



Main Findings of the Commission's Article 35 verification in Scotland

UKAEA DOUNREAY SITE

Site and area:	UKAEA Dounreay, Caithness, North of Scotland, UK
Date:	28 to 30 September 2004
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INTRODUCTION

Article 35 of the Euratom Treaty requires that each Member State shall establish facilities necessary to carry out continuous monitoring of the levels of radioactivity in air, water and soil and to ensure compliance with the basic safety standards.

Article 35 also gives the European Commission the right of access to such facilities in order that it may verify their operation and efficiency.

The main scope of verifications performed under Article 35 of the Euratom Treaty is to provide an independent assessment of the adequacy of monitoring facilities for:

- Liquid and airborne discharges of radioactivity into the environment by a site (and control thereof).
- Levels of environmental radioactivity at the site perimeter and in the atmospheric, terrestrial and marine environment around the site, for all relevant exposure pathways.
- Levels of environmental radioactivity on the territory of the Member State.

For the purpose of such a review a verification team from the European Commission visited, from 28 to 30 September 2004, the North of Scotland where the Dounreay nuclear site operated by the United Kingdom Atomic Energy Authority (UKAEA) is located.

With due consideration of the scope of the verification mission and taking into account the relatively short time available for the execution of the verification programme, it was agreed with the Scottish competent authorities to focus the activities on:

- Follow-up of the 1999 verification recommendations ⁽¹⁾ and implementation thereof.
- Modifications to the environmental monitoring programme since 1999.
- The monitoring of airborne discharges from:
 - i the Fuel Cycle Area (FCA)
 - ii the Marshall Laboratory
 - iii the Effluent Laboratory
 - iv the Sodium Disposal Plant (SDP)
 - v the Waste Receipt Assay Characterisation and Supercompaction facility (WRACS)
 - vi the Low Level Liquid Effluent Treatment Plant (LLETP)
- The monitoring of liquid discharges from the LLETP.

The present report gives an overview of the main findings of the verification team and corresponding recommendations.

Recommendations are addressed to the Scottish competent authorities.

MAIN FINDINGS

The proposed verification programme could be completed within the time allocated. In this regard the verification team appreciated the advance information supplied, as well as the additional documentation received during and after the verification.

1. Main findings with respect to the operator's radioactive discharge monitoring programme and related regulatory control

The verification activities performed at the facilities for monitoring and sampling of liquid and airborne discharges of radioactivity into the environment:

- 1.1 Confirmed the existence and functionality of monitoring and sampling facilities as defined in the regulatory obligations.
- 1.2 Confirmed that discharges are monitored and sampled in accordance with regulatory obligations.

¹ The previous verification under Article 35 at Dounreay took place in March 1999 and resulted in a number of recommendations from the European Commission to the United Kingdom competent authorities. The 1999 Main Findings document can be found on:

http://europa.eu.int/comm/energy/nuclear/radioprotection/verification_en.htm

It must be noted that a number of recommendations were discussed and resolved with the Scottish competent authorities in the year following the 1999 verification visit. These recommendations were therefore not addressed in the 2004 verification visit.

- 1.3 Established that the monitoring and sampling facilities are adequate and that the sampling programmes are satisfactory.
- 1.4 Established that quality assurance and control are implemented through a comprehensive compilation of written procedures and working instructions.

Follow-up of 1999 recommendations:

- 1.5 The recommendation to the effect that the UKAEA put in place adequate alpha monitoring for gaseous effluents from the Marshall Laboratory has been satisfactorily implemented.
- 1.6 The verification activities revealed, in comparison to the prevailing situation in 1999, that quality assurance and control have been significantly improved. Similar statutory sampling equipment for all discharge points and centralised documentation and maintenance control were important factors in achieving this objective.

The recommendation that the regulator ensures that procedures are put in place to allow prompt detection of failures in quality assurance and control programmes has been satisfactorily implemented.

Conclusion:

- 1.7 *The verification activities performed do not give rise to any specific recommendation.*

2. Main findings with respect to the operators' analytical laboratory for discharge samples and related regulatory control

The verification activities performed at the analytical laboratory for liquid and airborne discharges samples:

- 2.1 Established that the laboratory is well equipped and satisfactorily staffed with adequately trained personnel.
- 2.2 Established that quality assurance and control are implemented through a comprehensive compilation of written procedures and working instructions.
- 2.3 With respect to point 2.2 above:

The verification team, in the framework of general quality assurance and control, endorses the project of replacing the current spreadsheet-based reporting system by an integrated database that would reduce the number of data input operations.

Follow-up of 1999 recommendations:

- 2.4 The verification activities revealed, in comparison to the prevailing situation in 1999, that quality assurance and control have been significantly improved. Obtention of UKAS accreditation for the laboratories has been an important factor in achieving this objective.

Conclusion:

2.5 *The verification activities performed do not give rise to any specific recommendation.*

3. Main findings with respect to the operators' environmental monitoring programme and related regulatory control

The verification activities performed at the facilities for monitoring and sampling the environment on and around the UKAEA Dounreay site:

- 3.1 Confirmed the existence and functionality of monitoring and sampling facilities as defined in the regulatory obligations.
- 3.2 Confirmed that the levels of radioactivity in the environment are monitored and sampled in accordance with regulatory obligations.
- 3.3 Established that the monitoring and sampling facilities are in general adequate and that the programmes of sampling are satisfactory.
- 3.4 Established that quality assurance and control are implemented through a comprehensive compilation of written procedures and working instructions.
- 3.5 Established that the relationship between UKAEA and its contractor carrying out the statutory environmental sampling programme is duly formalised.

Follow-up of 1999 recommendations:

- 3.6 The recommendation that the UKAEA fits its environmental monitoring stations (more in particular its high volume air samplers) with guaranteed power supply and remote automatic warning in case of system failure, led the UKAEA to add to its stations a device logging operating hours and to increase its inspection frequency of the stations.

The above improvements, though not fully satisfactory, were implemented pending the commissioning of a 'new generation' high volume air sampler. This modern system, still in a testing phase, was demonstrated to the verification team. The team believes that the new high volume air samplers, when brought into operation, will significantly enhance UKAEA's capability for monitoring airborne radioactivity.

Conclusion:

- 3.7 *It is recommended that the competent regulatory authority considers a statutory replacement of UKAEA's existing high volume air samplers with the 'new generation' devices when these have proven their reliability. At the same time it is suggested that when these new systems become standard equipment, they be duly fenced off so as to ensure their physical integrity.*

4. Main findings with respect to the operators' analytical laboratory for environmental samples and related regulatory control

The verification activities performed at the analytical laboratory for environmental samples:

- 4.1 Established that the laboratory is well equipped and satisfactorily staffed with adequately trained personnel.
- 4.2 Established that quality assurance and control are implemented through a comprehensive compilation of written procedures and working instructions.

Conclusion:

- 4.3 *The verification activities performed do not give rise to any specific recommendation.*

5. Main findings with respect to the independent environmental monitoring programme put in place by the Scottish Environment Protection Agency (SEPA)

The verification activities focussed on the provisions put in place by SEPA, since April 2000, to independently monitor and sample airborne radioactivity in the vicinity of the UKAEA Dounreay site.

The verification activities:

- 5.1 Confirmed the existence and functionality of three medium velocity air samplers.
- 5.2 Established that the medium velocity air samplers are adequate and that the sampling programme is satisfactory.
- 5.3 Established that the relationship between the regulator and the contractor operating and maintaining the medium velocity air samplers is duly formalised.

Follow-up of 1999 recommendations:

- 5.4 The recommendation that the independent environmental monitoring programme put in place by SEPA would benefit from the installation of medium velocity air samplers has been satisfactorily implemented.

Conclusion:

- 5.5 *The verification activities performed do not give rise to any specific recommendation.*

6. Main findings with respect to environmental data management by SEPA

SEPA extensively demonstrated its newly developed database for environmental data management.

Follow-up of 1999 recommendations:

- 6.1 The recommendation that SEPA integrate the historical set of environmental data which it inherited from the Scottish Office into the then used electronic data management tool has been satisfactorily implemented through the development of a new database application.

Conclusion:

- 6.2 *The verification activities performed do not give rise to any specific recommendation.*

7. Main findings with respect to particles of radiological significance in the marine environment - beach surveys

The verification team received an extensive briefing on the evolution that took place since 1999: extended scope of beach surveys, improved detection technologies, more stringent regulatory requirements etc.

The verification team witnessed, at Thurso beach, a demonstration of the Groundhog Evolution™ motorised beach survey system. This system replaced the earlier Groundhog™ in the summer of 1999.

- 7.1 The verification team noted that Groundhog Evolution™ provides UKAEA with enhanced beach survey capabilities and increased detection efficiency capabilities when compared with the former Groundhog system. It was also noted that the detector signals are linked with satellite positioning technology (GPS) thus allowing a precise mapping of the area monitored.
- 7.2 With respect to survey capabilities at Sandside beach the verification team learned that the owner of this beach, since April 2004, again refuses access to the UKAEA surveying teams.

Follow-up of 1999 recommendations:

- 7.3 The recommendation to the effect that “the extensive use of the vehicle-mounted beach monitoring system which, in conjunction with the frequency and extent of beach monitoring SEPA is requesting in the new draft Authorisations will ensure an appropriate monitoring programme of public beaches around Dounreay” and “Reassurance monitoring of beaches must continue and be expanded where members of the public potentially may encounter radioactive particles” have been satisfactorily implemented - with the notable exception of Sandside beach.

Conclusions:

- 7.4 Notwithstanding the technical improvements achieved with Groundhog Evolution™:

It is recommended that SEPA regularly evaluate the feasibility and necessity of imposing an even more stringent target performance on the beach survey systems that are currently in use.

- 7.5 Since it is regrettable that the competent authorities and the owner of Sandside beach cannot find an agreement that would allow continued full-scale monitoring of this public beach:

It is recommended that the competent authorities find ways to reach a mutually satisfactory and robust agreement with the owner of Sandside beach so as to resume local survey activities at regular intervals. The programme of detecting and subsequent removal of particles of radiological significance should, for reasons of protection of the population, not be interrupted on this publicly accessible beach.

- 7.6 *The Commission would appreciate it being kept informed about any further investigation results and envisaged remedial actions with respect to particles of radiological significance on public beaches around Dounreay.*

8. Main findings with respect to particles of radiological significance in the marine environment - Dounreay off-shore

The verification team received an extensive briefing on the evolution that took place since 1999: extended scope of marine surveys and their results, improved detection technologies, underlying support programmes etc.

The verification team witnessed a demonstration of the remotely operated vehicle-mounted underwater detection system, specifically developed for off-shore surveys.

- 8.1 *The verification team endorses the efforts made to develop further technical means to fully determine the extent of the contamination (characterisation, population, distribution and dynamics) of the local marine environment with particles of radiological significance.*

Conclusions:

- 8.2 *The verification activities performed do not give rise to any specific recommendation.*
- 8.3 *However, the Commission would appreciate it being kept informed about any further investigation results and envisaged remedial actions with respect to particles of radiological significance in the marine environment around UKAEA Dounreay, both on-shore and off-shore.*

9. Main findings with respect to the Dounreay Waste Shaft

The verification team was extensively briefed on progress made since 1999. Presentations were given that explained the current situation and future prospects with regard to the waste retrieval from and eventual decommissioning of the Shaft.

Follow-up of 1999 recommendations:

- 9.1 The recommendation to the effect that the boreholes around the Shaft be used for environmental monitoring purposes (systematic analysis of extracted water samples to

monitor any activity that may escape from the Shaft) has been satisfactorily implemented.

Conclusion:

9.2. *The Commission would appreciate it being kept informed about progress made with respect to the isolation project of the Dounreay Shaft and any further actions that may be undertaken to remove the waste that is contained within the Shaft.*

FINAL REMARKS

- (1) The verification visit was successful and the objectives of the review were met. Within the remit of verification activities under Article 35 of the Euratom Treaty it has been demonstrated that the facilities necessary to carry out continuous monitoring of levels of radioactivity in the air, water and soil around the UKAEA Dounreay site are adequate. The Commission could verify the operation and efficiency of these facilities.
- (2) It should be noted that the recommendations by the Commission to the Scottish competent authorities do not discredit the conclusion that radiological environmental monitoring is in conformity with the provisions laid down in Article 35 of the Euratom Treaty.
- (3) The Commission would appreciate being kept informed about the actions the Scottish competent authority may undertake in the framework of the recommendations made.
- (4) Finally, the verification team acknowledges the excellent co-operation it received from all persons involved.

[signed]

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