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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

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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 **Technical Meeting on Benchmarking of Current Practices in Probabilistic Fault Displacement Hazard Assessment for Nuclear Installations** (hereinafter referred to as "event") to be held at the IAEA's Headquarters in Vienna, Austria, from **2 to 4 November 2021**.

In addition, the event will allow for virtual participation via Cisco Webex.

The purpose of the event is to discuss current Member State practices in probabilistic fault displacement hazard analysis for nuclear installations following the IAEA safety standards.

The attached Information Sheet provides further details of the event.

The event will be held in English.

Member States 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 **15 September 2021** 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 Secretary of the event, Mr Yoshimitsu Fukushima, Division of Nuclear Installation Safety, Department of Nuclear Safety and Security (Email: [Y.Fukushima@iaea.org](mailto:Y.Fukushima@iaea.org)), and to the Administrative Secretary, Ms Minitha Poikudiyil (Email: [M.Poikudiyil@iaea.org](mailto:M.Poikudiyil@iaea.org)). The Scientific Secretary 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 IAEA takes no responsibility for, and the provider of the virtual meeting services has represented and warranted that the Services shall not contain, and that no end user shall receive from the software used to hold the virtual meeting, any virus, worm, trap door, back door, timer, clock, counter or other limiting routine, instruction or design, or other malicious, illicit or similar unrequested code, including surveillance software or routines which may, or is designed to, permit access by any person, or on its own, to erase, or otherwise harm or modify any data or any system, server, facility or other infrastructure of any end user (collectively, a "Disabling Code").

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.



2021-04-06

Enclosures:       Information Sheet  
                          Participation Form (Form A)  
                          Grant Application Form (Form C)



# **Technical Meeting on Benchmarking of Current Practices in Probabilistic Fault Displacement Hazard Assessment for Nuclear Installations**

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

**2–4 November 2021**

**Ref. No.: EVT2003697**

## **Information Sheet**

### **Introduction**

In IAEA Safety Standards Series No. SSG-9, Seismic Hazards in Site Evaluation for Nuclear Installations recommends Probabilistic Fault Displacement Hazard Analysis (PFDHA), if capable fault issues for sites with existing Nuclear Installations came to light later in the site vicinity, although the capable fault issue should be avoided in the siting stage of the Nuclear Installations. The current PFDHA methodologies are developed on a limited database and therefore uncertainty of the results is quite large. To better quantify this uncertainty, the direct comparison between existing methodologies and their uncertainties needs to be performed as international benchmarking. With this event, the member states will be able to recognize the challenging issues on this topic and future progress.

### **Objectives**

The objective of the event is to discuss information on the state-of-the-art practices and detailed technical elements related to the PFDHA, so that Member States will be able to recognize how to conduct a PFDHA at existing nuclear installations following the recommendations of SSG-9.

Particular attention is devoted to benchmarking of available PFDHA schemes for scenario case studies and necessary refinements of models at individual nuclear installation sites.

## Target Audience

The event is open to all Member States involved or interested in the research, development and/or deployment of fault displacement hazard analysis. Moreover, target audience for this event is addressed to experts with experience in seismology, earthquake engineering, geology, seismic hazard assessment, civil engineering relevant to nuclear installations, and their design and analysis.

## Topics

The topics to be presented and discussed may cover any research work or practical case studies that use PFDHA for nuclear installations either actual existing site or fictional scenarios. Uncertainty of the PFDHA will be intensively discussed to evaluate the safety of the nuclear installations.

The main topics that are covered are the following:

### General framework of PFDHA

Contributions may include the description of approaches, methodologies, tools that are related to the PFDHA. This may include any procedures or former practices that have been implemented and published, or that are under preparation.

### Evaluation of each component of PFDHA

Contributions may cover the evaluation of any elementary component of a PFDHA, such as:

- Probability of having surface rupture on the principal fault, given that an earthquake with magnitude  $m$  occurred on the fault
- Probability of having a distributed rupture at a distance  $r$  from the principal fault
- Probabilities of having a distributed rupture inside a given site
- Probability that the distributed rupture displacement exceeds a given value
- Definition and selection of earthquake occurrence models (including e.g. source parameterization, maximum magnitudes, slip rate and non-Poissonian models)

### Evaluation of uncertainty in PFDHA

Contributions may cover the evaluation of the overall results of the PFDHA (that combine together with e.g. quantitative and qualitative data, models, assumptions and epistemic uncertainty) and how the uncertainty impacts the results. This would typically include:

- Impact of the epistemic and aleatoric uncertainties in the seismic source parameterization (e.g. maximum magnitude, mean rate of occurrence, and the geometry of the rupture)
- Impact of the epistemic and aleatoric uncertainties in the fault displacement models (e.g. normalize the distribution of amount of slip given principal rupture by the average or the maximum displacement)

## Working Language

English.

## Participation and Registration

The TM is targeted at experts from regulatory bodies, utilities, technical support organizations, vendors and research and development organizations, who are working in the areas covered by the workshop.

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 **15 September 2021**. 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 above deadline.

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

## 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 **15 September 2021**.

## 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.

In addition, the event will allow for virtual participation via Cisco Webex.

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](http://www.iaea.org/events)

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.

## Organization

### Scientific Secretary:

#### Mr Yoshimitsu Fukushima

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### Administrative Secretary:

#### Ms Minitha Poikudiyil

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Tel.: +43 1 2600 21207

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Email: [M.Poikudiyil@iaea.org](mailto:M.Poikudiyil@iaea.org)

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

**Scientific Organizing Committee:**

**Mr Stephen Thompson** (Chair)

Lettis Consultants International, Inc. USA

**Mr Toshiaki Sakai**

Central Research Institute of Electric Power Industry (CRIEPI), Japan

**Mr Emmanuel Viallet**

Électricité de France (EDF), France



# Participation Form

## Technical Meeting on Benchmarking of Current Practices in Probabilistic Fault Displacement Hazard Assessment for Nuclear Installations

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

**2–4 November 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 Secretary [Y.Fukushima@iaea.org](mailto:Y.Fukushima@iaea.org) and to the Administrative Secretary [M.Poikudiyil@iaea.org](mailto:M.Poikudiyil@iaea.org).

Participants who are members of an invited organization can submit this form to their organization for subsequent transmission to the IAEA.

**Deadline for receipt by IAEA through official channels: 15 September 2021**

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:	
Virtual Attendance	Yes <input type="checkbox"/>	No <input type="checkbox"/>
If/as applicable:		
Do you intend to submit a paper?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Would you prefer to present your paper as a poster?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Title:		



# Grant Application Form

## Technical Meeting on Benchmarking of Current Practices in Probabilistic Fault Displacement Hazard Assessment for Nuclear Installations

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**Deadline for receipt by IAEA through official channels: 15 September 2021**

Family name(s): (same as in passport)	First name(s): (same as in passport)	Mr/Ms:
Mailing address:	Tel.:	
	Fax:	
	Email:	
Date of birth (yyyy/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** \_\_\_\_\_