PARTICLES PROGRESS REPORT

25th November to 22 February 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 located, of 60 hectares. Performance will be assessed on the activity detected, rate of coverage and efficiency of particle retrieval.

The timescale for initial coverage of the seabed should be as short as possible to reduce the effect of natural redistribution, but will depend on the system, the weather and the availability of funding. The initial recovery work undertaken in 2008 has helped to determine the targets for 2009/10.

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 expected that 7.5 hectares would be covered in 2009, followed by 12.5 hectares, 20 hectares and 22 hectares in subsequent years.

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 particles detected by the offshore detection system are currently removed. 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.

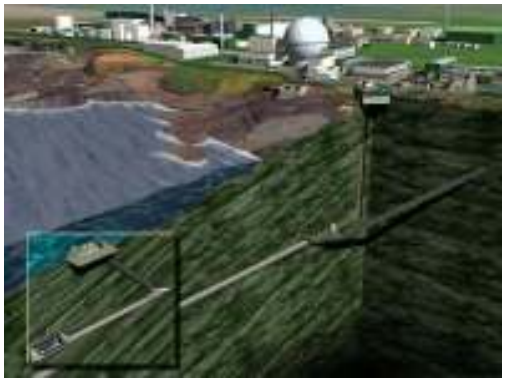
The Food Standards Agency had undertaken a review of the FEPA fishing exclusion zone and it was agreed that the zone would remain at present and would be further reviewed following the off-shore retrieval work.

3 THE OLD EFFLUENT DISCHARGE SYSTEM

3.1 Investigations at the Old Diffuser structure

Sufficient information is believed to have been gained from the offshore investigations. A course of action is being planned to reduce the potential for any particles which may remain within the discharge system from being released onto the seabed during remediation work at the Old Diffuser and the Old Effluent Pipes.

3.2 Investigations at the Old Effluent Discharge Pipes



During February 9 to the 12th, 3 of the 4 old effluent discharge pipes (1 of the 4 pipes is still connected to the old system and so was not available for this survey) have been surveyed using a camera system and a gamma detector with spectrometer mounted on a deep water pipe-crawler. The maximum sea depth for the survey was ~50m at the Triple Point, where the adit, the tunnel and the shaft stub tunnel meet. The pipe-crawler was novel in that that it could relay live visual and gamma survey data over such a long distance and water depth.

The immediate results indicate that the pipes:

- contain only low levels of alpha/beta/gamma ray emitting radionuclides but no significant accumulations of activity were found nor were any particles detected
- are clear of any significant debris up to 300m linear pipe travel (this is beyond the extent of the Shaft Grout Curtain)
- are apparently in good physical condition

The data acquired during the survey is currently being reviewed and a report prepared.

The next stage in the work is to review the survey data from both the old diffuser and from the effluent pipes together to enable DSRL to put forward a work programme to consider the BPM for decommissioning the system as a whole. This proposed programme of work will be presented to NDA during March 2009.

NB Although the potential total distance of crawler travel was 457m, the survey was carried out to a maximum distance of 300m in each pipe. At this distance, the crawler has passed the triple point, the lowest point of the system where particulate materials would start to accumulate, by 80 metres and at this point is well beyond the extent of the shaft grout curtain and tunnel plug. No significant accumulations of activity or material were found; in fact even at pipe joints the pipes were visibly clear of material. For these reasons, further travel along the pipes was not undertaken.

4 DOUNREAY PARTICLES: DPAG

DPAG's Fourth Report was published on the 19th of November and is available from the SEPA website. The report makes a number of recommendations that DSRL will take forward as part of the clean-up. It defines the limited extent of the area where the highest activity particles remain and contains new information on the westward plume and recommends continued monitoring on-shore during the clean-up phase.

Member of DPAG visting the Dounreay foreshore to verify Dounreay's assumptions about the rock formation around the old diffuser.

DPAG's primary concern was with respect to future sources of particles and issues around the old diffuser chamber. DSRL has confirmed that the potential of future sources was recognised by the site and was now a fundamental part of the risk management before a decommissioning activity was undertaken.

In terms of solubility one particle which showed unusual solubility had been reported in DPAG's third report. Further tests had been conducted to see if this was typical as it could impact on doses. The results of the tests indicated that this was an extreme case and DPAG were satisfied that this did not require a change to the category of particles as defined in DPAG's third report.

DPAG acknowledged the significant improvements in the detection system for the offshore system (TROL) and the on-shore system.

With respect to the extent of the offshore contamination DPAG had incorporated minor modifications to its maps to include latest data.

For public beaches recalculations had been carried out following the particle finds at Sandside beach. DPAG now estimate that about two relevant particles might be present on Sandside beach and estimated that the chance of any single particle on the beach being a significant particle was about 1 in 1000.

DPAG also recommended that, as far as possible, monitoring of the foreshore and Sandside beach should be carried out on a fortnightly basis and this should be established during the off-shore retrieval campaign.

In addition DPAG welcomed the concept of a sentry box which will give an indication of changes in particle movement towards Sandside beach while the off-shore retrieval is underway. Sandside should be monitored fortnightly for at least one year to provide SEPA with consistent data to review.

DSRLwill implement those recommendations under its control.

SEPA were currently considering a successor for DPAG. It was proposed to set up a smaller independent group to review the results of particle retrieval and beach finds. Once a decision was reached SEPA would write to DPAG's chairman and to DSRL. It is expected that DPAG's successor will be identified in the next month.

5 MONITORING OF BEACHES

A new contract for beach monitoring has now been awarded. Two companies had provided tenders with both systems very similar in detection technology. Both companies intimated that there were further potential improvements in the deployment of the systems.

Nuvia was selected as the preferred contractor and the contract commenced in February 2009 and will cover work being carried out at Dounreay and Sellafield.

The hand-held monitoring system has now been modified to utilise the same detection technology as is now present on the vehicle based beach monitoring equipment. The new system has improved detection with digital processing and was trialled on the foreshore. Further modifications to ease handling will be carried out. SEPA has been informed the new equipment is now available for deployment.

5.1 Dounreay Foreshore

In January 2009 there were two particle finds. A significant particle was detected and removed from the Dounreay East Foreshore and a relevant particle was removed from the Dounreay West Foreshore. In February a further two particles were detected on the Dounreay East Foreshore, one significant and one relevant.

DPAG recommended formal closure to the public of the Dounreay foreshore. A meeting between SEPA, DSRL, The Highland Council and National Health Service to discuss the issue of closing the foreshore will be organised shortly. Crown Estates will also be kept informed of progress.

5.2 Sandside Beach

Permission to access Sandside beach continues to be denied. Negotiations for the resumption of access are ongoing.

5.3 Dunnet beaches

Four strandline surveys will be carried out at Dunnet beach during 2009-10. At the same time, surveys will be carried out on targeted areas, below the access points, of the Dunnet Beach SEPA have intimated they intend to carry out a habit survey and following this a review of monitoring Dunnet beach will be carried out.

It is intended to use the new hand-held detection system, where appropriate, during the next surveys at Murkle and Peedie beaches. The results will then be considered to enable recommendations for future monitoring to be made.

6 KEY DATES

Date	Description
Feb 09	New beach monitoring contract in place
June 09	Offshore retrieval recommences
March 09	Report on the Old Pipeline investigation
March 09	Programme of work in place detailing the scope and objectives required for detaining the methodology to be used in decommissioning the Old Diffuser and associated pipelines
March 09	Contract awarded for the offshore particle recovery for the 2009 season.

Particles Project Team
Dounreay Site Restoration Ltd (DSRL)
5th March 2009

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.**