th April 2008 [TRIM Ref. 2008/154207]

ANNEX 1 – MAGNOX REPROCESSING PERIODIC SHUTDOWN REGULATORY HISTORY

Periodic Shutdown	Summary of Regulatory Approach ¹
1994	Specification placed after plants entered periodic shutdown, requiring a consent to restart after 1994 periodic shutdown. Not confirmed ² whether the licensee was required to address outstanding nuclear safety issues on plants on the Sellafield site other than Magnox Reprocessing prior to a consent being issued.
1997	Specification placed after plants entered periodic shutdown, requiring a consent to restart after 1997 periodic shutdown. Not confirmed ² whether the licensee was required to address outstanding nuclear safety issues on plants on the Sellafield site other than Magnox Reprocessing prior to a consent being issued.
2000	Magnox Reprocessing entered periodic shutdown under the licensee's own arrangements. Specification (Ref. 6) placed requiring a consent to restart after 2000 periodic shutdown. Licensee was required to address outstanding nuclear safety issues on plants ³ on the Sellafield site other than B*** prior to a consent being issued.
2002	Specification (Ref. 1) placed requiring a consent to restart after a full plant washout for the purposes of LC30(1). Licensee was required to address outstanding nuclear safety issues on plants ³ on the Sellafield site other than Magnox Reprocessing prior to a consent being issued. In 2003 a protocol arrangement for periodic shutdowns was agreed for use for all subsequent periodic shutdowns.
2005	Licensee was required to address outstanding nuclear safety issues on plants ³ on the Sellafield site other than Magnox Reprocessing prior to a consent being issued. The periodic shutdown was managed in accordance with the protocol agreement.
2008	Licensee was required to address outstanding nuclear safety issues on plants ³ on the Sellafield site other than Magnox Reprocessing prior to a consent being issued. The periodic shutdown was managed in accordance with the protocol agreement.
2012	The outstanding nuclear safety issues the licensee was required to address prior to a consent being issued (Ref. 11) were limited to plants ⁴ more closely associated with Magnox Reprocessing than had been the case in previous periodic shutdowns.

¹References are detailed in Section 7 'References'

²Records prior to the 2000 periodic shutdown were not reviewed, as the benefit of doing so did not justify the resource required. Records for the 2000 periodic shutdown confirm a consent was issued for each of the 1994 and 1997 periodic shutdowns.

³Typically, the issues to be addressed were on plants associated with Magnox Reprocessing, such as those immediately upstream or downstream, and those that provided essential services to Magnox Reprocessing. The plants include Fuel Handling Plant, Site Ion-Exchange Plant, the Medium Active Evaporation and Thermal Denitrification Plant, the Plutonium Finishing Lines and the Analytical Services Laboratory.

⁴The plants were limited to the Medium Active Evaporation and Thermal Denitrification Plant, the B*** cooling towers and the B*** pump house.