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IAEA
International Atomic Energy Agency

Fourth International Conference on Nuclear Power Plant Life Management

Lyon, France

23–27 October 2017

Organized by the

International Atomic Energy Agency

in cooperation with the

European Commission's Joint Research Centre (EC/JRC)

and the

Electric Power Research Institute (EPRI)

Hosted by the

Government of France

through the

Nuclear Generation II and III Association (NUGENIA)

and

Électricité de France (EDF)

Announcement and Call for Papers

A. Background

The world's fleet of nuclear power plants (NPPs) is, on average, more than 20 years old. Even though the design life of an NPP is typically 30–40 years, it is quite feasible that many plants will be able to operate in excess of their design lives, provided that NPP engineers demonstrate — through analysis, testing and ageing management for the equipment and system upgrades, as well as increased vigilance — that the plants will operate safely. In the operation of NPPs, safety should always be the prime consideration. Plant operators and regulators must always ensure that plant safety is maintained and, where possible, enhanced during a plant's operating lifetime.

The task of managing plant ageing is assigned in most Member States to an engineering discipline called plant life management (PLiM), which has gained increased attention over the past decade. The effective ageing management of structures, systems and components (SSCs) is a key element in PLiM for the safe and reliable long term operation (LTO) of NPPs. Plant life management can be defined in one sentence as the integration of ageing and economic planning for the purpose of maintaining a high level of safety and optimizing plant performance by dealing successfully with extended life ageing issues, maintenance prioritization, periodic safety reviews, education and training.

A PLiM programme is an effective tool that allows an operator to safely and cost-effectively manage ageing effects in SSCs for LTO. Such a programme helps facilitate decisions concerning when and how to repair, replace or modify SSCs in an economically optimized way, while assuring that a high level of safety is maintained.

The International Atomic Energy Agency (IAEA) organized earlier International Conferences on Nuclear Power Plant Life Management from 4 to 8 November 2002 in Budapest, Hungary, from 15 to 18 October 2007 in Shanghai, China, and from 14 to 18 May 2012 in Salt Lake City, United States of America. The participants of these earlier conferences appreciated greatly the opportunity they offered for information exchange in this field and recommended that the IAEA continue to organize future conferences regularly every four to five years. Accordingly, the IAEA is organizing the fourth conference in the series from 23 to 27 October 2017 in Lyon, France.

B. Objectives of the Conference

The objectives of the fourth international conference on PLiM are to:

- Emphasize the role of PLiM programmes in assuring safety and improving reliable NPP operation;
- Identify the economic impacts of PLiM and LTO programmes, as well as methodologies for their evaluation;
- Provide key elements and good practices related to the safety aspects of ageing, ageing management and LTO;
- Provide a forum for information exchange on national and international policies, as well as on regulatory practices, and for the demonstration of strategies, including their application in ageing management and PLiM programmes for operating and new NPPs; and

- Assist Member States in further developing their PLiM programmes taking consideration of lessons learned and of impacts from the Fukushima Daiichi accident.

C. Programme Structure and Topics

To facilitate the achievement of the conference's objectives, each topical session will have the following format:

- A keynote speaker, who will present a paper by invitation;
- A set of presentations that supplement specific areas within the session topic and stimulate discussion among conference participants; and
- A set of detailed technical papers that present the state of the art in the subject area.

C.1. Opening Session: Opening, Plenary and Keynote Presentations

Opening addresses will be made by a senior management representative of the IAEA, a representative of the Government of France and the Chairperson of the Conference, who will be a senior manager from Électricité de France (EDF). The session will set the conference objectives and provide background information on the status and trends in the field of PLiM. Keynote interventions will provide information about the development of PLiM technology that will emphasize the increasing reliance on a systematic and more effective approach to enhance the safe and economical operation of existing plants.

C.2. Session 1: Approaches to Plant Life Management

The aim of this session is to share information on, and best practices in, the application of PLiM for LTO from the safety and economic point of view. Topics to be addressed in the presentations include:

- Implementation of the lessons learned from the severe accident at the Fukushima Daiichi NPP and their implications for LTO;
- Methodology and scope, terms and definitions for the development of PLiM and LTO programmes and their implementation;
- Methodology for integrated plant assessments, including the condition of SSCs;
- Selection criteria for NPPs for LTO; and
- New NPP design features that take into account PLiM experiences and feedback.

C.3. Session 2: Economics of Plant Life Management

The aim of this session is to improve the economic performance of NPPs through PLiM. Topics to be addressed in the presentations include:

- Potential business opportunities and risks, including power uprating issues related to PLiM;
- Cost-effective strategy for modernization and replacement/refurbishment of SSCs;

- Economic analysis for decision making on LTO;
- Cost-effective technologies/practices for maintenance, inspection and surveillance;
- Premature shutdown preparation strategy and procedures, including technical aspects;
- Long term strategies for spent fuel storage (on-site) and waste management;
- Replacement of large components (e.g. steam generators, reactor vessel heads and turbine generators); and
- Flexible operation in response to increased grid variability.

C.4. Session 3: Ageing Management and Preparation of Long Term Operation

The aim of this session is to share technical updates on ageing management issues for mechanical, electrical/instrumentation and control (I&C) components and civil structures, as well as to discuss challenges related to the preparation of safe LTO. Topics to be addressed in the presentations include:

- Safety standards to support LTO;
- Scoping and screening of SSCs for LTO;
- Ageing management review;
- Use of the experience gained from implementation of the International Generic Ageing Lessons Learned (IGALL) programme;
- Development, implementation and improvement of effective ageing management programmes;
- Revalidation of time-limited ageing analysis;
- Research to support LTO and ageing management;
- Inspection methodologies and strategies for significant components; and
- In-service inspection and non-destructive examination.

C.5. Session 4: Configuration and Modification Management for Safety Enhancement

The aim of this session is to share information on safety enhancement, design modernization, refurbishment and replacement programmes for ageing SSC, obsolescence and additional safety requirements. Topics to be addressed in the presentations include:

- Aspects of SSC design modification, modernization, refurbishment and replacement;
- Maintenance optimization through predictive maintenance, preventive maintenance and corrective maintenance;
- Risk and reliability evaluation of components and piping;
- Modification and configuration management, including design basis reconstitution;
- Accident tolerant fuel assemblies;
- Safety analysis for design modification considering internal/external hazards;
- Effective management of I&C, including modernization, methods and tools; and
- Lessons learned from the planning and implementation of advanced I&C systems.

C.6. Session 5: Human Factors and Managerial Aspects

The aim of this session is to share experiences and lessons learned in relation to system management and the successful resolution of the technical issues and challenges presented in the previous sessions, and to identify outstanding human factors and managerial aspects in the field. Presentations will cover:

- Human resource development and workforce planning for LTO;
- Knowledge management methods/processes to preserve plant history and experiences;
- Stakeholder involvement and public understanding;
- Management of external and international resources to mitigate severe accidents; and
- Effects of severe accident scenarios on human performance and potential human reactions.

C.7. Session 6: Regulatory Approaches to Ageing Management and Long Term Operation

It is essential to exchange information about regulatory requirements in different Member States. The aim of this session is to discuss the distribution of roles and responsibilities among the parties involved and to address regulatory policy considerations. Presentations will cover:

- Regulatory approaches to ageing management and LTO;
- Use of IAEA safety standards for the development of national regulations;
- Requirements for the LTO licensing process;
- Second licence renewal preparation and approaches in the USA;
- Insights from periodic safety reviews;
- Use of operational experience in the regulations; and
- Lessons learned from SALTO (‘Safety Aspects of Long Term Operation’) missions

C.8. Panel Discussions

To discuss technical challenges and experiences, three panel discussions will be organized for technical sessions 1–6 in parallel session. The panellists and audiences will have a chance to exchange and discuss in depth their hand-on experiences and lessons learned with regard to the implementation of PLiM and LTO

In addition to the parallel panel discussions, a panel discussion on current impacts on, and challenges for, PLiM and LTO of NPPs resulting from the severe accident at the Fukushima Daiichi NPP is planned to take place in plenary session. The panel discussion by high level technical experts will consider:

- Technological issues;
- Regulatory issues;
- Political issues;
- Human resources; and
- Public information.

C.9. Closing Session

To conclude the conference, the session chairs will summarize the presentations and discussion of each technical session, and the Chairperson of the conference will present his/her conclusions and recommendations to the IAEA.

C.10. Technical Tours

Technical tours to NPPs near Lyon, as well as opportunities to visit research laboratories, nuclear installations and fuel cycle facilities in operation or under construction, are foreseen. Additional information about these tours will be made available on the IAEA web page for the conference (see Section O).

D. Exhibition

A limited amount of space will be available for company displays/exhibits during the conference. Interested parties should contact the local organizer:

Mr Abderrahim Al-Mazouzi
EDF Laboratory at Les Renardières
Avenue des Renardiéres-Ecuelles
77818 MORET-SUR-LOING CEDEX
FRANCE
Email: abderrahim.al-mazouzi@edf.fr

E. Audience

The conference is directed mainly at the staff of utilities, research and design organizations, regulatory bodies, manufacturing and service companies, as well as government decision makers concerned with near, medium and long term energy needs.

F. Synopses, Papers and Proceedings

Concise papers on issues falling within the topics outlined in Section C may be submitted as contributions to the conference. All papers, apart from invited papers, must present original work and they should not have been published elsewhere.

(a) Submission of Extended Synopses

Anyone wishing to present a paper or poster during this conference must submit a two-page synopsis in electronic format (no paper copies), directly to the IAEA. Instructions on how to upload the synopsis to the conference's web browser-based file submission system (IAEA INDICO) will be available on the IAEA web page for the conference (see Section O). The synopses must be submitted

through this system between **1 January and 28 May 2017**. No other form of submission will be accepted.

Authors must further submit the following two forms to their appropriate governmental or other competent authority (see Section G) for transmission to the IAEA:

- Participation Form (Form A)
- Form for Submission of a Paper (Form B)

These forms must be received by the IAEA no later than **28 May 2017**.

IMPORTANT: The electronically received two-page synopsis will be considered by the Programme Committee only if these two forms have been received by the IAEA through the established official channels.

(b) Acceptance of Papers/Posters

Authors will be informed by **30 June 2017** as to whether their papers have been accepted by the Programme Committee for oral or poster presentation.

All accepted synopses will be reproduced in unedited form in the *Book of Extended Synopses*, which will be distributed to all participants at registration.

Furthermore, selected authors will be asked to prepare full papers for publication in the proceedings. Guidelines for the preparation of contributed papers will be provided at that time.

In order to provide ample time for discussion, the number of papers that can be accepted for oral presentation is limited. If the number of relevant and high quality papers submitted for selection exceeds the acceptable number, some of them will be selected for poster presentation.

The Conference Secretariat reserves the right to exclude papers that do not comply with the IAEA's quality standards and/or do not apply to one of the topics listed in Section C.

(c) Proceedings

The proceedings of the conference containing all presentations, including conclusions and recommendations, will be published by the IAEA as soon as possible after the conference.

The IAEA reserves the right to refuse the presentation or publication of any paper that does not meet the expectations raised by the information originally given in the extended synopsis.

G. Participation

All persons wishing to participate are required to send a completed Participation Form (Form A) and, if applicable, the Form for Submission of a Paper (Form B) and the Grant Application Form (Form C) to the competent national authority (e.g. the Ministry of Foreign Affairs or national atomic energy authority) for subsequent transmission to the IAEA.

A participant will be accepted only if the Participation Form is transmitted through the competent national authority 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 approximately three months before the beginning of the conference. This information will also be posted on the conference web page (see Section O).

H. Expenditures

No registration fee is charged to participants.

The IAEA is generally not in a position to bear the travel and other costs of designated participants in the conference. The IAEA has, however, limited funds at its disposal to help meet the cost of attendance of selected specialists from Member States eligible to receive technical assistance under the IAEA's technical cooperation programme. Such assistance may be offered, upon specific request, provided that in the IAEA's view the participant on whose behalf assistance is requested will make an important contribution to the conference. In general, 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 are:

1. Submitted **by 28 May 2017**;
2. Accompanied by a duly completed and signed Grant Application Form (Form C); and
3. Accompanied by a completed Participation Form (Form A).

Applications that do not comply with the above conditions cannot be considered.

Approved grants will be issued in the form of a lump sum payment that usually covers only part of the cost of attendance.

I. Working Language

The working language of the conference will be English. All communications, synopses and full papers must be sent to the IAEA in English.

J. Documents

A preliminary programme of the conference will be made available on the IAEA web page for the conference (see Section O) before the opening of the conference. The final programme and the *Book of Extended Synopses* will be available upon registration at the conference.

K. Conference Venue and Accommodation

The conference will be held at the Lyon Convention Centre, Cité Internationale, 50 Quai Charles de Gaulle, 69443 Lyon cedex 06, France. Detailed information on accommodation and other administrative details will be available on the IAEA web page for the conference (see Section O) well in advance of the conference. Detailed information on accommodation and other relevant matters will be sent directly to all designated participants approximately three months before the conference. This information will also be made available on the conference web page as soon as possible.

L. Visa

Designated participants who require a visa to enter France should submit the necessary application(s) to the nearest diplomatic or consular representative of France as soon as possible: Further advice and instructions will be made available on the IAEA web page for the conference (see Section O).

M. Key Dates and Deadlines

Submission of Form for Submission of a Paper (Form B) and extended synopsis (800 words)	**28 May 2017**
Submission of Grant Application Form (Form C):	**28 May 2017**
Notification of acceptance of papers/posters:	**30 June 2017**
Submission of full paper (only upon request by the IAEA):	**18 October 2017**

N. Conference Secretariat

General contact details of the Conference Secretariat:

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Subsequent correspondence on scientific matters should be sent to the Scientific Secretaries and correspondence on administrative matters to the IAEA Conference Services Section.

O. Conference Web Page

Please visit the IAEA web page for the conference regularly for new information regarding this conference:

http://www-pub.iaea.org/iaeameetings/50811/Fourth-International-Conference-on-Nuclear-Power-Plant-Life-Management