



# Office for Nuclear Regulation (ONR) Quarterly Site Report for Dounreay

Report for period 01 October 2014 to 31 December 2014

## 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 quarterly to members for the Dounreay Site Stakeholder Group (SSG) and are also available on the ONR website (<http://www.onr.org.uk/ilc/>).

Site inspectors from ONR usually attend Dounreay SSG meetings and will respond to any questions raised there. Any person wishing to inquire about matters covered by this report should contact ONR.

## 1 INSPECTIONS

### 1.1 Dates of inspection

1. ONR site and specialist inspectors made inspections on the following dates during the quarter:

20 to 23 October 2014  
10 to 13 November 2014  
18 to 20 November 2014  
1 to 4 December 2014  
8 to 11 December 2014

## 2 ROUTINE MATTERS

### 2.1 Inspections

2. 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 1999 (IRR99) and the Management of Health and Safety at Work Regulations 1999 (MHSWR99).
3. 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.
4. In this period, routine planned inspections of Dounreay covered the following topics declared in Appendix A of the ONR Plan for Regulation of the Dounreay Site in 2014/15 (DSG(2014)C040):
  - Examination, Inspection, Maintenance and Testing
  - Management of operations including control and supervision
  - Modifications to plant, equipment and safety cases
  - Incidents on the site
  - Industrial safety

## 2.2 Examination, Inspection, Maintenance and Testing

### Site-wide arrangements

5. ONR undertook an inspection to check site-wide compliance with Licence Condition 28 (LC28), Examination, Inspection, Maintenance and Testing.
6. The inspector sampled the introduction of site maintenance processes at new facilities. This is achieved via the safety case implementation procedures. However, the production and approval of the associated Maintenance Instructions (MIs) can be delayed. To counter this DSRL has been working to ensure early engagement with the responsible Project Managers to ensure the timely production, approval and input to the maintenance management system of MIs.
7. DSRL ensures that MIs produced for first time use are accurate by ensuring that all new items of maintenance go for validation on first use by an experienced maintenance team who can mark-up any required changes or observations onto the MI, which is subsequently updated formally.
8. DSRL arrangements also require a Work Scope Hazard Review (WSHR) to be completed for new MIs (and Operating Instructions (OIs)) which is designed to ensure that the MI captures all of the requirements of the safety case before first use.
9. The inspection provided evidence that the required processes and audits to demonstrate site-wide compliance with LC28 were in place.

### Dounreay Reactors

10. ONR undertook an inspection of the Dounreay Fast Reactor (DFR) and Prototype Fast Reactor (PFR) for compliance with LC28. The inspector sampled the maintenance instructions for items of safety-significant equipment, examined the relevant test records, and looked for evidence of satisfactory completion of maintenance. Where checked, the link between the maintenance periodicity set down in the facility safety case and that in the maintenance management system was satisfactory. The inspector concluded that maintenance of plant that may affect safety is completed within the required timescales and to the required standard.

### **2.3 Management of operations including control and supervision**

11. ONR carried out an inspection of the DFR and PFR for compliance with LC23 Operating Rules<sup>1</sup>, LC24 Operating Instructions and LC27 Safety Mechanisms<sup>2</sup>. The inspection was aimed at verifying that there was a clear link between the operating instructions and required safety mechanisms and the relevant safety case.
12. The inspector sampled reactor operating rules and associated safety mechanisms together with the relevant operating instructions. For example, DSRL documentation stated that a given Operating Rule is implemented via specified OI; the inspector checked that the documentation was consistent. Similar checks were carried on a sample of safety mechanisms, and in addition a check of maintenance records showed that maintenance of the items was in-date.
13. The inspector was satisfied that there was a clear link between the documentation, hence that the reactor safety cases had been appropriately implemented via facility documentation. The inspection provided evidence that arrangements were in place and had been implemented both at DFR and PFR, and so that compliance with the licence conditions was adequate.

### **2.4 Modifications to plant, equipment and safety cases**

14. ONR undertook an inspection of the DFR and PFR for compliance with LC 22, Modification or Experiment on Existing Plant. The purpose of the inspection was to verify that the licensee had made and was implementing adequate arrangements to control any modification on existing plant, and to determine the existence of a clear link to subsequent implementation on plant by means of method statements.
15. The modification sampled at DFR referred to the removal and destruction of residual alkali metal coolant from within the reactor. This work originated in 2011 and was managed by phases of work each with separate documentation. The inspector challenged DSRL to demonstrate that the limits and conditions in the overarching safety case were properly embedded in work control documents. The inspector concluded that there existed multiple layers of control which made it difficult to ensure compliance with the limits and conditions.
16. The inspector concluded that implementation of modifications is not fully adequate at DFR and PFR, and has the potential to introduce errors leading to operators working outside the scope of modifications. Although these findings fall within the scope of the recent Improvement Notice (I/2014/ONR/SH/001), discussed under Item 3 below, the inspector has conveyed the findings to the licensee by letter.

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<sup>1</sup> LC23 states that a licensee shall produce an adequate safety case to demonstrate the safety of any operation and to identify the conditions and limits necessary in the interests of safety. These conditions and limits are referred to as 'Operating Rules'.

<sup>2</sup> LC27 states that a licensee shall ensure that a plant is not operated, inspected, maintained or tested unless suitable and sufficient safety mechanisms, devices and circuits are properly connected and in good working order. Safety mechanisms are items of equipment which have the greatest impact on safety within a facility, and are designated 'Key Safety Related Equipment' in DSRL's arrangements.

## **2.5 Incidents on the site**

17. ONR undertook an inspection for compliance with LC7, Incidents on the site. This included site-wide arrangements and also arrangements within the Fuel Cycle Area (FCA) including the low level waste (LLW) assay and processing plant.
18. DSRL explained the processes in place for raising, considering, tracking and trending incidents. The level of any subsequent DSRL investigation is determined by the significance and potential significance of the incident.
19. Within the FCA there are monthly safety meetings attended by senior management, safety advisors and safety representatives during which incident reports are reviewed and trends discussed. As an example, the inspector considered actions resulting from failures in airline suits. One manufacturer's suit had been withdrawn from use, and failures had also been identified in a newly introduced suit. Following discussion with the manufacturer a new inspection regime had been introduced and training in suit use was being repeated. Contact had also been made with other site licensee suit users.
20. The manager of the LLW assay and processing plant confirmed that there are no overdue actions related to incidents on that facility. The manager provided an overview of reported events for 2014 and the majority were associated with equipment failures. Formal trending of events is only undertaken as part of the facility's annual safety review. The inspector sampled close-out of incident-related actions which were satisfactory.
21. The inspector concluded that adequate arrangements and tools in place to meet the requirements of LC7 both in respect of site-wide management of incidents and within the FCA.

## **2.6 Industrial safety**

22. ONR conventional health and safety inspectors undertook a planned familiarisation visit in preparation for future inspections of activities at Dounreay. The inspectors made observations in relation to workplace transport safety, asbestos management, and the control and supervision of work. Examples of good practice were seen, particularly the resource allocated to asbestos management, condition monitoring of asbestos containing materials, general housekeeping, visibility inside enclosures seen at the PFR plant and the arrangements in place to ensure DSRL vehicles are maintained in a suitable condition and in a good working order. However, the inspectors recorded areas for improvement, such as the provision of visibility aids for certain vehicles, safety considerations during vehicle procurements, and the safety of excavation works. ONR has written to DSRL identifying the key actions required. Another planned inspection is provisionally set to take place in the summer of 2015.

## 2.7 Other work

23. ONR inspectors met with safety representatives during the quarter from organisations employed across Dounreay, including DSRL and their contractors. Safety representatives provide ONR with a valuable insight as regards day to day operations and safety culture, and ONR very much values the contribution of safety representatives to nuclear safety at Dounreay.
24. During the quarter Dounreay safety representatives provided advice during a visit by the ONR Director with responsibility for regulating Dounreay, and during the inspection by members of the ONR Conventional Health and Safety Team.

## 3 NON-ROUTINE MATTERS

25. 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.
26. Matters and events of particular note during the period were:

### PFR tank farm fire, 7 October

27. ONR was notified of a small fire in an enclosure adjacent to Tank 3 in the PFR sodium tank farm. The sodium is from the secondary cooling circuit and it is contaminated with low levels of tritium. No injuries resulted and it was extinguished by the DSRL Fire Service within 30 minutes of call-out. There was a release of radioactivity via an unauthorised route
28. ONR undertook a preliminary investigation into the circumstances surrounding this event. This raised a number of concerns, particularly with respect to organisational capability, control of work, risk assessment and safety culture. ONR has previously raised concerns in relation to method statements, work control and organisational effectiveness within the tank farm and the potential implications these matters might have on a site-wide scale. The effectiveness of DSRL's response to these original concerns has been challenged by this event.
29. ONR reviewed the findings of the preliminary investigation against ONR's Enforcement Management Model. Given the recent track record of relatively poor compliance ONR concluded that the incident warranted formal enforcement action. Accordingly an Improvement Notice was served on 11 November 2014. DSRL has until June 2015 to make the necessary improvements.
30. ONR will summarise progress with DSRL's improvement strategies in future quarterly reports to the DSG.

### Drum handling incident - contact-handleable ILW

31. ONR followed up an incident that occurred during drum handling operations when a drum failed to release fully from the facility crane. This was not initially observed by the operators and resulted in the drum being damaged in the process of returning the crane to the parked position. The operators reported that once the failure was recognised the drum was placed on the top of a stack in order to make safe, in the course of doing so an operator entered the store which is a breach of a Safety Management Requirement.

32. DSRL will consult with ONR before implementing its proposed modification to recover the drum.

Ventilation failure in laboratories, 15 September

33. ONR followed up a reported incident where isolation of an air pressure receiver for pressure testing caused an unplanned shutdown of the active laboratories' glovebox ventilation extract fans. The fans and associated dampers are designated as Key Safety Related Equipment (KSRE) under DSRL arrangements. (Equipment having the greatest impact on safety within a facility is designated KSRE). The laboratories had been evacuated on activation of the glove box air flow alarms in accordance with emergency instructions. The dampers had failed safe and natural ventilation continued. There was no release of radioactivity.
34. ONR has reviewed DSRL's investigation report and has requested confirmation of the close-out of a number of actions. The outcome of this work will be included in a later DSG report.

**4 REGULATORY ACTIVITY**

35. ONR inspectors, specialist inspectors and HSE inspectors 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' (LIs), but can take other forms. In addition, inspectors may issue Enforcement Notices to secure improvements to safety.
36. A Variation to the Nuclear Site Licence and one Enforcement Notice were issued during the period.

**Table 1  
Licence Instruments and Enforcement Notices Issued by ONR during this period**

Date	Type	Ref No	Description
23/09/14	Variation	Variation No.2, Site Licence Sc17	Varies Condition 1 and Condition 3 of the Nuclear Site Licence
11/11/14	Improvement Notice	I/2014/ONR/SH/001	Improvements to safety following PFR sodium tank farm fire, 7 October 2014

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

## 5 NEWS FROM ONR

37. Insight into ONR's work as an independent regulator of the nuclear industry can be found in ONR's Quarterly News. The online publication (<http://www.onr.org.uk/onr-quarterly-report.htm>) reports on the key themes and developments in each of ONR's regulatory programmes and provides an update about the ongoing changes at ONR. <http://www.onr.org.uk/index.htm>. For the latest news and updates from ONR visit the website and sign up for our ebulletin (<http://www.onr.org.uk/ebulletin/index.htm>).
38. ONR is changing the way that it communicates enforcement action against licensees. With immediate effect, ONR will issue a press release to key journalists to communicate issue of prohibition notices (on the day the notice is issued), and improvement/other notices (after any applicable appeal period). The press release will be published on the news centre of the ONR website and via twitter, and will be reiterated in ONR's Quarterly News.

### Amended licence conditions

39. Amendments have been made to licence conditions 1 and 3.
40. Licence Condition 1 (LC1, Interpretation) provides a set of definitions. ONR decided to amend the definition of "radioactive material" and "radioactive waste" to ensure they are consistent with ONR's regulatory requirements. The changes were necessary because other legislation, to which the Licence Conditions were linked, had amended the definitions. LC1 was further amended to add a definition of 'property transaction', made necessary by the introduction of the new LC3 (see below), and a definition of "ONR".
41. Licence Condition 3 (LC3, Control of Property Transactions) requires the licensee to make and implement adequate arrangements to control property transactions on licensed nuclear sites. LC3 was prescriptive and required the licensee to obtain ONR permission ("consent") before it let, conveyed, assigned or transferred any part of the licensed site to a third party. It made no allowance for the nuclear safety significance of transactions. Changes in the nature of the nuclear industry, with an increasing presence of contractors or other third parties on licensed sites, have resulted in growing numbers of LC3 applications, many of which have little or no nuclear safety significance. This has imposed an unintended regulatory burden on licensees and is an inefficient use of ONR's specialist resource and time. The principal change is to require the licensee to make and implement adequate arrangements that control all property transactions affecting the site and include provision for the classification and management of all property transactions according to their safety significance and their impact on the licensee's control of the site.
42. ONR's licence condition handbook has been updated and is available via the ONR website at <http://www.onr.org.uk/silicon.pdf>

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