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IAEA
International Atomic Energy Agency
Atoms for Peace and Development

Fifth International Conference on Nuclear Power Plant Life Management

Vienna, Austria

28 November - 2 December 2022

Organized by the
International Atomic Energy Agency (IAEA)

In cooperation with
European Commission Joint Research Centre (EC-JRC)
Electric Power Research Institute (EPRI)
European Atomic Forum (FORATOM)
International Youth Nuclear Congress (IYNC)
Ministry of Economy Trade and Industry of Japan (METI)
Sustainable Nuclear Energy Technology Platform (SNETP)
Women in Nuclear Global (WiN)
World Nuclear Association (WNA)

Announcement and Call for Papers

A. Background

The capacity weighted age of the world's operating nuclear power plants (NPPs) is, on average, more than 30 years old. Even though the design life of an NPP is typically 30–40 years, the operational lifetime of many plants is, following a comprehensive review, extended. To enable this, NPP engineers have demonstrated — through analysis, testing and ageing management for equipment and system upgrades — that the plants can continue to operate safely and reliably. Plant operators and regulators must ensure safety is maintained and, where possible, enhanced during a plant's operating lifetime. Reliability and performance are becoming increasingly important, especially for ageing NPPs. Low electricity prices in many markets and investment requirements to maintain, replace or modernize ageing components threaten the economic viability of operating plants, in some cases with many years remaining on approved licenses.

In most Member States, the task of ageing management is assigned to an engineering discipline called plant life management (PLiM), which has gained increased attention over the past two decades. 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 as the integration of ageing and economic planning for the purpose of maintaining a high level of safety and optimizing plant performance by addressing extended life ageing issues, maintenance prioritization, periodic safety reviews, education and training.

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

The IAEA previously organized 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, from 14 to 18 May 2012 in Salt Lake City, United States of America and from 23 to 27 October 2017 in Lyon, France. Participants in these earlier conferences greatly appreciated the opportunities for information exchange and recommended that the IAEA continue to organize conferences every four to five years. Accordingly, the IAEA is organizing the fifth conference in the series from 28 November to 2 December 2022 in Vienna, Austria.

B. Purpose and Objectives

The purpose of the event is to provide a forum for information exchange on national and international practices as well as regulatory approaches related to plant life management for long term operation, considering the sustainability, safety and efficiency of nuclear power plants.

The main objectives of the conference 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, regulatory practices, and for the demonstration of strategies, including their application in ageing management and PLiM programmes for operating and new NPPs; and

- Exchange lessons learned from managing NPP PLiM during the global pandemic.

C. Themes, Topics and Structure

To facilitate the achievement of the conference 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 representative of the IAEA, a representative of the Government of Japan and the Chairperson of the Conference. 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 consider PLiM experiences and feedback.

C.3 Session 2: Economics of Plant Life Management

The aim of this session is to discuss how 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 strategies for modernization and replacement/refurbishment of SSCs;
- Economic analysis for decision making on LTO;
- Cost-effective technologies/practices for maintenance, inspection and surveillance;

- Supply chain health, equipment obsolescence and commercial grade dedication;
- 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);
- Flexible operation in response to increased grid variability;
- Innovative solutions that address LTO challenges and help ensure operational sustainability; and
- NPP PLiM and the dawn of Integrated Energy Systems.

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;
- Technological obsolescence;
- 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 and improved reliability

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

- Aspects of SSC design modification, modernization, innovation, 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: Stakeholder Engagement, 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 human factors and managerial aspects of the field. Presentations will cover:

- Stakeholder engagement and public understanding, especially in the context of NPP LTO role in sustainable development and climate change mitigation;
- Human resource development and workforce planning for LTO;
- Knowledge management methods/processes to preserve plant history and experiences; and
- Innovative NPP operational and business models.

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

Exchange information about regulatory requirements in different Member States is essential. 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 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. The panellists and audiences will have a chance to discuss in depth their 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 challenges for LTO of NPPs is planned to take place during the plenary session. The panel discussion by high level technical experts will consider:

- Technological issues;

- Regulatory issues;
- Policy issues;
- Human resources;
- Economic issues; and
- Engagement of the public and other stakeholders.

C.9 Closing Session

To conclude the conference, the session chairs will summarize the presentations and discussions of each technical session, and the Chairperson of the conference will present their conclusions and recommendations to the IAEA.

D. Target 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.

E. Call for Papers

Contributions on the topics listed in Section C are welcome as oral or poster presentations. All submissions, apart from invited papers, must present original work, which has not been published elsewhere.

E.1. Submission of Synopses

Synopses (approximately 500 to 600 words on one or a maximum of two printed A4 pages, may contain any charts, graphs, figures and references) should give enough information on the content of the proposed paper to enable the Programme Committee to evaluate it. Anyone wishing to present at the conference must submit a synopsis in electronic format using the conference's file submission system (IAEA-INDICO), which is accessible from the conference web page (see Section O). The synopsis can be submitted through this system from **7 September 2021** until **1 August 2022**. Specifications for the layout will be available on IAEA-INDICO. The system for electronic submission of synopsis, IAEA-INDICO, is the sole mechanism for submission of contributed synopsis. Authors are encouraged to submit synopsis as early as possible. The IAEA will not accept submissions via email.

In addition, authors must register online using the InTouch+ platform (see Section H). The online registration together with the auto-generated Participation Form (Form A) and Form for Submission of a Paper (Form B) must reach the IAEA no later than **1 August 2022**.

IMPORTANT: The Programme Committee will consider uploaded synopses only if these two forms have been received by the IAEA through the established official channels (see Section F).

E.2. Acceptance of Synopses

The Secretariat reserves the right to exclude synopses that do not comply with its technical or scientific quality standards and that do not apply to one of the topics listed in Section C.

Authors will be informed by **3 September 2022** as to whether their submission has been accepted, either orally or as a poster, for presentation at the conference. Accepted synopses will also be reproduced in an unedited electronic compilation of Synopses which will be made available to all registered participants of the conference.

E.3 Submission of Full Papers

Selected authors of accepted synopses will be requested to submit a full paper in Word format, of about **five to ten** pages in length. A compilation of full papers (in electronic format) will be made available to participants at registration.

Full papers must also be submitted through the IAEA-INDICO file submission system in Word format. Submitting the paper in the indicated electronic format is mandatory. Specifications for the layout and electronic format of the contributed papers and for the preparation of posters will be made available on IAEA-INDICO.

The IAEA reserves the right to exclude papers that do not comply with its quality standards and those that do not apply to one of the topics outlined in Section C above and those that do not meet the expectations based on the information in the abstract.

The deadline for electronic submission of the full papers as Word files is **17 October 2022**. The IAEA will not accept papers submitted after the deadline.

IMPORTANT: The system for electronic submission of papers, IAEA-INDICO, is the sole mechanism for submission of contributed papers. Authors are encouraged to submit papers as early as possible. The IAEA will not accept submissions via email.

E.4 Proceedings

Following the conference, the IAEA will publish a summary report. The proceedings will be made available to read online.

F. Participation and Registration

All persons wishing to participate in the event must be designated by an IAEA Member State or should be member of an organization that has been invited to attend. The list of IAEA Member States and invited organizations is available on the event web page (see Section O).

Registration through the InTouch+ platform:

1. Access the InTouch+ platform (https://intouchplus.iaea.org):

- Persons with an existing NUCLEUS account can **sign in here** with their username and password;
- Persons without an existing NUCLEUS account can **register here**.

2. Once signed in, prospective participants can use the InTouch+ platform to:

- Complete or update their personal details under 'Basic Profile' (if no financial support is requested) or under 'Complete Profile' (if financial support is requested) and upload the relevant supporting documents;
- Search for the relevant event (**EVT2005403**) under the 'My Eligible Events' tab;
- Select the Member State or invited organization they want to represent from the drop-down menu entitled 'Designating authority' (if an invited organization is not listed, please contact Conference.Contact-Point@iaea.org);
- If applicable, indicate whether a paper is being submitted and complete the relevant information;
- If applicable, indicate whether financial support is requested and complete the relevant information (this is not applicable to participants from invited organizations);
- Based on the data input, the InTouch+ platform will automatically generate Participation Form (Form A), Form for Submission of a Paper (Form B) and/or Grant Application Form (Form C);
- Submit their application.

Once submitted through the InTouch+ platform, the application together with the auto-generated form(s) will be transmitted automatically to the required authority for approval. If approved, the application together with the form(s) will automatically be sent to the IAEA through the online platform.

NOTE: Should prospective participants wish to submit a paper or request financial support, the application needs to be submitted by the specified deadlines (see section M).

For additional information on how to apply for an event, please refer to the InTouch+ Help page. Any other issues or queries related to InTouch+ can be sent to InTouchPlus.Contact-Point@iaea.org.

If it is not possible to submit the application through the InTouch+ platform, prospective participants are requested to contact the IAEA's Conference Services Section via email: Conference.Contact-Point@iaea.org.

Participants are hereby informed that the personal data they submit will be processed in line with the Agency's Personal Data and Privacy Policy and is collected solely for the purpose(s) of reviewing and assessing the application and to complete logistical arrangements where required. Further information can be found in the Data Processing Notice concerning IAEA InTouch+ platform.

G. Expenditures and Grants

No registration fee is charged to participants.

The IAEA is generally not in a position to bear the travel and other costs of participants in the conference. The IAEA has, however, limited funds at its disposal to help cover the cost of attendance of certain participants. Upon specific request, such assistance may be offered to normally one participant per country, provided that, in the IAEA's view, the participant will make an important contribution to the conference.

If participants wish to apply for a grant, they should submit applications to the IAEA using the InTouch+ platform through their competent national authority (see Section H). Participants should ensure that applications for grants are:

1. Submitted by **1 August 2022**;
2. Accompanied by Grant Application Form (Form C); and
3. Accompanied by 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**.

H. Distribution of Documents

A preliminary and final programme will be made available on the conference web page (see Section O) prior to the start of the conference. The electronic compilation of synopses will be accessible free of charge to participants registered for the conference.

I. Exhibitions

A limited amount of space will be available for commercial vendors' displays/exhibits during the conference. Interested parties should contact the Scientific Secretariat by email plim-5@iaea.org by **1 August 2022.**

J. Working Language

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

K. Venue and Accommodation

The conference will be held at at the Vienna International Centre (VIC), where the IAEA's Headquarters are located. Participants are advised to arrive at Checkpoint 1/Gate 1 of the VIC one hour before the start of the event on the first day in order to allow for timely registration. Participants will need to present an official photo identification document in order to be admitted to the VIC premises.

Participants must make their own travel and accommodation arrangements. Hotels offering a reduced rate for participants are listed on https://www.iaea.org/events. Please note that the IAEA is not in a position to assist participants with hotel bookings, nor can the IAEA assume responsibility for paying fees for cancellations, re-bookings and no-shows.

L. Visas

Participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria as early as three months but not later than four weeks before they travel to Austria. Since Austria is a Schengen State, persons requiring a visa will have to apply for a Schengen visa. In States where Austria has no diplomatic mission, visas can be obtained from the consular authority of a Schengen Partner State representing Austria in the country in question.

For more information, please see the Austria Visa Information document available on https://www.iaea.org/events.

M. Key Deadlines and Dates

Submission of synopses through IAEA-INDICO	**1 August 2022**
Submission of Form B (together with Form A) through the InTouch+ platform	**1 August 2022**
Submission of Form C (together with Form A) through the InTouch+ platform	**1 August 2022**
Notification of acceptance of synopses for oral or poster presentation	**3 September 2022**
Deadline for submission of revised full papers submitted through IAEA-INDICO	**17 October 2022**
Submission of Form A only (no paper submission, no grant request) through the InTouch+ platform	**No deadline**

N. 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's Conference Services Section.

O. Conference Web Page

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