

 JNES
Japan Nuclear Energy Safety Organization

RIC 2011

Seismic Analysis Activities in Japan

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1. Seismic Activities of JAPAN

	(~2010)	(2011~)
■ NSCJ • Revision of seismic design review guide ■ NISA • Seismic re-evaluation • Review of NCO, EQ	▼ Kobe EQ (1995.1) (2006.9) ▼ NCO EQ (2007.7)	
■ JNES • Support to revision of seismic design review guide • Cross-check analysis for seismic re-evaluation • Seismic Safety Research • Improvement of evaluation methods and codes • Various seismic tests and studies • Cause analysis of NCO, EQ	Kashwazaki International Symposium (2010.11)	
■ Overseas organizations • IAEA • NRC	IAEA Tsunami EBP Information exchange with NRC	IAEA NEW EBP



**The Kashiwazaki International Symposium
on Seismic Safety of Nuclear Installations**

(Theme of the symposium)
"Lessons learned from Kashiwazaki and their applications"

(Objectives)

- Technical assessment for the next era
- Sharing common understanding on R&D topics with a perspective of developing safety standards
- Application of safety standards in countries with operating NPPs and new-comers
- Enhancement of societal trustfulness about NPP

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*The resolutions of the Symposium was taken in various theme of IAEA new EBP.
JNES will contribute to the EBP with NRC.*

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(Program of the symposium)

Date: 24-26 November 2010 Venue: Niigata Institute of Technology (Kashiwazaki, Japan)
Organizer: JNES/IAEA Co-hosts: NIIT, TEPCO and NISA

24 November	Opening Plenary Session of the Symposium - Keynote speech - Invited speech				
25 November	Main Sessions (JNES/IAEA)		Embedded Workshops		
26 November	Conclusion Plenary Session				

25 November	A: Earthquake and ground motion	C: Seismic margin and risk assessment	D: Information dissemination system for seismic safety	WS1: Seismic observation of deep boreholes and its applications	WS2: Seismic isolation of nuclear facilities	Open seminar -International speakers -Students and citizens
26 November	B: Tsunami					

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(Resolutions of the symposium)

The participation number of people was above 600 from 28 countries.
Total 125 presentations including 50 by overseas were reported on 4 technical sessions and 2 workshops.
Hot and perspective discussion were conducted in each session/workshop to get resolutions.
Open seminar has been welcomed by citizen.
It was useful for citizen to understand the seismic safety of nuclear power plant.

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Major significance of each session/workshop may be stated as follows

Session A (Earthquake and ground motion)
+Challenges in ground motion assessment and uncertainty evaluation: the state-of-the-art knowledge and relevant key issues to be shared among all participants

Session B (Tsunami)
+Significant progress in tsunami hazard assessment, tsunami warning and mitigation and tsunami resistant design since the 2004 Indian Ocean Tsunami, and a series of proposed future activities.

Session C (Seismic margin assessment and seismic risk assessment)
+Opportunities to discuss state-of-the-art of seismic PSA and seismic margin assessment, lessons learned from recent earthquakes, and recommendations for the future

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Session D (Information dissemination system for seismic safety)
+Provided a precious opportunity to fill gaps between experts and local people and promote mutual understanding.

WS 1 (Deep borehole seismic observation)
+Forum proposed to develop an integrated approach on moderate to deep boreholes with detailed geophysical profiling and international knowledge sharing to improve seismic characterization

WS 2 (Seismic isolation)
+Collaboration for internationally accepted guidelines, exchange system of knowledge and information for seismic isolation and resolutions on some pending issues including differential displacements, etc.

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4. Summary

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Seismic Re-evaluation (Deterministic re-evaluation)
Kashiwazaki-Kariwa plants :
Re-evaluations of Unit 1,5,6,7 to NCO EQ and design earthquake Ss were finished and Unit 3 are being re-evaluated.

BWR, PWR plants (Besides Kashiwazaki-Kariwa plants) :
-Revision of seismic design review guide-
Interim re-evaluations to design earthquake Ss are almost finished. Some plants begin the final re-evaluations.

Seismic Safety Research
-JNES will share the lessons learned from NCO EQ with international nuclear community e.g. through various chances like NRC (RIC and bilateral agreement), IAEA, OECD/NEA , and symposium.
-At the Kashiwazaki symposium, valuable resolutions were provided. These resolutions were taken in various theme of IAEA new EBP. NRC and JNES will work as the leader to the many EBP themes together.

JNES will keep contributing to the further improvement of seismic safety of NPPs in the world by translating the outcome of these joint work with NRC,IAEA, EdF, etc.

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ACRONYMS

BWR	Boiling Water Reactor
EBP	Extra-Budgetary Program
EdF	Electricité de France
FBR	Fast Breeder Reactor
G.M.	Ground Motion
JNES	Japan Nuclear Energy Safety Organization
IAEA	International Atomic Energy Agency
K-K NPP	Kashiwazaki-Kariwa Nuclear Power Plant
NGO EQ	Niigataken Chuetsu-oki Earthquake
NIIT	Niigata Institute of Technology
NISA	Nuclear and Industrial Safety Agency
NRC	U.S. Nuclear Regulatory Commission
NSCJ	Nuclear Safety Commission of Japan
OECD/NEA	Organization for Economic Cooperation and Development/Nuclear Energy Agency
PSA	Probabilistic Safety Assessment
PWR	Pressurized Water Reactor
RIC	Regulatory Information Conference, NRC
Ss	Ground Motion Level (comparable to SSE in U.S.)
TEPCO	Tokyo Electric Power Company
III,S,IV,S	Allowable Stress

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