IAEA
International Atomic Energy Agency

International Conference on Management of Spent Fuel from Nuclear Power Reactors: An Integrated Approach to the Back End of the Fuel Cycle

IAEA Headquarters
Vienna, Austria

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Announcement and Call for Papers

A. Background

The nuclear fuel cycle includes the 'front end', i.e. from mining to fabrication of the fuel, the 'service period' in which fuel is used during power reactor operation to generate electricity, and the 'back end', i.e. the safe, secure and sustainable management of spent fuel. If spent fuel is not reprocessed, the nuclear fuel cycle is referred to as an 'open' or 'once through' fuel cycle; if spent fuel is reprocessed, and extracted radioactive isotopes are reused, it is referred to as a 'closed' fuel cycle.

At the time of the last International Conference on Management of Spent Fuel from Nuclear Power Reactors in May–June 2010, the nuclear community was very optimistic about the future of the industry, with renewed interest in nuclear new builds and advanced fuel cycles. Less than 12 months after the conference, the accident at the Fukushima Daiichi nuclear power plant (NPP) prompted an international review of nuclear and spent fuel safety which led to modifications of strategies and revision of international guidance — e.g. through the publication of a new Specific Safety Guide, *Storage of Spent Nuclear Fuel* (IAEA Safety Standards Series No. SSG-15, Vienna, 2012). In some Member States, decisions were taken to phase out nuclear power generation and initiate the early closure of NPPs (e.g. Germany and Switzerland). In others, the construction of planned new NPPs has been delayed. These developments notwithstanding, the year 2013 saw the largest number of nuclear power reactors under construction since 1989.

As far as the management of radioactive waste and spent fuel is concerned, the development and implementation of a safe geological disposal facility is still a pending issue in a few countries with advanced nuclear power programmes but that have yet to finalize the licensing process for such a facility, as well as in countries with programmes which, despite the progress accomplished in the past, have been interrupted or the implementation of which has been slowed down. Such a situation regarding the long term safe management of radioactive waste and spent fuel has serious consequences in terms of the decreasing storage capacity for spent fuel and the increasing duration of storage prior to disposal.

B. Introduction

As a decision maker, spent fuel manager etc., taking a holistic view of the nuclear fuel cycle ensures that influences from, and impacts on, all phases of the nuclear fuel cycle are clearly understood, and facilitates effective decision making in the back end of the fuel cycle. Particular challenges include maintaining flexibility to accommodate the range of potential future spent fuel management (SFM) options as well as defining and addressing the relevant issues in storage, transport and disposal.

A stable SFM policy over the long time frames needed to implement such programmes can only be achieved with the strong involvement of all stakeholders, including policymakers, governmental organizations, regulatory bodies, operators and spent fuel and radioactive waste management organizations, industry, and all other relevant interested parties.

At present, there is limited experience in the transport of spent fuel after long periods of storage. However, with the potential extension of storage duration and as many countries contemplate the development of centralized dry storage facilities and other storage options, including the use of dual purpose casks for both transport and storage, the interface between transport and storage is gaining increasing importance — particularly if inspections and/or repackaging are needed, as well as with regard to safety demonstration aspects.

The theme of the new International Atomic Energy Agency (IAEA) conference on this topic that will take place in June 2015 covers the integrated approach to the management of spent fuel from nuclear power reactors and aims at addressing the impact of SFM on decisions made and activities developed in the rest of the nuclear fuel cycle and vice versa.

C. Objectives

The purpose of the conference is to highlight the importance of an integrated long term approach to the management of spent fuel from power reactors. The conference will discuss progress achieved in connection with the back end of the nuclear fuel cycle as well as associated challenges, and will cover, in particular, the impact of decisions made at the front end, technological developments, the regulatory framework and safety aspects. The conference will also allow for the evaluation of advances in the management of spent fuel from power reactors since the inception of the IAEA conferences on this topic, as well as for the identification of pending issues and anticipated future challenges. On this basis, the outcomes of the conference will contribute to defining future programmes of the IAEA in the field of managing spent fuel from power reactors.

D. Format and Topics

The conference will consist of an opening plenary session, topical sessions with keynote addresses and oral contributions, and poster sessions.

To set the scene there will be keynote addresses on:

- A holistic view of the nuclear fuel cycle;
- Safety and technological aspects of SFM;
- Influence of the end point on SFM; and
- Influence of fuel design and reactor operation on SFM.

The topical sessions will cover:

- Spent fuel management strategies:
    - Interdependencies between the different steps of a strategy, lessons learned from Member States' programmes, the information required to support successful strategy implementation, etc.;
    - Experience in strategy development and implementation, engaging key interested parties in strategy development, managing uncertainties and interfaces;
    - Different considerations for large and small nuclear power programmes; and
    - Newcomer approach/experience in developing a long term strategy.
- Storage options in support of the integrated approach:
    - Advantages and disadvantages of different options (e.g. centralized versus on-site storage, wet versus dry storage, single-use versus dual-purpose or multi-use casks);
    - When, how and why to shift from one technology to another;
    - Latest technology developments; and
    - International cooperation in developing spent fuel storage options.
- Status and challenges in an integrated approach:
    - Experience in designing and operating SFM facilities;
    - Results of the Joint Working Group on Guidance for an Integrated Transport and Storage Safety Case for Dual Purpose Casks for Spent Nuclear Fuel;
    - Transport/storage/reprocessing/disposal interfaces;
    - Consequences on the availability of spent fuel disposal;
    - Governmental, technical and legal/regulatory aspects of spent fuel storage, transport, reprocessing and disposal;
    - Management of damaged fuel (storage, reprocessing, transport and disposal);
    - Technological advances to accommodate changes in the nuclear fuel cycle; and

  - Security aspects of SFM.

- Ageing management programmes:
  - Surveillance and monitoring;
  - Time limited ageing analysis; and
  - How to develop an international database on ageing experience and ageing management plans.
- Impact of the front end of the nuclear fuel cycle on the back end:
  - Advantages and disadvantages of alternative fuels and revised reactor operation (e.g. new claddings, thorium fuels, high burnup fuel and mixed oxide fuel).
- Research and development required to deliver an integrated approach:
  - For example, current studies on hydrogen behaviour in zirconium cladding, drying of spent fuels, corrosion issues.
- Safety aspects of spent fuel management:
  - The licensing process for SFM (storage, transport after storage, reprocessing and disposal);
  - Safety case development for the different steps of SFM;
  - Safety and technological consequences of reprocessing (or not) spent fuel; and
  - Safety considerations for dual purpose casks.

E. Contributed Abstracts and Papers

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

E.1 Submission of Abstracts

Persons wishing to present a paper at the conference — either orally or in the form of a poster — must submit an abstract of between 250 and 400 words **in electronic format** directly to the IAEA. Instructions on how to upload the abstract to the conference's web browser-based file submission system (IAEA-INDICO) are available on the IAEA conference web page (see Section N).

The abstracts **must** be submitted through this system. No other form of submission will be accepted.

The abstract should give enough information on the contents of the proposed paper to enable the Programme Committee to evaluate it. Authors should state to which of the topics outlined in Section D their contribution relates. The accepted abstracts will be reproduced unedited in the *Book of Abstracts* which will be distributed to all participants at the conference.

Authors must further submit the following two forms to their appropriate official authority (see Section F) for transmission to the IAEA. These forms must be received by the IAEA no later than **15 December 2014**:

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

E.2. Acceptance of Papers for Oral or Poster Presentation

Authors will be notified by email by **31 January 2015** as to whether, on the basis of the electronically received abstract, their paper has been accepted, and whether it is accepted for oral presentation or for poster presentation.

Authors of accepted abstracts will be requested to provide a full length paper (between 4 and 10 pages) by **30 April 2015** using the IAEA proceedings template. This paper must also be submitted through the IAEA-INDICO system. The Conference Secretariat reserves the right to exclude papers that do not comply with its quality standards and/or that do not apply to one of the topics outlined in Section D above.

E.3. Proceedings

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

F. Participation

The International Conference on Management of Spent Fuel from Nuclear Power Reactors is held every three to five years and is intended to bring together participants from the nuclear community, including policymakers and representatives of governmental organizations, regulatory bodies, industry, and spent fuel and waste management organizations.

All persons wishing to participate in the conference are requested to **register online in advance** through the conference web page (see Section N). In addition, they 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 their competent national authority (e.g. Ministry of Foreign Affairs or National Atomic Energy Authority), or to one of the organizations invited to participate, for subsequent electronic transmission to the IAEA (Official.Mail@iaea.org).

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 from the IAEA further information approximately four months before the conference. This information will also be posted on the conference web page (see Section N).

G. 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 cover the cost of attendance of selected participants. Generally not more than one grant may 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 **15 December 2014**;
2. Accompanied by a 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**.

H. Distribution of Documents

A preliminary programme will be posted on the IAEA conference web page as soon as possible. The final programme and the *Book of Abstracts* will be available free of charge upon registration at the conference.

I. Working Language

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

J. Venue and Accommodation

The conference will be held at the IAEA's Headquarters in Vienna, Austria. Participants must make their own travel and accommodation arrangements. Hotels which are offering a reduced rate for conference participants will be listed on the conference web page (see Section N). Please note that the IAEA is not in a position to assist participants with hotel bookings, nor can the IAEA assume responsibility for paying cancellation fees or for re-booking and no shows.

K. Visas

Designated participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria at least 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.

L. Key Deadlines

Submission of Form for Submission of a Paper (Form B) and abstract:	**15 December 2014**
Submission of Grant Application Form (Form C):	**15 December 2014**
Notification of acceptance of papers:	**31 January 2015**
Submission of accepted full paper (4 pages max.):	**30 April 2015**

M. 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 of the conference and correspondence on administrative matters to the IAEA Conference Services Section.

N. Conference Web Page

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

http://www-pub.iaea.org/iaeameetings/46528/International-Conference-Spent-Fuel-2015