

Government of Italy



### 3<sup>rd</sup> ITALIAN NATIONAL REPORT FOR THE CONVENTION ON NUCLEAR SAFETY



Nuclear Installations 

November 2004

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## PREFACE

This National Report, pursuant to Article 5 of the Convention on Nuclear Safety co-ordinated by the International Atomic Energy Agency, which entered into force on 24 October 1996, describes the official actions that the Government of the Republic of Italy, as a Contracting Party to the Convention since 15 April 1998, has taken in order to fulfil its obligations prescribed in the Convention text as specified in Articles 6 through 19 of the Convention.

This Report is the third National Report. It represents a revision to the second Report submitted by Italy on October 2001 for the second Review Meeting of April 2002.

This third National Report was prepared in accordance with the “Guidelines Regarding National Reports under the Convention on Nuclear Safety”. It contains updated information on matters covered in the first and second Reports, noting significant changes occurred in national nuclear safety laws, regulations and practices. This Report also addresses topics of interest identified in the previous Report during the second Review Meeting.

Nuclear installations covered in this National Report are land based civil nuclear power plants under the jurisdiction of the Republic of Italy complying with the definition given under the Article 2i.

This National Report was drafted by the Italian Nuclear Regulatory Authority, that is APAT, on behalf of the Ministry of Foreign Affairs.

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ITALIAN NATIONAL REPORT  
FOR THE CONVENTION ON NUCLEAR SAFETY

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 LIST OF ACRONYMS

AFR	Away From Reactor
ALARA	As Low As Reasonably Achievable
APAT	Agency for Environment Protection and for Technical Services
ATWS	Anticipated Transient Without Scram
BWR	Boiling Water Reactor
CEVaD	Centre for Data Elaboration and Evaluation
CIPE	Interministerial Committee for Economic Planning
DISP	Nuclear Safety and Health Protection Directorate
ECCS	Emergency Core Cooling System
ENEA	Agency for New Technol., Energy and Environment
ENEL	National Electricity Company
ESF	Engineering Safety Features
EU NRWG	European Union Nuclear Regulators Working Group
FSAR	Final Safety Analysis Report
GCR	Gas Cooled Reactor
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
IFEC	Fuel Elements Fabrication Facility
INPO	Institute of Nuclear Power Operations
IRS	Incident Reporting System
ISPESL	National Prevention and Workers Safety Institute
ISS	Italian National Institute of Health
LOCA	Loss Of Coolant Accident
LWR	Light Water Reactor
NEA	Nuclear Energy Agency of OECD
NRWG	Nuclear Regulatory Working Group
OECD	Organisation for Economic Co-operation and Development
NEA CNRA	Committee on Nuclear Regulatory Activity
NEA CSNI	Committee on Safety of Nuclear Installations
NEA INEX	International Nuclear Exercise
OPCM	Ordinance of Prime Minister
OSART	Operating Safety Assessment Review Team
PARM	Post Accident Radioactive Monitoring
PASS	Post Accident Sampling System
PSA	Probabilistic Safety Analysis

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PSAR	Preliminary Safety Analysis Report
PUN	Italian Nuclear Unified Project
PWR	Pressurised Water Reactor
QA	Quality Assurance
RCPB	Reactor Coolant Pressure Boundary
RESN	Radiological Environmental Surveillance Network
SGTR	Steam Generator Tube Rupture
SOGIN	Company for the Nuclear Power Stations Management
TC	Technical Commission for Nuclear Safety and Health Protection
TMI	Three Mile Island NPP
TS	Technical Specification
US NRC	United States Nuclear Regulatory Commission
WANO	World Association of Nuclear Operators

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## 1. INTRODUCTION

### Introductory Remarks

This Report is intended to provide an updating of the Italian National Reports issued in 1998 and 2001. To organise its content, the following aspects have been considered:

- The limited extent of changes intervened in national nuclear safety laws, regulations and practices since 2001, when the Second National Report was prepared, as well as of topics identified in the previous Report during the second Review Meeting.
- The need of presenting in a clear and unitary way changes regarding matters dealt with in quite a lot sections of the First and/or the Second Report.

These considerations led both to include in the Report only those articles of the Convention dealing with matter subject to changes and to have a section of the document referring to more than one article. Together with a simplified implementation of the “article-by-article review”, an optimisation of the document itself was achieved.

In the light of the above remarks, apart from the matters here updated, the content of the First and the Second Reports is to be considered still valid. To facilitate the understanding of overall changes intervened after the drafting of the First Report, the text of the Second Report is herewith enclosed.

### **1.(a) Italy’s Nuclear Policy and Related Government Structure**

Since the abandonment of nuclear power that followed the referendum of November 1987, no significant change of policy has occurred on the matter. Within the national scientific community, lately it is anyhow noticed a debate for reassessing a potential future role of nuclear energy in the Country. In the framework of the privatisation of state owned utilities at EU level, it is also to be mentioned the growing interest of the Italian power utility ENEL in buying stakes in foreign former state-owned nuclear utilities.

As already announced in the Second Report, a slight change of the overall organisation of the Italian Regulatory Body was performed, mainly due to the incorporation of some additional Governmental services, dealing with

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environmental control matters. From then on, the name of the Regulatory Body was changed from ANPA to APAT (National Agency for Environment Protection and for Technical Services).

### **1.(b) National Nuclear Programmes Pertaining to Nuclear Installations – Main Themes and Main Safety Issues**

As referred in the Second Report, all the four Italian power stations are at present shut-down and, at different levels, under decommissioning. By early 2002 new applications for the immediate decommissioning of all the stations were submitted by SOGIN to the Ministry of Production to comply with the directives of the Government provided by the Ministerial Decree of May 7 2001. In the framework of the reference authorisation process, the review of the decommissioning plans by APAT is in the final stage and evaluation reports are going to be issued. Times and modes of implementing such a decommissioning programme will actually depend on the national policy to be established for both the identification of a national repository and the spent fuel and high level waste management.

Since the Second Report, a major event of interest for the status of the four Italian shut-down power stations has to be outlined. This is the Emergency Status declared on early 2003 by the Italian Prime Minister in national territories subject to specific risks for the presence of radioactive material. The main aspects of such an event are described in the following section 2.

#### **1.(c) List of Nuclear Installations**

See annexes 5.(a) and 5.(b) of the attached Second Report.

## **2. ARTICLE-BY-ARTICLE REVIEW**

### **2.(b)1.Art. 7 Legislative and Regulatory Framework**

#### **2.(b)2.Art. 8 Regulatory Body**

#### **2.(b)3.Art. 9 Responsibility of the Licence Holder**

The content of this section which describes the **Emergency Status** event above introduced, deals with matters covered in the First and Second Report primarily under the quoted sections and articles.



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### *Main Features*

The referred event of interest for the Italian nuclear installations was determined by the post 11 September measures implemented by the Italian Government to face the worldwide terrorist threat.

In fact, on early 2003, the Italian Prime Minister promulgated a Decree (DPCM February 14, 2003) declaring an emergency status in those national territories subject to specific risks coming from the presence of radioactive material. The actions required under this status, which has been recently extended until the end of 2004, are implemented in force of Ordinances by the Prime Minister (OPCM). Among the relevant decisions taken in this frame, the transfer of the licenses of all the interested installation to a unique actions “Implementer” subject (i.e. SOGIN) has to be highlighted.

Main objectives of the Prime Minister Ordinances were the adoption of provisions for protecting most vulnerable plants, and the improvement of radioactive waste storage facilities with prompt, homogeneous and economic cost effective interventions.

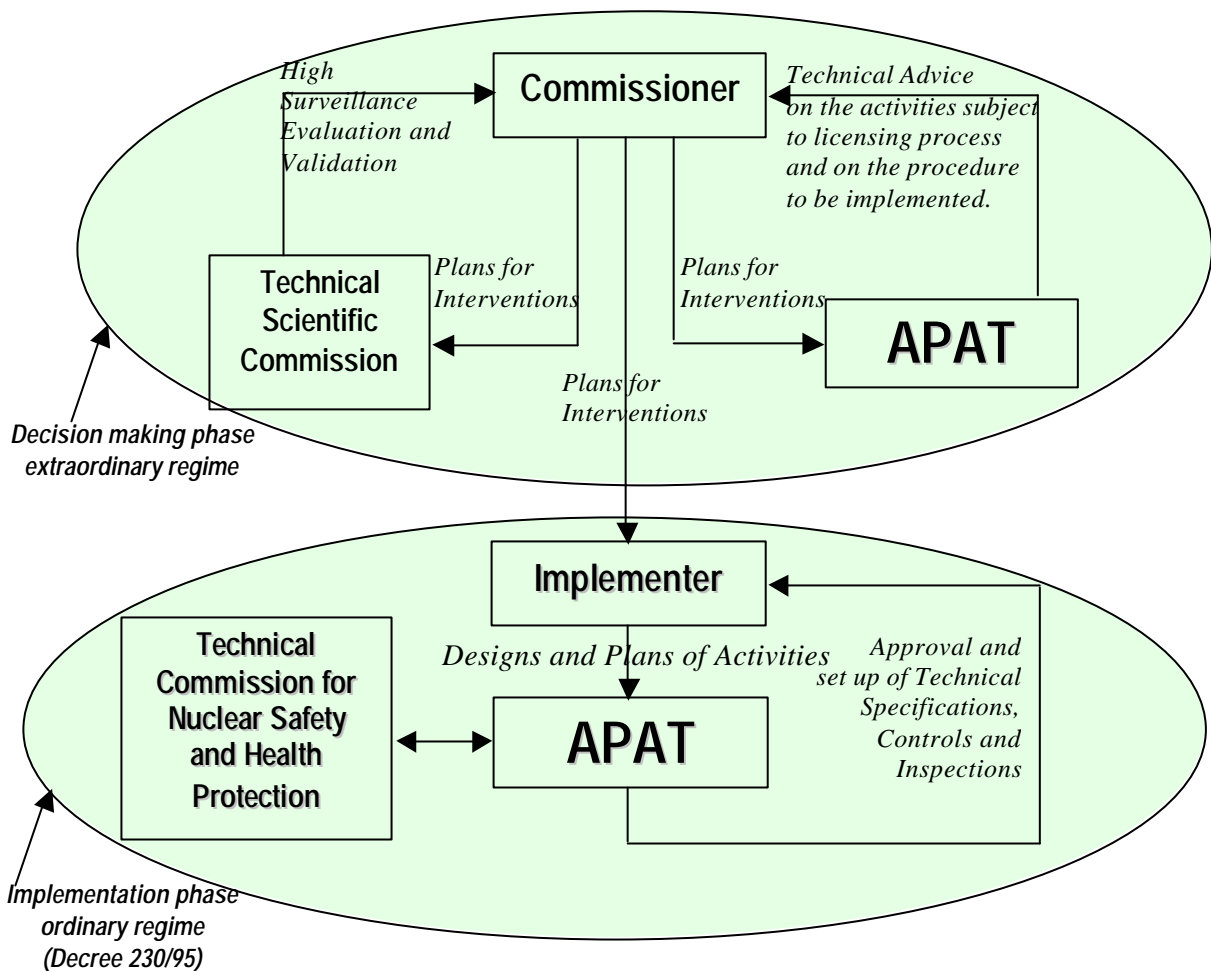
The main tools to effectively reach those objectives are the simplification of authorization procedures by repealing in part some Acts and the centralizing of the decision making process. For such a latter purpose, the Prime Minister delegated his own power to a Commissioner who, under the control of a Scientific Committee, was charged to issue specific Ordinances requesting the Implementer to perform the necessary actions, primarily in the area of security. The subsequent Ordinances identified plans of interventions establishing urgent provisions for enhancing both the physical protection and the safety conditions of the installations, with particular regard to the spent fuel and the radioactive waste.

The simplified scheme in Fig. 1 represents the procedure for authorising plans of interventions under the status of emergency, where the main subjects are:

- The Commissioner, who orders plans of interventions aimed at pursuing the established emergency objectives;
- SOGIN S.p.A., as the sole Implementer for the referred nuclear installations;
- APAT, the Regulatory Authority who provides technical advice on the plans of interventions of Commissioner, reviews and approves technical designs, proposes technical specifications and performs control and surveillance on the SOGIN’s activities;

- Technical-Scientific Commission providing evaluation and high level vigilance on the Ordinances' objectives, as well as evaluation and validation on the plans of interventions before their submittal to APAT;
- Technical Commission discharging duties established in the art. 9 of the Legislative Decree 230/95 (it provides independent advice to APAT on the acceptability of technical designs from the nuclear safety and radiation protection points of view).

Fig. 1 – Emergency Status – Process for Establishing and Implementing Plans of Interventions



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Plans of interventions have essentially a programmatic character and are subject to a prior evaluation and validation by the Technical - Scientific Committee. This Committee convenes representatives of all the competent Administrations (i.e. Presidency of Ministers' Council, Ministry of Environment, Production, Health), the interested Regions and the so called Conference State-Regions. The APAT advice on such plans is given in two steps. A preliminary advice of APAT is addressed to identify interventions which are significant from safety and radioprotection points of view, as well as to propose a suitable procedure to ensure an appropriate review of the technical design of selected interventions. In a subsequent step, basing on the review of detailed designs submitted by SOGIN and on the advice of the Technical Commission, APAT releases authorization to the execution of such interventions together with a proposal of technical specifications. Control and surveillance are subsequently ensured by APAT.

As far as urgent interventions of security are concerned, APAT takes note of the established plans and performs surveillance on the installed measures. APAT performs also a safety assessment of such measures in order to ensure the overall acceptability of the final configuration even if "a posteriori".

During the implementation phase of plans of interventions, the above mentioned technical reviews of selected designs and authorizations to other relevant activities, are carried out by APAT in compliance with the legislative framework (i.e. Legislative Decree 230/95 and following modifications) of the ordinary regime.

Since the final state of decommissioning process represents the safest configuration, the mandate of the Commissioner included also a specific duty of ensuring the expediting of the decommissioning procedures. As a mechanism to cope with such an objective, all the competent Authorities had to commit themselves to an institutional co-operation agreement which established a co-ordination of the authorization processes for the decommissioning of nuclear power plants and the relevant Environmental Impact Assessments (Ordinance no. 13 of November 2003).

### *The New Decommissioning Programmes*

It has to be firstly said that the process of submitting new applications responding to the Government new strategy outlined in the Second Report,

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was completed on early 2002 through the new applications for the immediate decommissioning of Latina and Trino submitted by SOGIN to the Ministry of Production. Subsequently, the provisions originated from the mentioned “regime of Ordinances”, led SOGIN to reconsider the programmes of decommissioning and to consequently update the applications submitted on 2002. To this aim, on middle 2003, an Addendum to each of those applications was provided by SOGIN aimed at shortening the time schedule of the programmes and at providing the relevant justifications (e.g. by executing activities in parallel, by using shift working).

With reference to the programmes updated by SOGIN, the following general considerations can be made.

The global decommissioning programme that has been submitted, in accordance to the ordinary Legislative framework, lasting from the preliminary activities until the site release, are structured in three main stages as hereinafter summarized.

*First stage:*

a) interventions, partly already in progress, aimed at improving safety conditions, such as:

- enhancing physical protection;
- removing spent fuel from nuclear island;
- treating and conditioning of radioactive waste coming from past operation;
- removing structures and material implying conventional risks (e.g. asbestos, unsafe structures);

b) design and implementation of activities which are deemed as opportune in order to facilitate subsequent decommissioning operations, such as:

- dismantling parts of the plants not contaminated or at low contamination,
- construction of temporary storage repositories;
- installation of new ventilation systems;
- refurbishment of safety systems revealing ageing problems.

*Second stage:* dismantlement of the nuclear island, decontamination of buildings, completion of waste treatment;

*Third stage:* completion of buildings’ demolition, performing a final radiological survey and site release;

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While the details of the time schedules are not of interest for this Report, it is outlined that one of the main assumptions, in such programs, regards the availability of the national repository, supposed to be ready to receive the waste, starting from the end of 2008 and an effective coordination of the authorization processes on the basis of the institutional agreement.

As very recent initiative of the Commissioner, the issuance of a detailed chronological programme on July 2004 is to be mentioned. In such a programme, the activities are divided in two categories. The first one includes the so called “*emergency situations*”, i.e. those actions addressed to face the most critical situations (in terms of the potential impact on the population and the environment).

In such a class the following types of interventions are included :

- Improving protection of the spent fuel;
  - Waste conditioning, in particular medium and high activity waste, still present either in liquid and in solid state on the plants’ sites .
- The second category of actions includes “*urgent situations*” which, nevertheless, have lower priority.

As mentioned, the implementation of the measures will be ensured by SOGIN S.p.A. as the sole Implementer subject. Costs deriving from the management of the emergency status will be covered by the resources planned for the decommissioning of the NPPs and for the fuel cycle facilities, as established in the OPCM 3267/2003.

It is to be also pointed out that the chronological programme was mainly conceived as a tool to allow the maximum transparency of the Commissarial actions; periodical communications are also foreseen, in particular the initiatives undertaken are presented at the so called “*tables for transparency*” set up at the interested Regions.

### *The Regulator’s View*

The need to identify and to carry out most critical activities, e.g. the ones recently classified either “*emergency* “ or “*urgent*”, in a timely and effective way, is something that has been outlined by APAT since long time. The recent history has confirmed that in the specific Italian situation, a firm commitment of the Government was really needed, either to identify a proper subject whom to assign the proper duties to, and to provide the needed resources.

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The general articulation and the safety criteria of the identified decommissioning stages are going to be positively commented by APAT. Nevertheless, it must be observed that the feasibility of full implementing the above outlined three-stage programme of activities strongly depends on the availability of the national disposal repository as well as on the availability of facilities at the plants' sites for the temporary storage and for the treatment and conditioning of wastes.

Owing to the uncertainties on the availability of the national repository at the planned time (January 2009), APAT, in the framework of the authorization process in progress, is going to clearly underline the need to identify due hold points in the decommissioning process, to be issued as constraints in the licence. In particular, the actual availability of the repository shall be a specific condition to be checked in the most appropriate implementation phase, when alternate solutions for a safe management of the decommissioning are still possible. Among the alternative solutions, the construction of temporary repositories on site or the shift to a safe enclosure state of the remaining structures must be quoted.

On that basis, the authorization on the decommissioning plans is going to be granted as:

- a general permit to pursue the decommissioning in the frame of the specific set of criteria and constraints,
- a specific permit to implement the actions foreseen during the stage 1, on the basis of specific controls on the specific activities to be performed by APAT, and
- a set of conditions for the actions to be performed in view of the subsequent phases.

Of course the final decision will be taken by the Ministry of Production, on the basis of the views that will be expressed also by other Public Administrations involved in the licensing process, according to the applicable Laws (i.e. Legislative Decree no. 230/95).

In any cases, given the specific situation, APAT considers of utmost importance to maintain large margins for on site waste storage. In fact, the routine waste production for long periods, the possible unexpected needs of interventions on dangerous, aged structures, the possible interventions on the

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wastes themselves (re-treatment/conditioning) call for the availability of large spare areas.

It is view of APAT that another significant aspect of the current authorization procedure regards the level of details of the documentation that has been provided by SOGIN to support the submitted application. In fact, APAT considers this documentation as a conceptual design where, in addition to a generic description of the plant status, the assessment of the effects on the environment and on the radiological protection, the feasibility and reliability of the proposed operations are presented. This is considered the appropriate level of detail for a licensing process involving Authorities such as Ministries and Local Administrators, in accordance with the applicable articles of the Legislative Decree no. 230/95.

Taking also into account that the planned decommissioning operations will have a long lasting time of development, APAT envisages the need of defining those safety related activities which, before their implementation, whose detailed designs, with associated safety analysis, have to be submitted to the Agency approval. For those designs, APAT intends to ask for the independent advice of the Technical Commission.

In fact, for instance, the acceptability of design requirements for facilities to be built (i.e. repositories and systems), of dismantling techniques and methods in line with the international state of the art deserve adequate in depth review.

Moreover, the importance of activities not directly related to interventions on the hardware are not disregarded, in fact APAT actions in the last years were also aimed to check that the conditions for a competent, well coordinated intervention of the subjects involved, based on procedures, are maintained.

A meaningful example, coming from the recent experience, refers to the complexity of the issue of the release of materials coming from decommissioning; it is recognised that this activity must be well prepared, well in advance, either from regulatory side and from licensees side. Appropriate clearance levels have been identified and are going to be modified on the basis of specific authorisations, qualified measuring laboratories have to be selected or set up in some cases, on site measuring capabilities of due size have to be timely prepared.

Regarding the strict time schedule of the interventions planned in the frame of emergency status, some difficulties have been found in managing Applicant-

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Regulatory Authority interfaces within time constraints; nevertheless, in no case, such constraints became an obligation for the Regulatory Authority.

As far as the spent fuel and high level waste management is concerned, a decision is still pending. At present, the spent fuel on the national territory amounts to more than 300 tons, partly stored in individual sites' storage pools, partly away from reactor sites, in a wet storage facility. In addition, the wastes deriving from spent fuel reprocessed abroad have to be considered. At the moment two options are credited. The first one consists in constructing interim storage facilities for the spent fuel in metallic dual purpose dry casks be located on the Italian territory; the second option refers to the possibility of delivering the spent fuel abroad, where it will be temporary stored, as it is or after reprocessing, in proper packages.

The adoption proper and the implementation of proper national policies for the identification of the national repository has been confirmed to be difficult task; an attempt that was made by the Government to initiate localisation activities for the national repository in a potentially suitable site encountered a strong opposition by the local population.

The promulgation of new legislation ruling the disposal of all radioactive wastes and spent fuel including those deriving from the decommissioning of the four power stations at a national site (Law no. 368 of 24 December 2003 and Law no. 239 of 23 August 2004) has finally to be mentioned.

## **2.(d) Safety of Installations**

The safety of the shut-down plants primarily founds on maintaining the set of rules and constraints that were in force during operation, only partially adapted; in other terms, a conservative approach to maintain consolidated practices has been requested, even when they might be made lighter (e.g.: Operators' license and Operating Manual). At the time of the first Report, while Caorso was in permanent shutdown condition, Garigliano, Latina and Trino were already under a decommissioning regime, according to the requirements of the Presidential Decree no. 185 of 1964 that was previously in force: the decommissioning authorisation for the specified three stations was issued as a modification of the operating license.



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On all the stations above, specific actions were taken to ensure the maintenance of the safety and radiation protection provisions, as hereinafter specified.

Due to the amendments (Legislative Decree no. 230 of 1995) to the mentioned Presidential Decree no. 185, and following the reconsideration of the decommissioning strategy, even the stations with ongoing decommissioning activities had to apply for a new authorisation.

In this respect, a comprehensive plan for an immediate decommissioning was presented by SOGIN for all the four power stations.

When the comprehensive decommissioning plans will be approved, a new overall regime of rules and constraints will be established for each station through the specific granted authorisation.

With the aim to update the information on the measures in place that ensure the maintenance of the safety and radiation protection provisions on all the stations, specific information on Caorso power station together with general information on the other stations, are hereinafter provided.

In August 2000, an authorisation to perform some preliminary minor decommissioning activities was issued by the Ministry of Industry and Trade, now Ministry of Production, which stated that:

- An updated decommissioning plan had to be provided before one year<sup>1</sup> from the date of the decree.
- The following activities were authorised: a) all the actions needed to move the spent fuel from the spent fuel pool to dual purpose dry containers, b) the treatment of the existing wastes and of the waste produced by the authorised activities, c) turbine building equipment and off-gas system dismantling, d) residual heat removal towers dismantling, e) primary coolant system decontamination.
- The above mentioned activities have to be approved by APAT, on the basis of suitable documents to be provided by the licensee.
- The following technical conditions have to be satisfied:
  - The production of new intermediate and low level wastes due to the authorised activities have not to overcome the existing site storage capabilities,

<sup>1</sup> The plan is already available and APAT review is in progress.

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- The 75% of the above capabilities have not to be overcome before a new waste treatment system is available,
  - Effective dose to a member of the critical group of the population, due to the whole activity, has to stay below 10  $\mu\text{Sv}/\text{year}$  (considering normal conditions).
  - A collective effective dose commitment for workers, due to the whole activity, has been defined below 1 person Sv.
    - A new set of technical specifications in order to maintain the plant safety conditions has been defined.

Additionally, specific APAT requests for Caorso were addressed to:

- The production of an Addendum to the Final Safety Analysis Report, mainly aimed at identifying the remaining safety functions to be maintained under the present plant conditions and the systems required for that purpose<sup>2</sup>.
- The issue of a new Fire Protection Plan tailored to the specific plant conditions.
- The issue of general safety and radiation protection criteria to be complied with in the performance of the activities.

Moreover, APAT established a list of contents of the documents to be submitted before the performance of the authorised decommissioning activities (attachment to the letter).

As a conclusion, in order to ensure the safety of all the permanently shutdown plants, particular emphasis is being given to:

- Tracking and controlling the plant configuration that ensures the fulfilment of all the remaining safety and radiation protection functions (e.g. fuel storage in the pool).
- Adding new items in technical specifications, besides the ones applicable to the shutdown state during operation, in order to reinforce the still remaining safety functions. Cancel the items in the technical specification and in the surveillance norms addressing components that are not needed either for safety or radiation protection reasons.
- Requiring a stringent authorisation regime for all the initial decommissioning activities.
- Maintaining the same level of constraint than the operation phase for all the other relevant aspects as the Personnel Qualification, Quality Assurance, Security.

<sup>2</sup> The Addendum has already been issued and approved.

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### **3. PLANNED ACTIVITIES TO IMPROVE SAFETY**

The conclusions of the Second Report are almost totally confirmed as follows. Given the extended post operation state of the Italian Nuclear Installations with reactors definitively de-fuelled, no further actions quoted in the Convention are needed.

The national Regulatory framework, as defined by the highest level Legislation, is satisfactorily complete and advanced and combines features of strictness and flexibility. On the other hand, the consolidated national regulatory regime promptly responds to intervening changes; to this respect, the recent experience of timely updating legislation to meet new requirements may be quoted.

The Government is performing all possible efforts to speed up the most urgent interventions and the procedures for the approval of decommissioning programmes.

In particular, the Emergency Status declaration led to the identification of all the needed actions for improving the protection of the installations, to the implementation of several security measures, to the performance of the most urgent activities in view of the decommissioning, to an institutional co-operation agreement in view of optimising and facilitating licensing procedures.

### **4. REFERENCES**

Reference is made to the first and second Italian National Reports issued on October 1998 and 2001 respectively.

### **5. ANNEXES**

See annex 5 of the attached Second Report.

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## 6. TOPICS OF INTEREST FROM THE 2<sup>nd</sup> REVIEW MEETING

### **6.(a) Experience from immediate decommissioning after a long period of safe storage and with the process of issuing decommissioning licenses based on the submitted application.**

The submitted applications for immediate decommissioning encountered some difficulties in the evaluation process, mainly due to the necessary tuning of the roles and of the programs of the new subjects intervened in the safety management of the Nuclear Installations and due to the uncertainties that have been unexpectedly raised up in the localisation process of the national repository.

During the year 2003, addenda to the decommissioning general plans were issued, slightly modifying some technical aspects and proposing new programs. Unfortunately, the uncertainties on the national repository at the planned time (January 2009), still remain. Consequently, the possibility to perform the most relevant dismantling interventions may be questioned.

Owing to such uncertainties APAT, in the evaluation reports that are going to be issued, is going to propose due hold points in the decommissioning process, to be issued as constraints in the licence. In particular, the actual availability of the repository shall be a specific condition to be checked in the most appropriate implementation phase, when alternate solutions for a safe management of the decommissioning are still possible. Among the alternate solutions, the construction of temporary repositories on site or the shift to a safe enclosure state of the remaining structures must be quoted.

In the mean time, either as preparatory actions in view of decommissioning or in the frame of the emergency interventions by the Commissioner, the following types of activities were authorised:

- Asbestos removal from thermal insulation in Trino, Garigliano and Caorso,
- Primary loop piping decontamination in Trino and Caorso,
- Dismantling of part of the emergency cooling towers in Caorso,
- Construction of temporary repositories, new liquid waste tanks and new controlled access in radiological controlled areas of Garigliano,
- Treatment of some radioactive sludge in Latina.

Moreover, most of the Caorso radwaste to be treated and conditioned has been sent abroad to perform those activities according approved specifications.

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Agreements are going to be stipulated with foreign European countries for the treatment of the remaining spent fuel and for the production of glass wastes abroad.

A specific experience to be quoted is related to the problem of the systems ageing. In fact, there are several systems that were used for the operation, which still are needed for ensuring the safety of decommissioning activities. Few interventions are required in installations whose life is still inside the design life of systems of components and whose components were maintained in good maintenance conditions (e.g. Caorso e Trino). On the other extreme, older installations, whose systems and components were even partially dismantled in view of reaching the safe storage conditions, require the design and the installation of new systems or the restoration of the existing ones. Among these latter activities, the installation of new ventilation systems in Garigliano for performing dismantling activities inside buildings previously not attended is quoted.

#### **6.(b) Relation of the Safety Convention in Italy with the Joint Convention**

Until the approval of the decommissioning plans for the four Italian power stations, these stations will be considered as “nuclear installations” for the CNS. Until that time, the Italian Report has to address all the actions implemented to ensure the maintenance of the safety and radiation protection provisions along the carrying out of preliminary decommissioning operations. An important part of these operations regard the achieving and maintaining of safety conditions of on site wastes and spent fuel. Such operations are clearly matter of interest also for the Joint Convention, but being Italy not yet Contracting Party such a matter cannot be dealt also for the aim of that Convention. After the approval of the decommissioning plans, because of the expected increase of the decommissioning operations and the associate changing of the plants configuration, other aspects of interest will be dealt with in the CNS Report, and no reference will be specifically addressed to the single NPP for some articles of the Safety Convention. In the meanwhile Italy will become Contracting Party of the Joint Convention and the relevant national Report will address safety management of radioactive wastes and spent fuel in relation to the status of the four power stations and for the aim of the Joint Convention.

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## 2<sup>nd</sup> ITALIAN NATIONAL REPORT FOR THE CONVENTION ON NUCLEAR SAFETY

### 1. INTRODUCTION

#### Introductory Remarks

This Report is intended to provide an updating of the Italian National Report issued in 2001. To organise its content, the following aspects have been considered:

- The limited extent of changes intervened in national nuclear safety laws, regulations and practices since 2001, time of the second National Report preparation, as well as of topics identified in the previous Report during the second Review Meeting.
- The need of presenting in a clear and unitary way changes regarding matters dealt with in more sections of the Second Report.

These considerations led both to include in the Report only those articles of the Convention dealing with matter subject to changes and to have a section of the document referring to more than one article. Together with a simplified implementation of the “article-by-article review”, an optimisation of the document itself was achieved.

In the light of the above remarks, short of the matters here updated, the content of the first Report is to be considered still valid.

#### **1.(a) Italy’s Nuclear Policy and Related Government Structure**

Since the abandonment of nuclear power followed the referendum of November 1987, no significant change of policy has occurred on the matter. Within the national scientific community, lately it is anyhow noticed a debate for reassessing a potential future role of nuclear energy in the Country.

#### **1.(b) National Nuclear Programmes Pertaining to Nuclear Installations – Main Themes and Main Safety Issues**

Changes intervened on the status of the four Italian shut-down power stations (i.e.: Garigliano , Latina, Trino and Caorso) primarily regarded the unloading

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of the fuel from the Caorso NPP reactor vessel to the plant spent fuel pool and the adoption of a strategy for a prompt decommissioning, “DECON”, called for all the stations. This meant the abandonment of the previous “SAFSTOR” option (safe storage and delayed dismantling), referred in the first Report. About the latter, major Government initiatives and consequent actions are hereinafter reported.

By the end of 1999, the Ministry of Industry, Commerce and Crafts, now named Ministry of Production, issued a document providing strategic guidelines for the management of liabilities resulting from past national nuclear activities.

Highlights of this new policy were:

- The treatment and conditioning of all radioactive waste stored on the sites.
  
- The start up of a concerted procedure, by means of a specific agreement between the Government and the Regions, for the selection of a national site for the final disposal of low and intermediate level waste and for the interim storage of the spent fuel and the high level waste.
  
- The adoption of the strategy for a prompt decommissioning (“DECON”) of all national shut-down nuclear installations, thus abandoning the previous “SAFSTOR” option.
  
- The establishing of a new national company, SOGIN, assignee of all shut-down nuclear power plants, with a mandate to perform a their prompt decommissioning.
  
- The commitment for the establishing of a national Agency for the management and disposal of radioactive waste, whose main mandate will be to realize and operate the national radwaste disposal site.
  
- The allocation of special funds for all these activities by means of a specific drawing from the electric energy bills.

In accordance with the requirements of the Legislative Decree no. 79/1999, which implemented CEE Directive 96/92, in view of a privatisation process, ENEL was split into two different Companies. One of them, that is SOGIN S.p.A., was charged of the NPPs decommissioning and of the nuclear fuel

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cycle closure. On November 2000, the shares of this new Company have been transferred from ENEL to the Ministry of Treasury.

The above new policy was followed by a Ministerial Decree of May 7, 2001, which provided operative directives to SOGIN for implementing a prompt decommissioning of the four national power stations until an unconditional release of the respective sites within twenty years. Such a Decree provided also directives to SOGIN for the safe management of radioactive waste and spent fuel associated to the power stations.

### **1.(c) List of Nuclear Installations**

See annexes 5.(a) and 5.(b).

## **2. ARTICLE-BY-ARTICLE REVIEW**

### **2.(b)1.Art. 7 Legislative and Regulatory Framework**

### **2.(c)6.Art. 15 Radiation Protection**

This section deals with matters covered in the First Report under the quoted sections and articles.

#### **Promulgation of New Radiation Protection Legislation**

The following radiation protection legislation was promulgated in Italy in the year 2000 and entered into force as of 1st January 2001:

- Legislative Decree no. 241 of 26th May 2000 has transposed EU (European Union) directive 96/29/Euratom laying down basic safety standards for the radiation protection of workers and the public; the standards laid down in the directive incorporate the 1990 Recommendations of the International Commission on Radiation Protection (ICRP) into EU radiation protection legislation. Decree no. 241 has modified and integrated Legislative Decree no. 230 of 1995, the latter constitutes the main piece of legislation laying down radiation protection requirements for workers and the public.
- Legislative Decree no. 187 of 26th May 2000 has transposed EU directive 97/43/Euratom for the protection of patients undergoing exposure to ionising radiation for purposes of diagnosis and treatment as well as for the protection of volunteers and comforters of patients; the requirements concerning the protection of such persons from ionising radiation are now no longer



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contained in Legislative Decree no. 230 of 1995.

Besides, Legislative Decree no. 257 of 9th May 2001 was promulgated in order to modify certain details in Legislative Decree no. 241 of 2000 concerning requirements for notification and authorisation of non nuclear installations where ionising radiation is used for industrial, research and medical purposes.

Legislative Decree no. 230 of 1995, as modified by Legislative Decrees no. 241 of 2000 and no. 257 of 2001, now contains thirteen Technical Annexes which make almost all of the provisions applicable as of 1st January 2001, although some ministerial decrees enacting some of the provisions of the Legislative Decree have still to be published.

### Changes in Legislation

It must be said beforehand that the text of Legislative Decree no. 230 of 1995 was drafted keeping in mind the drafting in Brussels of the new directive 96/29/Euratom; indeed, the Decree no. 230 was drafted with a view to anticipating the new Euratom requirements as much as legal constraints made it possible. As a consequence, the transposal of the directive did not make it necessary to completely revise Italian radiation protection legislation, although Decree no. 230, as modified by Legislative Decree no. 241 of 2000, does contain new important features deriving from the transposal of Directive 96/29/Euratom into Italian law.

One of the most far reaching new provisions in Decree no. 230 is the distinction between practices and intervention, as defined in EU directive 96/29/Euratom in accordance with the Recommendations of ICRP Publication 60: the basic principles of justification and optimisation (the latter being also called ALARA, i.e. requiring doses to be kept as low as reasonably achievable) apply both to practices and to intervention although the wording is somewhat different. In cases of intervention on the contrary the third principle of dose limitation does not apply, intervention levels being used in its stead.

### Practices

In accordance with the new provisions introduced into Decree no. 230 of 1995 by Legislative Decree no. 241 of 2000, a practice is subject to radiation protection requirements if certain thresholds of activity and concentration are exceeded: the scope is determined by overall thresholds of:

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- 1 Bq/g in activity concentration for all radionuclides, and
  - relevant activity values for each radionuclide from Euratom directives 84/467 and 96/29, whichever the lesser.

However, for certain practices, such as medical use of radiation, deliberately adding radioactivity to consumer goods, importing and exporting such goods, discharges, reuse or recycle of radioactive materials from installations, the Decree's requirements apply even below the thresholds.

As before, safety and radiation protection requirements for protection of workers, the public and the environment apply if a practice meets the appropriate conditions.

The concept of triviality in individual and in collective doses as well as provisions for unrestricted release of radioactive materials from installations have also been formally introduced into Italian legislation according to the following basic 'below regulatory concern' criterion, both conditions of which must be met:

- a) Effective dose  $\leq 10 \mu\text{Sv}/\text{year}$ , and
- b) either collective Effective dose committed in one year of performance of the practice not greater than about 1 man·Sv/year or the relevant analysis demonstrates that exemption is the optimum option.

From an administrative viewpoint, practices can be subject to the mutually exclusive requirements either of notification or of authorisation. In accordance with the new provisions a practice is subject to notification requirements starting from certain thresholds in activity and activity concentration as far as radioactive materials are concerned; the relevant thresholds established for notification in an Annex of the Decree are those laid down in Annex I of EU directive 96/29/Euratom. A holder of sources is required to notify local authorities of his intention to carry out the practice at least 30 days before the start of the practice. Besides, detailed requirements for notification apply which closely mirror those provided for in case of authorisation.

The Decree's provisions state that a practice is subject to notification insofar as requirements for authorisation do not apply. In particular, nuclear installations do not require notification since they continue being subject to the ad hoc authorisation requirements laid down in Decree no. 230 of 1995,

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which have not been modified by the transposal of EU directive 96/29/Euratom.

For other installations using ionising radiation for medical, industrial and research purposes the Italian authorisation system is based, as in the past, on a two tiered structure: authorisation of the more important installations is the competence of the Ministry of Industry; the Ministry of Industry issues authorisations acting in accordance with other relevant Ministries; the advice of ANPA (National Agency for the Protection of the Environment) is sought under law in order to determine technical specifications applicable to the installation.

For industrial and research installations of a less important character the Prefect of the province has administrative competence to issue authorisations after seeking the advice of regional technical bodies and of the Fire Corps; the authorisation required for installations where ionising radiation is used for medical purposes is issued by the Regions, which are responsible for health in the Italian system.

A Technical Annexe to Legislative Decree no. 241/2000 lays down thresholds in order to determine which installations are authorised by the Ministry of Industry and which ones by local authorities; thresholds are set in terms of values of activity, activity concentration and neutron yield for radioactive sources, and of energy and neutron yield for accelerators. The same Annexe also lays down the technical features of the radiation sources and of the installation which must be specified in the application.

A general criterion is in force in Italy for unrestricted release from any installation subject to either notification or authorisation requirements. Radioactive materials from such practices can be unconditionally released from regulatory control if the radionuclides concerned comply with conditions regarding both activity concentration and radioactive half life:

- activity concentration  $\leq 1$  Bq/g, and
- half-life  $< 75$  days.

If both conditions above are not complied with, an authorisation is required for release, reuse and recycle of radioactive materials from the installation concerned and specifications to that effect are established in the licence. The authorisation is given on the basis of a case-by-case analysis which has to demonstrate compliance with the basic 'below regulatory concern' criterion

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stated above. In the case where the practice is not subject per se to authorisation requirements, as for instance in the case where notification applies, a special authorisation for release is provided for.

The transposal of the EU directive 96/29/Euratom has also led to establishing a new dose limit for exposed workers of 20 mSv in a calendar year. Instead of Annual Limits on Intake (ALI), age dependent coefficients relating a unit of intake of a radionuclide to committed effective dose for workers and members of the public are now in use in accordance with the EU directive mentioned above.

### Natural Radiation Sources

Some of the most important provisions introduced in the Italian regulatory system by the transposal of EU directive 96/29/Euratom concern work activities which involve the presence of natural radiation sources, such as radon, ores and cosmic rays, leading to a significant increase in exposure of workers or members of the public; given the impact of the changes introduced into the regulatory system a gradual implementation has been provided for.

As regards natural radiation sources a new Title (III-bis) was introduced into Legislative Decree no. 230 of 1995 by the transposal of EU directive 96/29/Euratom. In the transposal of the directive the relevant European Commission's recommendations & guidance (Radiation Protection (RP) 88, RP 95 and RP 107) were followed, action levels being provided for concerning e.g. the following work activities:

- 500 Bq/m<sup>3</sup> or 3 mSv/year effective dose for radon;
- 1 mSv/y effective dose for workers or 0,3 mSv/y effective dose for members of the public in work activities with radioactive substances of a natural origin;
- 1 mSv/y effective dose for air crews.

Work activities with natural radioactive substances identified as worthy of concern in an Annex to Legislative Decree no. 241/2000 are, broadly, the ones listed in RP 95.

Operators are under a legal obligation to carry out relevant measurements and to have Qualified Experts estimate doses to workers and, where appropriate, to reference groups of the public; if an action level for workers or the public is reached and the operator does not succeed in keeping exposures below the

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action level then the ordinary provisions for the protection of workers and, if appropriate, for the public apply, i.e. the work activity in question is considered for all practical purposes as a practice as far as radiation protection of workers and, where appropriate, members of reference groups of the public is concerned.

An ad hoc Section of a Technical Commission which sits at ANPA is also provided for in order to give technical advice and further good practice in work activities in radon prone areas, with naturally occurring radioactive materials and cosmic rays.

### Intervention

As regards intervention in cases of emergency, it must be stated beforehand that requirements for detailed emergency plans providing for intervention in case of accidents in nuclear installations had been in force in Italy since Presidential Decree no. 185 of 1964 was promulgated. Further requirements to that effect have been introduced in Legislative Decree no. 230 by the transposal of EU directive 96/29/Euratom providing for intervention in cases of radiological emergencies in non nuclear installations and for exposure resulting from the after effects of a radiological emergency or of a past or old practice or work activity, which were not regulated in previous radiation protection legislation.

Since the promulgation in 1964 of the first Radiation Protection Decree it had been a practice in the authorisation procedures to request of the applicant an analysis of possible accident scenarios and of their radiological consequences, together with appropriate measures to be implemented with a view to preventing and controlling accident conditions, and mitigating their consequences; even then, separate provisions laid down in Decree no. 185/1964 applied to nuclear installations.

Given that nuclear installations proper continue to be subject to a special, separate regime as in the past, ad hoc provisions introduced into Legislative Decree no. 230 of 1995 by Legislative Decree no. 241 of 2000 require for each non nuclear installation subject to authorisation by the Ministry of Industry that evaluations of potential exposures should be made by the applicant seeking an authorisation for radioactive sources and submitted to licensing authorities so that an intervention plan can be prepared by emergency preparedness and management authorities.

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For those non nuclear installations which require authorisation by the Prefect or by the Regions, licensing authorities will review evaluations of potential exposures made by the applicant and will decide whether such potential exposures are likely to exceed 1 mSv of effective dose; in this case an intervention plan must be prepared by emergency preparedness and management authorities as well. No new installation can start operations before approval of an intervention plan if the former is required under the new rules.

A Technical Annexe in Legislative Decree no. 230, also introduced by Legislative Decree no. 241 of 2000, lays down indicative intervention levels in terms of effective, equivalent and absorbed doses for purposes of planning and intervention in case of emergency; broadly, the levels established are in accordance with the European Commission's guidelines (Radiation Protection 87 "Radiological protection principles for urgent countermeasures to protect the public in the event of accidental releases of radioactive material") and with criteria in IAEA Safety Series no. 109 ("Intervention criteria in a Nuclear or Radiological Emergency").

## **2.(b)2.Art. 8 Regulatory Body**

Two pieces of legislation (Legislative Decree no. 300 of 1999 and Act of Parliament no. 93 of 2001) provide for future changes in the structure of ANPA: ANPA will be strengthened in the environmental field from the merge into ANPA of the Technical Services, now attached to the Presidency of the Council of Ministers and responsible, inter alia, for the protection of the territory from natural accidents; the Agency resulting from the merge will have a closer connection with the Ministry of the Environment.

## **2.c) 7.Art. 16 Emergency Preparedness**

Major changes intervened in Italy on the subject since the first Report. These regarded the completion of an automatic and centralised network for the airborne radioactivity control, which was under realisation at that time. Hereinbelow a short description of this network is provided.

The realised network is conceived to detect and control levels in air of artificial radioactivity; main purpose of such a system is to control, with

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adequate detection capability, the atmospheric particulate collected on filters and the gamma dose rate in air and to provide a prompt warning of possible anomalies in a centralized control room located at ANPA headquarters. The system works in continuous and transmits all information on real time basis, covering airpaths of incoming radioactivity. The network consists of a seven automatic stations, with alpha and beta detectors as well as Germanium detectors for gamma spectrometry, and of a system of 50 gamma dose rate detectors installed all over the Italian territory. A separate alarm network of the Ministry of the Interior is also concurrent with the national network for the attainment of the objectives of surveillance.

## **2.(d) Safety of Installations**

The safety at the shut-down plants primarily founds on the maintaining of operating rules adequately adapted, that is the maintenance of prescriptions commensurate to the plant status, with a conservative attitude in maintaining consolidated practices even when they might be made lighter (e.g.: Operators' license and Operating Manual). At the time of the first Report, while Caorso was in permanent shutdown condition, Garigliano, Latina and Trino were already under a decommissioning regime, according to the requirements of the Presidential Decree no. 185 of 1964 that was previously in force: the decommissioning authorisation for the specified three stations was issued as a modification of the operating license.

On all the stations above, specific actions were taken to ensure the maintenance of the safety and radiation protection provisions, as hereinbelow specified.

Due to the amendments (Legislative Decree no. 230 of 1995) to the mentioned Presidential Decree no. 185, and following the reconsideration of the decommissioning strategy, even the stations with ongoing decommissioning activities had to apply for a new authorisation.

In this respect, a comprehensive plan for a prompt decommissioning was already presented by SOGIN for Garigliano and Caorso stations. As far as Latina and Trino stations are concerned, SOGIN is developing the respective plans for the submittal of new applications which are expected in a few months.

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When the comprehensive decommissioning plans will be approved, a new guarantee regime will be established for each station through the specific granted authorisation.

With the aim to provide an updating on the measures in place ensuring the maintenance of the safety and radiation protection provisions on all the stations, specific information on Caorso power station together with common information on the other stations, are hereibelow reported.

During the first half of 1999, Caorso reactor vessel was defuelled after an evaluation by ANPA on the basis of procedures and analyses submitted by the licensee; special attention was given to the arrangement of the spent fuel in the spent fuel pool racks. In fact, taking advantage of the limited number of fuel elements to be stored (1032) with respect to the design capability (more than 2180), ANPA required the licensee to arrange the fuel elements in a geometrical configuration characterised by large reactivity margins with respect to criticality. Calculations showed that subcriticality was ensured even not taking into account the existing boron absorber panels.

At the end of the same year, in order to speed-up the decommissioning plan evaluation, a Committee was established, made up by representatives of all the Public Administrations whose advice was sought under Law (art. 55 of Legislative Decree no. 230/95).

ANPA was requested to give a technical contribution to the Committee above, by producing an evaluation report (Dec. 1999) where the plan submitted by the licensee (based on Safe Storage Strategy) and the international experience in the field were analysed and discussed and where technical recommendations were singled out.

In the mean time, in compliance with the Government directives, the licensee modified its decision on the decommissioning strategy to be implemented, moving from "SAFSTOR" to accelerated dismantling ("DECON"). This change implied that a large part of the submitted documents were no longer applicable. During the time needed to update the documents, the licensee asked for being authorised to perform some minor decommissioning activities, consistent with both the strategies. It must be underlined that the most important obstacle to the choice of the strategy came from the lack of a Low Level Wastes' repository solution: the viability of the new strategy was ensured by the commitment of the Government to take all the actions needed



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for speeding up the process of site selection. The envisaged date for repository availability is at the end of this decade.

The Committee issued the final position, accepting the performance of some minor decommissioning activities requested by the licensee. The Technical Commission was also involved for its own advice.

In August 2000, an authorisation was issued by the Ministry of Industry and Trade, now Ministry of Production, which stated that:

- An updated decommissioning plan had to be provided before one year<sup>3</sup> from the date of the decree.
- The following activities were authorised: a) all the actions needed to move the spent fuel from the spent fuel pool to dual purpose dry containers, b) the treatment of the existing wastes and of the waste produced by the authorised activities, c) turbine building equipment and off-gas system dismantling, d) residual heat removal towers dismantling, e) primary coolant system decontamination.
- The above mentioned activities have to be approved by ANPA, on the basis of suitable documents to be provided by the licensee.
- The following technical conditions have to be satisfied:
  - The production of new intermediate and low level wastes due to the authorised activities have not to overcome the existing site storage capabilities,
  - The 75% of the above capabilities have not to be overcome before a new waste treatment system is available,
  - Effective dose to a member of the critical group of the population, due to the whole activity, has to stay below 10  $\mu\text{Sv}/\text{year}$  (considering normal conditions).
  - A collective effective dose commitment for workers, due to the whole activity, has been defined below 1 person Sv.
  - A new set of technical specifications in order to maintain the plant safety conditions has been defined.

Besides, ANPA requested for Caorso:

<sup>3</sup> The plan is already available and APAT review is in progress.

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- The production of an Addendum to the Final Safety Analysis Report, mainly aimed at identifying the remaining safety functions to be maintained under the present plant conditions and the systems required for that purpose<sup>4</sup>.
  - The issue of a new Fire Protection Plan tailored to the specific plant conditions.
  - The issue of general safety and radiation protection criteria to be complied with in the performance of the activities.

Moreover, ANPA established a list of contents of the documents to be submitted before the performance of the authorised decommissioning activities (attachment to the letter).

As a conclusion, in order to ensure the safety of all the permanently shutdown plants, particular emphasis is being given to:

- Tracking and controlling the plant configuration that ensures the fulfilment of all the remaining safety and radiation protection functions (e.g. fuel storage in the pool).
- Adding new items in technical specifications, besides the ones applicable to the shutdown state during operation, in order to reinforce the still remaining safety functions. Cancel the items in the technical specification and in the surveillance norms addressing components that are not needed either for safety or radiation protection reasons.
- Requiring a stringent authorisation regime for all the initial decommissioning activities.
- Maintaining the same level of constraint than the operation phase for all the other relevant aspects as the Personnel Qualification, Quality Assurance, Security.

### 3. PLANNED ACTIVITIES TO IMPROVE SAFETY

Given the extended post operation state of the Italian Nuclear Installations with reactors definitively defuelled, no further actions quoted in the Convention are needed.

The national Regulatory framework, as made up of the highest level Legislation, is satisfactorily complete and advanced and combines features of strictness and flexibility. On the other hand, the consolidated national regulatory regime promptly responds to intervening changes; to this respect, the recent experience of timely updating legislation to meet new requirements may be quoted. The necessary reorganisation and requalification

<sup>4</sup> The Addendum has already been issued and approved.

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of national Organisations to face new programmes (e.g.: new safety issues and technologies), that are a prompt decommissioning of all the Italian power stations and a safe management of associated spent fuel and radioactive waste, is going on.

#### 4. REFERENCES

Reference is made to the first Italian National Report issued on October 1998.

#### 5. ANNEXES

##### 5.(a) List of nuclear installations

At the time of the first Report, while Caorso station had the fuel in the vessel, Garigliano, Latina and Trino stations were already under a regime of decommissioning (“SAFSTOR”). Now, after the general reconsideration of the decommissioning strategy (“DECON”), the latter were subject, as above specified, to a new licensing process. The same process involves Caorso after defuelling of its reactor vessel. In the light of such a situation, implying four stations whose decommissioning plan has not yet been approved, all four stations have been considered as nuclear installations, according to the definition given under the Convention’s article 2i.

Hereinbelow, under the Annex 5.(b), the main data of these NPPs are reported.

## 5.(b) Data on Nuclear Installations

Name and Location	Type	Owner	Install. El.P. [MWe]	Date of Start Up		Shut Down
				First criticality	Comm. Operation	
Garigliano	BWR	(ENEL) SOGIN	160	05/06/1963	01/01/1964	08/08/1978
Latina	GCR	(ENEL) SOGIN	210 (160) <sup>5</sup>	27/12/1962	01/01/1964	26/11/1986
Caorso	BWR	(ENEL) SOGIN	882	31/12/1977	28/11/1981	24/10/1986
Trino	PWR	(ENEL) SOGIN	270	21/06/1964	01/01/1965	21/03/1987

## 5.(b)1. Garigliano NPP

- Installed electrical power: 160 MW
- Date of first criticality: 05/06/1963; date of the beginning of Commercial Operation: 01/01/1964; date of final Shut Down: 08/08/1978.
- License granted on 30/04/1985. This license authorised the operations aimed at achieving the safe storage condition of the NPP.
- Among preliminary operations carried out under the limits of the mentioned license:
  - Removal and transport of spent fuel away from the site.
  - Treatment and conditioning of radioactive waste deriving from plant operations.
  - Operations aimed at ensuring a “SAFSTOR” of reactor building.

Following the change of the decommissioning strategy (December 1999), a comprehensive plan for a prompt decommissioning of Garigliano was submitted by SOGIN under a new application (August 2001) and is under review by ANPA.

<sup>5</sup> The power was reduced with respect to the design value.

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#### 5.(b)2.Latina NPP

- Installed electrical power: At the beginning was 210 MWe, later it was reduced to 160 MWe to avoid oxidation of reactor internals
- Date of first criticality: 27/12/1962; date of the beginning of Commercial Operation: 01/01/1964; date of final Shut Down: 26/11/1986.
- License granted on 13/04/1991. This license authorised the operations aimed at achieving the safe storage condition of the NPP.
- Among preliminary operations carried out under the limit of the mentioned license:
  - Decontamination activity and waste treatment and conditioning.
  - The disassembly and removal of some structures and parts of the plant considered no longer safety related such as water stream piping, fuel charge/discharge machines, CO<sub>2</sub> production and storage system and auxiliary piping.

Following the change of the decommissioning strategy (December 1999), the preparation of a comprehensive plan for a prompt decommissioning of Latina is in progress by SOGIN, as requested for the submittal of a new application.

#### 5.(b)3.Caorso NPP

- Installed electrical power: 882 MW.
- Date of first criticality: 31/12/1977; date of the beginning of Commercial Operation: 28/11/1981; date of final Shut Down: 24/10/1986.
- The Operator presented a first application for decommissioning activities in the 02/08/1991 and then a new application in the 06/06/1997 according to the Legislative Decree 230/1995 which regulate the decommissioning process in Italy.
- The NPP is regulated through a preliminary decommissioning license granted on August 4, 2000.

A comprehensive plan for a prompt decommissioning of Caorso was submitted by SOGIN under a new application (August 2001) and is under review by ANPA.

#### 5.(b)4.Trino NPP

- Installed electrical power: 270 MW
- Date of first criticality: 21/06/1964; date of the beginning of Commercial Operation: 01/01/1965; date of final Shut Down: 21/03/1987.
- License granted on 17/01/1995. This license authorised the operations aimed at achieving the safe storage condition of the NPP. This license

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authorised the operations aimed at achieving the safe storage condition of the NPP.

Following the change of the decommissioning strategy (December 1999), the preparation of a comprehensive plan for a prompt decommissioning of Trino is in progress by SOGIN, as requested for the submittal of a new application.