PARTICLES PROGRESS REPORT

1st November 2007 to 31st January 2008

1. BEST PRACTICAL ENVIRONMENTAL OPTION (BPEO) PROCESS

The final stage of the particles consultations closed on 12th December. Thirty-two responses were received and UKAEA has almost finalised the BPEO for submission to the Scottish Environment Protection Agency (SEPA).

On 17th January, the External Consultation Steering Group, chaired by Highland Councillor Bill Fernie met for the final time to discuss and provide input to the particles BPEO.

External Consultation Steering Group final meeting held on 17th January 2008.

The final BPEO will be submitted to SEPA, NDA and Scottish Government in early February. SEPA will consider the BPEO with stakeholders. If UKAEA's recommendation is acceptable the offshore clean-up is expected to start in the summer of 2008.

2. OFFSHORE WORK

2.1 Remotely Operated Vehicle (ROV) offshore mapping

While carrying out the offshore mapping the opportunity was taken to survey the area between the old diffuser outfall and Sandside bay. Twenty-six particles were found in this area, none of them in the *significant* category. From the data collected it is now believed that an estimated 400-500 particles could be in transit to Sandside. They could be expected to gradually arrive over many years and would be monitored for as part of the beach programme. The majority of *significant* and *relevant* particles appear to remain close to the old diffuser outfall area on the seabed.

Fathoms preparing for particle mapping survey.

2.2 Remote particle retrieval offshore

Offshore trials during December 2007 demonstrated that removal of particles from the seabed can be achieved by a remotely-operated vehicle. Two

companies were chosen to deploy and demonstrate their respective systems on the seabed off Dounreay. The results of the trial by the first company have been reported. The second company will trial its system in March 2008. Following completion of this second trial an evaluation will be made of both systems.

2.3 Investigations at the old diffuser structure

Investigation work continues at the old diffuser. More work will be carried out at the risers to try to gain access to the diffuser chamber, approximately 23m below the seabed. Additional work is being planned to send a pipe-crawler down the nine inch diameter pipes once used to discharge effluent from the landward side towards the diffuser chamber. This work is expected to start during the summer of 2008.

3. FURTHER RESEARCH RESULTS

3.1 Testing for particle dissolution

The report on the dissolution of particles has been considered by DPAG. The work was carried out in order to improve the understanding of the potential dose from a particle if it was ingested into the body. From the findings of the tests DPAG have decided that the potential for increased health effects had not occurred and there was no need to revisit particle categorisations.

3.2 Particle density measurements

DPAG have considered the information provided by UKAEA on density measurements. The measurements of density showed that the MTR fragment densities were similar to grains of sand, while DFR fragments tended to have a higher density which could make them more liable to be more deeply buried in the seabed sediment. Further assessment on depths of finds for DFR particles, which are known to have a porous structure, will be carried out.

3.3 Dounreay foreshore

DPAG geology experts studying the rock structure of the Dounreay foreshore.

The investigations into the rock structure of the Dounreay foreshore, carried out by two geology experts from DPAG, have led to the conclusion that within the rock strata there are areas where materials will have dissolved under the acidic conditions known to exist during the periods of effluent discharge from the site. The rock strata around the risers would be subjected to the effects of dissolution as some of the rocks and jointing material are quite high in carbonates. In terms of the overall structure it is believed there is some interlinking of the risers within the rock mass above the diffuser system. DPAG will review the geology of the rock structure in their next report.

4. COMARE BEACH TRIALS

The Committee on Medical Aspects of Radiation in the Environment has published its report of field trials carried out at Dunnet beach in June 2007 to test the performance of particle detection systems. The report confirms that the system in use meets the current requirements of the regulator and is capable of finding higher activity particles deeper in the sediments and lower activity particles on the surface. A copy of the full report will be made available on the COMARE website.

5. DOUNREAY PARTICLES: EDINBURGH MEETING

The next meeting with Scottish Government and a number of other key agencies will be held on 9th April in Edinburgh. Minutes of these meetings are available on UKAEA's website.

6. MONITORING OF BEACHES

The contract for beach monitoring is due for renewal in 2008 and has been advertised in the Official Journal of the European Union (OJEU).

6.1 Dounreay Foreshore

The Dounreay foreshore has been reviewed following the shaft isolation platform (SIP) construction and particulate material has been found to accumulate in a different location. An area to the east of the platform, which had previously been mostly rocky, was found to accumulate shingle and a particle was recovered from this location. During this period 2 particles were detected and removed – one *significant* and one *relevant.*

6.2 Sandside Beach

Since the last progress report no monitoring has been carried out at Sandside, at the request of the landowner. Discussions on a resumption of monitoring are ongoing.

Monitoring of Reay Golf course is now complete. No particles were found.

Initial results from a survey of the depth of sand on Sandside beach have been received from BGS. The depth of sand approaches 4 metres at the dune faces but much of the beach when sampled in October 2007 had a depth of less than 1

metre. The outcome of the survey will be reviewed and reported.

6.3 Dunnet beaches

Monitoring of Dunnet, Peedie Sands and Murkle beaches is scheduled to be carried out in February/March 2008. The results of the monitoring will be reviewed and a decision will be made on whether there is sufficient justification for further monitoring.

7. KEY DATES

Date	Description
February 2008	Publication of final BPEO.
26 February 2008	DPAG meeting
February 2008	SEPA consultation on particles BPEO
26 February 2008	DPAG meeting
March 2008	2nd Trials for ROV retrieval system
26 March 2008	DPAG meeting
March 2008	Confirmation of BPEO
3 April 2008	COMARE meeting (London)
9 April 2008	Scottish Government meeting
14 May 2008	DPAG meeting
18 June 2008	COMARE meeting (London)
23 June 2008	DPAG meeting
Summer 2008	Off-shore clean-up commences, following approval of BPEO
24th or 30th Sept 08	COMARE meeting.
25 Sept 2008	DPAG's Fourth Report
10th Dec 2008	COMARE meeting

4th February 2008

Dounreay Particles Advisory Group (DPAG) – classification of particles

Significant	**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.**
Relevant	**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**
Minor:	**Caesium 137 activity less than 100,000 Bq**	**Will not cause discernable health effects**