



NEA Expert Workshop

“Innovations in Water-cooled Reactor Technologies”

NEA Headquarters, Issy-les-Moulineaux

11-12 February 2015

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Objectives of the Workshop

The OECD/NEA is planning to publish in 2015 a short report describing evolutions in design of water-cooled reactors (addressing both light water and heavy water-cooled reactor technologies) focusing in particular on innovations that have brought improvements in safety and performance, and those that are likely to be incorporated in future reactors. To gather input from utilities, vendors, as well as technical safety organisations and regulators, a two-day workshop is organised at the NEA on 11-12 February 2015.

New technologies and solutions have been developed over more than thirty years to improve the safety, performance and economics of nuclear power plants. Particular efforts were made in designing systems to prevent or mitigate nuclear accidents and, greatly limit or even avoid any off-site release of radioactivity. Reactor designs developed in the 1980s and later are often referred to as Generation III (Gen III) reactors. They offer enhanced safety compared to earlier Generation II (Gen II) designs, as well as improved performance and economics.

Examples of Gen III safety design features include solutions for corium localisation, advanced containment structures, improved emergency core-cooling systems, filtered venting systems, hydrogen risk management solutions, etc. Some of these solutions have also been back-fitted or partially adapted to existing reactors, based on recommendations from regulators or modernisation efforts by the utilities operating these reactors, to bring their level of safety to levels approaching those of the more modern designs. Other innovations found in the latest water-cooled reactor designs include the use of passive safety systems, and often associated with those, a simplification in the design of the reactor.

Gen III reactors also feature better economics, for example increased design lifetime up to 60 years, ability to use 100% MOX fuel and operate with higher flexibility, higher thermal efficiencies and reduced staff requirements. Modularity is often quoted as a feature of some Gen III designs as a way of reducing the construction times and simplifying the decommissioning of the plant.

The scope of the Workshop includes, *inter alia*:

- Evolution of regulatory and design requirements for commercial water-cooled reactors;
- Innovations in water-cooled reactor technologies that allowed significant improvement in the level of safety, with a discussion on advantages and challenges of active vs. passive safety systems;
- Innovations under development or being considered for future water-cooled reactors;
- Advantages that Gen III reactors have over previous designs in terms of economics, fuel utilisation, thermal efficiency, etc;
- Operational issues of nuclear power plants in future low carbon energy systems with high shares of variable renewables, and issues posed by climate change (e.g. water scarcity, increased air and water temperatures and extreme weather events).
- Standardisation, modularisation and constructability issues and challenges;
- A discussion of key differences between Gen II and Gen III designs, and possibilities of back-fitting Generation II reactors with new technologies, as part of a Long Term Operation strategy.

Abderrahim AL MAZOUZI



Senior Engineer and Projects Manager

EDF R&D

NUGENIA & EXCOM

Dr. A. Al Mazouzi received his PhD in material science from the university of Marseille /France in 1989, followed by a PhD from the Free University of Berlin in the same field. From 1989 to 1993 he worked as a Post Doc at Hahn Meitner Institute in Berlin/Germany. Thereafter he was appointed as visiting scientist at Kyoto University Japan from 1993 to 1995. In 1995 he became a member of the Polytechnical School of Lausanne CRPP/EPFL-Fusion technology, then in 1999 he joined the department of Nuclear Safety at the Paul Scherrer Institute in Switzerland. From 2002 until 2009, He worked at SCK.CEN/Belgium as a senior scientist.

Currently, he is working as a Senior Engineer and Projects Manager at EDF R&D, which he joined in April 2009. Since June 2012, he is acting as the EDF representative in both the NUGENIA secretariat and the Executive Committee.

He initiated and coordinated a certain number of international and European projects. He is the author or co-author of more than 70 peer reviewed papers, and is a member of many international and regional scientific groups.

Frank BERTELS



Principal Engineer Nuclear
TRACTEBEL ENGINEERING
(GDF SUEZ)

Frank Bertels works as a principal engineering for Tractebel Engineering. Tractebel Engineering, part of the GDF Suez group, the architect engineer and responsible designer of the 7 Belgian NPP operated by Electrabel. He was involved in licensing, severe accident, systems engineering and technical integration studies for the Belgian plants in the framework of SG Replacement & Power Uprate projects, ten yearly safety review studies, Life Time Extension programs and assistance to the operator as Responsible Designer. He has been working for international projects for Borssele (Netherlands), Ringhals AB (Sweden), Kalinin (Russia) and site suitability programs in Jordan, UAE. He has recently passed to the Owner's Engineering project team for the construction of 3 AP1000 plants at the Moorside site in UK to be operated by NuGen, in which GDF Suez is a shareholder.

Giovanni BRUNA



Scientific Director
IRSN

Giovanni Bruna holds a doctorate in Applied Nuclear Physics, from the University of Genova (Italy). He is the Technical Coordinator of the NUGENIA Association.

He is presently the Scientific Director of IRSN (since 2011). Previously, he was the deputy director of IRSN's Reactor Safety Division (from 2005), and before that, a Senior Expert in the AREVA Group and Manager Nuclear Reactor Physics.

His main fields of expertise include: Reactor physics, design and safety of LWR, FBR and HTR, as well as: fuel (particularly MOX), control technology and devices, computation methods development (including 3D coupled systems, uncertainty and sensitivity analysis) and validation on mock-up experiments and operation feed-back, and fuel cycle.

Igor BYLOV



Head of department

R&D in safety and reliability
OKBM Afrikantov

Igor Bylov is since 2008 the head of department, R&D in safety and reliability at OKBM Afrikantov. Prior to that position, he was chief specialist at Rosenergoatom, between 2007 and 2008, and before worked in the Navy as a service member, from 1987 to 2007.

He is a Candidate of sciences, system analysis, from the Nizhny Novgorod State Technical University, into 2011. He has a diploma of nuclear engineer from the Dzerjinsky High Naval Engineering College in Leningrad, in 1986.

Véronique DECOBERT



Director, Nuclear Regulatory Affairs

Europe, Middle East and Africa
Region
Westinghouse

Véronique Decobert joined Westinghouse in February 2009 as director, Engineering Services (ES) France. In June 2012, she was appointed director, ES and Installation and Modification Services (IMS) France.

From April 1st, 2013, Véronique Decobert holds the position of director, Nuclear Regulatory Affairs for the Europe, Middle East and Africa (EMEA) Region.

Previously, Ms. Decobert spent 26 years at AREVA, where she held various positions of increasing responsibility. Prior to joining Westinghouse, she was the Safety, Health and Security VP for the entire AREVA group.

Ms. Decobert is experienced in licensing and in fuel cycle engineering, has provided project supervision for the construction of La Hague reprocessing plant, and has a thorough understanding of the procedures for transporting nuclear materials. She served as Quality, Health, Safety and Environment director in the La Hague reprocessing plant prior to working as nuclear safety inspector.

Marc DEFFRENNES



Nuclear Energy Analyst

Nuclear Development Division
Nuclear Energy Agency (NEA)

Graduated Nuclear Engineer in 1980. Worked 10 years for Westinghouse on Safety Analyses, Plants Start-up, Radiation Protection and Operators Training. Joined the European Commission in 1991 and worked in the frame of Euratom for the Directorate's General for Energy, Research and External Relations. Joined OECD in October 2014.

Bertrand DE L'EPINOIS



Senior Vice President
Safety standards
AREVA

Bertrand de L'Epinois has the rank of ingénieur en chef des Mines. He starts his career in 1989 within the French nuclear safety authority, as head of the 900 MW reactor department.

From 1994 to 2002, he worked at the General directorate for energy and raw materials (French ministry of industry), as head of the raw material and subsoil department and then deputy director for oil, gas and raw materials. He joined Thales Under Water Systems in 2002, as competitiveness director and then general sonar study director. He also acted, in this period, as vice-chairman of the maritime technology cluster ("pôle de compétitivité mer"). In 2007 he was appointed director for the SESAR European programme and chairman of the Air Traffic Alliance grouping between Airbus, Thales and EADS. He joined Areva in September 2011 as Senior Vice President for safety standards.

Wolfgang DENK



Head of Nuclear Assets
Alpiq

Wolfgang Denk is Head of Nuclear Assets at the Swiss utility company Alpiq, managing more than 8 TWh/year of electricity generated from the co-owned Swiss nuclear power plants Gösgen and Leibstadt as well as from import contracts from French NPPs through the company CNP SA. He is a member of the Board of Directors of Leibstadt NPP, the BoD of Aurica AG, the Technical Commission of Leibstadt NPP, the Operations Commission of Gösgen NPP, the Operations Commission of CNP SA and the Technical Advisory Committee of the mutual insurance company EMANI.

He holds degrees in Mechanical Engineering (Dipl.-Ing. FH) and Management (MBA & Eng.) and has worked in the power plant sector since 2001, among others in the field of Nuclear Safety at TÜV SÜD in Germany and in Project Management of maintenance projects at Westinghouse Electric in Belgium. He is an active member of the World Nuclear Association Capacity Optimization Working Group and was part of the OECD-NEA Ad-hoc Expert Group on the Economics of Long-term Operation of NPPs. He is a Fellow of the inaugural class of the World Nuclear University Summer Institute of 2005.

Patrick DUMAZ



Program Manager
CEA

Patrick Dumaz is an engineer at the Nuclear Energy Division of CEA. He is the program manager for all the R&D performed by CEA for "generation 2 & generation 3 LWR".

P. Dumaz started his career at IRSN working on PWR design basis accidents and on severe accidents.

At the CEA Nuclear Energy Division, he worked for the LWR innovation program conducted by CEA during the 90's. In the years 2000, he participated in the research on generation 4 systems, mainly the SFR (Sodium cooled Fast Reactor) and the GFR (Gas cooled Fast Reactor).

From 2008 to 2012, he was the technical advisor for nuclear energy of the atomic energy High commissioner.

Fabien FERON

ASN

Fabien Féron has been working with the French nuclear safety authority (ASN) for twenty years or so, in various positions. He is now deputy director of the NPP department, in charge of regulations and new reactors, which of course includes the EPR reactor under construction at Flamanville.

He has been involved for several years in international projects, mostly through his membership in the IAEA nuclear safety standard committee or participation to the MDEP-EPRWG, but also via a secondment to the Canadian nuclear safety commission.

He is here today to make a presentation about WENRA activities as he has been working within WENRA-Reactor Harmonisation Working Group since 2009.

Giovanni FERRARO



International relations Advisor

EDF Nuclear Engineering
Division/SEPTEN
Advanced Nuclear Technology
Department

Giovanni Ferraro has experience and skills in several domains of Nuclear Power Plants Operation and Design (safety, maintenance, operation, design, and management). He's worked 27 years in the EDF/Nuclear Operation Division (DPN): from 1980 to 2004 and from 2012 to 2014. He spent 7 years in the EDF/Nuclear Engineering Division (DIN), from 2004 to 2011.

Since January 2015, he is the International relations advisor for the Nuclear Engineering Division / SEPTEN / Advanced Nuclear Technology Department in Lyon, in charge of international benchmarks and coordination with PWROG.

1980/1992: Nuclear safety engineer, Maintenance engineer and Operation Department Head at Fessenheim NPP (2 x 900 MW units)

1992/1997: PSA Project Manager - Nuclear Safety Department/ DPN Headquarters in Paris

1997/2004: Deputy Director for units 3&4, then Technical Director Deputy at Cruas-Meysse NPP (4 x 900 MW units)

2004/2009: Operation Department Head at Nuclear Engineering Division / SEPTEN - Lyon

2009/2011: Technical Director & Executive Vice-President of Sviluppo Nucleare Italia (SNI) in Rome (EDF/ENEL joint-venture to develop the project to build 4 EPR units in Italy)

2012/2014: International relations advisor for the EDF post Fukushima project at Nuclear Operation Division Headquarters in Paris.

Michael GOLAY



**Professor of Nuclear Science
and Engineering**
MIT

Dr. Michael W. Golay is a professor of nuclear science and engineering at the Massachusetts Institute of Technology, where he has worked since 1971. He is director of the Reactor Technology Course for Utility Executives and the Risk-Informed Operational Decision Management Course, both cosponsored by MIT and the National Academy for Nuclear Training. Most recently he has focused his research and teaching upon improving nuclear power performance both in the United States and internationally, particularly through use of probabilistic and dynamic methods of analysis. He has also been an active advisor to governmental and industrial organizations, particularly concerning risk-informed regulation and nuclear non-proliferation. Professor Golay received his PhD. in nuclear engineering from Cornell University in 1969, and performed post-doctoral research at Rensselaer Polytechnic Institute. In 1980 he was a visiting researcher at Electricité de France (EDF). He has served on the INPO Advisory Council, the NRC's Research Review Committee, the DOE's TOPS Committee (on non-proliferation), and national laboratory and nuclear power plant oversight committees. He is a Fellow of the American Association for the Advancement of Science and of the American Nuclear Society.

Julie GORGEMANS



Principal engineer
Westinghouse Electric
Company

Julie Gorgemans is a principal engineer at Westinghouse Electric Company. She joined Westinghouse after obtaining a master's degree in physics engineering from the Ecole Polytechnique of the Université Libre de Bruxelles in 2005. Since 2008, she is supporting the development and International deployment of Westinghouse generation III+ design, the AP1000 plant.

Jim GULLIFORD



Head
Nuclear Science Section
Nuclear Energy Agency (NEA)

Jim Gulliford is Head of the Nuclear Science Section and Deputy Head of the Data Bank at the OECD Nuclear Energy Agency. The goal of the NEA in this area is to help member countries identify, collate, develop and disseminate basic scientific and technical knowledge required to ensure safe, reliable and economic operation of current nuclear systems and to develop next-generation technologies. A key responsibility is the coordination of international R&D studies in reactor physics, fuel cycle physics & chemistry, criticality safety, material science and radiation shielding. Mr. Gulliford has 30 years of experience in nuclear R&D. He has worked at research reactor facilities in the UK and France, leading experimental programmes on both thermal and fast reactor systems.

Rosaura HAM-SU



**Manager of the Fuel
Development Branch**
Canadian Nuclear Laboratories
(CNL)

Rosaura Ham-Su is a graduate of McMaster University, Canada, where she obtained a PhD in Materials Science on the Processing and Creep Properties of Alumina/Silicon Carbide Composites. During her doctorate, she worked at the Technical University of Dresden, in Germany, on the Modelling of Internal Strains in Heterogeneous Materials.

After her PhD, Rosaura was a Research Scientist at Nova Crystals Ltd. where she developed light protective composite armour for use against multiple armour-piercing rounds. She then became a Defence Scientist and Group Leader of the Functional Materials Group at Defence Research and Development Canada–Atlantic. Her work there included consulting for the Canadian Navy and developing Magnetic Shape Memory Alloys and composites for missiles, sonars and energy harvesting devices. In 2009, Rosaura won an international team award for her work on Friction Stir Processing of Nickel Aluminum Bronze, an alloy used in submarines.

Rosaura joined AECL in 2007; in 2010 she became the Manager of the Fuel Development Branch which, together with Reactor Physics, is the Canadian Nuclear Laboratories (CNL) hub for Fuel Innovation. Rosaura leads CNL's Advanced Fuel and Fuel Cycles Centre of Excellence and the Sustainable Energy Technologies Sub-Program.

Jerry HOPWOOD



**Vice-President
Product Development**
Candu Energy

As Vice-President of Product Development, Jerry is responsible for a broad range of research, product development and product management activities.

Jerry moved to Canada to join Atomic Energy of Canada Limited (AECL) in 1975, working on Ontario Hydro and CANDU 6® designs. He spent two years on secondment to the Point Lepreau Nuclear Station in New Brunswick in its first years of operation and became Manager of Safety

Systems Design for new CANDU nuclear power plants in 1985. The following year, Jerry led an AECL investigation team looking into design flaws at Chernobyl. In 1992, he was appointed Technical Director, Korea.

Jerry became General Manager, Product Applications in 2004,

responsible for CANDU 6 and ACR-1000® pre-project support and CANDU applications such as energy for the oil sands. In 2006, he was named Vice-President, Product Development, taking on responsibility for all engineering, licensing, R&D and product application work associated with the Advanced CANDU Reactor® and the CANDU 6. Jerry transitioned to Candu Energy, member of the SNC-Lavalin Group in 2011.

Jerry holds both bachelors and masters degrees in Applied Physics from Oxford University in England.

Julien HUSSE



MDEP Project manager
Nuclear Energy Agency (NEA)

Julien Husse has an engineering degree from ENSTIMD.

From 2002 to 2006: he was an inspector for non-nuclear industrial installations.

From 2006 to 2012, he was a Senior inspector at ASN, coordinator of the operating experience in the NPP department and in charge of environmental matters.

He is currently working at the NEA in the Nuclear Safety Division, in the technical secretariat for the MDEP initiative.

Marja-Leena JÄRVINEN



Radiation and nuclear safety regulations developer

Finnish Radiation and Nuclear Safety Authority (STUK)

Marja-Leena Järvinen has been working at Radiation and Nuclear Safety Authority (STUK) since 1995. During 1995 – 1997 was senior inspector, during years 1997 – 2002 head of office and since the beginning of the year 2003 deputy director. Since the beginning of 2005 she has been a chairperson of the Finnish national nuclear safety research programme SAFIR (Safety Finnish Reactor).

Dr. Järvinen current responsibilities are the development of the radiation and nuclear safety regulations at STUK. Before that she was the Deputy Director of the Nuclear Reactor Regulation from 2003 to 2014. At that position she was responsible for the development of nuclear regulations, nuclear safety research, development and financing of the department. She has been working with nuclear facilities at their different lifecycle phases from design to the final disposal of nuclear waste and spent fuel. She was the head of I&C and Electrical systems office from 1997 to 2002 and the Nuclear Power Plant Technology office from 2002 to 2003. Development of the safety requirements for the digital I&C at early 2000s was led by her.

Before STUK Dr. Järvinen has 15 years of experience working in metal and mining industry leading development of radiation detectors and analyzer for industrial and space applications. She is a member of the Technology Academy Finland (TTA). She holds the Dr. Tech. Decree in Technical Physics from Helsinki University of Technology.

Sang-Baik KIM



Nuclear Energy Analyst

Nuclear Development Division
Nuclear Energy Agency (NEA)

Dr. Sang-Baik KIM received a bachelor's degree in Mechanical Engineering from Korea University and a master and PhD degree in Mechanical Engineering in Korea Advanced Institute of Science and Technology in Korea.

He worked for more than 30 years in safety research area as a researcher and a project manager in Korea Atomic Energy Research Institute. He involved in the development of safety design features for APR1400 and severe accident analysis for SMART. Currently he is working on the nuclear technology development and nuclear new build in NEA as a cost-free-expert of Korean Government.

Shin-Whan KIM



Senior Vice President

Safety Analysis Department
KEPCO-ENC

Mr. Shin Whan Kim is currently Vice President at KEPCO Engineering and Construction Company, with the responsibility of managing Safety Analysis Department. Prior to the current position, he served as the manager of Business Development with the main role of promoting the APR1400 technology in overseas market and project manager for several technology development projects. His technical background includes safety design and associated analysis of nuclear power plants, PSA, performance analysis and computer codes development. He received BS and MS in Nuclear Engineering from Seoul National University and Ph. D from Rensselaer Polytechnic Institute.

Jukka LAAKSONEN



Vice President

State Atomic Energy
Corporation "Rosatom"
JSC "Rosatom Overseas"

Jukka Laaksonen was Director General of STUK, nuclear regulatory body of Finland, in 1997-2012. While employed with STUK since 1974, he served as visiting expert at USNRC in 1981-82 and at IAEA in 1987-89. Since April 2012 he is VP of Rosatom Overseas, tasked to manage licensing of exported Russian NPPs.

He has been actively involved in international co-operation in nuclear safety and safeguards and has held several chairmanships in international groups, among them Western European Nuclear Regulators' Association WENRA (2009-2011) and OECD/NEA Committee for Nuclear Regulatory Activities (1998-2007). With IAEA, he has provided many services, for instance being team leader on missions that conducted review of Russian nuclear regulator (2009) and the USNRC (2010). In 2003-13 he was Vice Chair of IAEA's INSAG Group and in 2008-11 member of Commission on Safety Standards. Since 2009 he is member of International Advisory Board that advises UAE Government on its new nuclear program.

Mikhail MALTSEV



Head of Department
JSC 'Atomenergoproekt'
Moscow

Mikhail Maltsev has more than 25 years' experience in the nuclear energy sector. Main activities – accident analyses, hydrogen safety, development of PSAR/FSAR documentation.

In terms of international experience, he has participated in several IAEA Projects, and was the leader of the Russian team working group during the EUR assessment of the AES-92 design.

Henri PAILLÈRE



Nuclear Energy Analyst
Nuclear Development Division
Nuclear Energy Agency (NEA)

Henri Paillère is a nuclear energy analyst at the Nuclear Energy Agency which he joined in October 2011. Prior to that appointment, he worked as an R&D Program Manager for the Alstom Power Nuclear Business (2009-2011). Before that, he worked at the French Atomic Energy Commission (CEA) for thirteen years, successively as a research engineer in the field of thermal hydraulics and severe accidents, head of laboratory and finally program manager for European cooperation activities. He holds a PhD in Computational Fluid Dynamics from the Université Libre de Bruxelles in Belgium (1995), a MS in Aerospace Engineering from the University of Michigan in the United States (1991) and a diploma from French engineering school ENSTA (1991).

Henri PELIN



WNA Senior Adviser

Before his assignment in the WNA in June 2014, Henri PELIN has had 30 years' experience in energy industry within various EDF's Departments.

Since 2010, Mr. Pelin was Deputy Director for International Affairs, in EDF Generation Division (the largest world nuclear fleet of 58 plants representing 63GW), particularly in charge of development of new projects and relation with international organisations, such as IAEA.

Between 2003 and 2008, Mr. Pelin has worked in EDF's Corporate Strategy Division as Deputy Director particularly responsible for Industrial Matters (development, relation, mid and long term strategy) where he has been in position to have a large overview of the main world industrial and environmental concerns, in particular in nuclear fields.

Between 2000 and 2002 Mr. Pelin has been assigned as Managing Director of an EDF's subsidiary in Mexico for developing, building and commissioning a gas combined cycle, in partnership with the Mexican electricity company (CFE) and with a Japanese company as turnkey subcontractor. Mr. Pelin is familiar with working in an international context.

Between 1980 and 2000, Mr. Pelin has been involved at various levels in nuclear engineering, from the design (development of post-accidental operational strategy) to engineering for the existing plants. From 1994 to 2000, Mr. Pelin has been directly

involved in international projects related to safety improvements in Eastern Europe (Slovakia, Bulgaria, Ukraine).

Within the WNA, H. Pelin is bringing all his experience and his deep technical knowledge of the nuclear energy for the benefit of the nuclear industry through direct involvement in supporting and advising the Director General as well as the working group's directors, mainly as regarding the fuel cycle, the supply chain and CORDEL activities.

Jacques PIRSON



Technical Director in Nuclear Plant Design

Nuclear Department
TRACTEBEL ENGINEERING
GDF SUEZ Group

Jacques PIRSON is an engineer graduated from the Polytechnic School of Louvain-La-Neuve (in Belgium); he has studied a Master in Mechanical Engineering (1978) and a Degree in Management (1994).

He joined TRACTEBEL ENGINEERING (in Belgium) in 1982. Up to 2005, he worked as a system design engineer within the Nuclear Engineering Department of TRACTEBEL ENGINEERING, where he led a system design engineers team. His main activities consisted of support studies for the Belgian Nuclear Power Plants.

In the period 1998-2007, he was in charge of the TRACTEBEL ENGINEERING's activities for the R&D projects funded by the European Commission and related to the new nuclear reactor concepts including the fission and fusion reactors (High Temperature gas cooled Reactors (HTR), Accelerator Driven Systems (ADS), International Thermonuclear Experimental Reactor (ITER). He participated in several projects of the Framework Programmes related to the safety approach and licensing issues of HTR reactors.

Up to 2010, he was also Plant Design Manager for the new nuclear power plant projects of the GDF Suez Group.

Since 2010, he is Technical Director in charge of the coordination of the studies performed by TRACTEBEL ENGINEERING for the lifetime extension of the Belgian units Doel 1-2 and Tihange 1.

David POWELL



GE Hitachi Vice President
Nuclear power plant sales -
Europe

Dr. David Powell is GE Hitachi Vice President for nuclear power plant sales in Europe and leads the GEH efforts to deploy the PRISM in the UK. Powell has over 30 years of experience in the nuclear industry, initially with British Nuclear Fuels plc. and then later with the Westinghouse Electric Company. David has held a number of senior positions developing and running nuclear businesses, including responsibility for Westinghouse's European fuel business and working in Tokyo, Japan as President of BNFL/Westinghouse Japan.

Powell was named by the Young Generation Network (YGN) as the 2012 recipient of their Outstanding Contribution Award, presented for his leadership and commitment to the industry and he is an active STEM Ambassador. He holds a Doctor of Philosophy in metallurgy from the University of Manchester and is a Chartered Engineer and Fellow of the Institute of Materials.

Fiona RAYMENT



Director for Fuel Cycle Solutions

NNL

Fiona is the Director for Fuel Cycle Solutions within the NNL, covering technology developments in advanced fuels, spent fuel management, asset care, safety, security & safeguards. Fiona is a chartered Chemist with a BSc (Honours) and a PhD in Chemistry from University of Strathclyde. She is a Fellow of the Royal Society of Chemistry and of the Nuclear Institute. She has an MBA from Manchester Business School.

Fiona has twenty years nuclear industry experience, working primarily within technology, operations and strategic planning roles across a number of different nuclear sites both in the UK and internationally.

Fiona is also a board member of the National Skills Academy Nuclear, a member of the Fusion Advisory Board and the Office of Nuclear Regulation Advisory Board. She is also on the Nuclear Institute Board of Trustees.

Jože ŠPILER



Manager planning

New NPP Krško 2
Slovenia

Jože ŠPILER holds a BSc in Electrical Engineering from the University of Ljubljana.

He has 30 years of experience at Krško NPP in Commercial Nuclear Energy Development including Engineering, Safety, Licensing and Accident Management.

He is a lecturer at several different IAEA training courses in the area of nuclear safety and licensing and has participated in different IAEA advisory missions.

Since 2006, he is the Head of Technical Sector and Investments at GEN Energija, with responsibility for planning and preparatory activities for nuclear new build in Slovenia - Krško 2 project.

Caroline THEVENOT



Responsible for Innovative Light Water Reactors studies

Commissariat à l'Énergie
Atomique et aux Énergies
Alternatives (CEA)

Caroline THEVENOT is a mechanical engineer. She has been working at CEA (Commissariat à l'Énergie Atomique et aux Énergies Alternative) since 2001. During 8 years, she was in charge of pre-conceptual designs of innovative components and their integration in reactor concepts (advanced LWR and Generation IV concepts). In 2009, she joined the European Commission as Seconded National Expert to work on the implementation of the Strategic Energy Technology Plan, the EU Research and Innovation policy in the field of Energy Technology. Since September 2014, she is in charge of Innovative Light Water Reactors studies for CEA.

Harri TUOMISTO



Senior Nuclear Safety Officer

Fortum, Power Division
Finland

Dr. Harri Tuomisto keeps currently the position of Senior Nuclear Safety Officer at Fortum's Nuclear and Thermal Power Division. Fortum is a Nordic energy company owning and also operating nuclear assets in Finland and Sweden. Earlier Dr. Tuomisto has led both nuclear development and nuclear engineering in Fortum as well as nuclear safety oversight.

He has more than thirty years' career in nuclear engineering, thermal hydraulics and safety research, particularly supporting the Loviisa nuclear power plant and preparatory studies for new build nuclear in Finland. He has also been engaged in many international efforts promoting and supporting the safe operation of nuclear power plants.

Andrew WHITE



**Senior Nuclear Safety
Analyst**

Nuclear Safety Division
Nuclear Energy Agency (NEA)

Andrew White joined the NEA's Nuclear Safety Division in March 2013 as a senior nuclear safety analyst responsible for supporting activities of the Committee on the Safety of Nuclear Installations (CNSI). Prior to working for the NEA, Mr. White spent 30 years working for Atomic Energy of Canada Limited. He started with AECL in 1982 after graduating from the University of Waterloo with a Masters in Mathematics. Upon joining AECL, Mr. White led research activities into the corrosion behaviour of zirconium alloys used for fuel cladding and reactor core components in CANDU reactors. In 1997, he was appointed Manager for the Fuel Safety Branch, a group performing research to support safety of CANDU fuel. Mr. White went on to assume responsibility in 2002 for the full range of AECL's nuclear safety research activities as Director of the Reactor Safety Division. In 2006, Mr. White became AECL's Chief Regulatory Officer, providing oversight to the licensing of AECL's nuclear operations. His role was subsequently broadened to include General Manager, Programs and Nuclear Oversight, responsible for the programmatic and oversight activities required to safely conduct AECL's nuclear operations (e.g. radiation protection, environmental protection, security, audit and assessment, etc.).

Hongxing YU

Director of Science and Technology on Reactor System Design
Technology Laboratory / Vice-director of Design and Research
Sub-Institute of Nuclear Power Institute of China.

His technical responsibilities are thermal-hydraulic and safety
analysis for innovative and advanced reactor design.

Participants list for Innovations in water-cooled reactor technologies: from Generation II to Generation III

11/2/2015 - 12/2/2015

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