

# **SOGIN**

## **RADIOLOGICAL PROTECTION AND NUCLEAR SAFETY SCHOOL EXPERIENCE AND PROSPECTS**

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### **Abstract**

SOGIN is a joint-stock company owned by the Ministry of Economy and Finance. It was established in November 1999 to implement the decommissioning of nuclear installations in Italy. Due to the numerous technical and cultural diversities found in its sites, SOGIN has set itself the objective of standardizing the management of the radiation protection of its workers and the population. This requires a precise series of actions for guidance, coordination, and control. With this in mind, in February 2008, SOGIN set up its Radiation Protection and Nuclear Safety School. So far courses have been held for 746 participants for a total of 27,000 man hours in participation and 2,900 man hours in teaching. The results obtained to date are considered positive.

### **1. Introduction**

SOGIN is joint-stock company owned by the Ministry of Economy and Finance. It was established in November 1999 to implement the decommissioning of Italian Nuclear Power Plants (Caorso, Trino, Latina, Garigliano). Furthermore, from 2003, SOGIN has been given the task of decommissioning a nuclear fuel production plant (Bosco Marengo) and three fuel-cycle plants (Casaccia, Trisaia, Saluggia).

The Legislative Decree no. 31/2010, and Law no. 99/2009, entrusted Sogin with the construction and operation of a Technological Park including a National Repository and a Research, Experimentation, and Training Center, especially intended for activities related to radioactive waste management and radiation protection. The School falls under the SOGIN Department for Strategies and Innovative and International Activities and collaborates, in particular, with the SOGIN Department for Economic Affairs and Human Resources.

Plant	Reactor type	Power MWe	Final shutdown	end decommissioning
Garigliano	BWR	150	1978	2019
Latina	GCR	200	1986	2019
Caorso	BWR	860	1986	2019
Trino V.	PWR	260	1987	2013

Plant	Facility Type	end decommissioning
EUREX – Saluggia	nuclear fuel reprocessing	2019
FN - Bosco Marengo	nuclear fuel production	2009
IPU – Casaccia	research on nuclear fuel elements	2018
OPEC – Casaccia	research and analysis on post-radiation nuclear fuel elements	2018
ITREC – Trisaia	Fuel reprocessing and production (thorium-uranium cycle)	2019

The total cost of decommissioning is expected to be 5.200 million Euro.

Currently, 680 employees work in SOGIN.

SOGIN plants are very different from one another with diverse technical, cultural, organizational, and professional contexts. To face this situation, the company has set itself the goal of standardizing, where possible, the safety conditions for workers and population, aiming at establishing a coordinated way of operating, in accordance with recommended quality standards. This requires a clear act of guidance, coordination and control.

In this context, on 5 February 2008, SOGIN established the “Radiological Protection and Nuclear Safety School” at Caorso NPP. At present, the school formally falls under Human Resources Management employing staff working in different fields within SOGIN.

This presentation describes:

- tasks allocated to the School
- courses provided in 2010
- results achieved in 2008-2009
- areas of expected improvement

It is the School’s objective to perform in terms of excellence and sustainability, appealing to companies also in the international field.

## 2. School tasks

The tasks of the School are:

- Developing, diffusing and consolidating the culture of Radiation Protection and Nuclear Safety in SOGIN.
- Promoting uniform and appropriate behavior in every SOGIN site.
- Contributing to the maintenance and to the improvement of security conditions on the sites.
- Representing the Company in the international nuclear field and in the Italian academic world.
- Establishing a reference point for Italian companies working in the nuclear field.

The courses are for both in-house and external customers.

### 3. Courses provided in 2010

#### Basic Courses:

- Radiation Protection for qualified personnel (5 weeks)
- Radiation Protection for new employees (1 week)
- Individual protection devices Management (2 days)

#### Specialized courses:

- General nuclear safety from design to testing (1 week)
- Management of radioactive materials and radiological characterization of the plant (7 days)
- Assessment of Environmental Impact for normal conditions radioactive releases (1 week)
- Assessment for Environmental Impact for emergency radioactive releases (1 week)
- Internal Dosimetry (1 week)
- External Dosimetry (1 week)
- Total Quality - Contract management and supervision of works on construction sites - (3 days)
- Security Analysis (1 week)
- Nuclear Safety Culture (2.5 days).
- Methods of calculation and assessment of external dose by numerical codes (1 week).
- Italian Radiation protection regulations (Legislative Decree no. 230/95 ) and Italian work-safety regulations (Legislative Decree no. 81/08) (3 days)
- Nuclear regulations (3 days).
- Follow-up of 2009 courses.
- Environmental Aspects (7days)
- Alara and Work Management (1 day)

For each course, a person has been appointed to be responsible for the guidance, coordination, and selection of teachers. The people in charge are SOGIN experts in the field of Radiation Protection and Nuclear Safety while the teachers, who are experts in the various subjects, can be either from inside or outside SOGIN. For each course, a record card is prepared with course objectives, potential participants, and programs. The programs include classroom exercises using computational codes, laboratory demonstrations, and visits to the plant. A final test to evaluate the degree of learning and a questionnaire on the satisfaction of learners close every course.

### 4. The people present at the courses

The courses of the School are for:

#### - site personnel:

- Site Managers: Project Manager - Plant Manager - Project Engineering - Field Manager
- Head of Chemistry and Health Physics Divisions
- Heads of Operation - Maintenance – C.F.S. - Q.A Divisions
- Staff in possession of certificates or licenses to conduct Plant
- Employees and workers of Exercise - Maintenance - Chemistry and Health Physics Divisions

#### - headquarters staff:

- Engineering Staff
- Human Resources
- Contracts Office
- Legal Office
- Markets & Business Development
- Administration Office
- Operations Planning

## 5. Results

Activities balance 2008 – 2009 - 1<sup>st</sup> half of 2010, forecast 2010

		Activities balance 2008	Activities balance 2009	1st half of 2010	Forecast 2010
Courses	n.	17	31	13	12
Participants	n.	229	395	122	120
Participants x hours	man x hours	12.000	11.617	3.541	-
Teachers	n.	15	21	19	29
Teaching	Hours	1.000	1.420	455	300
Satisfaction participant		83%	82%	86%	-
Average mark final test		7/10	8/10	8/10	-

On February 23, 2010, the School obtained the ISO 9001:2008 certification from the accreditation and certification bodies for "Design and delivery of training services in the field of Radiation Protection and Nuclear Safety

Beyond the numbers, we would like to underline the following:

- the enthusiasm and commitment of learners, teachers, and organizers;
- the notions and the criteria learnt during a course can be the basis for the harmonious development of skills and professionalism;
- the development of skills and expertise is achieved not only through training but also with the full involvement of resources in planning and executing activities;
- the development, deployment, consolidation, and uniformity of nuclear culture in society is of particular importance as many contractors are generally employed.

## 6. Improvement areas

### In-house customers

The results in terms of participation and learning of SOGIN staff can be further improved through:

- the full involvement of all offices involved in defining the training of its personnel;
- the establishment of an agreed program;
- the establishment of incentives and rewards for learners and their managers and teachers, according to the results obtained.

### Maintenance of skills

Given that the development of skills and expertise is achieved not only through training but also with the full and proper involvement of resources in planning, executive, and managerial activities, in this area the School can give its specific contribution through the follow - up and recycling of 'Operational Experience'.

### External customers

Sogin's Service Communication no. 65/2008 gives the school the following tasks:

- align training of radiation protection and nuclear safety to European and international experiences;
- represent the company in the international nuclear industry and in the Italian academic world;

- provide qualified technical reference for Italian companies involved in the radiological, nuclear, and local contexts.

In order for the tasks listed above to be developed effectively and consistently, the organization,, marketing, and logistical aspects will also be handled by the School., thus making it a key reference point for the Company while also coordinating teaching activities with external customers.

### **Organizational actions**

The organizational structure of the School is being improved by means of :

- a better integration into the Company;
- the inclusion of School activities according to the Company's Quality Assurance System;
- the appointment of appropriate experts for the continuous updating of the courses, recycling of operational experience, maintaining relations with universities and foreign operators.

### **Marketing and Business Development**

In order to increase the marketing and business activities, the following are determinant:

- a system to manage clear and timely reports with corporations (private and public) involved with activities of the school;
- an ad hoc team that promotes, monitors, and coordinates all relations with the public concerning the school and supports actions already underway;
- a new policy of prices.

### **Nuclear Training School**

At the moment we are also developing the project of a Nuclear Training School, the aim of which is preparing personnel who will work in the new Italian nuclear sector. The project will not only focus on teaching aspects, but will also cover aspects involving resources, organization, equipment, simulation facilities, logistics, laboratories, and instrumentation which will be necessary for the project to be successful. We underline the fact that some of the courses performed in 2009 and planned for 2010 are deemed important to pursue this objective.

The contents of the programs planned are consistent with the document IAEA Nuclear Security Series N. 12 – Educational Programme in Nuclear Security.

In this regard, in the project mentioned above and as required by recent Italian legislation, the feasibility and opportunity is being evaluating of equipping the school in Radiation Protection Service with staff, facilities, and laboratories in order to provide:

- a center for effective planning, coordination and monitoring for radiation protection of workers and the public for SOGIN;
- a reference center in radiation protection for external bodies and institutions, both nationally and internationally, with the possibility of radiation protection services;
- an acknowledged center for calibration of radiation protection instrumentation
- an internal and external dosimetry service for workers during normal operation and in emergency situations
- environmental laboratories for radiological measures in normal operation and emergency situations
- a medical center for SOGIN and external organizations / institutions for medical surveillance of workers in normal operation and emergency situations
- a Radiation Protection School