Office for Nuclear Regulation (ONR)

Site Report for

Rolls-Royce Submarines Limited (RRSL), Raynesway, Derby

Nuclear Fuel Production Plant (NFPP), and Neptune Reactor Licensed Sites

Report for period 1 July – 31 December 2020

Foreword

This report is issued as part of ONR's commitment to make information about inspection and regulatory activities relating to the above site available to the public. Reports are distributed to members for the RRSL Local Liaison Committee (LLC) and are also available on the ONR website (http://www.onr.org.uk/llc/).

Site inspectors from ONR usually attend RRSL LLC meetings where these reports are presented and will respond to any questions raised there. Any person wishing to inquire about matters covered by this report should contact ONR.

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1 INSPECTIONS

1.1 Dates of inspection

ONR inspectors undertook interventions relevant to the RRSL licensed sites on the following dates during the report period:

- 26 August
- 16 September
- 29* October
- 4*, 5 November
- 9 December

* An ONR inspector was on-site on this occasion.

2 ROUTINE MATTERS

2.1 Inspections

Inspections are undertaken as part of the process for monitoring compliance with:

- the conditions attached by ONR to the nuclear site licence granted under the Nuclear Installations Act 1965 (NIA65) (as amended);
- the Energy Act 2013;
- the Health and Safety at Work Act 1974 (HSWA74); and
- regulations made under HSWA74, for example the Ionising Radiations Regulations 2017 (IRR17) and the Management of Health and Safety at Work Regulations 1999 (MHSWR99).

The inspections entail monitoring licensee's actions on the site in relation to incidents, operations, maintenance, projects, modifications, safety case changes and any other matters that may affect safety. The licensee is required to make and implement adequate arrangements under the conditions attached to the licence in order to ensure legal compliance. Inspections seek to judge both the adequacy of these arrangements and their implementation.

In this period, routine inspections at RRSL covered the following:

- management of operations including control and supervision
- modifications to plant, equipment and safety cases
- plant construction and/or commissioning
- radiological protection
- organisational changes
- quality assurance and records
- conventional (non-nuclear) health and safety.

In general, ONR judged the arrangements made and implemented by the site in response to safety requirements to be adequate in the areas inspected. However, some improvements were considered necessary and the licensee has made satisfactory commitments to address the issues, which the site inspector will monitor progress during future visits. Where necessary, ONR will take formal regulatory enforcement action to ensure that appropriate remedial measures are implemented to reasonably practicable timescales.

2.2 Other work

In addition to the inspections listed in section 1.1, there were a further 34 formally recorded interactions with RRSL, covering a variety of topics, including: organisational change,

organisational safety culture, radiation protection, Neptune refurbishment project, and Dreadnought Production Facility project. The site inspector also held several meetings to progress routine regulatory business, such as regulatory issues database reviews, meeting with site safety representatives and the internal regulatory function. The site inspector holds weekly meetings with senior RRSL management to ensure, in the absence of a substantial on-site presence, health and safety matters are addressed appropriately.

In December 2020, there was a change of ONR site inspector. The handover was conducted remotely over a month-long period. The incoming site inspector had an on-site familiarisation tour to inform the handover.

COVID-19 controls have been evaluated on the RRSL sites and were found to be good, with one aspect in particular (a bespoke personnel proximity alarm/track & trace device), exemplary.

3 NON-ROUTINE MATTERS

Licensees are required to have arrangements to respond to non-routine matters and events. ONR inspectors judge the adequacy of the licensee's response, including actions taken to implement any necessary improvements.

Matters and events of note during the period were:

3.1 Dissolver Fault Sequence Omission – INF1 2020/825

During routine operations, process operators identified a potential fault scenario on a Dissolver that had not been assessed within the current safety case. The scenario would involve a failure of a valve identified as important to safety, which could lead to the backflow of fissile liquor to a non-geometrically favourable vessel. This could result in a criticality if the situation was allowed to persist. It must be noted that the valve has not failed at any point, and thus there was no danger to the public.

ONR undertook follow up enquiries into this event, given its potential significance. ONR determined that RRSL's immediate actions on discovery were suitably conservative and that the plant & equipment remains locked off and out of service until the fault sequence has been properly assessed and any improvements required are implemented. The fault sequence was introduced following a modification applied to the system in 2018.

An interim report provided by RRSL states that a criticality could not have occurred with the liquor concentrations in use since the modification was introduced, thus the nuclear safety significance of the event is low. A 'level 2' investigation was initiated. ONR will monitor the outcome investigation and any improvements proposed to the system and what factors led to the omission of the fault sequence from the safety case assessment process.

3.2 Asset Care Documentation – INF1 2020/690

A Duly Authorised Person observed an operator signing a plant item's asset care daily pre-operational check records, without having first completed the necessary checks. The machine was not run, and the operator was suspended pending the outcome of an investigation. The machine was checked fully (and found to be in working order) prior to its next run on the following day.

ONR undertook follow up enquiries into this event, subsequently determining that the checks not performed were not Nuclear Safety related. Therefore, the nuclear safety significance of this event was low.

3.3 Dreadnought Product Facility Pail Event (Not INF1 reportable)

During an internal RRSL Health & Safety Walkdown, a white 25-litre pail was identified as unusually labelled. Discussions with the operations team revealed that the contents were uncertain. The pail was opened by an operations team member, under the supervision of the facility's Health & Safety Manager. Upon removing the metal banding securing the lid on the pail, the lid was ejected upwards by pressure within the pail and struck the operator on the face. The operator suffered a cut and swelling and was attended by first aiders and later sent to hospital. The individual returned to work the following day and resumed unrestricted duties.

ONR undertook follow-up enquiries into this event, determining that the pail was opened and further handled without a suitable risk assessment in place. It has been confirmed that no radiological materials were involved. The site inspector considered that a formal investigation was not proportionate. RRSL is undertaking a 'Level 3' (the most significant) investigation into the event and the ONR site inspector will monitor the outcome and corrective actions placed as a result of that investigation.

4 REGULATORY ACTIVITY

ONR may issue formal documents to ensure compliance with regulatory requirements. Under nuclear site licence conditions, ONR issues regulatory documents, which either permit an activity or require some form of action to be taken; these are usually collectively termed 'Licence Instruments' (LI) but can take other forms. In addition, inspectors may take a range of enforcement actions, to include issuing an Enforcement Notice.

No LIs, Enforcement Notices or Enforcement Letters have been issued during this period, however, the following Improvement Notice was issued last period (Q1 & Q2 2020), but was omitted in error from that period's report:

- Improvement Notice, ONR-IN-20-002, 29 May 2020
  Following one of a number of similar events which have resulted in breaches of safety limits defined by RRSL's Criticality Control Certificates, ONR judged that improvements in this area were not proceeding at sufficient pace. ONR had previously issued an Enforcement Letter on this matter.
  RRSL's response to the Improvement Notice has been appropriate, and a site-wide improvement plan has been devised and is being rolled out. ONR will maintain oversight of the delivery of that improvement plan.
  It should be noted that the breaches were all relatively minor in nature, and could have been avoided through more appropriate (higher) levels being set, but the overall number of breaches was of concern.

Table 1

Licence Instruments and Enforcement Notices Issued by ONR (Q1 & Q2 2020)

Date	Type	Ref No	Description
29/05/20	Improvement Notice	ONR-IN-20-002	Licence Condition 23(3) attached to Nuclear Site Licence Number 49 as provided by the Nuclear Installations Act 1965

Reports detailing the above regulatory decisions can be found on the ONR website at http://www.onr.org.uk/pars/.

5 NEWS FROM ONR

5.1 COVID-19

We are continuing to obtain assurance that nuclear site licensees and other dutyholders are adequately resourced to continue to safely and securely carry out their activities.

We remain satisfied with industry's response at this time and there has been no significant change to dutyholders' safety and security resilience.

As COVID-19 restrictions change, our focus is on the preparedness for the weeks and months ahead and maintaining safe and secure operations. All licensed sites are required to determine minimum staffing levels necessary to ensure safe and secure operations and contingency arrangements in the event that these levels are not met. This condition is specifically designed to ensure that industry can adequately manage and control activities that could impact on nuclear safety and security under all foreseeable circumstances, including pandemics.

ONR staff continue to work at home, primarily. We have considered our priorities, deferred non-critical activities, and are carrying out as much of our work as possible via videoconference, phone and email. We continue to inspect, assess and permission remotely where necessary to protect staff, workers on site, and the public around sites.

5.2 Enforcement action

In December, we announced that The Atomic Weapons Establishment (AWE) had been fined £660,000 after pleading guilty to an offence under Section 3 of the Health and Safety at Work etc. Act (1974). AWE was also ordered to pay costs of £9,945.71 during a virtual hearing at High Wycombe Magistrates Court. It followed an electrical incident on 20 June 2019 at the AWE Aldermaston site which resulted in a contractor narrowly avoiding injury when a flash over of electricity occurred from a 415V electrical source. The incident was a conventional health and safety matter and took place in a 'non-nuclear' building, so there was no radiological risk to workers or the public.

In October, we notified Sellafield Ltd that it would be prosecuted under Section 2 (1) of the Health and Safety at Work etc. Act (1974). The charge related to an incident on Friday, 24 April 2020 at the Sellafield site where an employee sustained injuries while working on high voltage electrical equipment. This incident was also a conventional health and safety matter and there was no radiological risk to workers or the public. The hearing took place at Carlisle Magistrates Court on 18 December 2020, where Sellafield Ltd was fined £320,000 and ordered to pay costs of £12,079.07 after pleading guilty to the offence.

5.3 Regulatory updates

In October, we announced an Information Exchange Arrangement (IEA) with the Canadian Nuclear Safety Commission (CNSC). The IEA is a bilateral agreement between our two organisations which provides a framework for the sharing of information, experience, and good practice to enable both parties to learn from and train each other on technical regulatory issues. It also allows for more effective communication between the two regulators. The agreement had already been used to develop a Memorandum of Cooperation (MoC) between ONR and the CNSC which allows the sharing of best practices and experience around reviewing advanced reactor and small modular reactor (SMR) technologies.

In November, our Chief Nuclear Inspector (CNI), Mark Foy, published his annual report detailing the performance of Great Britain's nuclear industry during 2019/20. The CNI reports he is satisfied that overall the nuclear industry has continued to meet the high standards of safety and security required to protect workers and the public. In areas where dutyholders have fallen short of these standards, the CNI is satisfied that these facilities remain safe and

that ONR has intervened in a proportionate manner to ensure plans are in place to improve performance.

In November, we also announced the appointment of a new member to the Chief Nuclear Inspector's Independent Advisory Panel (IAP). Chris McDonald has joined the panel, which was set up in in 2016 to provide independent advice on technically complex nuclear matters by engaging with industry experts to inform our regulatory strategies and approaches. Chris has a wealth of experience in industrial strategy and manufacturing research. He has a degree in Chemical Engineering and has been the CEO of the Materials Processing Institute since it was founded in 2014. Chris also has a proven record in the areas of innovation and low-carbon energy which will be of great benefit to ONR.

In December, we became an Affiliated Organisation member of the Society for Radiological Protection (SRP). We have actively participated and supported SRP for many decades. This affiliation formally recognises our involvement and contributions towards radiological protection and enhances the links between the two organisations.

In November, we played a leading role in the first ever virtual IRRS Mission.

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