



Assessment of Arrangements to use Construction Cranes on the Sellafield site

Project Assessment Report
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EXECUTIVE SUMMARY

Purpose

This Project Assessment Report (PAR) summarises the Office for Nuclear Regulation (ONR) assessment of Sellafield Limited (SL) revised Construction Crane Safety Assessment Methodology (CCSAM). ONR's confidence in SL's CCSAM enables ONR to use its resources to facilitate proportionate and targeted regulation.

Background

ONR has developed a new regulatory strategy for SL that focuses on stimulating, facilitating and expediting hazard and risk reduction. SL recognised that inefficiencies in its Construction Crane Safety Assessment Methodology (CCSAM) were a blocker to this hazard and risk reduction. SL began revising the CCSAM to support decommissioning activities and ONR engaged with SL to ensure that the revisions to these arrangements provided an adequate safety standard.

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

ONR specialist inspectors, from a range of disciplines, undertook a series of engagements with SL to influence the development its CCSAM. These interventions comprised a series of technical meetings with; SL crane specialists (acting as intelligent customer); crane providers (acting as subject matter experts) and SL (acting as safety case experts to review and sample the robustness of the CCSAM).

ONR's specialist inspectors undertook further engagements to consider the implementation of arrangements to determine their robustness.

Matters arising from ONR's assessment

ONR, through various interventions, has influenced SL to revise its CCSAM to secure improvements in safety standards. ONR considers SL's revised CCSAM to be satisfactory. However, ONR identified some shortfalls in the implementation of the revised CCSAM which, although not significant enough to prevent SL from applying the revised CCSAM, will nevertheless require addressing in future. SL is currently working to address the identified shortfalls and ONR will monitor progress on these improvements to ensure satisfactory progress is achieved.

Conclusions

ONR's assessment concluded that there are no nuclear significant safety issues associated with the use of SL's revised CCSAM. This intervention has provided confidence that SL's revised CSSAM arrangements are robust enough to allow their use in managing hazardous lifts within its facilities. Future requirements for ONR to assess crane safety case submissions should be minimised unless it is proportionate to do so based on the risks to nuclear safety.

Recommendation

Based on the assessment summarised in this report, I recommend that SL implements its revised CCSAM. This PAR identifies a number of areas where there is still scope for SL to improve implementation of its arrangements and ONR will give these an appropriate level of attention via its usual regulatory activities.

LIST OF ABBREVIATIONS

ALARP	As low as reasonably practicable
CCSAM	Construction Crane Safety Assessment Methodology
HOW2	(Office for Nuclear Regulation) Business Management System
HSE	The Health and Safety Executive
ONR	Office for Nuclear Regulation
SAP	Safety Assessment Principle(s)
TAG	Technical Assessment Guide (ONR)

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1 PURPOSE OF REPORT

1. This Project Assessment Report (PAR) summarises the Office for Nuclear Regulation (ONR) assessment of Sellafield Limited (SL) revised Construction Crane Safety Assessment Methodology (CCSAM). ONR's confidence in SL's CCSAM enables ONR to use its resources to facilitate proportionate and targeted regulation.
2. This PAR is written in accordance with ONR guidance on writing reports, (Ref. 12).

2 BACKGROUND

3. Inefficiencies with SL's CCSAM resulted in ONR considering it necessary to assess lifts involving construction cranes on the Sellafield site, on a case by case basis. This regulatory oversight was an additional step to SL when using construction cranes on site. SL recognised these inefficiencies and set about revising its CCSAM. Accordingly, ONR has engaged with SL to ensure that any revisions result in a CCSAM that reduces risk As Low As Reasonably Practicable (ALARP).
4. In February 2014 the ONR Sellafield Programme revised its regulatory strategy (Ref. 2) for Sellafield. The revised strategy identifies 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.
5. In undertaking this intervention, ONR recognised the ineffectiveness of assessing on a case by case basis and whilst recognising that appropriate use of construction cranes was a key factor in facilitating efficient and effective delivery of hazard and risk reduction across the Sellafield licensed site. Therefore, ONR has sought ways to close out any long standing regulatory concerns without compromising nuclear safety whilst still maintaining progress with hazard and risk reduction across the site.

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

6. ONR has carried out a programme of engagements with SL. The objective of these engagements was to ensure that any revisions to the CCSAM were undertaken to an adequate safety standard.
7. In order to influence improvements to the CCSAM, ONR produced a safety case expectations document (Ref 1). This document outlined to SL, using ONR's internal lifting guidance (Ref 2), regulatory expectations of what a crane lifting safety case should deliver. The document also highlighted practicable CCSAM areas of improvement for consideration. This document allowed SL to understand the regulatory benchmark by which the CCSAM would be judged.
8. Having reviewed SL's proposed changes to its CCSAM, ONR undertook a series of technical regulatory engagements to discuss with SL the proposed revisions to its crane arrangements (Ref. 9). These technical engagements were undertaken by a range of ONR specialist inspectors in the field of mechanical engineering, civil engineering, control & instrumentation, fault studies and human factors.
9. SL subsequently modified its CCSAM taking into consideration ONR's guidance particularly with regard to making clear distinctions between the conventional safety

risks normally associated with using mobile cranes and those additional precautions necessary when undertaking similar lifts on high hazard sites such as Sellafield. Following these changes, ONR informed SL that it was broadly content with the revised CCSAM.

10. In order to judge the robustness of SL's revised CCSAM, ONR approach sampled implementation of the CCSAM for the installation of a pipe bridge from the Pile Fuel Storage Pond (PFSP) into its Local Sludge Treatment Plant (LSTP), using a mobile crane. This involved a number of inspections undertaken by a multi-discipline team of ONR specialist inspectors identified to inform ONR.
11. The team inspected one of SL's preferred crane suppliers. The objective was to seek assurance that the supplier had an adequate understanding of the nuclear hazards and were capable of satisfying SL's arrangements to deliver a service capable of controlling the nuclear risks. ONR concluded (Ref 3) that this particular supplier had extensive experience of working in accordance with SL's CCSAM, that they had appropriate procedures, sufficient experience, sufficient resource, appropriate equipment and suitable knowledge to implement safe lifting projects at Sellafield.
12. The team then inspected SL in relation to the draft of its crane scheme for the LSTP pipe bridge installation (Ref. 10). ONR concluded (Ref 4) that the draft crane scheme and this early engagement were not sufficient to demonstrate that risks had been reduced to ALARP or that the crane scheme would be fully implemented in every situation. ONR considered that subsequent, engagements with SL were needed to address our concerns and provide confidence that SL's revised CCSAM arrangements were robust enough to justify this lift (Ref. 4). Following these engagements, ONR gained confidence that the CCSAM revision was sufficiently advanced to allow SL to proceed with this lift (Ref. 11).
13. Inspection by the ONR specialist team was to witness the pre-site inspection of the mobile crane and its subsequent on-site setup in preparation for lifting the LSTP pipe-bridge. ONR concluded (Ref 5) that the implementation of SL's CCSAM revealed a number of high level shortfalls as follows:
 - i. The command and control arrangements were inadequate because of poor communications and control of the interfaces between operations, projects and those responsible for the lifting.
 - ii. The method statements were not suitable to provide sufficient detail to those undertaking the task.
 - iii. The ground conditions were not adequately considered in advance. Also, there is a need to update SL SP 1.03.03.02 to provide clearer more appropriate guidance on how to evaluate the ground bearing capacities of sites.
 - iv. SL's arrangements for emergency recovery of the crane in the event of a collapse or breakdown were generic for all applications. ONR considered it important that procedures should be specific, based on the foreseeable level of risk.

4 MATTERS ARISING FROM ONR'S WORK

14. ONR identified that a 'Holding to Account Meeting' with SL was required to address the command and control concerns we had identified (Ref 7 & 8). SL is committed to addressing these concerns and ONR will routinely monitor progress via monthly regulatory meetings with SL as part of regular regulatory activities.

15. ONR has agreed with the chair of the SL crane committee that the issue regarding detail in the method statements, the issues surrounding ground conditions and the shortfalls relating to emergency recovery can be addressed under routine business by SL without further ONR intervention. The chair has agreed to consider these points in subsequent reviews of crane schemes. ONR will monitor progress on this point by proportionate sampling of crane schemes based on the nuclear safety risks.
16. ONR fault studies and mechanical engineering specialist inspectors reviewed ONR's expectations against the revised CCSAM, in light of ONR's engagement findings and prepared an assessment report (Ref 6). Reference 6 identifies ONR's findings, conclusions and recommendations from its assessment of the CCSAM and this is the key assessment that supports this PAR.
17. Reference 6 made two recommendations for areas where the revised arrangements require additional detail with regard to actions in the event of a loss of crane power fault and consideration of all generic types of construction cranes not just mobiles. These recommendations have been captured, pending approval, on the ONR Sellafield programme issues database under items 3681 and 3682 so that ONR can monitor SL's progress in addressing these recommendations.

5 CONCLUSIONS

18. Based on the evidence presented in this PAR, I am satisfied that SL has made adequate improvements to their CCSAM resulting in an improved and versatile methodology. This should help improve conventional and nuclear safety at SL when expediting hazard reduction and remediation activities at legacy facilities.
19. This intervention has provided confidence that SL's revised CCSAM arrangements are robust enough to allow their use in managing hazardous lifts within its facilities. I am satisfied that ONR has sufficient confidence to minimise the requirement to assess multiple crane safety case submissions. This should assist ONR in optimising resource to focus on lifts most important to nuclear safety.
20. The ONR interventions reported in this PAR identified a number of areas where ONR believes there is still need for SL to improve the implementation of its arrangements. Nevertheless, I judge that these areas of improvement are not significant enough to prevent SL from continuing to applying the current CCSAM to any lifting tasks. The shortfalls have been discussed and agreed with SL and ONR will give these an appropriate level of attention.

6 RECOMMENDATIONS

21. Based on the assessment summarised in this report, I recommend that SL implement its revised CCSAM. This PAR identifies a number of areas where there is still scope for SL to improve implementation of its arrangements and ONR will give these an appropriate level of attention via its usual regulatory activities.

7 REFERENCES

1. ONR Letter SEL77278R: Arrangements for Use of Construction Cranes on Sellafield Site, 10 January 2012. (TRIM Ref: 2012/17685).
2. ONR's Technical Assessment Guides.

NS-TAST-GD-056 - Nuclear Lifting Operation

NS-TAST-GD-084 - Guidance on Production of Reports

2014 Sellafield Strategy Paper Trim Reference 2014/141419

http://www.onr.org.uk/operational/tech_asst_guides/index.htm
3. ONR Contact Report - ONR-SEL-CR-14-456 - Sellafield Ltd, Technical Capability Visit to Mammoet Cranes – Trim Reference 2015/21538.
4. ONR Contact Report - ONR-SEL-CR-14-427- Sellafield Ltd, Level 4 Meeting to discuss Installation of a Pipe bridge. - Trim Reference 2014/466753
5. ONR Contact Report - ONR-SEL-CR-514 - Sellafield Ltd, Local Sludge Treatment Plant, Pipebridge Lifting Inspection - Trim Reference 2015/65191
6. ONR Assessment Report - ONR-SEL-AR-15-005 - Revision 0- Assessment of Sellafield's Construction Crane Safety Assessment Methodology (CCSAM). Trim Reference 2015/281180.
7. ONR Contact Report - ONR-SEL-CR-15-537 - February Engagement Week Meetings - Trim Reference 2015/106229.
8. ONR LEVEL 3 RIM; HOLD POINT CONTROL PLAN Trim Reference 2015/257281
9. Sellafield S&RM Technical Manual - D13.62 Construction Crane Safety Assessment. Issue 4, May 2014.
10. Appendices comprising a sample crane scheme. Trim Folder 4.4.2.15030.
11. Engagement Window 3 – Pile Fuel Storage Pond to Local Sludge Treatment Plan Pipebridge Installation - ONR-SEL-DR-15-008 – Trim Reference 2015/9815.
12. ONR Guide – Guidance on Production of Reports NS-TAST-GD-084 Revision 9 - (AST/003)

Table 1
[Heading]

Column 1	Column 2	Column 3