Have questions? Contact us.

Acceptance Notification, Technical Content, etc.
Volunteer Organizers

Program, Events, Registration, & Hotel Info
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Note: Program is subject to change.

Collapse All

Track 1 Plant Operations, Maintenance, Engineering, Modifications, life Cycle and Balance of Plant

Expand All Sessions In Track

Track Chair: Xinrong Liu, *China Nuclear Power Engoneering Co.,Ltd.*
Track Co-Chair: joe miller, *EDA, Inc*
Track Co-Chair: Koji Yamada, *Chubu Electric Power Co,Inc.*
Track Co-Chair: Motonari Haraguchi, *Hitachi, Ltd.*
Track Co-Chair: Frank Yee, *Candu Energy*
Track Co-Chair: Jean-claude PRENEZ, *EDF*
Track Co-Chair: Yehong Liao, *CNPRI*
Track Co-Chair: Dezi Yang, *Candu Energy Inc.*
Track Co-Chair: Bob Stakenborghs, *ILD*

1-2 Plant Support *(Technical Session)*

Session Description:
This Session provides presentation on plant and balance of plant support activities for nuclear power plants.

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**

Session Sponsors:
Session Chair: Motonari Haraguchi, *Hitachi, Ltd.*
Session Co-Chair: Lifeng Guo, *China Nuclear Power Engineering Co.,Ltd.*

ICONE21-15136	The Discussion of Nuclear Power Plant's Cooling Chain Design for Freezing Site	Technical Publication
ICONE21-16600	Nuclear Steam Turbine with 60 inch Last Stage Blade	Technical Publication
ICONE21-15916	Failure Analysis and Strategy Investigation of the Rupture on the Gland Seal Steam Drain Pipeline of the Reheat Stop Valve	Technical Publication
ICONE21-15148	Dynamic Balance and Vibration Control on Field of the Fan L9DVN272ZV in Lingao Nuclear Power Plant	Technical Publication
ICONE21-16243	Based on the Meta analysis thought of nuclear power equipment maintenance strategy optimization	Technical Publication

1-3 Plant Performance *(Technical Session)*

Session Description:
Plant Performance Session contains papers that deal with issues and areas that encompass the performance of the plant. These areas may include balance of plant, nuclear system supply system and other important systems.

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**

Session Sponsors:
Session Chair: Bob Stakenborghs, *ILD*
Session Co-Chair: WEIDONG WANG, *US Nuclear Regulatory Commission*

ICONE21-16281	Analysis And Evaluation of the Setting Value Drift of SEBIM Relief Valve Used in Nuclear Power Plant	Technical Publication
ICONE21-16848	Extended Power Uprate – Challenges within the Nuclear Island of a Boiling Water Reactor with 30 % Power Increase – a Case Study	Technical Presentation Only
ICONE21-15697	Development and Verification of Severe Accident Simulation Capability for a NPP Simulator	Technical Publication
ICONE21-16178	Performance analysis of a novel PXS with Organic Rankine Cycle(ORC) system	Technical Publication
ICONE21-15907	Research on Reactor Coolant Pump Fault Diagnosis Method Basee on Multi-sensor Data Fusion	Technical Publication
ICONE21-16127	Steam Generator Secondary Side Chemical Cleaning During Reactor Plant Cooling Down	Technical Publication

1-6 Plant Enhancements *(Technical Session)*

Session Description:

This session will present papers that describe plant enhancements either implemented or proposed that will positively impact plant operations, maintenance, installations or life cycle of the facility. These enhancements may include physical modification, operational procedures or strategies as well as maintenance scheduling.

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Xavier Pouget-Abadie, *EDF Nuclear Engineering Division*

Session Co-Chair: Xinrong Liu, *China Nuclear Power Engoneering Co.,Ltd.*

ICONE21-15751	The Summary of Commissioning and Maintenance of the TXP System of Tianwan Nuclear Power Station	Technical Presentation Only
ICONE21-15046	System Improvements In The Last 27 Years Of Operation Of FBTR	Technical Presentation Only
ICONE21-15251	New Method of Coolant Mixing Study on the Working Unit WWER-1000	Technical Publication
ICONE21-16889	Smart Generation Utilizing Integrated APR and Performance Modeling	Technical Presentation Only
ICONE21-16703	The Integrated Aging Management System Applied To Nuclear Power Plants in Korea	Technical Publication
ICONE21-16249	CORROSION INHIBITOR ON COPPER AND STAINLESS STEEL FOR COMPONENT COOLING WATER SYSTEM OF NPP	Technical Publication

1-8 Power Plant Piping *(Technical Session)*

Session Description:
Specialized analyses, methods, and evaluations associated with power plant piping.

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Koji Yamada, *Chubu Electric Power Co,Inc.*

Session Co-Chair: Zhili Feng, *Oak Ridge National Laboratory*

ICONE21-16235	Failure Analysis of the Branch Connection Leakage on Main Pipeline of the Primary Heat Transport System and the Maintenance Strategy Investigation for the Similar Connections	Technical Publication
ICONE21-15273	Analysis of dynamic effects associated with postulated breaks of high energy piping	Technical Publication
ICONE21-15184	State of the Art Study for the Basis of Pipe Wall Thinning Management in Japan	Technical Publication
ICONE21-16674	Architecting “Maintenance Program” for Piping and Pipe Support	Technical Publication
ICONE21-15326	The Feasibility Study of New Design Method for Combined Support of Pipes in Nuclear Engineering	Technical Publication

1-10 Special Evaluations *(Technical Session)*

Session Description:
Special methods and techniques used at nuclear power plants.

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Hanlin Wang, *CNNC Nuclear Power Operations Management CO., Ltd.*

Session Co-Chair: Sermet Kuran, *Candu Energy Incorporated*

ICONE21-16550	Development of RI-ISI Program for Krsko NPP	Technical Publication
ICONE21-15011	DETERMINATION OF PREVENTIVE MAINTENANCE CYCLE FOR AGEING EQUIPMENT IN NUCLEAR POWER PLANT BASED ON ECONOMIC ANALYSIS	Technical Publication
ICONE21-16573	Proposal Of the Estimation Equation Of Flow Accelerated Corrosion Under Water-steam Two-phase Flow	Technical Publication
ICONE21-16472	A Computational Modeling Tool for Welding Repair of Irradiated Materials	Technical Publication
ICONE21-15044	Application and Prospect on Online Monitor Technical in Diesel Operation & Maintenance Field in Nuclear Power Plant	Technical Presentation Only

1-12 Construction, Operation and Maintenance of Power Plants *(Technical Session)*

Session Description:
This session provides information on the development of construction, operation and Maintenace analyses and procedures for Reactors.

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Mo Li, *University of Houston*

Session Co-Chair: joe miller, *EDA, Inc*

ICONE21-16702	Study on Modifications of CPR1000 Nuclear Plants for Design Extension Conditions	Technical Publication
ICONE21-15099	AP1000 Plant Typical Operational Transient Analysis	Technical Publication
ICONE21-15418	The balance calculation of AP1000 turbine roll-up by non-nuclear steam	Technical Publication
ICONE21-15214	The RCM technique application in NPP operation and design stage	Technical Publication
ICONE21-15600	The Application Study of RCM Analysis Method in design of NPP	Technical

		Presentation Only

1-13 New Technologies *(Technical Session)*

Session Description:
Development and implementation of new technologies in the nuclear industry.

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Dezi Yang, *Candu Energy Inc.*

Session Co-Chair: Hanlin Wang, *CNNC Nuclear Power Operations Management CO., Ltd.*

ICONE21-15060	Research and Development of 3D Module Design System in Nuclear Power Engineering	Technical Publication
ICONE21-15063	Research and Application of Modular Construction Schemes for Containment Steel Liner of Nuclear Power Station	Technical Publication
ICONE21-16847	Seismic responses of isolated building in NPP with supplemental devices subjected to near-fault earthquake	Technical Publication
ICONE21-16605	The Development of Radiation Resistant RF Tags for the Application to Nuclear Power Plants	Technical Publication
ICONE21-15726	Study of Three-dimnsional Radiation Field Monitoring System Based On Mesh Network	Technical Publication

1-14 Testing and Research *(Technical Session)*

Session Description:
Developing testing and new research for the nuclear power station.

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Frank Yee, *Candu Energy*

Session Co-Chair: Xiang (Susie) Zhao, *Alabama A&M University*

ICONE21-15004	Research and application status of the modular technology in nuclear power engineering of CGNPC	Technical Publication
ICONE21-15906	Research on simultaneous faults diagnosis for Nuclear Power Plant based on Dezert-Smarandache Theory	Technical Publication
ICONE21-16208	Performance Tests after High Pressure Turbine Retrofit for Maanshan Nuclear Power Plant Unit 1	Technical Publication
ICONE21-16468	The Research of PHWR Reactor Feeder Flow Measurement	Technical Publication
ICONE21-15945	Research on Tensile Fixture for Accompanying Brazing Cross Samples	Technical Presentation Only
ICONE21-16403	Development of an Evaluation Method in Digital Radiographic Testing for Components in Nuclear Power Plant	Technical Presentation Only

1-15 Special Analyses and Evaluations *(Technical Session)*

Session Description:
Evaluations and analyses that support the power plant, which includes structural integrity and piping of the plant components and special evaluations.

Session Schedule: Friday, August 02, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: WEIDONG WANG, *US Nuclear Regulatory Commission*

Session Co-Chair: Zhili Feng, *Oak Ridge National Laboratory*

ICONE21-15076	Wall Thinning Analysis of Carbon Steel Pipes in the Secondary Section of NPP	Technical Publication
ICONE21-16716	Hybrid seismic response evaluation method for wall thinning piping system	Technical Publication
ICONE21-16033	Modeling of Thermal Fatigue Crack for Enhancement of Electromagnetic Nondestructive Evaluation of Nuclear Power Plant	Technical Publication
ICONE21-15008	Electromagnetic Compatibility Between Dcs And Switchboard	Technical Publication
ICONE21-15225	Capacity Calculation Method Study on the Emergency Diesel Generator Applied in HTR-PM	Technical Publication

1-16 Fuel Related Evaluations *(Technical Session)*

Session Description:
Any analyses or evaluations related to the nuclear fuel.

Session Schedule: Friday, August 02, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Tao Li, *Global Nuclear Fuel*

Session Co-Chair: Kaichao Sun, *Massachusetts Institute of Technology (MIT)*

ICONE21-16038	Reactivity Worth Measurment of Control Rods of CFBR-II by Inverse Kinetics Method	Technical Publication
ICONE21-15391	The Pressurized Water Reactor Control Rods Worth Calibration Calculation by MCNP	Technical Publication
ICONE21-15162	A Method for RCCA Drop Analysis	Technical Publication
ICONE21-15210	Application of LQG and IAGA to PWR Core Load Following Control	Technical Publication
ICONE21-16103	Optimization of the CANDU6 heat transport system inventory control during on-power refueling	Technical Publication

ICONE21-16067	Fuel Channel Replacement and Repair at Qinshan Candu Reactor	Technical Presentation Only

1-18 Project Management, Human Factors and Quality Assurance *(Technical Session)*

Session Description:
Any analyses or evaluations dealing with project management, human factors or quality assurance.

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Olivier VOKA, *EDF-PIAP, EBECC SHENZHEN BRANCH*

Session Co-Chair: Koji Yamada, *Chubu Electric Power Co,Inc.*

ICONE21-16517	Study on SPMO Management of Contractor Special Process Personnel Qualification under EPC Mode	Technical Publication
ICONE21-15093	Reflections And Suggestions On The Inspection Qualification System Development In China Nuclear Power Industry	Technical Publication
ICONE21-16303	Evaluation Method of Nuclear Equipment Manufacturing Quality	Technical Publication
ICONE21-15748	Application of Joint Building in Nuclear Power Engineering Design	Technical Publication
ICONE21-15428	Safety Culture Promoting Activities after Fukushima Accident	Technical Publication
ICONE21-15056	Plant Operations - Human Factors Issues	Technical Presentation Only

1-19 Severe Accidents and Flooding *(Technical Session)*

Session Description:
Analyses or evaluations concerning severe accidents and flooding.

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Jean-claude PRENEZ, *EDF*

Session Co-Chair: Mie Azuma, *Westinghouse Electric LLC*

ICONE21-15745	A Study of Anti-flooding Improvement Solutions for Nuclear Power Plants	Technical Publication
ICONE21-16912	Taking Account of the Fukushima Accidents on French Nuclear Power Plants	Technical Publication
ICONE21-15329	DISCUSSING THE MODIFICATION OF DEDICATED LINES USED FOR SEVERE ACCIDENT DEPRESSURIZATION	Technical Publication
ICONE21-16214	Study of Station Blackout Accident Process in Taishan Nuclear Power Plant	Technical Publication
ICONE21-16915	Different Countries, Similar Nuclear Safety Culture	Technical Publication
ICONE21-15160	Extension of Time for Completing Tsunami Countermeasures at Hamaoka Nuclear Power Station	Technical Presentation Only

Track 2 Nuclear Fuel and Materials Expand All Sessions In Track

Track Chair: Xiaomin Wang, *Nuclear Power Institute of China*

Track Co-Chair: Zhangjian Zhou, *University of Science and Technology Beijing*

Track Co-Chair: Jovica Riznic, *Canadian Nuclear Safety Commission*

Track Co-Chair: Robert Oelrich, *Westinghouse Electric*

Track Co-Chair: Carsten Schroer, *Karlsruhe Institute of Technology*

Track Co-Chair: Hidenori Takahashi

Track Co-Chair: Yoshihiro Isobe, *Nuclear Fuel Industires ltd.*

Track Co-Chair: Robert Tsai

2-1 Material challenges for Gen IV fast reactors and HTGR - I *(Technical Session)*

Session Description:
Organizers are soliciting papers related to recent developments in material solutions for high-efficiency sodium-, lead- or gas- or supercritical water-cooled reactors including, but not limited to, the following areas: • Material/coolant interactions: Degradation mechanisms and kinetics for steels and advanced materials • Coolant chemistry and instruments of impurity control • Material and coolant properties database • Steel protection • Candidate materials for major components • Open needs for demonstration plants

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Carsten Schroer, *Karlsruhe Institute of Technology*

Session Co-Chair: emmanuel HOROWITZ, *EDF*

Session Co-Chair: Celine Hin, *Virginia Tech*

ICONE21-15642	Factors promoting embrittlement of T91 in liquid lead-bismuth eutectic alloy	Technical Publication
ICONE21-15425	Investigation of Liquid Metal Embrittlement of T91 steel in LBE	Technical Presentation Only
ICONE21-16587	Investigation of liquid metal embrittlement effects on irradiated ferritic/martensitic steels in LBE	Technical Presentation Only
ICONE21-15230	Liquid Lead Bismuth Embrittlement Susceptbility of unirradiated and irradiated Optifer-IX FM steels	Technical Publication
ICONE21-15283	Creep Strength of Chromium-Containing Conventional and ODS Steels in Oxygen-Controlled Pb at 650°C	Technical Publication

2-2 Nuclear Fuel-I *(Technical Session)*

Session Description:
• Advances in nuclear fuel • Operational experience with fuel and cladding • Pellet-cladding interaction • Fuel safety, operational and design criteria • Criticality and shutdown margin • CRUD deposition • Stress/strain/fatigue • Oxidation and hydriding • Thermal mechanical analyzes • Fuel melting • Cladding failure • Fuel fragmentation and fuel dispersal

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Robert Oelrich, *Westinghouse Electric*

Session Co-Chair: Chongsheng Long, *Nuclear Power Institute of China*

Session Co-Chair: Ruiqian Zhang, *Nuclear Power Institute of China*

ICONE21-15009	MODELING THE IRRADIATION SWELLING OF UO2 AT THE FUEL PELLET RIM	Technical Publication
ICONE21-15038	High Temperature Creep Properties of UO2 Fuel Pellets Manufactured by Low Temperature Sintering Technology	Technical Publication
ICONE21-15543	The criteria of optimizing Nb content in Zr-Sn-Nb alloys for improving corrosion resistance of fuel cladding materials	Technical Presentation Only
ICONE21-16386	Gadolinium (Gd) and organic contamination (oil) in the moderator system	Technical Presentation Only
ICONE21-15054	Development of Electron Beam Welding Technology Using AA6061-T6 Aluminum Alloy for Nuclear Fuel Plate Assembly	Technical Publication
ICONE21-15836	Multiscale calculation of electronic structure and structural relaxation of ? phase Pu-Ga intermetallic compounds	Technical Publication

2-3 Corrosion in Nuclear Reactor Plants - Mechanisms, Detection, Avoidance and Mitigation Technology, Modeling and Prediction Techniques *(Technical Session)*

Session Description:
Corrosion, Environmentally Assisted Cracking and Corrosion Fatigue; Field failures; Detection and Prevention; Structural defects- vacancies and dislocations; Stress Corrosion Cracking laboratory studies (steels, carbon steels, high nickel alloys); Surface effects of surface treatments, Microstructure; Modeling; Statistical considerations; Mitigation technology and tools,

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: William A. Byers, *Westinghouse Electric Company LLC*

Session Co-Chair: Zhanpeng Lu, *Shanghai University*

Session Co-Chair: Xiong Ru, *Nuclear power institute of China*

ICONE21-16328	EFFECTS OF PRIOR-DEFORMATION AND WATER CHEMISTRY ON STRESS CORROSION CRACKING OF AUSTENITIC ALLOYS IN HIGH TEMPERATURE	Technical Publication
ICONE21-15309	Corrosion Behavior of Zircaloy-4 in Methanol Solution at 320 °C under Gamma-Irradiation	Technical Publication
ICONE21-15460	Effect of Bi Addition on the Corrosion Behavior of Zirconium Alloys	Technical Publication
ICONE21-16043	SCC in Nickel-base Weld Metals in PWR Primary Water	Technical Publication
ICONE21-15603	Research on Corrosion Resistance of N36 Zirconium Alloy at 500?	Technical Publication
ICONE21-15972	Research on Fracture Toughness JIC Test of Domestic 45# and A508-III Steel	Technical Presentation Only

2-4 Irradiation Damage and Materials Behavior-I *(Technical Session)*

Session Description:
Radiation damage, H and He effects in irradiated materials; Modeling and simulation of radiation damage in materials; Critical assessments of materials performance in irradiation environments; Prediction of radiation damage in nuclear materials - Ab initio calculations and potentials, cascades and short term evolution, long term prediction of irradiation-induced damage, modelling, software tools, data bases, experimental methods

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Yong Dai, *Paul Scherrer Institut*

Session Co-Chair: Hiroshi Abe, *Graduate School of Engineering, Tohoku University*

Session Co-Chair: Milan Brumovsky, *UJV Rez plc*

ICONE21-15939	Research Progrssing on Irradiation Effects of RPV Materials	Technical Publication
ICONE21-15420	Role Of Irradiation Embrittlement in RPV Lifetime Assessment	Technical Publication
ICONE21-15822	Out-of-pile Heat Transfer Test Device For Low Pressure Irradiation Capsule	Technical Publication
ICONE21-16466	Characteristics of Helium Diffusion Trajectory: A Molecular Dynamics Study	Technical Publication
ICONE21-16498	Status of the Third NGNP Graphite Creep Irradiation AGC-3 In the Advanced Test Reactor	Technical Publication
ICONE21-16651	Effects of helium on radiation damage in Inconel® Alloys	Technical Presentation Only

2-5 Aging Problems and Material Databases for Major Components and Balance of Plant (BOP) Systems *(Technical Session)*

Session Description:
Materials Properties Measurement, Material testing and property databases, Assessment and management of aging, environmentally induced materials degradation and damage, Aging effects on failures, Application of OPDE (Piping Failure Data Exchange) and CODAP (OECD NEA Component Operational Experience, Degradation and Ageing Programme), Corrosion and Degradation Management in BOP System, Buried Pipeline Corrosion in Nuclear Power Plant

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: San-Qiang Shi, *Hong Kong Polytechnic University*

Session Co-Chair: Jovica Riznic, *Canadian Nuclear Safety Commission*

Session Co-Chair: Ma Na, *National Key laboratory of Nuclear Fuel and Materials, Nuclear Power Institute of China*

ICONE21-15851	A STUDY OF THERMAL AGING EFFECTS ON MICROSTRUCTURES OF DISSIMILAR METAL WELDMENT	Technical Publication
ICONE21-16316	3D calculations of PWR vessels neutron fluence with EFLUVE3D code	Technical Publication
ICONE21-15021	Test Technology of the J-R Curves and True Stress-Strain Curves of Cast Austenitic Stainless Steel	Technical Publication
ICONE21-16538	FRACTURE TOUGHNESS OF RPV AUSTENITIC CLADDING	Technical Presentation Only
ICONE21-16767	Evolution Of Crystal Orientations In Plastically Deformed Steels: Role Of Constitutive Models Used In Finite Element Simulations	Technical Publication
ICONE21-15195	Modeling of Hydride Blister Formation in Zirconium Alloys	Technical Presentation Only

2-6 International Collaboration on Proactive Materials Degradation Management and Long Term Operation (LTO)
(Technical Session)

Session Description:
Global cooperation for reactor aging management and building cooperation among existing, and developing, programs, through initiatives like the International Forum for Reactor Aging Management (IFRAM). Cooperation in adopting best practices in emerging aging management processes including operational principles, practices, and improvement measures that are believed to have contributed to Improved performance, operation, safety of nuclear power plants, and safe and secure plant life extension; Identify regulatory gaps; Establish the technical bases for life extension – particularly provide an assessment of the state of the art, and Identify open questions and issues that require research or other actions; Establishment data bases (and library of materials) for naturally and laboratory aged materials, particularly focused on beyond 40+ years.

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Jovica Riznic, *Canadian Nuclear Safety Commission*

Session Co-Chair: Qi Xu, *Nuclear Power Institute of China*

ICONE21-15504	Theoretical analysis of ultrasonic testing technique for dissimilar metal weld	Technical Publication
ICONE21-16079	Hydrogen Absorption Behavior of Titanium Alloys by Cathodic Polarization	Technical Publication
ICONE21-16655	Thermal Conductivity Measurements for Simulated PWR Crud	Technical Publication
ICONE21-16330	Failure Analysis and Strategy Investigation on Local Thinning of the Warm-up Line in the Auxiliary Feedwater Pump System	Technical Publication
ICONE21-15590	The Microstructure And Characteristic Analysis Of USW Welding	Technical Publication
ICONE21-16417	Dynamic Recovery of Strain Hardening Behavior and Its Influence on Residual Stress Modeling for AISI 304 Stainless Steel	Technical Presentation Only

2-7 Component Reliability and Materials Issues *(Technical Session)*

Session Description:
Reactor vessel internals wear/corrosion issues • Pellet-cladding interaction •Low temperature embrittlement of welds • Boric acid corrosion control • Flow Accelerated Corrosion • Coolant/water chemistry • Production, Fabrication, Heat Treatment and Design Issues, welding, weld repair & integrity / life assessment issues, • Component Monitoring, Integrity and Life Assessment Issues, • Welding, Replacement and Repair Issues

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Taira Okita, *The University of Tokyo*

Session Co-Chair: B.F. Luan, *Chongqing University*

Session Co-Chair: Gui Yun Tian, *University of Electronic Science and Technology of China*

ICONE21-16714	Development of Co-reduced Valve Seat for Nuclear Power Plants	Technical Publication
ICONE21-16545	Cyclic Softening Effect on Design Margin of JLF-1 Steel	Technical Publication
ICONE21-15137	Hydrogen Permeability of Rubber Gaskets	Technical Publication
ICONE21-16381	High Temperature Effect on Strain-Hardening Cementitious Materials for Spent Nuclear Fuel Storage Systems	Technical Publication
ICONE21-16858	Electromagnetic non-destructive evaluation for nuclear fuel and materials	Technical Publication
ICONE21-15089	Requirements for Metal Material Used in NPP and Localization	Technical

	Analysis	Presentation Only

2-8 Material challenges for Gen IV fast reactors and HTGR - II *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Carsten Schroer, *Karlsruhe Institute of Technology*

Session Co-Chair: emmanuel HOROWITZ, *EDF*

Session Co-Chair: Celine Hin, *Virginia Tech*

ICONE21-16492	Operational experience during commissioning and start-up of the corrosion loop CRAFT at SCK•CEN	Technical Presentation Only
ICONE21-16483	Oxygen monitoring in the natural convection loop COLONRI I	Technical Publication
ICONE21-16412	Corrosion Behaviours of austenitic steel and F/M steels in static and flowing lead bismuth eutectic	Technical Presentation Only
ICONE21-15521	OXIDATION / DISSOLUTION OF FERRITIC ODS STEELS IN STATIC LEAD WITH VARIOUS OXYGEN CONTENTS AT 650°C	Technical Publication
ICONE21-16905	Fretting of fuel cladding materials for Pb cooled fast reactors – long term prediction using fretting maps	Technical Publication

2-9 Material challenges for Gen IV fast reactors and HTGR - III *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Carsten Schroer, *Karlsruhe Institute of Technology*

Session Co-Chair: Celine Hin, *Virginia Tech*

Session Co-Chair: emmanuel HOROWITZ, *EDF*

ICONE21-15234	Selective Leaching Of Nickel And Chromium From Type 316 Austenitic Steel In Oxygen-Containing Lead-Bismuth Eutectic (LBE)	Technical Presentation Only
ICONE21-16595	Microstructural Evolution of Self-Ion Irradiation HT9	Technical Publication
ICONE21-16112	Selection and Study on Materials of Pressure Vessel Reactor of SCWR	Technical Presentation Only
ICONE21-16432	High temperature steam oxidation kinetics and mechanism of SCWR fuel cladding candidate materials	Technical Publication
ICONE21-15876	Ongoing Research Of Water Chemisty Effect On SCC Properties Of Candidate Materials For SCWR	Technical Publication

2-10 Nuclear Fuel-II *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Chongsheng Long, *Nuclear Power Institute of China*

ICONE21-15589	Fuel Manufacturing Lines For NPPs in CNNFC	Technical Presentation Only
ICONE21-16548	NUCLEAR POWER: POTENTIAL TO OFFSET ENERGY DEMANDS?	Technical Publication
ICONE21-16076	Density Functional Theory Calculation of O chemisorption on the (001) Surface of UO2	Technical Publication
ICONE21-16913	CNSC Review of Safety Improvements: CANDU Fuel Modification in Canada	Technical Publication
ICONE21-15328	Analysis of advanced PWR loading schemes for transuranic incineration in thorium	Technical Publication
ICONE21-16727	CANDU Position and Prospect in Chinese Nuclear Fuel Cycle	Technical Publication

2-11 Nuclear Fuel-III *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Ruiqian Zhang, *Nuclear Power Institute of China*

ICONE21-15919	Neutron Absorbers in CANDU Natural Uranium Fuel Bundles to Improve Operating Margins	Technical Publication
ICONE21-15728	Development of a fuel performance code for CANDU and Application	Technical Publication
ICONE21-15905	Research on Application of Silicon Carbide on Advanced Fuel Rod	Technical Presentation Only
ICONE21-16763	Sintering Nuclear Fuels - Design and Operation for Integrated Safety	Technical Publication
ICONE21-16868	Assessment of the BaCo code simulations by using the CRP FUMEX exercises of the IAEA	Technical Publication
ICONE21-15869	The Kinetics of Hydrogen Desorption from Zirconium Hydride	Technical Publication

2-12 Zirconium Alloy *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: B.F. Luan, *Chongqing University*

ICONE21-15920	Microstructure and Performance of Zr-1.0Cr-0.4Fe-xMo Alloys	Technical Publication
ICONE21-16633	Techniques Developed to Determine K1H of Zircaloy-4 Cladding Material	Technical Publication

ICONE21-15325	Effect of Mo and Bi on mechanical properties of Zr-Fe-Cr alloy at room temperature	Technical Publication
ICONE21-15186	Characterization of Hot Deformation Behavior of Zr-1.0Sn-0.3Nb-0.3Fe-0.1Cr Using Processing Map	Technical Publication
ICONE21-15407	Electronic structure and Mechanical Properties of Zircaloy-2 and Zircaloy-4: A First Principle Study	Technical Publication
ICONE21-16430	The study on microstructure of hot extruded N36 zirconium alloy tubes	Technical Presentation Only

2-13 Irradiation Damage and Materials Behavior-II *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Hiroshi Abe, *Graduate School of Engineering, Tohoku University*

ICONE21-15478	Influence of Helium Cluster Structure on Diffusion Behavior	Technical Publication
ICONE21-16850	Ultrasonic NDE for Irradiation-Induced Material Degradations	Technical Publication
ICONE21-15857	Behavior of the Ag-In-Cd alloy control rod under irradiation	Technical Publication
ICONE21-15791	Effects of Irradiation Growth on the Thermo-Mechanical Behaviors in Inert Matrix Fuel Elements	Technical Publication
ICONE21-15637	Study on helium leak detecting for post irradiation fuel rods	Technical Publication

2-14 Material challenges for Gen IV fast reactors and HTGR - IV *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Carsten Schroer, *Karlsruhe Institute of Technology*

Session Co-Chair: Celine Hin, *Virginia Tech*

Session Co-Chair: emmanuel HOROWITZ, *EDF*

ICONE21-15097	DESIGN OF THE ESSENTIAL MATERIAL TEST EQUIPMENT FOR THE PEBBLE BED EFFECTIVE THERMAL CONDUCTIVITY MEASUREMENT EXPERIMENT	Technical Publication
ICONE21-15808	Experimental Study On Oxidation Of Graphite For HTR	Technical Publication
ICONE21-15525	Helium Permeability Measurement of SiC Ceramic Composites for Advanced Reactor Application	Technical Publication
ICONE21-15516	Elastic Modulus and Gas Tightness Measurement of Ceramic Matrix Composite-SiC for Advanced Reactor Application	Technical Publication
ICONE21-15074	First-principles study of He and H behavior with vacancy in V solid and V-Ti -Cr alloys	Technical Presentation Only
ICONE21-15527	Impact Properties of Electron Beam Welds of NIFS-HEAT-2 and CEA-J57 grades of V-4Ti-4Cr alloy	Technical Presentation Only

Track 3 Plant Systems, Construction, Structures and Components Expand All Sessions In Track

Track Chair: Shengyao Jiang, *Tsinghua University*

Track Co-Chair: Qing Mao, *China Nuclear Power Design Co.LTD(Shenzhen)*

Track Co-Chair: Asif Arastu, *Bechtel Power Corporation*

Track Co-Chair: Leon Cizelj, *Nuclear Society of Slovenia*

Track Co-Chair: Jovica Riznic, *Canadian Nuclear Safety Commission*

Track Co-Chair: Kazuyuki Tsukimori, *Japan Atomic Energy Agency*

Track Co-Chair: Kenji Takahashi, *Mitsubishi Heavy Industried*

3-1 Components and Systems Reliability and Failure Prevention *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Co-Chair: Jovica Riznic, *Canadian Nuclear Safety Commission*

ICONE21-15429	Evaluation of Interaction Effects on Part-through Cracks in Steam Generator Tubes	Technical Publication
ICONE21-15405	SEVERAL CONSTRAINT METHODS FOR AVOIDING THERMAL STRESS DISTORTION ON STRUCTURE SIMULATING CALCULATION	Technical Publication
ICONE21-16313	Stress Analysis and Assess for Nuclear Pipes of Class 1 Based on PIPESTRESS	Technical Publication
ICONE21-15868	The fracture behavior of cylinders with deep axial surface cracks under strong through-wall bending stresses	Technical Publication
ICONE21-15241	Study on the prestressing effect in reinforced concrete containment by using ANSYS	Technical Publication
ICONE21-16456	Effect of Welded Mechanical Heterogeneity on Crack Driving Force of Environmentally Assisted Cracking	Technical Presentation Only

3-2 Structure Design and Analysis Methods *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Qing Mao, *China Nuclear Power Design Co.LTD(Shenzhen)*

Session Co-Chair: Kazuyuki Tsukimori, *Japan Atomic Energy Agency*

ICONE21-16177	The position design for M310 reactor vessel's instrumentation penetration based on none-alignment analysis	Technical Publication

ICONE21-16457	Nonlinear crest-cut-off method for reducing the stress concentration of bolt with many threads: application in the main bolt of HTGR's RPV	Technical Publication
ICONE21-15797	Design of Moderators and Reflectors for Chinese Spallation Neutron Source	Technical Publication
ICONE21-15066	Optimal Design of Pressurizer	Technical Publication
ICONE21-15971	Structure Design of Jordan Subcritical Reactor	Technical Publication
ICONE21-15067	CPR1000 Reactor Pressure Vessel Main Bolt Load Distribution analysis	Technical Presentation Only

3-3 Materials Issues : Metallic Materials *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Jovica Riznic, *Canadian Nuclear Safety Commission*

ICONE21-16525	Scientific Bases of Water Chemistry for Corrosion Control of NPPs by Integration of Radiation- and Electro-Chemistry	Technical Publication
ICONE21-15435	Prospect of MAO Technology Application in Nuclear Industry	Technical Publication
ICONE21-15593	RESEARCH ON THE PROCESS FOR COBALT-PELLETS PLATINGING NICKEL OF HWRS COBALT ADJUSTMENT ROD ASSEMBLY	Technical Publication
ICONE21-16198	Research of the effects on a nuclear cable material irradiated by beta/gamma irradiation	Technical Publication
ICONE21-15948	Study on Comparison between Inconel 617 and GH3128 as Structural Material Candidates for Intermediate Heat Exchanger	Technical Publication

3-4 Materials Issues : Carbon-Graphite *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Libin Sun, *Tsinghua University*

ICONE21-15324	Study of Graphite Dust Releasing Behavior in a Depressurization Accident of HTR	Technical Publication
ICONE21-15574	The reliability prediction of HTR's graphite component in various temperature and neutron dose levels	Technical Publication
ICONE21-16283	Experimental Study on Dynamic Collision Characteristics of Graphite Bricks	Technical Publication
ICONE21-16839	Preliminary Study of Graphite Dust Resuspension in Steam Generator of HTR-10	Technical Publication

3-5 Component Design and Analysis Methods - Valves *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: John Sulley, *Rolls Royce Plc*

Session Co-Chair: Jovica Riznic, *Canadian Nuclear Safety Commission*

ICONE21-15276	Sensitivity Analysis and Design Improvement of Contra-Motion Check Valve	Technical Publication
ICONE21-15387	Analysis of Fatigue Life for Main Steam Isolation Valve in Nuclear Power Plants	Technical Publication
ICONE21-15555	Thermal Analysis of the Head of the Direct Action Solenoid Valve	Technical Publication
ICONE21-15112	Design Development of a Nuclear Standard Bi-Directional Solenoid Valve to Enable PWR Fluid System Simplification	Technical Publication

3-6 Component Design and Analysis Methods - CRDM *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: John Sulley, *Rolls Royce Plc*

ICONE21-15196	Experimental Investigations Of Control Rod Drive Mechanism	Technical Publication
ICONE21-15505	The study on the dynamic simulation of rod drop behavior in control rod drive line	Technical Publication
ICONE21-15559	The impact of the high temperature on the performance of critical components in the HTR-PM control rod drive mechanism	Technical Publication
ICONE21-16449	On Efficient Passive Cooling of Control Rod Drivers	Technical Publication

3-7 Component Design and Analysis Methods - Magnetic Components *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Yin Hua-qiang, *Tsinghua University*

ICONE21-16342	Electromagnetic Self-Locking Device For Air Cylinders In Spent Fuel Storage System Of Pebble-Bed High Temperature Gas-Cooled Reactor	Technical Publication
ICONE21-15669	Magnetic field analysis of active magnetic bearings for helium blower of HTR-PM	Technical Publication
ICONE21-16220	Identification of Flexible Rotor Suspended by Magnetic Bearings	Technical Publication
ICONE21-16098	Circularity Error Analysis of Axial Displacement Sensor Detecting	Technical Publication

	Surface for active magnetic bearings of 10MW High Temperature Gas-cooled reactor (HTR-10GT)	
ICONE21-16016	Interference fit design for rotor components of the active magnetic bearing	Technical Publication
ICONE21-15477	Experimental Study of Magnetic Synchronizator in HTR-PM Fuel Handling System	Technical Publication

3-8 Component Design and Analysis Methods - Separation and Adsorption *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Jia Haijun, *Tsinghua University*

Session Co-Chair: Cheng Ren, *Institute of Nuclear and New Energy Technology,Tsinghua University*

ICONE21-15362	Experimental Study on Adsorption of Carbon Dioxide on 13X Molecular Sieve for Coolant Helium Purification	Technical Publication
ICONE21-15417	Theoretic Analysis on Separation Efficiency of Wire Mesh Mist Eliminator of High-temperature Gas-cooled Reactor Helium Purification and Auxiliary System	Technical Publication
ICONE21-15113	Researches on the Simulation and Emulation of the Degasifying Column Used in Nuclear Power Plant	Technical Publication
ICONE21-16124	Experimental Study of a Gas Separator for MSR Gas Removal System	Technical Publication

3-9 Heat Transfer and Flow Characteristics in Components - I *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Fenglei NIU, *North China Electric Power University*

ICONE21-15510	A numerical study of eccentricity effect to single phase force convection heat transfer inside a vertical annulus	Technical Publication
ICONE21-15698	Study on Tube Arrangement Method for Helical-Coiled Heat Exchanger to Reduce Pressure Drop	Technical Publication
ICONE21-16474	Research and Solution on Vibration and Noise Caused by Orifice Cavitations of PTR System	Technical Publication
ICONE21-16710	Probabilistic Leak Rate Estimation of the Standard Problem 48 Exercise Containment	Technical Presentation Only
ICONE21-16396	Assessing the Design Margins for Ultimate Heat Sink Sizing	Technical Publication

3-10 Heat Transfer and Flow Characteristics in Components -II *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Asif Arastu, *Bechtel Power Corporation*

Session Co-Chair: Fenglei NIU, *North China Electric Power University*

ICONE21-16253	Experimental Investigation of Non Stationary Heat Transfer between Fluid and Solid Body	Technical Publication
ICONE21-15448	Transient Analysis of Active Residual Heat Removal Process for HTR-PM	Technical Publication
ICONE21-15430	Flow Characteristics of helium in elbow structure of HTGR-10	Technical Publication
ICONE21-15441	Theoretical Analysis of a Natural Circulation System under Rolling Condition Based on RELAP5/MOD3.3 code	Technical Publication
ICONE21-15444	Experimental and Numerical Study on Natural Circulation under Inclined Condition	Technical Publication

3-11 Heat Transfer and Flow Characteristics in Components - III *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Leon Cizelj, *Nuclear Society of Slovenia*

ICONE21-15427	Prospective Applications of Flow Drag and Noise Reduction Technology for Nuclear Reactors	Technical Publication
ICONE21-15473	A Preliminary Study on the Reactor Vessel Insulation of Cavity Injection System	Technical Publication
ICONE21-15659	Results and Discussion on Scaling Analysis for the NHR200-II Integral Test Facility under Single Phase Natural Circulation	Technical Publication
ICONE21-15660	Numerical study of the gas-steam transient behavior in the integrated pressurizer	Technical Publication
ICONE21-16436	The optimization design of lower plenum and distribution plates in MSR	Technical Publication

3-12 Pebble Flow Dynamics *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Asif Arastu, *Bechtel Power Corporation*

Session Co-Chair: Fenglei NIU, *North China Electric Power University*

ICONE21-15370	Very Slow Pebble Flow : A New Research Field	Technical Publication

ICONE21-15431	Effect of Feeder Inner Structure on Feeding Performance for Absorber Sphere Pneumatic Conveying	Technical Publication
ICONE21-15511	Falling Characteristic Analysis of Passive Drive Mechanism of Absorber Ball Shutdown System for HTR-PM	Technical Publication
ICONE21-15371	Experimental and Numerical Study of the Movement Mechanism and Characteristics of the Quasi-Static Pebble Flow	Technical Publication
ICONE21-15372	Experimental Research and DEM Simulations on Stagnant Region in Pebble Bed Reactor	Technical Publication

3-13 Seismic Related Analysis *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Qing Mao, *China Nuclear Power Design Co.LTD(Shenzhen)*

ICONE21-15825	Seismic Response Spectrum Analysis on Advanced PWR Coolant System	Technical Publication
ICONE21-16627	Analyzing and Comparing the Floor Response Spectra of the NPP Based on Different Soil Dynamic Numerical Models	Technical Publication
ICONE21-16668	Shaking Table Tests and Numerical Simulation Analysis of a 1:15 Scale Model Reinforced Concrete Containment Vessel	Technical Publication
ICONE21-16806	The Seismic Responses of NPP Building by Each SSI Analysis Method with the Spatial Incoherency Effects of Seismic Wave	Technical Presentation Only
ICONE21-15896	A Three-Dimensional Rigid-Body Model for Seismic Analysis of the Pebble-bed HTR Graphite Core Structure	Technical Publication
ICONE21-16699	Analysis of AP1000 seismic design	Technical Presentation Only

3-14 Construction Technologies and Management of NPPs *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Leon Cizelj, *Nuclear Society of Slovenia*

ICONE21-16863	The application of virtual reality technology to the conical roof lifting for the AP1000 nuclear power plant	Technical Publication
ICONE21-15287	Elementary analysis for the decommissioning schedule of High Temperature Reactors	Technical Publication
ICONE21-15288	Elementary analysis of the Quality Assurance for Probabilistic Safety Analysis	Technical Publication
ICONE21-16864	Ventilation Management for the AP1000 Containment Building during Construction Stage	Technical Publication
ICONE21-16823	Comparative Study On Self-Compacting Concrete Pouring Methods Of AP1000 Structure Module	Technical Publication
ICONE21-16623	Hitachi-GE's Information Technology Improvement for International Construction Project	Technical Presentation Only

Track 4 Radiation protection and Nuclear Technology Applications Expand All Sessions In Track

Track Chair: Huating Yang, *China Institute for Radiation Protection*

Track Co-Chair: Ruilan Liu, *Northern Regional Office of nuclear and Radiation Safety Inspection*

Track Co-Chair: Guobao Wang, *China Institute of Atomic Energy*

Track Co-Chair: Ivo Kljenak, *Jozef Stefan Institute*

Track Co-Chair: Takatoshi Hattori, *CRIEPI*

Track Co-Chair: Ikuo Ioka, *Japan Atomic Energy Agency*

Track Co-Chair: Toshiharu Muramatsu, *Japan Atomic Energy Agency*

Track Co-Chair: Justin Byard, *WECAN , an AREVA / CGNPC Joint-Venture*

Track Co-Chair: Xinfang Zhang

4-1 Environmental and Health Issues *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Justin Byard, *WECAN , an AREVA / CGNPC Joint-Venture*

Session Co-Chair: Huating Yang, *China Institute for Radiation Protection*

ICONE21-15134	Measurement of Inhaled Uranium Using Lung Counting System	Technical Publication
ICONE21-15506	Proton Dose Conversion Coefficients Based On Chinese Reference Adult Woman Voxel Phantom	Technical Publication
ICONE21-15862	Risk Assessment of the Intake of Foods and Soil with Radionuclids and the Air Radiation Dose After the Fukushima Nuclea Disaster	Technical Publication
ICONE21-16111	The Environmental Radiation Analysis on the Residential Area around Nuclear Power Plants	Technical Publication
ICONE21-16876	Radiation Doses Due to Natural Radioactivity in Hot Springs in Jordan	Technical Presentation Only
ICONE21-16205	Limitations on the Radioactivity of Industrial Waste Slag as Building Materials	Technical Presentation Only

4-2 Radiation Shielding *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Huating Yang, *China Institute for Radiation Protection*

Session Co-Chair: Dong Han Yoo, *Ulsan National Institute of Science & Technology(UNIST)*

ICONE21-15821	Primary Shielding Design For An Optimized Molten Salt Reactor	Technical Publication
ICONE21-16173	The research of Flexible neutron shielding material	Technical Publication
ICONE21-16188	The research of shielding material for mixed field	Technical Publication
ICONE21-16846	Shielding Calculation Research Based on Point-Kernel Integral Method	Technical Publication
ICONE21-15763	Shielding Design Analysis for the Proton Tube of China Lead-Alloy Cooled Research Reactor?CLEAR-I?	Technical Publication
ICONE21-15995	Primary Shielding Design and Analysis for CLEAR-I	Technical Publication

4-3 Radiation Detection and Measurement *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Gen Jin, *China Institute for Radiation Protection*

Session Co-Chair: Guobao Wang, *China Institute of Atomic Energy*

ICONE21-16030	Design Improvements to Fuqing Nuclear Plant Radiation Monitoring System: A Survey of Current Application at Domestic Nuclear Plants	Technical Publication
ICONE21-15279	Geant4 Simulations Response of Cylindrical Silicon-on-Insulator Microdosimeter Array Detector for Neutrons Detection	Technical Publication
ICONE21-16347	The Design of Area Radiation Monitoring System for the Nuclear Accident at Sea	Technical Publication
ICONE21-16090	The Design and Performance Study of An New Phoswich Detector	Technical Publication
ICONE21-15227	Analysis of the Influence of Spot Diameter of Point Sources on HPGe detector r-ray Efficiencies Simulation for Volume Source	Technical Publication
ICONE21-15585	APPLICATION OF COINCIDENCE TECHNIQUE FOR NEUTRON FLUX MAPPING IN BORON CONCENTRATED PARAFFIN WAX	Technical Publication

4-4 Practical Applications *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Guobao Wang, *China Institute of Atomic Energy*

Session Co-Chair: Gen Jin, *China Institute for Radiation Protection*

ICONE21-15072	Nuclear Quadrupole Resonance Technology Applied in the Field of Explosives Detection	Technical Publication
ICONE21-15215	Zero Thickness and Sample Demarcating Method for The Deposition Detection of Corrosion Products in PWR Primary System	Technical Publication
ICONE21-15663	Research on the Algorithms for Emission Image Reconstruction of Tomographic Gamma Scanning Based on Computer Simulation	Technical Publication
ICONE21-15155	Neutron Image Restoration by Combining Richardson-Lucy with Steering Kernel	Technical Publication
ICONE21-15306	Determination of 99Tc in Methylenediphosphonate Solution by Liquid Scintillation Counting	Technical Presentation Only

4-5 Theoretical Calculations *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Huating Yang, *China Institute for Radiation Protection*

Session Co-Chair: Xinfang Zhang

ICONE21-15073	The simulation of low-background gamma spectrometer with clover detector	Technical Publication
ICONE21-15330	The criticality safety analysis of AP1000 fuel assembly transport package	Technical Publication
ICONE21-15498	TRIPOLI-4 GAMMA-RAY DOSE CALCULATION FOR SPENT PWR FUELS	Technical Publication
ICONE21-15781	Improving the Accuracy of Gamma Spectrum Analysis by Total Variation Based Adaptive Smoothing	Technical Publication
ICONE21-15860	A Synthetic Approach Used for Gamma Spectra Fitting	Technical Publication

4-6 Experimental Research and Development *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Xinfang Zhang

ICONE21-16624	Studies on The Responses of CR-39 Detector to C3+, O3+ and Proton Irradiations	Technical Publication
ICONE21-15302	The Development and Application of A Cf-252 Source-based Neutron Irradiation Facility	Technical Publication
ICONE21-16737	Measurement of the reaction cross-section with a new scheme at RIBLL	Technical Publication

ICONE21-15485	Standardization of 243Am by efficiency extrapolation method	Technical Publication
ICONE21-15566	Preliminary Analysis of Polonium-210 Contamination for China LEad-Alloy Cooled Research Reactor	Technical Presentation Only

4-7 Radiation Management *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Ivo Kljenak, *Jozef Stefan Institute*

Session Co-Chair: Rongyao Tang, *China Institute for Radiation Protection*

Session Co-Chair: Justin Byard, *WECAN , an AREVA / CGNPC Joint-Venture*

ICONE21-15091	Developing of China Nuclear Emergency Response Ability post Fukushima Accident	Technical Publication
ICONE21-16842	A Utility Model of Environmental Radiation Online Monitoring System of Nuclear Power Plants	Technical Publication
ICONE21-15295	Study on Medical Emergency Rescue for Nuclear Accident on the Sea	Technical Publication
ICONE21-15792	Design And Renovation For NPP`s Access Control Point to Radiation Control Area	Technical Publication
ICONE21-16325	THE COMPARATIVE ANALYSIS OF HERMOLUMINESCENCE PERSONAL DOSEMETER DISTRIBUTION METHOD IN GROUP PLANT MODE	Technical Publication
ICONE21-16854	Dose Distribution in the Spent Fuel Package Operations and the Radiation Risk Control	Technical Publication

4-8 radiation technologies *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Huating Yang, *China Institute for Radiation Protection*

Session Co-Chair: Justin Byard, *WECAN , an AREVA / CGNPC Joint-Venture*

ICONE21-15002	Investigation techniques in ground water	Technical Presentation Only
ICONE21-15219	Electron and Beta Dose Rates of UO2 Pellet and Fuel Rod	Technical Publication
ICONE21-16282	Research on Negative Pressure Control Technology in NPP Reactor Building and its Application	Technical Publication
ICONE21-15213	Research on Adsorption Performance of Type III Absorber Used in Nuclear Power Plant	Technical Publication
ICONE21-16280	An integrated single-step gamma spectrum analysis method based on Bregmanized variational deconvolution	Technical Publication
ICONE21-16086	Monitoring and radiation protection on maritime rescue and salvage operations under the conditions of nuclear contamination	Technical Presentation Only

4-9 Radiation Technologies II *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Xiaolei Cheng, *North China Electric Power University*

Session Co-Chair: Baowei Chen, *China Institute for Radiation Protection*

ICONE21-16477	Development and Application of Neutron Damage Calculation Code for ADS System	Technical Publication
ICONE21-16230	the Research on the Energy Deposition of Heavy Ions in SMD	Technical Publication
ICONE21-16180	Technology Research of Infrasonic Signal Acquisiton and Pretreatment for Identification of Nuclear explosion	Technical Publication
ICONE21-16060	Research on ?-Ray Radiation Effect of Some Rubbers	Technical Publication
ICONE21-16048	Effect of temperature and humidity inside contaminated pipes on measuring ionization current	Technical Publication

Track 5 Next Generation Reactors and Advanced Reactors Expand All Sessions In Track

Track Chair: Donghui Zhang, *China Institute of Atomic Energy*

Track Co-Chair: Danrong Song, *Nuclear Power Institute of China*

Track Co-Chair: Zhiwei Zhou, *INET of Tsinghua University*

Track Co-Chair: Hong YU, *China Institute of Atomic Energy*

Track Co-Chair: Dmitry Paramonov, *JSC Atomenergoproekt*

Track Co-Chair: Edwin Harvego, *Idaho National Laboratory*

Track Co-Chair: hideaki heki, *Toshiba Corporation*

Track Co-Chair: Tetsuaki Takeda, *University of Yamanashi*

Track Co-Chair: yoshiyuki inagaki, *Japan Atomic Energy Agency*

Track Co-Chair: Claude Mayoral, *WECAN*

Track Co-Chair: Ryodai Nakai, *Japan Atomic Energy Agency*

Track Co-Chair: Eric de FRAGUIER, *EDF Nuclear Engineering Division*

5-1 New concept design I *(Technical Session)*

Session Description:
In order to meet the requirements of special purpose, safety or sustainable, some new or innovative design were developed. This session accumulates the designs about fast reactor, supercritical water

reactor, high temperature reactor, etc.

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Ryodai Nakai, *Japan Atomic Energy Agency*

Session Co-Chair: Bin LONG, *China Institue of Atomic Energy*

Session Co-Chair: Hao HUANG, *China Nuclear Power Technology Research Institute*

Session Co-Chair: M. V. Ramana, *Nuclear Futures Laboratory, Princeton University*

ICONE21-16008	Pressure tube type fusion-fission hybrid reactor for energy production using natural uranium or LWR spent fuel	Technical Publication
ICONE21-16646	AFCR and EC6, The Two Sister CANDU Products	Technical Publication
ICONE21-15235	A Conceptual Design of A Small Modular Natural-Circulation Liquid Metal Fast Reactor with AMTEC Units	Technical Publication
ICONE21-16783	Experimental modelling of a molten salt reactor concept	Technical Publication
ICONE21-16006	A Heat Pipe Cooled Modular Reactor Concept for Manned Lunar Base Application	Technical Publication
ICONE21-16421	Design and R&D Status of China Lead-alloy Cooled Reactor	Technical Presentation Only

5-2 Fuel and material of next generation reactors I *(Technical Session)*

Session Description:
Fuel and material are bases of new design reactor. This session gives the research works about different fuel and material.

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Jovica Riznic, *Canadian Nuclear Safety Commission*

Session Co-Chair: Yucheng Fang, *Yantaishi Taihai Group Co.,Ltd*

Session Co-Chair: Chen Huang, *china institute of atomic energy*

ICONE21-16497	Status of the Combined Third and Fourth NGNP Fuel Irradiations In the Advanced Test Reactor	Technical Publication
ICONE21-16694	Analysis of Modern HTGR Fuel Performance during the HFR-EU1 Irradiation Test and Prediction of Fission Product Release in PIE Accident Simulation Testing	Technical Publication
ICONE21-16516	Coupled neutronics/thermal-hydraulics analysis of PT–SCWR with 54-element bundle design	Technical Publication
ICONE21-16862	FEASIBILITY STUDY OF UTILIZING TRISO FUEL IN PWR TECHNOLOGY	Technical Publication
ICONE21-15440	First-principles study of mechanical property and electronic structure of quenching and aging U-Ti alloy	Technical Publication

5-3 Neutron physics of advanced reactors I *(Technical Session)*

Session Description:
Neutron physics design and physicl character research.

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Dmitry Paramonov, *JSC Atomenergoproekt*

Session Co-Chair: Hechun TIAN, *CIAE*

Session Co-Chair: Zhi GANG, *SNPTRD*

ICONE21-16514	The Testing and Application of Continuous-energy Neutron Cross Section Library HENDL-ADS/MC	Technical Publication
ICONE21-15598	Neutronics optimization design of the control rod in China Lead-Alloy Cooled Research Reactor CLEAR-I	Technical Presentation Only
ICONE21-15753	High Breeding Core of a Supercritical-pressure Light Water Cooled Fast Reactor	Technical Publication
ICONE21-15887	Stability analysis of the MSBR	Technical Publication
ICONE21-16413	Measurement of Reaction Rate Distribution and Neutron Spectrum in China Experimental Fast Reactor	Technical Publication

5-4 Thermal hydraulic of advanced reactors I *(Technical Session)*

Session Description:
This session focus on recent progress in thermal hydraulics of advanced reactors, including the original research works related to thermal hydraulics of GEN-III, GEN-IV and other next generation reactors.

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**

Session Sponsors: ASME, JSME, CNS

Session Chair: Zhiwei Zhou, *INET of Tsinghua University*

Session Co-Chair: Daisuke Tochio, *Japan Atomic Energy Agency*

ICONE21-16720	CFD Investigation of Heat Transfer Deterioration in Supercritical Water Flowing through Vertical Annular Channels	Technical Publication
ICONE21-15853	THE MEASUREMENT OF HIGH TEMPERATURE DOUBLE-LAYER PIPING ON CHINA EXPERIMENTAL FAST REACTOR	Technical Publication
ICONE21-16082	Preliminary Study on Thermal-load Fluctuation Test using HTTR	Technical Publication
ICONE21-16493	Mechanism of flow drag reduction on non-smooth surface	Technical Publication

ICONE21-16543	Thermal Hydraulic Analysis Code Development for DHRS of LMFRs	Technical Publication
ICONE21-16896	R&D on Integral Natural Circulation Validation Test Facility by Scaling Method for LBE Cooled Nuclear Reactor	Technical Presentation Only

5-5 Safety studies about next generation reactors and advanced reactors I *(Technical Session)*

Session Description:
Different type reactors have different safety features. This session is used to discuss the safety of new concept designs.

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Claude Mayoral, *WECAN*

Session Co-Chair: Edwin Harvego, *Idaho National Laboratory*

Session Co-Chair: Suizheng Qiu, *Xi'an jiaotong University*

Session Co-Chair: Xuewu Cao, *Shanghai Jiao Tong University*

Session Co-Chair: James Chapman, *Scientech*

ICONE21-16114	A Study on the Influences of Reactivity Feedback Mechanisms in China Experimental Fast Reactor Unprotected Transients	Technical Publication
ICONE21-16377	Fracture Mechanic at Design Level for New Reactors	Technical Publication
ICONE21-16095	Improvement of Temperature Evaluation Model of Biological Shielding Concrete for HTTR Test Simulating LOFC with VCS Inactive	Technical Publication
ICONE21-16237	Experimental Study On the Sodium Spray Fire	Technical Publication
ICONE21-16140	The Analysis of Sedimentation Rate of Sodium Aerosol in A Sodium Fire Accident of CEFR	Technical Publication
ICONE21-15319	Application of KIMERA to the M/E Release for SKN 5&6 Containment Design	Technical Presentation Only

5-6 Computer codes *(Technical Session)*

Session Description:
The computer codes for the design and safety analysis about new generation and advanced reactors

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Hong Yu, *China Institute of Atomic Energy*

Session Co-Chair: Yixue CHEN, *State Nuclear Power Software Development Center*

ICONE21-16628	Numerical Investigations on Instabilities in Supercritical Water Flowing through Heated Parallel Channels	Technical Publication
ICONE21-15849	HPLWR Fine Mesh Core Analysis	Technical Publication
ICONE21-15790	Study and Development of Primary Circuit Simulation Code for China Experimental Fast Reactor	Technical Publication
ICONE21-15081	On the Applicability of Pool Boiling Models in TRACE for the Evaluation of a Counter-Current LBE-Water Heat Exchanger	Technical Publication
ICONE21-15737	Preliminary development of System analysis code for Traveling-wave reactor	Technical Publication
ICONE21-16815	Fast Reactor Design using The Advanced Reactor Modeling Interface	Technical Publication

5-7 Economic and environment issues of new concept reactor I *(Technical Session)*

Session Description:
Research works about economic and enviroment issues of new reactors. Focus on Fast breeder reactor.

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Danrong Song, *Nuclear Power Institute of China*

Session Co-Chair: hideaki heki, *Toshiba Corporation*

ICONE21-15240	The treatment technology of radioactive sodium in the frame of fast reactors decommissioning	Technical Publication
ICONE21-15835	Conceptual Studies of Design Scheme for Steam Generator in FBR	Technical Publication
ICONE21-15848	Optimization Design for Air Heat Exchanger of Large Fast Reactor based on Genetic Algorithm	Technical Publication
ICONE21-16138	STUDY ON SEISMIC FRAGILITY OF AIR HEAT EXCHANGER FOR CEFR	Technical Publication
ICONE21-16162	The Design of a Small Annular Linear Induction EM Pump for the Transportation of Liquid Sodium in the SFR	Technical Publication
ICONE21-16924	Quantitative analysis of the SO2 depolarized electrolysis potential in hybrid sulfur process	Technical Presentation Only

5-8 Economic and environment issues of new concept reactor I I *(Technical Session)*

Session Description:
Economic and environment issues of new concept reactor II. Focus on HTR and LWR

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

ICONE21-16128	Investigation on Iodine Release Behavior during the Operation of High Temperature Engineering Test Reactor (HTTR)	Technical Publication
ICONE21-16638	Study on Design of Scaled Down Test Facilities for Investigation of	Technical Publication

	Instabilities in Supercritical Water Reactor	
ICONE21-16681	Enhancement of Plant Availability by Outage Shortening in European Advanced Boiling Water Reactor (EU-ABWR)	Technical Publication
ICONE21-16870	Overview of the Design Approach for the CVCS I&C of the EPR Nuclear Power Plant in Taishan.	Technical Publication

5-9 New concept design II *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Bin LONG, *China Institue of Atomic Energy*

ICONE21-15083	A STUDY ON SCWR CORE DESIGN AND FUEL MANGEMENT	Technical Publication
ICONE21-15211	A NEW DESIGN FOR SCWR FUEL ASSEMBLIES	Technical Publication
ICONE21-15664	The AP1000® PWR Project Moving Toward Completion in China	Technical Publication
ICONE21-16064	General Design Study on CSR1000 Structure	Technical Publication
ICONE21-16679	Parametric studies on thermodynamical cycle of HTGR with He-CO2 mixed medium	Technical Publication
ICONE21-16914	THE EUROPEAN UTILITY REQUIREMENTS (EUR): A GREAT ACHIEVEMENT AND STILL ON ITS WAY	Technical Publication

5-10 New concept design III *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Hao HUANG, *China Nuclear Power Technology Research Institute*

ICONE21-15927	Preliminary Design and Analysis of Audxiliary Heating System for China Lead-Alloy cooled research Reactor (CLEAR-I)	Technical Presentation Only
ICONE21-15454	self-breeding and radiotoxicity analysis on thorium-based molten salt reactors.	Technical Publication
ICONE21-15871	The impact of different carrier salts on the physical characteristics of the MSFR	Technical Publication
ICONE21-16134	Preliminary Research and Design in the Nuclear Island Systems of 1500MWt Standing-Wave Reactor	Technical Publication
ICONE21-16888	Research of Features Of U-Pu-Th Fuel Cycle And Its Use For Burning Up Of Minor Actinides In Supercritical Water-Cooled Reactor With Fast Neutron Spectrum	Technical Publication
ICONE21-16917	Small Modular Reactors: Uranium Resource Requirements, Waste Generation and Proliferation Risk Assessment	Technical Publication

5-12 Fuel and material of next generation reactors II *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Yucheng Fang, *Yantaishi Taihai Group Co.,Ltd*

ICONE21-15503	Research on the Stainless Steel Tubes and Pipes Material Standards of Demonstration Fast Reactor Power Plant	Technical Publication
ICONE21-16068	Structure and Erosion Characteristics of Underexpanded Inert-Gas Jets Impinging on a Single Cylinder Submerged in Liquid Sodium	Technical Publication
ICONE21-16415	Investigation on the Compatibility of Fe-Ni Magnetic Alloy with High Temperature Sodium	Technical Publication
ICONE21-15643	The Computer Measuring and Controlling System for Temperature Field of the Thermal-shock Test at R1/R2 Test Section in ESPRESSO Loop	Technical Publication
ICONE21-15645	The Computer Measuring and Controlling System for the Plugging Meter of the Mobile Sodium Purification Device	Technical Publication

5-14 Neutron physics of advanced reactors II *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Hechun TIAN, *CIAE*

ICONE21-15994	Neutronics Design of a Small LBE Cooled Accelerator Driven System CIADS	Technical Publication
ICONE21-16187	The First Criticality Experiment of China Experimental Fast Reactor	Technical Publication
ICONE21-16194	Neutronics Design Study on Driven Region of Travelling Wave Reactor	Technical Publication
ICONE21-16309	A Neutronics Concept Design of Lead-Bismuth Cooled Accelerator-Driven System for Minor Actinide Transmutation	Technical Publication
ICONE21-16507	Neutronic Analysis of The HTTR Core Fueled with Plutonium and Minor Actinides	Technical Publication

5-16 Thermal hydraulic of advanced reactors II *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Daisuke Tochio, *Japan Atomic Energy Agency*

ICONE21-15232	Hybrid Feedforward and Feedback Control of Steam Temperature in	Technical Publication

	a Once-through Direct Cycle Canadian SCWR	
ICONE21-15416	Thermal-hydraulic Conceptual Design of Water-Cooled Blanket of a Fusion-Fission Hybrid Reactor for Energy Production	Technical Publication
ICONE21-16544	Temperature field analysis for freezing sealing structure of sodium gate valve in CEFR	Technical Publication
ICONE21-16610	The investigation of minor losses in T-pipe flow	Technical Publication
ICONE21-16807	Wave Propagation in the Hot Duct of VHTR	Technical Publication
ICONE21-15143	Scaling for different Containment Passive Cooling designs Under LOCA conditions	Technical Publication

5-17 Thermal hydraulic of advanced reactors III *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Yijun Xu

ICONE21-16592	Preliminary thermal-hydraulic analyses for designing an experimental model of a molten salt reactor concept	Technical Publication
ICONE21-16217	Thermal hydraulic analysis of a SCWR core concept	Technical Publication
ICONE21-15967	Numerical Simulation and Analysis of Temperature Fluctuation in Core Outlet Zone of China Experimental Fast Reactor	Technical Publication
ICONE21-15739	Numerical Analysis of Flow and Heat Transfer in Wire-Wrapped Blanket Assembly of CEFR	Technical Publication
ICONE21-15572	Scaling analysis of Liquid Lead–bismuth Eutectic Thermal Stratification in ADS Facility under LOCA	Technical Publication
ICONE21-16120	Analysis of CEFR Transients by Coupling the System Code OASIS and a CFD Code	Technical Presentation Only

5-18 Safety studies about next generation reactors and advanced reactors II *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Edwin Harvego, *Idaho National Laboratory*

Session Co-Chair: Xuewu Cao, *Shanghai Jiao Tong University*

ICONE21-15178	The Events at the Fukushima Dai-ichi Nuclear Complex and the State of Knowledge on Severe Accident Phenomenology	Technical Presentation Only
ICONE21-15587	Safety analysis of a Super Fast reactor with upward flow cooling in two paths at supercritical pressure	Technical Publication
ICONE21-16704	Safety Performance of a Large Scale Sodium Cooled Fast Reactor in Unprotected Transient Overpower Scenarios	Technical Publication
ICONE21-16884	LOCA BREAK SPECTRUM ANALYSIS OF THE WESTINGHOUSE SMALL MODULAR REACTOR	Technical Publication
ICONE21-15799	The Measurement and Analysis of CEFR Sodium Void Reactivity Effect	Technical Publication
ICONE21-15899	Seismic analysis of lead-bismuth-cooled fast reactor vessel	Technical Publication

5-20 Safety studies about next generation reactors and advanced reactors III *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Suizheng Qiu, *Xi'an jiaotong University*

ICONE21-16520	PROBABILISTIC DISTRIBUTION OF PARAMETERS APPLIED TO PFM ANALYSIS FOR PIPING IN CEFR	Technical Publication
ICONE21-16502	PRELIMINARY SAFETY ANALYSIS OF CSR1000	Technical Publication
ICONE21-16383	Licensing Considerations of a Fluoride Salt Cooled High Temperature Test Reactor	Technical Publication
ICONE21-15780	Discussion on the Application of Fire Probability Safety Assessment to Sodium Cooled Fast Reactor	Technical Publication
ICONE21-16091	A Safety Evaluation of HTTR core components against 2011 Tohoku Earthquake	Technical Publication
ICONE21-16132	Transient analysis of Passive Decay Heat Removal System for CEFR	Technical Publication

Track 6 Nuclear Safety And Security Expand All Sessions In Track

Track Chair: Hongxing Yu, *Nuclear Power Institute of China*

Track Co-Chair: Martin Sattison, *Idaho National Laboratory*

Track Co-Chair: Mohammad Pourgol-Mohammad, *Quality Consultings Inc.*

Track Co-Chair: Upendra Rohatgi

Track Co-Chair: Yoshihiko Ishii, *Hitachi Ltd., Hitachi Research Laboratory*

Track Co-Chair: Kohei Hisamochi, *Hitachi-GE Nuclear Energy, Ltd.*

Track Co-Chair: Yoshihisa Nishi, *Central Research Institute of Electric Power Industry*

Track Co-Chair: Daming Liu, *China Institute of Atomic Energy*

Track Co-Chair: Lindsey Dziuba, *ILD, Inc.*

6-1 Probalistic Risk Assessment *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Yoshihiko Ishii, *Hitachi Ltd., Hitachi Research Laboratory*

Session Co-Chair: Kohei Hisamochi, *Hitachi-GE Nuclear Energy, Ltd.*

ICONE21-15242	THE HUMAN RELIABILITY ANALYSIS IN FIRE PSA USING SPAR-H METHOD	Technical Publication
ICONE21-15253	Research for crossing strait transportation accident of nuclear fuel assemblies	Technical Publication
ICONE21-16334	Application of an Integrated Deterministic-Probabilistic Safety Assessment methodology to feed and bleed sequences.	Technical Publication
ICONE21-16831	ALWR PRA Standard Development	Technical Publication
ICONE21-16918	REVISED EVENT TREE ANALYSIS FOR ASYMMETRIC REACTIVITY FAULTS FOR TORNESS POWER STATION	Technical Presentation Only

6-2 Safety and Risk Assessment Tools and Methods-I *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Daming Liu, *China Institute of Atomic Energy*

Session Co-Chair: Hongxing Yu, *Nuclear Power Institute of China*

ICONE21-15814	3-D Base Control Systems for the Seismic Protection of Power Plant Equipment and Buildings	Technical Publication
ICONE21-16171	CFD Analysis on Hydrogen Risk in Subcompartment of the Containment	Technical Publication
ICONE21-16058	THE DEVELOPMENT AND APPLICATION OF PWR SEVERE ACCIDENT SIMULATION MODEL	Technical Publication
ICONE21-16829	Influence of the sump on gas distribution in reactor containment in case of severe accident: synthesis of TOSQAN tests	Technical Publication
ICONE21-15265	Similarity criterion for earthquake simulation in structural dynamics in the study of graphite brick	Technical Presentation Only
ICONE21-16920	Advanced simulation for the assessment of nuclear safety issues at EDF: some examples	Technical Presentation Only

6-3 Source Term and Public Exposure Assessments *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Hongxing Yu, *Nuclear Power Institute of China*

Session Co-Chair: Daming Liu, *China Institute of Atomic Energy*

ICONE21-16834	Fukushima Insights	Technical Publication
ICONE21-15125	Fast on-line source term estimation of non-constant releases in nuclear accident scenario using extended Kalman filter	Technical Publication
ICONE21-15361	Sensitivity studies on the influence of shutdown control assembly banks arrangement in Rod control assembly banks withdrawal from a subcritical condition	Technical Publication
ICONE21-15670	Simulation on the Decontamination Efficiency and Factor of Radioactive Waste Water Disposed by Supersonic Wave	Technical Publication
ICONE21-16526	A Post Accident Safety Analysis Report of the Fukushima Accident - Future Direction of Evacuation: Lessons Learned -	Technical Publication

6-4 Containment Safety Issues *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Kohei Hisamochi, *Hitachi-GE Nuclear Energy, Ltd.*

Session Co-Chair: Hongxing Yu, *Nuclear Power Institute of China*

ICONE21-15965	A Review on Technologies for Hydrogen Concentration Measurement in Containment Atmosphere:	Technical Publication
ICONE21-15955	Thermal-hydraulic Simulations of Guard Containment in Depressurization Accidents of a Gas-cooled Fast Reactor	Technical Publication
ICONE21-15191	Analysis of Factors Influencing Compressive Bearing Capacity of Nuclear Containment	Technical Publication
ICONE21-16682	Management of Containment Flooding for ABWR	Technical Presentation Only
ICONE21-15147	Comprehensive Evaluation of Hydrogen Risk in AP1000 Power Plant	Technical Presentation Only

6-5 PRA General, Security and Vulnerability Assessment *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Mohammad Pourgol-Mohammad, *Quality Consultings Inc.*

Session Co-Chair: Yoshihisa Nishi, *Central Research Institute of Electric Power Industry*

ICONE21-15612	Analysis of the Transition Process from Forced Circulation to Natural Circulation of Integrated Pressurized Water Reactor Machinery	Technical Publication
ICONE21-16832	Fire PRA Insights	Technical Publication

ICONE21-15268	The Research on Core Melting Process - Oxidation	Technical Publication
ICONE21-15490	A study of long-term completely passive cooling of the AP1000 reactor	Technical Publication
ICONE21-15299	Conservatism Analysis of the LOFW Accident for PSA	Technical Publication
ICONE21-15034	Preliminary study of the application of PEFS on PCWA	Technical Publication

6-6 Experimental Studies in Nuclear Risk Analysis *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Yoshihisa Nishi, *Central Research Institute of Electric Power Industry*

Session Co-Chair: Upendra Rohatgi

ICONE21-15204	LIVE EXPERIMENTAL RESULTS OF MELT POOL BEHAVIOUR IN THE PWR LOWER HEAD WITH INSULATED UPPER LID AND EXTERNAL COOLING	Technical Publication
ICONE21-15449	Numerical Simulation of Electromagnetic Field in the Cold Crucible	Technical Publication
ICONE21-15885	Tunable diode laser absorption spectroscopy for gas temperature measurement in a large closed container	Technical Publication
ICONE21-16470	Experimental Study of Feed Water Level Decreasing Effect on VVER Steam Generator Model Operation in Condensation Mode	Technical Publication
ICONE21-16510	Experimental investigation of Counter current flow limitation in large diameter hot-leg PWR geometry	Technical Publication
ICONE21-16825	Experiment Study on Fragmentation Characteristics of LBE Drops in Subcooled Water under External Trigger	Technical Presentation Only

6-7 Reliability Analysis Supporting Risk Assessment *(Technical Session)*

Session Description:
This session presents the researches in area of reliability analysis for nuclear systems and components in support of risk analysis. the non-deterministic methods (most probabilistic) as well as deterministic reliability methods are presented.

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Mohammad Pourgol-Mohammad, *Quality Consultings Inc.*

Session Co-Chair: Daming Liu, *China Institute of Atomic Energy*

ICONE21-15258	Reliability analysis for power supply system in a typical reprocessing facility based on GO methodology	Technical Publication
ICONE21-16348	Effects of Break Location and Time Uncertainties in Small-Break LOCA Sequences with Unavailability of HPSI	Technical Publication
ICONE21-15828	A Benchmark Implementation of DFM for Reliability Modeling and Analyzing of AP1000 FWCS	Technical Publication
ICONE21-15437	Research on Fault Diagnosis Approach Based on the Signed Directed Graph Model for Nuclear Power Plant	Technical Publication
ICONE21-16369	Damage Domains calculation associated with multiple damages in a Steam Generator Tube Rupture Dynamic Event Tree	Technical Publication

6-8 Deterministic Safety Analysis *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Upendra Rohatgi

Session Co-Chair: Kohei Hisamochi, *Hitachi-GE Nuclear Energy, Ltd.*

ICONE21-16288	Reactivity Initiated Transient Analysis of Molten Salt Reactor with Uncontrolled Rod	Technical Publication
ICONE21-15641	Spent Fuel Pool Accidents in a Nordic BWR	Technical Publication
ICONE21-15374	Classification of Major Transient for Severe Accidents of Advanced Boiling Water Reactor	Technical Publication
ICONE21-15833	An investigation of Deterministic Realistic Method for LBLOCA Mass and Energy Release Evaluation for CPR1000 NPPs	Technical Publication
ICONE21-15968	the Analysis of AP1000 Depressurization During Small Break LOCA	Technical Publication
ICONE21-15459	Study of LOCA analysis method of reactor cores with tight lattice	Technical Presentation Only

6-9 Case Studies in Nuclear Safety *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Daming Liu, *China Institute of Atomic Energy*

Session Co-Chair: Yoshihiko Ishii, *Hitachi Ltd., Hitachi Research Laboratory*

ICONE21-15314	Study on the Influence of Safety Injection Rate on the Process of SBLOCA	Technical Publication
ICONE21-16007	Analysis of Liquid Sloshing in an In-containment Refueling Water Storage Tank for AP1000	Technical Publication
ICONE21-16165	Safety Analysis on Mitigation overpressure ATWS JDH in VVER-1000 NPP	Technical Publication
ICONE21-15462	Improvement on Dual Energy CT Reconstruction Method with	Technical Publication

	Reduced Data	
ICONE21-15879	Fretting Wear Behavior of NC30Fe in Distilled Water and Hydrazine Solution	Technical Publication
ICONE21-15687	Preliminary Study On The primary side Structure Design Improvement Based On CPR1000	Technical Publication

6-10 Nuclear Security and Safeguards *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Daming Liu, *China Institute of Atomic Energy*

Session Co-Chair: Mohammad Pourgol-Mohammad, *Quality Consultings Inc.*

ICONE21-15993	Design of a Low Vulnerability Electronic Fiber Optic Seal System	Technical Publication
ICONE21-15900	Simulating the Radiation of Special Nuclear Material	Technical Publication
ICONE21-15774	Characteristic Analysis of Supercritical Water-cooled Reactor during Uncontrolled CR Withdrawal at Normal Operation Transient	Technical Publication
ICONE21-15529	HEAT SINK ISSUE - A SPECIFIC PROBLEMATIC ISSUE FOR REGULATORY REVIEW OF NPP SITE CHARACTERIZATION IN WARM COUNTRIES	Technical Publication
ICONE21-15117	A Proposal On Ultimate Safety Disposal Of High Level Radioactive Wastes	Technical Publication
ICONE21-15878	Application of the Distributed Condition Monitoring Technology to Nuclear Power Plant Research	Technical Presentation Only

6-11 Safety and Risk Assessment Tools and Methods-II *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Kamran Sepanloo, *Daneshestan Institute of Higher Education*

Session Co-Chair: Upendra Rohatgi

ICONE21-16683	Safety evaluation of nuclear plant fire using CFD analysis	Technical Publication
ICONE21-15088	The Development and Verification of a Mechanistic Model of MCCI under Severe Accidents	Technical Publication
ICONE21-16398	The fault tree analysis on aunxiliary feedwzter pump room ventilation system in pressurized water reactor power	Technical Publication
ICONE21-15922	Quantitative Analysis and Evaluation of Physical Protection system in Nuclear Power Plant	Technical Presentation Only
ICONE21-15911	The research on software safety design and verification in nuclear digital protection system	Technical Presentation Only

6-12 Safety and Risk Assessment Tools and Methods-III *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

ICONE21-15553	TRACE Analysis of LOCA Transients Performed on FIX-II Facility	Technical Publication
ICONE21-15307	First-order and second-order sensitivity Studies of ARCON96 for ground release mode	Technical Publication
ICONE21-16671	Analysis of Isolation Condenser Behavior by TRACG Code	Technical Publication
ICONE21-16092	A comparison in the accuracy of mapping nuclear fallout patterns using DELFIC and several modified models based on DELFIC	Technical Publication
ICONE21-16301	Three- dimensional bond analysis of Octagonal Prestressed Concrete Slab	Technical Presentation Only
ICONE21-16305	Computer Simulation Research of Active Neutron Multiplicity Counting and Analysis	Technical Publication

6-13 Severe Accident *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

ICONE21-15970	Device for Measuring the Hydrogen Concentration in Containment During Severe Accident	Technical Publication
ICONE21-15298	Negative Impacts Analysis for Core Injection during Severe Accident Management	Technical Presentation Only
ICONE21-16708	Evaluation of plant behavior in reactor building using the severe accident analysis code (MAAP) for ABWR	Technical Presentation Only
ICONE21-16557	Analytical Study of Spent Fuel Pool Accidents with MAAP Code	Technical Presentation Only

Track 7 Codes, Standards, Licensing and Regulatory Issues Expand All Sessions In Track

Track Chair: Jinquan Yan, *Shanghai Nuclear Engineering Research & Design Inst., (SNPTC)*

Track Co-Chair: Ralph S. Hill III, *Westinghouse Electric Company*

Track Co-Chair: Lingfu Zeng, *ÅF-Industry AB*

Track Co-Chair: Clayton Smith, P.E., PMP, *Fluor Nuclear Power*

Track Co-Chair: Nik K. Popov, *McMaster University*

Track Co-Chair: Tetsuya Nagata, *Hitachi-GE Nuclear Energy, Ltd.*

Track Co-Chair: Ping Wan, *Bechtel Power Corp*

7-1 Current and Near Term Codes and Standards Developments *(Technical Session)*

Session Description:

Design Basis and Response to Severe Accident Management - post-Fukushima
New Validation and Verification Standards – ASME Codes and Standards International Working Groups
Process for Requesting Interpretations and Changes to ASME Nuclear Codes and Standards
ASME Section III, Division 5, for High Temperature Reactors
Introducing Nuclear Codes and Standards into Engineering Curricula

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Gary Sandquist, *Applied Science Professionals*

Session Co-Chair: Tetsuya Nagata, *Hitachi-GE Nuclear Energy, Ltd.*

ICONE21-15291	A Study of Rules of Material Groupings in ASME IX QW-420 by Decision Tree Method	Technical Publication
ICONE21-15842	Application Of RSE-M2010 On In-service Inspection Of Taishan EPR Project	Technical Publication
ICONE21-15064	Preliminary Research on the Elimination of OBE in the Seismic Design Requirements for NPP	Technical Publication
ICONE21-15591	Qualification Of ultrasonic Inspection For RPV Safe End Narrow Gap Welding With Visualization Of Laser Ultrasonic Detection Technology And Computerized Ultrasonic Simulation	Technical Publication
ICONE21-16438	How to Get an ASME Nuclear Certificate of Authorization	Technical Presentation Only
ICONE21-15491	Comparison of Different Acceptance Standard for Radiographic Rounded Indications in Welds	Technical Publication

7-2 International Codes and Standards Establishment and Harmonization I *(Technical Session)*

Session Description:

Adoption and Establishment of Nuclear Codes and Standards
Codes and Standards Developments to Support Multinational Design Evaluation Program (MDEP) activities for harmonization of codes and standards internationally

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Claude Faidy, *AFCEN - Consultant Engineer*

Session Co-Chair: Clayton Smith, P.E., PMP, *Fluor Nuclear Power*

ICONE21-15551	Exploration of Development of China Nuclear Power Code and Standard System	Technical Publication
ICONE21-16827	Introduction to KEPIC(Korea Electric Power Industry Code)	Technical Publication
ICONE21-15558	Standard system conception in the field of pressurized water reactor nuclear power plant commissioning	Technical Publication
ICONE21-16379	Fatigue of Stainless Steel Components-Toward Codified Rules improvements	Technical Publication
ICONE21-16788	Towards the Development of Shutdown Emergency Operating Procedures for Nuclear Power Reactors	Technical Publication
ICONE21-16810	Presentation of RCC-C, code for design and construction of PWR fuel assemblies	Technical Publication

7-3 Codes, Standards & Regulatory Topics for LWR Reactors I *(Technical Session)*

Session Description:

Pending Regulatory Changes/Updates Including Regulatory Guides
Impact of GI-199 Seismic Ground Motions
Impact of 10CFR52 on ASME Codes & Standards
Nuclear Quality Assurance
Application of QME-1-2007
Developments on Qualification of Mechanical Equipment
Nuclear Air Gas & Treatment Standards
Changes being developed for Section III Div 2 Concrete Containments
New and Updated Design Rules for Storage and Transport Containments

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Milan Brumovsky, *UJV Rez plc*

Session Co-Chair: Jinquan Yan, *Shanghai Nuclear Engineering Research & Design Inst., (SNPTC)*

ICONE21-15176	Historical Perspectives and Insights on ACRS Review of AP1000 Design Certification	Technical Publication
ICONE21-15404	Proposed Improvements of the ASME B&PV Code and Future Directions of CIWG	Technical Publication
ICONE21-15434	Suspension of Nonconforming Items for Aging Nuclear Facilities at LANL	Technical Publication
ICONE21-15439	Lesson's Learned from the Automation of the Nonconformance Reporting (NCR) Process at the Los Alamos National Laboratory (LANL)	Technical Publication

ICONE21-15488	Quality assurance for a nuclear power plant simulator by applying standards for safety-critical software	Technical Publication
ICONE21-16792	More on design evaluation of nuclear power piping subjected to time-history dynamic loads accoording to ASME BPV III	Technical Publication

7-4 Current and Near Term Codes and Standards Developments: Codes, Standards & Regulatory Topics for Gen IV and Fusion Reactor *(Technical Session)*

Session Description:

Design Basis and Response to Severe Accident Management - post-Fukushima
New Validation and Verification Standards – ASME Codes and Standards International Working Groups
Process for Requesting Interpretations and Changes to ASME Nuclear Codes and Standards
ASME Section III, Division 5, for High Temperature Reactors
Introducing Nuclear Codes and Standards into Engineering Curricula
Codes, Standards & Regulatory Topics for Gen IV and Fusion Reactor

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Lingfu Zeng, *ÅF-Industry AB*

Session Co-Chair: guoqing li, *institute for standardization of nuclear industry*

ICONE21-16718	Off-site Emergency Response of AP1000	Technical Publication
ICONE21-15476	Consideration on selection of design codes and standards for China Fusion Engineering Testing Reactor	Technical Publication
ICONE21-15412	Study and Compare on Classification and Management Requirements of Domestic and Foreign Research Reactors	Technical Publication
ICONE21-16663	Development of Guideline for Containment Structural Integrity Evaluation at Severe Accident Condition in Japan	Technical Presentation Only

7-5 International Codes and Standards Establishment and Harmonization II *(Technical Session)*

Session Description:

Adoption and Establishment of Nuclear Codes and Standards
Codes and Standards Developments to Support Multinational Design Evaluation Program (MDEP) activities for harmonization of codes and standards internationally

Session Schedule: Friday, August 02, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Myoung Sung Sohn, *Korea Electric Association*

Session Co-Chair: Philippe Malouines

ICONE21-15419	COMPARISON OF PTS GUIDES FOR RPV INTEGRITY ASSESSMENT	Technical Publication
ICONE21-16375	RCC-M and RSE-M: A set of consistent Codes for PWR design and operation	Technical Publication
ICONE21-16376	Major improvements of French Mechanical Nuclear Components Codes: RCC-M, RCC-MRx and RSE-M	Technical Publication
ICONE21-16921	French RCC-E code	Technical Presentation Only
ICONE21-15086	Codes Comparison And Analysis Of Weld Cladding Ultrasonic Testing In Nuclear Power Plants	Technical Publication
ICONE21-15463	Comparison And Investigation of Seismic Qualification Standards for Electrical Equipments in Nuclear Power Plant	Technical Presentation Only

7-6 Codes, Standards & Regulatory Topics for LWR Reactors II *(Technical Session)*

Session Description:

Pending Regulatory Changes/Updates Including Regulatory Guides
Impact of GI-199 Seismic Ground Motions
Impact of 10CFR52 on ASME Codes & Standards
Nuclear Quality Assurance
Application of QME-1-2007
Developments on Qualification of Mechanical Equipment
Nuclear Air Gas & Treatment Standards
Changes being developed for Section III Div 2 Concrete Containments
New and Updated Design Rules for Storage and Transport Containments

Session Schedule: Friday, August 02, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Ping Wan, *Bechtel Power Corp*

Session Co-Chair: Yinbiao He, *Shanghai Nuclear Engineering Research & Design Ins*

ICONE21-16372	Nuclear power plant design verification based on the analyzer	Technical Publication
ICONE21-16393	Water Use Management Challenges in Power Generation	Technical Publication
ICONE21-16121	Study on the nonradioactive environmental impact assessments for Chinese nuclear power plants	Technical Publication
ICONE21-16392	Selection Of Chemical Hazard Prediction Models For Plant Safety And Control Room Habitability Evaluations	Technical Publication
ICONE21-16101	The effect of light water reactor coolant environment on the fatigue life of nuclear componet	Technical Presentation Only

ICONE21-16441	Nuclear Supply Chain Management	Technical Presentation Only

Track 8 Fuel Cycle, Radioactive Waste Management and Decommissioning Expand All Sessions In Track

Track Chair: Dongsheng Li, *China Nuclear Power Technology Research Institute*

Track Co-Chair: Min Xiao, *China Nuclear Power Research Institute/CGNPC*

Track Co-Chair: Patricia D. Paviet-Hartmann, *Idaho National Laboratory*

Track Co-Chair: Anthony Hechanova, *Abu Dhabi Polytechnic*

Track Co-Chair: Yoshitsugu Morishita, *Japan Atomic Energy Agency*

Track Co-Chair: Yuichi Niibori, *Tohoku University*

Track Co-Chair: Li ShiLei, *China Nuclear Power Research and Technology Institute*

8-1 Fuel Design + Fuel Reprocessing + Waste Management *(Technical Session)*

Session Description:
Fuel design, fuel reliability issues and experiences. Fuel Reprocessing. Waste Management.

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Li ShiLei, *China Nuclear Power Research and Technology Institute*

ICONE21-15025	OPPORTUNITY AND CHALLENGE OF MOX FUEL APPLICATION IN CHINA	Technical Publication
ICONE21-15904	Study On Microwave Curing of Radioactive Waste	Technical Publication
ICONE21-15301	The Neutronic Transmutation Characteristics of Tc-99 in PWR	Technical Publication
ICONE21-15452	Selective Adsorption Properties and Stable Solidification of Cs by Insoluble Ferrocyanide Loaded Zeolites	Technical Publication
ICONE21-16816	Ultrasonic examination of Noble Metal Precipitate detection in Glass Melter	Technical Publication
ICONE21-16843	Stripping of transurnium elements with TMDGA in TRPO process	Technical Publication

8-2 Fuel Cycle Development and Core Design *(Technical Session)*

Session Description:
Advanced fuel cycles and associated fuel forms, core physics, advances in computational physics, engineering analysis, fuel cycle economics and burn-up optimization, resources futures, reload analysis and optimization techniques.

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Min Xiao, *China Nuclear Power Research Institute/CGNPC*

Session Co-Chair: Dongsheng Li, *China Nuclear Power Technology Research Institute*

ICONE21-15190	Pyroprocess Facility Design for a Nuclear Fuel Cycle	Technical Publication
ICONE21-15588	Preliminary Fuel Cycle Analysis of a Fusion-Driven Subcritical Reactor	Technical Publication
ICONE21-16460	Preliminary Study on the Feasibility of Utilizing the Thermal Fissile Breeding Capability of the Th-U Fuel Cycle in HTR-PM	Technical Publication
ICONE21-16581	Method for Joint Configuration of Nuclear Power Plant Fuel Elements/Assemblies	Technical Publication
ICONE21-16659	Natural Uranium Equivalent (NUE) Fuel; Full Core Use of Recycled Uranium and Depleted Uranium in Candu Reactors	Technical Publication
ICONE21-16662	Advanced Fuel CANDU Reactor (AFCR) Core Physics with High-Burn up Recycled Uranium and Uranium-Thorium Fuel	Technical Publication
ICONE21-15596	Preliminary Fuel Cycle Analysis of an Accelerator Driven Subcritical System CLEAR-III	Technical Presentation Only

8-3 Fuel Reprocessing and Materials Extraction *(Technical Session)*

Session Description:
Proliferation resistance issues, enrichment and processing, fuel fabrication and manufacturing, MOX fuel, fuel blending from HEU, thorium and alternative fuel cycles, reprocessing, onsite storage, repositories, transportation of spent fuel, fuel cask design.

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Patricia D. Paviet-Hartmann, *Idaho National Laboratory*

ICONE21-15647	Optimization Study on LLFPs Transmutation in PWRs	Technical Publication
ICONE21-16923	Sustainable Fuel Cycle Solutions	Technical Presentation Only
ICONE21-15343	Study on the Influencing Factors of Directly Extracting Uranium from Uranium Oxides Powder by Using Supercritical CO2	Technical Presentation Only
ICONE21-16812	AREVA LONG STANDING EXPERIENCE WITH HIGH PERFORMANCE M5™ CLADDING ALLOY	Technical Presentation Only
ICONE21-16625	Robotic Tasks for the Decommissioning	Technical Presentation Only
ICONE21-16669	Basic Data Acquisitions for Development of Remote Decontamination Techniques	Technical Presentation Only

8-4 Plant Decommissioning and Transport of Nuclear Fuel *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Yoshitsugu Morishita, *Japan Atomic Energy Agency*

ICONE21-15771	Research on High & Low Pressure Filter Cartridge Replacement and Transport Process and Related Operating Equipments Design for AP1000 Nuclear Power Project	Technical Publication
ICONE21-16161	Current Status on Recovery Works from the Accident at Fukushima Daiichi Nuclear Power Station	Technical Publication
ICONE21-16423	Laser Decontamination of Paint Coated Concrete in Nuclear Plants	Technical Publication
ICONE21-16721	Demonstration test on concrete with epoxy resin coating using ultra-high pressure water jet decontamination technology	Technical Publication
ICONE21-16295	CALCULATION OF EXTERNAL RADIATION OF DRY SPENT NUCLEAR FUEL STORAGE CONTAINER	Technical Publication
ICONE21-16003	Study on security requirements for geological disposal of high level radioactive wastes	Technical Presentation Only

8-5 Waste Management (I) *(Technical Session)*

Session Description:
Waste transmutation, low level waste disposal, waste minimization, treatment technologies and equipment for processing ventilation and gaseous wastes, transportation of low level waste, monitoring and security issues and technologies, remediation of defense-related sites and facilities, waste disposal/storage facilities, waste processing and treatment.

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: yuichi Niibori

ICONE21-15123	Preparation of a Novel Macroporous Silica-based 6,6?-Bis(5,6-diethyl -1,2,4-trazin-3-yl)-2,2?-bipyridine and its Investigation in the Separation of Trivalent Actinides from Lanthanides	Technical Publication
ICONE21-15126	TOWARDS APPLYING RFID TECHNOLOGY FOR THE LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT OF NUCLEAR DECOMMISSIONING PROJECT	Technical Publication
ICONE21-15165	Hollow-Fiber Membrane Based Micro-Filtration Technology for the Treatment of Low Level Nuclear Laundry Waste and Floor Drain Water	Technical Publication
ICONE21-15179	Radioactive waste management approaches for developed countries	Technical Publication
ICONE21-15773	Improvement of the Flue Gas Cleaning System in Radioactive Waste Incineration Facilities	Technical Publication
ICONE21-15787	Low-Level Liquid Waste Treatment System Technical Design in China	Technical Publication
ICONE21-15508	Summarization and Suggestions for Radioactive Waste Minimization Practices in Decommissioning of Nuclear Facilities	Technical Presentation Only

8-6 Waste Management (II) *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

ICONE21-15941	JiNan MNSR Decommissioning	Technical Publication
ICONE21-16424	Analysis on the Characteristics of Disposal Waste Arising From Various Partitioning and Conditioning Options	Technical Publication
ICONE21-16454	Close-out of the Daxin open pit uranium and associated waste rock piles in China	Technical Publication
ICONE21-15671	Dimensional Analysis for The Experiment of PM2.5 Thermophoretic Deposition in the narrow rectangular channel	Technical Publication
ICONE21-16524	Fluorescence Emission Behavior of Eu(III) Sorbed on Calcium Silicate Hydrates Formed with No Dried Process	Technical Publication
ICONE21-16724	Bounding Analysis of Uplift and Erosion Scenario for an HLW repository	Technical Publication

Track 9 Thermal Hydraulics Expand All Sessions In Track

Track Chair: Guanghui Su, *Xi'an Jiaotong University*

Track Co-Chair: Asif Arastu, *Bechtel Power Corporation*

Track Co-Chair: Richard Schultz

Track Co-Chair: Glenn Harvel, *University of Ontario Institute of Technology*

Track Co-Chair: Mohammad Pourgol-Mohammad, *Quality Consultings Inc.*

Track Co-Chair: Michele Andreani, *Paul Scherrer Institut (PSI)*

Track Co-Chair: Chul-Hwa SONG, *KAERI*

Track Co-Chair: Genevieve Geffraye

Track Co-Chair: Kazuyuki Takase, *Japan Atomic Energy Agency*

Track Co-Chair: Hiroyasu Ohtake, *Kogakuin*

Track Co-Chair: Michitsugu Mori, *Hokkaido University*

Track Co-Chair: Yasushi Yamamoto, *Toshiba Corporation Power Systems Company*

Track Co-Chair: Shinichi Morooka, *Waseda University*

Track Co-Chair: Kaiwen Du, *China Institute of Atomic Energy*

Track Co-Chair: Moses YEUNG, *Worldwide Engineering CGNPC AREVA Nuclear (WECAN)*
Track Co-Chair: Baowen Yang, *CARP Associates USA*

9-1 Severe Accident Analysis; Methods and Applications *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**
Session Sponsors:
Session Chair: Yehong Liao, *CNPRI*
Session Co-Chair: Xuewu Cao, *Shanghai Jiao Tong University*

ICONE21-15152	The Severe Accident Analysis of CPR1000 Based on MELCOR Code	Technical Publication
ICONE21-15569	Development of Prediction Technology of Two-Phase Flow Dynamics under Earthquake Acceleration-(8) Measurement of velocity profile around bubble under structure vibration-	Technical Publication
ICONE21-15577	Development of Prediction Technology of Two-Phase Flow Dynamics under Earthquake Acceleration -(9) Effect of structure vibration on rising bubble behavior-	Technical Publication
ICONE21-16599	Research of Seawater Effects on Thermal-Hydraulic Behavior at Severe Accident (1) Research Plan and Results of Preliminary Experiments	Technical Publication
ICONE21-16604	Development of Numerical Simulation Method for Relocation Behavior of Molten Debris in Nuclear Reactors (1) Preliminary Analysis of Relocation of Molten Debris to Lower Plenum	Technical Publication
ICONE21-16895	Countermeasures Derived from the Lessons of the Fukushima Daiichi Nuclear Power Plant Accident	Technical Publication

9-2 Best Estimate Plus Uncertainty Analysis (1) *(Technical Session)*

Session Description:
This session presents the research in area of best estimate thermal-hydraulics analysis along with the techniques for uncertainty analysis. Uncertainty analysis and modeling along with uncertainty propagation methods are presented.

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**
Session Sponsors:
Session Chair: Mohammad Pourgol-Mohammad, *Quality Consultings Inc.*
Session Co-Chair: Haochun Zhang, *Harbin Institute of Technology*

ICONE21-16811	RELAP5 Code Study of ROSA/LSTF Experiment on a PWR Station Blackout (TMLB') Transient	Technical Publication
ICONE21-15816	FLOW-INDUCED GRID-TO-ROD FRETTING TEST AND SIMULATION FOR NFI PWR FUEL ASSEMBLY	Technical Publication
ICONE21-16480	LBLOCA Analysis of CPR1000 NPP with advanced accumulator	Technical Publication
ICONE21-16503	Safety Analysis of CPR1000 Spent Fuel Pool in Case of Loss of Heat Sink	Technical Publication
ICONE21-16448	Assessment of Choking Flow Models in RELAP5 for Flashing Flow Thorough Small Cracks	Technical Publication
ICONE21-16513	PRELIMINARY ASSESSMENT OF TRACE CODE AGAINST CRITICAL HEAT FLUX EXPERIMENT	Technical Presentation Only

9-3 Experimental Studies in Thermal-Hydraulics-I (1) *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**
Session Sponsors:
Session Chair: Dr. Peipei Chen, *State Nuclear Power Technology Corporation*
Session Co-Chair: Baowen Yang, *CARP Associates USA*

ICONE21-16020	Investigation of thermophysical and nuclear properties of prospective coolants for generation-IV nuclear reactors	Technical Publication
ICONE21-16584	The characteristics of heat transfer in a rectangular channel under Rolling Motion	Technical Publication
ICONE21-16579	Experimental Investigation of Wall Nucleate Boiling Models in Narrow Channel	Technical Publication
ICONE21-16319	Research on Bubble Growth and Frequency at Higher System Pressure in Narrow Rectangular Channel	Technical Publication
ICONE21-16279	Estimation of void fraction in dispersed bubbly flow with a constant electric current method	Technical Publication
ICONE21-16270	Bubble Generation from an Orifice in Upward and Downward Liquid Flow	Technical Publication

9-4 Codes for Reactor Safety (1) *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**
Session Sponsors:
Session Chair: Xiangang Fu, *CNPRI*
Session Co-Chair: Norio Sakai, *Toshiba Corporation*

ICONE21-15035	Transient and Safety Analysis Code for TP-1 Sodium Cooled TWR	Technical Publication
ICONE21-15464	THE PRINCIPLE AND PRELIMINARY VALIDATION OF A NEW SUBCHANNEL CODE	Technical Publication
ICONE21-16673	Investigation of Turbine Model based on RELAP5	Technical Publication

ICONE21-16844	THE DEVELOPMENT AND ASSESSMENT OF A NEW CHF CORRELATION FOR PWR FUEL ASSEMBLIES	Technical Publication
ICONE21-15881	Assessment of the GRS System Code ATHLET against Intermediate Break Tests	Technical Presentation Only
ICONE21-15595	RECENT KNOWLEDGE FROM AN EXPERIMENTAL INVESTIGATION ON SELF-LEVELING BEHAVIOR OF DEBRIS BED	Technical Publication

9-5 Nuclear System Numeric Model Development and Analyses (1) *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Mie Azuma, *Westinghouse Electric LLC*

Session Co-Chair: Asif Arastu, *Bechtel Power Corporation*

ICONE21-15639	VERIFICATION OF ACCUMULATOR MODEL IN COSINE (DRAFT)	Technical Publication
ICONE21-15397	Investigations on Multi-objective Optimal Design of a Two Flow Condenser	Technical Publication
ICONE21-15451	Numerical Modeling of Stationary, Dynamic Pebbles, and Gas Flows in a Pebble Bed Reactor	Technical Publication
ICONE21-15841	Analysis of Automatic Depressurization System Stage 4 Valves Inadvertent Actuation Scenario for Passive Power Plant	Technical Publication
ICONE21-15897	CFD Analysis of Thermal Stratification of China Lead Alloy Cooled Research Reactor (CLEAR-I)	Technical Publication
ICONE21-15901	Evaluation Study of NPPs Design Improvement Based on SGTR Calculation Result	Technical Publication

9-6 Loss-of-Coolant-Accident Analyses *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Chong Zhou, *AREVA NP*

Session Co-Chair: Moses YEUNG, *Worldwide Engineering CGNPC AREVA Nuclear (WECAN)*

ICONE21-16218	Investigation of conditions for zinc particle release and transport in the reactor core	Technical Publication
ICONE21-15635	ATHLET Simulation of OECD/NEA ROSA-2 Test-2 about Cold Leg Intermediate-Break LOCA	Technical Publication
ICONE21-16808	A Preliminary 3D Steam Flow Analysis for CET Behavior during LSTF SBLOCA Experiment using FLUENT code	Technical Publication
ICONE21-15931	The ACC Configuration Sensitivity Study For AP1000 Large Break LOCA	Technical Publication
ICONE21-15646	ATHLET Analysis of OECD/NEA ROSA-2 Test 7 Experiments on Intermediate-break LOCA at cold leg	Technical Publication
ICONE21-15012	Coupled Neutronics/Thermal-hydraulics for analysis of Molten Salt Reactor	Technical Publication

9-7 Containment Thermal-Hydraulics *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Richard Schultz

Session Co-Chair: Glenn Harvel, *University of Ontario Institute of Technology*

ICONE21-15084	Algorithm of Water Film Identification in Passive Containment Water Distribution Test	Technical Publication
ICONE21-15679	A simplified model of Passive Containment Cooling System in a CFD code	Technical Publication
ICONE21-15946	Numerical analysis of containment response under accident conditions	Technical Publication
ICONE21-15960	Study On the Behaviors of a Conceptual Passive Containment Cooling System	Technical Publication
ICONE21-15102	Numerical Simulation on Transient Hydrogen Distribution in the Advanced PWR Containment	Technical Publication
ICONE21-15208	Scaling Analysis Of Mixing And Thermal Stratification In Passive Containment	Technical Publication

9-8 Multi-Phase Flow Phenomena (1) *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Kazuyuki Takase, *Japan Atomic Energy Agency*

Session Co-Chair: Tao Zhou, *North China Electric Power University*

ICONE21-15231	The Influence Of Non-uniform Heating On Two-phase Flow Instability In Parallel Channels	Technical Publication
ICONE21-16903	Nanofluid Boiling Heat Transfer and Critical Heat Flux Enhancement- Mechanism to be Revealed	Technical Publication
ICONE21-15586	Simulation of Oscillating Free Interface Behavior by Using OpenFOAM	Technical Publication
ICONE21-16063	Study on Mixing Process of Two Component Gases in A Stable	Technical Publication

	Stratified Fluid Layer - Effectiveness on Natural Convection -	
ICONE21-16200	Bubble Growth during Subcooled Forced Convective Flow Boiling	Technical Publication
ICONE21-15100	Improvements of interfacial drag models for the rectangular narrow channel reflood simulation based on the RELAP5/MOD3.2	Technical Presentation Only

9-9 Scaling Analysis *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Chul-Hwa SONG, *KAERI*

Session Co-Chair: Genevieve Geffraye

ICONE21-15158	Scaling assessment in the integral effect tests (2)- open system depressurization	Technical Publication
ICONE21-15447	Development of Prediction Technology of Two-Phase Flow Dynamics under Earthquake Acceleration (7) Measurement of Velocity Profile around Bubble under Flow Rate Fluctuation	Technical Publication
ICONE21-15157	Scaling assessment in the integral effect tests (1)- closed loop natural circulation	Technical Publication
ICONE21-15228	A Scaling Analysis of a CANDU-6 Moderator Tank Scaled-Down Test Facility	Technical Publication
ICONE21-15139	Studies on Source Effect in Experimental Design for Passive Cooling in Large Cavities under LOCA conditions	Technical Publication
ICONE21-15001	2-Critical nuclear infrastructure vulnerability	Technical Presentation Only

9-10 Separate Effect Test Studies (1) *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Chul-Hwa SONG, *KAERI*

Session Co-Chair: Hiroyasu Ohtake, *Kogakuin*

ICONE21-15029	Transient Study on Sodium Heat Pipe in Passive Residual Heat Removal System of Molten Salt Reactor	Technical Publication
ICONE21-16442	Transfer to Water at Supercritical Parameters in Vertical Tubes, Annular Channels, 3- and 7-Rod Bundles	Technical Publication
ICONE21-16459	ITER CC Conductor Pressure Drop Test and Result Analysis	Technical Publication
ICONE21-16476	Theoretical Research on Flow Instability in Parallel Channels under Motion Conditions	Technical Publication
ICONE21-15686	The Research of Flow Instability in Vertical Parallel Natural Circulation Channels Based on Relap5	Technical Publication
ICONE21-16131	Study of Pulsating Laminar Flow Field and Resistance characteristics in Rectangular Channel	Technical Publication

9-11 Experimental Studies in Thermal-Hydraulics-II (1) *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Dr. Reza Zarghami

Session Co-Chair: Michitsugu Mori, *Hokkaido University*

ICONE21-16160	Study on Controlling Condensation Heat Transfer by Using Functionalized Heat Transfer Surface	Technical Publication
ICONE21-15171	COSINE VALIDATION EXPERIMENT PLAN-1st PHASE	Technical Publication
ICONE21-15620	Measurement of Velocity and Temperature Profiles in the Scaled-down CANDU-6 Moderator Tank	Technical Publication
ICONE21-16749	RELAP5-3D ASSESSMENT USING A QUALIFIED EXPERIMENTAL DATABASE	Technical Publication
ICONE21-16100	Experimental studies on heat transfer to supercritical water flowing in circular tubes	Technical Publication
ICONE21-16746	Validation of the system code APROS for fast transients	Technical Publication

9-12 Case Studies in Nuclear Thermal-Hydraulics *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Jianqiang Shan, *Xi'an Jiaotong University*

Session Co-Chair: Kaiwen Du, *China Institute of Atomic Energy*

ICONE21-16814	Measurement of Three-Dimensional Time-Averaged Void Fraction Distribution in Rod Bundle in Air-Water System by X-ray CT Technique	Technical Publication
ICONE21-16835	A research on eliminating the deposited water after water-ingress accident in HTR	Technical Publication
ICONE21-16265	Analysis of the Velocity Field of Thermal Stratification in Pipes	Technical Publication
ICONE21-15188	Thermal – Hydraulic Performance Analysis for AP1000 Passive Containment Cooling System	Technical Publication
ICONE21-15172	Experimental Validation for Specific Thermal-Hydraulic Phenomena	Technical Publication

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9-13 Natural Circulation Thermal-Hydraulics *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Moses YEUNG, *Worldwide Engineering CGNPC AREVA Nuclear (WECAN)*

Session Co-Chair: Daogang LU, *North China Electric Power University*

ICONE21-15519	Research of Parameters' Influence to the Reverse Flow of UTSG under Natural Circulation	Technical Publication
ICONE21-15576	Numerical Simulation Study on supercritical natural circulation flow and heat transfer in narrow rectangular channels	Technical Publication
ICONE21-15315	Experimental Research of Flow Instability Initial Conditions in a Natural Circulation System With Subcooled Boiling	Technical Publication
ICONE21-15107	Investigation of steady-state characteristics of a natural circulation loop	Technical Publication
ICONE21-15632	Analysis of flow stability boundaries of ERVC system	Technical Publication

9-14 Best Estimate Plus Uncertainty Analysis (2) *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Haochun Zhang, *Harbin Institute of Technology*

Session Co-Chair: Junli Gou, *Xi'an Jiaotong University*

ICONE21-16354	AP1000 3D ROD EJECTION REACTOR CORE THERMAL ANALYSES	Technical Publication
ICONE21-16276	Flow channel blockage analysis for Upgraded Apsara Reactor	Technical Publication
ICONE21-15674	Sobol' sensitivity analysis using a neural network model of a LB-LOCA in the ZION nuclear power plant with CATHARE-2 V2.5 code	Technical Publication
ICONE21-16434	VERIFICATION OF NON-LINEAR PROPER ORTHOGONAL DECOMPOSITION REDUCED ORDER MODELING FOR BWR FUEL ASSEMBLIES	Technical Publication
ICONE21-16435	Numerical analysis on heat transfer-characteristics of supercritical pressure water in a heated tube based on three dimensional two-fluid model	Technical Publication
ICONE21-16264	AP1000 ATWS Sensitivity Studies By LOFTRAN And RELAP5	Technical Presentation Only

9-15 Experimental Studies in Thermal-Hydraulics-I (2) *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Wenxi Tian, *XI'AN JIAOTONG UNIVERSITY*

Session Co-Chair: Hiroyasu Ohtake, *Kogakuin*

ICONE21-16174	Photographic Study of Subcooled Pool Boiling Critical Heat Flux on Horizontal Cylinders with Commercial and Rough Surfaces	Technical Publication
ICONE21-16246	Experimental Study on the Fluctuation Characteristics of Pressure Drop and Mass Flux of the Two-Phase Flow in Narrow Channel	Technical Publication
ICONE21-16247	Experimental Modeling of Light Phase Effect on Heat Transfer in Rod Bundle	Technical Publication
ICONE21-15608	APR+ CORE FLOW AND PRESSURE DISTRIBUTIONS UNDER THE 4 PUMP UNBALANCED FLOW CONDITION	Technical Publication
ICONE21-15710	Pressure Drop Characteristics of Flow Boiling in Narrow Rectangular Channel	Technical Publication
ICONE21-15433	EXPERIMENTAL INVESTIGATION INTO FORCED-TO-NATURAL FLOW TRANSITION IN HORIZONTAL TUBE WITH NANOFLUIDS	Technical Publication

9-16 Experimental Studies in Thermal-Hydraulics-I (3) *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Baowen Yang, *CARP Associates USA*

Session Co-Chair: Jianqiang Shan, *Xi'an Jiaotong University*

ICONE21-15495	An experimental investigation on molten behaviors for a new type core catcher	Technical Publication
ICONE21-15952	An Experimental Study on Liquid Film Dynamics and Interfacial Wave of Air-Water Two-Phase Flow in a Horizontal Channel	Technical Publication
ICONE21-15756	Sudy on the characteristics in the liquid slug of rising slug flow in narrow rectangular channel	Technical Publication
ICONE21-15888	TIGHTNESS ANALYSIS OF PRESSURED EQUIPMENT IN EXPERIMENTAL TEST ON STEAM CONDENSATION ON THE COLD SURFACE	Technical Publication
ICONE21-16494	Experimental investigation of steam bubble condensation in flowing subcooled water in vertical large diameter geometry under atmospheric pressure	Technical Publication
ICONE21-16504	Experimental Observation of the General Trends of the Steady State and Instability Behavior of Supercritical Water Natural	Technical Publication

Circulation

9-17 Codes for Reactor Safety (2) *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Zhiwei Zhou, *INET of Tsinghua University*

Session Co-Chair: Dalin Zhang, *Xi'an jiaotong University*

ICONE21-15289	ASSERT-PV 3.2: Improved Subchannel Thermalhydraulics Code for CANDU Bundles	Technical Publication
ICONE21-15106	Coupled Neutron Dynamic and Thermal Hydraulic Models of the HTR Simulator	Technical Publication
ICONE21-15336	Progress in the large-scale simulation of convective boiling heat transfer under turbulent conditions using TransAT	Technical Publication
ICONE21-15352	Assessment of Subchannel Code ASSERT-PV for Flow Distribution Predictions	Technical Publication
ICONE21-15327	Thermal-Hydraulic Evaluation of an LBE Cooled 19 Pin Bundle in the Frame of TRACE Validation	Technical Publication
ICONE21-16349	MAGNETIC FIELD EFFECT ON THE NATURAL CONVECTION OF A LIQUID METAL IN A HORIZONTAL CYLINDER	Technical Publication

9-18 Codes for Reactor Safety (3) *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Tomohisa KURITA, *TOSHIBA*

Session Co-Chair: Chang-Lung Hsieh, *National Tsing Hua University*

ICONE21-16125	Relap5 Core Modeling Study For Level 1 PRA Thermal-Hydraulics Analysis	Technical Publication
ICONE21-15457	Temperature Calculations for HP-STMCs SRPS during a Heatpipe Failure Accident	Technical Publication
ICONE21-15544	The ATWS Analysis of One Control Rod Withdrawal Out of the HTR-10GT Core Accompany with the Loss of System Pressure	Technical Publication
ICONE21-15987	Validation of an Hybrid Surface Renewal Theory based HTC model for the Simulation of Condensation Induced Water Hammer	Technical Publication
ICONE21-15548	Validation of TRACE Code against ROSA/LSTF Test for SBLOCA of Pressure Vessel Upper-Head Small Break	Technical Publication
ICONE21-16611	Numerical Computation of One-dimensional Unsteady Two-phase Flow using HEM Model and IAPWS IF-97 Equations of State	Technical Publication

9-19 Codes for Reactor Safety (4) *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Michitsugu Mori, *Hokkaido University*

Session Co-Chair: Dalin Zhang, *Xi'an jiaotong University*

ICONE21-16540	Effects of the RHR Return Line Elevation to the Suppression Pool Temperature of the Lungmen ABWR Containment	Technical Publication
ICONE21-16541	Loss of Cooling Thermal Analysis for the Spent Fuel Pool of the Chinshan Nuclear Power Plant	Technical Publication
ICONE21-16570	Uncertainty Propagation in Complex Codes Calculations	Technical Publication
ICONE21-16575	Improving Thermal-hydraulic Calculation Modules of THERMIX Code Based on LU Decomposition	Technical Publication
ICONE21-16591	Thermal hydraulice characteristics simulation of CPR1000 using CFD method	Technical Publication
ICONE21-16616	Heat Transfer Correlation For Boiling Flows In Vertical Rectangular Narrow Channel	Technical Publication

9-20 Nuclear System Numeric Model Development and Analyses (2) *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Yassin Hassan, *Texas A&M university*

Session Co-Chair: Daogang LU, *North China Electric Power University*

ICONE21-15053	Numerical Analysis of the Residual Heat Removal for the Spent Fuel Storage Tank of HTR-10	Technical Publication
ICONE21-15296	Numerical Prediction of the Outcomes of Binary-droplet Collision in Steam-Water Separator	Technical Publication
ICONE21-15284	CFD Simulation of 5×5 Rod Bundles with Split Type Spacers	Technical Publication
ICONE21-16107	Theoretical and Experimental Study on Natural Circulation Relevant to Nuclear Heating Reactor	Technical Publication
ICONE21-15077	Numerical Simulation of the Turbulent Mixing in Tight Lattice	Technical Publication
ICONE21-15119	EXPERIMENTAL INVESTIGATION FOR REWETTING BEHAVIOR OF HOT SURFACE DURING JET IMPINGEMENT COOLING	Technical Publication

9-21 Nuclear System Numeric Model Development and Analyses (3) *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Xu Cheng, *Shanghai Jiao Tong University*

Session Co-Chair: Jianjun Xiao, *Karlsruhe Institute of Technology*

ICONE21-16535	Numerical Simulation of Accident Scenario In HTGR (Pebble Bed Reactor) Using COMSOL Code	Technical Publication
ICONE21-16568	Preliminary Design and Analysis of a Lead-Bismuth Natural Circulation Loop	Technical Publication
ICONE21-16778	Review of the State of the Art on Startup Transients in Natural Circulation Boiling Water Systems	Technical Publication
ICONE21-16880	A Correlation of Heat Transfer Non-uniformity in Rod Bundle and its Application to Sub-channel Code	Technical Publication
ICONE21-15524	A New Model towards Thermal Mixing and Stratification in Passive Containment	Technical Publication
ICONE21-16902	Design of Fluidic Diode for a High-Temperature DRACS Test Facility	Technical Publication

9-22 Multi-Phase Flow Phenomena (2) *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Kuo Tian, *Karlsruhe Insitute of Technology*

Session Co-Chair: Zhanjie Xu, *Karlsruhe Institute of Technology*

ICONE21-15259	Development of Prediction Technology of Two-Phase Flow Dynamics under Earthquake Acceleration (10) Numerical Prediction of Velocity Profile around Bubble under Accelerating Condition	Technical Publication
ICONE21-15182	The mechanism of two phase flow instability enhanced the interface mass transfer	Technical Publication
ICONE21-15199	A New Method to Weaken Thermal Stratification Phenomena in Pipes of Nuclear Power Plant	Technical Publication
ICONE21-15015	Bypass Flows in Control Rod Channels of the HTR-PM	Technical Publication
ICONE21-15105	Sub-channel Analysis of SCWR Assembly with Double-row Rods	Technical Publication
ICONE21-15282	Thermal and Stability Considerations for a Supercritical Water-Cooled Fast Reactor during Pressurization Phase of Plant Sliding Pressure Startup	Technical Publication

9-23 Separate Effect Test Studies (2) *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Randall Gauntt, *Sandia National Laboratories*

Session Co-Chair: Yuki Ishiwatari, *The University of Tokyo*

ICONE21-15122	Numerical Sensitivity Studies of Heat Transfer from Nuclear Fuel Rod at Low Steam Flow Rates	Technical Publication
ICONE21-15255	ANALYSIS OF MHD PRESSURE DROP IN PACKED PEBBLE BED-BASED BLANKET FOR FDS	Technical Publication
ICONE21-15280	THE Study of QINSHAN III PHWR Thermosyphoning Capability	Technical Publication
ICONE21-15323	Transient Critical Heat Fluxes of Subcooled Water Flow Boiling in a SUS304-Circular Tube with Various Twisted-Tape Inserts (Influence of Twist Ratio)	Technical Publication
ICONE21-15164	The graphite particle movement in fuel handing system bend pipe in the High Temperature Gas-cooled Reactor	Technical Publication
ICONE21-16268	Condensation heat transfer characterstic in a vertical tube under natural crculation condition	Technical Publication

9-24 Experimental Studies in Thermal-Hydraulics-II (2) *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Annalisa Manera

Session Co-Chair: Kune Suh

ICONE21-15625	Experimental Investigation on Distribution of Local Void Fraction of Vertical Bubbly Flow in a Rectangular Channel	Technical Publication
ICONE21-15718	EXPERIMENTAL INVESTIGATION ON BUBBLY FLOW IN RECTANGULAR CHANNEL UNDER ROLLING CONDITION	Technical Publication
ICONE21-15592	Analysis of flowing characteristics in IRWST under pressure relief condition	Technical Publication
ICONE21-16115	EXPERIMENTAL RESEARCH OF SUPERCRITICAL WATER HEAT TRANSFER IN DIFFERENT CHANNELS	Technical Publication
ICONE21-16562	Experimental and Prediction Methods Investigation of Two-phase Frictional Pressure Drop In Rectangular Narrow Channel	Technical Publication
ICONE21-16715	Development of experimental setup of High Temperature Helium Loop and preparation for In-Pile Operation	Technical Publication

Track 10 Computational Fluid Dynamics (CFD) and Coupled Codes Expand All Sessions In Track

Track Chair: Shengyi Si, *Shanghai Nuclear Engineering Research & Design Institute*

Track Co-Chair: Liangzhi Cao, *Xi'an Jiaotong University*
Track Co-Chair: Shripad Revankar, *Purdue University, POSTECH*
Track Co-Chair: Yassin Hassan, *Texas A&M university*
Track Co-Chair: Yacine Addad, *Khalifa University*
Track Co-Chair: Ludwig Haber
Track Co-Chair: Hiroyuki Ohshima, *Japan Atomic Energy Agency*
Track Co-Chair: Akira Yamaguchi

10-1 CFD Codes Application I *(Technical Session)*

Session Description:
Papers related to CFD methods, thermalhydraulics codes, couple CFD and codes, application of CFD and codes to nuclear power plant fluid and heat transfer and safety

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Suizheng Qiu, *Xi'an jiaotong University*

ICONE21-16113	Three-dimension thermal hydraulic analysis of stationary Target Plate for Hefei Intensified Neutron Generator (HINEG)	Technical Publication
ICONE21-16158	NUMERICAL SIMULATION OF SUPERCRITICAL WATER HEAT TRANSFER IN THE VERTICALLY HEATED TUBE	Technical Publication
ICONE21-16768	Effects of Bypass Flow on the LOFA Transient Computations in a VHTR	Technical Publication
ICONE21-15917	CFD Analysis of Circumferential Temperature Distribution of Fuel Cladding Surface of China Lead-Alloy Cooled Research Reactor (CLEAR-I)	Technical Publication
ICONE21-16267	Prediction of hydraulic characteristic of the outlet plenum of Upgraded Apsara reactor	Technical Publication

10-2 CFD analysis on Fuel Assembly, Component or System of Nuclear Power Plant *(Technical Session)*

Session Description:
Paper related to CFD analysis on Fuel Assembly, Component or System of Nuclear Power Plant;

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Yixiang Liao, *Helmholtz-Zentrum Dresden-Rossendorf*

Session Co-Chair: Eric Lillberg, *Westinghouse Electric Sweden AB*

ICONE21-15832	Numerical Investigation of Flow and Heat Transfer Characteristics in Wire-Wrap Tight Lattice 19-Rod Bundle	Technical Publication
ICONE21-16290	CFD Simulation of Flashing Boiling Flow in the Containment Cooling Condensers (CCC) System of KERENA™ reactor	Technical Publication
ICONE21-16341	Numerical Simulation On 3D Flow In The Fuel Transfer Canal And Local Flow Field Analysis	Technical Publication
ICONE21-16632	Predicting thermal mixing and fatigue inside control rod guide tubes using OpenFOAM	Technical Publication
ICONE21-15778	The Research of the Fluid-Solid Interaction of the Passive Containment Cooling Tank and Shield Building Structure	Technical Publication

10-3 Multi-discipline analysis with coupled Thermal-hydraulics, Mechanics, Neutronics, or Fuel Performance code(s) *(Technical Session)*

Session Description:
Paper related to multi-discipline analysis with coupled Thermal-hydraulics, Mechanics, Neutronics, or Fuel Performance code(s)

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Liangzhi Cao, *Xi'an Jiaotong University*

Session Co-Chair: Lin Tian, *Shanghai Nuclear Engineering Research and Design Institute*

ICONE21-16692	Multiphysics Analysis System for Tube Failure Accident in Steam Generator of Sodium-cooled Fast Reactor	Technical Publication
ICONE21-16687	The Modelling and Coupling Methodology of ANSYS CFX Using Porous Media for PB-AHTR	Technical Publication
ICONE21-16159	Full implicit integrate solution to the coupled neutron/thermal-hydraulic	Technical Publication
ICONE21-15007	ANALYSIS OF MAIN STEAM LINE BREAK ACCIDENT AT HOT SHUTDOWN STATE USING A COUPLED METHOD	Technical Publication
ICONE21-16269	Simulation of MHD effects and thermal issues in the DCLL blanket for ITER	Technical Publication
ICONE21-16221	Local thermal hydraulic phenomena study for pipe section linked to primary coolant loop	Technical Presentation Only

10-4 CFD Codes Application II *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Yujun Guo, *Canadian Nuclear Safety Commission*

ICONE21-15014	A Study of GOTHIC 7.2 Code Application to AP1000 Containment	Technical Publication

	Response	
ICONE21-15226	ANALYSIS OF THE THERMAL HYDRAULIC PHENOMENA CAUSED BY STEAM JETS IN AP1000 CONTAINMENT	Technical Publication
ICONE21-15128	NUMERICAL INVESTIGATION OF TWO PHASE FLOW AND HEAT TRANSFER CHARACTERISTICS OF PASSIVE CONTAINMENT COOLING SYSTEM	Technical Publication
ICONE21-15644	Numerical Research on Performance of AP1000 Passive Containment Cooling System without Falling Film	Technical Publication
ICONE21-15818	Numerical Simulation Analysis on the Flow Mechanism of Passive Containment Cooling System	Technical Publication

10-5 CFD Codes Application III *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Jian Su, *Universidade Federal do Rio de Janeiro*

ICONE21-15040	The design and CFD simulation of a new spent fuel pool passive cooling system	Technical Publication
ICONE21-15180	Fluid-Structure Coupling Analysis for the Flow Distribution Device of Nuclear Reactor Internals	Technical Publication
ICONE21-15482	Thermal Hydraulics Analysis on a Simplified Model of Spent Fuel Pool	Technical Publication
ICONE21-15486	Computational simulation of turbulent natural convection in a volumetrically heated square cavity	Technical Publication
ICONE21-15929	Study on The Flow Distribution at The Core Inlet	Technical Publication
ICONE21-15198	Development and Application of Single-phase CFD Methodology for Estimating Flow Field in Rod Bundles	Technical Publication

10-6 Codes and Models I *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Jin Yan, *Westinghouse Electric Company*

Session Co-Chair: Jianjun Xiao, *Karlsruhe Institute of Technology*

ICONE21-15051	Development and validation of two-way Fluid-particle coupling in turbulent flows for a CFD code	Technical Publication
ICONE21-15187	Conservative front-tracking method for 2-dimensional deformable drops	Technical Publication
ICONE21-15339	Multiphase Flow Simulation of Subcooled Boiling Using the N-Phase Approach in TransAT	Technical Publication
ICONE21-15606	Development of PCCSAP-3D Code for the Analysis of Passive Containment Performance	Technical Publication
ICONE21-15930	Local Mesh Refinement for Viscid Flow in Combustion Code COM3D	Technical Publication
ICONE21-15345	Departure from Nucleate Boiling Modeling Development for PWR Fuel	Technical Publication

10-8 CFD Analysis *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Co-Chair: Wenxi Tian, *XI'AN JIAOTONG UNIVERSITY*

ICONE21-15795	STUDY OF MIXING CHARACTERISTICS OVER A SPACER GRID WITH SLOPING CHANNELS BASED ON NUMERICAL SIMULATIONS IN A PWR 5X5 ROD BUNDLE USING CFD CODES	Technical Publication
ICONE21-15735	CFD Analysis of Thermal Stratification Phenomena in the RNS Suction Line of A GEN-III Nuclear Power Plant	Technical Publication
ICONE21-15480	Thermal Hydraulics Numerical Simulation and Optimized Design of Passive Residual Heat Removal Heat Exchanger in AP1000	Technical Publication
ICONE21-15124	Preliminary Analysis Of Two-phase Flow In a Steam Generator Using CUPID-SG	Technical Publication
ICONE21-15683	COMPUTATIONAL STUDY ON A SINGLE FLOW ELEMENT IN A NUCLEAR THERMAL ROCKET	Technical Publication

10-9 CFD Simulation *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Yuming Chen, *Karlsruhe Institute of Technology*

ICONE21-16641	A numerical simulation on effects of distance between bubble and the wall on behavior of rising bubble	Technical Publication
ICONE21-16172	Numerical Simulations and Experiments on Gaseous Flow and Heat Transfer in Multiple Narrow Channels in Transition Region	Technical Publication
ICONE21-15194	Numerical Study on the Influence of Non-uniform Wall Roughness on Vortex Structure in Sparse Lattice	Technical Publication
ICONE21-15202	Numerical Simulation of Quasi Periodic Large Scale Vortices in Rod Bundles with Non-uniform Wall Roughness	Technical Publication

ICONE21-15049	Flow Characteristics of Fuel bundle with New Mixing Vane Design	Technical Publication

10-10 Coupling Analysis *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Hidemasa Yamano, *Japan Atomic Energy Agency*

Session Co-Chair: Liang-ming Pan, *Chongqing University*

ICONE21-15483	Numerical Simulation of Self-leveling Behavior in Debris Bed by a Hybrid Method	Technical Publication
ICONE21-15163	Experimental Analyses by SIMMER-III on Duct-Wall Failure and Fuel Discharge/Relocation Behavior	Technical Publication
ICONE21-15689	The effect of electromagnetic field on the behavior of bubbles	Technical Publication
ICONE21-15903	Two-way Coupling Simulation of Heat Transfer in ADS Windowless Spallation Target	Technical Publication
ICONE21-16312	Analysis of fluid-induced excitation forces in tube arrays based on the LES method	Technical Publication

Track 11 Reactor Physics and Transport Theory Expand All Sessions In Track

Track Chair: Shouzhi Zhao

Track Co-Chair: Hongchun Wu, *Xi'an Jiaotong University*

Track Co-Chair: Koreshi Zafar, *Air University*

Track Co-Chair: Akio Yamamoto, *Nagoya University*

Track Co-Chair: Hideki Matsumoto, *Mitsubishi Heavy Industries, Ltd./Reactor Core Engineering*

Track Co-Chair: Cassiano de Oliveira, *Univeristy of New Mexico*

11-1 Reactor Physics (General), Design and Validation *(Technical Session)*

Session Description:
Diffusion and Transport Theory, multi-group transport eigenvalue problems, core neutronics, lattice physics, design and analysis of LWR, HWR, HTGR, Fast reactors, Advanced Reactors, CANDLE reactor and Space Power reactors, reactor dynamics, comparison of analytical and numerical benchmarks, reactor fuel performance modeling, transient and safety analysis, radiation applications,

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Xinrong Cao, *Harbin Engineering University*

Session Co-Chair: Hong YU, *China Institute of Atomic Energy*

ICONE21-15275	REACTIVITY HOLD-DOWN TECHNIQUE FOR A SOLUBLE BORON FREE PWR USING TRISO PARTICLE FUEL	Technical Publication
ICONE21-16193	Calculation of Bowing Reactivity of Core Assemblies in Liquid Metal Fast Reactors	Technical Publication
ICONE21-15467	Re-evaluation of Pulsed Neutron Experiment on Fast-thermal Coupled Sub-critical Reactor VENUS-1#	Technical Publication
ICONE21-15846	PHYSICS ANALYSIS OF THE ACCELERATOR DRIVEN SUBCRITICAL REACTOR CORE	Technical Publication
ICONE21-15135	Investigation on the frequency-dependent response of neutron noise in 2-D MSR	Technical Publication

11-2 Computational Methods *(Technical Session)*

Session Description:
Numerical methods, acceleration techniques and codes, code validation, parallelization of neutron transport calculations, new developments.

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Hongchun Wu, *Xi'an Jiaotong University*

ICONE21-15725	Development of A Two-Dimensional Modularity Characteristics Code for Neutron Transport Calculation	Technical Publication
ICONE21-16401	Analysis for SN code with discontinued factor	Technical Publication
ICONE21-16770	HYBRID METHODS INVOLVING KRYLOV TECHNIQUES WITH WAVELETS APPROACH TO SOLVE THE NEUTRON TRANSPORT EQUATION	Technical Publication
ICONE21-16707	Verification of control rod assembly homogenization for LMFBR with a New Lattice Physics Code GALAXY-H	Technical Publication
ICONE21-16077	The transport-burnup coupling system between MCMG-II and STEP1.0 for high fidelity calculations	Technical Publication
ICONE21-15278	Matrix Method of Characteristics Based on Modular Ray Tracing	Technical Publication

11-3 Monte Carlo (Stochastic and Hybrid MC-Deterministic) *(Technical Session)*

Session Description:
Monte Carlo methods, Variance reduction, Monte Carlo perturbation analysis for sensitivity studies and design optimization, simulating small changes with MCNP, probabilistic risk assessment, medical physics applications, Monte Carlo modeling for nuclear safeguards, development of hybrid methods to improve the accuracy of Monte Carlo estimates.

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Kan Wang, *Tsinghua University*

ICONE21-15016	Stationarity issues in Monte Carlo Simulation for Neutron Transport	Technical Publication
ICONE21-16857	AUTOMATIC MODELING OF COMPLEX GEOMETRIES FOR MCNP SIMULATION USING GEOMIT CODE	Technical Publication
ICONE21-15393	The Thermal Neutron Utilization Factor Calculation by Monte Carlo	Technical Publication
ICONE21-15714	Primary Simulation The Yield of 14C Produced In PWR NPP During Normal Operation	Technical Publication
ICONE21-16670	NEUTRONIC ANALYSIS AND FUEL CYCLE SIMULATION OF THE MIT REACTOR USING MCODE-FM AND EXPERIMENTAL VALIDATION	Technical Publication
ICONE21-16578	Nuclear Criticality Analyses of the Spent Fuel Pool under Loss of Spent Fuel Pool Water and Neutron Absorbers in the Racks for Taipower's Chinshan Nuclear Power Plant	Technical Publication

11-4 Mathematical Modeling in Transport Theory + Nuclear Data Libraries and Measurements *(Technical Session)*

Session Description:
Neutral and charged particle transport, transport in stochastic media, development of perturbation and variational methods, stochastic modeling of thermal radiative transfer, multi-physics and multi-discipline applications such as neutronics/thermomechanics coupling in fast burst reactors, advances and innovative methods. Additionally, this session will explore Nuclear data measurements, integral experiments, comparison of data libraries and nuclear data uncertainty analysis, cross-section generation models for GEN IV reactors.

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Koreshi Zafar, *Air University*

ICONE21-16790	Nuclear Data Statistical Treatment	Technical Publication
ICONE21-15442	The Development and Validation of Nuclear Cross Section Processing Code for Reactor-RXSP	Technical Publication
ICONE21-16260	Measurement Of Prompt Neutron Decay Constant of CFBR-II At Near Delayed Criticality Using Randomly Pulsed Neutron Method	Technical Publication
ICONE21-16406	On Operational and Start-up Transients in an Accelerator Driven Systems	Technical Publication
ICONE21-15760	Spatially Dependent Resonance Cross Sections in a Fuel Plate	Technical Publication
ICONE21-15883	Research on the Measurement of Deep Subcriticality Based on Pulsed Neutron Source Method	Technical Publication

11-5 Reactor Physics (General), Design and Validation(2) *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Li yiguo, *China Institute of Atomic Energy*

ICONE21-15925	Startup of In-hospital Neutron Irradiator	Technical Publication
ICONE21-15912	Neutonics character Analysis of Space Reactor TOPAZ-?	Technical Presentation Only
ICONE21-15098	general scheme of research reactor mainly for production of fission Mo-99	Technical Presentation Only
ICONE21-15649	Benchmarking of Super Monte Carlo Calculation Program for Nuclear and Radiation Process SuperMC 2.0	Technical Presentation Only
ICONE21-15807	Automatic Modeling for the Neutron Transport of the Fission Core in MCAM	Technical Presentation Only

11-6 Computational Methods(2) *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Hongchun Wu, *Xi'an Jiaotong University*

ICONE21-15260	Development and Preliminary Verification of COSINE--CORE	Technical Presentation Only
ICONE21-15262	Verification and Validation procedure of reactor physics code in COSINE	Technical Presentation Only
ICONE21-15924	Development Status of Reactor Physics Codes in COSINE Project	Technical Presentation Only
ICONE21-15954	Development and Preliminary V&V of Lattice Code (LATC) in COSINE Project	Technical Presentation Only

Track 12 Nuclear Education, Public Acceptance and Related Issues Expand All Sessions In Track

Track Chair: Suizheng Qiu, *Xi'an jiaotong University*

Track Co-Chair: Kan Wang, *Tsinghua University*

Track Co-Chair: Yassin Hassan, *Texas A&M university*

Track Co-Chair: Kazuhiko Yamamoto

Track Co-Chair: Hiroshige Kikura, *Tokyo Institute of Technology*

12-4 Nuclear Education, Human Resources, and Public Acceptance - I *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Toshiro Kobayashi, *Tsuyama National College of Technology*

Session Co-Chair: Hector Medina, *Virginia Commonwealth University*

ICONE21-15233	The Challenges and Opportunities in Developing Nuclear Engineering Education in Indonesia after Fukushima Accident	Technical Publication
ICONE21-15408	Improving Education Quality of the Specialty of Nuclear Chemical and Fuel by Using Superiority of CDUT	Technical Publication
ICONE21-15762	Nuclear Safety Culture Construction in Nuclear Power Design Enterprise on the Perspective of Knowledge Workers in China	Technical Publication
ICONE21-16567	Sustainable Progression of Technology Education for Atomic Energy Engineering in Tsuyama National College of Technology	Technical Publication
ICONE21-16908	Being Educated in a New Nuclear Engineering Program: A Graduate Student Perspective	Technical Publication

12-5 Nuclear Education, Human Resources, and Public Acceptance - II *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Mauro Mancini, *Politecnico di Milano*

Session Co-Chair: Qiong Zhang, *Nuclear and Radiation Safety Center, MEP, China*

ICONE21-15238	Preliminary Study of the Application of Probability Safety Analysis on multi-reactors station	Technical Publication
ICONE21-15269	Preliminary Study on Human Resources Guarantee in China's Nuclear Safety Supervision	Technical Publication
ICONE21-15932	Assessing the Attractiveness of SMR: an Application of INCAS Model to India	Technical Publication
ICONE21-15938	Method to Select the Countries and Scenarios More Appropriate for the Deployment of SMR	Technical Publication

12-6 Nuclear Education, Human Resources, and Public Acceptance - III *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Chao Fang, *Tsinghua University*

Session Co-Chair: Yan Chen, *Nuclear and Radiation Safety Center MEP*

ICONE21-16302	The study on the relationship between PSA and safety objectives of nuclear power plant	Technical Publication
ICONE21-15017	THE STUDY OF PANIC TO NUCLEAR ENERGY ON PSYCHOLOGICAL AND SOCIOLOGICAL ISSUES	Technical Publication
ICONE21-16909	Application of Cloud Chambers for Heuristic Comprehension of Radiation	Technical Publication
ICONE21-15358	The Influences of Significant Nuclear Events on Public Attitude and Acceptance	Technical Publication

12-7 Nuclear Education, Human Resources, and Public Acceptance - IV *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Min CHEN, *Southwest University of Science and Technology*

Session Co-Chair: LI MIN, *Chinese National Nuclear Corpation (CNNC)*

ICONE21-16606	Construction Of Practice Teaching System For Speciality Of Nuclear Engineering & Technology	Technical Publication
ICONE21-15976	Multimedia technology for Education, Training in Nuclear Applications	Technical Publication
ICONE21-15665	Exploration of Bilingual Teaching Mode for Nuclear Specialty	Technical Publication
ICONE21-15512	Research On Chinese Public Mental In Post-Fukushima Era	Technical Publication

12-8 Nuclear Education, Human Resources, and Public Acceptance -V *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Fei Hou, *China Nuclear Power Operation Technology Corporation.,LTD*

Session Co-Chair: Shenjun Xu, *State Nuclear Power Engineering Company Ltd.*

ICONE21-16099	The Investigation on Interactive Products for Propaganda of Nuclear Safety in Public	Technical Publication
ICONE21-16853	The Document Management of Major Scientific Projection of Fusion	Technical Publication
ICONE21-16758	Shaping Public Opinion on Nuclear Power	Technical Publication
ICONE21-16621	Lifting Operation Safety Management in AP1000 Nuclear Plant Project	Technical Publication
ICONE21-16212	MAPPING NUCLEAR STUDIES IN EUROPE. TOWARDS SOLVING THE GAP	Technical Presentation Only

Track 13 Instrumentation & Controls (I&C) Expand All Sessions In Track

Track Chair: Zhijian Zhang

Track Co-Chair: Ming Yang, *Harbin Engineering University*

Track Co-Chair: Li Shi, *GE Hitachi*

Track Co-Chair: mauro cappelli, *ENEA*

Track Co-Chair: Kenji Urase, *Hitachi-GE Nuclear Energy, Ltd.*

Track Co-Chair: Bob Stakenborghs, *ILD*

13-1 Advances in HMI Technology *(Technical Session)*

Session Description:
Failure mode analysis, equipment diagnostics, development of fault diagnosis system, Alarm system for operator's decision making

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Hidekazu Yoshikawa, *Harbin Engineering University*

Session Co-Chair: Jia Qianqian, *Tsinghua University*

ICONE21-15423	The Failure Analysis and Processing of Digital Reactor Protection system	Technical Publication
ICONE21-15550	Research On Feature Recognition Of Nuclear Power Equipment Based On The Optimal Wavelet Basis	Technical Publication
ICONE21-15738	Digital Rod Position Indication Detector Malfunction Issues and Analytical Processing	Technical Publication
ICONE21-15546	A Design of the Alarm System in Digital Control Room of HTR-PM	Technical Publication
ICONE21-16866	Utilizing the Purified Orbit Curve technical on AP1000 NPP Turbine Diagnosis Systems	Technical Publication
ICONE21-15095	Study for application of Safety Soft Control and Information System in Highly- Integrated Control Rooms(HICRc) of CPR1000 NPP	Technical Publication

13-2 Simulation technologies and FPGA based systems *(Technical Session)*

Session Description:
Use of simulation for design, engineering, maintenance and verification activities. FPGA based system design and development.

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Yi-tung Chen

ICONE21-15479	Extension of Load Follow Capability of PWR without Boron Adjustment	Technical Publication
ICONE21-16374	A digital pressurizer controller for implementation in hybrid FPGA-CPU platform	Technical Publication
ICONE21-15396	Modeling and Simulation of Nuclear Power Unit for Primary Frequency Regulation Research	Technical Publication
ICONE21-16148	A NPP KSN DCS Training System with Combined Approach of Simulation and Stimulation	Technical Publication
ICONE21-16142	The analysis and design technology research of DAS	Technical Publication
ICONE21-16416	Analysis of Effect on Axial Flux Difference in AP1000 Mechanical Shim Mode	Technical Presentation Only

13-3 Advanced sensors and measurement techniques *(Technical Session)*

Session Description:
Advanced sensors and measurement techniques, wireless applications in nuclear power plants, and instrumentation developments.

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Joanna Phillips, *Cameron - Caldon Ultrasonics Technology Center*

ICONE21-16629	Detecting Changing Balance of Plant Indicators Using Ultrasonic Flowmeters	Technical Publication
ICONE21-15177	TEMPERATURE MEASURING SYSTEM IN HIGH TEMPERATURE CARBON REDUCING ENVIRONMENT	Technical Publication
ICONE21-16654	Instrumentation and Control Enhancements in EC6 Reactor Design	Technical Publication
ICONE21-16751	Guided Wave Technology for In-Service Inspection and Monitoring of Inaccessible Components in Nuclear Power Plants	Technical Publication
ICONE21-16804	Off-Gas Nuclide Analysis System	Technical Publication
ICONE21-16929	Nuclear Power Plant Liquid Analytics Using Intelligent Sensor Technology	Technical Presentation Only

13-4 General I&C issues *(Technical Session)*

Session Description:
Applications of DCS, networks, and fieldbus in nuclear power plants.

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Jia Qianqian, *Tsinghua University*

ICONE21-15094	Study on Application of Decoupling Circuit to I&C System of Nuclear Power Plant	Technical Publication
ICONE21-15154	The Application of AFAL Methodology in Substantiation of Instrument Calibration Intervals Extension in Nuclear Power Plant	Technical Publication
ICONE21-15541	RESEARCH ON PROJECT MANAGEMENT OF DCS DEVELOPMENT FOR FIRST AP1000 UNIT	Technical Publication
ICONE21-16126	Instrument calibration in the nuclear power plant refueling cycle extension project	Technical Publication

ICONE21-16052	The AMB system's EMI analysis of backup helium circulator for HTR-10	Technical Publication

13-5 Digital system reliability *(Technical Session)*

Session Description:
Digital system reliability issues, maintenance and condition monitoring, aging management.

Session Schedule: Friday, August 02, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Ming Yang, *College of Nuclear Science and Technology, Harbin Engineering University*

ICONE21-15027	RELIABILITY MONITOR FOR PWR SAFETY SYSTEM USING FMEA AND GO-FLOW METHODOLOGY - Application of Risk Monitor for Nuclear Power Plants	Technical Publication
ICONE21-16010	Research on Digital Instrumentation and Control System in Nuclear Power Plant Using Mixed Redundant Model	Technical Publication
ICONE21-16110	A Survey on the quantitative evaluation methods of software reliability of digital I&C systems at NPPs	Technical Publication
ICONE21-16706	Design and Development of HTR-PM Reactor Protection System	Technical Publication
ICONE21-15261	Fangjiashan Nuclear Power Plant Unit1 Fuel Handling and Storage System (PMC) V&V Overview	Technical Publication
ICONE21-15375	Software Reliability Assessment of the Reactor Protection System for Lungmen Nuclear Power Station	Technical Publication

13-6 Advanced signal processing methods and control algorithms *(Technical Session)*

Session Description:
Advanced signal processing methods and control algorithms

Session Schedule: Friday, August 02, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Hidekazu Yoshikawa, *Harbin Engineering University*

ICONE21-15571	The Study on Applying Image Processing Method to Handle Digital Nuclear Signals	Technical Publication
ICONE21-16023	Self-Stability Analysis and Nonlinear Power-level Control Design for the Pressurized Water Reactors	Technical Publication
ICONE21-16294	A Novel Method for Controller Parameters Optimization of Steam Generator Level Control	Technical Publication
ICONE21-15469	research on electronic overspeed detection system of main feedwater pumps	Technical Presentation Only
ICONE21-15767	Conceptual Design Study of Thermal Measurement System in China LEad-Alloy Cooled Research Reactor (CLEAR-I)	Technical Presentation Only
ICONE21-16582	Research on the Integrated Control System of a Small Marine Condenser	Technical Presentation Only

13-7 Applications of Technology to Enhance design, construction, operation and maintenance *(Technical Session)*

Session Description:
Applications of Technology to Enhance design, construction, operation and maintenance.

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Zhe Dong

ICONE21-15487	Study on Network Radiation Environmental Monitoring System	Technical Publication
ICONE21-15676	CODE AUTOMATION TECHNOLOGY BASED COSINE SOFTWARE DEVELOPMENT	Technical Publication
ICONE21-16322	Camera Elevator Control Design for Manipulator Crane in PWR	Technical Publication
ICONE21-16358	Application of high-tech in nuclear power instruments	Technical Publication
ICONE21-16025	Real-Time Simulation Platform for the Design and Verification of the Operation Strategy of the HTR-PM	Technical Publication
ICONE21-16378	Using A Hybrid FPGA-CPU Platform For A User-Friendly Environment In Control Systems Design: A Possible Application To Nuclear Plants	Technical Publication

13-8 Experience in construction, operation and maintenance *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Hidekazu Yoshikawa, *Harbin Engineering University*

Session Co-Chair: Ming Yang, *Harbin Engineering University*

ICONE21-16919	TRITON: Technique to Restore Images with Turbulence for Online Nuclear Core Inspection	Technical Presentation Only
ICONE21-15131	A Review on Developing Industrial Standards to Introduce Digital Computer for Nuclear I&C+HMIT in Japan	Technical Presentation Only
ICONE21-16367	Comparative analysis of diversity assessment techniques for Multi-version NPP I&C Systems	Technical Presentation Only
ICONE21-15321	Requirement Management and Functional Requirement Assignment in Safety Critical I&C Systems of a Nuclear Power Plant	Technical Presentation Only
ICONE21-15369	The steam generator leak rate monitoring instrument algorithm and application analysis in Tianwan nuclear power plant	Technical Presentation Only

ICONE21-15722	Control System Design of High Pressure Abrasive Water Jet Cutting Device	Technical Presentation Only

Track 14 Fusion Engineering Expand All Sessions In Track

Track Chair: Kaiming Feng, *Southwestern Institute of Physics*

Track Co-Chair: Yican Wu, *Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences*

Track Co-Chair: Leigh Winfrey

Track Co-Chair: Tomoaki Kunugi, *Kyoto University*

Track Co-Chair: joe miller, *EDA, Inc*

Track Co-Chair: Kaiming Feng, *SWIP*

14-1 Theoretical research for fusion *(Technical Session)*

Session Description:
Theoretical research for fusion, including plasma physics, new ideas of fusion, et al.

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Kaiming Feng, *Southwestern Institute of Physics*

Session Co-Chair: Tomoaki Kunugi, *Kyoto University*

ICONE21-16119	Project development of a pilot industrial reactor on the basis of a compact tokamak for the disposal of spent nuclear fuel	Technical Publication
ICONE21-16922	Nuclear Fusion Within Dense Plasma Enhanced by Quantum Particle Waves	Technical Presentation Only
ICONE21-16157	UA-AMG Methods for 2-D 1-T Radiation Diffusion Equations and their CPU-GPU Implementations	Technical Publication
ICONE21-16740	Development of Numerical Code for Coupling Dynamical Response of Typical Tokomak Structure using Volumetric Finite Element	Technical Publication
ICONE21-16320	The Neutronic Calculation of Hybrid Energy Reactor	Technical Presentation Only
ICONE21-16878	new method for Measurement of Plasma Temperature with Double Langmuir Probe	Technical Presentation Only

14-2 Stellarator,ICF,Hybrid reactors,DEMO *(Technical Session)*

Session Description:
Design, analysis, technology, plan for Stellarator, ICF, Hybrid reactors, DEMO, or other advanced magnetic confined reactors.

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Yican Wu, *Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences*

Session Co-Chair: Anna Encheva, *ITER IO*

ICONE21-16370	Multiphysics Thermal-Fluid Analysis of the W7-X Divertor Scraper Element	Technical Presentation Only
ICONE21-15703	The Experimental Consideration for TBM Mock-up Effect on Plasma Performance Based on MAPES Platform in EAST	Technical Publication
ICONE21-15991	Current Status of the Major Cells Design of IFMIF Test Facility and Arrangement of the Cells	Technical Publication
ICONE21-16689	Study on Formation and Development of Surface Wave of Liquid Metal Lithium Jet for IFMIF	Technical Publication
ICONE21-16539	Neutronic Analysis of High Flux Test Module for High Temperature Irradiation of IFMIF	Technical Publication
ICONE21-16879	Research of electromagnetic form factor of pion pair	Technical Presentation Only

14-4 ITER Components/systems *(Technical Session)*

Session Description:
ITER Components and system related design, fabrication, material, et al.

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Gennady Gladush, *SRC RF TRINITI*

Session Co-Chair: Jens Reich, *ITER Organization*

ICONE21-16335	Design Integration Approach in ITER as a large Fusion Device	Technical Presentation Only
ICONE21-15159	The status on design collaboration in ITER Chinese Domestic Agency	Technical Publication
ICONE21-16473	ITER Cryostat design and analysis	Technical Publication
ICONE21-15395	ITER Shield Block Cooling System Design and Analysis	Technical Publication
ICONE21-16761	Progress on the Development of ITER Diagnostic Electrical Services	Technical Presentation Only
ICONE21-16887	Mechanical performances of ITER in-vessel coils' conductors	Technical Publication

14-5 Blanket Module development & technology *(Technical Session)*

Session Description:
Blanket Module development related design, fabrication, plan, technologies, et al.

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Bharatkumar Doshi, *ITER Organization*

Session Co-Chair: songlin liu, *Institute of Plasma Physics, Chinese Academy of Sciences*

ICONE21-16593	Experimental Investigation on Liquid-Metal Flow Distribution in Insulating Manifold under Uniform Magnetic Field	Technical Publication
ICONE21-16039	The thermal-mechanical analysis of the BIT HCCB blanket for CFETR	Technical Publication
ICONE21-15461	Preliminary Design for the Back Plate of Sub-module of CN HCCB TBM	Technical Publication
ICONE21-16109	Proposal of a novel blanket system using LiF-BeF2-LiI for a fusion reactor	Technical Publication
ICONE21-15696	PRELIMINARY NEUTRONICS DESIGN AND ANALYSIS OF THE BIT HELIUM COOLING CERAMICS BLANKET FOR CFETR	Technical Publication
ICONE21-16046	Updated Design and Development Route for CH HCCB TBM and Its Mockup	Technical Publication

14-6 Thermal-Hydraulic analyses and thermal structural analyses *(Technical Session)*

Session Description:
Thermal-Hydraulic analyses and thermal structural analyses for components in Fusion reactors.

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Arnold Lumsdaine, *Oak Ridge National Lab*

Session Co-Chair: Eiji Hoashi, *Osaka University*

Session Co-Chair: Kuo Tian, *Karlsruhe Insitute of Technology*

ICONE21-16118	Effect of FCI Electrical Conductivity on MHD Flow in Channels with Multi-layer Inserts for Fusion Blanket	Technical Publication
ICONE21-16373	Thermal and Structural Analysis of ECH Waveguide Components	Technical Presentation Only
ICONE21-15153	Development Of A Thermal-hydraulic Analysis Code For Chinese Helium-cooled Ceramic Breeder TBM Cooling System	Technical Publication
ICONE21-16105	Feasibility Study on Application of a Self-formed Flow Field downstream of Elbows to Divertor Cooling	Technical Publication
ICONE21-15223	New Cooling Scheme of First Wall in HCCB TBM And Related Performance Analysis	Technical Publication
ICONE21-16304	Modeling TBM Components by Using Relap5 Code	Technical Publication

Track 15 Beyond Design Basis Events Expand All Sessions In Track

Track Chair: Xuewu Cao, *Shanghai Jiao Tong University*

Track Co-Chair: Yu Zhang, *Nuclear Power Institute of China*

Track Co-Chair: joe miller, *EDA, Inc*

Track Co-Chair: Sama Bilbao y Leon

Track Co-Chair: Randall Gauntt, *Sandia National Laboratories*

Track Co-Chair: Jun Sugimoto, *Kyoto University*

Track Co-Chair: Yu Maruyama, *JAEA*

15-1 Fundamental Experimental Analysis during the BDBAs *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Koji Morita, *Kyushu University*

Session Co-Chair: Zhou Zhiwei, *INET of Tsinghua University*

ICONE21-15693	Experimental Evaluation of Debris Bed Characteristics in Particulate Debris Sedimentation Behaviour	Technical Publication
ICONE21-16287	Research and Development of Self-Priming Venturi Scrubber for Filter Venting:Preliminary Analysis and Observation of Hydraulic Behavior in Venturi Scrubber	Technical Publication
ICONE21-16635	Heat Removal Capability of Core-Catcher with Natural Circulation	Technical Publication
ICONE21-15633	Influence of the Fragmentation Behavior on Molten Material Jet Breakup in Coolant	Technical Publication
ICONE21-16066	Diffusion of Liquid Jet Discharged from Pressurized Vessel	Technical Presentation Only

15-2 Analysis of Fukushima Accident or large radioactive release *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Jun Sugimoto, *Kyoto University*

Session Co-Chair: Xinrong Cao, *Harbin Engineering University*

ICONE21-16898	Estimation of Fukushima-Daiichi NPS PCV cooling states based on measurement data after nitrogen injection	Technical Publication
ICONE21-16897	Analysis of early stage accident at TEPCO's Fukushima Daiichi NPS	Technical Publication
ICONE21-15183	Behavior of the Spent Fuel Pool and Dose Rate Calculations for the CPR1000 Reactor under Severe Accident Conditions using MELCOR	Technical Publication

ICONE21-16796	Severe Accident Research Issues after Accident at Fukushima Daiichi Nuclear Power Station	Technical Publication
ICONE21-16805	Analysis of Accident Progression of Fukushima Daiichi NPPs with SAMPSON Code	Technical Publication
ICONE21-16865	Deposition fractions of fission product and heavy elements on soil in Fukushima Dai-Ichi Nuclear Power Plant accident	Technical Publication

15-3 Research on Fundamental Models or methods during the BDBAs *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Grigory Ponomarenko, *OKB Gidropress*

Session Co-Chair: zhuohua zhang, *Tsinghua University*

ICONE21-16911	Hydrogen Combustion Modelling in Large-Scale Geometries	Technical Publication
ICONE21-15383	Analysis of diffusion mechanism of oxidation in UO2-Zr plate-type fuel under severe accident	Technical Publication
ICONE21-15403	About Harmonization of Deterministic and Probabilistic Approaches to the NPPs Safety Substantiation	Technical Publication
ICONE21-16085	Simulation Research On Combustion Of Liquid Sodium Droplet	Technical Publication
ICONE21-16263	Simulation of the Atmospheric Dispersion of Radionuclides Using Gaussian Plume Model	Technical Publication
ICONE21-16719	Improvement of the SAMPSON code for BWR severe accident analysis	Technical Publication

15-4 New Safety Design Features, Seismic Analysis, Evaluation and Management of Severe Accident *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Naitoh M, *The Institute of Applied Energy*

Session Co-Chair: yang zhiyi, *Nuclear and Radiation Safety Center, MEP*

ICONE21-16826	Phenomena Identification Ranking Table (PIRT) for the MAAP Enhancement Project	Technical Publication
ICONE21-16499	EC6 Safety Design Features for Defence In Depth and Beyond Design Basis Accidents including Severe Accidents	Technical Publication
ICONE21-16838	Issues Associated with the Development of Severe Accident Management Guidelines for NPPs in China	Technical Publication
ICONE21-16656	Candu's Practice in Seismic Margin Assessment	Technical Publication
ICONE21-16469	Evaluation of damaging effects on a NPP integrity subjected to Beyond Design Earthquake	Technical Publication
ICONE21-15831	Structural Integrity Analysis for A Reactor Vessel Lower Head Under In-vessel Steam Explosion Loads	Technical Publication

15-5 Analysis of System Behavior During the BDBAs *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Cesar Queral, *Universidad Politécnica de Madrid*

Session Co-Chair: Jian Deng, *Nuclear Power Institute of China*

ICONE21-15140	Analysis of AP 1000 DEDVI Beyond Design Basis Accident	Technical Publication
ICONE21-15174	Study on the SBO coping capability for Qinshan Phase II unit 3	Technical Publication
ICONE21-15398	Analysis of temporary cooling strategy for CPR1000 power plant under situation similar to Fukushima severe accident	Technical Publication
ICONE21-16257	Safety Analysis of Xi'an Pulsed Reactor under Beyond Design Basis Accident	Technical Publication
ICONE21-16332	Application of Integrated safety assessment methodology to SBO sequences	Technical Publication
ICONE21-15701	Study on Impacts of ADS on AP1000 During SB-LOCA	Technical Publication

15-6 Numerical Investigation on Fundamental Phenomena During the BDBAs *(Technical Session)*

Session Schedule: Friday, August 02, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Randall Gauntt, *Sandia National Laboratories*

Session Co-Chair: Chen jinbo, *Shanghai Jiao Tong University*

ICONE21-16910	Experimental and Numerical Investigation of H2-Air Deflagration in the Presence of Concentration Gradients	Technical Publication
ICONE21-15118	Analysis of Steam Blocking In a Low Pressure Heating System	Technical Publication
ICONE21-15712	Study on Simulation of the Building Fires Using an Advanced New Model	Technical Publication
ICONE21-15744	Development of Numerical Simulation for Jet Breakup Behavior in Complicated Structure of BWR Lower Plenum (1) Preliminary Analysis of Jet Breakup Behavior in Complicated Structure by TPFIT	Technical Publication
ICONE21-15624	Development of Numerical Simulation for Jet Breakup Behavior in Complicated Structure of BWR Lower Plenum (2) Flow Observation with Visualized Experimental Apparatus	Technical Publication

ICONE21-15205	Research on the Method of Hydrogen Concentration Monitoring in the containment during Severe Accident	Technical Presentation Only

Track 16 Student Paper Competition Expand All Sessions In Track

Track Chair: Su-yuan Yu, *INET, Tsinghua University*
Track Co-Chair: Liang-ming Pan, *Chongqing University*
Track Co-Chair: Igor Pioro, *University of Ontario Institute of Technology*
Track Co-Chair: Sama Bilbao y Leon
Track Co-Chair: Wolfgang Hansen, *Technical University Dresden*
Track Co-Chair: Vladimir Stevanovic, *University of Belgrade*
Track Co-Chair: Tomio Okawa, *The University of Electro-communications*
Track Co-Chair: Masahiro Takei, *Chiba University*

16-1 Thermal Hydraulics 1 *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**
Session Sponsors:

ICONE21-15894	Modelling of QUENCH 03 and QUENCH 06 Experiments Using RELAP/SCDAPSIM Code	Technical Publication
ICONE21-15962	Study on operating criteria of the supersonic steam injector	Technical Publication
ICONE21-15537	Analysis of CNU-M2 external reactor cooling experiments using RELAP5 Mod3.3 and ASTEC V2.0 codes	Technical Publication
ICONE21-15445	Experimental Investigation on Density Wave Oscillation in Parallel Rectangular Channels under Vertical and Inclined Condition	Technical Publication
ICONE21-16399	PRELIMINARY INVESTIGATIONS OF HEAT-TRANSFER CORRELATION FOR UPWARD FLOW OF CO2 AT SUPERCRITICAL PRESSURE	Technical Publication

16-2 Thermal Hydraulics 2 *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**
Session Sponsors:

ICONE21-15542	STUDY OF SURROGATE DATA METHOD FOR CHAOS IDENTIFICATION OF NATURAL CIRCULATION FLOW OSCILLATION UNDER ROLLING MOTION	Technical Publication
ICONE21-15713	Nuclear Power Plant Passive Residual Heat Removal System Design and Simulation	Technical Publication
ICONE21-16315	Study on Condensation Heat Transfer on Micro Structured Surfaces(Effect on Condensation Heat Transfer of Metal-sputtering Surfaces)	Technical Publication
ICONE21-16453	HEAT-TRANSFER CORRELATION FOR SUPERCRITICAL CARBON DIOXIDE FLOWING IN VERTICAL BARE TUBES	Technical Publication
ICONE21-15263	The Study of Cavitation Characteristics of a Heavy Liquid-metal Coolant	Technical Publication

16-3 Thermal Hydraulics 3 *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**
Session Sponsors:

ICONE21-15992	Influence Analysis of Initial and Boundary Conditions on the Formation of Reactor Vessel Pressurized Thermal Shock	Technical Publication
ICONE21-16446	Assessment of FLUENT CFD Code as a Tool for SCW Heat Transfer Analysis	Technical Publication
ICONE21-16149	Investigation of Transition Boundary and Nature of Pulsating Flow in the Trickle Bed Reactors by Electrical Resistance Tomography	Technical Publication
ICONE21-16769	CFD Analysis for Dome Section in Maanshan Nuclear Power Plant	Technical Publication
ICONE21-15424	Methodology For Verification Of The Heat Transfer Crisis In The Nuclear Fuel Assemblies	Technical Publication

16-4 Thermal Hydraulics 4 *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**
Session Sponsors:

ICONE21-15248	Experimental studies of thermal hydraulics of a HLMC flow around heat exchange surfaces	Technical Publication
ICONE21-16425	THE EXPERIMENTAL APPROACH TO OBSERVE ATOMISTIC BEHAVIORS OF METALLIC SURFACES BY A LINKED FACILITY BETWEEN AN ION ACCELERATOR AND A STM	Technical Publication
ICONE21-16387	The Analysis of Influence of Fuel Pellet and Coolant Temperature Distributions on the VVER-1000 Active Core Characteristics	Technical Publication
ICONE21-15653	Research on Corrosion and Precipitation Behaviors in LBE Systems	Technical Publication
ICONE21-16765	Investigation of Characteristic Temperature Approaches for Heat Transfer Correlations at Supercritical Conditions	Technical Publication

16-5 Computational Fluid Dynamics *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**
Session Sponsors:

ICONE21-16688	NUMERICAL SIMULATION OF SINGLE BUBBLE MOVING IN	Technical Publication

	STAGNANT SOLID-LIQUID MIXTURE POOL USING FINITE VOLUME PARTICLE METHOD	
ICONE21-15634	Three-dimensional Steady Simulation on Two-phase Flow in Secondary Side of Steam Generator	Technical Publication
ICONE21-16297	ANALYSIS AND APPLICATIONS OF A TWO-FLUID MULTI-FIELD HYDRODYNAMIC MODEL FOR CHURN-TURBULENT FLOWS	Technical Publication
ICONE21-16329	Study on Pressure Loss of Two Phase Flow and Flow Boiling Heat Transfer in Micro channel	Technical Publication
ICONE21-16452	Numerical Analysis of Natural Circulation Phenomena of Supercritical Fluids	Technical Publication

16-6 Component, Structure and Material *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

ICONE21-16428	FUNDAMENTAL STUDY TO EVALUATE MECHANICAL PROPERTY CHANGE ASSOCIATED TO DISLOCATION BEHAVIOR IN IRRADIATED AUSTENITIC STAINLESS STEELS BY INCORPORATING THERMAL FLUCTUATIONS	Technical Publication
ICONE21-15145	A Design Proposal and Assessment of In-vessel Retention Strategy for 2nd Generation PWR	Technical Publication
ICONE21-15413	Behavior of a Magnetically Suspended Rotor Dropped into Auxiliary Bearings	Technical Publication
ICONE21-16440	Study of Zircaloy-4 cladding air degradation at high temperature	Technical Publication
ICONE21-16907	Stress, Strain, and Energy at Fracture of Degraded Surfaces: A Study on Replicates of Random Rough Surfaces	Technical Publication

16-7 Accident, Diagnosis and Risk *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

ICONE21-15988	Design Analysis Of Corium Immobilization and Cooling Of The Reactor Vessel In The Severe Accidents At NPP With Commercial Unit V-320	Technical Publication
ICONE21-16089	Experimental Study on Sodium Column Fire of Sodium-cooled Fast Reactor	Technical Publication
ICONE21-16209	SIMULTANEOUS FAULT DIAGNOSIS OF THE REACTOR COOLANT SYSTEM BASED ON THE DSm EVIDENCE THEORY	Technical Publication
ICONE21-16242	The use of risk-informed inspection approaches of Ukraine	Technical Publication
ICONE21-16554	Countermeasures to Improve LWR Safety Level in Design and Operation by Accident Analyses at Fukushima Daiichi Nuclear Power Plants	Technical Publication

16-8 Fuel Cycle and Management *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

ICONE21-15127	Burnup Credit in the Criticality Safety Analysis of Spent Fuel in Transportation and Storage Systems	Technical Publication
ICONE21-15246	TOWARDS OPTIMAL IN-CORE FUEL MANAGEMENT OF THORIUM-PLUTONIUM-FUELLED PWR CORES	Technical Publication
ICONE21-16054	Study on Flushing Phenomena by Microwave Heating	Technical Publication
ICONE21-16511	CENTRALIZATION OF CANADA'S SPENT NUCLEAR FUEL	Technical Publication
ICONE21-16830	Experimental investigation of boil-off scenario in BWR spent fuel pools	Technical Publication

16-9 Controls ans Measurment *(Technical Session)*

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

ICONE21-15037	Design of Fuzzy-PID controller for Hydrogen production using HTPBR	Technical Publication
ICONE21-16179	On the Influence of Controller Parameters on the Performance of Rotating System with Magnetic Bearings	Technical Publication
ICONE21-16518	Experimental investigation of heat transfer and pressure drop for turbulent air flows in hexagonal channels	Technical Publication
ICONE21-16601	A Study of Phased Array Ultrasonic Velocity Profile Monitor for Flow Rate Measurement	Technical Publication
ICONE21-16819	A Review of the Current State of FPGA Systems In Nuclear Instrumentation and Control	Technical Publication

16-10 Reactor Physics *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

ICONE21-15249	Response Functions of a Cs2LiYCl6 Scintillator to Neutron and Gamma Radiation	Technical Publication
ICONE21-15730	STUDY ON IMPROVEMENT OF ANALYTIC DEPLETION CALCULATION	Technical Publication

	METHOD	
ICONE21-16485	BURNUP COMPUTATION FOR HTR-10 USING LAYER-TO-LAYER MOVEMENT	Technical Publication
ICONE21-16572	Stochastic Higher-Order Generalized Perturbation Theory for Neutron Diffusion and Transport Calculations	Technical Publication
ICONE21-16784	Development of SUBSPACE-Based Hybrid Monte Carlo-Deterministic Algorithms for Reactor Physics Calculations	Technical Publication

16-11 Advanced Reactor *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

ICONE21-15218	Study on Neutronic Characteristics and Neutronic-Thermohydraulic Coupling Behavior of SCWR with Thorium-based Fuel	Technical Publication
ICONE21-15303	Transient Heat Transfer for Helium Gas Flowing over a Horizontal Flat-Plate with Different Widths	Technical Publication
ICONE21-15673	Research on trans critical characteristic on sliding pressure booting process of SCWR	Technical Publication
ICONE21-16072	Experiment and numerical analysis of control method of natural circulation by injection of helium gas	Technical Publication
ICONE21-16410	Power Distribution in a Pressure-Channel Supercritical Water-cooled Reactor	Technical Publication

16-12 Advanced Reactor and Decommissioning *(Technical Session)*

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

ICONE21-15353	Incandescent Particle Characterization Emitted by a Cut-off Grinder During Decommissioning Operations for Evaluating Filters Degradation.	Technical Publication
ICONE21-16014	Study on primary and secondary heat-transport systems for Sodium-Cooled Fast Reactor	Technical Publication
ICONE21-16571	Performance Evaluation of DRACS System for FHTR and Time Assessment of Operation Procedures	Technical Publication
ICONE21-16642	Model Passivated Carbon Electrodes for Fluorine Generation in MSRs and the Nuclear Fuel Cycle	Technical Publication
ICONE21-16150	EFFECT OF PHYSICAL PROPERTIES ON GAS ENTRAINMENT RATE FROM FREE SURFACE BY VORTEX	Technical Publication

Track 17 Panel Session Expand All Sessions In Track

Track Chair: Zhengfeng Ma, *Chinese Nuclear Society*

Track Co-Chair: Guoqiang Wang, *Westinghouse Electric*

Track Co-Chair: Asif Arastu, *Bechtel Power Corporation*

Track Co-Chair: Robert Tsai

Track Co-Chair: Hideaki Monji, *University of Tsukuba*

Track Co-Chair: Akihiro Matsuda, *University of Tsukuba*

Track Co-Chair: Jovica Riznic, *Canadian Nuclear Safety Commission*

17-1 Small Modular Reactors *(Panel Session)*

Session Description:
This session will focus on providing a technology update including the status of on-going research to support the small modular reactor (SMR). Presenters will also address the opportunities and challenges for deploying the SMR technology.

Session Schedule: Wednesday, July 31, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Layla Sandell, *Westinghouse Electric Company*

Session Co-Chair: Asif Arastu, *Bechtel Power Corporation*

Session Co-Chair: Tetsuaki Takeda, *University of Yamanashi*

ICONE21-16930	CNNC's ACP 100 Reactor	Panel
ICONE21-16931	Add Title Here.	Panel
ICONE21-16932	Add Title Here.	Panel
ICONE21-16933	Add Title Here	Panel
ICONE21-16934	Add Title Here.	Panel
ICONE21-16935	Add Title Here.	Panel

17-2 Nuclear Waste Management *(Panel Session)*

Session Description:
This session will pay emphasis on the back-end of nuclear fuel cycle, especially on management of nuclear waste. Subjects such as: HLLW disposal, medium and low level waste disposal and vitrification, and so on will be encouraged for exchange.

Session Schedule: Wednesday, July 31, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Guoan Ye, *China Institute of Atomic Energy*

Session Co-Chair: Kun Lee J., *KAIST*

Session Co-Chair: Philippe Gillet, *AREVA Beijing Consulting CO.,LTD*

ICONE21-16936 Add Title Here	Panel
ICONE21-16937 Add Title Here.	Panel
ICONE21-16938 Add Title Here.	Panel
ICONE21-16939 Add Title Here.	Panel
ICONE21-16940 Add Title Here.	Panel

17-3 New NPP Designs & Passive Systems *(Panel Session)*

Session Description:
Several distinct New NPP Designs and Passive/non-passive systems are proposed and discussed within this panel session. Invited Panelist from the nuclear industry will present experiences and challenges during the New NPP designs and construction process.

Session Schedule: Wednesday, July 31, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Sumit Ray, *Westinghouse*

Session Co-Chair: Xiaomin Wang, *Nuclear Power Institute of China*

Session Co-Chair: Yassin Hassan, *Texas A&M university*

ICONE21-16941 Add Title Here	Panel
ICONE21-16942 Add Title Here	Panel
ICONE21-16943 Add Title Here.	Panel
ICONE21-16944 Add Title Here.	Panel
ICONE21-16945 Add Title Here.	Panel
ICONE21-16946 Add Title Here.	Panel
ICONE21-16947 Add Title Here.	Panel

17-4 Next Generation NPPs *(Panel Session)*

Session Description:
This session will focus on the latest status in research and development of next generation of nuclear power plants. Speakers from government, regulatory and industry backgrounds will address the growth and challenges from their perspectives and what to expect in new developments in the coming years.

Session Schedule: Wednesday, July 31, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Jeffrey Bradfute L., *Westinghouse*

Session Co-Chair: Asif Arastu, *Bechtel Power Corporation*

Session Co-Chair: Tetsuaki Takeda, *University of Yamanashi*

ICONE21-16948 Add Title Here.	Panel
ICONE21-16949 Add Title Here.	Panel
ICONE21-16950 Add Title Here.	Panel
ICONE21-16951 Add Title Here.	Panel
ICONE21-16952 Add Title Here.	Panel
ICONE21-16953 Add Title Here.	Panel
ICONE21-16954 Add Title Here.	Panel

17-5 Standards & Codes, V & V *(Panel Session)*

Session Description:
In the session, JSME and ASME Codes and Standards for Design and Construction of Nuclear Power Plant Components will be discussed. Some comparisons between JSME and ASME Codes and Standards will be introduced and a plan of harmonizing the differences will be proposed. Additionally,this panel will discuss approaches for verification and validation in computational modeling for nuclear applications. Verification and validation methodologies will quantify the degrees of accuracy inferred from the comparison of solution and data for specified variables at specified validation points and use concepts from experimental uncertainty analysis to consider the errors and uncertainties in both the solutions and the data.

Session Schedule: Thursday, August 01, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: Clayton Smith, P.E., PMP, *Fluor Nuclear Power*

Session Co-Chair: Howard Chung H., *Korea Advanced Institute of Science & Technology (KAIST)*

Session Co-Chair: Koji Okamoto, *The University of Tokyo*

ICONE21-16955 Add Title Here.	Panel
ICONE21-16956 Add Title Here.	Panel
ICONE21-16957 Add Title Here.	Panel
ICONE21-16958 Add Title Here	Panel
ICONE21-16959 Add Title Here.	Panel
ICONE21-16960 Add Title Here.	Panel

17-6 Fukushima Daiichi Accident Issues *(Panel Session)*

Session Description:
The work toward decommissioning of Fukushima Daiichi Nuclear Power Plant is in progress. For its success, the national Research & Development project for the decommissioning is performed under the Japanese government and Tokyo Electric Power Company (TEPCO) Council. This panel session presents and discusses current status and some results of this project and related activities.

Session Schedule: Thursday, August 01, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Yasuo Koizumi, *Shinshu University*

Session Co-Chair: Kohei Hisamochi, *Hitachi-GE Nuclear Energy, Ltd.*

ICONE21-16961	Add Title Here.	Panel
ICONE21-16962	Add Title Here.	Panel
ICONE21-16963	Add Title Here.	Panel
ICONE21-16964	Add Title Here.	Panel
ICONE21-16988	Results on the National Research and Development Project in 2012 for the Decommissioning	Panel
ICONE21-16989	Results on the National Research and Development Project in 2012 for the Decommissioning	Panel

17-7 Variety of Severe Accident Management *(Panel Session)*

Session Description:
Equipment designs and strategies to prevent or mitigate the consequences of severe accident as advanced accident management measures.

Session Schedule: Thursday, August 01, 2013 **01:40 PM-03:40 PM**

Session Sponsors:

Session Chair: Jun Sugimoto, *Kyoto University*

Session Co-Chair: Moo Kim H., *POSTEC*

Session Co-Chair: Tianmin Xin, *China Nuclear Power Engineering Corp.*

ICONE21-16965	Thermal-Hydraulic Safety Research at KAERI for Secusitng Ultimate Heat Sink	Panel
ICONE21-16966	Add Title Here.	Panel
ICONE21-16967	Add Title Here.	Panel
ICONE21-16968	Add Title Here.	Panel
ICONE21-16969	Add Title Here.	Panel
ICONE21-16970	Add Title Here.	Panel
ICONE21-16971	Add Title Here.	Panel
ICONE21-16972	Add Title Here.	Panel

17-8 Nuclear Industry Initiatives *(Panel Session)*

Session Description:
“Nuclear Industry Initiatives” is a broad topic, which may include initiatives for a number of areas, such as new plant construction or fuel performance. The overall goal of this panel session is to focus on initiatives that improve the status quo at our nuclear plants in terms of operations, safety, new builds and other topics of interest. Each invited speaker will have a different focus. Presentations will include why initiatives are sometimes necessary, how initiative plans are developed and what outcome resulted or will be expected.”

Session Schedule: Thursday, August 01, 2013 **04:00 PM-06:00 PM**

Session Sponsors:

Session Chair: Timothy Collier J., *Westinghouse*

Session Co-Chair: Jeff Deshon, *Electric Power Research Institute*

Session Co-Chair: Remy AUTEBERT

ICONE21-16973	Add Title Here.	Panel
ICONE21-16974	Add Title Here.	Panel
ICONE21-16975	Add Title Here.	Panel
ICONE21-16976	Add Title Here.	Panel
ICONE21-16977	Add Title Here.	Panel
ICONE21-16990	High Power Density Metallic Fuel for Light Water Reactors	Panel

17-9 Inland NPPs: Experience & Outlook *(Panel Session)*

Session Description:
INLAND nuclear power plant or COASTAL nuclear power plant? What are the differences? Is the difference significant? In this panel, the Panelist will present the status of the sites of NPP in the world. They will introduce the experience for inland nuclear power plant siting, construction and operation. They will also discuss the future of the inland NPPs.

Session Schedule: Friday, August 02, 2013 **08:00 AM-10:00 AM**

Session Sponsors:

Session Chair: John Bendo, *ASME*

Session Co-Chair: Hua Chen, *China National Nuclear Power Co.,Ltd*

Session Co-Chair: Clayton Smith, P.E., PMP, *Fluor Nuclear Power*

ICONE21-16978	Add Title Here.	Panel
ICONE21-16979	Add Title Here.	Panel
ICONE21-16980	Add Title Here.	Panel
ICONE21-16981	Add Title Here.	Panel

17-10 Nuclear Engineering Education *(Panel Session)*

Session Description:
With major countries expanding nuclear energy's role and new countries poised to develop it, the question here is what the various institutions are doing to the workforce shortage, training and education issues to

emphasize on promoting the levels of skill, motivation and ethics for nuclear power development. Several Panelist will provide various views in addressing the needs in meeting this global imperative. What do we need in order to succeed as engineers in our own careers?

Session Schedule: Friday, August 02, 2013 **10:20 AM-12:20 PM**

Session Sponsors:

Session Chair: Yassin Hassan, *Texas A&M university*

Session Co-Chair: S.w. Kidd, *East Cliff Consulting*

ICONE21-16982 Add Title Here.	Panel
ICONE21-16983 Add Title Here.	Panel
ICONE21-16984 Add Title Here	Panel
ICONE21-16985 Add Title Here	Panel

Note: Program is subject to change.

Sponsored By

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In Cooperation with

附錄2 JNRA簡報

New Nuclear Regulation Authority and Requirements of Japan

Hiroshi YAMAGATA

Senior Coordinator for Severe Accident Measures
Director, Nuclear Regulation Division for BWR

Nuclear Regulation Authority of JAPAN

CONTENTS

- New Regulator: Independence & Integration
- Safety Goals: Protect People and the Environment
- New Requirements:
  - ✓ Defense-in-Depth
  - ✓ Elimination of Common Cause Failures
  - ✓ Against Severe Accident & Terrorism
  - ✓ Continuous Improvement
- Emergency Preparedness: Quick Action

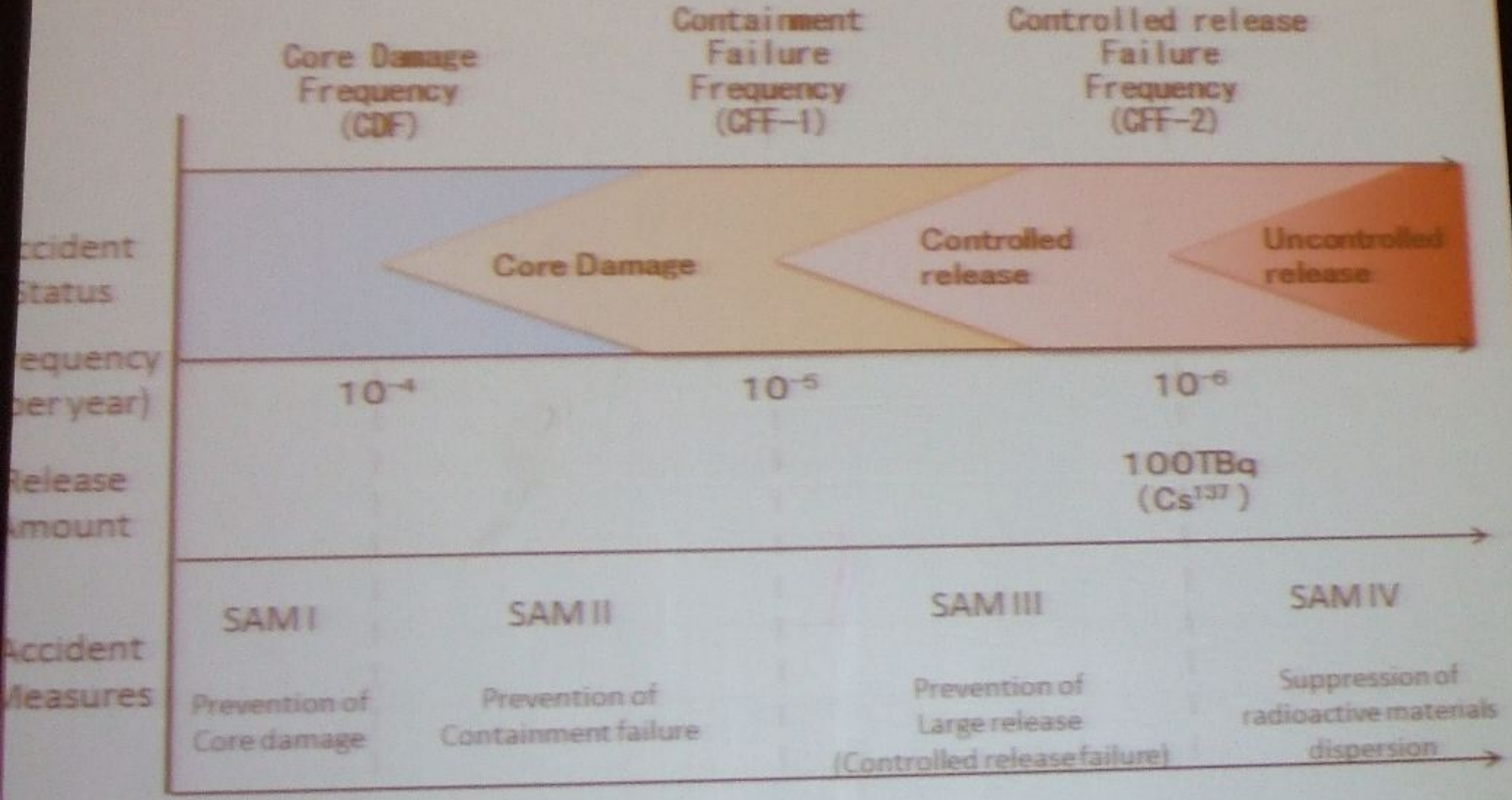
New Nuclear Regulation Authority (NRA)
Independence & Integration

AEC : Atomic Energy Commission
METI : Ministry of Economy, Trade and Industry
MEXT : Ministry of Education, Culture, Sports, Science and Technology
MOE : Ministry of the Environment
NISA : Nuclear and Industrial Safety Agency (abolished)
NSC : Nuclear Safety Commission (abolished)

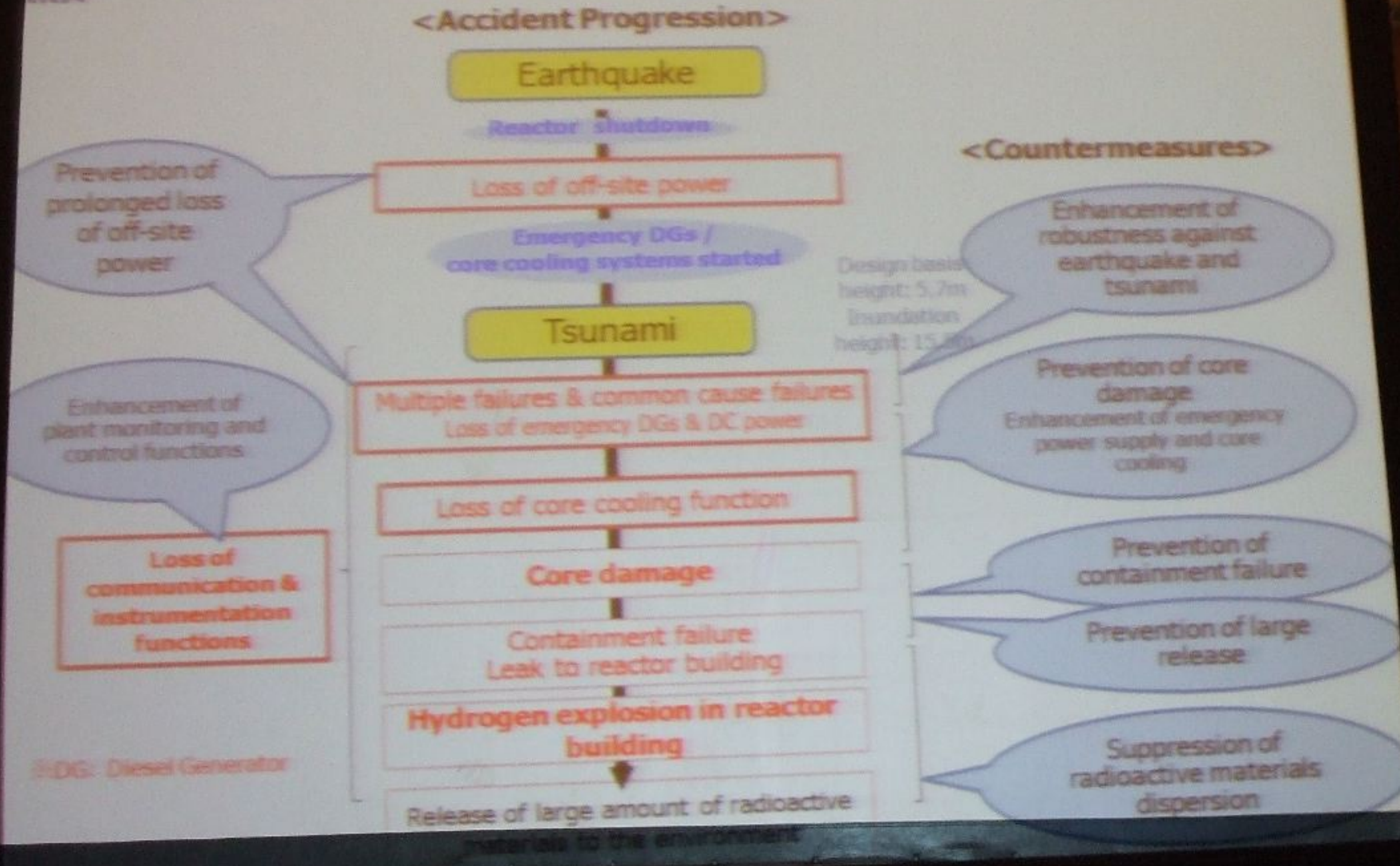
Safety Goals

- NRA agreed the safety goals in April 2013.
- Based on the ex-Nuclear Safety Commission report
  - ✓ Qualitative: "The possibility of health effects to the public caused by utilization of nuclear power should be limited to the level not to cause a significant increase in the public risk."
  - ✓ Quantitative: CDF < 10^{-4}, CFF < 10^{-5}
- In addition, by taking the environmental protection point of view into consideration, NRA introduced limits of amount and frequency of radioactive materials release.
  - ✓ Cs-137 release of 100 TBq or larger < 10^{-6}

Safety Goals : Accident status and its frequency



Progression of Fukushima-Daiichi Accident and Countermeasures



※DG: Diesel Generator

Policy in New Requirements

- ✓ Place emphasis on Defense-in-Depth concept
  - Prepare multi-layered protective measures and, for each layer, achieve the objective only in that layer regardless of the measures in the other layers.
- ✓ Eliminate common cause failures (natural hazards)
  - Introduce accurate approaches in assessment of earthquake and tsunami and measures against tsunami inundation.
  - Make much account of "diversity" and "independence".
  - Introduce assessment of volcano, tornado, & forest fire.
- ✓ Eliminate common cause failures (others)
  - Enhance measures against fire, internal flooding, & loss of power.
- ✓ Define "functional" requirements
  - Provide flexibility in choosing acceptable measures.

Structure of New Requirements

<Pre-existed>

Design basis
to prevent core damage
(Based on single failure, etc.)

- Fire Protection
- Reliability of power supply
- Function of other SSCs
- Natural phenomena
- Seismic/Tsunami resistance

<New>

- Response to intentional aircraft crash
- Suppression of radioactive materials dispersal
- Prevention of CV failure & Large release
- Prevention of core damage (Postulate multiple failures)
- Internal flooding
- Fire Protection
- Reliability of power supply
- Function of other SSCs
- Volcano, Tornadoes, forest fire
- Seismic/Tsunami resistance

(Against SA & Terrorism)
NEW

Reinforced

Reinforced

Stringent Standards & Enhanced Measures on Tsunami

- ✓ More Stringent Standards on Tsunami
  - Define "Design Basis tsunami" that exceeds the largest in the historical records and require to take protective measures such as breakwater wall based on the design basis tsunami.
- ✓ Enlarged Application of Higher Seismic Resistance
  - SSCs for tsunami protective measures are classified as Class S equivalent to RPV etc. of seismic design importance classification.

<Example of tsunami measures (multiple protective measures)>

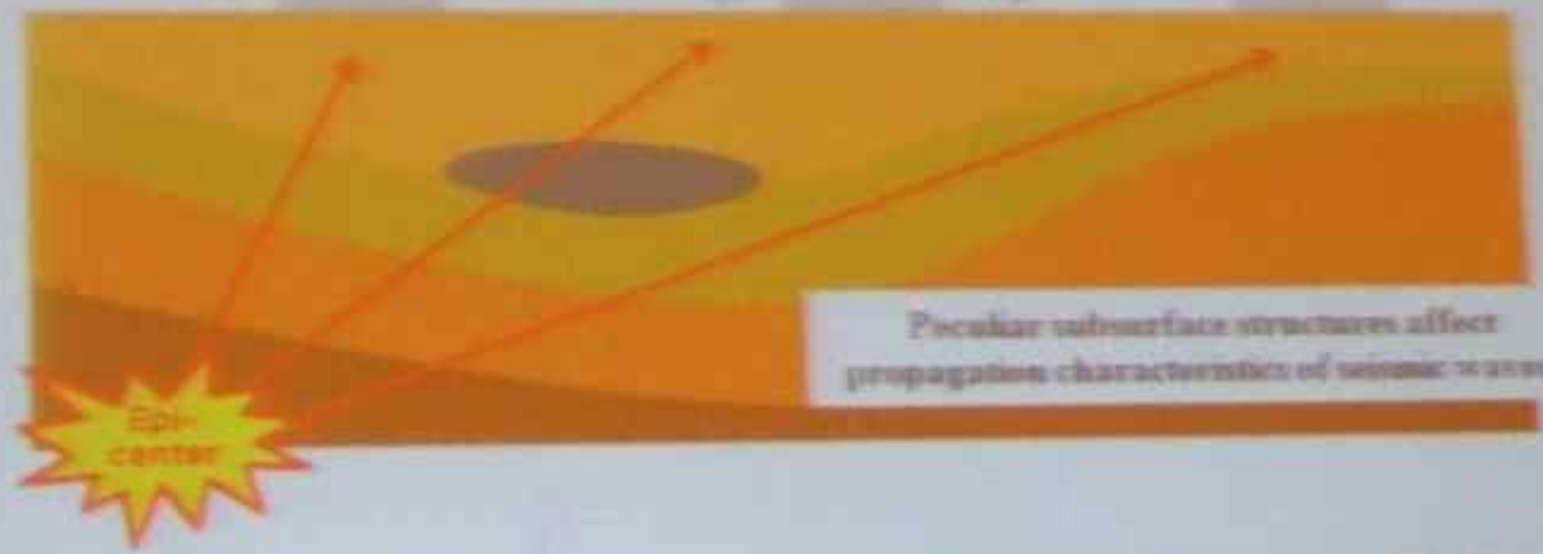
◆ Breakwater Wall
(prevent inundation to site)

◆ Tsunami Gate
(prevent water penetration into the building)

More Accurate Seismic Ground Motions

Evaluate seismic motion of nuclear power plants

- ✓ considering their unique structures under the ground.
- ✓ in the vicinity of fracture zones.

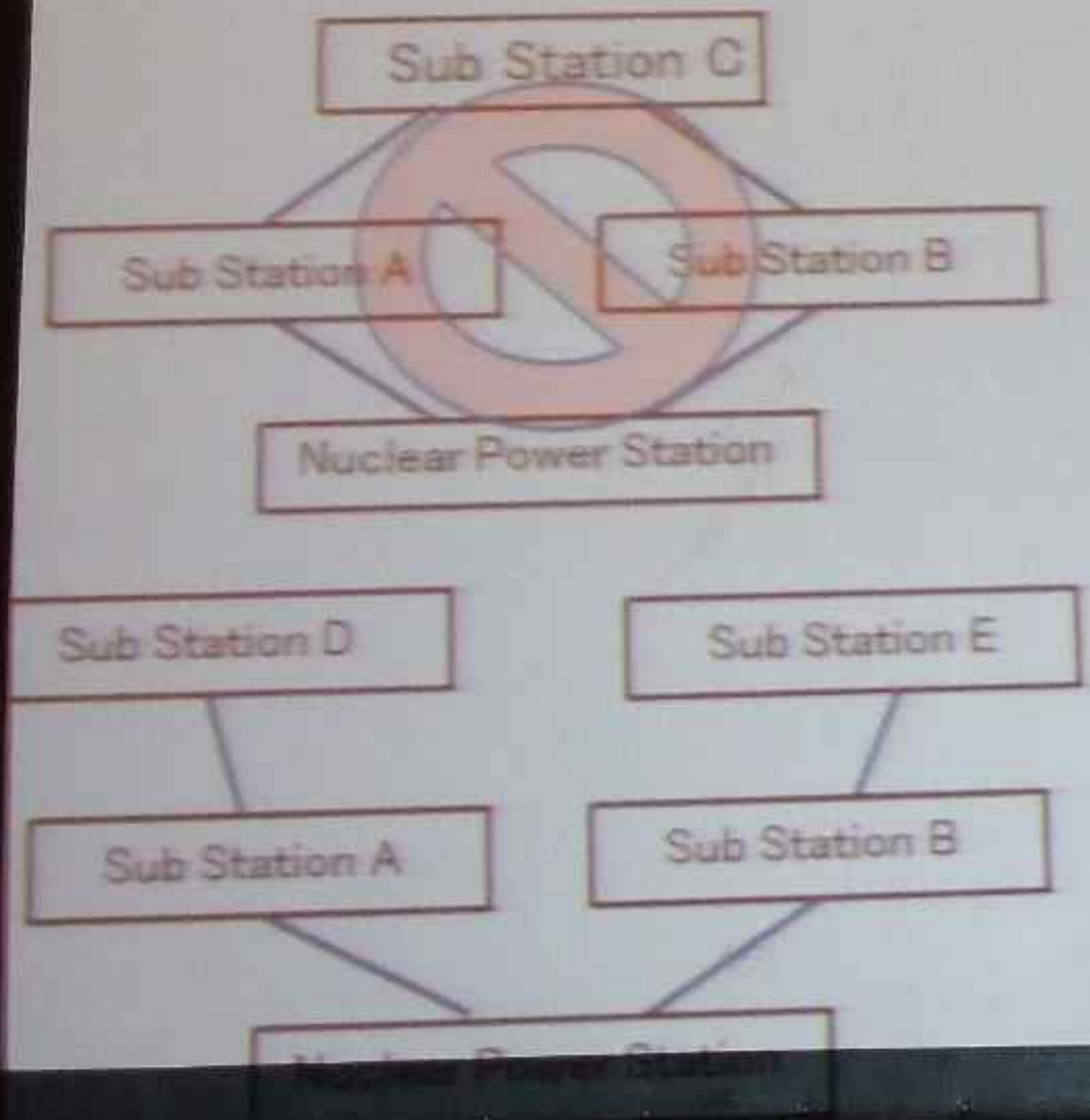


<Example of a subsurface structure survey>

vibration generator generates vibrations
derground, and geophones installed in a borehole
cord the vibrations. By analyzing the record,
surface structure can be ascertained

Prevent CCFs by others than Natural Events: Example

- Reinforcement of off-site power supply (connection to different substations through multiple lines)



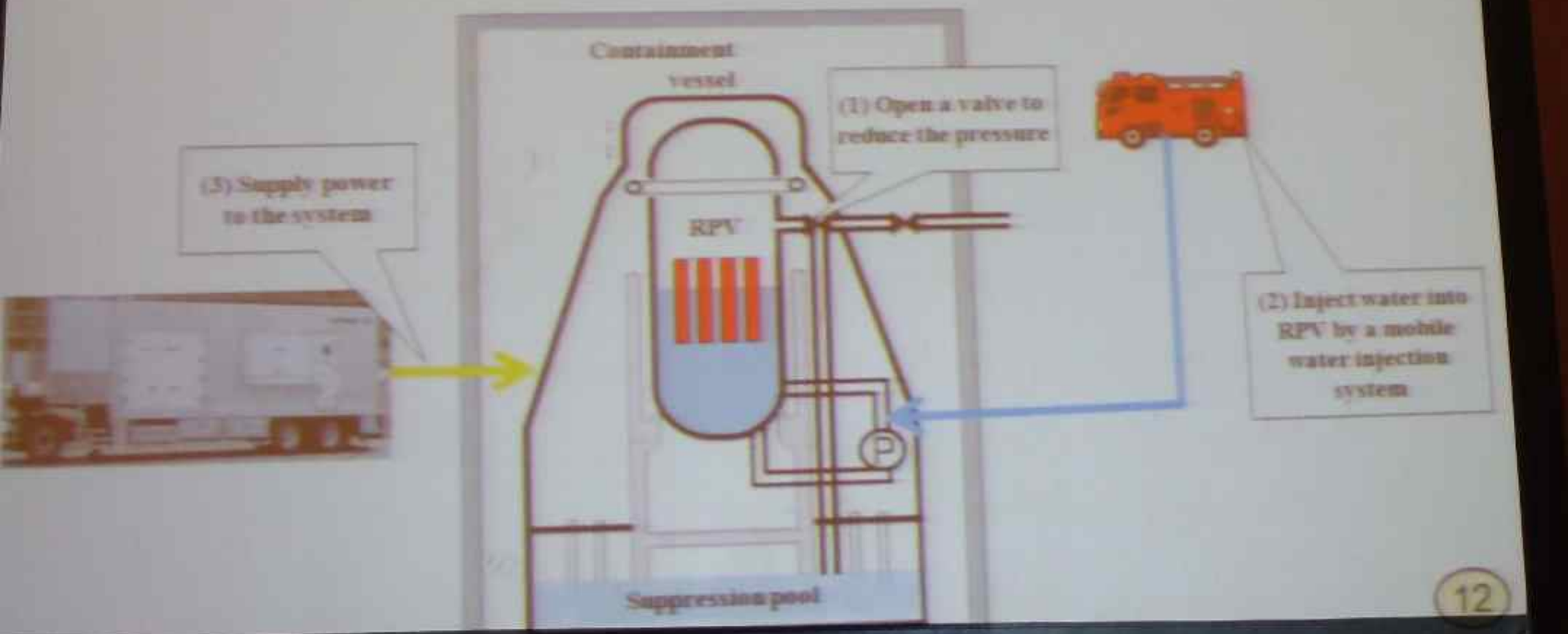
- ✓ Fire protection (use of non-combustible cables for SSCs with safety functions, whose non-combustibility are confirmed by verification tests)

Against Severe Accident and Terrorism

- ✓ Prepare multi-layered protection for "prevention of core damage", "prevention of containment failure", "prevention of large release (controlled release by venting)", and "suppression of radioactive materials dispersion".
- ✓ Use mobile equipment as a base, as in U.S., and enhance reliability with permanent systems/equipment.
- ✓ Enhance protective measures in spent fuel pool.
  - Water level measurement, alternative water supply, spray.
- ✓ Improve command communication and instrumentation.
  - Reinforced seismic-resistance of on-site emergency response center, improved reliability/durability of communication system, enhanced instrumentation including in spent fuel pool.
- ✓ Introduce "Specialized Safety Facility" against intentional aircraft crash.

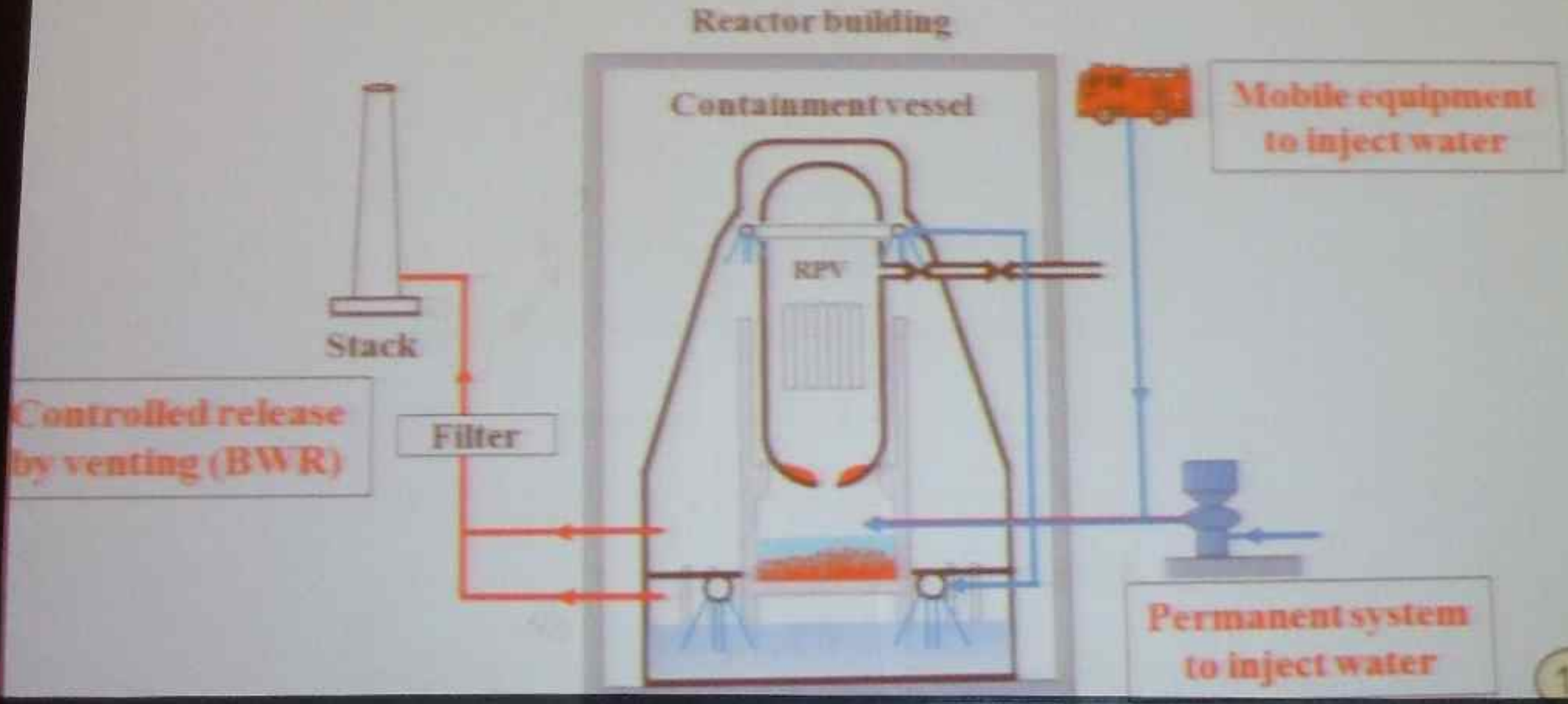
Prevention of Core Damage at Multiple Failures

- Require measures to prevent core damage in the event of loss of safety functions due to common cause
  - Ex.1 Open a safety-relief valve by mobile battery
  - Ex.2 Inject water into the RPV by mobile pump
  - Ex.3 Supply power by power vehicle at SBO



Prevention of Containment Failure

- ✓ Require measures for
  - cooling, depressurization and radioactive material reduction in the atmosphere of the containment vessel
  - cooling molten core fallen to the bottom of the containment vessel
  - preventing hydrogen explosion, and etc.



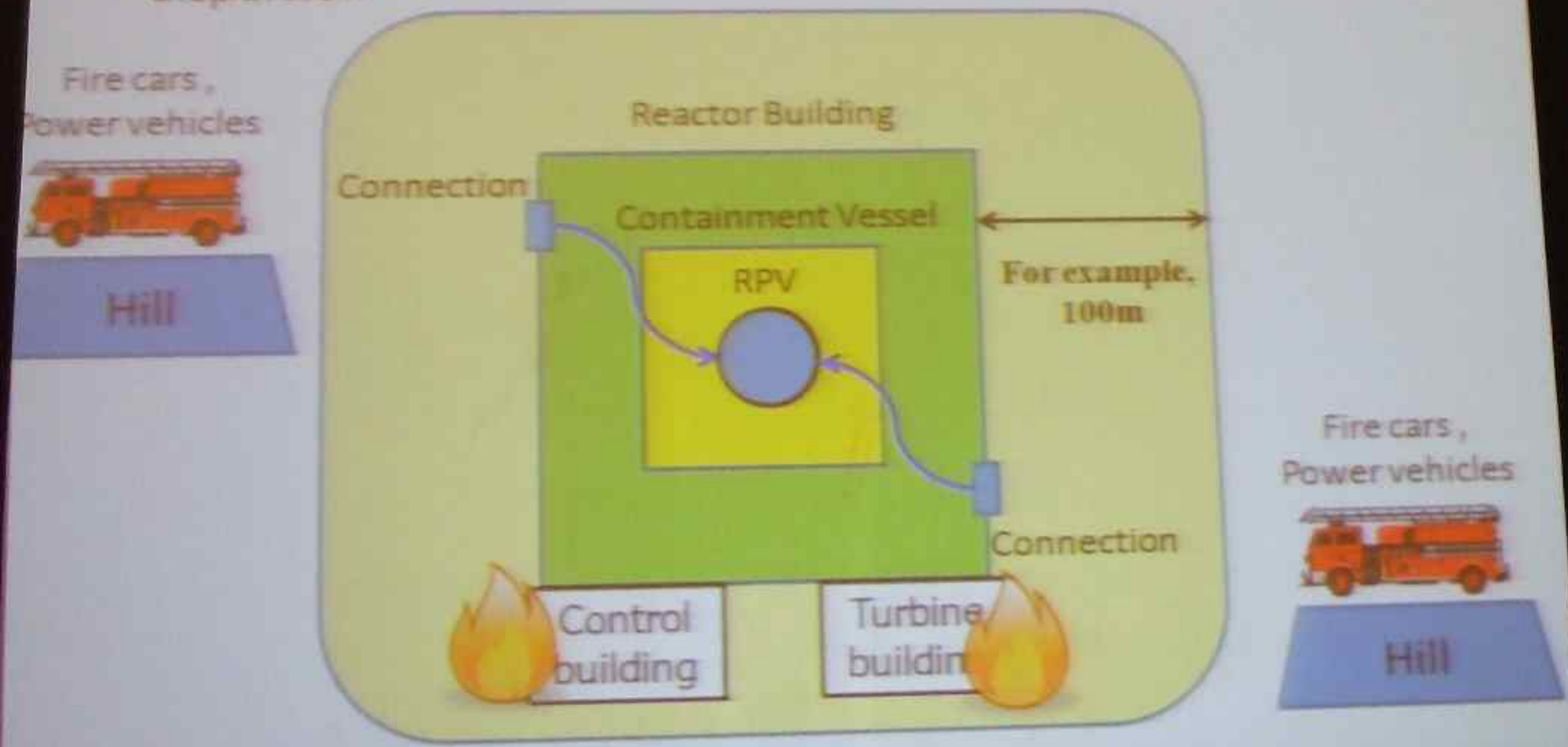
Suppression of Radioactive Materials Dispersion

- ✓ Assuming CV failure, require outdoor water spraying equipment, etc. to suppress radioactive materials dispersion by water spraying to reactor building and radioactive plume.

Water-spraying with a large scale bubble water cannon system

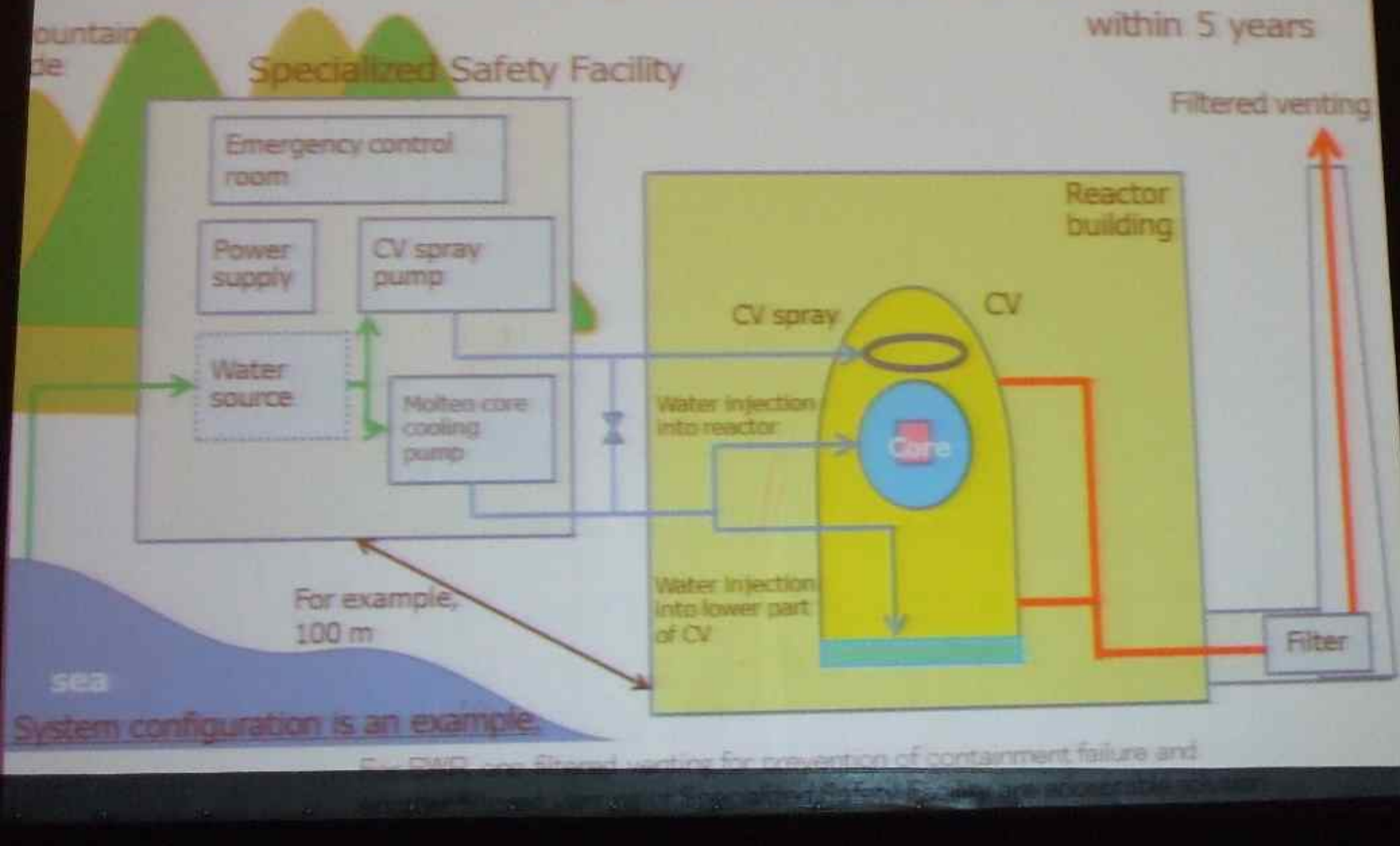
Response to Extreme External Events & Intentional Aircraft Crash

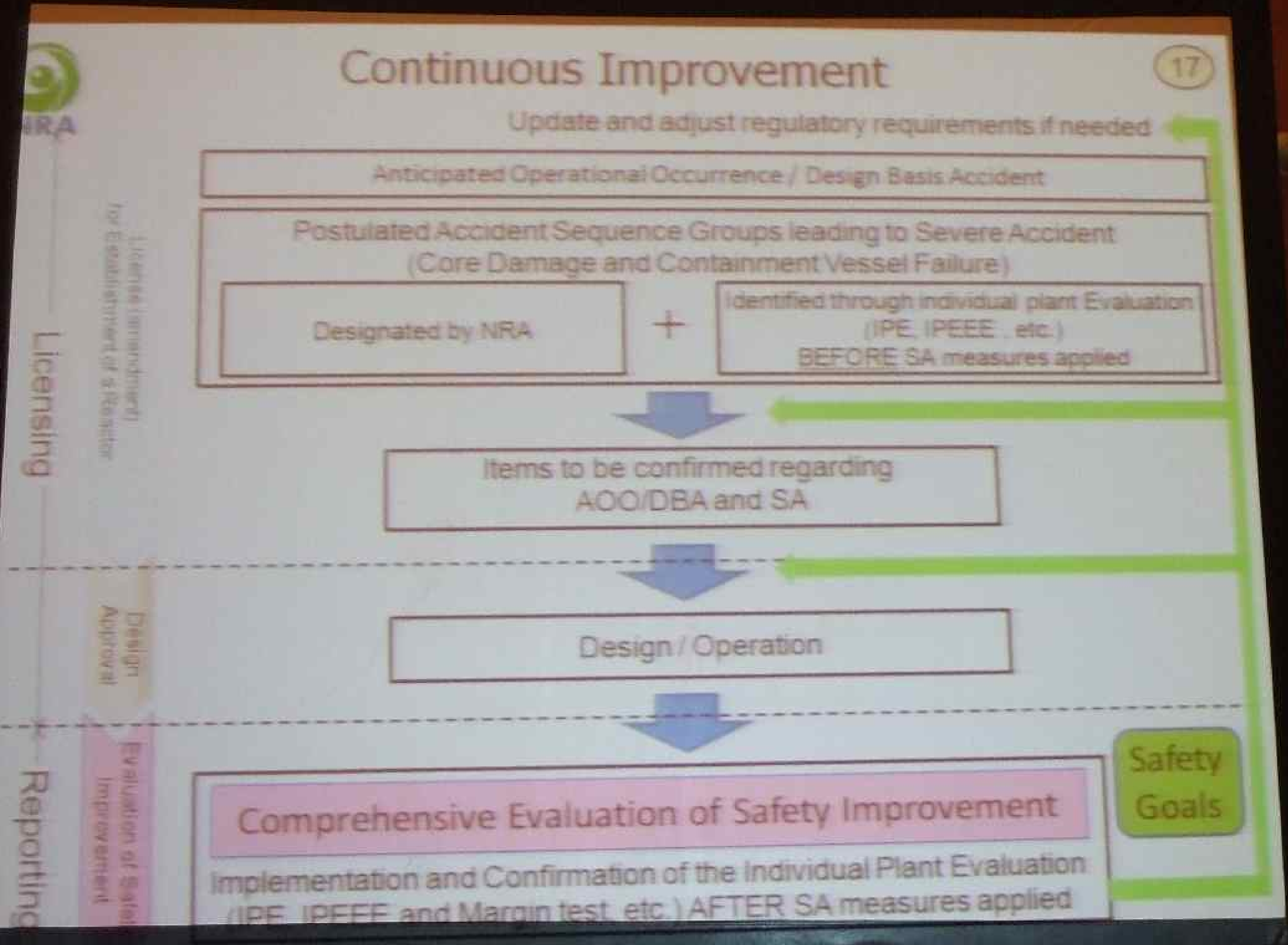
- ✓ Prepare mobile equipment and connections with spatial dispersion



Facility against Intentional Aircraft Crash

- ✓ Require a "Specialized Safety Facility" to mitigate release of radioactive materials after core damage due to intentional aircraft crash within 5 years




Continuous Improvement
17
NRA
Update and adjust regulatory requirements if needed
Anticipated Operational Occurrence / Design Basis Accident
Postulated Accident Sequence Groups leading to Severe Accident (Core Damage and Containment Vessel Failure)
Designated by NRA
+
Identified through individual plant Evaluation (IPE, IPEEE, etc.) BEFORE SA measures applied
Items to be confirmed regarding AOO/DBA and SA
Design / Operation
Comprehensive Evaluation of Safety Improvement
Implementation and Confirmation of the Individual Plant Evaluation (IPE, IPEEE and Margin test, etc.) AFTER SA measures applied
Safety Goals
Licensing
License (amendment) for Establishment of a Reactor
Design Approval
Reporting

Nuclear Emergency Preparedness

PAZ (Precautionary Action Zone): ~ 5 km in radius

Residents take swift actions (e.g., evacuation, intake of iodine tablets) based on the emergency action level (EAL) before the potential release of radioactive material into the environment.

UPZ (Urgent Protective Action Planning Zone): ~30 km in radius

Residents take actions (e.g., evacuation, temporary relocation, sheltering, intake of iodine tablets) based on the EAL and the operational intervention level (OIL) based on environmental monitoring data.

Thank you for your attention.

Outline of New Regulatory Requirements at NRA website:
http://www.nsr.go.jp/english/

Nuclear Criticality Analyses of the Spent Fuel Pool under Loss of Spent Fuel Pool Water and Neutron Absorbers in the Racks for Taipower's Chinshan Nuclear Power Plant

Weng-Sheng Kuo

Nuclear Engineering Division
Institute of Nuclear Energy Research

Presentation Overview

- Beginning Words
- Chinshan NPP
- Basic Assumption & Criteria of Criticality
- Analysis Tools & Models
- What & How Do We Compute
- Results of Analyses
- Concluding Words

Beginning Words

- Criticality of SFP under BDB (Beyond-Design-Basis) accidents is one of the safety concerns worthy of investigation following the Fukushima accident.
- The investigation may help nuclear utilities and regulatory bodies to develop the safety measures and regulations to prevent the criticality accident.

UNIT3 SFP
(Water surface and under water)

UNIT4 SFP
(Water surface and under water)

Presentation Overview

- Beginning Words
- Chinshan NPP
- Basic Assumption & Criteria of Criticality
- Analysis Tools & Models
- What & How Do We Compute
- Results of Analyses
- Concluding Words

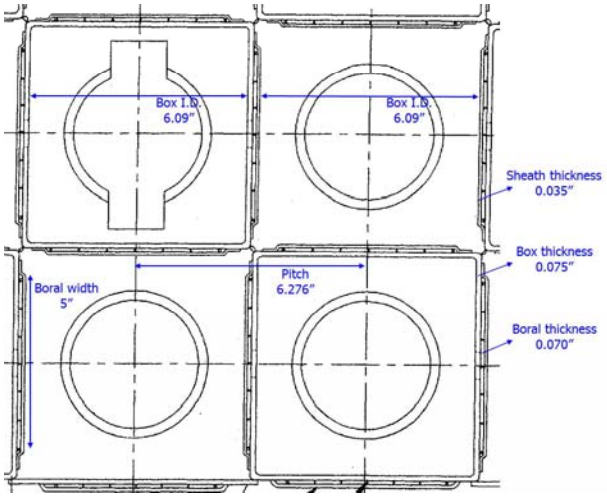
Chinshan NPP

- Chinshan NPP is located at the northeast corner of Taiwan.
- Dual unit BWR-4 Mark I reactors begin operation in 1978 and 1979.
- Chinshan NPP SFP is chosen for investigation as it is of the same BWR type as Fukushima Daichi.

SFP Capacities

Unit	Original Design	After 1st Re-racking	After 2nd Re-racking
1	1410	2470	3083
2	1620	2470	3083

SFP Rack Module



Presentation Overview

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- Concluding Words

Basic Assumption & Criteria of Criticality

- The rack array configuration stays intact under the loss of SFP water and the loss of neutron absorbers.
- The conventional criteria of 0.95 of Keff does not apply; instead, we look at whether the changes in Keff will reach 0.05ΔK.

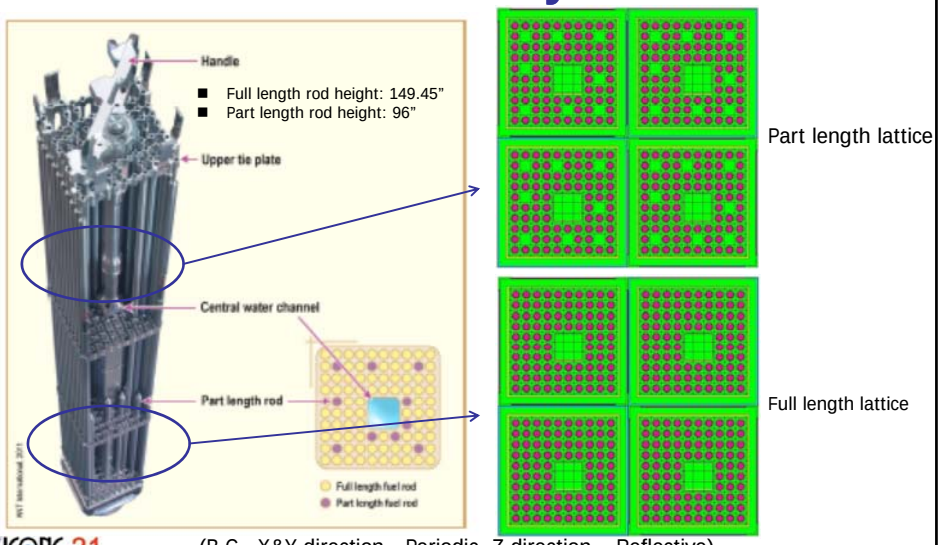
Presentation Overview

- Beginning Words
- Chinshan NPP
- Basic Assumption & Criteria of Criticality
- Analysis Tools & Models
- What & How Do We Compute
- Results of Analyses
- Concluding Words

Analysis Tools & Models

- MCNP5&ENDF/B-VII was used to compute changes in Keff.
- CASMO-4 was used to provide atom densities of nuclides to MCNP5 as part of the input data.
- A spreadsheet was devised to compute atom densities of BORAL in the SFP racks.

MCNP5 Geometry Models



(B.C. X&Y direction - Periodic, Z direction – Reflective)

Six Fuel Lattices Were Analyzed

Enrichment (w/o)	Fuel Rod Type
3.585	Full Length
3.585	Part Length
4.064	Full Length
4.064	Part Length
4.562	Full Length
4.562	Part Length

Presentation Overview

- Beginning Words
- Chinshan NPP
- Basic Assumption & Criteria of Criticality
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- What & How Do We Compute
- Results of Analyses
- Concluding Words

What & How Do We Compute

- For the loss of SFP water analysis, we decrease the density of SFP water to see whether Keff will decrease too.
- For the loss of B-10 analysis, we decrease the concentrations of Boron-10 in BORAL at various SFP water densities until the changes in Keff reach 0.05ΔK, which is critical by the assumption. Thus, we can know by how much amount of loss of B-10 that the SFP will be critical.

$$\Delta K(\rho, x, t) = K(\rho, x, t) - K(1.0, 0, t)$$

where,

ρ = density of spent fuel pool water (g/cm^3),
x = percentage of Boron-10 loss in BORAL (%),
t = fuel lattice.

- To see how much boric acid should be added into SFP water to compensate for the increase of 0.05ΔK due to loss of B-10 in BORAL, we compute:

$$\Delta K(\rho, p, t) = K(\rho, p, t) - K(\rho, 0, t)$$

where,

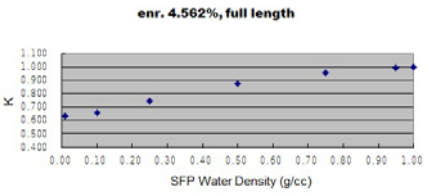
ρ = density of spent fuel pool water (g/cm^3),
p = concentration of boric acid (ppm),
t = fuel lattice.

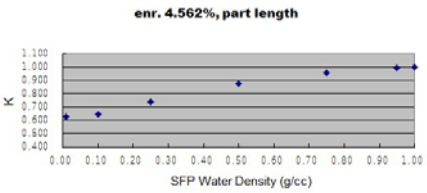
Presentation Overview

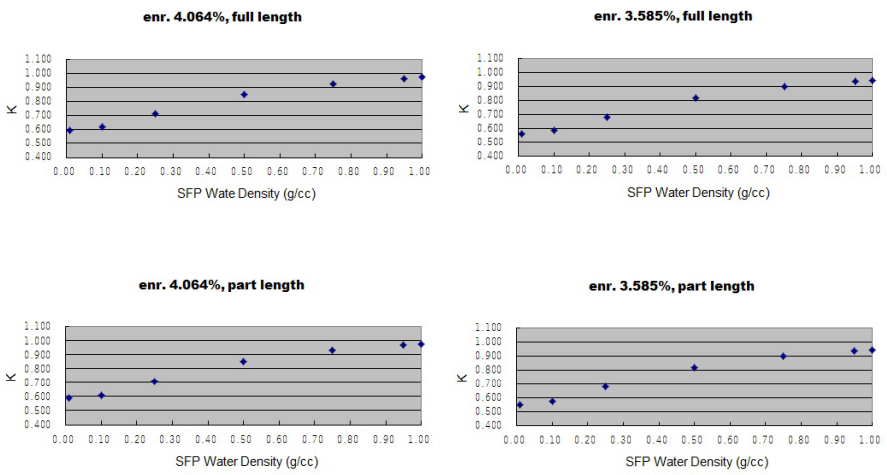
- Beginning Words
- Chinshan NPP
- Basic Assumption & Criteria of Criticality
- Analysis Tools & Models
- What & How Do We Compute
- Results of Analyses
- Concluding Words

Results of Analyses

- If BORAL is intact, Keff will decrease as loss of SFP water.







- As the SFP water density decreases (loss of SFP water), more B-10 should be lost so that changes in Keff can reach 0.05ΔK and therefore, higher concentration of boric acid should be added into the SFP water to compensate for this increase in Keff.

Fuel Lattice	SFP Water Density (g/cm^3)	Boron-10 Loss Percentage (%)	Concentration of Boric Acid (ppm)
3.585 wt% part length	0.50	77.8	860
	0.75	66.0	460
	0.95	56.0	330
	1.00	54.0	310
3.585 wt% full length	0.50	78.0	980
	0.75	66.0	520
	0.95	55.0	380
	1.00	53.0	350

Fuel Lattice	SFP Water Density (g/cm^3)	Boron-10 Loss Percentage (%)	Concentration of Boric Acid (ppm)
4.064 wt% part length	0.50	77.5	880
	0.75	65.0	470
	0.95	55.0	340
	1.00	53.0	320
4.064 wt% full length	0.50	77.5	1010
	0.75	65.0	530
	0.95	55.0	390
	1.00	52.0	360
4.562 wt% part length	0.50	77.0	900
	0.75	65.0	490
	0.95	55.0	350
	1.00	52.0	330
4.562 wt% full length	0.50	76.7	1050
	0.75	65.0	560
	0.95	54.0	400
	1.00	52.0	370

Presentation Overview

- Beginning Words
- Chinshan NPP
- Basic Assumption & Criteria of Criticality
- Analysis Tools & Models
- What & How Do We Compute
- Results of Analyses
- Concluding Words

Concluding Words

- The SFP will not go critical when the SFP water is lost, unless there is sufficient loss of Boron-10 in the BORAL plates.
- To keep the fuel integrity and maintain enough cooling to the spent fuel pool, make-up water is required under the loss of the SFP water.
- For conservatism, sufficient amount of boric acid should be added into the SFP water to maintain the sub-criticality of the SFP.

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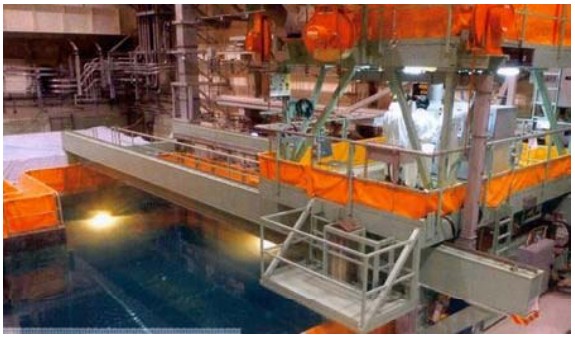
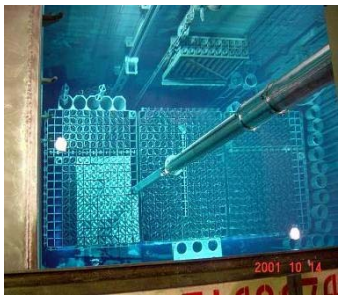
Thank you for your attention!





附錄4-林員簡報1

EFFECTS OF THE RHR RETURN LINE ELEVATION TO THE SUPPRESSION POOL TEMPERATURE OF THE LUNGMEN ABWR CONTAINMENT

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Outline

- Introduction
- Long-term GOTHIC modeling of the Lungmen containment
- Feedwater line break/ ECCS and RHR operation modes
- Analysis cases
- Results and discussion
- Conclusion

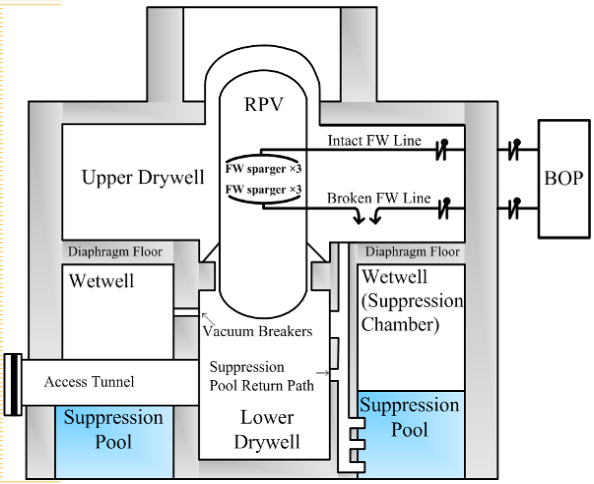
Introduction-1

- For the BWR plant during a LOCA event, the long-term cooling of the suppression pool is performed by the RHR system to ensure the containment structure integrity. However, if the pool temperature is too high, the ECCS pumps cannot have sufficient Net Positive Suction Head (NPSH).
- The RHR system operates automatically in the LPFL (Low Pressure Flooder) mode at the beginning of the LOCA. The RHR pumps drain water from the suppression pool and directly inject into the RPV. After 30 minutes, the RHR system will switch to the SPC (Suppression Pool Cooling) mode, in which the pool water is pumped to the RHR exchanger and the cooled water returns to the suppression pool via the RHR return lines.
- To prevent the cooled water from being directly drawn by the RHR pumps again, the return lines should be elevated from the RHR suction lines which are near the pool bottom.

Introduction-2

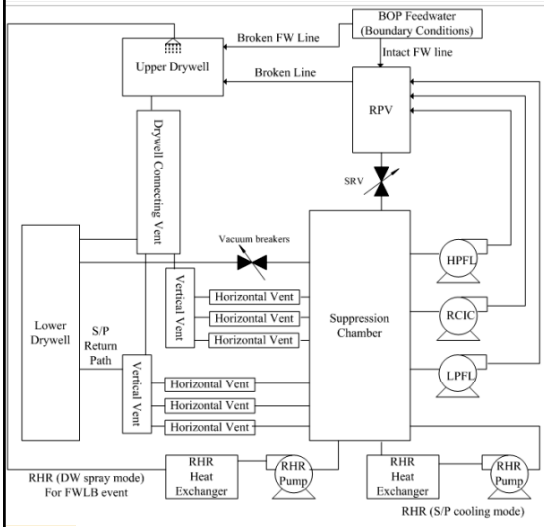
- In this study, an integrated modeling for the Lungman ABWR containment is constructed using GOTHIC code.
- Transient behaviors of the Lungman suppression pool temperature under long-term FWLB event are calculated.
- The blowdown conditions from the Balance of Plant (BOP) side are provided by a RELAP 5 transient analysis.
- The wetwell temperature stratification associated with different elevations of the RHR return lines are presented and investigated in this study.

Schematics of the Lungmen containment

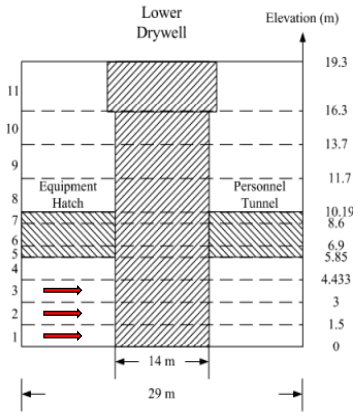


- Separate UDW and LDW connected by ten vertical drywell connecting vents.
- A vertical vent extending downward from each drywell connecting vent.
- Each vertical vent connected with three horizontal vents at different elevations.
- The horizontal vents are submerged by the suppression pool water.

Long-term GOTHIC modeling of Lungmen containment



Schematic of the long-term FWLB containment model



Subvolume distribution: side view a of the wetwell

Feedwater Line Break

- There are two feedwater lines connected to the Lungman RPV.
- If a double-ended FWLB occurs, fluid within the RPV flows reversely via three feedwater spargers and then into the UDW.
- In addition to the RPV blowdown, the BOP blowdown conditions are required in the FWLB event. Feedwater from the BOP side will not stop immediately when a feedwater line breaks, and it directly enters the drywell via the broken line.
- In the Lungman FSAR, the BOP blowdown conditions are provided by the RELAP5 transient analysis.

ECCS and RHR Operation Modes

- ECCS of the Lungman plant includes:
  - One RCIC (not operable in this study due to low RPV pressure)
  - Two HPCFs ($HPCF_B$ and $HPCF_C$)
  - Three RHR systems in the LPFL mode (RHR_A/LPFL, RHR_B/LPFL and RHR_C/LPFL). The LPFL mode is operable at the beginning of the accident and will be switched to other modes at 30 minutes.
- All ECCS pumps are assumed to take water from the suppression pool and are modeled by the flow and coupled boundary conditions of GOTHIC.
- For the single-failure criteria, one RHR heat exchanger is assumed to be inoperable to obtain the higher suppression pool temperature.
- Initially, three RHR systems operate in the LPFL mode without the heat exchanger operation. At 30 minutes, two RHR systems are assumed to be in SPC mode and one RHR system is in the drywell cooling mode.

Analysis Cases

	Drywell modeling	Wetwell modeling	RHR retune line elevation from the pool bottom*	Maximum suppression pool temperature
Lungmen FSAR	One lumped node for drywell	One node for pool and one node for airspace	Not applicable	92.8 ºC
Case A	Separated UDW and LDW	One lumped volume	1.538 m (Actual elevation)	91.5 ºC
Case B	Separated UDW and LDW	Subdivided	1.538 m (Actual elevation)	92.6 ºC
Case C	Separated UDW and LDW	Subdivided	0.8864 m (the same elevation of the suction line)	94.2 ºC
Case D	Separated UDW and LDW	Subdivided	3.0 m	90.0 ºC
Case E	Separated UDW and LDW	Subdivided	4.5 m	89.1 ºC
Case F	Separated UDW and LDW	Subdivided	18.895 m (the wetwell spray sparger)	88.9 ºC

Results and Discussion-case A

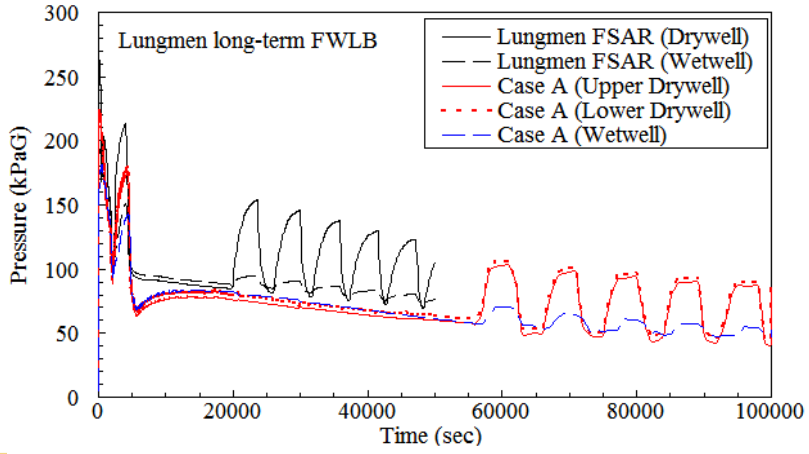
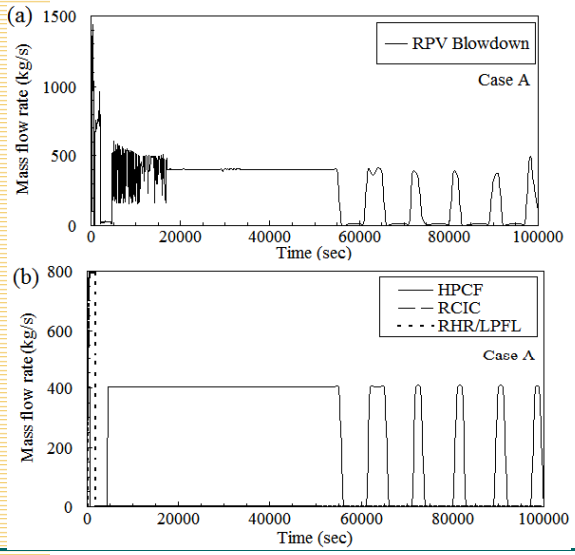


Fig. 4 Containment pressure responses of the Lungmen FSAR and case A

Results and Discussion-
Blowdown Data/ECCS Injection for case A



(a)Blowdown from the RPV

(b) ECCS injection in the long-term FWLB

Results and Discussion-
Suppression Pool Temperatures

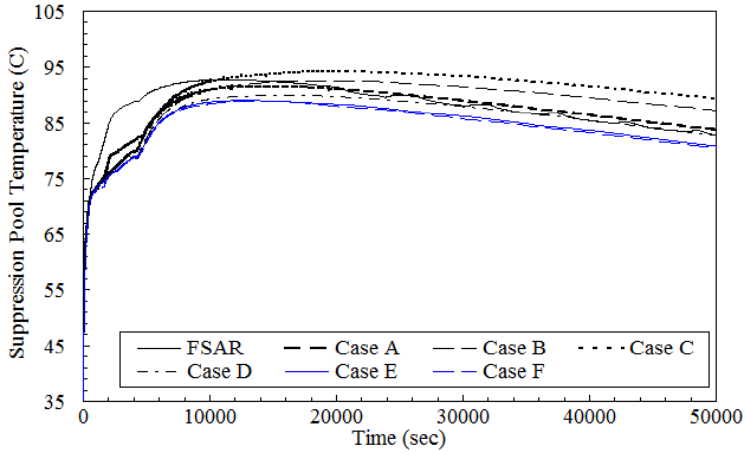
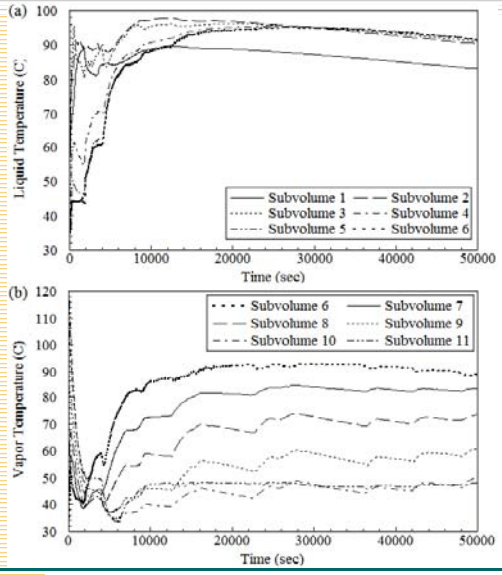


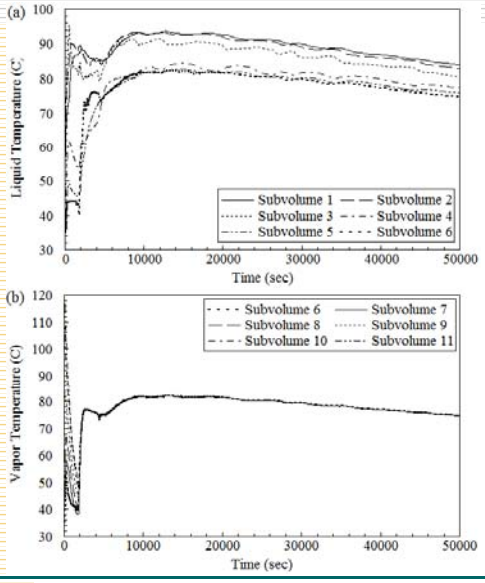
Fig. 6 Suppression pool temperature for each case

Results and Discussion- Liquid/Vapor Temperature Distribution for case C



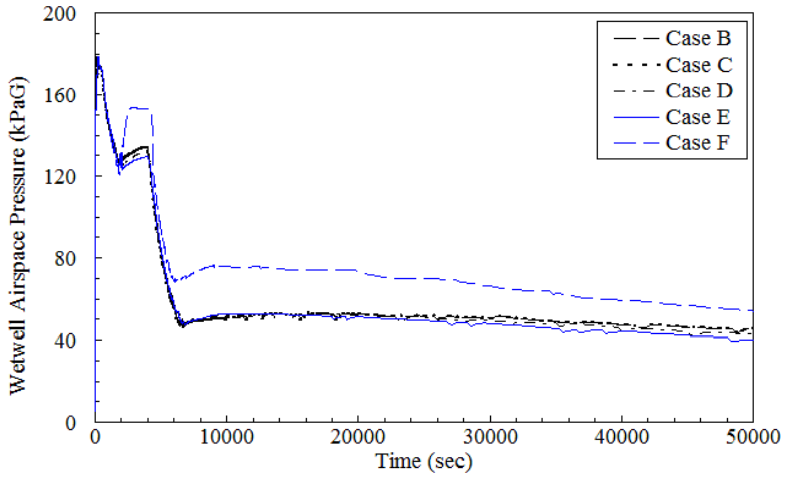
- The suction line and return line are at the same elevation in this case.
- The subvolumes below the RHR return line are cooler than the above subvolumes.
- The returned flow is not well mixed with the upper water, and then induces a lower HX heat removal rate.

Results and Discussion- Liquid/Vapor Temperature Distribution for case F



- The cooled water returns to the wetwell via the spray sparger located at the top of the wetwell space.
- The spray droplet goes downward from the top of the wetwell. The returned flow is mixed with the upper pool water first, so the higher subvolumes have lower liquid temperature as seen in the upper figure.
- Thus, the RHR HX heat removal rate in this case is increased because of the hotter suction water.
- The spray droplet contacts with the airspace first before entering the pool. Thus, the wetwell airspace temperature shown in the lower figure is much more uniform than other cases.

Results and Discussion-
Average Wetwell Airspace Temperatures



Conclusion-1

- A long-term ABWR containment model of the Lungmen plant is established using GOTHIC. The wetwell is vertically divided into subvolumes to present the temperature stratification effect.
- The suppression pool is cooled by the RHR systems, and the pool temperature stratification associated with the RHR return line elevation is investigated.
- The pool mixing becomes better with elevated RHR return line.

Conclusion-2

- Although the pool temperature can be further reduced by returning the cooled water via the wetwell spray sparger, it should be noted that the long-term wetwell pressurization is also introduced by the spray effect.
- The RHR return line should be elevated for higher suction water temperature, and using the wetwell spray in the long-term process should be avoided because of the wetwell pressurization.

LOSS OF COOLING THERMAL ANALYSIS FOR THE SPENT FUEL POOL OF THE CHINSHAN NUCLEAR POWER PLANT

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Outline

- Introduction
- Analysis modeling for the Chinshan spent fuel pool
- Initial conditions and boundary conditions
- Results and discussion
- Conclusion

Introduction

- Without adequate cooling, the SFP water will be eventually evaporated. If the spent fuels are not fully covered by water, the fuel integrity may be compromised due to overheating.
- The Chinshan BWR-4 plant is the first nuclear power plant in Taiwan. Units 1 and 2 of this plant began commercial operation in December 1978 and July 1979, respectively.
- Thermal behavior of the SFP of the Chinshan plant is investigated in this study. It is assumed that the SFP cooling system fails during an emergency full-core discharge.
- Before the fuels become uncovered, the water temperature and pool level are calculated using lumped energy and mass balance. Once the fuels are uncovered, the CFD technique is applied to calculate the hotspot temperature of the fuel cladding.
- A coarse management and a check-board arrangement of spent fuels are investigated.

Decay heat released by the spent fuels

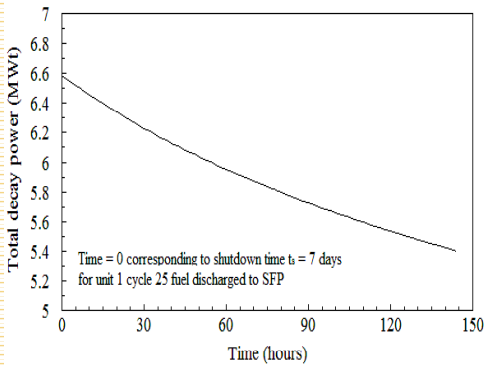

Fig. 1. Decay heat generated by all the fuels in Chinshan SFP

- The decay heat of the fuels is calculated based on ASB 9-2.
- Contributions from the fission products and the heavy elements are included in estimating the decay heat.
- Based on the operation data, the decay power generated by all the spent fuels in the SFP is shown in Fig. 1.

Before the spent fuels are uncovered

A lumped energy balance is used:

$$\rho \mathrm{Cp} V \frac{dT(t)}{dt} = P_{total}(t) \qquad (1)$$

ρ is the liquid water density (kg/m^3); *Cp* is the specific heat of the pool water (J/kg-^{o}C);
V is the SFP water volume (m^3);
T is the SFP water temperature (^{o}C);
t is time in second;
$P_{total}(t)$ is the total decay power in Watt at time *t*.

When the water temperature reaches the saturation temperature, the evaporation of the pool water begins and the pool level drops accordingly to the following equation:

$$\rho A \frac{dL(t)}{dt} = -\frac{P_{total}(t)}{h_{fg}} \qquad (2)$$

A is the pool surface area (m^2);
L is the pool level (m);
h_{fg} is the latent heat for evaporation (J/kg)

Fuel cladding temperature after fuel is uncovered

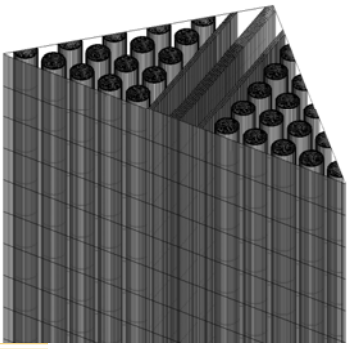

Fig. 2. Control volume distribution of the fuel rods

- A CFD model dealing with the uncovered part of the fuel is modeled by ANSYS 12. Only the uncovered part is considered in the computational domain.
- First, the uncovered length at specific time is determined by lumped energy and mass balances.
- Then, built the CFD domain of the uncovered length, as shown in Fig. 2. The dimensions are based on the ATRIUM-10 fuels. The volume number per unit length (1 inch) is about 100,000.
- Finally, solve the flow and temperature distribution to obtain the peak cladding temperature at a specific time.

Initial conditions and boundary conditions

- The initial pool level is 7.1 m above TAF (the top of the active fuels).
- The initial pool water temperature is assumed to be 41 ^{o}C which is the highest temperature observed at site.
- For CFD simulations, the radial boundaries are set as the symmetric boundaries.
- A fixed pressure boundary of 1 atm is applied to the top outlet.
- Heat source distribution along a fuel rod is assumed to be a EOC distribution.
- At the bottom inlet boundary, which corresponds to the liquid-vapor interface, a given mass flow inlet condition is applied.
- The upward steam flow rate is assumed to be generated by the decay heat from the submerged part of the fuels.

Results and discussion- pool water temperature

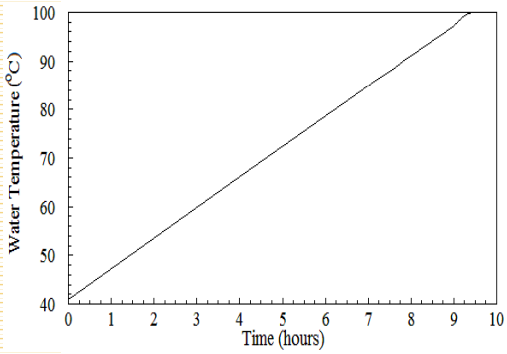

Fig. 3 Pool water temperature response after loss of cooling

- The increasing rate is 6.25^{o}C per hour. The water temperature reaches the saturation temperature (100^{o}C) at 9 hours and 26 minutes. Then, the pool level starts to drop by evaporation

Results and discussion- pool level

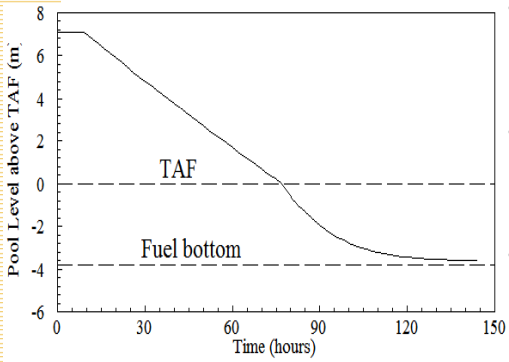

Fig. 4 Pool level after loss of cooling

- The pool level decreasing rate is 0.104 m per hour. At 76 hours and 48 minutes after the accident, the pool level reaches the TAF.
- Then, the pool level dropping rate is not a constant rate because the remained pool water can only absorb the decay heat from the covered part of the fuels.
- The time to reach the saturation temperature (9.4 hours) is much less than that to total evaporation of the water above the TAF (67.4 hours).
- If a loss of cooling accident occurs, it is better to actuate any operation for cooling or supplying water to the SFP in 76.8 hours

Results and discussion- peak cladding temperature

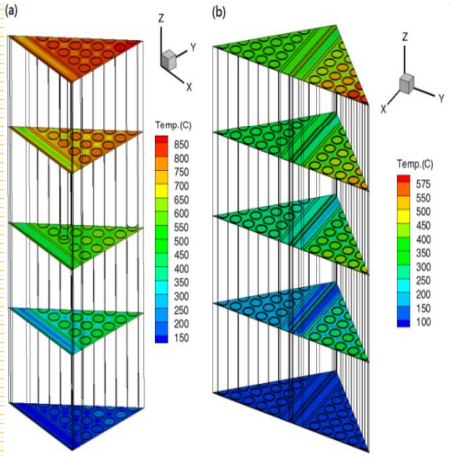

Fig. 5 Temperature distributions at 5.2 hours after fuels uncovered under (a) the concentrated arrangement; and (b) check-board arrangement.

- Heat transfer of the uncovered parts mainly depends on the convection of upward steam flow. The temperature rises dramatically because the convection cooling effect of the steam is much weaker than that of liquid water.
- The temperature variation along the axial direction is much greater than that along the radial direction.
- The check-board arrangement allows sufficient radial heat transfer from the hot assemblies to the cold assemblies, reducing the cladding temperature of the hot fuels.

Results and discussion- peak cladding temperature

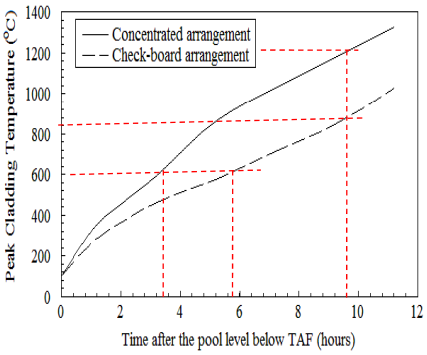

Fig. 6 Peak cladding temperature after the pool level below TAF

- Since the zirconium-water reaction is not desired, the site people of the Chinshan plant suggested using 600°C as a possible surveillance condition with practical and conservative considerations.
- After the pool level is below the TAF, it takes 3 hours to reach 600°C for the concentrated arrangement. By implementation of the check-board arrangement, it takes 2.5 hours more to reach the same temperature.
- The calculated temperature reaches 1200°C at 9.5 hours for the concentrated arrangement. However, at this time, the peak temperature is only about 870 °C for the check-board arrangement.

Conclusions

- The pool water temperature and pool level are calculated using lumped energy and mass balance.
- The SFP temperature reaches the saturation temperature at 9.4 hours, and the pool level drops to the TAF at 76.8 hours following the accident.
- It is recommended that necessary actions for cooling of supplying water to the SFP be taken before the spent fuels are uncovered by water.
- For the Chinshan SFP, the check-board arrangement earns 2.5 hours more than the concentrated arrangement for the operators to take necessary actions.