INTERNATIONAL ATOMIC ENERGY AGENCY

Technical Meeting
on

"Fuel Failure and Failed Fuel Detection Systems for Fast Reactors"

hosted by

Indira Gandhi Centre for Atomic Research,
Kalpakkam, India
1-3 March 2006

Conducted within the frame of IAEA's
Technical Working Group on Fast Reactors
(Technology Advances in Fast Reactors and Accelerator Driven Systems)

INFORMATION SHEET AND CALL FOR PAPERS

1. INTRODUCTION AND BACKGROUND

Fuel pellets are provided with leak-tight metal cladding for containment of the fission products. Fuel clad failures take place in two stages: initially in the form of gas leakers during which only fission gases and volatile fission products are released, and then followed by wet rupture characterized by contact between fuel and coolant resulting in release of both solid and gaseous fission products into the coolant. Gaseous fission products released ultimately reach the cover gas space. The solid fission products and fuel particles released into the coolant will contaminate the primary coolant circuit and also may cause local blockages due to deposition in the flow passages. Early detection, location and subsequent removal of the failed fuel subassembly are essential to limit the failure propagation.

Gas leakers are detected by monitoring the cover gas for the presence of radioactive fission gases. Wet ruptures are detected by monitoring the primary coolant for the presence of delayed neutron precursors. Location of the failed fuel subassembly is done by delayed neutron monitoring of the coolant samples drawn from individual fuel subassembly outlets. Methods such as gas tagging, wet sipping, dry sipping, analysis of cover gas to find out concentrations of fission gases etc. are also used for location of the failed fuel subassembly. Design of these systems involves detailed studies and analyses on various aspects such as Core Engineering, Reactor Physics, Thermal Hydraulics and Instrumentation and Control.

The proposed Technical Meeting (TM) on “Fuel Failure and Failed Fuel Detection Systems for Fast Reactors” is called to enable the specialists to present the philosophy applied and analyses carried out to the topic in the various Member States for different Liquid Metal Cooled Fast Reactors (LMFR).

2. SCOPE AND OBJECTIVES

The scope of the TM is to provide a global forum for information exchange on the philosophy applied and the analyses carried out with regard to the Fast Reactor Fuel Failure and Failed Fuel Detection Systems, in the participating Member States for different LMFRs.

The objectives of the TM are to review and discuss:

- Fuel failures in different LMFRs
- Failed Fuel Detection Systems used in different LMFRs.
- Modelling and simulation analyses carried out on
    - Core Physics
    - Thermal Hydraulics
    - Fuel-Sodium Interaction
- Experimental validation of the methods (data and codes)
- Operational experiences on various systems employed in the LMFRs
- Works carried out on simplification and cost reduction of the systems
- Details of the on-going R&D

3. PROVISIONAL PROGRAMME

The programme of the TM will include papers addressing the topics listed under covering its objectives. The programme will also include technical visits to FBTR and to the PFBR Site, as well as a celebration event to mark 20 years of successful operation of FBTR.

4. PARTICIPATION

Participation is solicited from governmental, national and international organisations, research centres, universities, and industries. To ensure maximum effectiveness in the exchange of information, the participants should be persons actively involved in the subject of the meeting. Participants should complete the attached Participation Form as soon as possible and send it to the competent official authority (ministry of Foreign Affairs or National Atomic Energy Authority) for transmission to the IAEA Secretariat, to arrive not later than **30 January November 2006**.

The designation of a participant will be accepted only if forwarded by the Government of an IAEA Member State or by an Organisation invited to participate.

Please note that the participant and family member information requested on the Participation Form is needed by the host, Indira Gandhi Centre for Atomic Research (IGCAR), to comply with security requirements. This information should be provided as early as possible to facilitate orderly processing of meeting attendees by IGCAR security personnel.

The meeting is, in principle, open to all officially designated persons. The Agency, however, reserves the right to limit participation should this become necessary due to limitations imposed by the available seating capacity. It is therefore recommended that interested persons take the necessary steps to obtain their official designation as early as possible.

A preliminary meeting Agenda will be sent to the participants when the completed Participation Forms are received.

5. LOCATION OF THE MEETING

The meeting will be held at the Indira Gandhi Centre for Atomic Research (IGCAR), in Kalpakkam, India.

6. MEETING ORGANIZATION

Official correspondence with regard to the technical aspects of the meeting should be addressed to the Scientific Secretary:

Mr. Alexander Stanculescu	Phone:	43 1 2600 22812
Department of Nuclear Energy	E-mail:	A.Stanculescu@iaea.org
International Atomic Energy Agency	Fax:	+43 1 2600 29598
P. O. Box 100, Wagramerstrasse 5		
A-1400 Vienna, Austria		

Correspondence regarding the local arrangements should be addressed to:

Mr. Baldev Raj	Phone:	+91 044 27480240
Director	E-mail:	pcp@igcar.ernet.in
IGCAR, Kalpakkam-603102	Fax:	+91 044 27480060
India		

7. SUMMARIES AND PAPERS

The Participation Form (see attachment) should be submitted through the appropriate government channels with an indication of the intention to present a paper. Participation Forms must be transmitted to the Agency in time to reach the Agency by 30 January 2006, together with a copy of a one-page abstract. The abstract will be used to select papers (based on coherence with the objectives and scope of the Technical Meeting, novelty and significance of results, clarity of presentation, etc.) and to establish the final programme. Authors will be notified of the status of their paper by the IAEA.

The submission of a paper implies that the author intends to participate in the meeting if the paper is accepted, and to provide the IAEA (Mr. A. Stanculescu) at the Technical Meeting with a camera-ready original of the paper for publication by the IAEA in the proceedings after the Technical Meeting. A digital version of the paper on a disk (or CD ROM) in MS Word format is desirable to facilitate editing and publication of the proceedings. All papers - apart from invited reviews - must present original work; they should not have been published elsewhere.

Detailed instructions for preparation of the manuscript for publication will be provided to authors upon notification of acceptance of their paper. Authors should bring to the meeting (or send in advance to the local organizing committee) 40 copies of their papers.

The time for presentation of papers will be limited to approximately 30 minutes in order to have sufficient time for discussions. Both an overhead and a video projector, and a screen for viewgraphs will be provided. Any additional equipment requirements should be noted on the attached Participation Form.

The meeting agenda will be provided to the participants sufficiently in advance of the meeting for them to plan their presentation.

8. WORKING LANGUAGE

The working language of the meeting will be English, with no interpretation provided. All communications, abstracts and papers must be in this language.

9. VISAS

Designated participants who need a visa for entering India should submit the necessary application to the nearest diplomatic or consular representative of India as early as possible.

10. EXPENDITURES

No registration fee will be charged to the participants. The costs for the organisation of the meeting are born by the Indira Gandhi Centre for Atomic Research (IGCAR) and the IAEA.

The Agency is not in a position to bear the travel and other costs of designated participants in the Technical Meeting.

11. PROCEEDINGS

The proceedings of the meeting will be prepared by the Agency as soon as possible after the meeting.

12. LOCAL ARRANGEMENTS

The meeting venue, hotel reservation, and other necessary information will be sent to officially designated participants upon receipt by the IAEA of the Participation Form.

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(Technology Advances in Fast Reactors and Accelerator Driven Systems)

To be sent before **30 January 2006** *to the competent official authority (Ministry of Foreign Affairs or National Atomic Energy Agency) for transmission to the Scientific Secretary* ***Mr. A. Stanculescu, International Atomic Energy Agency, P.O. Box 100, Vienna International Centre, A-1400 Vienna, Austria, Fax: +43 1 2600 29598***

PARTICIPATION FORM

Family Name	**All initials of given name**	**Mr./Ms.**
Institution	**Full Address**	
Tel. No.	**Fax. No.**	**E-mail:**
Nationality	**Designating government or organization**	

Mailing address (if different from address of institution):

Do you wish to present a paper(s)? Yes……..…No……

Title of Paper(s):

(A one-page abstract of each paper offered should be attached to this form before forwarding)

Information needed by IGCAR, Kalpakkam, India, for non-Indian Citizens

Participant	Participant Family Member
Full Name	Full Name
City and Country of Birth	City and Country of Birth
Nationality/Citizenship	Nationality/Citizenship
Date of Birth	Date of Birth
Occupation	Relationship to Participant
Home Address	Home Address
Passport Details:	_____Male _____Female
a) Number	
b) Date & Place of issue	
c) Issued by:	
d) Date of validity	
_____Male _____Female	

A photo identification, such as a passport or national identification card, is required for site access.