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## Main Findings of the Commission's Article 35 verification in Greece.

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<b>Area:</b>	Democritos Research Reactor Agia Paraskevi Attikis (near Athens)
<b>Date:</b>	23 to 25 May 2000
<b>Verification team:</b>	C. Sauer (team leader) S. Van der Stricht
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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 responsibility for undertaking these review and verification activities lies with the Directorate-General for Environment, Radiation Protection Unit (DG ENV.C.4) of the European Commission (EC).

For the purpose of such a review a verification team from DG ENV.C.4 visited the Greek Atomic Energy Commission (GAEC) and the National Centre for Scientific Research "Democritos" (NCSR), more in particular the latter's Institute of Nuclear Technology & Radiation Protection (INT-RP) that operates the Democritos Research Reactor (DRR). The verification activities took place between the 23<sup>rd</sup> and the 25<sup>th</sup> of May 2000.

The scope of the review was to provide independent verification of the adequacy of:

- The monitoring facilities for gaseous and liquid discharges of radioactivity (effluents) from the Democritos Research Reactor into the environment.
- The analytical laboratories for effluent sample measurements.
- The monitoring facilities for levels of environmental radioactivity at the Democritos site perimeter, for all relevant exposure pathways.
- The analytical laboratories for environmental sample measurements.
- Within the time available, and to the extent possible, part of the environmental radioactivity monitoring programme for the marine, terrestrial and aquatic environment in Greece.

The present report gives an overview of the main findings and corresponding recommendations of the verification team. These recommendations are addressed to the Greek competent authorities.

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## **Main findings and recommendations**

All verifications that had been planned by the verification team were completed successfully. In this regard the verification team appreciated the advance information supplied by the Greek competent authorities, as well as the additional documentation received during and after the verification.

The information provided and the outcome of the verification activities led to the following observations and recommendations.

The Commission would appreciate it being kept informed about investigative results and remedial actions the GAEC may undertake in the framework of the recommendations.

### **1 The monitoring of gaseous and liquid radioactive effluents**

1.1 The verification team noted that the gaseous effluent particulate monitoring system of the Democritos Research Reactor suffers from operational shortcomings due to intermittent temperature related failures of the on-line counting device. These failures also entail temporary loss of monitoring data.

*The verification team recommends the GAEC to investigate the operational shortcomings of the particulate monitoring system of the Democritos Research Reactor and to consider remedial action.*

1.2 The verification team noted that the condition of the computer hardware upon which the stack control systems are based leaves them vulnerable to possible breakdown. In view of the probable difficulties in obtaining spare parts should such a breakdown occur,

*The verification team recommends the GAEC to consider upgrading the computer hardware upon which the Democritos Research Reactor control and monitoring systems are based.*

1.3 The verification team noted that the sampling procedures of the decay tanks, aiming at controlling liquid activity releases, are satisfactory. However, the team observed that delay tank sampling, as additional control, is subject to shortcomings. Because of the continuous discharge mode of the delay tanks, the analytical results of the samples taken are available after the liquids have already left site and escaped operational control. Furthermore, due to the non-continuous mode of sampling a transient contamination is likely to go unnoticed.

*The verification team recommends the GAEC to consider fitting the liquid discharge delay tanks with a continuous monitoring device alarming the operator in case of an activity threshold transgression.*

1.4 Even though atmospheric and liquid emissions from the Democritos site are tending to zero for most radionuclides, the verification team considers that a comprehensive control measurement programme with systematic recording and reporting of results should be maintained.

*The verification team recommends the GAEC to consider the implementation of a control measurement programme for the atmospheric and liquid radioactive discharges from the Democritos Research Reactor.*

1.5 With respect to the monitoring and control of radioactive effluents, the verification team noted the absence of a well-defined statutory separation between the GAEC and the NCSR, the latter being the operator of the Democritos Research Reactor.

*The verification team recommends the GAEC to clarify the role, powers and independent status of the regulatory authority with respect to the operator of the Democritos Research Reactor, more in particular where authorisation, prior authorisation of discharges, justification and inspection are concerned.*

## 2 The environmental radioactivity monitoring programme

2.1 The verification team noted that the local sampling devices at the environmental monitoring station in the Athens area it visited were not operated adequately.

*The verification team recommends the GAEC to restore the air sampling capabilities at the N-Philadelphia station and to ensure that deposition-sampling activities are performed according to procedures. The team also recommends the GAEC to consider replacing the existing air sampler and deposition collector with devices in line with modern standards.*

2.2 The verification team noted that the yearly environmental reports issued by the GAEC were suffering from shortcomings such as clerical errors and incomplete data sets for various environmental monitoring stations.

*The verification team recommends the GAEC to improve the quality and transparency of its official yearly reports on the results of the environmental radioactivity monitoring programme in Greece.*

2.3 The verification team noted that the GAEC intends to take over the environmental radioactivity monitoring programme from the NCSR Environmental Radioactivity Laboratory within the next two years.

*The verification team recommends the GAEC, awaiting the future take-over of the environmental radioactivity monitoring programme from the NCSR, to formalise the distribution of responsibilities between itself and the NCSR.*

Furthermore the team invites the GAEC to already now take into consideration the following recommendations:

- *To ensure that the GAEC inherits the ERL electronic archive containing the historical data pertaining to the current environmental radioactivity monitoring programme, so as to preserve continuity of knowledge of environmental data and hence maintain follow-up and evaluation capabilities.*
- *To replace, where appropriate the old air samplers and the old deposition collectors with devices in line with modern standards and to ensure that various monitors and samplers are located in areas free of possible sources of interference.*
- *To ensure that any part of the activities of the programme that it may intend to devolve to third parties is duly formalised.*

2.4 The verification team witnessed a comprehensive demonstration of the GAEC radiation protection database currently under development. This database is intended to

become the repository of all relevant data generated by GAEC regulatory activities in the area of radiation protection, including the environmental radioactivity monitoring programme.

*The verification team recommends that the GEAC radiation protection database project receive particular attention; successful implementation will provide an excellent management tool, in particular with respect to quality assurance and control capabilities.*

2.5. The verification team, after having observed the current status of implementation of the Telemetric Radioactivity Monitoring Network and its high degree of technical sophistication, fully endorses the efforts made by the GAEC to develop and commission a state-of-the-art environmental monitoring tool. The Commission would appreciate being kept informed on progress made with regards to the commissioning of the Telemetric Radioactivity Monitoring Network.

## **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 aerial and liquid discharges and of levels of radioactivity in the environment, the situation in Greece is broadly satisfactory. However, some shortcomings were noted and lead to recommendations by the Commission to the Greek competent authority with the aim to achieve improvements.

The Commission would appreciate being kept informed about the actions the Greek 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.

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Team leader