



*Atoms for Peace and Development*

الوكالة الدولية للطاقة الذرية  
国际原子能机构  
International Atomic Energy Agency  
Agence internationale de l'énergie atomique  
Международное агентство по атомной энергии  
Organismo Internacional de Energía Atómica

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In reply please refer to: **EVT1904051**  
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The Secretariat of the International Atomic Energy Agency (IAEA) presents its compliments to the IAEA's Member States and has the honour to draw their attention to the **Training Workshop on Non-Destructive Examination, In-Service Inspection and Online Monitoring Techniques of Research Reactors** (hereinafter referred to as "event"), which had to be postponed owing to the COVID-19 pandemic and will now be held at the IAEA's Headquarters in Vienna, Austria, from **8 to 12 February 2021**.

The purpose of the event is to improve the participants' practical competence in conducting online monitoring, non-destructive examination and in-service inspection at research reactors in participating Member States and to share experiences, challenges and lessons learned in this area.

The attached Information Sheet provides further details of the event.

The event will be held in English.

Member States are informed that designations already received for this event will remain valid. Should Member States not have submitted any designations or wish to change their designation, they are invited to designate one or more participants to represent the Government at this event. Member States are strongly encouraged to identify suitable women participants.

The IAEA is generally not in a position to bear the travel and other costs of participants in the event. The IAEA has, however, limited funds at its disposal to help meet the cost of attendance of certain participants. Upon specific request, such assistance may be offered to normally one participant per country, provided that, in the IAEA's view, the participant will make an important contribution to the event. The application for financial support should be made at the time of designating the participants using the attached Grant Application Form (Form C).

It should be noted that compensation is not payable by the IAEA for any damage to or loss of personal property. The IAEA also does not provide health insurance coverage for participants in IAEA events. Arrangements for private insurance coverage on an individual basis should therefore be made. The IAEA will, however, provide insurance coverage for accidents and illnesses that clearly result from any work performed for the IAEA.

Designations should be submitted to the IAEA through the competent national authority (Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) not later than **30 November 2020** using the attached Participation Form (Form A). Completed and authorized Participation Forms should be sent either by email to: [Official.Mail@iaea.org](mailto:Official.Mail@iaea.org) or by fax to: +43 1 26007 (no hard copies needed). Copies should be sent by email to the Scientific Secretaries of the event, Mr Ram Sharma (Email: [Ram.Sharma@iaea.org](mailto:Ram.Sharma@iaea.org)) and Mr Dario Jinchuk (Email: [D.Jinchuk@iaea.org](mailto:D.Jinchuk@iaea.org)), both of the Division of Nuclear Fuel Cycle and Waste Technology, Department of Nuclear Energy, and to the Administrative Secretary, Ms Reena Thottakkara (Email: [R.Thottakkara@iaea.org](mailto:R.Thottakkara@iaea.org)). The Scientific Secretaries of the event will liaise with the participants directly concerning further arrangements, including travel details, as appropriate, once official designations have been received.

Should Governments wish, in addition, to appoint one or more observers to assist and advise the designated participants, they are kindly requested to inform the IAEA of the names and contact details of any such observers by the above date. In accordance with the established rules, Governments are expected to bear the cost of attendance of any observers they may send to IAEA events. Compensation is not payable by the IAEA for any damage to or loss of observers' personal property or for illness, injury or death occurring while travelling to or in connection with their attendance at IAEA events.

The Secretariat of the International Atomic Energy Agency avails itself of this opportunity to renew to the IAEA's Member States the assurances of its highest consideration.



2020-10-20

Enclosures:      Information Sheet  
                         Participation Form (Form A)  
                         Form for Submission of a Paper (Form B)  
                         Grant Application Form (Form C)



# **Training Workshop on Non-Destructive Examination, In-Service Inspection and Online Monitoring Techniques of Research Reactors**

**IAEA Headquarters  
Vienna, Austria**

**8–12 February 2021**

**Ref. No.: EVT1904051**

## **Information Sheet**

### **Introduction**

There are approximately 240 research reactors currently in operation worldwide. 60% of the operating research reactors (RRs) are now over 40 years old. The majority of operating RRs face various negative effects of ageing. As research reactors continue to operate there is an increasing need for enhanced asset management programs that involve advanced predictive maintenance technologies for equipment monitoring, degradation and aging management.

On-line Monitoring (OLM) technologies have been successfully implemented in power reactors for a number of applications such as condition-based calibration, performance monitoring of process instrumentation systems, detection of process anomalies, and distinguishing between process problems/effects and instrumentation/sensor issues. In spite of great advances in OLM technologies for power reactors, research reactors are yet to benefit from all that OLM can offer. The experience from these implementations has stimulated an interest in the research reactor community to use OLM for improved maintenance regimes, safety and reliability of research reactors, and to contribute to their life extension and ageing management objectives.

The Agency has consistently supported RR operation and maintenance programmes, particularly the formulation and implementation of ageing management and surveillance programmes, which include the regular examination of structures, systems and components of reactor facilities for potential degradation in order to verify reactor safety and maintain optimal availability. A comprehensive

programme of ageing management and surveillance is carried out through routine inspection and periodic testing as well as corrective or preventive maintenance, which include activities important for safety and the operational performance of structures, systems and components.

The IAEA has established guidelines for NDE/ISI as part of the ageing management and surveillance programmes of RRs. They cover:

- NDE methodology for use in ISI of various types of RR;
- Preparation of appropriate programmes/plans/schedules, including documentation, as well as their implementation;
- Appropriate methods and procedures to be used in ISI of various types of RR; and
- Requirements for qualification and certification of NDE personnel involved in ISI of RRs.

The IAEA has several publications (published and in printing process) on the subject (see below).

The IAEA can assist Member States with research reactors with equipment and experts, providing NDE/ISI services. The IAEA can also assist to train local staff, promulgate best practices and improve ageing management and surveillance programmes.

## **Objectives**

The workshop is intended to improve practical competence in conducting on-line monitoring (OLM), non-destructive examination (NDE) and in-service inspection (ISI) at the RRs of participating Member States and to share and discuss experiences, challenges and lessons learned in relation to the development, implementation and continuous improvement of OLM/NDE/ISI within ageing management and surveillance programmes.

The workshop will include lectures on theory of OLM/NDE/ISI and also provide a practical demonstration using selected IAEA equipment such as ultrasonic test equipment and radiation resistance camera.

## **Target Audience**

The workshop is aimed at the technical personnel who are involved in on-line monitoring (OLM), non-destructive examination (NDE) and in-service inspection (ISI) for the research reactor facilities. Member States are strongly encouraged to identify suitable women participants.

## **Working Language**

This workshop will be held in English.

## Topics

The workshop will include training sessions on the following topics:

- OLM/NDE/ISI techniques applicable to RRs;
- Guidance for on-line monitoring implementation;
- Status of OLM of structures, systems and components for RRs for Member States;
- Training on the use of NDE/ISI equipment through lectures and demonstrations;
- ISI programmes, and ISI schedules and plans for plant structures, systems and components;
- Qualification requirements for NDE.

Participants are requested to make brief presentations (~20 minutes) on the status and results of OLM, NDE and ISI in their countries, including information on specific methods used for implementation. There could be more than one presentation from one participant in a typical case.

## 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, participants are requested to send the **Participation Form (Form A)** to their competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) for onward transmission to the IAEA by **30 November 2020**. Participants who are members of an organization invited to attend are requested to send the **Participation Form (Form A)** through their organization to the IAEA by the above deadline.

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

## 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. The abstract should be in A4 page format, should extend to no more than one page (including figures and tables) and should not exceed 400 words. It should be sent electronically to Mr Dario Jinchuk, the Scientific Secretary of the event (see contact details in below), not later than **30 November 2020**. Authors will be notified of the acceptance of their proposed presentations by **21 December 2020**.

In addition, participants have to submit the abstract together with the **Participation Form (Form A)** and the attached **Form for Submission of a Paper (Form B)** to their competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) or their organization for onward transmission to the IAEA not later than **30 November 2020**.

## Expenditures and Grants

No registration fee is charged to participants.

The IAEA is generally not in a position to bear the travel and other costs of participants in the event. The IAEA has, however, limited funds at its disposal to help meet the cost of attendance of certain participants. Upon specific request, such assistance may be offered to normally one participant per country, provided that, in the IAEA's view, the participant will make an important contribution to the event.

The application for financial support should be made using the **Grant Application Form (Form C)**, which has to be stamped, signed and submitted by the competent national authority to the IAEA together with the **Participation Form (Form A)** by **30 November 2020**.

The countries eligible for TC (Technical Cooperation) assistance which participate in TC projects may submit the request for TC support through their respective National Liaison Officers (NLOs). In this case, TC specific forms to attend the workshop need to be employed. Detailed information and forms are accessible in the following web page:

<https://www.iaea.org/services/technical-cooperation-programme/how-to-participate>

Department of Technical Cooperation is using InTouch+. Participants can apply and submit all required documents online. National authorities will be able to use InTouch+ to review and approve these applications. Interested parties that would like to use this facility should write to: [InTouchPlus.ContactPoint@iaea.org](mailto:InTouchPlus.ContactPoint@iaea.org).

## 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:

<http://www-pub.iaea.org/iaeaevents/GeneralInfo/Guide/VIC>.

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.

## Reference and Publications

IAEA documents containing useful information related to On-line Monitoring are as follows:

- 1) On-line Monitoring of Instrumentation in Research Reactors (IAEA-TECDOC-1830, Vienna, 2017).
- 2) Advanced Surveillance, Diagnostic and Prognostic Techniques in Monitoring Structures, Systems and Components in Nuclear Power Plants (IAEA Nuclear Energy Series No. NP-T-3.14, Vienna, 2013).
- 3) On-line Monitoring for Improving Performance of Nuclear Power Plants, Part 1: Instrument Channel Monitoring (IAEA Nuclear Energy Series NP-T-1.1, Vienna, 2008).
- 4) On-line Monitoring for Improving Performance of Nuclear Power Plants, Part 2: Process and Component Condition Monitoring and Diagnostics (IAEA Nuclear Energy Series No. NP-T-1.2, Vienna, 2008).
- 5) Condition Monitoring and Incipient Failure Detection of Rotating Equipment in Research Reactors (IAEA-TECDOC, in printing process).

IAEA documents containing useful information related to NDE and ISI are as follows:

- 6) Safety of Research Reactors, IAEA Specific Safety Requirements, SSR-3, 2016.
- 7) Training Guidelines in Non-destructive Testing Techniques (IAEA-TECDOC-628/Rev. 3, Vienna, 2013).
- 8) Training Guidelines in Non-Destructive Testing Techniques: Manual for Visual Testing at Level 2 (IAEA Training Course Series No.54, 2013).
- 9) Training Guidelines in Non-destructive Testing Techniques: Leak Testing at Level 2 (IAEA Training Course Series No.52, 2012).
- 10) Non-Destructive Testing: Sample Questions for Conduct of Examinations at Levels 1 and 2 (IAEA Training Course Series No.45, 2010).
- 11) Ageing Management for Research Reactors (IAEA Safety Standards Series No. SSG-10, Vienna, 2010).
- 12) Risk Informed In-service Inspection of Piping Systems of Nuclear Power Plants: Process, Status, Issues and Development (IAEA Nuclear Energy Series No. NP-T-3.1, Vienna, 2010).
- 13) Maintenance, Periodic Testing and Inspection of Research Reactors (IAEA Safety Standards Series No. NS-G-4.2, Vienna, 2006).
- 14) Non-destructive Testing for Plant Life Assessment (Training Course Series No. 26, IAEA, Vienna, 2005).
- 15) Improvement of in-service inspection in nuclear power plants (IAEA-TECDOC-1400, Vienna, 2004).
- 16) Maintenance, Surveillance and In-service Inspection in Nuclear Power Plants (IAEA Safety Standards Series No. NS-G-2.6, Vienna, 2002).
- 17) Application of non-destructive testing and in-service inspection at research reactors (IAEA-TECDOC-1263, Vienna, 2001).

# IAEA Contacts

## Scientific Secretaries:

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Division of Nuclear Fuel Cycle and Waste Technology  
Department of Nuclear Energy  
International Atomic Energy Agency  
Vienna International Centre  
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## Administrative Secretary:

Ms Reena Thottakkara  
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Email: [R.Thottakkara@iaea.org](mailto:R.Thottakkara@iaea.org)

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



# Participation Form

## Training Workshop on Non-Destructive Examination, In-Service Inspection and Online Monitoring Techniques of Research Reactors

IAEA Headquarters, Vienna, Austria

8–12 February 2021

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](mailto: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 Secretaries [Ram.Sharma@iaea.org](mailto:Ram.Sharma@iaea.org) and [D.Jinchuk@iaea.org](mailto:D.Jinchuk@iaea.org), and to the Administrative Secretary [R.Thottakkara@iaea.org](mailto:R.Thottakkara@iaea.org).

**Deadline for receipt by IAEA through official channels: 30 November 2020**

Family name(s): (same as in passport)	First name(s): (same as in passport)	Mr/Ms
Institution:		
Full address:		
Tel. (Fax):		
Email:		
Nationality:	Representing following Member State/non-Member State/entity or invited organization:	
If/as applicable: Do you intend to submit a paper? Yes <input type="checkbox"/> No <input type="checkbox"/>		
Title:		



## Form for Submission of a Paper

### Training Workshop on Non-Destructive Examination, In-Service Inspection and Online Monitoring Techniques of Research Reactors

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**Deadline for receipt by IAEA through official channels: 30 November 2020**

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:	
Mailing address:		
Tel. (Fax):		
Email:		

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Furthermore, I herewith declare:

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- that any permissions and rights to publish required for third-party content, including but not limited to figures and tables, have been obtained, that all published material is correctly referenced; and
- that the material submitted to the IAEA does not contain any libellous or other unlawful statements and does not contain any materials that violate any personal or proprietary rights of any person or entity.

**Date:**

**Signature of main author:**

# Grant Application Form

## Training Workshop on Non-Destructive Examination, In-Service Inspection, and Online Monitoring Techniques of Research Reactors

IAEA Headquarters, Vienna, Austria

8–12 February 2021

To be completed by the applicant 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](mailto: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 Secretaries [Ram.Sharma@iaea.org](mailto:Ram.Sharma@iaea.org) and [D.Jinchuk@iaea.org](mailto:D.Jinchuk@iaea.org) and to the Administrative Secretary [R.Thottakkara@iaea.org](mailto:R.Thottakkara@iaea.org).

**Deadline for receipt by IAEA through official channels: 30 November 2020**

Family name(s): (same as in passport)	First name(s): (same as in passport)	Mr/Ms:
Mailing address:	Tel.:	
	Fax:	
	Email:	
Date of birth (yy/mm/dd):	Nationality:	

### 1. Education (post-secondary):

Name and place of institution	Field of study	Diploma or Degree	Years attended from to	

### 2. Recent employment record (starting with your present post):

Name and place of employer/ organization	Title of your position	Type of work	Years worked from to	

### 3. Description of work performed over the last three years:

### 4. Institute's/Member State's programme in field of event:

Date:                      Signature of applicant: \_\_\_\_\_

Date:                      Name, signature and stamp of Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority \_\_\_\_\_