

# Dounreay Progress Report

## As of 4 October 2019

DSG(2019)P027

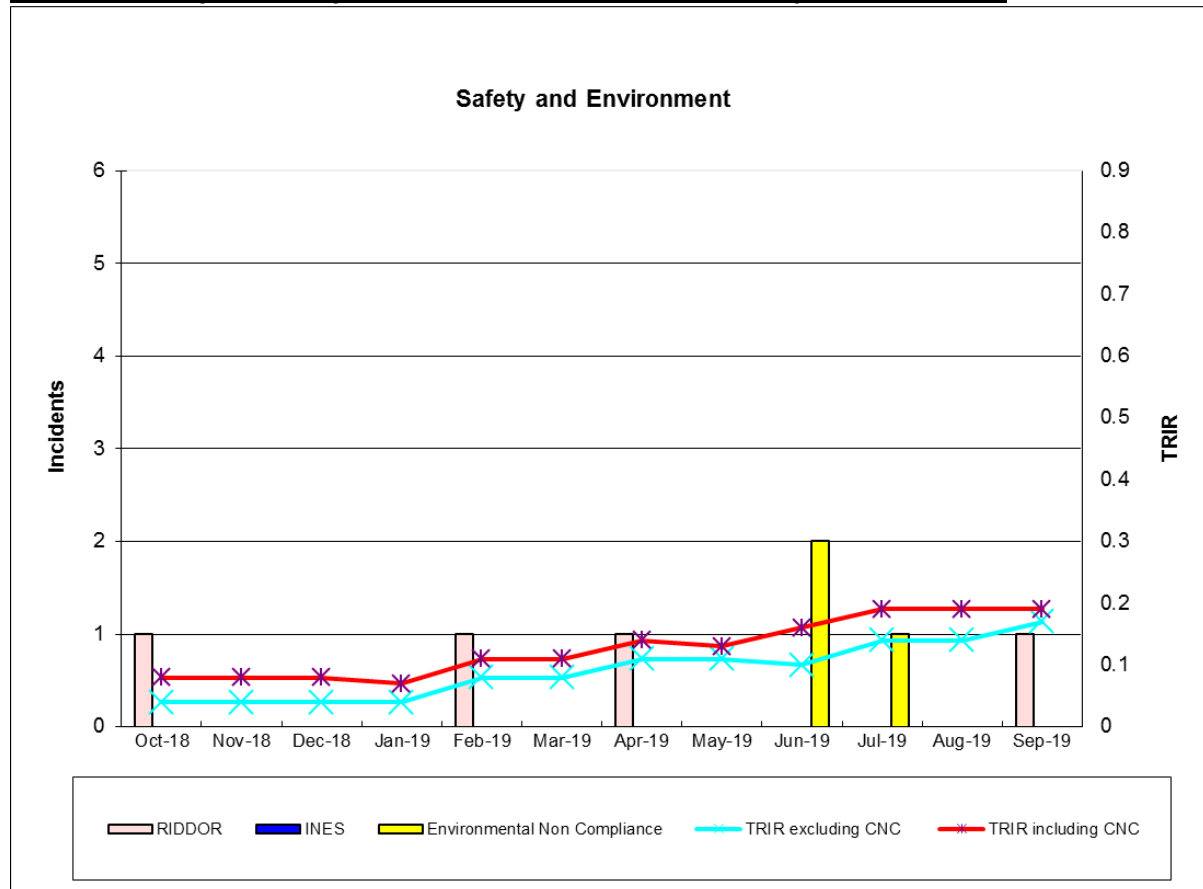
### Vision and mission

Dounreay’s vision is to be recognised globally for decommissioning excellence, supporting the creation of sustainable alternative employment. Its mission is to work together to responsibly deliver the Dounreay programme effectively and efficiently.

### Decommissioning programme

Following around a year of work, with input from multiple projects across the site, the production of an updated decommissioning programme has reached an important milestone with submission to NDA for review. The latest version of the programme, known as a performance plan, sets out the work required to reach the site’s interim end state and reflects progress made so far, as well as the impact of changes to the programme that have previously been agreed. We expect this to be finalised next year following a period of detailed review and scrutiny. In the meantime, focus remains on delivering a busy programme of work this current financial year.

### Health, Safety, Security and Environment (as at end September 2019)



- The organisation’s Total Recordable Incident Rate was 0.14 (as of August 2019).

- There was one RIDDOR reportable event during September. During the lowering of a component in PFR, there was an issue with the raise/lower mechanism of a chain block. The situation was safely recovered and the item fully lowered into position. As this was deemed as a failure of a piece of lifting equipment, it met the criteria for reporting. Similar items have been withdrawn from service until further information is known.
- At the time of going to print, DSRL has received a regulatory notice from SEPA following its investigation into an event from February in one of our Fuel Cycle Area facilities. The event has been reported at previous Dounreay Stakeholder Group meetings. While we welcome SEPA's assessment that there was no breach of discharge limits and that the environmental impact is considered to be very low, we take such events very seriously. Environmental compliance is a high priority for us and we have developed an action plan in response to the notice.

### **Site decommissioning**

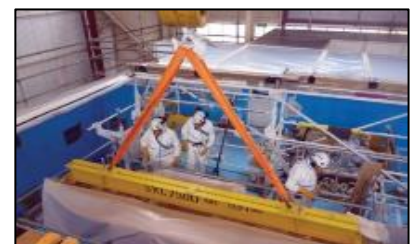
Appendix 1 of this report provides information about key project milestones for 2019/20. Specific performance achievements are outlined below.

### **Reactors**

- More than 50% of breeder elements have now been removed from DFR.
  - As of 19 August, 149 vessel loads have been completed by the sodium inventory destruction (SID) plant at PFR.
  - The installation of a heel pool removal pump that will remove the sodium pool (approx. 1.4 cubic metres) from the bottom of the reactor vessel is expected to begin operations soon. To facilitate the pump installation, and also maintain containment of the reactor vessel, the pump will be inserted into the reactor transfer vessel. The pump will be inserted into the reactor transfer port from within a large sealed 'glove bag'. The glove bag is 25m in length, 1.8m diameter and one of the largest ever used on the site.
- A photograph showing a large industrial facility. A long, narrow, white, cylindrical structure, identified as a 'glove bag' for pump installation, is being moved or positioned within a large, open industrial space. The structure is suspended or supported by a system of cables and pulleys. The background shows various industrial equipment, pipes, and structural elements of the facility.
- The last Primary Pump Valve was successfully lifted from around the reactor vessel. This will allow the final large Water Vapour Nitrogen (WVN) application tool to be inserted into place in preparation for the WVN cleaning process to commence.
  - At PFR, a large access point into the Primary Cold Trap Loop (PCTL) vault has been created to allow the sodium pipework to be removed. Corecut will drill small vertical and horizontal holes to allow a hydraulic burster to split away 13 tonnes of concrete, to expose the metal liner of the vault.

### **Fuel Cycle Area**

- Lab 101 in the D1200 labs has now been successfully decommissioned. It was previously used to analyse metallic and non-metallic compounds. This brings the total number of labs that have been cleaned out to 22.



- The D1211 team has achieved the first of its 2 milestones – to remove the brickwork on the upper half of Pit 1. Work is now underway on the second milestone which is to remove all of the remaining bricks in Pit 1.
- In D1217, the roof blocks and upper level ducting has been removed from the transfer cell. The photo (right) shows the team working to lift one of the blocks off the roof.
- Modifications to D1208 are underway to enable treatment and packaging of legacy waste. The work involved accessing an ‘active’ bulge, breaking into active pipelines and carrying out welding operations in a restricted area, allowing the new transfer pumps and control equipment to be installed behind a shielded enclosure. Active commissioning is due to be complete in November.
- A new filter change system in the D2001 waste posting cell is making a difference to the operational team. Designed by GDES and Arch Henderson, and fabricated and installed by Gow’s Lybster, the system is reducing dose uptakes as it allows the filters to be changed more easily.

## **Waste**

- Building on the good work undertaken earlier this year to establish a new metal treatment route, the project team has now placed a further contract with waste specialist EDF Cyclife. This will allow the site’s project team to assess sending more items offsite for metal treatment and prove the ongoing viability of the route.

Historic metal items, which have been in storage for a number of years, will be considered as part of this next phase. The team will carry out thorough characterisation, treatability and transport assessments which will then be used to underpin any decision to use the metals route. They must demonstrate "best practical means", which is a requirement of the site’s permit.

By the end of the calendar year, a decision is expected about the suitability of sending these further metals items via this route.

## **Construction**

- The floor slab for the new higher activity waste store, being built alongside Dounreay’s Cementation Plant, has been completed ahead of schedule. The photo shows the team as preparations were made for the last concrete pour.



## **The Interim End State Delivery Team**

- An unconstrained review of the site end state continues to be developed. DSRL has now had the list of credible options agreed at the Dounreay Nuclear Safety and Environment Committee and at the NDAs Senior Strategy Committee. The next stage will be to apply these credible options to the site’s facilities and components, but in a site wide context. This process will be assessed in accordance with the NDA value added framework and strategy management system. DSRL will be inviting DSG representatives to attend assessment workshops to ensure that local views are

adequately represented throughout the review. DSRL will provide adequate notice of the workshops when they are scheduled.

- A series of groundwater monitoring boreholes are being drilled in 3 phases around the site. Phase 1, located near to the new low level waste facility, was successfully completed in September. Phase 2 is off site on tenanted land, and is currently near the main gate. Phase 3 will drill boreholes in the FCA and in the area of the historic low level waste pits. The work, due to end in December, forms a key delivery milestone for the team this year.



- The annual inspection and maintenance of the offshore effluent diffuser by divers was completed during August. The diffuser is located on the sea bed approximately 600 metres offshore, and liquid effluent from the Low Level Liquid Effluent Treatment Plant (LLLEPT) is released to the sea through 9 valves. The maintenance is required by the Environmental Authorisations (Scotland) Regulations 2018.

### **Particles**

- As previously reported, no particles have been found on the Dounreay foreshore since 4 April 2019. Four particles were found on Sandside in September. This year a total of 9 particles have been recovered so far – 3 on the foreshore and 6 at Sandside.
- The Dounreay west and east foreshore was not surveyed from 9 May to 21 August 2019 and 11 June to 25 July 2019 (respectively) due to the presence of nesting birds.
- Work continues on the analysis of the unusual particle recovered from the foreshore in 2016.

### **Commercial**

- Dounreay and its Decommissioning Services Framework partners held a suppliers day on 5 September for companies to find out more about opportunities associated with the framework contracts signed earlier this year. Over 200 representatives of companies attended the event.

### **General**

#### **Staffing (end September 2019)**

	<b>FTE Target</b>	<b>FTE Actual</b>
<b>Current - DSRL</b>	<b>1,146</b>	<b>1,148.8</b>
<b>Current – ASW</b>		<b>138</b>

13 new starters; 3 resignations

- At the beginning of August, 14 graduates started their 2 year development scheme. The group includes business, engineering and science graduates.

- Seven apprentices received their indenture certificates in August marking the completion of their training. All are now employed on site.

- Two new carpentry and joinery apprentices started work during September. They are the first apprentices in 46 years to be recruited for this discipline.



- Three Dounreay nominations were shortlisted for the NDA's first Safety and Wellbeing awards. Those shortlisted were the D1211 project team for the Achievement in Safety award, Denny Macdonald and Cameo Green jointly for Role Model and Denny Macdonald for Role Model. The award ceremony took place on 16 September and Dounreay was delighted that Denny Macdonald was named Role Model.

- Roxana O'hara and Josh Owens were finalists in the Scotland branch of the Nuclear Institute Young Generation Network Speaking Competition which took place in early August. Roxana secured second place.

- Three employees have completed a Level 2 Diploma in Nuclear Decommissioning (NVQ).

- Dounreay apprentice, Lewis Fraser, came second in the electrical section of the Scottish Craft competition.

- A student from North Highland College began a work placement on 8 October and is providing support with the Environmental Sampling team.

- On 14 September the ambulance crew at Dounreay received a call requesting attendance to a female who had a medical condition. The caller was a taxi driver who was close to the site and had originally called Scottish Ambulance Service but at that time there was no ambulance availability. The Dounreay ambulance crew responded, treated and transferred the patient to Caithness General Hospital.

## Heritage

- Linda Ross successfully obtained her PhD (from UHI) for her study about Dounreay entitled "Nuclear fission and social fusion: the impact of Dounreay experimental research establishment on the built environment and communities of Caithness, 1954 to 1966". Linda started her studies in October 2015.

- James Gunn, Heritage Officer has delivered 3 presentations recently about the history of Dounreay – one on site for staff and public events in Thurso and Wick, which were well attended.
- Dr Egle Rindzeviciute, Associate Professor at Kingston University London, led an international workshop in Caithness in September focusing on capturing, preserving and presenting nuclear cultural heritage. It was held in the Pentland Hotel, Dounreay and Nucleus, and was attended by industrial heritage practitioners and leading academics from all over Europe and Russia.

### Visits / events:

- Dounreay apprentices supported the NDA at the Mey Highland Games by providing STEM activities for young people to engage in. DSRL also supported this event.
- David Peattie, NDA Chief Executive, visited Caithness in August. He visited Nucleus and Scrabster Harbour in addition to a number of facilities at Dounreay.
- A group of Babcock graduates from Rosyth visited during August to get an insight into the work being carried out at Dounreay.
- Two technical leads from AWE visited to benchmark arrangements for licence conditions compliance.
- Representatives from the Monju reactor in Japan were on site at the end of August to take part in a workshop at PFR. This was aimed at promoting knowledge sharing and lessons learned, and was the first step in a request from Monju via the NDA for support in building their decommissioning strategies.
- Representatives of CoRWM (Committee on Radioactive Waste Management) and BEIS (Department for Business, Energy and Industrial Strategy) visited at the beginning of September. They were provided with a tour and an update on the site's waste management plan.
- Representatives of the International Atomic Energy Agency were on site in October for a technical workshop. DSG Chairman, Roger Saxon provided a presentation on the DSG's consultation on site end states as part of a stakeholder engagement session.



**Dounreay Site Restoration Limited**  
4 October 2019

## APPENDIX 1 – KEY MILESTONES 2019/20

Area	Milestone	Date due	Progress
FCA	D2001 NDA7 scheme design & detailed design stage 1	30-Jun-19	Complete
FCA	D1211 Pit 1 decommissioned stage 1	31-Aug-19	Complete
Construction	DCP store extension, 1st concrete pour stage 1	31-Aug-19	Complete
IES	Installation of 19 Boreholes - phase 1	20-Sep-19	Complete
Fuels	D2001 Irradiated Exotic Fuel disposition concept design completion	10-Oct-19	Complete
IES	Installation of 19 Boreholes - phase 2	25-Oct-19	
FCA	D1200 Lab 101 decommissioned	31-Oct-19	Complete
Waste	Acidification of 1st Batch of ADU Floc	29-Nov-19	
IES	Installation of 19 Boreholes - phase 3	13-Dec-19	
FCA	D1204 mac strip out completed	31-Dec-19	
Construction	DCP store extension, 1st concrete pour stage 2	28-Feb-20	
FCA	D1211 Pit 1 decommissioned stage 2	31-Mar-20	
FCA	D2001 NDA7 scheme design & detailed design stage 2	31-Mar-20	
Reactors	SID - completion of treatment of sodium components and commencement of treatment of tank 2	31-Mar-20	

### Key:

	On target to deliver
	At risk
	Missed

## GLOSSARY

Abbreviation	
BCP	Baseline Change Proposal
DACR	Days Away Case Rate
DCP	Dounreay Cementation Plant
DFR	Dounreay Fast reactor
DIT	Dounreay Improvement Team
DMR	Dounreay Modification Report
DMTR	Dounreay Materials Test Reactor
DPF	Dounreay Planning Framework
DSRL	Dounreay Site Restoration Ltd
EIA	Environmental Impact Assessment
ES	Environmental Statement
IFBS	Irradiated Fuel Buffer Store
IFC	Irradiated Fuel Cave
INF	Incident Notification Form
LLLETP	Low Level Waste Effluent Treatment Plant
LLW	Low level waste
LTA	Lost Time Accident
mSv	milli Sieverts
NDP	NaK Disposal Plant
OJEU	Official Journal of the European Union
ONR	Office for Nuclear Regular
PBO	Parent Body Organisation
PCP	Project Control Procedure
PFA	Pulverised Fly Ash
PFR	Prototype Fast Reactor
PSR	Preliminary Safety Report
RAMT	Radioactive Material Transport
RIDDOR	Reporting of injuries, Diseases & Dangerous Occurrences Regulations.
RSA	Radioactive Substances Act
SEPA	Scottish Environment Protection Agency
SID	Sodium Inventory Destruction Plant
STA	Sample Tank Annex
TRIR	Total Recordable Incident Rate
WRACS	Waste, Receipt, Assay, Characterisation and Supercompaction