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

### **Caorso Nuclear Power Plant – Region of Emilia Romagna.**

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**Date:** 15 to 19 May 2006

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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 purpose 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 marine, terrestrial and aquatic environment around the site, for all relevant exposure pathways.
- Levels of environmental radioactivity on the territory of the Member State.

A European Commission delegation conducted such verification from 15 to 19 May 2006 in the region of Emilia Romagna, at the following locations:

- The Caorso nuclear power plant (hereafter CNPP) and its surrounding area.
- The regional high-level laboratory for environmental surveillance (hereafter ARPA-PC) located in the city of Piacenza.
- The environmental surveillance station belonging to the Italian early warning network REMRAD, operated by the national the Agency for Environmental Protection and Technical Services (hereafter ANPA), located at Monte Cimone in the district of Modena.

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, emphasis was put on:

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- The CNPP statutory monitoring/sampling programme for liquid and airborne discharges of radioactivity into the environment as well as regulatory control thereof.
- The CNPP statutory environmental radioactivity monitoring/sampling programme as well as regulatory control thereof.
- The CNPP analytical laboratories for discharge and environmental samples, including aspects of quality assurance and control as well as document control.
- The site-related and regional environmental radioactivity monitoring programmes conducted by the ARPA-PC.
- The ARPA-PC analytical laboratories for environmental samples, including aspects of quality assurance and control as well as document control.

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

## **MAIN FINDINGS**

The Italian authorities proposed a verification programme covering all matters in which the Commission had expressed special interest.

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.

The results of the verification activities performed give rise to the following main observations and recommendations that are addressed to the Italian competent authorities.

### **1. The Caorso Nuclear Power Plant**

The verification activities demonstrated that:

- 1.1 The facilities necessary to carry out continuous monitoring of radioactive discharges from the CNPP are adequate. The Commission could verify the operation and efficiency of these facilities.
- 1.2 The facilities necessary to carry out continuous monitoring of levels of radioactivity in the air, water and soil around the CNPP are adequate. The Commission could verify the operation and efficiency of a significant part of these facilities.
- 1.3 The analytical laboratories for discharge and environmental samples are satisfactorily equipped and efficiently managed. The results of recent laboratory intercomparison exercises as well as proficiency tests indicate that the laboratory for environmental samples achieves high quality standards. The verification team fully endorses the efforts made by the laboratories to obtain accreditation for a number of analytical procedures.
- 1.4 Quality assurance and control is implemented through a compilation of written procedures and working instructions.

However, a topical recommendation needs to be formulated. This recommendation aims at achieving an improvement and does not discredit the fact that the radiological surveillance at the CNPP is in conformity with the provisions laid down under Article 35 of the Euratom Treaty.

The recommendation is as follows:

- 1.5 The verification team reminds, with respect to the handling of values below the detection limit for analytical results of discharge samples, that the European Commission issued Recommendation 2004/2/Euratom <sup>(1)</sup> wherein substitution rules for values below the detection limit are presented. Such rules are proposed to avoid unnecessary over- or underestimation of discharged activities. These substitution rules are in line with ISO standard 11929-7:2005.

*It is recommended that the competent regulatory authority APAT consider the benefits of revising its regulatory requirements for substitutions of analytical results (for discharge samples) below detection limits by bringing these requirements in line with Commission Recommendation 2004/2/Euratom and ISO standard 11929-7.*

## **2. The radiological surveillance of the CNPP conducted by the ARPA-PC.**

The verification activities demonstrated that:

- 2.1 The site-specific radiological surveillance programme as well as the sampling methodologies and related analytical methodologies are comprehensive and adequate.

## **3. The regional radiological surveillance programme by the ARPA-PC.**

The verification activities demonstrated that:

- 3.1 The scope of the regional surveillance programme, as conducted by the ARPA-PC, in conjunction with the other ARPA regional laboratories and the local services of the Ministry of Health (ASL), is adequate.
- 3.2 The collaboration between the actors and the ensuing individual responsibilities are well defined in written agreements. The verification team fully endorses the ARPA-PC objective to strengthen quality control on the sampling activities devolved to the ASL by issuing a set of specific quality assured sampling methodologies and associated working documents as well as requesting that these be put into effect by ASL personnel.
- 3.3 The ARP-PC analytical laboratories are satisfactorily equipped and efficiently managed. A comprehensive quality assurance and control programme is in place. The laboratory has obtained ISO/IEC 17025 accreditation.

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<sup>1</sup> Official Journal L 002, 06/01/2004 P. 0036 - 0046

However, in particular with respect to sampling/monitoring equipment:

- 3.4 The system for collecting wet/dry depositions, as installed on the premises of the ARPA-PC, is not in line with modern standards.

*It is recommended, that the Regional Ministry of the Environment provides the ARPA-PC with the necessary budgetary means to acquire an integrated dry/wet deposition sampling system that is in line with modern standards. It is furthermore recommended that the system be located in an area that ensures representative sampling conditions.*

- 3.5 The telemetric continuous air sampling and dose rate monitoring system located on the premises of the ARPA-PC, the only such system in Emilia Romagna, was out of order due to recurrent failures of the air conditioning system protecting its electronic components. The continuity of monitoring was therefore not achieved nor guaranteed. The intermittent sampling activities that the system still allows cannot be considered as being representative nor can it be accepted as being satisfactory.

*It is recommended that the Regional Ministry of the Environment provides the ARPA-PC with the necessary budgetary means to effectively and efficiently maintain its continuous monitoring and sampling capability for airborne particulate matter as well as dose rate monitoring.*

- 3.6 A continuous surface water sampling station located on the Po River (at the Isola Serafina dam, downstream of the Caorso NPP) is property of the Centro Elettronico Sperimentale Italiano (CESI). From 1997 onwards CESI leased the sampling station to the ARPA-PC, thus enabling the latter to acquire environmental data. However, early in 2001 the lease and hence the sampling activities had to be stopped because of budgetary constraints. Since February 2001 the river is spot-sampled every quarter: such a sampling regime cannot satisfactorily replace a continuously operating monitoring/sampling system.

*It is recommended that the Regional Ministry of the Environment provides the ARPA-PC with the necessary budgetary means to restore the continuous monitoring and sampling capability for surface water of the river Po.*

#### **4. The REMRAD national surveillance station operated by the APAT**

The verification activities:

- 4.1 Confirmed the existence and functionality of the REMRAD automated on-line monitoring station located near the summit of the Monte Cimone Mountain, district of Modena.
- 4.2 Showed the REMRAD stations to be state-of-the-art facilities.

## 5. Independent regulatory control

5.1 The APAT, on behalf of the Ministry of Productive Activities as licensing authority, is legally empowered with the regulatory means to control the Italian nuclear power plants; this responsibility may include the conduct of independent verifications. The APAT is also legally responsible for controlling the operator's environmental monitoring programme.

From the verification activities it transpired that:

5.2 With respect to operator's statutory reporting obligation for discharges of radioactive effluents into the environment:

- The APAT performs a paper-based verification of the reports that is restricted to checking whether the declared values do not breach the statutory discharge limits.
- The APAT does not implement independent verifications of the operator's radioactive discharge management that would allow APAT to satisfy itself that the operator's discharge declarations are reliable.

*While it is understood that controls and inspections by APAT should be commensurate with the shut-down status of the Caorso NPP and its future decommissioning, it is recommended that the Ministry of Productive Activities provides the APAT with necessary means so as to allow the latter to fully discharge itself from its responsibilities as laid down in Decree Nr 230 of 17 March 1995 (as amended), especially with regard to control and inspection of nuclear facilities and the waste these generate.*

5.3 With respect to operator's statutory reporting obligation on the results of its environmental surveillance programme.

- The APAT performs a paper-based verification of the reports that is restricted to checking whether the declared values are of within the same order of magnitude as those reported by the ARPA-PC.
- The APAT does not implement independent verifications of the operator's environmental surveillance programme that would allow APAT to satisfy itself that the operator's monitoring results are reliable.

*Without prejudice to the recommendation under 5.2 above, it is recommended that the APAT, in conjunction with the (Regional) Public Health Service, consider whether it would be beneficial, from the point of view of achieving adequate regulatory control over the statutory site-related environmental surveillance by the Caorso NPP, to amend the Memorandum of Understanding signed with the ARPA-PC to include control responsibilities. These controls should be adapted to the operational status of the Caorso NPP and therefore be restricted in their scope: even though the operator's laboratory has proven to maintain a high level of quality, it should at least encompass a small but representative programme of sharing environmental samples with subsequent formal comparison of the analytical results obtained.*

## CONCLUSIONS

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 Caorso Nuclear Power Plant and on the territory of the Emilia Romagna region of Italy are adequate. The Commission could verify the operation and efficiency of these facilities.

The European Commission would appreciate being kept informed about the remedial actions that the Italian authorities may undertake in the framework of the above recommendations.

The verification team acknowledges the excellent co-operation it received from all persons involved in the activities it performed.

*[signed]*

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Head of Mission