EUROPEAN COMMISSION

DIRECTORATE-GENERAL ENVIRONMENT
Directorate C – Environment and Health
ENV.C.4 – Radiation Protection

Main Findings of the Commission's Article 35 Verification Dungeness Power Stations

Area: Dungeness A and B Power Stations, Kent, UK
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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 (EC) the right of access to such facilities in order that it may independently verify their operation and efficiency.

For the EC, the Directorate-General for Environment (DG ENV) and more in particular its Radiation Protection Unit (ENV C.4) is responsible for undertaking these verifications.

For the purpose of such a review, a verification team from DG ENV visited the Dungeness A and B Nuclear Power Stations located on the coast of Kent, England, operated by BNFL Magnox Generation Ltd and British Energy plc respectively.

The visit included meetings with the Department of the Environment, Transport and the Regions (DETR), the Environment Agency (EA) and the Food Safety Agency (FSA).

The EC team also visited the Veterinary Laboratory Agency (VLA) at Weybridge. The VLA is contractor to the FSA and performs radiochemical analyses on environmental samples.

The verification activities took place on 6-10 November 2000.

The verification activities encompassed the following audits:

- Discharges of radioactivity into the environment.
- Levels of environmental radioactivity at the site perimeter and in the marine, terrestrial and aquatic environment around the site, for all relevant exposure pathways.

With due consideration of the scope of the verification mission and taking into account the relatively short time available for the execution of the programme, it was agreed that emphasis would be put on:

- The operator's monitoring and control facilities for gaseous and aqueous discharges of radioactivity into the environment.
- The implementation of the statutory environmental radioactivity monitoring programme as performed by the operator.
- The operator's effluent and environmental laboratories, including aspects of quality assurance and control as well as document control.
- The independent environmental monitoring programme as performed by the competent authorities.

The present report gives an overview of the Main Findings of the verification team and corresponding recommendations.

These recommendations are addressed to the UK competent authorities.

1. Main Findings with respect to the operators' radioactive effluent monitoring programme and analytical laboratory.

1.1 Dungeness A and B – liquid discharges

1. The verification team considers that discharges of liquid radioactivity are properly controlled, as specified in the Certificates of Authorisation and the related Implementation Documents. Quality control is implemented through compilation of comprehensive written operational procedures and interlock systems. The verification activities performed do not give rise to a specific recommendation.

1.2 Dungeness A – gaseous discharges

2. The verification team considers that discharges of airborne radioactivity at the Vent Stacks and Blowdown Systems are properly controlled, as specified in the Certificate of Authorisation and the related Implementation Document. Quality control is implemented through compilation of comprehensive written operational procedures. The verification activities performed do not give rise to a specific recommendation.

3. Routine sampling for I-131 is not performed as it is deemed only necessary to implement such sampling in case of well-defined emergencies; Magnox reactors, under normal operational conditions, do not release this radionuclide. The verification team noted that, in case an emergency would occur, it would take the operator an undefined amount of time before the sampling device for I-131 would become operational. Even though the release of iodine under normal operations is believed not to occur, it should be considered if regular monitoring of I-131 would not be useful, be it only to effectively confirm the absence of such releases.

> *The verification team recommends the Environment Agency to consider the implementation of regular monitoring of I-131 in gaseous discharges from Magnox power stations.*

4. During its verification activities the team noted that the sampling trolleys located at the Reactor Coolant Gas Circuits are suffering from minor but recurrent operational failures. These failures do however not appear to significantly affect the effluent sampling programme. Faced with this shortcoming of the reliability of the equipment, the operator took the decision to replace the existing sampling trolleys with modern equipment. Replacement is planned to take place during the year 2001. The verification team fully endorses such a replacement.

The verification team considers that the control of airborne radioactivity in the Reactor Coolant Gas Circuit is broadly satisfactory. However, the verification team recommends the Environment Agency to ensure continuous availability of the Reactor Coolant Gas sampling devices.

1.3 Dungeness B – gaseous discharges

5. The verification team considers that, at the outlets that were subject to verification activities, discharges of airborne radioactivity are properly controlled, as specified in the Certificate of Authorisation and the related Implementation Document. Quality control is implemented through compilation of comprehensive written operational procedures. The verification activities performed do not give rise to a specific recommendation.

6. The verification team noted that the Environment Agency does not systematically perform independent sampling of radioactive discharges. Programmes of systematic independent verification of radioactive effluents are in place in most Member States of the European Union.

The verification team recommends the Environment Agency to consider the implementation of independent sampling of radioactive effluents to enhance the current programme of independent analysis of gaseous radioactive effluents from both power stations.

1.4 Dungeness A and B – effluents laboratory

7. The verification team considers the sample measurement devices present in the analytical laboratory to be adequate. Quality control on the equipment is assured through the implementation of written operation and calibration procedures. Sample and measurement results are well documented and traceability of results of (historical) samples is properly ensured; data management is consistent and adequate archiving of results is in place. The verification activities performed do not give rise to a specific recommendation.

8. Due to document control procedures prohibiting hard copies of working instruction to circulate, the latest approved versions of the working instructions covering sample management, assessment and reporting are made available at the analytical laboratory as electronic files on a local area network. The pathway leading to these instructions is, however, not user-friendly. The principle of having working instructions at arms-length is not satisfactorily implemented.

The verification team recommends the Environment Agency to ensure that the operators, in the framework of general quality control, optimise the accessibility of electronically archived working instructions.

9. The verification team noted, when auditing source documents at the analytical laboratory, that post-discharge proportional sample results (Dungeness A) had been substituted with pre-discharge results for a series of discharges that occurred in May 2000. Contrary to the ruling of the Certificate of Authorisation and the Implementation Document, the pre-discharge sample results were officially declared to the regulator and represent a departure from quality assurance and control standards.

The verification team recommends the Environment Agency to ensure that operators duly report and justify any departure from the rulings and principles laid down in the Certificate of Authorisation and detailed in the Implementation Documents.

The verification team recommends the Environment Agency to audit the operators' Management Procedures and Health Physics Instructions at set intervals in order to check the compliance of these quality control and assurance documents with the Certificate of Authorisation and related Implementation Documents.

10. The verification team noted that quarterly bulk samples are split between operator and regulator. The regulator has the bulk sample analysed by its contracting laboratory in order to obtain independent confirmation of the operator's declared result. The regulator omits, however, to inform the operator of the results of the independent analysis. The opportunity to provide the operator with valuable feedback for the assessment of his laboratory performance is lost by this omission.

The verification team recommends the Environment Agency to consider transmitting the results of their independent effluent sampling programme to the operators concerned, more in particular with respect to bulk samples, quarterly or otherwise, so as to provide the operators with a valuable means of performing analytical quality assurance checks.

2. Main Findings with respect to the operators' environmental monitoring programme and analytical laboratory.

11. The verification team considers that the operators' environmental monitoring programme, the District Survey Programme, is globally satisfactory. However, the team noted that besides quarterly sampling at the four 'outer' locations (farms), only one out of eight 'inner' locations (in the immediate periphery of site) is sampled in any given quarter. Every 'inner' location is therefore sampled only once every two years. It is the verification team's opinion that the sampling frequency for 'inner' locations is too low to guarantee optimal representativeness of obtained environmental data.

The verification team recommends the Environmental Agency to ensure an improvement of the representativeness of the operators' herbage sampling through the implementation of yearly herbage sampling at all 'inner' locations, on well-defined sampling spots.

12. The verification team considers that the organisation and operation of the stations' environmental monitoring laboratory as well as the analytical equipment present to be

excellent. High levels of quality assurance and control are in place. Environmental samples and measurement results are well documented and traceability of results of (historical) samples ensured. The verification activities performed do not give rise to any recommendation.

13. The verification team noted that environmental samples for which individual assessment of specific nuclides is required are send to the Central Radiochemistry Laboratory at Berkeley. The CRL has NAMAS/UKAS accreditation and is entitled to perform the radiochemical operations necessary for such assessments. A representative of the CRL gave a comprehensive presentation on the accredited analytical methods used for the assessment of S-35 and C-14 in herbage samples and results obtained. Taking into account the restricted scope of the verification activities it could perform the team has no further comments to make.

3. Main Findings with respect to the Environment Agency environmental monitoring programme.

14. The verification team considers that the Environmental Agency environmental monitoring programme is globally satisfactory. However, the team noted a shortcoming in the quantitative assessment of aerosol-borne total beta activity and gammaspectrometric assessment of aerosol-borne radionuclides at ground level. The dry-cloth monitoring programme currently operated by FSA allows for a qualitative assessment of airborne activity concentration only.

The verification team recommends the Environment Agency to install medium velocity air samplers as collectors for representative sampling and quantitative assessment of aerosol-borne radionuclides resulting from atmospheric releases of activity. Such air samplers should be located at sites in the vicinity of the power stations where the dispersion of the releases may contribute to the dose to the population through inhalation.

4. Main Findings with respect to the Food Standards Agency environmental monitoring programme.

15. The verification team considers that the Food Standards Agency environmental monitoring programme is globally satisfactory. However, the team noted that herbage as feeding stuff is not sampled. There are numerous grazing grounds for sheep in the vicinity of the Dungeness power stations.

The verification team recommends the Food Standards Agency to implement a sampling programme for herbage where herbage is harvested as feeding stuff.

16. The verification team noted the high standards by which the Veterinary Laboratory Agency operates as well as the excellence of its quality management system. The verification activities performed do not give rise to any specific recommendation.

5. Conclusion.

The visit was successful and the objectives of the review were met. Within the remit of verification activities under Article 35 of the Euratom Treaty the report confirms that, with regard to the monitoring of gaseous and liquid discharges and of levels of radioactivity in the environment, the situation is broadly satisfactory.

However, some shortcomings were noted and lead to recommendations by the Commission to the UK competent authorities with the aim to achieve improvements.

The Commission would appreciate being kept informed about the actions the UK competent authority may undertake in the framework of the recommendations made.

Finally, the verification team acknowledges the excellent co-operation it received from all persons involved.

[signed]

V. Tanner

for C. Sauer [absent]