

Specialist Meeting on the Seismic Probabilistic Safety Assessment of Nuclear Facilities, Seogwipo ICC, Jeju Island, Korea, 6-8 November 2006

Hosted by the Korea Atomic Energy Research Institute (KAERI) and the Korea Institute of Nuclear Safety (KINS)

In co-operation with the International Atomic Energy Agency (IAEA)

PRELIMINARY DETAILED PROGRAMME

DAY 0, Sunday, 5 November 2006

Pre-registration at 15.00-20.00, hotel Lotte – it is suggested that all would use this alternative especially if they intend to pay the meeting fee on the spot

DAY 1, Monday 6 November 2006 (Venue: Samda Hall)

8.30 Registration

OPENING SESSION, Chairs U.C. Lee, Dr. P.Pyy

9.00 Welcome, **U.C. Lee** (Professor, University of Seoul, Korea, chairman)

9.10 – 9.40 Welcomes addresses:

Representative of NEA, T. Tanaka, Director, Safety and Regulation

Representative of IAEA, J. Yllera, IAEA Nuclear Safety Division (to be confirmed)

Representative WGRISK, J-M Lanore, chair, NEA CSNI Working Group on Risk

9.40 – 10.10 **M. Drouin, A. J. Murphy, and N. Chokshi, US NRC**, Application of Seismic PSA in the United States: Activities since the Tokyo Workshop, **INVITED**

10.10 – 10.40 **T. Yonomoto, T. Nakatogawa, Y. Maeda, NSC Japan**, Revision of Examination Guideline for Seismic Design of Nuclear Power Reactor Facilities of Japan, **INVITED**

TOPICAL AREA 1 Regulatory framework and objectives of SPRA and SMA studies, chairs A. Murphy (US NRC) and C.J. Lee (KINS)

10.40 – 11.10 **US NRC, A. J. Murphy, G. Bagchi, S. Ali, M. Shah, H. Graves, C. Munson, Yong Li, and V. Thomas**, Development of a Risk-Informed Approach to Seismic Siting and Design, **INVITED**

11.10 - 11.30 *Coffee break*

11.30 – 12.50 Technical session, 4 papers, chairs A. Murphy (US NRC) and C.J. Lee (KINS)

P. Hessel, T. Sung, CNSC, Canada: Methodology and Use of PSA/SMA results

S. Andersson, R. Roberts, J. Lundwall, SA Ingenjorsbyra, Uppsala University, Ringhals AB, Sweden: Assessment Of Seismic Risk – Pilot Study

M. Uršič, A. Stritar, D. Vojnovič, A. Mühleisen, Slovenian Nuclear Safety Administration: The use of the Krško NPP Seismic Probabilistic Safety Assessment at the Slovenian Nuclear Safety Administration

J. Sandberg, P. Välikangas and Y. Hytönen, STUK, Finland: Seismic Risk Analysis and Design in Finland - A Regulatory View

12.50 – 13.30 *Discussion of Topical Area 1*

13.30 – 14.30 *Lunch*

TOPICAL AREAS 2 and 4 Lessons Learnt from Applications of SPRA and Uses of PSA/SMA Results, , chairs R. Budnitz and J.E. Yang (KAERI)

14.30 – 15.05 **A. Bareith (VEIKI, Hungary)**, Use of Insights from Seismic PSA for NPP Paks, **INVITED**

15.05 – 16.15 Technical session, 3 papers, chairs R. Budnitz and J.E. Yang (KAERI)

J-U. Klügel, NPP Goesgen-Daeniken, Switzerland: Lessons learned from seismic PSA - Level 1 and Level 2 at NPP Goesgen

U. Menon, P. Santamaura, H. Shapiro, T. Ramadan, M. Elgohary, AECL, Canada: Insights from PSA Based Seismic Margin Assessment of the Advanced CANDU Reactor™

I.K. Choi, KAERI, Korea: Seismic Risk Analysis of a CANDU Containment Building for Probability Based Scenario Earthquake

16.15 – 16.35 Coffee break

16.30 – 17.30 Discussion of Topical Areas 2 and 4

19.30 Dinner

DAY 2, Tuesday, 7 November 2006

TOPICAL AREA 3 Methodology, chairs A. Bareith, K. Ebisawa

9.00 – 9.30 **H. Shibata, Professor Emeritus, University of Tokyo, Japan :**
Evaluation on Some Gaps between Theoretical Approach and Techniques for Practice
in Seismic PSA Code, **INVITED**

9.30 – 10.30 Technical session, 5 papers, , chairs A. Bareith, K. Ebisawa

J-U. Klügel, NPP Goesgen-Daeniken, Switzerland: Procedure for the
evaluation of damaging effects of earthquakes

T. Hakata, NSC, Japan: Seismic PSA Methodology for Multi-Unit Sites

K. Ogura, M. Fukuda, M. Sakagami, K. Ebisawa, JNES, Japan: Accident
Sequence Study for Seismic Event At The Multi-Unit Site

10.30 – 10.50 Coffee break

10.50 – 11.30 Technical session continues, chairs A. Bareith, K. Ebisawa

K. Funayama, S. Sumida, M. Kajimoto and M. Sakagami, JNES, Japan:
The Radiological Consequence Analysis by Evacuation Model for
Earthquake Event of a BWR plant

K. Muramatsu, Q. Liu, K. Onizawa, JAEA, Japan: Potential Uses of
Seismic PSA for Risk Management of NPPs - a Review of Recent Studies
at JAEA

11.30 – 12.15 Discussion of the morning papers of Topical area 3, Methodology

12.15 – 13.30 Lunch

13.30 – 15.10 Technical session, Hazard analysis, 5 papers , chairs R. Budnitz, K. Muramatsu

P. Varpasuo, Fortum Nuclear Services Ltd, Finland: Probabilistic
Seismic Hazard Assessment for OL3 Plant Site In Finland

H. Tsutsumi, H. Nanaba, S. Motohashi, K. Ebisawa, JNES, Japan:
Development of seismic PSA methodology considering aftershock

**E. Viallet, C. Martin, C. Durouchoux, P. Labbé, P. Sollogoub, D. Sicilia,
N. Humbert, EdF/GEOTER/CEA, France:** An Innovating Approach to
Address Uncertainties in Probabilistic Seismic Hazard Assessment

**H. Nanba, H. Kameda, K. Ebisawa, M. Sakagami, K. Irino, JNES,
Japan:** A Probabilistic Seismic Hazard Assessment based on Logic Tree
Utilizing Expert Judgment

S. Motohashi, JNES, Japan: Probabilistic Evaluation Of Near-Field Ground Motions Due To Buried-Rupture Earthquakes Caused By Undefined Faults

15.10 – 15.50 *Discussion about the papers of the session*

15.50 – 16.10 *Coffee break*

16.10 – 17.30 Technical session, Ground motion, 4 papers, chairs **R. Budnitz, K. Muramatsu**

P. Zuidema, NAGRA, Switzerland: PEGASOS: A PSHA for the Swiss nuclear power plants – Some comments from the managerial point of view
K-H. Yun, D-H. Park, KEPRI, Korea: Recent Advances in Developing Site-Specific Ground Motion Attenuation Relations for the Nuclear Power Plant sites in Korea

K. Dan, M. Muto, N. Hata, J. Miyakoshi, M. Kaneko, Y. Suzuki, J. Kanda, Ohsaki Research Institute, Inc.; The University of Tokyo, Nagoya University, **Japan:** Probabilistic Approach To Design Earthquake Ground Motions Based On Fault Rupture Scenarios

H. Wenzel, G. Achs, VCE Holding, Austria: Determination of Fragility Curves of Aging Plants by Ambient Vibration Measurements

17.30 – *Discussion of the above papers (and observations of the whole Technical area 3)*

DAY 3, Wednesday, 8 November

TOPICAL AREA 3 (continued) Methodology and standards, J.Yllera, J.M. Lanore

9.00 – 9.30 **M.K. Ravindra, ABS Consulting, USA:** Development of American National Standard on External Event PRA Methodology, **INVITED**

9.30 – 10.00 **M. Hirano, T. Nakamura, K. Ebisawa, Japan, INVITED, Kansai Electric Power Co / JNES,** Outline of Seismic PSA Implementation standards on the Atomic Energy Society of Japan

10.00 – 11.05 Technical session, Fragility, 6 papers, J.Yllera, J.M. Lanore

J-G. Song, S-K. Kang: A Study on Comparison of Seismic Capacities by Probabilistic Approach and Deterministic Approach

A. Yamaguchi, Osaka University, Japan Usage of Information Entropy in Updating Seismic Fragilities

H. Sugino, K. Mori, H. Tsutsumi, M. Sakagami, JNES, Japan: Development Of Probabilistic Safety Assessment Considering Slope Collapse By Earthquake

11.05 – 11.25 Coffee break

11.25 – 12.30 Technical session continues, J.Yllera, J.M. Lanore

R. Bertrand - J.M. Rambach - C. Lincot, IRSN, France:

Development of the fragility curve of the Refuelling Water Storage Tank Institute for Radiological protection and Nuclear Safety

M. Sakagami, N. Takamatsu, T. Iijima, JNES, Japan: Seismic Fragility Capacity Tests on Nuclear Power Plant

K. Sano, H. Tsutsumi, K. Tanabe, M. Sakagami, K. Ebisawa, JNES, Japan: Seismic Fragility Evaluation of Electrical Power Systems and Influence Evaluation of Seismic Base Isolation on Seismic Risk

12.30 – 13.20 Discussion about the above 6 papers, and about Area 3 generally

13.20 – 14.30 Lunch

CLOSING SESSION, , Chairs U.C. Lee, P.Pyy

14.30 – 15.30 **Rapporteurs: Ravindra, Varpasuo, Kang, Muramatsu**

15.30 – 16.00 **R. Budnitz** (US): Summary of what was learned during the meeting

16.00 – Closing Discussion

Closing remarks, Chairman U.C. Lee, Korea

Adjourn by 17.00