



**Dounreay Site  
Restoration Ltd**

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Dear June

DSRL have prepared a response to the Shetland Island council letter of 8 July, to aid discussion on the points raised. A copy of the response is attached. The letter refers to the PRAG(D) report and to SEPA. Both of these bodies will have an important input into the definition of the completion criteria and hence they also may wish to provide a response to the Shetland letter.

We remain committed to carrying out the necessary offshore work as defined by PRAG(D)



## RESPONSE BY DSRL TO QUESTIONS RAISED BY SHETLAND ISLAND COUNCIL ON THE 2010 PRAG(D) REPORT

The DSRL response to the points raised by Shetland Council is shown in blue text.

### Particle Retrieval Advisory Group annual report

The Council has long-standing concerns regarding the historic large-scale discharge of radioactive particles from Dounreay and the potential risks, both perceived and real, to the environment, people's health and detriments to the regional economy. There has to be concerns over the unknown location of the vast majority of the particles, which may have spread over a very wide area, while recovery work has only taken place where monitoring of the seabed, foreshore or beaches has taken place around the north coast of Caithness and close to Dounreay in particular.

DSRL note that the council have consistently voiced their concerns with respect to the particles issue. There has been significant work with respect to the location and transport of particles as reported in DPAG reports 3 and 4. The particle plume maps reproduced in these reports together with the wider distribution of the mobile fraction through the Pentland Firth and beyond to Sandy Biddle have been reported. The recovery work has deliberately been focussed on the area where most of the significant particles were believed to lie. This was stated in the outcome of the BPEO, determined through public consultation. The work completed so far has not indicated that the plume area is different to the area predicted by DPAG, only that the numbers of particles being found is lower.

The Council remains concerned about the lack of knowledge regarding the location of the vast majority of the particles, but it has welcomed the efforts by the site owners in recent years to tackle this issue more seriously and accept the financial consequences.

The Councils concern is difficult to understand. The knowledge on the area where most of the particles are found has been steadily improved. The work the site agreed to carry out as the result of the BPEO has confirmed the general size of the plume area, with reducing numbers of finds at the edges, indicating the problem area was similar to that defined by DPAG.

However, the Council has consistently argued that the particle recovery work must be carried out efficiently and involve the recovery of all detected particles, irrespective of their activity. In addition the Council believes no final End State for site decommissioning can be fixed until stakeholders have agreed what they are prepared to accept.

NDA agreed with DSRL that the best available technology should be used. The Land and Marine ROV is exactly that. It locates and retrieves 95% or more of detected buried particles. It is not able to capture mobile particles, but the majority of these are believed to be of low activity. They are not the prime target of this work. PRAG(D) have been asked to provide advice to SEPA and DSRL on the completion criteria. This group includes both a group of members with the prerequisite skills to analyse the results of the retrieval work, together with observer Agencies. DSG have asked Mr P Cartwright to provide feedback to their group and to take forward any specific issues to PRAG(D). Part of the focus for PRAG(D) is to understand repopulation. The removal of the main sources should ensure any repopulation is minimal. Resurvey of areas of overlap, that are recovered to ensure continuity of monitoring, have shown very limited repopulation.



Given this background the Council was particularly concerned by the comments in the recent annual report to SEPA and DSRL from the Particles Retrieval Advisory Group.

In the report the Group raises serious concerns about the efficiency of the remotely-operated vehicle currently being used to detect and recover radioactive particles on the seabed off Dounreay.

PRAG(D) has not raised serious concerns about the efficiency of the ROV. It has highlighted there is a discrepancy between the number of particles being found and the numbers predicted by DPAG. This may be due to the efficiency of detection (no detector deployed in this mode could be claimed to be 100% efficient), particles being beyond the range of detection or due to the particles not being there in the first place. It should be remembered that the DPAG maps were built up from spot sampling by divers and ROV monitoring, both within the plume and in the wider environment of the Firth(DPAG 4) over a number of years. The information gained from the more recent contiguous monitoring now being carried out, together with the efficiency check, carried out during the 2011 operations will greatly improve the knowledge of the remaining particles. This information is being provided to PRAG(D) for analysis and we expect to have revised plume maps before next season.

The report states "it is clear that the detection efficiency, particularly at depth, is not 100% and... the same is true for the recovery efficiency for detected particles". The Group says offshore work this summer will allow a comparison with earlier predictions of the number and distribution on the particles and they hope to be able to make "a more reliable estimate of the absolute numbers of particles remaining".

As stated above no system will be 100% efficient in the detection of particles. Our reporting of 'in-situ' particles also shows retrieval is not 100%. Since the remediation work commenced there has been confirmation of the shape of the plume, but the number of particles being found may be because the detector efficiency is low, the particles are buried beyond the range of detection, the particles have broken up into much smaller particles or perhaps they are not there. If they are not present, it does not necessarily mean they have moved elsewhere as it may be the case that they had never entered the marine environment or have broken down to activity levels which are of no concern for health.

Despite the many years of analysis and surveying, these statements appear to highlight a continued lack of information and certainty regarding the number, location and movement of particles in the areas where recovery work is taking place. The comments by the Group are especially disappointing given the reassurances the DSG has received over the apparent efficiency of current recovery work.

It is true there is a lack of certainty with respect to particle numbers. This is inevitable as the actual number discharged will never be known. DSRL have worked closely with DPAG and their successor Group PRAG(D), SEPA and other agencies since 2005 to try to quantify the extent of the problem. The mapping of the Significant particle plume in DPAG 3 was a breakthrough, it highlighted a plume of potentially hazardous particles in a relatively small area close to Dounreay. This informed the Particles BPEO and allowed the present approach to be defined. The targeting of the area represented by the 'Significant plume' has been successfully tackled, in stages since 2008. One of the requirements of the BPEO is the positive reporting of the progress. In the 2010 report PRAG(D) welcomed the removal of 429 particles, they highlighted a discrepancy in the numbers and identified a revised approach for 2011 to establish the equipment performance. Why is this disappointing given the reassurances DSG have received?

When considering any End State for the site, the Group also commented on a statement by the north region board of SEPA in 1998 that the seabed should be returned to a "pristine condition", which PRAG said implied removing all the particles. However the Group states



compliance with this statement is “not feasible” due to the lack of efficiency of the recovery work.

Since the North Regional Board of SEPA made the statement, legislation has been introduced by the Scottish Government with respect to Radioactively Contaminated Land.

DSRL is tasked with the restoration of the Dounreay Site by the NDA. We have a responsibility to spend the funding provided to the site wisely, addressing those projects that have a significant effect on reducing hazards on site and in areas off-site where there are known problems. The Particles issue is a high priority project. It has been highlighted in the NDA business plan and the site has been supported in moving forward with this remediation project. We are using the best available technology, to deplete the source of particles harmful to man, whilst removing as many others that are detected and are within the retrieval capability of the equipment. It was made clear during the Particles BPEO that we cannot remove all particles. We are targeting the area where most Significant particle were known to reside. We will, with others, analyse all the results and attempt to produce completion criteria for the work and as a minima this would be to ensure that the local seabed did not require further remediation under the radioactive contaminated land regime. It will be for SEPA at an appropriate juncture, under this regime, to determine if sufficient work has been done.

The work term has to be finite, we believe the main source of the particles that find their way to Sandside is the result of particle fragmentation, not a continuing release. Hence, by removing the main source of the problem, the potential for particles to find their way back to a beach is also much reduced. The BPEO advocated a period of beach monitoring beyond the offshore work as demonstration the problem had been reduced to a level that further intervention would be unnecessary.

With the data collected in 2011 the group says it will be possible to estimate “the effort required to remove a given proportion of particles from the seabed. It will then be necessary for a decision to be made as to the target value to be achieved”. The Council is concerned that the Group stresses this only relates to the recovery of significant particles, not those of lesser activity.

The Particles BPEO was clear that the remediation should be focussed on the area where most significant particles were found. It is these that are the greatest hazard. Those of lesser activity found within this area are also being retrieved. There was no intention to move to other areas, unless improved information indicated a need to do so.

The Council believes the comments in the report raise serious questions about the reliability of the current recovery work and the information the work is based upon. The Group’s report needs a speedy response from DSRL and SEPA and the Group should be asked to provide an urgent assessment of the results of this summer’s recovery work.

DSRL do not believe there are serious questions with respect to the reliability of the current work. PRAG(D) have provided explanations for the discrepancies and will be assessing the results of the 2011 work. DSRL are processing the data and will send their draft report to PRAG(D) as soon as it has been written. PRAG(D) have already rescheduled their planned meeting in November to August.

In addition urgent consideration needs to be given as to what final condition of the seabed, foreshore and beaches is acceptable to stakeholders.

PRAG(D) were set up to provide advice to SEPA and DSRL on this. The Stakeholder group has a voice through this forum and other relevant agencies are represented as observers. Currently P Cartwright provides the back up for PRAG(D) to DSRL.

Response prepared by;  
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