



PROGRAMME

Salamanca, 22-26 October 2006

Sunday 22

09:00 – 19:00 Golf Tournament
20:00 – 21:00 Welcome Reception

Monday 23

09:00 – 10:15 **OPENING SESSION I**

Parainfo

Chairwoman: M^a Teresa Estevan - Chairwoman / Consejo de Seguridad Nuclear.

Co-Chairman: Frank Deconinck - President / European Nuclear society.

- Yury A. Sokolov – Deputy Director General / International Atomic Energy Agency.
- Luis Echávarri – Director General / NEA/OECD.
- Kunihisa Soda – Commissioner / Japan Nuclear Safety Commission.

10:15 – 10:45 Break

10:45 – 13:00 **OPENING SESSION II : Future Trends in Nuclear Fuel**

Parainfo

Chairman: José L. González - President / ENUSA.

Co-Chairwoman: M^a Teresa Dominguez - President / Spanish Nuclear Society.

- Jack Fuller – Chief Operating Officer / GNF.
- Anton Badenkov – Vice-President / TVEL Corporation.
- Claude Jaouen – Executive Vice-President / Framatome ANP.
- Aris Candris – Senior Vice-President / Westinghouse.
- Yuhong Ren – Vice Chief Engineer/ CJFN.
- Sadaaki Abeta – Acting General Manager / MHI.

13:00 – 14:30 Cocktail

TECHNICAL SESSION I : Security of Supply

C. Room: "Sala Menor"

14:30h – 16:30

Chairman: Ali Etemad – Vattenfall Bränsle AB – Sweden.

Co-Chairman: James Tulenko – University of Florida – USA.

- **THE DIVERSE ASPECTS OF SECURITY OF SUPPLY.**
James Malone (Exelon – USA).
- **FOR A FEW DOLLARS MORE – A STORY ABOUT SECURITY OF SUPPLY.**
Geoff Varley (NAC-UK).
- **ADDRESSING THE SUPPLY SECURITY OF THE NUCLEAR FUEL CYCLE: A U.S. MERCHANT GENERATOR RISK ACCEPTANCE PERSPECTIVE.**
Robert P. Jordan & Phillip A. Benavides (Constellation Energy, Inc.– USA).



- **INCREASED FLEXIBILITY AND SECURITY OF FUEL ASSEMBLY SUPPLIES WITHIN AREVA.**
Florence Guyot (AREVA NP - France), Bernd Beuerlein (AREVA NP GmbH- Germany), Nancy Carr (AREVA NP Inc – USA) and Franz-Josef Sievers (AREVA-NP – Germany).
- **GNF SECURITY OF SUPPLY CHAIN. BUSINESS CONTINUITY STRATEGY.**
K. Clark, J.D. Fuller (GNF-USA).
- **ALTERNATE URANIUM SOURCES IN GERMANY.**
Udo Rieger (Vattenfall Europe Nuclear Energy GmbH - Germany), Michael Weis (VGB PowerTech e.V. – Germany).

16:30 – 17:00 Break

TECHNICAL SESSION II : High Burnup

C. Room: "Sala Menor"

17:00 – 19:00 **Chairman:** Sadaaki Abeta – MHI – Japan.
Co-Chairman: Carlo Vitanza – NEA/OECD – Italy.

- **EDF PWR FUELS, OPERATING EXPERIENCE AND HIGH BURN-UP PERFORMANCE.**
Jean-Juc Provost and Michel Debes (EDF Generation-France).
- **ROADMAP OF CRITERIA RATIONALIZATION AND R&D FOR FUTURE HIGH DUTY USAGE OF FUEL.**
Naoto SEKIMURA (The University of Tokyo-Japan).
- **SPECIFIC HEAT AND DENSITY OF HIGH BURN-UP FUEL.**
S. K. Yagnik (EPRI-USA), J.A. Turnbull (Consultant-UK).
- **TVO'S MEASUREMENT CAMPAIGN FOR GE14 LEAD USE ASSEMBLIES: PURSUING HIGHER BURNUP.**
Kari Ranta-Puska (TVO- Finland), Juan J. Serna (ENUSA-Spain), Robert Rand and Mark Dubecky (GNF-USA), A. Knuutila (Technical Research Centre of Finland – Finland).
- **DEVELOPMENT PROGRAM OF J-ALLOY™, HIGH CORROSION-RESISTANT ALLOY FOR PWR FUEL CLADDING TUBE.**
Hayato TAKABATAKE (The Kansai Electric Power Co., Inc - Japan), Saadaaki Abeta (Mitsubishi Heavy Industries, Ltd.-Japan), Tamotsu Murata (Nuclear Fuel Industries, Ltd.-Japan).
- **CLADDING OPTIMIZATION FOR ENHANCED PERFORMANCE MARGINS.**
L. Hallstadius (Westinghouse Sweden – Sweden), R.L. Kesterson, K. Yueh, H. Shah, J. Foster, D. Colburn (Materials Department Westinghouse -USA), Ignacio Arana (ENUSA-Spain).

20:30 – 21:30 Concert



Tuesday 24

TECHNICAL SESSION III : Fuel Manufacturing

C. Room: "Sala Menor"

08:30 – 10:30

Chairman: Michel Debes – EDF – France.
Co-Chairman: Paloma Gómez – ENUSA - Spain.

- **DEVELOPMENT OF DUPIC FUEL FABRICATION TECHNOLOGY BY USING HIGH BURN-UP SPENT PWR FUEL.**
 J.W. Lee, G.I. Park, K.H. Kang, K.C. Song and M.S. Yang (Korea Atomic Energy Research Institute – Korea).
- **MELOX HIGH THROUGHPUT MOX MANUFACTURING PLANT: 10 YEARS OF EXPERIENCE AND PROGRESS.**
 Marc ARSLAN (AREVA NC, Recycling Business Unit, MELOX – France).
- **MANUFACTURING EXPERIENCE OF LWR FUELS IN INDIA.**
 R.N. Jayaraj and P. Balakrishna (Nuclear Fuel Complex - India).
- **LEAN SIX SIGMA IN ENUSA FACTORY: QUALITY AND EFFICIENCY.**
 Javier Montes (ENUSA-Spain).
- **FABRICATION OF DENSITY HOMOGENIZED (U,GD)₂O₂ PELLETS BY IMPROVING WET HYDROGEN.**
 PENG Haiqing, YANG Wei, XIONG Deming (China JianZhong Nuclear fuel Corporation – China).
- **IMPROVED FUEL PERFORMANCE BY ENHANCED UO₂ PELLETS FABRICATION AND INSPECTION METHODS.**
 S. Borell, H. Widegren (Westinghouse Electric Sweden – Sweden), H. Shah (Westinghouse Electric Company– USA).

TECHNICAL SESSION IV : Methods & Models I

C. Room: "Usos Múltiples"

In parallel with TS III

Chairman: Peter Urban – AREVA NP – Germany.
Co-Chairman: Toyoshi Fuketa – JAPAN ATOMIC ENERGY AGENCY - Japan.

- **NUCLEAR FUEL RESEARCH ACTIVITIES OF THE CONSEJO DE SEGURIDAD NUCLEAR.**
 J. M. Conde, C. Alejano, J. M. Rey (Consejo de Seguridad Nuclear – Spain).
- **NEW DEVELOPMENTS IN FUEL PERFORMANCE MODELLING.**
 B. Sutharshan, S. Sidener, M. Conner (Nuclear Fuels, Westinghouse – USA), P. Rubiolo (Science and Technology, Westinghouse – USA).
- **A METHODOLOGY FOR CALCULATING AND A PROCESS FOR MITIGATING CHANNEL DISTORTION & CELL FRICTION (PART I) & (PART II).**
 Atul A. Karve, Gerard A. Potts, Robert A. Rand, Gerry M. Latter, and Mark A. Dubecky, W.C. Cline, A. Enica, J.P. Rea, J.E. Fawks (GNF – USA).
- **ADVANCED THERMAL HYDRAULIC CORE AND FUEL ASSEMBLY DESIGN WITH STATE-OF-THE-ART SUBCHANNEL CODES.**
 F. Burtak, J. Heinecke, M. Glück, J. Kronenberg, T. Kollmann (AREVA NP GmbH – Germany).



- **EVOLUTION OF THE THERMOPHYSICAL PROPERTIES OF THE UO₂ FUEL AS A FUNCTION OF BURN-UP.**
D. Staicu , V.V. Rondinella , T. Wiss , J. Jonnet, D. Papaioannou (European Commission, Joint Research Centre - Institute for Transuranium Elements – Germany), M. Kinoshita , A. Sasahara , T. Sonoda , S. Kitajima (Nuclear Technology Research Laboratory, - Central Research Institute of Electric Power Industry – Japan), D. Baron (EDF/DRD/MMC Renardiere – France), D. Laux (Université Montpellier II – France), R. Rahouadj (Laboratoire d’Energétique et de Mécanique Théorique et Appliquée – France) .
- **EDF EXPERIENCE FEEDBACK AND RESEARCH & DEVELOPMENT CONTRIBUTIONS TO THE UPDATE OF THE FUEL PERFORMANCE CODE CYRANO3 TO CHALLENGE THE HIGH BURNUP LICENSING REQUIREMENTS.**
B. Therache, P. Thevenin (EDF-Septen, EDF-R&D – France).

10:30 – 11:00 Break

11:00 – 13:00 POSTER SESSION I

C. Room: “Sala de Maquetas”

Chairman: José G^a Aycart – GNII – Spain.
Co-Chairman: Georgij Krivoshein - IGNALINA NPP – Lithuania

High Burnup

- **POST-IRRADIATION EXAMINATION OF HIGH BURNUP SBR MOX FUEL.**
M.A. Barker (NEXIA Solutions Ltd.- UK), E.C. Matthews, K. Stephenson (British Nuclear Group Ltd. – UK), Y. Parmar (NOK-Switzerland) and S. Bremier, D. Papaioannou, C.T. Walker (Institute for Transuranium Elements – Germany).
- **DEVELOPMENT OF EXPERIMENTAL TECHNIQUE FOR SIMULATION OF RADIAL CRACKING OF HIGH BURNUP FUEL CLADDING TUBES.**
Kan Sakamoto, Masafumi Nakatsuka (GNF – Japan).
- **FUMEX-II RESULTS OF HIGH BURNUP PERFORMANCE CODE INFRA.**
Yong Sik Yang, Chan Bock Lee, Dae Ho Kim, Sun Ki Kim, Je Geon Bang. (Korea Atomic Energy Research Institute – Korea).

Fuel Manufacturing

- **ZIRCONIUM MATRIX ALLOYS FOR HIGH URANIUM CONTENT DISPERSION TYPE FUEL.**
A.M. Savchenko, I.I. Konovalov, S.A. Ershov, A.V. Laushkin, G. Kulakov, S.V. Maranchak, Y.V. Konovalov, E.K. Malamanova (A.A. Bochvar All-Russian Scientific Research Institute of Inorganic Materials – Russia).
- **RELATIONSHIP BETWEEN RELEASE BEHAVIOR OF CESIUM AND SINTERED PELLET DENSITY IN DUPIC FUEL FABRICATION WITH HIGH BURN-UP SPENT PWR FUEL.**
Geun IL Park, D.Y. Lee, Jung Won Lee, J.W. Lee, M.S. Yang (Korea Atomic Energy Research Institute – Korea).
- **AREVA MOX FUEL FABRICATION DEVELOPMENT INCENTIVES.**
Dominique FAVET (AREVA NC, Recycling BU – MELOX – France).



- **RAJ-II AND NPC SHIPPING CONTAINERS DEVELOPMENT AND LICENSING STATUS.**

A. Langston, R. Stachowski (Global Nuclear Fuel – USA).

Methods & Models I

- **ALCYONE: THE PLEIADES FUEL PERFORMANCE CODE DEDICATED TO MULTIDIMENSIONAL PWR STUDIES.**

G. Thouvenin, J.M. Ricaud, D. Plancq (Commissariat à l'Energie Atomique / Centre d'Etudes de Cadarache – France), P. Thévenin (Electricité de France – France).

- **1 D NEUTRONIC MODEL IN THE FREQUENCY DOMAIN AND ITS COUPLING TO THE STABILITY CODE LAPUR.**

J.L. Muñoz-Cobo, C. García, A. Escrivá (Polytechnic University of Valencia – Spain), José Melara (Iberdrola Ingeniería y Construcción – Spain).

- **QUANTIFICATION OF FISSION GASES IN HIGH BURNUP FUEL WITH LASER ABLATION ICP-MS.**

Matthias I. Horvath, Andrei Izmer, Niko Kivel, Renato Restani (Laboratory for Materials Behaviour, Nuclear Energy and Safety, Paul Scherrer Institute – Switzerland), Marcel Guillong (Institute for Isotope Geology, Mineralogic Elements – Switzerland), Detlef Günther (Laboratory for Inorganic Chemistry, Trace Elements and Microanalysis Group – Switzerland).

- **ANALYSIS OF FRAPCON-3 MODELS RELATED TO HIGH BURNUP FUEL.**

María Teresa del Barrio, Isabel Vallejo, Luis Enrique Herranz (CIEMAT-Spain).

- **CONSISTENT MODELLING OF THRESHOLD CONDITIONS FOR BEGINNING OF HBS FORMATION IN HIGH BURNUP UO_2 .**

V.V. Likhanskii, V.G. Zborovskii (SRC RF TRINITI – Russia), Yu. V. Pimenov, (JSC TVEL-Russia).

- **MODELING FISSION GAS EFFECTS ON HIGH BURNUP FUEL BEHAVIOR DURING RIA.**

Wenfeng Liu and Mujid S. Kazimi (Center for Advanced Nuclear Energy Systems – USA).

- **CHARACTERIZATION TEST AND ANALYSIS OF LWR FUEL ASSEMBLY MECHANICAL BEHAVIOUR.**

H.-K. Kim, K.-H. Yoon, K.-H. Lee, Y.-H. Lee, T.H. Chun (Korea Atomic Energy Research Institute – Korea), S.-S. Lee (Korea University of Technology and Education - Korea).

- **A SIMPLE MODEL FOR THE ENHANCED CLADDING CORROSION IN PWRs.**

M. Quecedo, A. Sanchez, J. Andres (ENUSA – Spain).

- **CALCULATION WITH MCNP OF REACTIVITY AND POWER DISTRIBUTION OF ATRIUM-10XP DESIGN AND COMPARISON WITH ISOTOPICS OBTAINED WITH MONTEBURNS, MCNP-ACAB AND CASMO4.**

P. Ortego, C. Töre (SEA, Ingeniería y Análisis de Blindajes S.L.- Spain), A. Crespo (IBERINCO – Spain), P. Mata, L. García Delgado (IBERDROLA Generación – Spain), O. Cabellos, N. García-Herranz, J. Sanz (Universidad Politécnica de Madrid, Instituto de Fusión Nuclear - Spain).

- **IMPROVEMENTS IN THE FISSION GAS RELEASE MODULE OF THE FUEL BEHAVIOUR CODE FUROM.**

K. KULACSY, Á. GRIGER (MTA KFKI Atomic Energy Research Institute – Hungary)



- **3D FEM BASED FUEL ROD SIMULATOR FRA-TF.**
M. Dostál, M. Valach, J. Zymák (NRI ŘEŽ plc - Czech Republic), R. Svoboda (ČEZ a.s., NPP Temelín - Czech Republic).
- **POROSITY AND GASEOUS SWELLING EFFECTS ON FUEL ROD BEHAVIOUR DURING CLASS 2 POWER RAMP TRANSIENT.**
J. Julien, R. Masson (EDF-R&D – France). B. Michel, I. Noirot, J.M. Gatt (Commissariat à l’Energie Atomique Cadarache – France).

Fuel Performance

- **EXPERIMENTAL VERIFICATION OF WATER CHEMISTRY INFLUENCE ON AOA.**
Nuria Doncel (ENUSA - Spain), Genis Rubio (Asociación Nuclear Ascó-Vandellós II A.I.E – Spain), Manuel Novo (CCNN Almaraz-Trillo – Spain), P. Mata, B. Remartinez (IBERDROLA Generación, S.A. – Spain), J. Deshon (Electric Power Research Institute - USA), J. Chen (Studsvik Nuclear AB – Sweden).
- **FRETTING WEAR EXAMINATION ON THE GUARDIAN™. FUEL FOR OPR1000 PLANTS.**
H.K. Kim, J.S. Yoo, J.I. Kim, J.S. Lee, Y.K. Jang, K.T. Kim (Korea Nuclear Fuel Co., LTD.- Korea).
- **ULTRASONIC FUEL CLEANING SYSTEM (UFCS).**
Pedro Alvarez and Humberto Marta (ENUSA-ENWESA A.I.E. – Spain), Dave Argüelles (Dominion Engineering – USA).

Fuel Cycle Strategies and Core Management

- **ANALYSIS OF CRDA IN A HIGH BURNUP FUEL CORE FOR COFRENTES NPP WITH RETRAN-3D.**
Andrés J. Gómez, Ignacio Collazo, A. Ortego, Consolación Montalvo, Pablo J. García, (GENU, Iberdrola Ingeniería y Construcción – Spain), P.Mata (COSNU, Iberdrola Generación – Spain).

Spent Fuel Management

- **METHODOLOGY TO EVALUATE LIMITING CLADDING TEMPERATURES DURING DRY STORAGE OF SPENT FUEL.**
K. L. Nissen, W. Goll (Areva NP GmbH – Germany), Y. Parmar, J. Afonso (NOK - AG – Switzerland).

LOCA & RIA Issues

- **STUDY OF FUEL ROD CRITERIA FOR LOCA CONDITION IN THE LIGHT OF RECENT EXPERIMENTAL DATA.**
Sonnenburg, H.G. (Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) mbH – Germany).



- **DEVELOPMENT OF EXPERT SYSTEM FOR FAILED FUEL DIAGNOSIS UNDER WWER OPERATION CONDITIONS.**
V. Likhanskii, I. Evdokimov, A. Sorokin, A. Khromov, V. Kanukova, O.V. Apollonova (State Research Center of Russian Federation TRINITI – Russia). V.B. Ionov, A.V. Ugryumov (JSC TVEL - Russia).
- **PROBABILISTIC ASSESSMENT OF FUEL PIN INTEGRITY SUBJECTED TO SEVERE ACCIDENT.**
B.K.Dutta and H.S.Kushwaha (Bhabha Atomic Research Centre – India).
- **MECHANICAL PROPERTY EVALUATION OF HIGH BURN-UP NUCLEAR FUEL CLADDING BY RING TENSILE TEST.**
Sunki Kim, Jegeon Bang, Chanbock Lee, Daeho Kim, Yongsik Yang, Sangbock Ahn, Dosik Kim, Wanho Oh, Hangsuk Seo (Korea Atomic Energy Research Institute – Korea).
- **NEW INSIGHT ON VOLATILE FISSION PRODUCTS (I AND CS) RELEASE FROM HIGH BURNUP UO₂ FUEL UNDER LOCA TYPE CONDITIONS.**
Y. Pontillon, G. Ducros, P.P. Malgouyres, J. Noirot, C. Gonnier, A (Commissariat à l’Energie Atomique – France), A. Harrer, F.A. Andreo (EDF/SEPTEN – France), Dutheillet (EDF R&D – France), M. Kissane (Institut de Radioprotection et de Sécurité Nucléaire DPAM/SEMIC – France).
- **SUBSTANTIATION OF WWER FUEL SAFETY IN DESIGN BASIS ACCIDENTS. EXPERIMENTAL SUPPORT.**
V.V. Novikov, A.V. Medvedev, A.V. Salatov, O.A. Nechaeva, P.V. Fedotov (FSUE A.A. Bochvar VNIINM - Russia), V.L. Molchanov, YU.V. Pimenov (JSC “TVEL” – Russia), V.P. Smirnov, A.V. Goryachev, V.A. Ovchinnikov, V.N. Shulimov (FSUE SRC RIAR – Russia), V.I. Nalivaev, V.S. Konstantinov, D.N. Ignatyev (FSUE SRI SIA “LUCH” – Russia).

Advance in Fuel Design

- **AREVA NP NEW UO₂ FUEL DEVELOPMENT AND QUALIFICATION FOR LWRS APPLICATIONS.**
C. Delafoy & P. Dewes (AREVA NP – France & Germany).
- **PELLET CONTINUITY AS PERSPECTIVE FUEL PROPERTIES.**
I.I.Loktev (Department of Atomic Energy of Russian Federation, JSC “NCCP” – Russia).
- **FUEL ENGINEERING CONTRIBUTIONS TO IMPROVE THE COMPETITIVENESS OF ARGENTINE NUCLEAR POWER PLANTS.**
L. Alvarez, J. Casario, J. Valesi (Comisión Nal. de Energía Atómica - Argentina)

13:00 – 14:30 Lunch

TECHNICAL SESSION V : Fuel Performance

C. Room: “Sala Menor”

14:30 – 16:30 **Chairman:** Charles J. Paone – GNF – USA.
Co-Chairman: Michio Yamawaki – JNES - Japan

- **SYSTEMATIC APPROACH TO PWR FUEL PERFORMANCE IMPROVEMENT.**
R.J. Buechel, A.B. Moreno, M. Y Young, M. Mutyala (Westinghouse Electric Company – USA).



- **NUCLEAR FUEL PERFORMANCE: TRENDS, REMEDIES AND CHALLENGES.**
M.W. Kennard, I. Frankl, R.L. Klein (Stoller Nuclear Fuel Division of NAC International, Inc – USA).
- **FUEL EVALUATIONS UNDER ZINC INJECTION IN ASCÓ I-II AND VANDELLÓS II NPP.**
Genís Rubio, José Luis Gago (Asociación Nuclear Ascó-Vandellós II A.I.E. – Spain), Alicia Sánchez, Nuria Doncel (ENUSA – Spain).
- **GNF 10X10 FUEL - PURSUING PERFORMANCE AND RELIABILITY.**
John Schardt (General Electric Energy, Nuclear– USA).
- **INVESTIGATION OF THE HIGH BURNUP RIM STRUCTURE IN THE PWR FUEL PELLET.**
Yuji KOSAKA (Nuclear Development Corporation – Japan), Nobuyuki FUKUDA (Mitsubishi Heavy Industries, Ltd – Japan), Toshikazu SENDO (The Kansai Electric Power Co. Inc – Japan).
- **PERFORMANCE OF ALLOY M5® CLADDING AND STRUCTURE AT BURNUPS BEYOND THE CURRENT LICENSING LIMIT IN US REACTORS.**
G.L. Garner, Isaac Mensah (AREVA NP Inc – USA), Jean-Paul Mardon (AREVA NP – France).

16:30 – 17:00 Break

TECHNICAL SESSION VI : Fuel Cycle Strategies and Core Management

C. Room: "Sala Menor"

17:00 – 19:00 **Chairman:** David Powell – WESTINGHOUSE – UK.
Co-Chairman: Imre Nemes – PAKS NPP - Hungary.

- **EDF'S PERSPECTIVES ON FUEL PERFORMANCE AND FUEL CYCLE MANAGEMENT.**
Michel DEBES (EDF - Nuclear Fuel Division – France).
- **TECHNICO-ECONOMIC COMPARISON OF THREE INNOVATIVE LONG-TERM NUCLEAR FUEL CYCLE SCENARIOS IN THE FRENCH CONTEXT.**
A. Le Dars and C. Loac (CEA – France).
- **LATEST UPDATE ON FUEL AND CORE DESIGN EXPERIENCES IN COFRENTES NPP.**
M.T. López Carbonell, A. Galicia Saavedra (IBERDROLA Generación – Spain).
- **SIMPLICITY, FLEXIBILITY AND MARGINS – THE FIRST CORE OF OLKILUOTO 3.**
R. Boehm, E. Riedl, G. Schmidlein, E. Riedl, P. Pulkus (AREVA NP GmbH – France)
- **THE N-STREAMINGSM CONCEPT FOR OPTIMIZING BWR FUEL CYCLE DESIGNS.**
Dave J. Kropaczek and R. Stachowski (Global Nuclear Fuel – Americas – USA).

19:00 – 20:00 Spanish Wine Testing

Wednesday 25


TECHNICAL SESSION VII : Spent Fuel Management
C. Room: "Sala Menor"
08:30 – 10:30
Chairman: Kari Ranta Puska – TVO – Finland.

Co-Chairman: José Antonio Gago – ENRESA – Spain.

- **EUROFAB: A SUCCESS STORY FOR MOX IN THE USA.**
Jean-Pierre BARITEAU, Marc DALMIER (AREVA NC, Recycling Business Unit – France), Arvid JENSEN, (Duke- Cogema-Stone and Webster – USA), Mike MC MAHON, Jeff TUCKER, George MEYER (AREVA NP – USA), Patrick JACOT, Laurent BLACHET (TN International – USA), Tracy SAVILLE (DUKE POWER – USA).
- **DELAYED HYDRIDE CRACKING SUSCEPTIBILITY OF SPEND FUEL RODS AT ROOM TEMPERATURE.**
Young S. Kim, Sang B. Ahn, M. Cheong (Korea Atomic Energy Research Institute – Korea).
- **SPANISH R&D PROGRAM ON SPENT FUEL DRY STORAGE**
José Manuel Alonso (ENUSA – Spain), José Manuel Conde (CSN – Spain), José Antonio Gago (ENRESA – Spain), Pedro González (ENDESA – Spain), Manuel Novo (CNAT – Spain), Luis Enrique Herranz (CIEMAT – Spain)
- **ACCELERATION OF DEFECTS IDENTIFICATION OF VVER-440 FUEL AT THE WET INTERIM SPENT FUEL STORAGE FACILITY AT NPP SE-EBO.**
M. Mikloš, V. Slugeň, V. Kršjak (Slovak University of Technology Bratislava – Slovakia), M. Božik, D. Vašina (Jadrová vyrad'ovacia spoločnosť, a.s. – Slovakia).
- **SPECIFIC SURFACE AREA: KEY FACTOR IN THE DISSOLUTION PROCESS FOR THE SPENT FUEL STORAGE.**
E. Iglesias, J. Quiñones, J.M. Cobo, (CIEMAT–Spain), A. Martínez Esparza (ENRESA – Spain).
- **CHALLENGES FOR HIGH BURNUP FUEL ROD DESIGNS.**
R. Fawcett, C. Patterson, R. Rand , R. Stachowski (GNF – USA), M. Quecedo (ENUSA – Spain).

TECHNICAL SESSION VIII : Methods & Models II
C. Room: "Usos Múltiples"
In parallel with TS VII
Chairman: Pedro Mata – IBERDROLA – Spain

Co-Chairman: Frantisek Pazdera - NUCLEAR RESEARCH INSTITUTE. – Czech Republic

- **STATISTICAL METHODOLOGY FOR FUEL ROD THERMAL-MECHANICAL DESIGN AND LICENSING ANALYSES**
A. Lingenfelter, R. A. Rand, G. A. Potts (GNF – USA), N. Doncel (ENUSA - Spain).
- **CLADDING MECHANICAL ASSESSMENT AND APPLICATION IN MODELLING**
Anna-Maria Alvarez, Koji Kitano, Rikard Källström and Gunnar Wikmark (Studsvik Nuclear – Sweden), V. Ioan Arimescu (Areva NP Inc – USA), David Schrire (Vattenfall Fuel - Sweden).



- STUDY OF IRRADIATION INDUCED RESTRUCTURING OF HIGH BURNUP FUEL - THE NEW CROSS-OVER PROJECT (NXO) TO STUDY RIM-STRUCTURE FORMATION.**
 M. Kinoshita (JAEA - Japan), H. Y. Geng, Y. Chen, Y. Kaneta (University of Tokyo – Japan), M. Iwasawa, T. Ohnuma, T. Sonoda (CRIEPI – Japan), K. Yasunaga, S. Matsumura, K. Yasuda (Kyushu University – Japan), M. Sataka, N. Ishikawa, Y. Chimi, J. Nakamura, M. Amaya (JAEA – Japan).
- EDF INDEPENDENT EVALUATION OF A NEW FUEL ASSEMBLY DESIGN PROPOSED BY A SUPPLIER : A METHOD TO IMPROVE RELIABILITY AND COMPETITIVENESS.**
 N. Baillon, A. Maurice (EDF Septen - France)
- RECALCULATION OF A PWR LOAD RAMP WITH THE COUPLED 3D CODE SYSTEM R/P/C.**
 K. Kühnel, K. Richter (AREVA NP – Germany)
- 3D ASSESSMENTS OF THE CRACKED UO₂ PELLETS BEHAVIOUR.**
 Armando C. Marino & Gustavo L. Demarco (Comisión Nacional de Energía Atómica – CNEA – Argentina).

10:30 – 11:00 Break

11:00 – 13:00 POSTER SESSION II

C. Room: "Sala de Maquetas"

Chairman: Lars Hallstadius – WESTINGHOUSE - Sweden.
Co-Chairman: Frantisek Pazdera - NUCLEAR RESEARCH INSTITUTE. – Czech Republic.

High Burnup

- HIGH BURNUP FUEL (PELLET BURNUP 80 GWD/T) BEHAVIOUR - FISSION GAS RELEASE, PELLET SWELLING, MICRO-STRUCTURE.**
 Jin KAMIMURA, Koichi OHIRA, Kazutoshi OKUBO, Noboru ITAGAKI (Nuclear Fuel Industries, Ltd – Japan), Akira TAKAGI (Tokyo Electric Power Company – Japan).
- HIGH BURNUP UO₂ FUEL MORPHOLOGY: RECENT TRANSMISSION ELECTRON MICROSCOPY OBSERVATIONS.**
 T. Wiss, H. Thiele, I.L.F. Ray, V.V. Rondinella (European Commission, Joint Research Centre, Institute for Transuranium Elements – Germany), T. Sonoda, M. Kinoshita (Central Research Institute of Electric Power Industry, CRIEPI – Japan).

Fuel Manufacturing

- LEAN SIX SIGMA.**
 John Porter, A. Lingenfelter (Global Nuclear Fuel – USA).
- THE TRAVELLER: A SHORT HISTORY OF THE DESIGN, TESTING, LICENSING, AND IMPLEMENTATION OF THE NEW PWR FUEL SHIPPING PACKAGE DESIGN.**
 Norman A. Kent (Westinghouse Electric Company, LLC – USA), Pilar Pérez-Millán (ENUSA Industrias Avanzadas, S.A. – Spain).



- **AREVA NP FUEL MANUFACTURING INVESTS FOR THE FUTURE TO ENSURE SECURITY OF SUPPLY TO ITS CUSTOMERS.**
Christian Delevallée, Alain Lacoste, Jean-François Marrot (AREVA, FBFC-France) and Hans-Uwe Siebert (AREVA NP – France)
- **ARE THERE SPECIFICITIES TO AN INTERNATIONAL TRANSPORT COMPARED TO A DOMESTIC TRANSPORT OF RADIOACTIVE MATERIAL?.**
Pascal Chollet, Anne Presta (AREVA NC, TN International - France).
- **ZIRCONIUM PRODUCT MANUFACTURING WITHIN AREVA: A KEY ELEMENT FOR THE NUCLEAR FUEL SUPPLY CHAIN.**
Jean-Pierre Gros, Romain Doublet (AREVA, CEZUS – France).

Methods & Models I

- **FUEL MODELLING AT EXTENDED BURNUP: IAEA COORDINATED RESEARCH PROJECT FUMEX-II.**
J Killeen, V Inozemtsev (IAEA – Australia), J A Turnbull (Independent Consultant – Australia).
- **ANALYSIS OF ABNORMAL OPERATING OCCURRENCES FOR STA. MARIA DE GAROÑA WITH TRACG.**
J. C. Manchobas (Nuclenor – Spain), J. Haces (ENUSA Industrias Avanzadas, S.A.- Spain), J. Garcia (General Electric – Spain).
- **TANOXOS : AN ANALYTICAL IRRADIATION PROGRAM AIMING AT UNDERSTANDING THE BEHAVIOUR OF VARIOUS DOPED UO₂ FUELS.**
L. CAILLOT, J. NOIROT, Y. PONTILLON (Fuel studies department (DEC), CEA – Cadarache – France), S. VALIN (DTN/SE2T – France).
- **CFD SIMULATION OF A BWR FUEL ASSEMBLY AND COMPARISON WITH TRACE AND RELAP5.**
J. Ferrando, R. Miró, G. Verdú (Universitat Politècnica de València – Spain), S. Chiva, (Universitat Jaume I – Spain).
- **THE BENEFITS OF THE FUMEX-II PROJECT FOR EXTENDING THE VERIFICATION OF THE TRANSURANUS CODE.**
P. Van Uffelen, A. Schubert, C. Györi, J. van de Laar (European Commission, Joint Research Centre, Institute for Transuranium Elements – Germany), D. Elenkov (Institute for Nuclear Research and Nuclear Energy, Sofia – Bulgaria).
- **RECENT MODELLING FEATURES IN THE COPERNIC3 AREVA NP FUEL ROD PERFORMANCE CODE.**
Ch. Garnier, P. Mailhé F. (AREVA NP – France), Sontheimer, H. Landskron, D. Deuble (AREVA NP GmbH – Germany), Arimescu, M. Billaux (AREVA NP – USA).
- **UTILIZATION OF SIMTAB METHODOLOGY IN TRANSLATING THE KINETICS. PARAMETERS FROM SIMULATE-3 TO RELAP5/PARCS FOR REA 3D-DYNAMIC ANALYSIS IN TRILLO NPP.**
R. Miró, T. Barrachina, F. Maggini, O. Roselló, G. Verdú (Universidad Politècnica de Valencia – Spain), A. Gómez, A. Ortego (IBERINCO – Spain), J. C. Martínez-Murillo (C.N. Almaraz-Trillo – Spain).
- **CYRANO3 : THE INDUSTRIAL PLEIADES FUEL PERFORMANCE CODE FOR EDF PWR STUDIES.**
P. Thévenin, R. Masson, D. Baron (EDF R&D – France), B. Petitprez (EDF SEPTEN – France), D. Plancq (Commissariat à l’Energie Atomique – France).



- **ANALYTICAL AND EXPERIMENTAL STUDIES OF FRETTING-CORROSION AND VIBRATIONS OF FUEL ASSEMBLIES OF A VVER-1000 WATER COOLED AND WATER MODERATED POWER REACTOR.**

Dr.Yu.N.Drozdoz (IMASH Machine Study Institute named after A.A.Blagonravov of the Russian Academy of Sciences, Moscow – Russia), Dr. Al.A.Tutnov, Dr. A.A.Tutnov, Dr.E.E.Alexeyev (Kurchatov Institute Russian Research Centre, Moscow – Russia), V.V.Makarov, A.V.Afanasyev (FSUE OKB “Gidropress”- Russia).

- **A MECHANISTIC FISSION GAS RELEASE MODEL IMPLEMENTED IN THE TRANSURANUS FUEL BEHAVIOUR CODE AND APPLIED ON FUMEX-II BENCHMARKING CASES.**

L.A. Nordström, P. Blair, Ch. Hellwig (Paul Scherrer Institut (PSI) - Switzerland).

Fuel Performance

- **EFFECT OF MECHANICAL PROPERTIES OF SPACER GRID SPRINGS ON THE FRETTING WEAR OF A NUCLEAR FUEL ROD.**

Young-Ho Lee, Hyung-Kyu Kim (Korea Atomic Energy Research Institute – Korea).

- **CHARACTERISATION OF MAGNETIC CRUD ON KKL FUEL RODS.**

Guido Ledergerber, Wilfried Kaufmann (Kernkraftwerk Leibstadt AG – Switzerland), K.-A. Magnusson (Westinghouse Electric Sweden – Sweden), Didier Gavillet, Soutan Abolhassani (Paul Scherrer Institut – Switzerland).

- **EXPERIENCE ON FUEL INSPECTION SYSTEM.**

José R. Fernández (Tecnatom - Spain), Juan J. Serna (Enusa Industrias Avanzadas, S.A. – Spain).

- **COMPARISON OF THE CODE PREDICTIONS WITH PIE DATA FOR WWER-1000 FUEL RODS, AND COMPARATIVE CALCULATIONS OF WWER AND PWR TYPE FUEL RODS**

G. Passage, S. Stefanova (Institute for Nuclear Research and Nuclear Energy – BAS, Bulgaria), A.S. Scheglov, V.N. Proselkov (Russian Research Center "Kurchatov Institute", Russian Federation).

- **ENSURING FUEL ECONOMY AND SAFE BWR CONTROL ROD MOVEMENTS THROUGH BWR FUEL CHANNEL MEASUREMENTS.**

Andreas Fristedt-Ablad, Jan Möller, Per Collin (Westinghouse Electric-Sweden).

- **RESULTS OF POST-IRRADIATION EXAMINATIONS (PIE) OF E110 CLADDINGS AND ALLOY UPGRADING FOR VVER.**

V.V. Novikov, V.A. Markelov, V.N. Shishov, A.V. Tselishchev, A.A. Balashov (FSUE A.A. Bochvar VNIINM – Russia).

- **PERFORMANCE OF WEAPONS-GRADE PLUTONIUM IN MIXED OXIDE NUCLEAR FUEL.**

Donald Spellman, Larry Ott, and Robert Morris (Oak Ridge National Laboratory - USA)

Fuel Cycle Strategies and Core Management

- **THE FUEL MANAGEMENT STRATEGY FOR THE END-OF-PLANT CYCLES OF ZORITA NPP.**

Luis Rebollo Medrano, Julio Blanco Zurro (UNION FENOSA GENERACION, S.A – Spain).



- **DETERMINISTIC BWR CORE DESIGN.**
Randolph Höglund (VTT Technical Research Centre of Finland – Finland), Mikael Solala (Teollisuuden Voima Oy – Finland).

Spent Fuel Management

- **LONG TIME STORAGE OF FAILED FUEL RODS.**
Andreas Fristedt-Ablad, Jan Möller, Per Collin, (Westinghouse Electric-Sweden).

LOCA & RIA Issues

- **EXPERIMENTAL DATABASE OF E110 CLADDING OXIDISED IN HYDROGEN RICH STEAM.**
E. Perez-Feró, P. Windberg, Z. Hózer, M. Horváth, I. Nagy, A. Pintér-Csordás, E. Szabó, K. Kulacsy (Hungarian Academy of Sciences KFKI Atomic Energy Research Institute – Hungary), Cs. Győri (European Commission, Joint Research Centre, Institute for Transuranium Elements – Germany).
- **FAILURE BEHAVIOR OF THE ZIRCONIUM CLADDING AFTER THE LOSS OF THE COOLANT ACCIDENT (LOCA).**
Jun Hwan Kim, Myoung Ho Lee, Byoung Kwon Choi and Yong Hwan Jeong (Korea Atomic Energy Research Institute – Korea).
- **HIGH POWER AND HIGH SPEED RAMPS IN THE OSIRIS REACTOR.**
F. CHAMBIOT-BISSON, G. THELLIER, S. LOUBIERE, S. MARTIN, P. DURANDE AYME (Commissariat à l'Energie Atomique – France).
- **WATERCARE™ PROGRAM OVERVIEW.**
C. Enneking, John Schardt (GE Energy, Nuclear – USA).
- **Proposal for a Fuel Integrity Evaluation System under a BWR Post-BT Condition.**
Hiroshi Ono, Akira Mototani, Nobuaki Abe, Yutaka Takeuchi (Toshiba Corporation, Power system Company – Japan).

Advance in Fuel Design

- **OUT-OF-PILE TESTS UNDER LOCA CONDITIONS FOR J-ALLOY™, HIGH CORROSION-RESISTANT ALLOY FOR PWR FUEL CLADDING TUBE.**
Seiichi Watanabe (Mitsubishi Heavy Industries, Ltd – Japan), Toshiya KIDO (Nuclear Development Corporation – Japan), Yoshihiro Tsuchiuchi (Nuclear Fuel Industries, Ltd. – Japan), Hayato Takabatake (The Kansai Electric Power Co, Inc. – Japan)
- **MANUFACTURING AND CHARACTERIZATION OF J-ALLOY™, HIGH CORROSION RESISTANT ALLOY FOR PWR FUEL CLADDING TUBE.**
Yoshihiro Tsuchiuchi (Nuclear Fuel Industries, Ltd – Japan), Ryuji Wakamatsu (Zirco Products Co., Ltd. – Japan), Takeshi Isobe (Mitsubishi Materials Corporation – Japan), Seiichi Watanabe (Mitsubishi Heavy Industries, Ltd. – Japan), Hayato Takabatake (The Kansai Electric Power Co., Inc – Japan).

13:00 – 14:30 Lunch


TECHNICAL SESSION IX : LOCA & RIA Issues
C. Room: "Usos Múltiples"
14:30 – 16:30

Chairman: Jose M. Conde – CONSEJO DE SEGURIDAD NUCLEAR – Spain.
Co-Chairwoman: Nadine Hollasky – ASSOCIATION VINÇOTTE NUCLEAR – Belgium.

- **IRSN R&D STUDIES ON HIGH BURNUP FUEL BEHAVIOUR UNDER RIA AND LOCA CONDITIONS**
 J. Papin, M. Petit, C. Grandjean, V. Georgenthum (Institut de Radioprotection et de Sûreté Nucléaire –France)
- **BEHAVIOUR OF HIGH BURNUP PWR FUELS DURING SIMULATED REACTIVITY-INITIATED ACCIDENT CONDITIONS.**
 Toyoshi FUKETA and Tomoyuki SUGIYAMA, M. UMEDA, K. TOMIYASU, H. SASAJIMA (Japan Atomic Energy Agency - Japan).
- **THE U.S. NUCLEAR REGULATORY COMMISSION'S RESEARCH ON FUEL BEHAVIOUR UNDER ACCIDENT CONDITIONS.**
 Ralph O. Meyer (U.S. Nuclear Regulatory Commission – USA).
- **CORE AND FUEL ASPECTS IN LOCA SAFETY ANALYSIS AND RELOAD SAFETY EVALUATION FOR BELGIAN NPPS.**
 Jinzhao Zhang and Jean Paul Dalleur (Suez-Tractebel Engineering – Belgium).
- **EXPERIMENTAL SIMULATION OF A CONTROL ROD WITHDRAWAL ERROR IN A COLD CRITICAL BWR.**
 Joakim K.-H. Karlsson, K. Kitano (Studsvik Nuclear AB – Sweden), Gunnar Rönnerberg, Göran Wiksell (OKG AB – Sweden), David Schrire (Vattenfall Bränsle AB – Sweden), Magnus Limbäck (Westinghouse Electric Sweden AB – Sweden).
- **SIMULATIONS OF THE HALDEN IFA-650.3/4 HIGH BURNUP LOCA TESTS WITH TRACE AND FALCON: A PRELIMINARY STUDY ON AXIAL RELOCATION.**
 Yacine Aounallah, G. Khvostov, Antonino Romano, Hannu Wallin, and Martin A. Zimmermann (Laboratory for Reactor Physics and Systems Behaviour, Paul Scherrer Institut – Switzerland), E. Kostad, M. EK, L. Kekkonen (Institute for Energy Technology- OECD Halden Reactor Project – Norway)

16:30 – 17:00
Break
TECHNICAL SESSION X : Advance in Fuel Design
C. Room: "Usos Múltiples"
17:00 – 19:00

Chairman: Patrick Blanpain – AREVA NP – France.
Co-Chairman: Didier Haas - ITU Karlsruhe – Germany.

- **WESTINGHOUSE BWR FUEL - RECENT EXPERIENCES AND DEVELOPMENTS.**
 Sture Helmersson, Magnus Limbäck, Hakan Söderberg (Westinghouse Electric Sweden AB – Sweden).
- **IMPROVED ZR ALLOYS FOR HIGH BURNUP BWR FUEL.**
 Shinji Ishimoto, Yoshinori Etoh, Toshio Matsumoto (GNF-Japan Co., Ltd – Japan), Dan Lutz (GNF-Americas – USA), Akira Takagi (TEPCO – Japan).
- **A FAMILY OF UPGRADED FUEL ASSEMBLIES FOR PWR.**
 Denis Gottuso (AREVA NP Inc – USA), Jean-Noel Canat, Pierre Mollard (AREVA NP – France).



- **EFG FUEL DESIGNS AND EXPERIENCE IN EDF REACTORS.**
David Chapin, William Rabenstein (Westinghouse Electric Comp. – USA), Miguel Aulló, Alberto Cerracín (ENUSA – Spain), Göran Boman (Westinghouse Electric Sweden AB – Sweden).
- **MIXED URANIUM-TRANSITION METAL CARBIDES FOR ADVANCED REACTOR APPLICATIONS.**
Samim Anghaie (University of Florida – USA).
- **CAPILLARY IMPREGNATION TECHNOLOGY FOR NOVEL TYPES OF FUELS.**
A. Savchenko, I. Konovalov, A. Vatulin, S. Ershov, G. Kulakov, S. Maranchak, Z. Petrova, (A.A. Bochvar All-Russian Scientific Research Institute of Inorganic Materials – Russia).

21:00 – 23:00 Conference Dinner

Thursday 26

09:00 – 14:00 TECHNICAL VISIT