



IAEA

International Atomic Energy Agency

INTERNATIONAL ATOMIC ENERGY AGENCY

**Regional Workshop on
Protection of Nuclear Installations against External Hazards**

*Hosted by:
Eletronuclear (Eletrobrás Termonuclear)*

**Rio de Janeiro and Angra dos Reis
Brazil**

13–17 May 2013

INFORMATION SHEETⁱ

1. BACKGROUND

Recent extreme natural events have had an impact on a number of nuclear power plants (NPPs) in many parts of the world. Some strong earthquakes have surpassed the original seismic design or evaluation levels and affected operating NPPs, mainly in Japan where a large proportion of the recent severe events have occurred. Such events have led to growing international concerns regarding site safety and the protection of nuclear installations against external hazards, including multiple hazards. These concerns are shared by Member States of the International Atomic Energy Agency (IAEA) in the Latin America region with existing or planned nuclear power programmes, and they have heightened the interest of these countries in implementing state-of-the-art safety measures against external events.

The associated safety measures cover a very broad range of areas, such as site selection, site evaluation, engineering design, instrumentation, re-evaluation of existing installations and response to real event occurrences. In view of nuclear safety infrastructure development, the IAEA strongly recommends that the site selection process be guided by a clearly established set of criteria or regulatory requirements from the very beginning, as certain aspects can lead to sites being excluded due to unacceptable conditions. Moreover, as part of periodic safety reviews, new nuclear installation sites need to be evaluated in detail and the site related safety of existing installations also needs to be re-evaluated.

An integrated approach is necessary in order to address such challenges as the continuous development of codes and standards with new requirements; the evidence from external hazards that exceeded the original design basis; the need to properly consider design and engineering aspects associated with the protection of nuclear installations against external natural and human induced events; the identification of new technical findings on the basis of recent experiences related to extreme natural phenomena; and the increasing trend towards the application of probabilistic methodologies.

The IAEA's International Seismic Safety Centre (ISSC) conducts site related safety evaluations covering all of the above-mentioned aspects in order to develop and update relevant IAEA safety standards and to assist Member States in the design of nuclear installations to ensure that these are protected against all external and internal hazards that may occur during their lifetime.

The latest scientific and technological developments underlying nuclear installation safety measures, and also recent advances that have been made in the field of accident analysis, are having a major impact on the existing and planned nuclear power programmes and nuclear safety regulations of Member States. In particular, owners and operators need to demonstrate that their nuclear installations are capable of withstanding threats from natural and human induced events.

The IAEA organizes this workshop in cooperation with Eletronuclear (Eletrobrás Termonuclear) and Brazil's National Nuclear Energy Commission (CNEN), within the framework of Component 1 ("Enhancing the seismic safety of nuclear installations") of the Action entitled "EC-IAEA Cooperation in the Field of Nuclear Safety — Nuclear Installation Safety Part", which is being implemented through the Contribution Agreement concluded between the European Commission (EC) and the IAEA in July 2010. The workshop is fully funded by the EC.

This one-week workshop is organized for experts from Member States in the Latin America region who are involved in safety assessment issues related to nuclear installations. The workshop will provide participants with the opportunity to receive updated information on the subjects covered and to learn how to define the required actions to address the relevant challenges.

2. OBJECTIVES OF THE WORKSHOP

The objectives of the workshop are: (a) to exchange information on recent scientific and technological developments, as well as on the IAEA safety standards that aim to provide protection against external events and that cover such topics as site selection, site evaluation, engineering design, seismic instrumentation and re-evaluation of existing installations; (b) to present the IAEA's Site and External Events Design (SEED) review service offered for different stages of site selection, site assessment and the design of structures, systems and components to protect against site specific external and internal hazards; and (c) to identify issues which should be investigated further, as well as actions to be undertaken by newcomer countries at the start of their nuclear power programmes. The workshop will provide an opportunity to share lessons learned from recent extreme natural events and to discuss their impact on the proposed revisions to the relevant IAEA safety standards.

3. PROPOSED TOPICS

- Site selection and evaluation process for NPPs, safety and non-safety related aspects: emphasis on site survey, site selection and assessment stages. Details of the process and interfaces.
- Site selection and evaluation criteria in relation to external hazards and site characteristics. Landslide control. Design basis for seismic, flooding and hurricane events. Analysis of seismic margins.
- Safety protection in design extension conditions or analysis of beyond design basis events.
- External events monitoring and management systems.
- Periodic safety reviews and external events preparedness.

4. PROVISIONAL PROGRAMME

DAY 1 13 May 2013

Session 1: Opening Session

- 8:30–9:00 Registration
- 9:00–9:30 Welcome and opening remarks (CNEN, Eletronuclear, IAEA)
- 9:30–10:30 IAEA nuclear safety standards and extra budgetary projects
- 10:30–11:00 Coffee break

Session 2: Actions Undertaken by Member States and the IAEA Secretariat Following the Fukushima Daiichi nuclear accident in 2011

- 11:00–13:00 Country experiences
- 13:00–14:00 Lunch break

Session 3: Site Selection: Methodological Approach

- 14:00–15:30 Lecture: Site and External Events Design (SEED) Review Service
- 15:30–16:00 Coffee break
- 16:00–17:00 Country experiences

DAY 2 14 May 2013

Session 5: Site Selection Process for Nuclear Power Plants, Safety and Non-Safety Related Aspects

9:00–10:00 Lecture

10:00–11:00 Lecture

11:00–11:30 Coffee break

Session 6: Site Selection and Evaluation Criteria in Relation to External Hazards and Site Characteristics

14:00–15:00 Lecture

15:00–15:30 Coffee break

15:30–16:00 Lecture

16:00–17:00 Country experiences

DAY 3 15 May 2013

Session 7: External Events — Seismic Hazards

9:00–11:00 Lecture/Country experiences

11:00–11:30 Coffee break

Session 8: External Events — Hydrological Hazards (Floods)

11:30–13:00 Lecture/Country experiences

13:00–14:00 Lunch break

Session 9: External Events — Meteorological Hazards

14:00–15:00 Lecture/Country experiences

15:00–15:30 Coffee break

Session 10: External Events — Volcanic Hazards

15:30–17:00 Lecture/Country experiences

DAY 4 16 May 2013

Session 11: External Events Monitoring and Management Systems

9:00–10:00 Lecture

Session 12: Periodic Safety Reviews and External Events Preparedness

10:00–11:00 Lecture

11:00–11:30 Coffee break
11:30–12:30 Country experiences
13:00–14:00 Lunch break

Session 13: Country Experiences — Plenary Discussions

14:00–17:00 Country experiences

(Trip to the Angra NPP site)

Day 5 17 May 2013

Session 14: Technical Visit to the Angra NPP

9:00–13:00 Plant walkdown. Presentations by Eletronuclear management, operators and/or technical staff.

13:00–14:00 Lunch break

Session 13: Closing Session

14:00–15:30 Conclusions. Closing remarks (CNEN, Eletronuclear, IAEA)

5. PARTICIPATION

The workshop is targeted at participants from Member States in the Latin America region who are working at institutions dealing with the implementation of nuclear power programmes, specifically at representatives from (a) high level planning management and (b) the specific groups dealing with the site selection and evaluation tasks, from the managerial to specialized technical levels. To ensure maximum effectiveness in the exchange of information, participants should be persons actively involved in the subject of the workshop.

Participants officially nominated by their relevant governmental authority (Ministry of Foreign Affairs or National Atomic Energy Authority) should send by fax or email the attached Participation Form (Form A) to the Workshop Coordinator, Ms Maria Laura Videla (contact details indicated in Section 6 below), to arrive no later than **2 April 2013**. The nomination of a participant will be accepted only if forwarded by the Government of an IAEA Member State.

The participants will present country-specific case studies and discuss the status of their NPP projects in relation to the site selection process and the protection of nuclear installations against external hazards. The IAEA encourages participants to send abstracts for presentations as indicated in the Participation Form.

6. ORGANIZATION OF THE WORKSHOP

Workshop Contact Persons

Host Organization:

Workshop Organizer: **Mr Luis Carlos Siqueira**
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7. VISAS

Designated participants who require a visa to enter Brazil should submit the necessary application to the nearest diplomatic or consular representative of Brazil as soon as possible.

8. EXPENDITURE

The costs of the workshop are borne by the IAEA; no registration fee is charged to participants.

Travel and subsistence expenses for a limited number of participants can be borne by the IAEA through funds provided by the European Commission, one of the donors institutions of the ISSC's extra budgetary Programme. Such assistance may be offered upon specific request to normally one participant per country provided that, in the IAEA's view, the participant on whose behalf assistance is requested will make an important contribution to the workshop. The application for financial support should be made at the time of nominating the participant.

9. WORKING LANGUAGE

The working language of the workshop will be English and Spanish. However, most IAEA experts will be delivering relevant lectures in English language.

10. DELIVERABLES

A working material document containing all presentations, including conclusions and the workshop proceedings, will be issued and distributed by the IAEA no later than six months after the workshop.

11. LOCAL ARRANGEMENTS

The workshop will be held at the offices of Eletronuclear (Eletrobrás Termonuclear) in Rio de Janeiro and Angra dos Reis, Brazil. It will start on Monday, 13 May 2013, at 9.00 a.m. and end in the afternoon on Friday, 17 May 2013, at 3.30 p.m.

The workshop agenda, together with information on local arrangements, including hotel accommodation, will be sent to designated participants when the completed Participation Forms have been received.

12. WORKSHOP WEB PAGE

Please visit the following web page regularly for new information regarding this workshop:
<http://www-pub.iaea.org/iaeameetings/>

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