



Devonport Royal Dockyard Ltd. – 14 Dock Reactor Access House (RAH)

**Assessment of the Request for Agreement to Undertake RAH/ Defuelling Phase 1
Inactive Commissioning of the 14 Dock RAH Tooling and Equipment in the NEMSAC**

Project Assessment Report ONR-DEF-PAR-14-022
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EXECUTIVE SUMMARY

Devonport Royal Dockyard Ltd. – 14 Dock Reactor Access House Assessment of the Request for Agreement to Undertake RAH/ Defuelling Phase 1 Inactive Commissioning of the 14 Dock RAH Tooling and Equipment in the NEMSAC

The Licensee, Devonport Royal Dockyard Ltd. (DRDL), requested (Ref. 1) ONR's 'Agreement' under Licence Condition 21 to undertake RAH/ Defuelling Phase 1 Inactive Commissioning of the 14 Dock RAH Tooling and Equipment in the NEMSAC.

The 14 Dock Reactor Access House Defueling Facility, including tooling used to handle the fuel, is required in order to undertake the defuelling of submarines at Devonport Royal Dockyard.

Prior to the first use of the tooling in the facility, DRDL plans to carry out inactive commissioning of tooling and associated equipment in the New Engineering, Maintenance and Storage Facility (NEMSAC).

This report presents the findings of the assessment of the Pre-Commissioning Safety Report (PCmSR) and associated documentation for the inactive commissioning of tooling and associated equipment for the 14 Dock Reactor Access House at Devonport.

Regulation of the 14 Dock Reactor Access House project is being carried out jointly by ONR and the Defence Nuclear Safety Regulator (DNSR), with the latter taking the lead on matters relating to the tooling and associated equipment.

DNSR has carried out an assessment of the PCmSR for the tooling and associated equipment, together with relevant supporting documents.

ONR has reviewed the conclusions of a series of regulatory inspections of procurement of manufactured equipment and Quality Assurance arrangements to ensure the as-built facility meets the safety case requirements.

DNSR's assessment identified that the licensee had presented adequate arrangements for the inactive commissioning of the tooling. ONR concluded that the tooling being procured by the licensee meets the safety case requirements.

The Project Assessment Report recommends that the Propulsion Sub-programme Delivery Lead:

- Accepts this Project Assessment Report.
- If this Project Assessment Report is accepted, issues Licence Instrument No. 556 under arrangements made under Site Licence Condition 21 of Schedule 2 to Nuclear Site Licence No. 50B which agrees to undertake RAH/ Defuelling Phase 1 Inactive Commissioning of the 14 Dock RAH Tooling and Equipment in the NEMSAC.

LIST OF ABBREVIATIONS

DNSR	Defence Nuclear Safety Regulator
DRDL	Devonport Royal Dockyard Ltd.
DSR	Design Substantiation Report
FRC	Frigate Refit Complex
LC	Licence Condition
LI	Licence Instrument
NEMSAC	New Equipment Maintenance and Storage Facility
ONR	Office for Nuclear Regulation
PCSR	Pre-construction Safety Report
PCmSR	Pre-commissioning Safety Report
QA	Quality Assurance
RAH	Reactor Access House
SRC	Submarine Refit Complex
TTR	Test and Training Rig

TABLE OF CONTENTS

1	PERMISSION REQUESTED.....	5
2	BACKGROUND.....	5
3	ASSESSMENT AND INSPECTION WORK CARRIED OUT BY ONR IN CONSIDERATION OF THIS REQUEST	6
4	MATTERS ARISING FROM ONR'S WORK.....	6
5	CONCLUSIONS	8
6	RECOMMENDATIONS	9
7	REFERENCES	10

1 PERMISSION REQUESTED

1. The Licensee, Devonport Royal Dockyard Ltd. (DRDL), requested (Ref. 1) ONR's 'Agreement' under Licence Condition 21 to undertake RAH/ Defuelling Phase 1 Inactive Commissioning of the 14 Dock RAH Tooling and Equipment in the New Engineering, Maintenance and Storage Facility (NEMSFAC).
2. The documents referred to in this letter from DRDL include:
 - Pre-Commissioning Safety Report (PCmSR) for the tooling and associated equipment, including the Inactive Safety Commissioning Schedule (Ref. 2).
 - Pre-Commissioning Safety Report, Submarine Refit Complex (SRC) Facility Safety Case – RAH Defuel.
 - Minutes of the relevant DRDL Nuclear Safety Committee (Ref. 3).
 - Test and Training Rig (TTR) Defuel Test Procedure Index.

2 BACKGROUND

3. The 14 Dock Reactor Access House (RAH) Defueling Facility, including tooling, is required in order to undertake the defuelling of Swiftsure and Trafalgar Class submarines in 14 Dock in the SRC at Devonport Royal Dockyard.
4. ONR carried out assessment of the Pre-Construction Safety Report (PCSR) (Ref. 4) for the 14 Dock RAH in 2012. The PCSR is identified as Addendum 2 to the SRC Facility Safety Case, PSC-220, and is designated as a Category A Safety Case.
5. Normally, ONR would issue a Licence Instrument (LI) under Licence Condition (LC) 19 following satisfactory regulatory assessment of a PCSR to permission the start of construction, as required under DRDL's arrangements under LC 19. However, construction of the RAH is taking place on a barge in the Frigate Refit Complex (FRC), after which the RAH will be transferred on the barge to its operational position at 14 Dock for completion of installation, commissioning and operations
6. The FRC is not part of the DRDL licensed site and ONR did not have any regulatory powers there in 2012. ONR agreed with DRDL that it would carry out regulatory assessment of the 14 Dock RAH PCSR and associated Design Substantiation Reports (DSRs). The outcome of this assessment was a letter of no objection (Ref. 5) to DRDL commencing construction off the licensed site. The provision of this notice of no objection minimises the risk DRDL carries in performing the assembly of the RAH off the licensed site and enabled ONR to influence the safety case and design. This letter was underpinned by a Project Assessment Report (Ref. 6).
7. Once DRDL has completed the construction activities in the FRC, DRDL plans to move the RAH from the FRC to 14 Dock on the licensed site.
8. Prior to this, DRDL plans to carry out inactive commissioning of tooling and associated equipment in the NEMSFAC prior to installation of the RAH in 14 Dock. DRDL term this Hold Point 2a.
9. As required by its arrangements under LC 21, DRDL has requested from ONR Agreement to Undertake Phase 1 Inactive Commissioning of the 14 Dock RAH Tooling and Equipment in the NEMSFAC to enable the release of Hold Point 2a.
10. Subsequent DRDL hold points are:
 - Hold Point 1c, transport the SRC RAH and commence integration and setting to work the new SRC RAH, its crane and tooling/defuel plant within 14 Dock on the DRDL Licensed Site.

- Hold Point 2b, inactive commissioning of the 14 Dock RAH structure, crane, tooling and services within the SRC.
 - Hold Point 3, active commissioning.
11. The release of these hold points may require the issue by ONR of a LI or may be released by other means yet to be decided but in accordance with DRDL's arrangements made under LC 21 and LC 22.

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

12. Regulation of the 14 Dock RAH project is being carried out jointly by ONR and the Defence Nuclear Safety Regulator (DNSR). It has been accepted by ONR that DNSR should take the lead on matters relating to the tooling and associated equipment.
13. Consequently, DNSR has carried out an assessment of the PCmSR for the tooling and associated equipment (Ref. 2), together with relevant supporting documents.
14. ONR and DNSR have jointly carried out a programme of inspections of procurement of manufactured equipment and Quality Assurance (QA) arrangements to ensure the as-built facility meets the safety case requirements. ONR has reviewed the conclusions of these inspections.

4 MATTERS ARISING FROM ONR'S WORK

4.1 ASSESSMENT OF THE PRE-COMMISSIONING SAFETY REPORT

15. DNSR has carried out an assessment of the PCmSR for the tooling and associated equipment (Ref. 2), together with relevant supporting documents.
16. DNSR has taken account of the output from this assessment and has provided assurance to ONR (Ref. 7) that DRDL has presented adequate arrangements for the inactive commissioning of the RAH tooling and associated equipment in the NEMSFAC. DNSR also advised that it plans to carry out interventions prior to and during the commissioning activities to verify the adequacy of these arrangements.

4.2 INSPECTIONS OF PROCUREMENT AND QUALITY ASSURANCE ARRANGEMENTS

4.2.1 APPROACH TO INSPECTIONS

17. ONR has, in conjunction with DNSR, carried out a number of inspections during the manufacture of equipment for the 14 Dock RAH project. These have been focussed on the management of procurement by DRDL, including the QA arrangements, with the objective being to gain confidence that the equipment being procured by DRDL meets the safety case requirements.
18. ONR selected a sample of inspections in order to look at different types of equipment and a range of companies in the supply chain.
19. The scopes and outcomes of these inspections are set out below.

4.2.2 GEARBOX MANUFACTURE

20. A joint inspection was carried out by ONR and DNSR in November 2010 at the manufacturing works where the RAH Crane gearbox was being manufactured.
21. This is reported in Contact Report 166-2010 (Ref. 8).

22. This inspection was carried out to assess the adequacy of DRDL's supplier audit process to gain confidence that DRDL will suitably control its suppliers and their sub-contractors during early procurement activities. The gearbox manufacturer was selected as a representative sample.
23. The inspection provided a high level of confidence that the DRDL supplier audit process will make a significant contribution in ensuring that suppliers of class1 and 2 items are subjected to a suitable level of control by DRDL.
24. ONR also gained confidence that the RAH Crane gearbox will be manufactured in accordance with the DRDL specification.

4.2.3 TOOLING EQUIPMENT MANUFACTURE

25. A joint inspection was carried out by ONR and DNSR in March 2011 at the manufacturing works where components forming significant parts of the overall tooling and associated equipment were being manufactured.
26. This is reported in Contact Report 042-2011 (Ref. 9).
27. The primary focus of this inspection was to assess the adequacy of DRDL's supplier audit process. However, the inspection also provided an opportunity to see one of the suppliers in the tooling supply chain.
28. The inspection provided a high level of confidence that the DRDL supplier audit process will make a significant contribution in ensuring that suppliers of class1 and 2 items are subjected to a suitable level of control by the licensee.
29. ONR also gained confidence that the RAH tooling and associated equipment will be manufactured in accordance with the DRDL specification.

4.2.4 RAH STRUCTURE FABRICATION

30. A joint inspection was carried out by ONR and DNSR in February 2013 at the factory where the RAH Structure was being fabricated.
31. This is reported in Intervention Report DRDL-IR-2012-013 (Ref. 10).
32. This inspection was carried out to gain confidence in both technical and quality aspects of the manufacturing being carried out on the bridge beams. Its purpose was to enable ONR to ascertain whether, based on a sampling approach:
 - The RAH Structure to be delivered to DRDL would be in accordance with the DRDL specification; and
 - The quality management arrangements for this work were adequate.
33. Based on the work activities and documentation examined in this inspection, ONR gained further confidence that the RAH Structure to be delivered to DRDL should be in accordance with the DRDL specification.
34. ONR also concluded that the quality management arrangements in relation to this work are adequate.

4.2.5 RAH CRANE ASSEMBLY

35. A joint inspection was carried out by ONR and DNSR in November 2013 at the manufacturing facilities where the RAH Crane is being assembled and a range of components for the RAH Crane was being manufactured.

36. This is reported in Intervention Report DRDL-IR-2013-040 (Ref. 11).
37. This inspection enabled ONR to sample DRDL's management of manufacturing activities as part of this project.
38. Generally the inspection showed that the arrangements used to manage the manufacture and assembly of RAH Crane modules met guidance requirements. A number of areas for improvement were identified and these were readily accepted by the licensee.
39. Based on the inspection carried out using sampling of the manufacturing and assembly of the RAH Crane modules, ONR concluded that the manufacturing and assembly was generally being managed adequately by DRDL.

4.2.6 RAH RECORDS INSPECTION

40. A joint compliance inspection was carried out by ONR and DNSR Inspectors at Devonport in June 2014 for Licence Condition (LC) 6 on Documents, Records, Authorities and Certificates relating specifically to the manufacturing and installation phases of the 14 Dock RAH project.
41. This is reported in Intervention Report DRDL-IR-2014-012 (Ref. 12).
42. This inspection identified a number of good points, along with a number of areas for improvement, and no shortfalls. The records that were sampled for the breakfall were considered to be exemplar, with no errors seen.

4.2.7 OVERALL CONCLUSIONS FROM INSPECTIONS

43. Based on the range of inspections described above, ONR concludes that the manufacturing and assembly of the equipment being procured by DRDL for the RAH project is being managed adequately by DRDL.
44. Integral to this is the high level of confidence gained that the DRDL supplier audit process makes a significant contribution in ensuring that suppliers of class 1 and 2 components/items are subjected to a suitable level of control by DRDL.
45. Consequently, ONR has gained confidence that the equipment being procured by DRDL, including the tooling and associated equipment, meets the safety case requirements.

5 CONCLUSIONS

46. This report presents the findings of the assessment of the Pre-Commissioning Safety Report and associated documentation for the inactive commissioning of tooling and associated equipment for the 14 Dock Reactor Access House at Devonport.
47. Based on assurance provided by DNSR, ONR is satisfied with the claims, arguments and evidence laid down within the Pre-Commissioning Safety Report.
48. ONR has also gained confidence that the equipment being procured by DRDL, including the tooling and associated equipment, meets the safety case requirements.
49. The Licence Instrument 556 (Ref. 13) "Agreement to Undertake RAH/ Defuelling Phase 1 Inactive Commissioning of the 14 Dock RAH Tooling and Equipment in the NEMSFAC" has been prepared for consideration by the Superintending Nuclear Inspector. An associated QA Check Sheet has been completed (Ref. 14).

6 RECOMMENDATIONS

50. The Project Assessment Report recommends that the Propulsion Sub-programme Delivery Lead:
- Accepts this Project Assessment Report.
 - If this Project Assessment Report is accepted, issues Licence Instrument No. 556 under arrangements made under Site Licence Condition 21 of Schedule 2 to Nuclear Site Licence No. 50B which agrees to undertake RAH/ Defuelling Phase 1 Inactive Commissioning of the 14 Dock RAH Tooling and Equipment in the NEMS FAC.

7 REFERENCES

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6. *ONR, Project Assessment Report, Request For Notice Of No Objection To Support The Release Of DRDL's Internal Hold Point SRC_RAH_1a In Order To Continue The Assembly Of The SRC RAH Off The DRDL Licensed Site In Accordance With The 14 Dock Reactor Access House (RAH) Programme*, ONR-DRDL-PAR-018, TRIM Ref. 2013/320877.
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11. *ONR, DRDL-IR-2013-040 - DRDL 14 Dock RAH Crane - LC19 and LC 20 Manufacturing Inspection - 19 November 2013*, TRIM Ref. 2013/440960.
12. *ONR, DRDL - IR -2014-012 - LC6 Inspection and Meetings at Devonport on 14 Dock RAH and EIMT - 9 to 11 June 2014*, TRIM Ref. 2014/242006.
13. *ONR-DRDL-LI-556, Agreement to Undertake Phase 1 Inactive Commissioning of the 14 Dock Reactor Access House Tooling and Equipment in the NEMSFAC*, Unique Number DRDL 71286N, TRIM Ref.2015/84742.
14. *ONR-DRDL-LI-556 QA Check Sheet, Agreement to Undertake Phase 1 Inactive Commissioning of the 14 Dock Reactor Access House Tooling and Equipment in the NEMSFAC*, TRIM Ref. 2015/84898.