

# PARTICLES PROGRESS REPORT

March to June 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

Following the offshore work, undertaken by Fathoms in 2008, a review of the programme to cover approximately 60 hectares in the main plume was carried out. To allow time to develop experience in the operation of the retrieval system, it is planned that 7.5 hectares would be covered in 2009, followed by 12.5 hectares, 20 hectares and 22 hectares in subsequent years.

A contract has been let with Fathoms for the first phase of the monitoring and retrieval operations (7.5 Ha) and work was scheduled to commence on the 1<sup>st</sup> June 2009., with the monitoring of a 'Sentrybox'



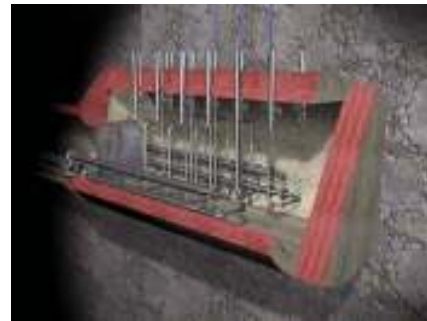
DPAG's Fourth report states that the removal of 'literally' any particle is impractical and in the case of minor particles is unnecessary. However, in practice all buried particles detected by the offshore detection system will be targeted for removal. Over the next 2-3 years the data collected from the off-shore retrieval programme will assist SEPA and DSRL in defining an end point.

The Food Standards Agency had undertaken a review of the FEPA fishing exclusion zone and it was agreed that the zone would remain at present and would be further reviewed following the off-shore retrieval work.

### 3 THE OLD EFFLUENT DISCHARGE SYSTEM

The results of the Effluent Pipe Line visual and gamma survey, carried out during February 2009, were reported to the NDA during March 2009.

An option study is now underway to identify the most appropriate method for sealing the Old Effluent Discharge System and the associated fractured rock structure above the Old Diffuser Chamber(ODC). This is a requirement of our RSA Authorisation and SEPA have written to clarify that any methodology identified to seal the ODC should be looked at in the context of decommissioning the whole system.



### 4 DOUNREAY PARTICLES: PRAG(D)

With the issue of the fourth report the Dounreay Particles Advisory Group (DPAG) completed their contracted workscope. Since its creation in 2000 DPAG have provided valuable independent expert advice on the particles issue to SEPA and UKAEA (now DSRL) and have produced a series of reports on the particles issue (DPAG reports 1,2, 3 and 4).

Through the period of implementation of the Particles BPEO, additional information will be generated from the particles retrieval to allow the extent of the contamination to be further refined, to provide information on the effectiveness of the particle removal and, ultimately, permit the definition of end-points for both the retrieval work and the beach monitoring work. Expert scrutiny of the information generated would allow the progress of the BPEO implementation to be independently reviewed, and enhance- public confidence.

In addition, the impact of the offshore work on onshore monitoring could be analysed and incorporated into any review of the monitoring regime for particles by SEPA or DSRL.

To this end a new independent body has been set up with the following main duties:

- To review information received from DSRL on offshore particles recovered and seabed survey areas, with the aim of determining whether the offshore population diagrams in DPAG 4 and the estimates and distributions of significant, relevant and minor particles remain valid. The results of the review will be communicated to SEPA and DSRL.
- To review the effectiveness of offshore particle retrieval, to make recommendations for improvement and review the plan for the next year's recovery operations.
- To consider criteria for determination of the offshore recovery end point.
- To provide commentary on the potential re-population of offshore areas.

- To review beach monitoring information and make recommendations for improvement in techniques and changes in the frequency and extent of monitoring area (in relation to public health and other objectives).

The first meeting of this group took place in Edinburgh on the 5<sup>th</sup> May 2009. The new group is called Particles Recovery Advisory Group (Dounreay) (PRAG(D)). PRAG9D) is chaired by Professor Keith Boddy and is administered by SEPA. The need for Agency and Stakeholder Group input was discussed.

## 5 **MONITORING OF BEACHES**

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

The new hand held monitoring system is now being deployed for the statutory surveys on the Dounreay East Foreshore and Crosskirk. In addition, the new system has also been used on other surveys of Melvich, Murkle and Peedie beaches and on the coastline surveys of Dounreay to Sandside Bay and Dounreay to Crosskirk.

### 5.1 **Dounreay Foreshore**

In March two Significant particles were detected and recovered from the Dounreay East Foreshore. A survey of all sand and shingle areas on the Dounreay Foreshore, outwith the statutory East and West areas, was completed during March. No particles were detected.



Although no surveys are usually completed during the bird nesting season from May to August, the intention is to complete monthly surveys (the statutory frequency is fortnightly) when possible, e.g. as the presence of sand/shingle on the East Foreshore is dictated by the tide, no birds will be nesting on this part of the foreshore. However, the West foreshore area is much larger and birds do nest within the area making it impossible for any vehicular surveys. Advice from our Ornithological expert suggests that the bird nesting period is earlier this year, so nests and chicks are likely to have disappeared by mid/late July. This could enable us to complete vehicle surveys before September. This enhanced work is important as the offshore particle retrieval work will commence in June, so continuing to survey onshore areas and detect particles will be vital to provide indications of how the offshore retrieval work affects particle arrival rates in onshore areas.

### 5.2 **Sandside Beach**

Access permission was granted for a single survey during March/April. This was the first survey since October 2008. The survey commenced on 23<sup>rd</sup> March and finished on 8<sup>th</sup> April. During this survey a total of 7 particles were detected and recovered (6 Minor and 1 Relevant). Access permission remained withdrawn until the end of May 2009, although DSRL have now been given permission to restart beach monitoring. Survey started on 1<sup>st</sup> June and 3 particles (1 Relevant and 2 Minor) were recovered on the first day.

### 5.3 Dunnet beaches

A Dunnet strandline survey was completed in April. 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.

The beaches at Murkle and Peedie were surveyed in May. No particles were found on Peedie beach, however a Minor category particle,  $9.0 \text{ E}+03 \text{ Bq Cs137}$ , was detected and recovered during the Murkle survey. Such a particle find is not unexpected as it conforms with the distribution analysis undertaken by DPAG. Particles of this activity will not cause health effects. These survey results will be considered by SEPA as part of their review of the particle issue.

## 6 KEY DATES

Date	Description
June 09	Option study for sealing the ODC commenced
June 09	Offshore retrieval recommences

Particles Project Team  
Dounreay Site Restoration Ltd (DSRL)  
June 2009

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### 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.