



PARTICLES PROGRESS REPORT

June to August 2009

1 BEST PRACTICAL ENVIRONMENTAL OPTION (BPEO) PROCESS

The BPEO sets out the proposals for seabed clean-up with a targeted seabed area, where most significant and relevant particles are believed to be located following examination of available data by DPAG, of 60 hectares. Performance during implementation will be assessed on the activity detected, rate of coverage and efficiency of particle retrieval.

The initial recovery work undertaken in 2008 has helped to determine the area to be targeted for 2009/10, to allow further information to be gained on retrieval, against different numbers, depths and activities of particles detected.

2 OFFSHORE WORK

2.1 Off-shore retrieval



Monitoring and retrieval of particles offshore at Dounreay commenced on the 1st June and was completed on 3rd August 2009. The objective of this years work was to monitor a continuous area of 7.5 Hectares at the west end of the main plume, to generate improved information on the depths and populations of the particles and retrieve at least 95% of buried particles detected, within the retrieval capability of the equipment. All results of the work would be forwarded to the Particles Retrieval Advisory Group (Dounreay) PRAG(D).

The 'Sentry Box', an area at the edge of the fishing exclusion zone to the west, was monitored before and after monitoring and retrieval operations carried out within the particle main plume. The pre monitoring area covered was 7,762 m² and post monitoring area was 8,762 m². Neither 'Sentry box' survey detected any particles.

Monitoring and retrieval operations were targeted within the 7.5 Ha area at the west of the particle plume, an area agreed with PRAG(D). With the plume edge criteria discussed with PRAG(D) together with variations in sand coverage of sub-sea rock structures, the actual area monitored within the zone identified for the 2009 survey was only 7.06 Ha. Additional areas had already been discussed with PRAG, both inshore and to the east of the initial agreed area. Monitoring of these was undertaken to give a total coverage area of the main plume of 7.6 Ha.

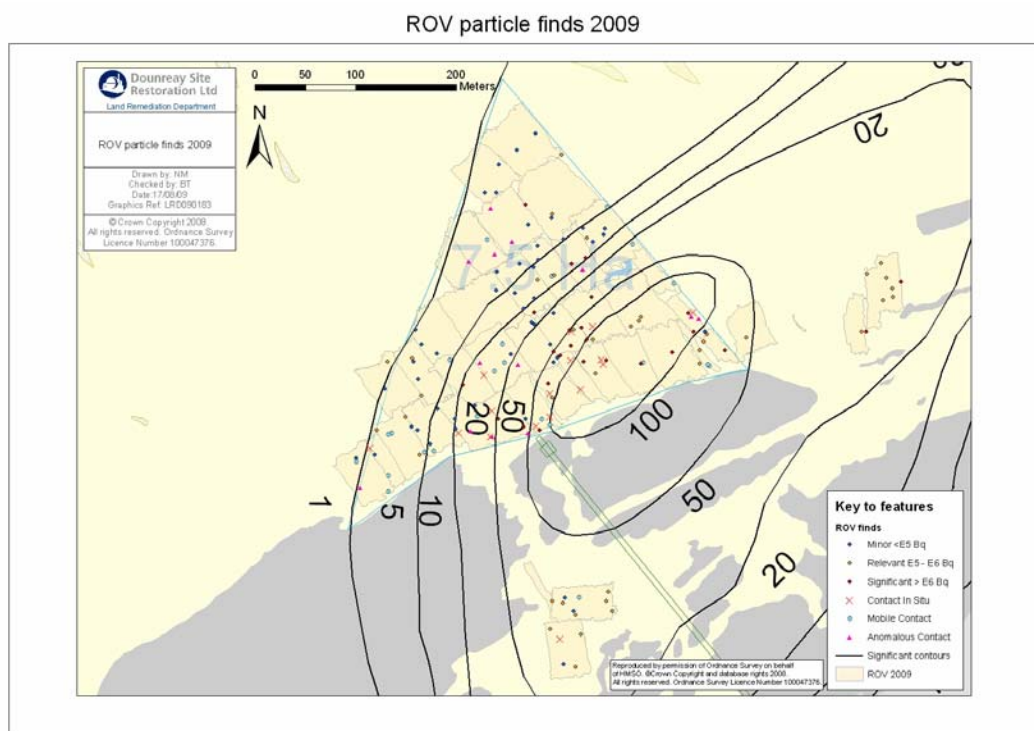
A total of 115 particles were recovered of which 27 were classified as significant, 39 as relevant and 49 as minor. The total activity removed from the sea bed was $4.68E+08$ Bq of caesium-137.

Additional information was gained from the work

- 23 mobile particles which could not be targeted, this is similar, proportionally, to the number of mobile particles encountered in 2008 ;
- 16 particles have been left in situ. 6 were indicated to be within the retrieval capability of the equipment and 10 were indicated to be buried below 450mm in the sand. The position of these particles has been logged*.
- 14 anomalous contacts which, from information from the detectors and attempts at retrieval, are not believed to be particles but other contaminated materials such as sand, rock or concrete.

All of the information will be forwarded to PRAG(D) for their expert consideration. DSRL will also utilise the information gained to specify the equipment requirements for tackling the rest of the main plume.

*As the position of these particles has been logged it is intended to return to the same locations in 2010 to determine whether the particles remain in position and can be retrieved.



3 THE OLD EFFLUENT DISCHARGE SYSTEM

An option study has been completed in order to identify the most appropriate method for sealing the Old Effluent Discharge System and the associated fractured rock structure above the Old Diffuser. The report on the findings of the study is currently being produced.

A contract has been let to develop the required Environmental Safety Case for the remediation of the ODC and a draft report should be available by the end of September.

4 DOUNREAY PARTICLES: PRAG(D)

The initial results of this years offshore work has been provided to PRAG(D). DSRL are compiling a report that covers the work in detail for presentation and discussion at the next PRAG(D) meeting on 17th November.

5 MONITORING OF BEACHES

The statutory beach monitoring programme continues as per SEPA Authorisation requirements.

5.1 Dounreay Foreshore

Although no surveys are usually completed during the bird nesting season from May to August, the intention was to complete monthly surveys (the statutory frequency is fortnightly) when possible. This enhanced work is important as the offshore particle retrieval work commenced in June, so continuing to survey the Dounreay Foreshore and detect particles is vital to provide indications of how the offshore retrieval work affects particle arrival rates in onshore areas.



Surveys on the East Foreshore continued at a frequency of one per month. However, surveys on the West Foreshore were not possible until August. West Foreshore surveys require the vehicular Groundhog system, but the presence of nests and young birds prevented its use until late August. No particles were detected during this period. The statutory surveys recommence at the start of September.

5.2 Sandside Beach

Access permission was granted for beach monitoring to resume on 1st June 2009. As part of the agreement for access during June, as offshore particles operations were also due to start, enhanced monitoring of accessible sand at low tide was also undertaken. Statutory area coverage and the enhanced monitoring continued until the 16th June 2009, when access permission was withdrawn. During this survey period a total of 14 particles were detected and recovered (11 from the statutory coverage and 3 from the enhanced). This is the highest monthly total of particle finds in any month. Analysis of the particle finds were provided to PRAG who were clear that although the number of particle finds was the highest found to date, the number of finds lay within the numbers DPAG predicted. A large number of the finds were in areas where the sand depth had increased, since the last survey. The need for consistent monitoring at Sandside over an extended period of time was re-stated. The process of negotiations for long term access is continuing, but at present DSRL do not have permission to restart the monitoring.

5.3 Dunnet beaches

A Dunnet strandline survey was completed in June. Targeted areas below the access points to the beach were also surveyed at this time. The target areas will continue to be surveyed, along with the strandlines, until SEPA complete their habit survey of the beach. The data gained from the habit survey will form part of SEPA's review of beach monitoring.

5.4 Coastal Survey

In response to a recommendation from PRAG(D) (Particles Recovery Advisory Group Dounreay), a coastal survey, from the east end of Sandside Bay, eastwards along the coast, to Crosskirk was undertaken. This included the Dounreay Foreshore. All accessible areas with sand and shingle were monitored. The survey was completed using the Groundhog™ EV2 portable system, however it should be noted that at some locations between Dounreay and Crosskirk it was not possible to record the GPS data. This was due to some of the areas being narrow geos or inlets, with very high rock faces on either side. Despite the absence of GPS data the radiological data was still able to be recorded and analysis showed that no particles were detected. Indeed, over the full coastal survey no particles were detected.

5.5 Offsite Finds

During monitoring of the area designated for the new LLW Facility, with the Groundhog Evolution equipment, a minor particle and an area of contamination were discovered. These have been removed and investigated by DSRL and the results have been reported to SEPA and FSA. FSA have carried out further work and confirmed that the finds pose no concern with respect to the food chain.

In addition a minor particle was also found on Landfill 42 during work agreed with SEPA to determine the way forward for the landfill.

6 KEY DATES

Date	Description
June 09	Option study for sealing the ODC commenced
Sept 29	Edinburgh Particles Meeting
Nov 17	PRAG(D)

Particles Project Team
Dounreay Site Restoration Ltd (DSRL)
9th September 2009

Dounreay Particles Advisory Group (DPAG) – classification of particles

<i>Significant</i>	Caesium 137 activity greater than 1,000,000 Bq	Likely to cause serious ulceration (visible after 1-2 weeks). This may take several weeks to heal along with the associated risk of infection which might require medical treatment.
<i>Relevant</i>	Caesium 137 activity between 100,000 and 1,000,000 Bq	Would require a minimum of 7 hours stationary contact with the skin to have any discernable effect. Indeed, time periods of 1-2 days would be required for any reddening with small lesion of the skin to be observed. The affected area of skin would be expected to heal completely within 2-4 weeks without further problems. Anyone coming into contact with this type of particle is unlikely to experience any observable effects.
<i>Minor</i>	Caesium 137 activity less than 100,000 Bq	Will not cause discernable health effects.