



# **International Conference on Operational Safety Experience and Performance of NPPs and Fuel Cycle Facilities**

**21–25 June 2010  
Vienna, Austria**

## **ANNOUNCEMENT AND CALL FOR PAPERS**

### **1. INTRODUCTION**

Since 2004, the IAEA has organized several international conferences where operational safety was an important subject, such as the: ‘International Conference on Topical Issues in Nuclear Installation Safety’, held in Beijing in 2004, the ‘International Conference on Operational Safety Performance in Nuclear Installations’, held in Vienna in 2005; and the ‘International Conference on Topical Issues in Nuclear Installation Safety: Ensuring Safety for Sustainable Nuclear Development’ held in Mumbai in 2008. This conference will further discuss and extend the recommendations of the previous meetings in the field of operational safety.

An integrated nuclear safety approach based on the defence in depth principle and deterministic criteria continues to be successful in maintaining a high level of operational safety, when properly applied and complemented with reference to the IAEA Safety Standards, probabilistic analyses and operational experience feedback,. However, guarding against the risk of accidents requires constant vigilance, high technical competence and a never-ending fight against complacency. Strong leadership, with a commitment to continuous improvement and a vision of sustained excellence, is a key element of nuclear safety.

A key contributor to enhancing nuclear safety is the ability to learn from experience. As well as addressing the causes of more significant events occurring nationally or internationally, this should also include learning from the causes of low level events, so that more significant events are prevented. The value of an effective operating experience programme is generally well recognized. However, evidence from recent reviews of nuclear power plants (NPPs) by the IAEA and the World Association of Nuclear Operators (WANO), together with the fact that similar events repeatedly occur, indicates that the safety benefits of a comprehensive operating experience programme are not yet being fully realized. It is important to recognize that even when event information from an NPP is analysed and shared, real safety benefits will only occur when the affected plant and other NPPs implement the necessary corrective actions to address the identified causes. A high degree of openness and transparency is also an important factor in the operating experience feedback area.

Key aspects of a management system to support nuclear safety include the measurement, assessment and improvement of operational safety. Some of the main processes used for assessing operational safety and improvements in nuclear safety culture are self-assessment and peer review. Operators of NPPs and fuel cycle facilities have long recognized the importance of these review processes. A number of mechanisms, including the IAEA's Operational Safety Review Team (OSART) and Safety Evaluation of Fuel Cycle Facilities During Operation (SEDO) programmes and WANO Peer Reviews, are available to identify whether the processes necessary for ensuring nuclear safety are in place and effective.

The IAEA's safety fundamentals and safety requirements provide a comprehensive basis for developing and implementing a management system, ensuring that safety is paramount, overriding all other demands. In particular, the Fundamental Safety Principles issued in 2006 emphasize the importance of responsibility for safety, establishing and sustaining effective leadership and management for safety and prevention of accidents. However, measuring and assessing the effectiveness of a management system, including the safety culture aspects, continues to present challenges to nuclear operators and regulators. In addition, development of a management system and pragmatic safety culture programmes, in all relevant organizations related to new nuclear programmes and builds, represents a novel challenge for the entire international nuclear community.

In many parts of the world, nuclear power development programmes have been dormant for several decades. This has resulted in little need to provide large numbers of replacement staff during that period. Operating facilities could rely on the existing staff, with few challenges other than economic competitiveness. However, as interest in new nuclear development expands, and the viability of extending the operating lifetimes of existing facilities increases, there exists a heightened awareness of the potential shortage of competent human resources to staff extended life facilities, new nuclear facilities and regulatory bodies.

Worldwide construction of similar NPPs in different States provides an incentive for better communication between regulators, technical support organizations and operating organizations. Improving the harmonization of the regulatory approach, especially in the assessment of new NPP designs and the related licensing process, may become a challenge in the forthcoming years.

Recent NPP experience has shown significant problems in some aspects of the quality of construction of new plants. Only a limited number of new projects have been undertaken in the past few years, hence the knowledge and experience of the industry regarding the management of large nuclear projects, involving numerous subcontractors, has been eroded.

Long term operation (LTO) and ageing management are becoming crucial issues in many operating nuclear power plants and fuel cycle facilities. Operating life extension is required because of the increasing need for energy supplies and is technically supported by the continued high operational safety performance of operating plants and fuel cycle facilities. The number of NPPs and fuel cycle facilities that are eligible for an extension of their operating life is possibly quite high and, for this reason, the LTO issue is becoming very important and deserves to be integrally and systematically addressed in all aspects of safety. Of particular interest are the activities related to maintenance, periodic safety review (PSR), in-service inspection, surveillance, ageing management, modifications and improvements and appropriate training and use of advanced technologies in operation and maintenance.

## **2. OBJECTIVE**

The objective of the conference is to foster the exchange of information on operational safety performance and operating experience in nuclear installations, with the aim of consolidating an international consensus on:

- the further development of basic approaches for dealing with operational safety issues including revision of IAEA safety standards, e.g. GS-R-3;
- future IAEA, nuclear operator and regulatory authority activities for enhancing operational safety;
- the further promotion of application of lessons learned from events;
- the implementation of the necessary corrective actions to address the identified causes;
- capacity and competence building of countries operating nuclear facilities and new countries embarking on a nuclear programme;
- tools and criteria for conducting systematic training needs assessments and human resource development planning;
- extended operational lifetimes of nuclear installations beyond original design expectations;
- further development of management for safety, safety culture and operational safety practices.

## **3. TOPICS**

The following topics related to nuclear power plants and fuel cycle facilities have been identified as subjects for this conference. The conference will also welcome relevant papers related to other nuclear installations, industry programmes and facilities other than nuclear installations.

**1. International peer reviews.** Are they effective tools in, inter alia, avoiding complacency?

### **Improvements to international peer reviews**

- carry out efficient evaluation of operational safety performance and commissioning of NPPs and fuel cycle facilities;
- provide advice on how NPPs and fuel cycle facilities can incorporate the review results seamlessly into their management process;
- take steps to improve their effectiveness;
- develop effective tools to avoid complacency
- develop an appropriate scope to address recent trends and emerging issues

### **Significant events occurring at NPPs and fuel cycle facilities**

- identification of precursors or latent unacceptable conditions contributing to these events
- effectiveness of international peer reviews in assessing the process of precursors or the identification of latent conditions
- proactive use of existing knowledge and experience

**2. Application of IAEA Safety Standards for operation.** How can we improve the effective application of the IAEA Safety Standards?

### **Wide range of safety standards for nuclear installations available**

- ways in which Member States have adapted the safety standards to improve their effectiveness;
- how industries, other than nuclear, have amended their own country industry standards to suit their working environment;
- feedback mechanism for improvement of the Safety Standards.

**3. Operating experience.** How effective are corrective actions?

### **Enhance safety of NPPs and fuel cycle facilities**

- identifying and sharing corrective actions taken in response to events;
- to strengthen the weakened or broken “barriers” and thus prevent recurrence of events;
- use of operating experience in the development of PSA and design;
- use of operating experience from NPPs in fuel cycle facilities and vice versa;
- utilization of operating experience by newcomers (countries, staff).

### **Results of operational safety missions indicate weaknesses**

- corrective actions not effectively addressing the root causes of an event;
- affected plant and other NPPs do not implement the necessary corrective actions to address the identified causes.
- absence of effectiveness review of implemented corrective actions.

**4. Leadership, management for safety and safety culture.** How effective is the current management of safety practices and how can it be improved?

#### **How the management system for safety can support the leadership and development of a strong safety culture**

- the development and implementation of senior leadership programmes;
- the attributes of a strong safety culture;
- issues and pitfalls when developing and implementing a management system for safety.

#### **Oversight and assessment**

- IAEA safety review to assess management of safety and safety culture;
- components of the safety oversight programme, including skills;
- safety culture oversight processes, including data gathering;
- the challenges facing management for safety and safety culture assessment;
- the role of the regulator.

**5. Newcomers, ambitious plans to build new NPPs.** Can existing vendors, utilities and international organizations effectively support new utilities and operators?

#### **Safety infrastructure development is a prerequisite for the introduction of a nuclear power programme**

- roles and responsibilities of all interested parties, i.e. designers, vendors, regulators and operators are clearly established;
- long term responsibility of vendors;
- need to consider the whole life cycle of the NPP and any supporting fuel cycle facilities;
- professional cooperation arrangements with other States' operating organizations, as well as with international organizations such as the IAEA and WANO

#### **Countries embarking on nuclear power programmes**

- safety is fully their responsibility and cannot be delegated;
- vendor countries support of new utilities and operators.
- IAEA and WANO's role in assisting these countries in preparing for the needed capacities.

**6. Long term operation.** How can we achieve safe operation beyond initial design lifetime constraints?

#### **Considerations when reviewing possibilities for LTO**

- licensing/economic issues;
- use of periodic safety review results and ageing management programmes outputs;
- scoping of systems, structures, components (SSCs) important to safety for LTO;
- review of LTO degradation mechanisms.

#### **Implementing an LTO programme**

- licensing requirements;
- replacement/obsolescence programmes;
- interfaces with other existing programmes e.g. maintenance, in-service inspection and surveillance.

#### **Support available for LTO**

- documentation/databases available (IAEA safety standards/GALL, etc.);
- review services (e.g. SALTO).

#### **Capacity and competence building**

- networking as a very effective instrument for sharing knowledge and experience;
- the role of international organizations in supporting and coordinating various safety knowledge groups, particularly for the purpose of maximizing the effectiveness of training resources;
- tools and criteria for conducting systematic training needs assessments, human resource development planning, and short and long term training programme planning.

### **4. PROGRAMME STRUCTURE**

The conference is organized in such a way as to facilitate exchanges and discussions among the participants.

An **opening session** will address the conference objectives.

A series of six **technical sessions** will address the six above mentioned topics of interest. Each session will consist of:

- an overview presentation and summaries of the relevant contributed papers;
- invited keynote paper(s);
- open discussion.

**Poster sessions** will be organized for all accepted contributed papers.

**A final session** will include presentations by the session chairpersons of the main conclusions drawn in their respective sessions and of the recommendations for the future development of international cooperation, including IAEA activities.

## 5. AUDIENCE

The conference is directed at a broad range of experts in the area of safe nuclear operations, including professionals from the different disciplines involved in the operations and safety of nuclear power plants and of the fuel cycle facilities. It is aimed at both licensees and governmental officials, including persons from regulatory bodies, the industry and academe as well as senior policy makers.

## 6. PARTICIPATION

All persons wishing to participate in the conference are requested to **register online in advance**. In addition, they must send a completed Participation Form (Form A) and, if relevant, the Paper Submission Form (Form B) and the Grant Application Form (Form C) as soon as possible to the competent official authority (Ministry of Foreign Affairs or national regulatory authority) for subsequent transmission to the IAEA. A participant will be accepted only if the Participation Form is transmitted through the government of a Member State of the IAEA or by an organization invited to participate.

Participants whose official designations have been received by the IAEA will receive further information on the conference at least three months before the meeting. This information will also be available on the conference website:

<http://www-pub.iaea.org/MTCDD/Meetings/Announcements.asp?ConfID=38094>

## 7. CONTRIBUTED PAPERS AND POSTERS

Concise papers on issues falling within the scope of the conference (see Section 3 above) may be submitted as contributions to the conference. These papers will not be presented orally, but will be included in a book of contributed papers to be distributed free of charge to all participants upon registration. Authors of contributed papers may present the substance of their paper(s) in the form of a **poster**, which will be exhibited in the poster area.

The **contributed papers** should not exceed **four A4 pages in length** and must be submitted in English. Each contributed paper must be preceded by an abstract not exceeding 300 words. Authors should state to which of the above technical topics their contribution relates. Authors must use the IAEA's Proceedings Paper Template in MS Word 2000 (user instructions are available on the conference web page (Section 15)). Guidelines for the preparation of a contributed paper and subsequent poster are given in the attached "IAEA Guidelines for Authors on the Preparation of Manuscripts for Proceedings" and the "IAEA Guidelines for the Preparation of a Poster".

The contributed papers should be submitted to the following e-mail address:

[op-safety@iaea.org](mailto:op-safety@iaea.org)

To permit selection and review, the electronic version of the contributed paper must be received by the Scientific Secretariat not later than **25 January 2010**.

In addition to the electronic submission, a copy of the contributed paper(s) must also be submitted through one of the competent official authorities (see Section 9). The paper should be sent with a completed **and signed** Form for Submission of a Paper (Form B) and the Participation Form (Form A), to reach the IAEA not later than **25 January 2010**.

Only papers and supporting documents such as Forms A and B that have been received by the above deadline and through the appropriate official channels will be considered for inclusion in the book of contributed papers. Final acceptance will occur after a peer review process. Furthermore, the Secretariat reserves the right to exclude papers that do not comply with its quality standards and do not apply to one of the topics in Section 3, above.

Papers that are not sent through the official channels and papers arriving after the deadline will not be considered.

Authors will be informed by **March 2010** whether their papers have been accepted for inclusion in the book of contributed papers and for presentation as a poster.

## **8. EXPENDITURES/GRANTS**

No registration fee is charged to participants.

As a general rule, the IAEA does not pay the cost of attendance, i.e. travel and living expenses, of participants. However, limited funds are available to help meet the cost of the attendance of selected specialists, mainly from developing countries with low economic resources. Generally, not more than one grant will be awarded to any one country.

If governments wish to apply for a grant on behalf of one of their specialists, they should address specific requests to the IAEA to this effect. Governments should ensure that applications for grants:

- (a) are submitted by **25 January 2010**;
- (b) are accompanied by a duly completed and signed Grant Application Form (see attached Form C).

Applications that do not comply with the conditions stated under (a) and (b) cannot be considered.

The grants awarded will be in the form of lump sums and will usually cover only part of the cost of attendance.

## **9. CHANNELS OF COMMUNICATION**

The Participation Form (Form A), and if applicable, the Paper Submission Form (Form B) and the Grant Application Form (Form C) must be sent through one of the competent official authorities (Ministry of Foreign Affairs or national regulatory authority) for subsequent transmission to the IAEA. Subsequent communications concerning technical matters should be sent to the Scientific Secretary and communications on administrative/logistical matters to the Conference Secretariat (see Section 14).

## **10. DISTRIBUTION OF DOCUMENTS AND PROCEEDINGS**

A preliminary programme of the conference will be sent to all officially designated participants well in advance of the meeting and will also be available on the IAEA conference web site (see Section 15).

The final programme and the book of contributed papers will be available free of charge upon registration at the conference.

The proceedings of the conference will be published by the IAEA as soon as possible after the conference.

## **11. WORKING LANGUAGE**

The working language of the meeting will be English. All communications must, therefore, be sent to the IAEA in English.

## 12. ACCOMMODATION

Information on accommodation will be available on the IAEA conference website as soon as possible. Other administrative details will be sent to all officially designated participants approximately three months before the conference.

## 13. VISAS

If a visa is required to enter Austria (the 'Schengen visa'), the necessary applications should be submitted to the nearest diplomatic or consular representative of Austria as early as possible. (It should be noted that this procedure may take up to three weeks).

## 14. CONTACT INFORMATION

### (a) Scientific issues – Scientific Secretariat (IAEA)

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### (b) Administrative Issues – Conference Organizer (IAEA)

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## **15. CONFERENCE WEB PAGE**

Please visit the IAEA conference web page regularly for new information regarding the conference under: <http://www-pub.iaea.org/MTCD/Meetings/Announcements.asp?ConfID=38094>