



IAEA

International Atomic Energy Agency

Atoms for Peace and Development

Technical Meeting on HEU/LEU Conversion, Operation and Utilization of MNSR and SLOWPOKE Research Reactors

IAEA Headquarters, Vienna, Austria
and virtual participation via Cisco Webex

28-30 August 2024

Ref. No.: EVT2103743

Information Sheet

Introduction

The Slowpoke reactor, short for "Safe Low-Power Kritical Experiment," was developed in Canada in the 1960s as a small, inherently safe nuclear reactor. The Slowpoke reactor's unique characteristic lies in its inherently stable and safe nature, making it less prone to accidents and meltdown scenarios. The first operational Slowpoke reactor, Slowpoke-1, began operating in Manitoba, Canada, in 1977. A total of nine Slowpoke reactors were constructed, all of which were low-power (~20kW) except for one district heating demonstration reactor designed for ~2MW. The Slowpoke reactors originally used high enriched uranium (HEU), enriched to 93% in uranium-235. Three slowpoke reactors utilizing the LEU core continue to operate in Canada and Jamaica primarily for NAA, education, and training.

A similar reactor type, the miniature neutron source reactors (MNSRs), are located around the world: four in China and one each in Ghana, the Islamic Republic of Iran, Nigeria, Pakistan and the Syrian Arab Republic. These reactors are low-power (~30 kW) neutron source research reactors that are used primarily for neutron activation analysis and for education and training. Each reactor originally had a core consisting of less than 1 kilogram of high enriched uranium (HEU), enriched to 90% or greater in uranium-235.

Since 1978, various national and international activities have been under way to convert research and test reactors from the use of HEU fuel to low enriched uranium (LEU) fuel or to shut down and decommission HEU operated research reactors following relevant decisions taken by Member States of the International Atomic Energy Agency (IAEA). These activities support the objective of reducing and eventually eliminating the civilian use of HEU. In connection with this effort, in 1985 a new core design using low enriched uranium (LEU) (<20% enriched) was developed and used for Slowpoke reactors.

In 2006, the MNSR community joined this international conversion initiative by launching an IAEA coordinated research project (CRP) to coordinate individual activities in the conversion of MNSRs to LEU. The CRP participants established that conversion of the MNSRs are feasible, and that China is able to produce LEU cores for the MNSR reactors. In 2016, China completed the conversion of the first MNSR at the CIAE to LEU, followed by Ghana in 2017 and Nigeria in 2018.

In connection with the above, the IAEA is organizing a meeting to discuss the technical details for the conversion of the MNSRs from HEU to LEU fuel and for removal of the HEU cores as well as operation and utilization issues of MNSR and Slowpoke reactors.

Objectives

The main objective of this meeting of the MNSR/Slowpoke Working Group is to review the progress and share lessons learned in activities related to the conversion of MNSRs from HEU to LEU fuel, including activities related to fresh and spent fuel transportation, project and supply agreements, and coordination between the conversion and removal efforts. The group will discuss technical solutions for active projects and the next steps for initiating potential new conversion projects. In addition, the group will discuss operation, utilization, and decommissioning issues related to the similar designs of MNSR and Slowpoke reactors.

Target Audience

The meeting is intended for individuals from IAEA Member States that are operating or decommissioning MNSR and Slowpoke reactors, as well as those carrying out efforts to support the conversion of MNSRs and removal of the HEU fuel. Participants should be representatives of the operating staff of the reactors, as well as teams involved in, and responsible for, the MNSR conversion and removal projects, governmental institutions, the national safety and regulatory body, and other stakeholders.

Working Language

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

Expected Outputs

The expected result of the meeting will be a sharing of experience and information related to operation and utilization of MNSR and Slowpoke reactors, as well as a better understanding for all participants of the implementation procedures necessary for the conversion and HEU removal activities for MNSRs. In addition, a meeting report will be prepared that addresses the topics mentioned below, including any action items.

Topics

The following topics will be addressed and discussed during the meeting:

- Operation of MNSR and Slowpoke reactors;
- Utilization of MNSR and Slowpoke reactors;
- MNSR operation experience after conversion;
- Training support for MNSR HEU core discharge and packing;
- Preparations for future MNSR conversions, including regulatory and legal considerations, and
- Decommissioning of MNSR and Slowpoke reactors.

Participation and Registration

All persons wishing to participate in the event have to be designated by an IAEA Member State or should be members of organizations that have been invited to attend.

In order to be designated by an IAEA Member State or invited organization, participants are requested to submit their application via the InTouch+ platform (<https://intouchplus.iaea.org>) to the competent national authority (Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) or organization for onward transmission to the IAEA by **15 July 2024**, following the registration procedure in InTouch+:

1. Access the InTouch+ platform (<https://intouchplus.iaea.org>):
 - Persons with an existing NUCLEUS account can sign into the platform 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 ‘Complete Profile’ and upload the relevant supporting documents;
 - Search for the relevant event 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 InTouchPlus.Contact-Point@iaea.org);
 - 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 the Participation Form (Form A) and/or the 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 applicable form(s), will automatically be sent to the IAEA through the online platform.

NOTE: The application for financial support should be made, together with the submission of the application, by **15 July 2024**.

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.

Selected participants will be informed in due course on the procedures to be followed with regard to administrative and financial matters.

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. The IAEA may also use the contact details of Applicants to inform them of the IAEA's scientific and technical publications, or the latest employment opportunities and current open vacancies at the IAEA. These secondary purposes are consistent with the IAEA's mandate. Further information can be found in the [Data Processing Notice](#) concerning IAEA InTouch+ platform.

Papers and Presentations

The IAEA encourages participants to give presentations on the work of their respective institutions that falls under the topics listed above.

Participants who wish to give presentations are requested to submit an abstract of their work. The abstract will be reviewed as part of the selection process for presentations. It should be sent electronically to Ms Kerry Dunn, the Scientific Secretary of the event (see contact details below), not later than **15 July 2024**. Authors will be notified of the acceptance of their proposed presentations by **25 July 2024**.

Venue

The event will be held at the Vienna International Centre (VIC), where the IAEA's Headquarters are located. Participants must make their own travel and accommodation arrangements.

General information on the VIC and other practical details, such as a list of hotels offering a reduced rate for IAEA participants, are listed on the following IAEA web page:

www.iaea.org/events/evt2103743.

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.

Visas

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.

IAEA Contacts

Scientific Secretaries:

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Subsequent correspondence on scientific matters should be sent to the Scientific Secretary/Secretaries and correspondence on other matters related to the event to the Administrative Secretary.

Participation Form (Form A) Via Intouch+
Grant Application Form (Form C) Via Intouch+

Enclosure: Form for Submission of a Paper (Form B) (Attached)

Form for Submission of a Paper

Technical Meeting on HEU/LEU Conversion, Operation and Utilization of MNSR and SLOWPOKE Research Reactors (Hybrid event)

IAEA Headquarters (VIC), Vienna, Austria

28-30 August 2024 [Virtual participation will be available; details will be communicated directly to the participants]

To be completed by the participant and sent to the competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA, or National Atomic Energy Authority) of his/her country for subsequent transmission to the International Atomic Energy Agency (IAEA) either by email to: Official.Mail@iaea.org or by fax to: +43 1 26007 (no hard copies needed). Please also send a copy by email to the Scientific Secretary, Ms Kerry DUNN, k.dunn@iaea.org and to the Administrative Secretary, Ms Reena THOTTAKKARA, r.thottakkara@iaea.org.

Deadline for receipt by IAEA through official channels: 15 July 2024

Title of the paper:		
If applicable: Abstract ID in IAEA-INDICO:		
Family name(s) and first name(s) of all author(s) (same as in passport(s):	Scientific establishment(s) in which the work has been carried out	City/Country
1.		
2.		
3.		
Family name(s) and first name(s) of author presenting the paper (same as in passport):	Mr/Ms:	
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Yes No

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