

TOP FUEL

REACTOR FUEL PERFORMANCE 2012



Programme Committee

John Jones, Office of Nuclear Regulation, United Kingdom (Chair)
Marc Verwerft, SCK-CEN, Belgium
Sadaaki Abeta, Mitsubishi Corp., Japan
Samim Anghaie, Univ of Florida (ret), United States
Clara Anghel, GE-Hitachi, Sweden
José Aycart, GE-Hitachi, Spain
Patrick Blanpain, AREVA, France
Florin Curca-Tivig, AREVA NP GmbH, Germany
Guy Demazy, Synatom/Electrabel, Belgium
Jozsef Elter, PAKS NPP, Hungary
Wolfgang Faber, E.ON Kernkraft GmbH, Germany
Toyoshi Fuketa, JAEA, Japan
Lars Hallstadius, Westinghouse, Sweden
Nadine Hollasky, Bel V, Belgium
Victor Inozemtsev, IAEA
Yongjun Jiao, China National Nuclear Corporation (CNNC), China
Bernard Jolly, SFEN, France
Grigori Khvostov, Paul Scherrer Institut, Switzerland
Hans-Joachim Lippert, AREVA NP GmbH, Germany
Pierre Mollard, AREVA, France
Rob Montgomery, PNNL, United States
Kari Ranta-Puska, TVO, Finland
Michael Reitmeyer, Exelon, United States
Javier Riverola, ENUSA, Spain
John Roberts, University of Manchester, United Kingdom
David Schrire, Vattenfall, Sweden
Fred Sheil, Sheil Consulting Ltd, United Kingdom
Marco Streit, Paul Scherrer Institut, Switzerland
Alexander Tuzov, ROSATOM, Russian Federation
Nicolas Waeckel, EDF, Japan
Koo Yang-Hyun, KAERI, Korea
Rosa Yang, EPRI, United States
Zhu Yuemin, China Guangdong Nuclear Power Group (CGNPC), China
Jinzhao Zhang, Tractebel Engineering / GDF SUEZ, Belgium

Welcome Address

Mark Bassett, Deputy Chief Inspector of the Health and Safety Executive's Nuclear Directorate, HSE, UK

Keynote Address

"IAEA activities related to the area of fuel engineering" Victor Inozemtsev, Fuel Engineering Team Leader, IAEA and Juan Carlos Lentijo, Director of the Division of Nuclear Fuel Cycle and Waste Technology, IAEA

TOP FUEL

REACTOR FUEL PERFORMANCE 2012



Sunday 2 September 2012

17:00–19:00 Pre-registration

18:30–19:30 Welcome Drink

Monday 3 September 2012

Mon 8:30–9:30 Opening Session

Chair: John Jones, Office for Nuclear Regulation, United Kingdom; Co-Chair: Marco Streit, President ENS, Belgium

Welcome Address

Keynote Address

Mon 9:30–10:30 Plenary Session I: Setting the Scene

Chair: John Jones, Office for Nuclear Regulation, United Kingdom; Co-Chair: Marco Streit, President ENS, Belgium

"Fueling the Future" Andrew A. Lingenfelter, Vice-President Fuel Engineering, Global Nuclear Fuel, United States

"Next generation fuel designs - a Westinghouse perspective" Jeff Bradfute, Director of Product Engineering, Westinghouse Fuel Engineering

"Investment in Competencies and Innovation for the Highest Safety Standards and Performance" Alain Frichet, Products & Technologies Division Vice President Fuel BU and Front End Business Group R&D Director, AREVA

10:30–11:00 Coffee Break and Poster viewing

Mon 11:00–13:00 Parallel Session I - Operation and Experience I

Chair: Lars Hallstadius, Westinghouse, Sweden; Co-Chair: Chuck Paone, GNF, United States

11:00-11:20 CHANGES OF PLUTONIUM DISTRIBUTION AND FISSION GAS RELEASE IN IRRADIATED MOX FUEL

Nakae, N. (1); Baba, T. (1); Kamimura, K. (1); Verwerft, M. (2); Jutier, F. (2); Iwafuchi, J. (3); Kobayashi, Y. (3); Shikakura, S. (3)

1 - Japan Nuclear Energy safety Organization, Japan
2 - Studiecentrum voor Kernenergie / Centre d'Etude de l'Energie Nucléaire, Belgium
3 - PESCO Co., Ltd., Japan

11:20-11:40 POST SEISMIC EVALUATION FOR WESTINGHOUSE DESIGN FUEL IN US

Jiang, J. X. (1); Bradfute, J. L. (1); Karoutas, Z. E. (1)
1 - Westinghouse Electric Company, United States

11:40-12:00 FISSION GAS RELEASE OF MOX IRRADIATED TO HIGH BURNUP

Nakae, N. (1); Miura, H. (1); Akiyama, H. (1); Baba, T. (1); Kamimura, K. (1); Kurematsu, S. (2); Kosaka, Y. (2); Yoshino, A. (3); Kitagawa, T. (3)

1 - Japan Nuclear Energy Safety Organization, Japan
2 - Nuclear Development Corporation, Japan
3 - Mitsubishi Nuclear Fuel Co., Ltd., Japan

TOP FUEL

REACTOR FUEL PERFORMANCE 2012



12:00-12:20	ANALYSIS OF FISSION GAS IN ADVANCED GAS COOLED REACTOR FUEL	Barker, M. (1); Adam, M. (1); Foster, A. (1); Gonzales, M. (1); Graves, N. (1); Morgan, S. (1); Robinson, I. (1); Rutherford, N. (1); Ball, J. (2); Levy, M. (2) 1 - The UK's National Nuclear Laboratory Ltd, United Kingdom 2 - EDF Energy Nuclear Generation Ltd, United Kingdom
12:20-12:40	STUDY OF FISSION GAS BEHAVIOUR AND FUEL RESTRUCTURATION IN IRRADIATED (U,GD)O ₂ FUEL	Delorme, R. (1); Valot, C. (1); Carlot, G. (1); Sabathier, C. (1); Martin, P. (1); Fayette, L. (1); Pujol, X. (1); Pasquet, B. (1); Bienvenu, P. (1); Roure, I. (1); Lamontagne, J. (1); Blay, T. (1); Trillon, G. (2); Auret, V. (3); Bouffard, S. (4) 1 - CEA, DEN, Département d'Etudes des Combustibles, France 2 - AREVA/NP SAS, France 3 - EDF-DIN/SEPTEN, France 4 - CIMAP, CEA-CNRS-ENSICAEN-UCBN, France
12:40-13:00	AREVA PRODUCT EXPERIENCE IN SUPPORT OF EPR FUEL DESIGN	Teboul, N. (1); Gentet, G. (1); Louf, P.-H.(1); Hintergraeber, C. (2); Wiltz, C. (3) 1 - AREVA, AREVA NP SAS, France 2 - AREVA, AREVA NP GmbH, Germany 3 - AREVA, AREVA NP , United States

Mon 11:00-13:00 Parallel Session II - Transient Fuel Behaviour I

Chair: Nicolas Waeckel, EDF, France; Co-Chair: Fumihisa Nagase, JAERI, Japan

11:00-11:20	QUANTIFICATION OF THE MARGINS PROVIDED BY M5@ CLADDING IN ACCIDENTAL CONDITIONS	Garat, V. (1); Deuble, D. (2); Dunn, B. (3); Mardon, J.-P. (1) 1 - AREVA, AREVA NP SAS, France 2 - AREVA NP GmbH, Germany 3 - AREVA NP Inc., United States
11:20-11:40	MOX FUEL BEHAVIOUR UNDER REACTIVITY INITIATED ACCIDENT	Cazalis, B. (1); Georgenthum, V. (1) 1 - Institut de Radioprotection et de Sûreté Nucléaire (IRSN), France
11:40-12:00	THE U. S. NUCLEAR REGULATORY COMMISSION'S STRATEGY FOR REVISING THE RIA ACCEPTANCE CRITERIA	Clifford, P. (1) 1 - U.S. Nuclear Regulatory Commission, United States
12:00-12:20	NEW TECHNIQUES FOR THE TESTING OF CLADDING MATERIAL UNDER RIA CONDITIONS	Yueh, H. K. (1); Karlsson, J. (2); Lees, W. (3); Mitchell, D. (4); Quecedo, M. (5) 1 - Electric Power Research Institute, United States 2 - Studsvik Nuclear AB, Sweden 3 - Maxbar Inc., United States 4 - Westinghouse Electric Company, United States 5 - ENUSA Industrias Avanzadas, S.A., Spain
12:20-12:40	TRANSIENT DRYOUT IN FORSMARK 2 DURING A FAST PUMP RUNBACK – VERIFICATION OF PEAK CLADDING TEMPERATURE	Schrire, D. (1); Ramenblad, E. (2); Kese, K. (3); Nilsson, M. (4) 1 - Vattenfall Nuclear Fuel, Sweden 2 - Forsmarks Kraftgrupp AB, Sweden 3 - Studsvik, Sweden 4 - OKG AB, Sweden

TOP FUEL

REACTOR FUEL PERFORMANCE 2012



12:40-13:00 CHF TESTING VVER-1000 FUEL IN THE WESTINGHOUSE ODEN LOOP

Smith III, L. D. (1); Andersson, S. (2); Hallehn, A. (2); Elmadhi, A. (1); Shah, H. (1); Sheng, D.-Y. (2); Tejne, H. (2)

1 - Westinghouse Electric Company, Columbia, SC, United States

2 - Westinghouse Electric Company Sweden AB, Västerås, Sweden

13:00-14:00 Lunch and Poster viewing

Mon 14:00 - 16:00 Parallel Session I - Operation and Experience II

Chair: José Aycart, GE Power&Water, Spain; Co-Chair: Lars Hallstadius, Westinghouse, Sweden

14:00-14:20 ATOMIC DIFFUSIVITY MEASUREMENT OF XENON GAS IN VARIOUS TYPES OF FUELS WITH LOW BURNUP BY POST-IRRADIATION ANNEALING TEST

Kim, H. (1); Park, K. (2); Kim, K.-S. (1); Na, S.-H. (1); Kang, K.-H. (1); Kim, D.-J. (1); Lee, J.-W. (1); Ahn, S.-B. (1)

1 - Korea Atomic Energy Research Institute, Daejeon, Korea, Republic of

2 - Dept. of Nuclear Eng., Kyunghee University, Kiheong, Yongin, Kyunggi, Korea, Republic of

14:20-14:40 POST-IRRADIATION EXAMINATION OF HIGH BURNUP FUEL RODS IN VANDELLOS II

Arana, I. (1); Muñoz-Reja, C. (1); Doncel, N. (1); Culebras, F. (2)

1 - ENUSA Industrias Avanzadas, S.A, Spain

2 - Asociación Nuclear Ascó-Vandellós II, Spain

14:40-15:00 SUCCESSFUL HIGH BURNUP IRRADIATION CAMPAIGN OF THE GE14 LUAS AT TVO'S OL1 REACTOR: INSPECTION RESULTS AND ASSESSMENTS

Dunavant, R. (1); Jahingir, M. (1); Schneider, R. (1); Doncell, N. (2); Muñoz-Reja, C. (2); Knuutila, A. (3); Ranta-Puska, K. (3)

1 - Global Nuclear Fuel-Americas, United States

2 - ENUSA Industrias Avanzadas, Spain

3 - Teollisuuden Voima Oyj, Finland

15:00-15:20 POST-IRRADIATION EXAMINATIONS ON AGR FUEL PINS IN STUDSVIK

Källström, R. (1); Karlsson, J. (1); Johansson, H. (1); Levy, M. (2); Minay, J. (2); Barker, M. (3); Gonzales, M. (3)

1 - Studsvik Nuclear AB, Sweden

2 - EDF Energy, United Kingdom

3 - National Nuclear Laboratory, United Kingdom

15:20-15:40 PERFORMANCE OF AN UPDATED CELL FRICTION METHODOLOGY

Cantonwine, P. (1); Karve, A. (1); Thomas, M. (1); Galloway, G. (1)

1 - Global Nuclear Fuels, United States

15:40-16:00 IN-CORE FUEL MANAGEMENT WITH MIXED FUEL ASSEMBLIES FOR BELGIAN NUCLEAR POWER PLANTS

Druenne, H. (1); Zhang, J. (1); Flachet, F. (2)

1 - Tractebel Engineering (GDF SUEZ), Belgium

2 - Electrabel (GDF SUEZ), Belgium

Mon 14:00-16:00 Parallel Session II - Transient Fuel Behaviour II

Chair: Fumihisa Nagase, JAERI, Japan; Co-Chair: Nicolas Waeckel, EDF, France

14:00-14:20 FUEL BEHAVIOR IN SEVERE ACCIDENTS AND AN ADVANCED FUEL CLADDING DESIGN TO IMPROVE HEAT TOLERANCE

Cheng, B. (1)

1 - Electric Power Research Institute, United States

14:20-14:40	SENSITIVITY TO CHEMICAL COMPOSITION VARIATIONS AND HEATING/OXIDATION MODE OF THE BREAKAWAY OXIDATION IN M5® CLADDING STEAM OXIDIZED AT 1000°C (LOCA CONDITIONS)	Vandenberghe, V. (1); Brachet, J.-C. (1); Le Saux, M. (1); Gilbon, D. (1); Mardon, J.-P. (2); Sebbari, B. (3) 1 - CEA, France 2 - AREVA NP, France 3 - EDF-SEPTEN, France
14:40-15:00	CHARACTERIZATION OF UNCERTAINTY PARAMETERS OF FUEL ROD FOR LOCA ANALYSIS	Lee, J. (1); Woo, S. (1) 1 - Korea Institute of Nuclear Safety, Korea, Republic of
15:00-15:20	IMPACT OF THE POTENTIAL HIGH BURNUP FUEL DISPERSAL DURING A LARGE BREAK LOCA IN A BWR-6 NPP	Concejal Bermejo, A. (1); García Sedano, P. (1); Crespo García, A. (1); Mata Alonso, P. (2) 1 - Iberdrola Ingeniería y Construcción. Spain 2 - Iberdrola Generación. Spain
15:20-15:40	COMPUTATIONAL ANALYSIS OF MULTI-PIN BALLOONING DURING LOCA AND POST-LOCA TRANSIENT USING THE MULTI-PHYSICS CODE DRACCAR	Bascou, S. (1); Guillard, G. (1); Jean-Marc, R. (1) 1 - Institut de Radioprotection et de Sûreté Nucléaire (IRSN), France
15:40-16:00	NRC LOCA TESTING PROGRAM AT STUDSVIK - RECENT RESULTS ON HIGH BURNUP FUEL	Askeljung, P. (1) 1 - Studsvik Nuclear AB, Sweden

16:00 – 16:20 Coffee Break and Poster viewing

Mon 16:20-18:00 Parallel Session I - Design and Materials I: Hydriding and Oxidation

Chair: David Schrire, Vattenfall, Sweden; Co-Chair: Kari Ranta-Puska, TVO, Finland

16:20-16:40	OXIDATION BEHAVIOR OF NIOBIUM IN OXIDE LAYER OF ZIRCONIUM-NIOBIUM ALLOYS	Sakamoto, K. (1); Une, K. (1); Hashizume, K. (2) 1 - Nippon Nuclear Fuel Development, Japan 2 - Kyushu University, Japan
16:40-17:00	A STUDY INTO THE IMPACT OF PLASTICITY AND LATTICE STRAIN ON THE OXIDATION BEHAVIOUR OF ZIRCONIUM ALLOYS	Platt, P. (1); Preuss, M. (1); Frankel, P. (1); Howells, R. (2); Bamber, M. (2); Symington, I. (2) 1 - The University of Manchester, United Kingdom 2 - Serco, United Kingdom
17:00-17:20	UNDERSTANDING THE IMPORTANCE OF SN CONTENT FOR THE CORROSION BEHAVIOUR OF ZR-NB-SN ALLOYS FOR CLADDING MATERIAL	Frankel, P. (1); Wei, J. (1); Cottis, R. (1); Lyon, S. (1); Preuss, M. (1); Ambard, A. (2); Comstock, R. J. J. (3); Hallstadius, L. (4); 1 - Materials Performance Centre, School of Materials, The University of Manchester, United Kingdom 2 - EDF - R&D, Moret sur Loing, France 3 - Westinghouse Electric Co., Pittsburgh, United States 4 - Westinghouse Electric Co., Sweden
17:20-17:40	COMPARISON OF DUCTILITY OF IRRADIATED ZIRLO® AND ZIRCALOY-4	Garde, A. (1); Mitchell, D. (1) 1 - Westinghouse Electric Company, United States

TOP FUEL

REACTOR FUEL PERFORMANCE 2012



17:40-18:00	EFFECT OF UV IRRADIATION ON CORROSION OF FUEL COMPONENTS IN HIGH TEMPERATURE WATER	Kim, Y.-J. (1); Lin, Y.-P. (2); Lutz, D. (2); Kucuk, A. (3); Cheng, B. (3) 1 - GE Global Research Center, Schenectady, NY, United States 2 - Global Nuclear Fuel-America, Wilmington, NC, United States 3 - Electric Power Research Institute, United States
-------------	--	---

Mon 16:20-18:30 Parallel Session II - Transient Fuel Behaviour III

Chair: John Jones, Office for Nuclear Regulation, United Kingdom; Co-Chair: Jinzhao Zhang, Tractebel Engineering, Belgium

16:20-16:40	HIGH BURN-UP MOX FUEL BEHAVIOUR IN TRANSIENT CONDITIONS	Lemoine, F. (1); Federici, E. (1); Blachier, R. (2); Largenton, R. (3); Mailhe, P. (4) 1 - Commissariat à l'Energie Atomique et aux Energies Alternatives, France 2 - Electricité De France, SEPTEN, France 3 - Electricité De France, R&D, MMC/T25, France 4 - AREVANP SAS, France
16:40-17:00	ADJUSTMENT OF FUEL CREEP PROPERTIES BASED ON POST-RAMP DISH FILLING AND 3D SIMULATIONS. IMPACT ON CLAD RIDGES	Julien, J. (1); Aubrun, I. (1); Sercombe, J. (1); Raveu, G. (1); Gatt, J.-M. (1) 1 - CEA, DEN, DEC, France
17:00-17:20	ANALYSIS METHODOLOGIES UTILIZED TO DEMONSTRATE COMPLIANCE TO FUEL DESIGN LIMITS FOR THE AP1000® REACTOR	Ray, S. (1); Drudy, K. (1); Knott, R. (1) 1 - Westinghouse Electric Company, United States
17:20-17:40	HYBRID CLADDING FAILURE MODE MODELING BASED ON SCC, HE AND DHC FAILURE MECHANISMS	Zhou, G. (1); Hallstadius, L. (1); Ledergerber, G. (2); Mitchell, D. (3); Bolander, M. (4); Johannesson, S.-B. (4) 1 - Westinghouse Electric Sweden AB, Sweden 2 - Kernkraftwerk Leibstadt AG, Switzerland 3 - Westinghouse Electric Co., United States 4 - UPPSALA University, Energy System, Sweden
17:40-18:00	PEREGRINE: ADVANCED MODELING OF PELLET-CLADDING INTERACTION (PCI) FAILURE IN LWRS	Montgomery, R. (1); Sunderland, D. (2); Stanek, C. (3); Wirth, B. (4); Capps, N. (4); Williamson, R. (5) 1 - Pacific Northwest National Laboratory, United States 2 - ANATECH Corp., United States 3 - Los Alamos National Laboratory, United States 4 - University of Tennessee, Knoxville, United States 5 - Idaho National Laboratory, United States
18:00-18:30	MOX IN REACTORS: From GEN2 to GEN3+	Arslan, M. (1); Gros, J.-P. (1); Aubret, p. (P); Marincic, A. (2); De Villele, E. (2) 1 - AREVA NC, France 2 - AREVA NP, France

TOP FUEL

REACTOR FUEL PERFORMANCE 2012



Tuesday 4 September 2012

Tue 8:30–10:00 Plenary Session II

Chair: John Jones, Office for Nuclear Regulation, United Kingdom; Co-Chair: John Roberts, University of Manchester, United Kingdom

8:30 - 9:00	BACK-END REQUIREMENTS THAT NEED TO BE TAKEN INTO ACCOUNT IN THE FUEL DESIGN PHASE	Lalieux, P. (1) 1 - ONDRAF, Belgium
9:00 - 9:30	MOLECULAR DYNAMICS	Grimes, R. (1) 1 - Imperial College London, United Kingdom
9:30 -10:00	EVOLUTION OF FUEL MATERIAL	Hallstadius, L. (1); Motta, A. (2) 1 - Westinghouse, Sweden 2 - Pennsylvania State University, United States

10:00 – 10:30 Coffee Break and Poster Session - authors will be at their poster for discussions with participants

Tue 10:30 - 12:30 Parallel Session I - Design and Materials II: Hydriding and oxidation

Chair: Kari Ranta-Puska, TVO, Finland; Co-Chair: David Schrire, Vattenfall, Sweden

10:30-10:50	CONTROLLING FACTORS IN HYDROGEN ABSORPTION OF ZIRCONIUM ALLOYS	Ume, K. (1); Sakamoto, K. (1); Matsunaga, J. (1); Etoh, Y. (1); Aomi, M. (2); Takagi, I. (3); Sawada, K. (3); Watanabe, H. (3) 1 - Nippon Nuclear Fuel Development, Japan 2 - Global Nuclear Fuel Japan, Japan 3 - Kyoto University, Japan
10:50-11:10	NEW METHOD TO OBTAIN THE FRACTURE ENERGY OF HYDROGEN-CHARGED NUCLEAR FUEL CLADDING FROM RING COMPRESSION TESTS	Gomez, F. J. (1); Martin-Rengel, M. A. (2); Ruiz-Hervias, J. (2); Torres, E. (2) 1 - Advanced Material Simulation, S.L., Spain 2 - Polytechnic University of Madrid, Spain
11:10-11:30	TEMPERATURE DEPENDENCE OF DELAYED HYDRIDE CRACKING VELOCITY IN FUEL CLADDINGS MADE FROM ZIRCONIUM ALLOYS OF DIFFERENT COMPOSITIONS	Markelov, V. (1); Gusev, A. (1); Kotov, P. (1); Novikov, V. (1) 1 - A.A. Bochvar High-Technology Research Institute of Inorganic Materials (JSC "VNIINM"), Russian Federation
11:30-11:50	DELAYED HYDRIDE CRACKING IN ZIRCALOY-2 FUEL CLADDING TUBES	Namburi, H. K. (1); Valance, S. (1); Bertsch, J. (1) 1 - Paul Scherrer Institut, Switzerland
11:50-12:10	EFFECT OF INCREASED HYDROGEN CONTENT ON THE MECHANICAL PERFORMANCE OF IRRADIATED CLADDING TUBES	Ogata, K. (1); Baba, T. (1); Kamimura, K. (1); Matsunaga, J. (2); Nakatsuka, M. (2); Sakamoto, K. (2); Sawada, A. (3) 1 - Japan Nuclear Energy Safety Organization, Japan 2 - Nippon Nuclear Fuel Development Co., Ltd., Japan 3 - Global Nuclear Fuel - Japan Co., Ltd., Japan

12:10-12:30	CHARACTERIZATION AND MODELING OF THE COMBINED INFLUENCE OF HYDROGEN AND OXIDATION ON FUEL CLADDING DIMENSIONAL STABILITY	Krebs, B. (1); Desquines, J. (1); Drouan, D. (1); Guilbert, S. (1); Duriez, C. (1); March, P. (1) 1 - IRSN, France
-------------	--	---

Tue 10:30-12:30 Parallel Session II - Modelling I: Fuel Rod Thermal Mechanics

Chair: Jinzhao Zhang, Tractebel Engineering, Belgium, Co-Chair: Nicolas Vioujard, AREVA, France

10:30-10:50	QUALIFICATION OF FRAPCON/FRAPTRAN CODES FOR FUEL ROD DESIGN VERIFICATION AND RELOAD FUEL SAFETY EVALUATION	Umidova, Z. (1); Dethioux, A. (1); Zhang, J. (1) 1 - Tractebel Engineering (GDF SUEZ), Belgium
10:50-11:10	MODEL DEVELOPMENT AND VERIFICATION FOR FISSION GAS INVENTORY AND RELEASE FROM HIGH BURNUP LWR FUEL DURING SIMULATED REACTIVITY-INITIATED ACCIDENT EXPERIMENTS AT NSRR	Suzuki, M. (1); Udagawa, Y. (1); Sugiyama, T. (1); Nagase, F. (1) 1 - Japan Atomic Energy Agency, Japan
11:10-11:30	EFFECTS OF RECOIL-IMPLANTED FISSION FRAGMENTS ON INTERNAL CORROSION OF PWR NUCLEAR FUEL CLADDING	Minne, J.-B. (1); Desgranges, L. (2); Optasanu, V. (3); Barnel, N. (1); Montesin, T. (3) 1 - EDF R&D, France 2 - CEA/DEN/DEC/SESC/LLCC, CEA Cadarache, France 3 - ICB, Université de Bourgogne, UMR 6303 CNRS, France
11:30-11:50	3D SIMULATION OF MISSING PELLET SURFACE DEFECTS IN LIGHT WATER REACTOR FUEL RODS	Spencer, B. (1); Hales, J. (1); Novascone, S. (1); Williamson, R. (1) 1 - Idaho National Laboratory, United States
11:50-12:10	THE ANALYSIS OF FUEL ROD INTERNAL PRESSURE UNEVEN DISTRIBUTION	Zhang, Y. (1); Han, Y. (1); Li, C. (1); Wei, X. (1); Liu, T. (1); Zhou, Y. (1) 1 - China Nuclear Power Technology Research Institute, China
12:10-12:30	EVALUATION AND ADAPTATION OF THE RIA CODE SCANAIR FOR MODELLING BWR FUEL AND CONDITIONS	Arffman, A. (1); Moal, A. (2); Georgenthum, V. (2) 1 - VTT Technical Research Centre of Finland, Finland 2 - Institut de Radioprotection et de Sûreté Nucléaire, France

Tue 10:30-12:30 Parallel Session III - Operation & Experience III

Chair: Marco Streit, Paul Scherer Institute, Switzerland; Co-Chair: Nadine Holasky, Bel V, Belgium

10:30-10:50	INVESTIGATION OF BWR FUEL FAILURES	Lutz, D. (1); Lin, Y.-P. (1); Schneider, R. (1); Yeager, H. (1); Kucuk, A. (2); Cheng, B. (2); Lemons, J. (3); Nesmith, K. (3) 1 - Global Nuclear Fuel - Americas, United States 2 - Electric Power Research Institute, United States 3 - Tennessee Valley Authority, United States
-------------	------------------------------------	--

TOP FUEL

REACTOR FUEL PERFORMANCE 2012



10:50-11:10	REVISED INDUSTRY GUIDANCE ON LIGHT WATER REACTOR FUEL SURVEILLANCE AND INSPECTION	Daum, R. (1); Mader, E. (1); Yueh, K. (1); Armstrong, E. (2); Smith, F. (3) 1 - Electric Power Research Institute, United States 2 - Finetech, Inc., United States 3 - Entergy Corporation, United States
11:10-11:30	FUEL INSPECTIONS AND THE ROOT CAUSES STUDY	Mala, M. (1); Mikus, J. (1); Miklos, M. (1) 1 - CV Rez Ltd, Czech Republic
11:30-11:50	REDUCTION OF FUEL ASSEMBLY BOW WITH THE RFA FUEL	Aulló, M. (1); Aleshin, Y. (2); Messier, J. (3) 1 - ENUSA Industrias Avanzadas, S.A., Spain 2 - Westinghouse Electric Company, United States 3 - Electricité de France, France
11:50-12:10	WESTINGHOUSE FUEL DESIGNS AND PERFORMANCE OVERVIEW	Bradfute, J. (1); Chapin, D. (1); Reparaz, A. (1); Quecedo, M. (2); Munoz, C. (2) 1 - Westinghouse Electric Company, United States 2 - ENUSA, Spain
12:10-12:30	NEW CORES ON BASE COATED PARTICLES FOR POWER WATER REACTORS (PWR-CP)	Grishanin, E. I. (1); Alekseev, P. N. (1); Kucharkin, N. E. (1) 1 - National Research Center "Kurchatov Institute", Russian Federation

12:30-13:15 Lunch

13:15-14:20 Poster Session - authors will be at their poster for discussions with participants

Tue 14:20-16:20 Parallel Session I - Design and Materials III: Advanced Materials

Chair: Pierre Mollard, AREVA, France; Co-Chair: Arttu Knuutila, TVO, Finland

14:20-14:40	U1-XAMXO2± δ PELLETS FABRICATION THROUGH CONVENTIONAL SINTERING	Delahaye, T. (1); Lebreton, F. (1); Horlait, D. (1) 1 - CEA Marcoule, France
14:40-15:00	DEVELOPMENT OF INNOVATIVE HIGH THERMAL CONDUCTIVITY UO2 CERAMIC COMPOSITE FUEL PELLETS WITH SILICON CARBIDE WHISKERS USING SPARK PLASMA SINTERING	Tulenko, J. (1); Subhash, G. (1); Baney, R. (1); Cartas, A. (1); Yeo, S. (1); Ge, L. (1) 1 - University of Florida, United States
15:00-15:20	THE IRRADIATION PERFORMANCE AND EXPERIENCE OF ADVANCED ZIRCONIUM ALLOY HIFI® IN COMMERCIAL BWR	Kataoka, K. (1); Owaki, M. (1); Kakiuchi, K. (1); Ide, H. (1); Kishita, H. (1); Kubo, Y. (1); Inaba, Y. (1); Ohta, T. (2) 1 - Nuclear Fuel Industries, Ltd., Japan 2 - Tokyo Electric Power Company, Japan
15:20-15:40	ASSESSMENT OF DIFFERENT MATERIALS FOR MEETING THE REQUIREMENTS OF FUTURE LWR FUEL DESIGNS	Ray, S. (1); Lahoda, E. (1) 1 - Westinghouse Electric Company, United States

15:40-16:00	HIGH TEMPERATURE OXIDATION OF SILICON CARBIDE AND ADVANCED IRON-BASED ALLOYS IN STEAM-HYDROGEN ENVIRONMENTS	Terrani, K. (1); Keiser, J. (1); Brady, M. (1); Cheng, T. (1); Pint, B. (1); Snead, L. (1); Silva, G. W. C (1) 1 - Oak Ridge National Laboratory, United States
16:00-16:20	ULTRA LOW TIN ZR1NBSNFE QUATERNARY ALLOYS – PERSPECTIVES FOR STRUCTURAL COMPONENTS IN PWR FUEL ASSEMBLIES.	Trapp-Pritsching, S. (1); Chabretou, V. (2); Scott, C. (2); Sell, H.-J. (1); Teboul, N. (1) 1 - AREVA NP GmbH, Germany 2 - AREVA NP SAS, France

Tue 14:20-16:20 Parallel Session II - Modelling II: Fuel Rod Thermal Mechanics

Chair: Jinzhao Zhang, Tractebel Engineering, Belgium; Co-Chair: Robert Montgomery, PNNL, United States

14:20-14:40	VALIDATION OF FUEL PERFORMANCE CEA CODE ALCYONE, SCHEME 1D, ON EXTENSIVE DATA BASE	Struzik, C. (1); Marelle, V. (1) 1 - CEA, DEN, Fuel Studies Department, Cadarache, France
14:40-15:00	CONTRIBUTION OF THE FUMEX-III PROJECT TO VALIDATION AND DEVELOPMENT OF THE TRANSURANUS FUEL PERFORMANCE CODE	Schubert, A. (1); Van Uffelen, P. (1); Van de Laar, J. (1); Calabrese, R. (2); Boneva, S. (3); Györi, C. (4); Spykman, G. (5) 1 - European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany 2 - ENEA, Reactor and Fuel Cycle Safety and Security Methods Section, Bologna, Italy 3 - Institute for Nuclear Research and Nuclear Energy, Sofia, Bulgaria 4 - NucleoCon LLC, Levice, Slovakia 5 - TÜV NORD EnSys Hannover GmbH & Co. KG, Germany
15:00-15:20	QUANTIFYING UNCERTAINTIES AND BEST-ESTIMATE, REALISTIC METHODS FOR LWR FUEL MECHANICAL ANALYSIS DURING STEADY-STATE AND AOO TRANSIENTS	Arimescu, I. (1) 1 - AREVA NP Inc, United States
15:20-15:40	MODELING AXIAL GAS TRANSPORT IN DEFECTIVE FUEL RODS	Liu, W. (1); Lyon, W. (1); Rashid, J. (1); Yagnik, S. (2) 1 - ANATECH Corp, United States 2 - EPRI, United States
15:40-16:00	GALILEO, AREVA'S ADVANCED FUEL ROD PERFORMANCE CODE AND ASSOCIATED REALISTIC METHODOLOGY	Vioujard, N. (1); Bessiron, V. (1); Garnier, C. (1); Mailhe, P. (1); Georget, V. (1); Barbier, B. (1); Deuble, D. (2); Landskron, H. (2); Bellanger, P. (3); Arimescu, V. I. (4) 1 - AREVA, AREVA NP SAS, France 2 - AREVA, AREVA NP GmbH, Germany 3 - AREVA, AREVA NP Inc, United States 4 - AREVA, AREVA NP Inc, United States
16:00-16:20	PWR FUEL ROD MODELING IN START-3 CODE AT HIGH BURNUP AND TRANSIENT CONDITIONS IN THE FRAMEWORKS OF FUMEX-3 PROJECT	Bogatyr, S. (1); Chulkin, D. (1); Kuznetsov, V. (1); Novikov, V. (1) 1 - A.A. Botchvar High-Technology Scientific and Research Institute of Inorganic Materials, Russian Federation

Tue 14:20-16:20 Parallel Session III - Spent Fuel and Transportation I

Chair: Guy Demazy, Synatom/Electrabel, Belgium; Co-Chair: Alexander Tuzov, ROSATOM, Russian Federation

14:20-14:40	OXIDATION STUDIES ON IRRADIATED UO ₂ FUELS	Papaioannou, D. (1); Hollas, S. (1); Rondinella, V. (1); Sasahara, A. (2) 1 - European Commission, Joint Research Centre, Institute for Transuranium Elements, Germany 2 - Central Research Institute of Electric Power Industry, Japan
14:40-15:00	RESULTS OF THERMAL CREEP TESTS ON IRRADIATED ZRY-2	Lloret, M. (1); Quecedo, M. (1); Conde, J. M. (2); Rey, J. M. (2); Alejano, C. (2); Fernandez, F. J. (3) 1 - ENUSA Industrias avanzadas SA, Spain 2 - Consejo de Seguridad Nuclear, Spain 3 - ENRESA, Spain
15:00-15:20	DRY STORAGE RELIABLE SOLUTIONS FOR THE MANAGEMENT OF SPENT NUCLEAR FUEL IN THE LONG TERM	Issard, H. (1) 1 - AREVA TN International, France
15:20-15:40	FRAPCON-3.4 EXTENSION TO MODEL HYDROGEN EFFECTS ON CLADDING MECHANICAL BEHAVIOR DURING DRY STORAGE	Feria, F. (1); Herranz, L. E. (1) 1 - CIEMAT, Spain
15:40-16:00	CRITICALITY SAFETY ANALYSIS OF FRESH AND SPENT FUEL STORAGE AND HANDLING FOR VVER REACTOR UNIT USING CODE MCNP5	Slugen, V. (1); Farkas, G. (1); Hascik, J. (1); Vrban, B. (1); Lulej, J. (1); Petriska, M. (1); Hincă, R. (1); Urban, P. (2) 1 - Slovak University of Technology, Faculty of Electrical Engineering and Information Technology, Slovakia 2 - SE a.s., NPP Mochovce, Slovakia
16:00-16:20	STUDSVIK CMS CAPABILITY FOR SPENT NUCLEAR FUEL	Grandi, G. (1); Simeonov, T. (2) 1 - Studsvik Scandpower, Inc, United States 2 - Studsvik Scandpower, GmbH, Germany

16:20 – 16:40 Coffee Break

Tue 16:40-18:20 Parallel Session I - Design and Materials IV: New Concepts

Chair: Clara Anghel, GE Hitachi, Sweden; Co-Chair: Koo Yang-Hyun, KAERI, Republic of Korea

16:40-17:00	FULLY CERAMIC MICROENCAPSULATED FUEL DEVELOPMENT FOR LWR APPLICATIONS	Snead, L. (1); Terrani, K. (1); Voit, S. (1); Besmann, T. (1) 1 - Oak Ridge National Laboratory, United States
-------------	---	---

TOP FUEL

REACTOR FUEL PERFORMANCE 2012



17:00-17:20	SILICON CARBIDE COMPOSITE FOR BWR CHANNEL APPLICATION	Yueh, H.-K. (1); Edsinger, K. (1); Griffith, G. (2); Garnier, J. (2); Pilat, E. (3); Cantonwine, P. (4); Feinroth, H. (5); Shinavski, R. (6) 1 - Electric Power Research Institute, United States 2 - Idaho National Laboratory, United States 3 - Massachusetts Institute of Technology, United States 4 - Global Nuclear Fuel, United States 5 - Ceramic Tubular Products, United States 6 - Hyper-Term HTC, Inc, United States
17:20-17:40	WESTINGHOUSE SVEA FUEL EVOLUTION AND MANAGEMENT	Bergmann, U. (1); Jinnerstand, M. (1); Hallstadius, L. (1); King, J. (1) 1 - Westinghouse Electric Sweden AB, Sweden
17:40-18:00	ATRIUM™ 11 – THE TRANSITION FROM DEVELOPMENT TO IN-SERVICE QUALIFICATION OF AN ADVANCED FUEL DESIGN FOR BOILING WATER REACTORS	Garner, N. L. (1); Cole, S. E. (1); Graebert, R.-F. (2); Lippert, H.-J. (2); Teboul, N. (3); Mollard, P. (3) 1 - AREVA NP Inc, United States 2 - AREVA NP GmbH, Germany 3 - AREVA NP, France
18:00-18:20	ADVANCED FUEL MANAGEMENT IN EPR (TM) CORES	Van de Velde, A. (1); Zheng, S. (1); Berger, H.-D. (2); Porsch, D. (2) 1 - AREVA, AREVA NP SAS, France 2 - AREVA, AREVA NP GmbH, Germany

Tue 16:40-18:00 Parallel Session II - Spent Fuel and Transportation II and Fabrication & Seismic Simulation

Chair: Alexander Tuzov, ROSATOM, Russian Federation; Co-Chair: Guy Demazy, Synatom/Electrabel, Belgium

16:40-17:00	IAEA'S COOPERATION IN SUPPORTING LONG TERM INTERIM STORAGE AND BACK-END MANAGEMENT OF RESEARCH REACTOR FUEL	Tozser, S. (1); Pablo, A. (1); Bradley, E. (1) 1 - International Atomic Energy Agency, Austria
17:00-17:20	RETHINKING SPENT FUEL MANAGEMENT, A POST-FUKUSHIMA PERSPECTIVE	Chiguer, M. (1); Lelievre, F. (1); Froment, A. (1) 1 - AREVA, France
17:20-17:40	REVIEW OF QUALIFICATIONS FOR FUEL ASSEMBLIES FABRICATION	Slabu, D. (1); Zemek, M. (1); Hellwig, C. (1) 1 - Axpo AG, Switzerland
17:40-18:00	EXPERIMENTAL STUDY OF FA TO CORE BAFFLES IMPACTS UNDER SIMULATED SEISMIC LOADINGS	Makarov, V. V. (1); Afanasiev, A. V. (1); Matvienko, I. V. (1); Dolgov, A. B. (2); Volkov, S. V. (3) 1 - OKB "HYDROPPRESS", Podolsk, Russian Federation 2 - JSC "TVEL", Moscow, Russian Federation

Conference dinner at Manchester Town Hall

TOP FUEL

REACTOR FUEL PERFORMANCE 2012



Wednesday 5 September 2012

Wed 08:30–09:55 - Plenary session III

Chair: John Jones, Office for Nuclear Regulation, United Kingdom; Co-Chair: Marco Streit, Paul Scherer Institute, Switzerland

8:30-8:55	PRELICENSING ASSESSMENT OF FUEL DESIGNS FOR NEW COMMERCIAL NUCLEAR REACTORS WITHIN THE UNITED KINGDOM	Jones, J. (1) 1 - Office for Nuclear Regulation, United Kingdom
8:55-9:20	R&D IN SUPPORT OF SAFETY ANALYSIS AND DESIGN	Waeckel, N. (1) 1 - EDF, France
9:20-9:55	LESSONS LEARNED FROM RUNNING OECD-NEA FUEL PROJECTS	Vitanza, C. (1) 1 - OECD/NEA Halden Reactor Project, Norway

09:55–10:20 Coffee Break and Poster viewing

Wed 10:20-12:20 Parallel Session I - Design and Materials V: Methods and Tests

Chair: Chair: John Roberts, University of Manchester, United Kingdom; Co-Chair: Yuemin Zhou, China Guangdong Nuclear Power Group, China

10:20-10:45	RESEARCH REACTOR MIR – RUSSIAN NATIONAL BASE FOR TESTING WATER-COOLED REACTOR FUEL RODS UNDER TRANSIENT AND ACCIDENT CONDITIONS	Burukin, A. V. (1); Alexeev, A. V. (1); Izhutov, A. L. (1); Kalygin, V. V. (1); Kiseleva, I. V. (1); Ovchinnikov, V. A. (1); Shulimov, V. N. (1) 1 - SSC RIAR JSC, Russian Federation
10:45-11:10	IODINE-INDUCED STRESS CORROSION CRACKING (I-SCC) OF ZIRCALOY-4: EFFECT OF MECHANICAL LOADING HISTORY, IODINE CONCENTRATION AND IRRADIATION ON CRACK INITIATION	Mozzani, N. (1); Andrieu, E. (2); Auzoux, Q. (1); Blanc, C. (2); Le Boulch, D. (1); Scott, C. (3) 1 - Commissariat à l'Énergie Atomique; CEA Saclay, DMN/SEMI/LCMI, France 2 - CIRIMAT/ENSIACET, Université de Toulouse, UPS/INPT/CNRS, France 3 - Areva NP, France
11:10-11:35	RADIAL PROFILING AND ISOTOPIC INVENTORY ANALYSIS OF IRRADIATED NUCLEAR FUEL USING LASER ABLATION ICP-MS	Granfors, M. (1); Puranen, A. (1); Zwicky, H.-U. (2) 1 - Studsvik Nuclear AB, Sweden 2 - Zwicky Consulting GmbH, Switzerland

TOP FUEL

REACTOR FUEL PERFORMANCE 2012



11:35-12:00	GRIZZLI IRRADIATION EXPERIMENT DONE AT CEA : GOALS AND INDUSTRIAL USE	Soniak-Defresne, A. (1); Gavoille, P. (1); Geffroy, E. (1); Pierre, J. (2); Ambard, A. (3); Audic, K. (3); Bernaudat, C. (4); Colombier, V. (4); Cloué, J.-M. (5); Pérusin, S. (5) 1 - CEA, Nuclear Energy Division, CEA Saclay, France 2 - CEA, Nuclear Energy Division, CEA Cadarache, France 3 - EDF, DRD/MMC, France 4 - EDF SEPTEN, Nuclear Fuel Division, France 5 - AREVA, AREVA-NP, France
12:00-12:20	"FEDS" DATABASE AND ITS APPLICATION IN SOLUTION OF TASKS OF REACTOR MATERIAL SCIENCE	Markov, D. V. (1); Zhitelev, V. A. (1); Zvir, E. A. (1); Strozuk, A. V. (1); Svetukhin, V. V. (2); Zhukov, A. V. (2); Levkina, O. Y. (2) 1 - JSC "SSC RIAR" Dimitrovgrad, Russian Federation 2 - Ulyanovsk State University, Russian Federation

Wed 10:20-12:20 Parallel Session II - Modelling III: Thermal Hydraulics and Coupling

Chair: Javier Riverola, ENUSA, Spain; Co-Chair: Ken Yueh, EPRI, United States

10:20-10:40	DEVELOPMENT OF FUEL ROD VIBRATION AND FLUID ELASTIC INSTABILITY ANALYSIS CODE: ROVIN	Kim, H. K. (1); Lee, K. S. (1); Park, N. G. (1); Kim, J. H. (1); Yoo, J. S. (1) 1 - KEPCO Nuclear Fuel, Korea, Republic of
10:40-11:00	N.N.	
11:00-11:20	NUMERICAL STUDY ON THERMAL HYDRAULIC PERFORMANCE OF MIXING VANES IN NUCLEAR ROD BUNDLES	Zhang, Y. (1); Li, W. (1); Zhou, Y. (1); Pang, Z. (1); Yan, J. (1); Lu, Z. (1) 1 - China Nuclear Power Technology Research Institute, China
11:20-11:40	APPLICATION OF ADVANCED METHODS TO PREDICT GRID TO ROD FRETTING IN PWRs	Karoutas, Z. (1); Lu, R. (1); Yan, J. (1); Sham, T.-L. (2); Krammen, M. (1) 1 - Westinghouse Electric Company, United States 2 - Oak Ridge National Laboratory, United States
11:40-12:00	TWO-PHASE CFD SIMULATION OF DNB AND CHF PREDICTION BEHIND SPACER GRIDS WITH NEPTUNE_CFD AND STAR-CCM+	Chatelain, A. (1); Alleborn, N. (2); Goodheart, K. (2); Baudry, C. (3); Lavieville, J. (3) Keheley, T. (4) 1 - AREVA NP, France 2 - AREVA NP GmbH, Germany 3 - EDF R&D, France 4 - AREVA NP Inc, United States
12:00-12:20	STATE-OF-THE-ART DEVELOPMENT OF CHF CORRELATIONS AT AREVA NP	Wieckhorst, O. (1); Opel, S. (1); Kronenberg, J. (1); Filhol, F. (2); Greene, K. (3) 1 - AREVA, AREVA NP GmbH, Germany 2 - AREVA, AREVA NP SAS, France 3 - AREVA, AREVA NP Inc., United States

12:20 – 13:20 Lunch



Wed 13:20-15:00 Parallel Session I - Design and Materials VI

Chair: Kenneth J Geelhood, PNNL, United States; Co-Chair: Koo, Yang-Hyun, KAERI, Republic of Korea

13:20-13:40	A STUDY ON THE BOW CHARACTERISTICS AND DESIGN EFFECTS ON THE FUEL ASSEMBLY BOW	Jeon, S. Y. (1); Suh, J. M. (1); Hwang, S. T. (1); Park, J. K. (1) 1 - KEPCO NF, Korea, Republic of
13:40-14:00	REDOX BEHAVIOUR OF PLUTONIUM IN MIXED OXIDE FUELS	Degueldre, C. (1); Poonosamy, J. (2); Pin, S. (3); Kulik, D. (4) 1 - LNM, NES, Paul Scherrer Institut, Switzerland 2 - IPNO, University of Orsay, France 3 - LBC, ENE, Paul Scherrer Institut, Switzerland 4 - LES, NES, Paul Scherrer Institut, Switzerland
14:00-14:20	UNDERSTANDING CIVIL ADVANCED GAS REACTOR FUEL USING METALLOGRAPHY	Morgan, S. (1); Gate, A. (1); Thompsom, J. F. (1); Talling, R. (2) 1 - National Nuclear laboratory, United Kingdom 2 - EDF Energy, United Kingdom
14:20-14:40	AREVA OPTIMIZED FUEL RODS FOR LWRS	Cole, S. E. (1); Delafoy, C. (2); Louf, P.-H. (2); Teboul, N. (2); Graebert, R.-F. (3) 1 - AREVA, AREVA NP SAS, France 2 - AREVA, AREVA NP Inc, , United States 3 - AREVA, AREVA NP GmbH, Germany
14:40-15:00	WESTINGHOUSE BWR CONTROL ROD CR 99 – TOWARDS FLAWLESS OPERABILITY	Seltborg, P. (1); Jinnestrand, M. (1); Rebensdorff, B. (1); Bergmann, U. (1) 1 - Westinghouse Electric Sweden AB, Sweden

Wed 13:20 - 15:00 Parallel Session II - Modelling IV: Multiphysics

Chair: Arndt Schubert, JRC-ITU, Germany; Co-Chair: Javier Riverola, ENUSA, Spain

13:20-13:40	CASL MULTIPHYSICS PWR MODELING INCLUDING CRUD INDUCED POWER SHIFT (CIPS) AND CRUD INDUCED LOCALIZED CORROSION (CILC)	Secker, J. (1); Zhang, B. (1); Hilton, P. (1); Belcourt, K. (2); Schmidt, R. (2) 1 - Westinghouse Electric Company, United States 2 - Sandia National Laboratory, United States
13:40-14:00	SAVAN3D: IMPROVING SIMULATION CAPABILITIES OF THE SAVAN TECHNOLOGY	Morales, M. (1); Cerracín, A. (1); Aleshin, Y. (2); Kim, J.-H. (3) 1 - ENUSA Industrias Avanzadas, Spain 2 - Westinghouse Electric Company, United States 3 - KEPCO Nuclear Fuel, Korea, Republic of
14:00-14:20	CRUD/CORROSION RISK ASSESSMENT TOOLS OF AREVA ARE MINIMIZING FUEL CRUD/CORROSION RISKS FOR US PLANTS	Vioujard, N. (1); Lamanna, L. (2); Pop, M. (2); Gregorich, C. (1); Harne, R. (3); Jones, J. (3) 1 - AREVA, AREVA NP SAS, France 2 - AREVA, AREVA NP Inc, United States 3 - AREVA, AREVA NP Inc, United States
14:20-14:40	COMBINING REACTOR PHYSICS AND FUEL PERFORMANCE CALCULATIONS	Viitanen, T. (1); Tulkki, V. (1) 1 - VTT Technical Research Centre of Finland, Finland
14:40-15:00	FUEL PERFORMANCE RISK ASSESSMENT DURING LOADING PATTERN DEVELOPMENT	Oelrich, R. (1); Long, Y. (1); Brown, J. (1); Kersting, P. (1); Keiser, K. (1); Wang, G. (1); Rumschlag, D. (1) 1 - Westinghouse Electric Company LLC, United States



15:00 - Farewell Drink

16:00 - 17:30 - Round Table: *How to mitigate the risk of pyrophoricity in the Zirconium Industry*

Chair: A. Ferré, AREVA, France

Best Practice Sharing: Recent events Pyrophoricity management in the shops – Testing and rating the wastes and scraps hazard - Mechanism understanding

Posters

Spent Fuel Storage and Transportation - Poster

TopFuel2012-A0093	SIMULATION OF LEAKING FUEL IN THE LEAFE FACILITY	Somfai, B. (1); Hózer, Z. (1); Kracz, G. (1); Nagy, I. (1); Vimi, A. (1) 1 - Fuel and Reactor Materials Department, Centre for Energy Research, Hungarian Academy of Sciences, Hungary
-------------------	--	---

Modelling - Poster

TopFuel2012-A0007	ADVANCED CHARACTERIZATION OF MIMAS MOX FUEL MICROSTRUCTURE TO QUANTIFY THE HBS FORMATION	Bouloré, A. (1); Federici, E. (1); Aufore, L. (1) 1 - CEA, DEN, Fuel Studies Department, Cadarache, France
TopFuel2012-A0021	INVESTIGATION OF POSSIBILITIES OF COMPUTER TECHNOLOGY MSC.MARC TO MODEL THE BEHAVIOR OF FUEL ELEMENTS	Kulakov, G. (1); Kashirin, B. (1); Kosaurov, A. (1); Konovalov, Y. (1); Kuznetsov, A. (1); Bogatyr', S. (1); Novikov, V. (1) 1 - Joint Stock Company «A.A. Bochvar High-Technology Research Institute of Inorganic Materials» (JSC VNIINM), Russian Federation
TopFuel2012-A0032	ASSESSMENT OF PCMI SIMULATION USING THE MULTIDIMENSIONAL MULTIPHYSICS BISON FUEL PERFORMANCE CODE	Novascone, S. (1); Hales, J. (1); Spencer, B. (1); Williamson, R. (1) 1 - Idaho National Laboratory, United States
TopFuel2012-A0035	STUDY OF SCWR FUEL ASSEMBLY CHARACTERISTICS BASED ON NEUTRONICS / THERMAL-HYDRAULIC COUPLING METHOD	Hong, Q. (1); Lu, L. (1); Liao, C. (1) 1 - Shanghai Nuclear Engineering Research and Design Institute, China
TopFuel2012-A0038	PORE PRESSURE CALCULATION OF HIGH BURNUP STRUCTURE	Li, S. (1); Gao, L. (1); Chen, B. (2); Xiao, Z. (3); Jiang, S. (4); Yu, J. (4) 1 - Tsinghua University; Science and Technology on Reactor System Design Technology Laboratory, NPIC, China 2 - Nuclear Power Institute of China, China 3 - National Energy R&D Center on Advanced Nuclear Fuel, China 4 - Tsinghua University, China
TopFuel2012-A0043	THE MODELING EFFECTS OF HIGH BURNUP FUEL ON MARGIN ASSESSMENT FOR REVISED LOCA ACCEPTANCE CRITERIA	Lee, K. M. (1); Eom, S. (1); Park, J. H. (1); Ban, C. H. (1); Kim, Y. H. (2); Oh, S. J. (2) 1 - KEPCO Nuclear Fuel, Korea, Republic of 2 - KHNP Central Research Institute, Korea, Republic of
TopFuel2012-A0046	NUMERICAL SIMULATION OF ROD PULLING PROCESS DURING FUEL ASSEMBLY FABRICATION	Guo, Y. (1); Wu, H. (1); Li, W. (1); Zhou, Y. (1); Wu, A. T.-T. (2) 1 - China Nuclear Power Technology Research Institute, China 2 - Energy Technology International, United States
TopFuel2012-A0047	COMPARISON OF WATERSIDE CORROSION MODELS IN COPERNIC CODE USING IFPE DATABASE	Wang, J. (1); Liu, T. (1); Zhou, Y. (1) 1 - China Nuclear Power Technology Research Institute, China

TOP FUEL

REACTOR FUEL PERFORMANCE 2012



TopFuel2012-A0052	DEVELOPMENT OF A POST PROCESSOR FOR STRESS CLASSIFICATION IN ACCORDANCE WITH THE ASME CODE, SECTION III	Wu, H. (1); Guo, Y. (1); Li, W. (1); Zhou, Y. (1); Wu, A. T.-T. (2) 1 - China Nuclear Power Technology Research Institute, China 2 - Energy Technology International, United States
TopFuel2012-A0063	FINITE ELEMENT MODELLING OF ADVANCED GAS-COOLED REACTOR FUEL PERFORMANCE AND CLADDING STRUCTURAL INTEGRITY	Mella, R. (1); Wenman, M. R. (1) 1 - Department of Materials, Imperial College London, United Kingdom
TopFuel2012-A0067	PLASTIC STRAIN HETEROGENITY IN MOX NUCLEAR FUEL (COMPOSITE MATERIAL) AND THE NONUNIFORM TRANSFORMATION FIELD ANALYSIS	Largenton, R. (1); Michel, J.-C. (2); Suquet, P. (2); Masson, R. (3); Thouvenin, G. (1) 1 - Dpt MMC EDF R&D, France 2 - LMA CNRS, France 3 - LSC CEA, France
TopFuel2012-A0085	VERIFICATION OF COMPUTATIONAL CODE PINCOD	Popov, V. (1); Ganina, S. (1); Birzhevoy, G. (1) 1 - State Scientific Center of Russian Federation - Institute for Physics and Power Engineering (IPPE), Russian Federation
TopFuel2012-A0103	ANALYSIS OF PWR UO ₂ NUCLEAR FUEL USING DETERMINISTIC AND STOCHASTIC CODES	V. Sousa, R. (1); A. M. da Silva, C. (1); Pereira, C. (1); F. Veloso, M. A. (1); L. Costa, A. (1) 1 - Universidade Federal de Minas Gerais, Brazil
TopFuel2012-A0104	THE EFFECT OF CONTROL RODS INSERTION IN FIRST CORE OF ANGRA II NUCLEAR POWER PLANT ANALYZED WITH SCALE SYSTEM	V. Sousa, R. (1); Pereira, C. (1); A. M da Silva, C. (1); F. Veloso, M. A. (1); L. Costa, A. (1); H. de Oliveira, A. (1) 1 - Universidade Federal de Minas Gerais, Brazil
TopFuel2012-A0142	AREVA'S NEW TRANSIENT HOT CHANNEL METHODOLOGY FOR EUROPEAN BWR'S	Baer, M. (1); Velten, R. (1); Wehle, F. (1) 1 - AREVA NP GmbH, Germany
TopFuel2012-A0144	SIMULATION OF NUCLEAR MATERIALS AND FUELS BY USING THE BACO CODE AND MULTISCALE MODELLING OF MATERIALS (M3)	Marino, A. (1); Jaroszewicz, S. (1); Losada, E. (1); Martín, V. (1); Mosca, H. (1); Garcés, J. (1) 1 - Comisión Nacional de Energía Atómica, Argentina
TopFuel2012-A0147	INVESTIGATION OF FUEL MECHANICAL PROPERTIES BY MICRO-INDENTATION	Staicu, D. (1); Ernstberger, M. (1); Spino, J. (1); Papaioannou, D. (1); Pétry, C. (2); Baron, D. (2) 1 - European Commission, Joint Research Centre, Institute for Transuranium Elements , Germany 2 - EDF R&D, Materials and Mechanics of Components Department , France
TopFuel2012-A0166	ASSESSMENT OF PCI PHENOMENA BY TRANSURANUS CODE: THE OSIRIS-R3 DATABASE	Cantini, F. (1); Adorni, M. (1); D'Auria, F. (1) 1 - University of Pisa - GRNSPG, Italy
TopFuel2012-A0167	ARCADIA®, NEXT GENERATION CODE SYSTEM FOR DEMANDING LICENSING ENVIRONMENT	Van de Velde, A. (1); Thareau, S. (1); Berger, H.-D. (2); Leberig, M. (2); Porsch, D. (2); Delorey, T. (3) 1 - AREVA, AREVA NP SAS, France 2 - AREVA, AREVA NP GmbH, Germany 3 - AREVA, AREVA NP Inc, United States
TopFuel2012-A0186	PREDICTING CHF IN NON-CIRCULAR COOLANT CHANNELS USING THE LOOK UP TABLES	Manning, J. (1) Walker, S. (1); Hewitt, G. (2) 1 - Department of Mechanical Engineering, Imperial College London, United Kingdom 2 - Department of Chemical Engineering, Imperial College London, United Kingdom

Design and Materials - Poster

TopFuel2012-A0030	DEVELOPMENT OF DISPERSION TYPE FUEL ELEMENTS FOR FLOATING POWER UNIT	Kulakov, G. (1); Vatulin, A. (1); Ershov, S. (1); Konovalov, Y. (1); Morozov, A. (1); Sorokin, V. (1); Fedotov, V. (1); Novoselov, A. (2); Ovchinnikov, V. (2); Shishin, V. (2) 1 - Joint Stock Company «A.A. Bochvar High-Technology Research Institute of Inorganic Materials» (JSC VNIINM), Russian Federation 2 - Joint Stock Company «State Scientific Center of Russian Federation - Research Institute of Atomic Reactors» (JSC RIAR), Russian Federation
TopFuel2012-A0039	IRRADIATION TEST RESULTS OF HANA CLADDING IN HALDEN TEST REACTOR AFTER 67 GWD/MTU	Kim, H.-G. (1); Park, J.-Y. (1); Jung, Y.-I. (1); Park, D.-J. (1); Koo, Y.-H. (1) 1 - Korea Atomic Energy Research Institute, Korea, Republic of
TopFuel2012-A0057	FORMATION OF THE GEL STRUCTURE ON ZR1NB CLADDING TUBES OF NUCLEAR FUEL	Weishauptová, Z. (1); Vrtílková, V. (2); Janda, P. (3); Linhart, S. (2) 1 - Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, v.v.i., Czech Republic 2 - UJP-Praha, Inc., Czech Republic 3 - J. Heyrovsky Institute of Physical Chemistry, Academy of Sciences of the Czech Republic, v.v.i., Czech Republic
TopFuel2012-A0068	RECRYSTALLIZATION KINETICS OF U-MO ALLOY NUCLEAR FUEL	Kim, Y. S. (1); Hofman, G. L. (1); Cheon, J. S. (2) 1 - Argonne National Laboratory, United States 2 - KAERI, Korea, Republic of
TopFuel2012-A0069	A COMPARATIVE STUDY ON THE FRETTING WEAR RESISTANCE OF SPACER GRID SPRINGS FOR DUAL COOLED ANNULAR FUEL	Lee, Y. -H. (1); Kim, H. -K. (1); Kim, J. -Y. (1); Yoon, K. -H. (1); Lee, K. -H. (1); Kang, H. -S. (1) 1 - Korea Atomic Energy Research Institute, Korea, Republic of
TopFuel2012-A0071	INVESTIGATION OF GRID STRAP VIBRATION CHARACTERISTICS SUBJECTED TO COOLANT FLOW.	Kim, K. H. (1); Park, N. G. (1); Suh, J. M. (1) 1 - KEPCO Nuclear Fuel, Korea, Republic of
TopFuel2012-A0087	FABRICATION OF NON-OXIDE URANIUM CERAMIC POWDERS	Yang, J. H. (1); Kim, D.-J. (1); Oh, J.-S. (1); Rhee, Y. W. (1); Kim, K. S. (1); Koo, Y. H. (1); 1 - Korea Atomic Energy Research Institute, Korea, Republic of
TopFuel2012-A0091	CORROSION PROPERTIES OF NEW ZR ALLOYS DEVELOPED FOR THE ADVANCED FUEL CLADDING	Park, J.-Y. (1); Kim, H.-G. (1); Choi, B.-K. (1); Park, S.-Y. (1); Jung, Y.-I. (1); Park, D.-J. (1) 1 - Korea Atomic Energy Research Institute, Korea, Republic of
TopFuel2012-A0127	METAL MATRIX MICROENCAPSULATED FUEL TECHNOLOGY FOR LWR APPLICATIONS	Terrani, K. (1); Snead, L. (1); Kiggans, J. (1); Bell, G. (1); 1 - Oak Ridge National Laboratory, United States
TopFuel2012-A0140	IMPROVED FUEL WITH ENHANCED PERFORMANCE, FABRICATED BY MORE EFFECTIVE METHOD	Loktev, I. I. (1); Goncharov, U. V. (1); Strukov, A. V. (1); Shustov, M. A. (1); Zarubin, M. G. (1); Karlov, U. K. (1) 1 - JSC "NCCP", Russian Federation

TOP FUEL

REACTOR FUEL PERFORMANCE 2012



TopFuel2012-A0154	WELDING PROCESS OF PWR FUEL ASSEMBLY SKELETON	Bo, L. (1) 1 - China Nuclear Fuel South Company, China
TopFuel2012-A0162	DUAL-COOLED FUEL THERMAL-HYDRAULIC ANALYSIS AND EXPERIMENT FOR OPR1000 POWER UPRATE	In, W.-K. (1); Lee, C.-Y. (1); Shin, C.-H. (1); Chun, T.-H. (1) 1 - Korea Atomic Energy Research Institute, Korea, Republic of
TopFuel2012-A0169	INNOVATIONS IN PHWR FUEL FABRICATION AT NFC	Hemantha Rao, G. V. S. (1); Saibaba, N. (1) 1 - Nuclear Fuel Complex, India
TopFuel2012-A0178	RECYCLING PROCESSES OF UO ₂ SCRAPS TO FABRICATE THE SINTER-ACTIVE U ₃ O ₈ POWDERS	Lee, S.-J. (1); Jung, D.-H. (1); Suh, J.-M. (1); Jeon, K.-L. (1); Yang, J.-H. (2); Kim, K.-S. (2) 1 - KEPCO Nuclear Fuel, Korea, Republic of 2 - Korea Atomic Energy Research Institute, Korea, Republic of
TopFuel2012-A0192	RAPID DENSIFICATION OF UO ₂ PELLETS USING SPARK PLASMA SINTERING	Ge, L. (1); Subhash, G. (1); Tulenko, J. (1); Baney, R. (1) 1 - University of Florida, United States

Transient Fuel Behaviour - Poster

TopFuel2012-A0009	EFFECTS OF HYDRIDE PRECIPITATION ON DIFFUSION OF HYDROGEN IN DELAYED HYDRIDE CRACKING OF ZIRCALOY-2	Kubo, T. (1); Kobayashi, Y. (2) 1 - Nippon Nuclear Fuel Development Co.,Ltd., Japan 2 - M.O.X Co.,Ltd., Japan
TopFuel2012-A0023	VALIDATION OF THE EXPANSION DUE TO COMPRESSION TEST FEM MODEL	Dostal, M. (1); Grigoriev, V. (2); Hallstadius, L. (3); Valach, M. (1) 1 - Nuclear Research Institute Rez, Czech Republic 2 - Studsvik Nuclear AB, Sweden 3 - Westinghouse Electric Sweden AB, Sweden
TopFuel2012-A0075	DEVELOPMENT OF NONLINEAR FE MODULE FOR FUEL BEHAVIOR SIMULATION DURING OFF-NORMAL CONDITION	Kim, H. C. (1); Yang, Y. S. (1); Kim, D. H. (1); Bang, J. G. (1); Kim, S. K. (1); Kim, J. Y. (1); Koo, Y. H. (1); Kwon, Y. D. (2) 1 - Korea Atomic Energy Research Institute, Korea, Republic of 2 - Kyungpook National University, Korea, Republic of
TopFuel2012-A0088	MECHANICAL PROPERTIES OF NUCLEAR FUEL CLADDING IN PCMI-SIMULATING CONDITION	Kim, S.-K. (1); Bang, J.-G. (1); Kim, D.-H. (1); Yang, Y.-S. (1); Kim, H.-C. (1); Koo, Y.-H. (1) 1 - KAERI, Korea, Republic of
TopFuel2012-A0137	ANALYSIS OF CIP0-1 AND CIP3-1 TESTS WITH FRAPTRAN AND SCANIR: EFFECT OF THE MAJOR CODES ASSUMPTIONS	Sagrado Garcia, I. C. (1); Vallejo Diaz, I. (1); Herranz, L. E. (1) 1 - CIEMAT, Spain
TopFuel2012-A0150	PCI MARGIN ASSESSMENT IN AP1000	Mitchell, D. (1); Atwood, A. (1); Aleshin, Y. (1); Sears, R. (1) 1 - Westinghouse Electric Company, United States

TOP FUEL

REACTOR FUEL PERFORMANCE 2012



Operation and Experience - Poster

TopFuel2012-A0031	INVESTIGATIONS OF FISSION GAS DISTRIBUTION CHARACTERISTICS IN A SPENT FUEL ROD	Park, S.-D. (1); Kwon, H.-M. (1); Seo, H.-S. (1); Ha, Y.-K. (1); Song, K. (1) 1 - Korea Atomic Energy Research Institute, Korea, Republic of
TopFuel2012-A0053	STANDARDLESS QUANTITATIVE ANALYSIS TECHNIQUES OF XENON IN PWR SPENT FUEL WITH WDS-SEM	Kwon, H.-M. (1); Seo, H.-S. (1); Ju, J.-S. (1); Yang, Y.-S. (1); Jang, J.-N. (1); Park, S.-D. (1); Kim, D. (1) 1 - Korea Atomic Energy Research Institute, Korea, Republic of
TopFuel2012-A0076	COMMISSIONING OF PRESSURIZED WATER LOOP	Ahn, S. H. (1); Hong, J. T. (1); Joung, C. Y. (1); Jung, H. S. (1) 1 - Korea Atomic Energy Research Institute, Korea, Republic of
TopFuel2012-A0092	LWR FUEL IRRADIATION EXPERIMENTS IN THE FUTURE JULES HOROWITZ REACTOR	Roux, P. (1); Dousson, T. (1); Ferry, L. (1); Parrat, D. (1); Gonnier, C. (1) 1 - CEA Cadarache, France
TopFuel2012-A0173	LATEST DEVELOPMENTS IN FUEL ON-SITE SERVICES DEDICATED TO EPRTM OPERATING PERFORMANCE	Pachtem, D. (1); Neubauer, E. (2) 1 - AREVA NP SAS, France 2 - AREVA NP GmbH, Germany
TopFuel2012-A0180	PLANT LIFETIME FUEL RECYCLING	Wieman, J. (1); Breitenstein, P. (2) 1 - EPZ, Netherlands 2 - AREVA, France

Paper reviewers:

John Jones, Office for Nuclear Regulation, UK
Marc Verwerft, SCK-CEN, Belgium
Jinzhao ZHANG, Tractebel Engineering (GDF SUEZ), Belgium
Javier Riverola, ENUSA, Spain
Grigori Khvostov, Paul Scherre Institute, Switzerland
Koo Yang-Hyun, KAERI, South Korea
Rob Montgomery, PNNL, United States
Glyn Rossiter, NNL, UK
Nicolas Vioujard, AREVA, France
Kari Ranta - Puska, TVO, Finland
Wolfgang Faber, EON, Germany
José Aycart, GE-Hitachi, Spain
Patrick Blanpain, AREVA, France
Tong LIU, China Guangdong Nuclear Power Group (CGNPC), China
Yongjun JIAO, NPIC, China
Florin Curca-Tivig, AREVA NO GmbH, Germany
Guy Demazy, Synatom/Electrabel, Belgium
Jozsef Elter, PAKS NPP, Hungary.
Toyoshi Fuketa, JAEA, Japan
Victor Inozemtsev, IAEA,
Bernard Jolly, SFEN, France
Hans-Joachim Lippert, AREVA NP GmbH, Germany
Pierre Mollard, AREVA, France,
Michael Reitmeyer, Exelon, United States
John Roberts, University of Manchester, United Kingdom
Fred Sheil, Sheil Consulting Ltd, United Kingdom
Alexander Tuzov, ROSATOM, Russian Federation,
Nicolas Waeckel, EDF, Japan
Rosa Yang, EPRI, United States
Zhu Yuemin, China Guangdong Nuclear Power Group (CGNPC), China
Mojmir Valach, Nuclear Research Institute Rez plc, Czech Republic
Jan Klouzal, Nuclear Research Institute Rez plc, Czech Republic

Martin Dostal, Nuclear Research Institute Rez plc, Czech Republic
Carl Beyer, PNNL, United States
Kenneth J Geelhood, PNNL, United States
Xiaojun HE, CIAE, China
BK Dutta, BARC, India
Armando Mariono, Centro Atómico Bariloche, Argentina
Jason Hales, INL, USA
Benjamin Spencer, INL, United States
Rich Williamson, INL, United States
Stephen Novascone, INL, United States
Arndt SCHUBERT, JRC-ITU, Germany
Suzuki Motoe, JAEA, Japan
Svetla Stefanova, INRNE, Bulgaria
Yong-Sik Yang, KAERI, Korea
Hyo-Chan Kim, KAERI, Korea
Jeong-Yong Park, KAERI, Korea
Hyun-Gil Kim, KAERI, Korea
Dong-Jun Park, KAERI, Korea
Yang-Il Jung, KAERI, Korea
Heung-Seok Kang, KAERI, Korea
Wang-Kee In, KAERI, Korea
Marco Streit, PSI, Switzerland
Nadine Hollasky, Bel V, Belgium
Clara Anghel, GE, Sweden
Miguel Aullo, ENUSA, Spain
Marisol Corisco, ENUSA, Spain
Antonio Espejo, ENUSA, Spain
Jose Francisco Serrano, ENUSA, Spain
Mariano Morales, ENUSA, Spain
Carlos Casado, ENUSA, Spain
Manuel Espino, ENUSA, Spain
Samim Anghaie, University of Florida (ret), United States
Tahir Sheikh Mahmood, GNF, United States
Yang-Pi Lin, GNF, United States
Nayem Jahingir, GNF, United States
Erik Mader, EPRI, United States
Anders Puranen, Studsvik, Sweden
Per Magnusson, Studsvik, Sweden
Martin Ketteler, Vattenfall Nuclear Fuel, Germany
Bernhard Otten, Vattenfall Nuclear Fuel, Germany
Klaes-Håkan Bejmer, Vattenfall Nuclear Fuel, Sweden
Göran Bergshem, Vattenfall Nuclear Fuel, Sweden
Audrius Jasiulevicius, Vattenfall Nuclear Fuel, Sweden
Bertil Josefsson, Vattenfall Nuclear Fuel, Sweden
David Schrire, Vattenfall Nuclear Fuel, Sweden
Anna-Maria Alvarez, Studsvik, Sweden
Kwadwo Kese, Studsvik, Sweden
Anders Puranen, Studsvik, Sweden
Bo Cheng, EPRI, United States
Robert Daum, EPRI, United States
Kenny Epperson, EPRI, United States
Dennis Hussey, EPRI, United States
Aylin Kucuk, EPRI, United States
Erik Mader, EPRI, United States
Martin Pytel, EPRI, United States
Suresh Yagnik, EPRI, United States
Ken Yueh, EPRI, United States
Fred Myzen, MYZEN, UK