

**Severe Accident Analysis and Management
(SAAM-2013) Symposium**
(For Civilian Nuclear Power Plants)



February 1st – 3rd, 2013 IIT Kanpur, India



IIT Kanpur

**Nuclear Engineering & Technology Programme
(NETP)**

Indian Institute of Technology Kanpur (IITK) is a unique not only in this country but also in the whole of South East Asian region for starting NETP in 1971 and gets credit for this pioneer initiative. Besides offering PhD and MTech degrees in the area of Nuclear Engineering & Technology, the program provides research and development expertise in the experimental and theoretical studies of fusion and plasma physics, radio isotope applications in manufacturing engineering, computer aided tomography, reactor safety studies, heat transfer in nuclear sub-systems, and development of radiation detectors. Other

institutes like IITM, IITB, Delhi University, PDPU Gandhinagar and Jadavpur University have also started master programs in Nuclear Engineering & Science during the last three years. BARC, IGCAR and AERB also sponsor academic research in these institutions.

Background

Consideration of severe accidents in a Nuclear Power Plant (NPP) design is an essential component of Defense in Depth (DID) approach used in nuclear safety. Severe accidents have a very low probability, but can have significant consequences resulting from nuclear fuel degradation/damage. Computer codes (deterministic and Probabilistic) are essential tools for understanding how the reactor and its containment might respond under severe accident conditions and their probability of failure. The codes are used as a tool to support engineering judgment, based on which specific measures to mitigate the consequences of severe accidents are taken in NPP design and are also used to determine accident management strategies. Simulators are used for training of operators, students and faculty. The aims of severe accident analysis are:

- To evaluate the ability of the design to withstand severe accidents;
- To identify particular vulnerabilities;
- To assess the equipment and instrumentation that could manage and monitor the course of the accident;
- To mitigate accident effects;
- To develop a severe accident management program;
- To provide input for off-site emergency planning;

Three severe accidents have taken place in the 60-years of the history of civil nuclear power generation. These are:

Three Mile Island (USA 1979) where the reactor was severely damaged but radiation was contained and there were no adverse health or environmental consequences.

Chernobyl (Ukraine 1986) where the destruction of the reactor by reactivity transient, steam explosion and fire killed 31 people and had significant health and environmental consequences.

Fukushima (Japan 2011) where three old reactors (together with a fourth) were destroyed due to loss of cooling resulting from incapacitating of the emergency power supply due to tsunami .

Severe Accident Management Program has evolved for existing nuclear power plants and for new designs worldwide to mitigate the core degradation progression arising from severe accidents. The program aims prevention of the failure of reactor vessel and containment as well as activity release to the public domain. Severe Accident Management Guideline (SAMG) is required for accident situation not handled adequately through the use of Emergency Operating Procedures (EOP). SAMG aims at limiting the risk of radiologically significant radioactive releases during the few hours to few days duration. The substantial progress in developing detailed computer codes and establishing a database for various reactors can play an important role in severe accident studies. In addition, analysis of the severe accidents like TMI-2, Chernobyl and Fukushima along with validation of that analysis against available data will be useful for severe accident analysis.

Objective of the Symposium

The objective of this conference is to bring the experts in this field at one platform and share the

experience and knowledge on different aspects of the severe accidents and management. This would help to create a virtual centre for continuous analysis of severe accidents of all the types of civil nuclear power plants in the Indian scene addressing the following thrust areas:

1. Modeling & Simulation for thermal hydraulics of Nuclear Reactors
2. Code Development & Validation
3. Comparison between Fukushima, Chernobyl & TMI accident
4. Hydrogen Phenomenon and management
5. Emergency and Severe Accident Analysis: responses & procedures
6. Spent fuel pool/pond management
7. Operational Safety Improvements
8. Modeling of transport of FP (Fission Product) in Environment
9. Thermal Hydraulics in Safety Assessment
10. Natural Circulation & Passive Systems
11. Air Ingression
12. Steam explosion
13. Nuclear materials
14. Nuclear waste management

Travel and Accommodation

Accommodation will be provided to all the participants from 31st Jan till 3rd Feb 2013 in the Visitor's Hostel on shared basis.

Weather at Kanpur

The weather at Kanpur in February is expected to be pleasant. Day-time temperatures range from 15-20°C. The night temperatures may be between 10-15°C.

How to Reach

Kanpur, a major city of Uttar Pradesh is well-connected by rail, road and air to all the parts of the country. The nearest airport is Amausi Airport, Lucknow, about 100 kms from the IITK campus

(about 2 hrs drive). The railway station is at a distance of about 15 km from the IITK campus. A regular auto-rickshaw (about Rs. 160) and taxi service (about Rs. 300) from the station are available.

Lead Speakers

International and national experts in Nuclear Safety (list is available on the web).

Registration Process

Registration details and forms are available at www.iitk.ac.in/saam. Registration fee also includes boarding, lodging and all meals along with tea breaks during the symposium.

Registration Fees:

Students	Rs 500/-, Faculty	Rs 1000/-
DAE + Government R&D Orgzns		Rs 1500/-
Industry		Rs 6000/-
Foreign Delegates		USD 200

Mode of Payment

1. Demand Draft: In favor of “**Severe Accident Analysis & Management (SAAM)**” payable at Kanpur and send it to the address given below
2. Online Transfer to Bank Account:

Account No. is 537201010035158

IFSC Code is UBIN0553727

UBI, IIT Kanpur

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Sponsorship

This symposium is partially sponsored and supported by Board of Research in Nuclear Sciences (BRNS), Atomic Energy Regulatory Board (AERB), DST, NPCIL, & industry.

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