



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

Report for period 01 January 2015 to 31 March 2015

## 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/lrc/>).

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:

12 to 15 January 2015

9 to 12 February 2015

4 March 2015

16 to 19 March 2015

## **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 and assessing 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):
  - Modifications to plant, equipment and safety cases
  - Radioactive waste management
  - Management of operations including control and supervision
  - Commissioning
  - Emergency preparedness
  - Nuclear lifting
  - Decommissioning
  - Organisational capability
  - Annual Review of Safety meeting

## **2.2 Modifications to plant, equipment and safety cases; and radioactive waste management**

5. ONR inspected compliance with licence condition (LC) 22 (Modification or experiment on existing plant) and also LC32 (Accumulation of radioactive waste) by sampling progress with the installation of a replacement supercompactor in the waste receipt, assay, characterisation and supercompaction (WRACS) facility and arrangements for accumulation of drummed LLW.
6. The inspector considered that the modification had been correctly categorised in relation to site arrangements. Documentation was reviewed and it confirmed that it had been completed properly. At the time of the visit DSRL had suspended work on the supercompactor while issues identified during inactive commissioning were rectified.
7. Arisings of drummed LLW from decommissioning activities continue to be stored in iso-containers in a defined hard-standing area. Appropriate demarcation was in place. Once the new super-compactor and the LLW grouting facility are operational we expect the backlog of LLW to be conditioned for disposal.
8. The inspector concluded that DSRL had demonstrated adequate compliance with both LC22 and LC32.

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

9. ONR carried out an inspection of site-wide compliance with LC 24 Operating Instructions. LC24 requires the licensee to ensure that all operations which may affect safety are carried out in accordance with written instructions, referred to as operating instructions. The inspector reviewed the licensee's arrangements written to manage compliance with LC24, and concluded that they were thorough, easy to follow and up to date.
10. Recent events at Dounreay have indicated that implementation of the licensee's site arrangements for compliance with LC24 is not fully satisfactory. As a response to the November 2014 Improvement Notice, DSRL programme directors had arranged for checks of compliance with LC24 (and other licence conditions) supported by audits undertaken by DSRL's internal assessment team (IAT). This activity was further enhanced by the Site Safety Stand-Down instigated by the Managing Director.

## **2.4 Commissioning**

11. ONR carried out an inspection for compliance with LC21 Commissioning. The inspection started with a review of the licensee's documented management arrangements, which were considered to be well written and consistent with the relevant ONR guidance document. The inspector then considered the implementation of commissioning within the Breeder Fuel Removal (BFR) facility. The BFR facility is in part operational, with a role to repackage breeder fuel for transport off site, with the remainder undergoing inactive commissioning prior to the receipt of breeder fuel that currently resides within the Dounreay Fast Reactor (DFR). The commissioning strategy document for BFR was in good alignment with the site's arrangements. It included a human performance element (that is, bringing people to a suitable level of competence) and operating instructions as well as the aspects related to the plant. Control is exercised appropriately via a Commissioning Manager and is overseen by a test and commissioning panel. There is tight control of reservations (that is, findings

that are outside expectations) that emerge during commissioning. Evidence on the plant was that there is demonstrable control of commissioning.

12. The inspector concluded that DSRL has made adequate arrangements for managing commissioning. DSRL's commissioning arrangements have been, and are being, implemented to a good standard on the BFR facility. Practices used on the BFR are being rolled forward to the Unirradiated Fuels Characterisation Facility (UFCF) which should help promote similar good standards of commissioning.

## **2.5 Emergency preparedness**

13. ONR undertook an inspection for compliance with LC11 Emergency Arrangements. This included consideration of the impact of the site's lock-down arrangements in relation to nuclear safety-significant emergencies, a topic which arose during the most recent demonstration emergency exercise (refer to ONR's report to the DSG for April to June 2014). Following this exercise ONR recommended to DSRL that it should improve the operation of the site's lock-down arrangements which appeared to delay unnecessarily the nuclear safety and casualty recovery responses. DSRL emphasised that the DSRL site emergency controller is responsible for control of an emergency situation. This would include appropriate prioritisation of nuclear safety (preventing further release of radioactive material, casualty recovery, for example) and maintaining lock-down integrity. DSRL has revised its lock-down procedure accordingly and made it clear that the initiation of lock-down arrangements should not be a default position. This should ensure that each event is taken on its merits and appropriate command and control invoked.
14. ONR inspectors also discussed with DSRL its relationship with the National Health Service (NHS) to ensure that there is adequate medical cover if there were to be a need to deal with contaminated casualties when Dounreay is operational. We learned that there are regular discussions between DSRL and NHS and protocols for wound monitoring have been reviewed.

## **2.6 Nuclear Lifting Operations System Based Inspection**

15. ONR carried out a 'systems inspection' of two of the site's cranes, one in DFR and one in the Dounreay Cementation Plant, to establish whether there is satisfactory linkage of the safety arguments presented in the safety case through to operating instructions, maintenance requirements and the training of those tasked with operating or maintaining the cranes. Overall, inspectors concluded that the site has adequate arrangements for ensuring that the requirements of the safety case are met during operations and maintenance. There were also areas of good practice identified, particularly in the specification and monitoring of training.

## **2.7 Decommissioning**

### **Site-wide**

16. ONR met representatives of DSRL, the Nuclear Decommissioning Authority (NDA) and the Scottish Environment Protection Agency (SEPA) to discuss the outcome of the re-baselining of the site decommissioning programme. There has been significant interaction over the last year on this topic, and ONR first informed the DSG in the quarterly report for the period October to December 2013.
17. DSRL's baseline change proposal gives priority to the unirradiated fuels programme. It no longer includes deferral of decommissioning within the Fuel Cycle Area where decommissioning of high hazard facilities is prioritised and some programmes have

been accelerated. There is some delay to the Shaft and Silo project but design work is continuing and ONR is content that the delay will not adversely impact safety. The DFR programme remains unchanged with some delay to the Prototype Fast Reactor (PFR) programme to accommodate the Irradiated Fuels programme. Overall the proposed Interim End State moves out to 2029.

18. ONR considers that this outcome is consistent with ONR's decommissioning expectations.

### **Fuel Cycle Area**

19. ONR reviewed the decommissioning programmes for two ex-reprocessing facilities within the Fuel Cycle Area. The inspector was content that DSRL was making satisfactory progress with the decommissioning of both facilities and that programmes are in place to support the decommissioning strategy. This includes a proposal to build a mock-up to determine an engineering solution for a plant item that has been out of service for some time.
20. The inspector then visited the facilities to check how work activities are controlled and supervised. This included a review of documented instructions and evidence of operator competence assessment against these instructions. The inspector discussed work control arrangements and undertook a plant inspection which revealed a good standard of house-keeping. The inspector was satisfied that there was an adequate understanding of the concepts of control and supervision and that it was being applied appropriately for the work in hand.

## **2.8 Organisational Capability**

21. ONR discussed proposed organisational changes. As required by DSRL's arrangements made under LC36 Organisational Capability, and consistent with relevant ONR guidance, the proposals have been categorised according to their significance to safety. There are no changes planned at Category A, reserved for changes of highest safety significance.
22. The discussion focussed on two potential Category B changes. These relate firstly to the formation of a cross-site maintenance organisation, and secondly to proposals to augment assurance management. As required by DSRL arrangements the category B proposals and supporting documentation once complete will be submitted to ONR. The inspection provided evidence that DSRL is implementing its arrangements made under LC36 to a satisfactory standard.
23. The formation of the Dounreay Improvement Team under the Deputy Managing Director, in part response to the ONR Improvement Notice served on 11 November 2014, will be covered by a separate Management of Change.

## **2.9 Annual Review of Safety Meeting**

24. ONR inspectors participated in the Annual Review of Safety meeting. This comprised a summary of reports reviewing safety performance in the past reporting period, plus a look ahead to the key challenges that lay ahead. The meeting afforded an opportunity to reflect on progress made in 2014 and DSRL's plans for 2015 and beyond.
25. The Managing Director opened the meeting with a clear statement that 2014 had shown deterioration in safety performance that culminated in the PFR tank farm Improvement Notice (IN). Discussions that followed included concerns about morale and safety culture on site. There are significant challenges ahead to address these

matters but there was evident commitment expressed by the DSRL management team and safety representatives at the meeting to work together to achieve the necessary improvements. The formation of the Dounreay Improvement Team to help identify improvements and facilitate change is one strand of the required drivers to be successful, but there must be ownership at all levels within the organisation for it to work. ONR expects sustained improvement in 2015.

26. The meeting also discussed decommissioning achievements such as continued progress in the FCA and action to improve the working environs in DFR and PFR.
27. We concluded that the challenges ahead support the ONR position that the site requires enhanced regulatory attention.

### **2.10 Other work**

28. As recorded above, DSRL has formed a Dounreay Improvement Team, which it is continuing to augment, to work on strategies to address site-wide issues related to the findings in the PFR tank farm IN. These strategies are in the early stages of development and ideas are still being formulated as to how improvements can be achieved and sustained. Future quarterly reports will include progress updates.
29. 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.
30. During the quarter Dounreay safety representatives participated fully during a visit to the site by the ONR Chair, a Non-Executive Director and the Chief Nuclear Inspector. The safety representatives were also fully involved in the Annual Review of Safety meeting.

## **3 NON-ROUTINE MATTERS**

31. 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.
32. Matters and events of particular note during the period were:  
  
PFR tank farm fire, 7 October 2014
33. As previously reported ONR served an IN in November 2014 as a result of the findings of its investigation into the fire at the Prototype Fast Reactor (PFR) sodium tank farm. DSRL has developed proposals to discharge the IN. ONR has continued to engage with DSRL during this quarter on the proposed improvements and have also engaged on the steps needed to restart operations in the tank farm; these remain suspended and cannot restart without regulatory permission.
34. DSRL has produced a matrix outlining the response to each of the areas of concern identified in the IN. ONR will carry out an inspection that will focus on the areas identified in the IN and the activities claimed by the licensee in its response matrix to determine whether we consider that DSRL has made the necessary improvements to allow us to close it.

Drum handling event (30 October 2014)

- 35. ONR previously reported on 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. ONR is satisfied with DSRL’s actions taken to review operating instructions and refresh operator training to address the safety significant aspects of this event.

Unplanned shutdown of laboratory ventilation system (15 September 2014)

- 36. ONR previously reported on an incident where isolation of an air pressure receiver for pressure testing caused an unplanned shutdown of the active laboratories’ glovebox ventilation extract fans which was failure of a safety significant system. DSRL has confirmed that it has reviewed and amended its maintenance instructions to prevent a recurrence of this type of event.

High Active Liquid Waste Storage Facility (22 January 2015)

- 37. ONR was informed that there had been an increase in the liquid level in a sump within the facility, comprising cells within which are located tanks containing radioactive liquors. The cells are constructed of reinforced concrete and have stainless steel liners. The cells form a secondary containment to the release of liquors. It was confirmed that the tank contents level had not changed and that no radioactivity was present in the sump liquor. Groundwater appears to have entered the sump because the stainless steel cell liner had become partially detached. The tanks’ integrity has not been challenged. Recovery actions were discussed and the tank contents will be transferred to another tank for further processing. The inspector considered that appropriate action had been taken and the way forward was satisfactory.

**4 REGULATORY ACTIVITY**

- 38. 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.
- 39. No LIs or Enforcement Notices were issued during the period.

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

Date	Type	Ref No	Description

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



## 5 NEWS FROM ONR

40. Since 2000, ONR has collected data from licensees (except for research reactors and certain defence establishments) on the radiation fields (i.e. gamma and neutron dose rates) measured at their site boundaries. Each year up to four sites have been selected for independent confirmatory radiation field surveys to be undertaken by personnel from Public Health England, who are independent experts for this type of work. The dose rate data are used to estimate the exposure of public reference groups to direct radiation. The reference groups are groups of people most likely to be exposed to radiation on the basis of factors such as proximity to the site and living habits. ONR has a responsibility to maintain regulatory oversight of the direct radiations emanating from nuclear licensed sites.
41. Confirmatory radiation field surveys will be undertaken at the Dounreay site boundary during 2015. The dose rate data form an important part of the annual report on “*Radioactivity In Food and the Environment*” (RIFE), which is produced by the Environment Agency, the Food Standards Agency, the Northern Ireland Environment Agency and the Scottish Environment Protection Agency.
42. 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>).
43. 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](#).

## 6 CONTACTS

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