

**INTERNATIONAL ATOMIC ENERGY AGENCY****TECHNICAL MEETING  
ON  
FUEL BEHAVIOUR AND MODELLING  
UNDER SEVERE TRANSIENT AND LOCA CONDITIONS****18 – 21 October 2011****Nuclear Science Research Institute, Japan Atomic Energy Agency (JAEA)  
Tokai-mura, Ibaraki-ken, Japan****INFORMATION SHEET****I. BACKGROUND**

More than 95% of the nuclear power in the world is derived from water cooled reactors. In such reactor systems, water is used in primary circuits, secondary circuits (except in BWRs) and in a number of auxiliary systems. It is necessary to demonstrate that these reactors can operate safely under all operating conditions and that even under severe transient or accident conditions, such as reactivity insertion accidents (RIA) or loss of coolant accidents (LOCA), the behaviour of the fuel can be adequately predicted and that the consequences of such events can be safely contained.

This meeting is the eighth in a series of IAEA meetings that were held in 1980 (jointly with OECD/NEA, Helsinki, Finland), 1983 (Risø, Denmark), 1986 (Vienna, Austria), 1988 (Preston, United Kingdom), 1992 (Pembroke, Ontario, Canada), 1995 (Dimitrovgrad, Russian Federation) and 2001 (Halden, Norway). All of these activities have significantly contributed to the enhanced understanding of fuel behaviour at accident conditions. In the ten years since the last meeting took place, the demands on fuel duties have continued to increase, including higher burnup, longer fuel cycles and higher temperatures. To satisfy these demands, fuel vendors have developed and introduced new cladding and fuel materials and designs to provide sufficient safety margins, especially under accident conditions. This has incurred a need to assess the applicability of the database for clarification of safety criteria as well as models for accident evolution predictions. Thus, national and international experimental programmes have been launched, and models are being developed or adapted to consider the changed conditions, e.g. fission gas behaviour, relocation of cracked fuel, and physical property changes of the cladding.

It is for these reasons that this issue was proposed to the IAEA in 2007 to be included in the agenda of a Technical Meeting arranged by the Technical Working Group on Fuel Performance and Technology (TWGFPT). This proposal was supported with a recommendation to hold the meeting in May 2011 at the Nuclear Science Research Institute, Japan Atomic Energy Agency (JAEA), Japan, with sponsorship from JAEA. Due to the Fukushima accident it had to be postponed until October 2011.

## II. OBJECTIVES

The purpose of the Technical Meeting is to provide a forum for the world experts to review the current situation and the state of the art on the performance of nuclear fuel for water cooled reactors under severe transient and LOCA conditions.

## III. TOPICS TO BE COVERED

The technical meeting will cover both light and heavy water reactor fuels, and will consider topics including, but not limited to, the following:

- behaviour of fuel pellet, cladding and fuel rod during and after a transient;
- oxidation rate and embrittlement of cladding;
- rod burst and fuel relocation;
- effect of high burnup;
- sub-channel blockage;
- radiological consequences (extent of burst, release of fission products);
- modelling adequacy and accuracy;
- regulatory requirements;
- experience and lessons from the Fukushima accident relevant to the subject of the meeting.

Papers are invited on all aspects of fuel behaviour under transient and LOCA conditions for water cooled reactors. Both experimental and theoretical/modelling works are welcome.

## IV. ORGANIZATION

### Meeting Chairman:

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**V. DEADLINE FOR PAPERS AND PARTICIPATION IN THE MEETING**

The meeting may be attended only upon official designation. Participants should complete the attached Form A and B (if applicable) and send them, together with an abstract of approximately 300 words to the appropriate national authority (Ministry of Foreign Affairs or National Atomic Energy Authority) for subsequent transmission to the IAEA, not later than **5 September 2011**, with copies to the IAEA Scientific Secretary, Mr Victor Inozemtsev and to the Meeting Coordinators, Mr Fumihisa Nagase and Mr Katsuichiro Kamimura. The abstracts should summarize the content and principal conclusions of the paper the author intends to present during the technical meeting. The format of the meeting presumes papers from all participants that will be afterwards published as an IAEA Proceedings TECDOC.

Prospective participants whose nominations have been received by the IAEA will be notified directly. The authors will be notified about the acceptance of their paper(s) and the preliminary programme will be issued by **9 September 2011**. As usually practiced in this type of meetings, the programme will include a panel session to permit participants to contribute to the summary and highlights of the meeting and to make recommendations to the IAEA on future work in this field.

On arrival at the meeting, the authors are requested to bring in electronic form (on a CD or a memory stick) their papers in MS Office Word format and their presentations in Power Point format.

**VI. VENUE AND ACCOMMODATION**

The meeting will be held at the Nuclear Science Research Institute, Japan Atomic Energy Agency (JAEA), 2-4 Shirakata-Shirane, Tokai-mura, Naka-gun, Ibaraki, 319-1195 Japan.

Delegates should arrange their accommodation directly with hotels (a list of recommended options will be provided by the meeting organizers).

Further details regarding travel arrangements and social events will be provided to participants at the meeting website (under preparation):

Designated participants who require a visa to enter Japan should submit the necessary application form in due time to the nearest diplomatic or consular representative of Japan.

## **VII. EXPENDITURES**

In accordance with the established rules, Governments or other national authorities are expected to bear the travel and other costs of designated participants in the Technical Meeting. Limited funds are, however, available to help cover the cost of participants from Member States eligible to receive technical assistance under the IAEA's Technical Cooperation Programme. Such assistance can be offered, upon specific request, to one participant per country provided that, in the IAEA's view, this participant will make an important contribution to the meeting. The application for financial support should be made at the time of designation of the participant.

The Secretariat wishes to state that compensation is not payable by the IAEA for any damage to or loss of the experts' personal property. However, for the period of their engagement with the IAEA, including travel between their residence and the duty station, the designated experts will be covered under the IAEA's insurance policy for permanent total disablement or death resulting from service-incurred accidents or illness up to a maximum of \$100 000, for permanent partial disablement resulting from service-incurred accidents or illness up to a maximum of \$100 000 and for medical expenses up to a maximum of \$20 000 plus \$10 000 for supplementary travel and accommodation expenses in case of illness or injury resulting from service-incurred accidents or illness, in accordance with the terms of the IAEA's relevant insurance policy. This insurance coverage only covers accidents and illnesses insofar as they clearly result from attendance at an IAEA meeting. The IAEA recommends that the expert also make arrangements for private insurance coverage on an individual basis.

## **VIII. WORKING LANGUAGE**

The working language of the meeting will be English. All communications, abstracts, and papers must be sent in English.