



INFORMATION SHEET

ON

First Kashiwazaki International Symposium on Seismic Safety of Nuclear Installations

“Mission for Technology Innovation toward Next Generation”

Organized by

Japan Nuclear Energy Safety Organization

in cooperation with

International Atomic Energy Agency

Hosted by:

Japan Nuclear Energy Safety Organization,

Niigata Institute of Technology,

Tokyo Electric Power Company,

Nuclear and Industrial Safety Agency of Japan, and

Nuclear Safety Commission of Japan

24-26 November 2010

Niigata Institute of Technology, Kashiwazaki, Niigata, Japan

1. ORGANIZATION AND HOST

The First Kashiwazaki International Symposium on Seismic Safety of Nuclear Installations will be held from 24 to 26 November 2010 at the Niigata Institute of Technology (NIIT), Kashiwazaki, Niigata, Japan, and organized by the Japan Nuclear Energy Safety Organization (JNES) in cooperation with the International Atomic Energy Agency (IAEA); and hosted by the JNES, NIIT, Tokyo Electric Power Company (TEPCO), Nuclear and Industrial Safety Agency (NISA) of Japan, and Nuclear Safety Commission (NSC) of Japan.

2. BACKGROUND OF THE SYMPOSIUM

During the 2007 Niigata-ken Chuetsu-oki earthquake, the seismic ground motion observed at the Kashiwazaki-Kariwa nuclear power plant (KKNPP) was much higher than the design basis ground motion (DBGM) that was determined in accordance with the former Japanese *Regulatory Guide for Reviewing Seismic Design of Nuclear Power Reactor Facilities*. Although some equipment and facilities of lower seismic design class were damaged, the full investigation by Japanese experts, as well as the fact-finding expert missions carried out by the IAEA, found that the four reactors in operation or in start-up status were safely shutdown, and the events identified after the earthquake had no significant safety impact. The soundness and integrity of structures, systems and components (SSCs) that are important to safety were also not compromised. However, it was necessary to investigate why the DBGM was underestimated, to share internationally the experiences learned in the KKNPP, and to address the issues identified. A detailed survey by the owner-operator of the plant and intensive reviews by the Japanese regulator and technical support organization have been conducted, focusing especially on the specific seismic source mechanism, on the impact of the strong ground motion and on the plant's response in cases where events beyond design basis occurred. There are still a number of issues that need to be studied by the international nuclear community.

This was one of the main reasons for the establishment of the International Seismic Safety Centre (ISSC) in the IAEA, and the reason why the JNES has been providing contributions to the ISSC. The JNES, NIIT and TEPCO have decided to establish the "Nuclear Seismic and Structural Research Core Center" at Kashiwazaki as a basis for nuclear seismic safety study with the aim of acting as a hub for international seismic safety. This International Symposium will be held as part of the Center's opening ceremony.

This Symposium is held to share experience of the KKNPP with the international nuclear community, to exchange knowledge on the latest technologies and results of research programme and to address the issues which should be studied continuously. It provides an opportunity for discussion of state-of-the-art insights and findings on seismic safety. Participants will discuss the future direction of technology innovation and capability building for next generation nuclear power plants, which will contribute to the safe and reliable construction of new plants. The Symposium will be held biennially. The First Symposium will be focused on "Lessons learned from Kashiwazaki and their applications".

3. OBJECTIVES, CONTENT AND TOPICS OF THE SYMPOSIUM

The objectives of the Symposium are to discuss recent findings and issues related to the seismic safety of nuclear installations, and their effect on seismic assessment of the SSCs of nuclear installations.

Session A: Earthquake and Ground Motion

Session A-1: Strong Ground Motion

Experts from IAEA Member States will report on how the DBGGM is determined based on the country-specific seismic safety regulations for nuclear installations. Current results and remaining issues on the DBGGM will be summarized.

Focusing on the evaluation of near-source ground motion, the characteristics of seismic source and strong motion will be clarified in this session, and state-of-the-art knowledge and technologies of ground motion evaluation will also be presented and discussed. The analysis of uncertainties in ground motion evaluation is also a main subject to be discussed in this session. Subjects discussed in this session will be reflected in discussion in Session A-2.

TOPICS

- Characteristics of near-source ground motion
(Identification and summary of historical observation features)
- Methods for evaluating near-source ground motion
(Empirical attenuation equation, finite fault source simulation)
- Identification of faults by geophysical exploration, geomorphology, etc.
- Evaluation of uncertainty in seismic sources and ground motion (logic tree)
- DBGGM
- Rules or guides for DBGGM

Session A-2: Uncertainties Associated with the Seismic Source

In this session, the discussion will focus on how to establish the DBGGM in order to ensure the seismic safety for nuclear power plants in the event of earthquakes where the source and magnitude cannot easily be determined in advance by means of a survey (earthquakes without specified source faults). This will be an important issue for Member States in regions of both high and middle to low seismicity. The main points in the discussion will be: i) how to assume the seismic source and identify the subject earthquake; ii) how to assess the seismic ground motion and evaluate the DBGGM; and iii) what kind of issues should be studied based on each country's situation of geological survey and ground motion assessment.

TOPICS

- Active faults
- The detectability of buried/concealed faults based on seismic reflection profiling
- Earthquakes without specified source fault
- Probabilistic and deterministic seismic hazard assessment
- Handling of uncertainty (logic tree), source characteristics, propagation, and site effects
- DBGGM

Session B: Earthquake Accompanying Events

Session B-1: Slope and Foundation Ground Stability

Safety assessments of the slope and building foundation ground stability have been carried out by using a safety margin (sliding safety factor). However, overestimation may be introduced by this approach. In this session, state-of-the-art assessments for the slope and foundation ground stability will be introduced, and related issues will be discussed. Current approaches and future direction in this area will be summarized in this session. A rational approach to the evaluation of the slope and foundation ground stability will be discussed based on realistic phenomenon.

TOPICS

- Properties, strength and deformational characteristics of soil/rock materials
- Modeling (dynamic properties and strength, non-uniformity, variability)
- Survey and investigation
- Shaking table experiment, etc. (motion, slope collapse patterns, effects of input motion characteristics)
- Analysis and evaluation (analysis of continuous and discontinuous model, large deformation and collapsing behaviour, response before and after collapse, evaluation by stress, evaluation by strain and deformation)
- Application of probabilistic assessment (seismic probabilistic safety assessment (PSA), uncertainty)
- Effectiveness of seismic reinforcement for slopes and foundation ground

Session B-2: Tsunami

In December 2004 the biggest ever recorded earthquake occurred with its epicentre off the coast of Sumatra, Indonesia, triggering a huge tsunami that affected numerous

countries in the Indian Ocean basin. Triggered by this incident, the IAEA has promoted the revision of the related IAEA Safety Guide pertaining to the safety assessment of nuclear facilities regarding tsunamis, and the spread of tsunami analytical techniques among IAEA Member States.

The IAEA and the JNES also implemented a tsunami extrabudgetary programme from 2007 to 2010, promoting tsunami analysis techniques and seismic information dissemination system.

In February 2010, an earthquake occurred in Chile and generated a tsunami. To prevent recurrence of major tsunami disasters in the future, issues related to the safety assessment of nuclear power plants with respect to tsunamis will be identified in lessons learned from past tsunamis, and recent approaches and future directions will be discussed.

TOPICS

- Indian Ocean tsunami in 2004
- Chilean tsunami in 2010
- PSA with respect to tsunamis
- Tsunami deposits, sediment move, and river run up
- Tsunami database

Session C: Seismic Safety Margin

Session C-1: Seismic Safety Margin at a Plant

During the 2007 Niigata-ken Chuetsu-oki earthquake, the seismic ground motion observed at the KKNPP was much higher than the DBGGM, but the soundness and integrity of the SSCs that are important to safety were not compromised. It seems that the main reason for this success was that the nuclear power plant had a sufficient seismic safety margin (SSM). However, it is important to clearly explain to the public not only the integrity of the facilities but also how much SSM the nuclear power plant had, in order to gain further public confidence in the safety of the nuclear power plant prior to its restart.

In this session, the current situation of seismic safety assessment of nuclear power plants, state-of-the-art research on SSM assessment and the utilization of a SSM factor for criteria governing the restart of a nuclear power plant struck by a large earthquake will be discussed to identify the challenges for further research and future directions.

TOPICS

- Present situation of seismic safety assessment of nuclear power plants
- State-of-the-art research on SSM assessment
- SSM assessment of SSCs

- Capacity (fragility) test for SSM assessment of SSCs
- SSM assessment at system and plant level
- SSM assessment of older plants
- Relationship between SSM and seismic PSA/probabilistic risk assessment (PRA)
- Restart and SSM (including seismic PSA/PRA)

Session C-2: Evaluation of Seismic Risk

In this session, approaches to the application of risk assessment to existing and new plants in each country will be discussed and opinions exchanged on the issues of risk assessment and the need for international guidelines with a view to developing an ideal method of international risk assessment.

The incident at the KKNPP was a clear example where risk evaluation is required.

In the light of the risks associated with beyond design basis earthquakes (which in Japan are called “residual risks”) and the construction of new plants expected in various countries, the discussion will focus on utilizing risk assessment for regulatory requirements.

TOPICS

- Present situation of seismic PSA/PRA
- Performance and safety targets in risk assessment
- Issues and perspectives in residual risk assessment
- Establishment of international guidelines for risk assessment
- Evaluation method for core damage frequency at sites with multiple units
- Evaluation method for levels 1, 2 and 3 in an earthquake situation
- Restart and SSM (including seismic PSA/PRA)

Session D: Information Dissemination System for Seismic Safety

During the 2007 Niigata-ken Chuetsu-Oki earthquake, the integrity of important equipment and facilities in terms of safety at the KKNPP was not compromised and the nuclear reactors were shutdown safely. However, information on the situation of the facilities after the earthquake was not promptly disseminated to the parties concerned, including local governments and residents living nearby. Consequently fragmentary information such as the information about the transformer fire was spread, and a great deal of confusion was caused among the parties concerned.

The technical issues and latest findings will be discussed in this section in order to find ways of promptly providing information that is easy to understand on nuclear facility

behaviours and the related earthquake in order to promote public confidence.

Discussions will also cover seismic ground motion observation systems and information dissemination systems at nuclear facilities, and techniques for disseminating information based on new communication methods. In addition, this session will accompany in-depth discussions through the public panel.

TOPICS

- Earthquake observation and information dissemination at nuclear power plants
- Seismic information dissemination system
- Understandability and visualization of seismic safety information
- Information required in case of earthquakes and techniques for communicating such information
- Understandability and visualization of seismic safety information
- Regional security and safety

4. SCOPE AND STRUCTURE OF THE SYMPOSIUM

The Symposium will consist of an opening plenary session, technical sessions devoted to technical presentations and panel sessions by participants on the topics outlined in the objectives and a closing plenary session. In the closing plenary session, there will be a summary of the discussions in Sessions A to D and of the conclusions and recommendations to the international nuclear community. All participants are encouraged to take part in the discussions and formulation of conclusions in the final session.

5. LOGISTICS AND PARTICIPATION IN THE SYMPOSIUM

Participants

For the First Kashiwazaki International Symposium on Seismic Safety of Nuclear Installations, participation is open to experts from regulatory authorities, technical support organizations, research institutions, academic organizations, nuclear installation owners and operators, nuclear installation designers and vendors, industrial associations, and observers from local residents living near nuclear installations.

Nominations should be made through the Secretariat of the Symposium. Those wishing to make a presentation at the Symposium should submit an abstract with their preliminary registration form.

The session programme will be arranged by the Technical Program Committee.

Registration

Participants should fill in the attached registration form and send it by email to the JNES Secretariat by **15 October 2010**.

JNES Secretariat

Mr Yuichi UCHIYAMA
Seismic Safety Division
Japan Nuclear Energy Safety Organization (JNES)
Kamiya-cho MT Bldg., 4-3-20, Toranomom,
Minato-ku, Tokyo, 105-0001, Japan
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Fax: +81 3 4511 1598
Email: kashiwazaki-seis-sympo@jnes.go.jp
Note: The JNES Secretariat will confirm the acceptance of registration for the Symposium.

Venue of the Symposium

The Symposium will be held at the Niigata Institute of Technology.
1719 Fujihashi, Kashiwazaki City, Niigata Prefecture 945-1195, Japan
(MAPS) <http://www.niit.ac.jp/english/access.html>

Accommodation

The travel agent for the Symposium has reserved a sufficient number of rooms at several hotels in Kashiwazaki City and Nagaoka City. Detailed information will be provided in the advance programme. If you have any inquiries, please contact the JNES Secretariat.

Passport and visa requirements

For the citizens of most countries, a valid passport is sufficient. However, visitors coming from certain countries may need a tourist visa. Please consult your travel agent or the nearest Japanese consulate or embassy. The JNES Secretariat will be pleased to send you an official letter of invitation upon request.

6. LANGUAGE, ABSTRACTS AND SYMPOSIUM ARCHIVES

Official language

All presentations and discussions will be in English or Japanese, and a simultaneous English–Japanese interpretation service will be provided. Presentations should not exceed 20 minutes.

Abstracts

Participants wishing to make a presentation should submit an abstract (less than 400 words in English). All abstracts should be submitted by **15 September 2010** with the registration form. (Note: All abstracts should be submitted electronically in MS Word in “Times 11” or “Times New Roman 11” font.)

The Technical Program Committee will review abstracts for oral and poster presentations. Review results will be notified by **30 September 2010**. Presentation material in electronic file should be sent to the JNES Secretariat by **31 October 2010**.

Symposium archives

Presentation slides will be published at a later date in electronic form on CD-ROM, including the opening session, conclusions and recommendations of Sessions A to D and a summary of the panel discussions.

7. HALF DAY TECHNICAL TOUR

- i) Visit to Kashiwazaki-Kariwa nuclear power plant (prior registration required)
- ii) Visit to Nuclear Seismic and Structural Research Core Center (on site registration)

8. ORGANIZING COMMITTEE

Japan Nuclear Energy Safety Organization:	Mr Katsumi Ebisawa Mr Yuichi Uchiyama Mr Hiroshi Abe
International Atomic Energy Agency:	Mr Ovidiu Coman
OECD/NEA Working Group on Integrity and Ageing of Components and Structures (IAGE):	Mr Javier Reig
US Nuclear Regulatory Commission:	Mr Nilesh Chokshi
Électricité de France (EDF):	Mr Pierre Labbé
Tokyo Electric Power Company:	Mr Shinichi Ito
Niigata Institute of Technology:	Mr Masayuki Miyazawa
Nuclear and Industrial Safety Agency:	Mr Masaru Kobayashi

9. TECHNICAL PROGRAM COMMITTEE

Japan Nuclear Energy Safety Organization:	Mr Hiroyuki Kameda
University of Tokyo:	Mr Tsuyoshi Takada
International Atomic Energy Agency:	Mr Shin Morita
US Nuclear Regulatory Commission:	Mr Nilesh Chokshi
Tokyo Electric Power Company:	Mr Katsuichirou Hijikata
Niigata Institute of Technology:	Mr Masayuki Miyazawa

10. IMPORTANT DATES

Abstract submission deadline:	15 September 2010
Notification of acceptance:	30 September 2010
Registration to the Symposium:	15 October 2010
Presentation material deadline:	31 October 2010
Symposium:	24–26 November 2010

11. EMBEDDED WORKSHOPS

- OECD/NEA IAGE/JNES Workshop on OECD/NEA Programme to Study Earthquake Measurements in Deep Wells and their Applications
- JNES/EDF Workshop on Seismic Isolation of Nuclear Installations

More detailed information will be uploaded on the following page soon.

<http://www.jnes.go.jp/seismic-symposium10/index.html>

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**First Kashiwazaki International Symposium on Seismic Safety of Nuclear
Installations and Embedded Topical Meetings**
24–26 November, Niigata Institute of Technology, Kashiwazaki-city, Japan

Registration/Accommodation/Abstract Form

Surname (family name): (Please indicate prefix whether Prof., Dr, Mr, Mrs, Miss, or Ms)	
Given name(s):	
Institution, organization or company:	
Address (full address):	
Address (country):	
Address (ZIP code):	
Address (mailing address):	
Telephone no.:	
Fax no.:	
Email address:	
Kashiwazaki NPP site visit (on 25 November or 26 November) (Passport will be required.)	I prefer on <input type="checkbox"/> : 25 Nov <input type="checkbox"/> : 26 Nov
Accommodation request/Accompanying spouse/Room type(if any): (please contact Secretariat if needed)	
Preferred participation place: (Please check the appropriate box.)	<input type="checkbox"/> : First Kashiwazaki International Symposium on Seismic Safety of Nuclear Installations <input type="checkbox"/> : OECD/NEA IAGE/JNES Workshop on OECD/NEA Programme to Study Earthquake Measurements in Deep Wells and their Applications <input type="checkbox"/> : JNES/EDF Workshop on Seismic Isolation of Nuclear Installations
Title of the presentation, if any (abstract to be attached by 15 September 2010):	
Abstract (less than 400 words):	

To be sent as soon as possible to
JNES secretariat
Yuichi UCHIYAMA
Email: kashiwazaki-seis-sympo@jnes.go.jp