2010 LWR Fuel Performance Meeting/ Top Fuel/WRFPM

September 26-29, 2010

Orlando, Florida
Hyatt Regency Grand Cypress

The technical scope of the meeting includes all aspects of nuclear fuel from fuel rod to core design as well as performance experience in commercial and test reactors. The meeting excludes front end and back end fuel issues; however, it covers all front and/or back issues that impact fuel designs and performance.

TECHNICAL TRACKS

Fuel Performance, Reliability and Operational Experience

Transient Fuel Behavior and Safety Related Issues

Advances in Water Reactor Nuclear Fuel Technology

Innovative Fuel Design and Core Management

Emerging Fuel Performance and Fuel Cycle Issues

OFFICIAL PROGRAM

CONTRIBUTING ORGANIZATIONS

The organizations listed below have made an outstanding contribution to the success of the 2010 LWR Fuel Performance Meeting/Top Fuel/WRFPM and to the enjoyment of the attendees and their guests through their generous sponsorship.

SUNDAY, SEPTEMBER 26, 2010

Westinghouse Electric Company
Sponsor of the Opening Reception

MONDAY, SEPTEMBER 27, 2010

Studsvik Scandpower, Inc.
Sponsor of the Afternoon Refreshment Break

GE Hitachi Nuclear Energy
Sponsor of the Monday Luncheon

TUESDAY, SEPTEMBER 28, 2010

AREVA
Sponsor of the Afternoon Refreshment Break

Global Nuclear Fuel
Sponsor of the Tuesday Evening Poster Event

Thank you!

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UPDATED: 9/21/2010

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Welcome

to the

2010 LWR Fuel Performance Meeting/ Top Fuel/WRFPM

September 26-29, 2010

Orlando, FL

Hyatt Regency Grand Cypress

MEETING OFFICIALS

GENERAL CHAIR:
Kevin Walsh,
GNF, GEH

TECHNICAL PROGRAM CHAIR:
Jim Klapproth,
GEH

The technical scope of the meeting includes all aspects of nuclear fuel from fuel rod to core design as well as performance experience in commercial and test reactors. The meeting excludes front end and back end fuel issues; however, it covers all front and/or back issues that impact fuel designs and performance.

2010 LWR Fuel Performance/Top Fuel/WRFPM

Steering Committee

Jose Maria Caro (GEH), Chair

Atul Karve (GNF), Co-Chair

Doug Crawford (GNF)
Jim Klapproth (GEH)
Andy Lingenfelter (GNF)
Brian Moore (GNF)
Rob Schneider (GNF)
Russell Stachowski (GNF)

Workshop Coordinator

Jeff Deshon (EPRI)

Technical Program Committee

Sadaaki Abeta (Mitsubishi)
Yuriy Aleshin (Westinghouse)
Samim Anghaie (Consultant)
Mehdi Asgari (Studsvik)
Scott Bowman (GEH)
Jose Caro (GEH)
Bo Cheng (EPRI)
Doug Crawford (GNF)
Anghel Enica (Westinghouse)
Scott Ferguson (WCNOC)
Toyoshi Fuketa (JAEA)
Kenneth Geelhood (PNL)
Lars Hallstadius (Westinghouse)
Kenichi Ito (GNF)
Yong Hwan Jeong (KAERI)
Zeses Karoutas (Westinghouse)
Atul Karve (GNF)
Hyeong Koo Kim (KNF)
Jim Klapproth (GEH)
Yang-Hyun Koo (KAERI)
Yang-Pi Lin (GNF)
Andy Lingenfelter (GNF)
Changxin Liu (CNS)
Erik Mader (EPRI)
Brian Moore (GNF)
Arthur T. Motta (Penn State Univ)
Javier Riverola (ENUSA)
David Schrire (Vattenfall)
Steve Shelton (GEH)
Russell Stachowski (GNF)
Marius Stan (LANL)
Nicolas Waeckel (EDF)
John Willse (Consultant)
Masatoshi Yamazaki (Nuclear Fuel Industries)
Michael Young (Westinghouse)
Jinzhao Zhang (GDF-SUEZ Tractebel)

Meeting Schedule

Sunday, September 26, 2010

4:00 PM – 6:00 PM	Registration	Registration #1
6:00 PM – 8:00 PM	Opening Reception *(Sponsored by Westinghouse Electric Company)*	Upper Pool Deck

Monday, September 27, 2010

8:00 AM – 10:20 AM	Opening Plenary	Grand Cypress Ballroom
10:20 AM – 10:40 AM	Coffee Break	Grand Cypress Foyer
10:40 AM – 12:15 PM	Fuel and Fuel Rod Design and Performance—I Emerging Fuel Performance and Fuel Cycle Issues	Grand Cypress A Grand Cypress C
12:15 PM – 1:40 PM	Meeting Luncheon *(Sponsored by GE Hitachi Nuclear Energy)*	Grand Cypress D
1:40 PM – 3:40 PM	Fuel and Fuel Rod Design and Performance—II Corrosion, Crud, and Cladding Behavior	Grand Cypress A Grand Cypress C
3:40 PM – 4:00 PM	Coffee Break *(Sponsored by Studsvik Scandpower, Inc.)*	Grand Cypress Foyer
4:00 PM – 6:00 PM	BWR and PWR Fuel Assembly Technology Fuel Failure Mechanisms	Grand Cypress A Grand Cypress C

Tuesday, September 28, 2010

8:00 AM – 10:00 AM	Numerical Simulation and Testing—I Material Design (Fuel Technology)—I	Grand Cypress A Grand Cypress C
10:00 AM – 10:20 AM	Coffee Break	Grand Cypress Foyer
10:20 AM – 12:15 PM	Numerical Simulation and Testing—II Material Design (Fuel Technology)—II	Grand Cypress A Grand Cypress C
12:15 PM – 1:40 PM	Meeting Luncheon	Grand Cypress D
1:40 PM – 3:40 PM	Thermal Mechanical Models PCI/Failure	Grand Cypress A Grand Cypress C
3:00 PM – 6:00 PM	Poster Session Set-Up	Regency Hall
3:40 PM – 4:00 PM	Coffee Break	Grand Cypress Foyer
4:00 PM – 6:00 PM	Reactor Systems Simulation and Modeling LOCA Effects on Fuel and Materials	Grand Cypress A Grand Cypress C
6:30 PM – 8:30 PM	Poster Event *(Sponsored by Global Nuclear Fuel)*	Grand Cypress D

Wednesday, September 29, 2010

8:00 AM – 10:00 AM	Fuel Reliability and Experience—I	Grand Cypress Ballroom
10:00 AM – 10:20 AM	Coffee break	Grand Cypress Foyer
10:20 AM – 12:15 PM	Fuel Reliability and Experience—II Numerical Simulation and Testing—III	Grand Cypress A Grand Cypress C
12:15 PM – 1:40 PM	Meeting Luncheon	Grand Cypress D
1:40 PM – 3:40 PM	Mixed Oxide Fuel Behavior Innovative Fuel Design and Core Management—I	Grand Cypress A Grand Cypress C
3:40 PM – 4:00 PM	Coffee Break	Grand Cypress Foyer
4:00 PM – 6:00 PM	Modeling of RIA Behaviors Innovative Fuel Design and Core Management—II	Grand Cypress A Grand Cypress C

Thursday, September 30, 2010

8:00 AM – 12:00 PM	Professional Workshop "Fuel Cladding Integrity Challenges by Foreign Material"	Lakeside Casita

Meeting Information

Accommodations and Hotel Information

The Hyatt Regency Grand Cypress Hotel is the location for the 2010 LWR Fuel Performance Meeting/Top Fuel/WRFPM, where all meeting activities and technical sessions will take place. The outstanding array of resort amenities filling this Orlando Florida resort hotel creates an amazing retreat for families and business travelers, alike. Play golf and tennis, swim, sail, or treat yourself to a massage. Savor a meal prepared by renowned chefs – cuisine ranges from authentic southwestern fare to fresh sushi and a sumptuous American buffet breakfast daily. This family-friendly resort offers an ideal location adjacent to Disney World – kids of all ages will love exploring area attractions.

Meeting Registration

Registration is required for all attendees and presenters. Badges are required for admission to all events. The Full Meeting Registration fee includes one (1) copy of the CD of the Meeting Proceedings and one (1) ticket each to the Opening Reception and the Monday, Tuesday and Wednesday Luncheons.

NOTE:
Additional tickets can be purchased at the ANS Registration Desk for the Sunday Opening Reception and the Monday, Tuesday, and Wednesday Luncheons.

Registration Hours:

The Meeting Registration Desk and Message Center will be located in the Registration # 1 Area of the Hyatt Regency Grand Cypress Hotel. You may register, purchase tickets for events, or pick up your registration packet during the following hours:

SUNDAY, SEPTEMBER 26, 2010
4:00 P.M. – 6:00 P.M.

MONDAY, SEPTEMBER 27, 2010
7:00 A.M. – 5:00 P.M.

TUESDAY, SEPTEMBER 28, 2010
7:00 A.M. – 5:00 P.M.

WEDNESDAY, SEPTEMBER 29, 2010
7:00 A.M. – 2:00 P.M.

Speakers' Preview Room

A Speakers' Preview Room, the Hibiscus Room of the Hyatt Regency Grand Cypress Hotel, will be available during the following hours:

SUNDAY, SEPTEMBER 26, 2010
3:00 P.M. – 7:00 P.M.

MONDAY, SEPTEMBER 27, 2010
7:00 A.M. – 4:00 P.M.

TUESDAY, SEPTEMBER 28, 2010
7:00 A.M. – 4:00 P.M.

WEDNESDAY, SEPTEMBER 29, 2010
7:00 A.M. – 12:00 P.M.

Audio/visual equipment will be set up; so that speakers may preview their presentation material.

Meetings Proceedings

The meeting proceedings is available on CD-ROM. Copies of the Meeting Proceedings will be available on-site. Each full meeting registrant will receive a copy of the proceedings as part of the full meeting registration fee. Additional copies may be purchased at the meeting registration desk for $75.00.

This special rate is available at the meeting only. To purchase copies following the meeting, you may contact the ANS Accounting Department at 708-579-8210 (telephone); 708-579-8314 (fax); accounting@ans.org (email); or submit your request in writing to: American Nuclear Society, 97781 Eagle Way, Chicago, IL 60678-9770. Copies of the proceedings are available for $210.00 after the meeting. Payment information must accompany all orders.

Special Events

Opening Reception

SUNDAY, SEPTEMBER 26, 2010
6:00 p.m. – 8:00 p.m.
Location: Upper Pool Deck

The meeting will start with a welcome reception. One ticket to the Opening Reception is included with the full meeting registration.
Additional tickets can be purchased at the ANS Registration Desk for $75.00 each.

Monday Luncheon

MONDAY, SEPTEMBER 27, 2010
12:15 p.m. – 1:45 p.m.
Location: Grand Cypress D

FEATURED LUNCHEON SPEAKER:
Nicole Holmes *(COO, Global Nuclear Fuel - Americas)*

Nicole Holmes currently serves as Chief Operating Officer of Global Nuclear Fuel - Americas (GNF-A). GNF is a world-leading supplier of boiling water reactor fuel, including uranium dioxide and MOX fuel and fuel-related engineering services. GNF operates primarily through Global Nuclear Fuel-Americas, LLC in Wilmington, N.C., and Global Nuclear Fuel-Japan Co. Ltd. in Kurihama, Japan. Holmes assumed this leadership position in 2010.

Holmes started her career in engineering at Duke Energy's Catawba Nuclear Station in Lake Wylie, South Carolina. Holmes assumed increasingly responsible positions with Duke Energy before joining GE in February 2000.

Holmes began her GE career in sourcing as a supply chain leader and earned certification as a six sigma black belt. Holmes progressed through leadership roles in quality and manufacturing. Holmes's most recent position was general manager, nuclear manufacturing for GE Hitachi Nuclear Energy. Nicole had responsibility for all aspects of manufacturing, facilities and global logistics for the $1B nuclear business, which serves customers in North America, Europe and Asia.

Holmes earned a B.S. degree in Nuclear Engineering from North Carolina State University and an M.B.A from the University of North Carolina at Chapel Hill.

One ticket to the Monday Luncheon is included with the full meeting registration.
Additional tickets can be purchased at the ANS Registration Desk for $60.00 each.

Tuesday Luncheon

TUESDAY, SEPTEMBER 28, 2010
12:15 p.m. – 1:45 p.m.
Location: Grand Cypress D

One ticket to the Tuesday Luncheon is included with the full meeting registration.
Additional tickets can be purchased at the ANS Registration Desk for $60.00 each.

Wednesday Luncheon

WEDNESDAY, SEPTEMBER 29, 2010
12:15 p.m. – 1:45 p.m.
Location: Grand Cypress D

One ticket to the Wednesday Luncheon is included with the full meeting registration.
Additional tickets can be purchased at the ANS Registration Desk for $60.00 each.

Technical Sessions: Monday

MONDAY, SEPTEMBER 27, 2010 • 8:00 A.M. - 10:20 P.M.

Opening Plenary

Grand Cypress Ballroom

OPENING REMARKS BY CONFERENCE GENERAL CHAIR:
Kevin Walsh *(CEO of Global Nuclear Fuel)*

PLENARY SPEAKERS:

- Mr. Ken Peterson *(Vice President for Fuel, Exelon Corporation)*
- Mr. Akio Toba *(General Manager, Nuclear Power & Plant Sitting Administrative Department, TEPCO)*
- Dr. Philip Fink *(Associate Lab Director, Idaho National Laboratory)*
- Dr. Sam Armijo *(Vice-Chairman, Advisory Committee on Reactor Safeguards)*
- Dr. Eric P. Loewen *(President Elect/Vice-President American Nuclear Society)*
- Mr. Shane Johnson *(COO Office of Nuclear Energy of the Department of Energy)*

MONDAY, SEPTEMBER 27, 2010 • 10:40 A.M. - 12:15 P.M.

Fuel and Fuel Rod Design and Performance-I

Session Chair: Tony Reese *(GNF)*

Grand Cypress A

10:40 a.m.
Optimization of BWR Fuel Rod Cladding Condition for High Burnups, Friedrich Garzarolli *(Consultant)*, Ron Adamson *(Zircology Plus)*, Peter Rudling *(ANT International)*

11:00 a.m.
Discussion about the Main Parameters Affecting the Thermal Conductivity of LWR UO2 and MOX Fuels, D. Staicu *(EC/JRC/ITU)*, D. Baron *(EDF R&D)*

11:20 a.m.
Development of FRAPCON-EP for High Burnup and High Temperature Fuel Pellet Behavior Modeling, Aydin Karahan, Andrew Lerch, Mujid S. Kazimi *(MIT)*

11:40a.m.
Development and Application of ATRIUM™ 10XM BWR Fuel Assemblies, S.E. Cole, K.A. Elliott, N.L. Garner *(AREVA NP)*, H.J. Lippert *(AREVA NP GmbH)*

Emerging Fuel Performance and Fuel Cycle Issues

Session Chair: Keizo Ogata *(JNES)*

Grand Cypress C

10:40 a.m.
Fuel Assembly Fabrication Monitoring and Inspection – 30 Years in Charge, Dan Slabu, Christian Hellwig *(Axpo AG)*

11:00 a.m.
Application of OPTIMA2 Fuel to Reduce Shadow-Corrosion Induced Channel Distortion in Low Hot Excess Reactivity BWR Core Designs, John Wheeler, Peter Weggeman *(Exelon Nuclear)*, Anghel Enica *(Westinghouse Electric Company)*

11:20 a.m.
Verification of a New GNF Shuffling Sequence System, EPIMETHEUS to an In-core Shuffling Case of ABWR, Hitoshi Sato, Masayuki Tojo, Tatsuya Iwamoto, John Elam *(Global Nuclear Fuel)*

11:40 a.m.
Behavior of Homogeneous and Heterogeneous MOX Fuel, T. Tverberg, W. Wiesanck *(OECD Halden Reactor Project)*, S.K. Yagnik *(EPRI)*, G. Rossiter *(NNL)*

MONDAY, SEPTEMBER 27, 2010 • 1:40 P.M. - 3:40 P.M.

Fuel and Fuel Rod Design and Performance-II

Session Chairs: Lars Hallstadius *(Westinghouse)*, Nicolas Waeckel *(EDF)*

Grand Cypress A

1:40 p.m.
New Generation VVER and RBMK Fuel: Results of Post-irradiation Examinations, Justification of Operational Reliability, D.V. Markov, S.V. Pavlov, .Ye. Novoselov, V.S. Polenok, V.A. Zhitelev, Ye.A. Zvir, V.V. Chesanov, G.P. Kobylyansky *(JSC "SSC RIAR")*

2:00 p.m.
Fuel Performance Beyond Design – Exploring the Limits, Guido Ledergerber *(Kernkraftwerk Leibstadt KKL)*, Sima Valizadeh, Jonathan Wright, Magnus Limbäck, Lars Hallstadius *(Westinghouse)*, Didier Gavillet, Sousan Abolhassani *(PSI)*, Fumihisa Nagase, Tomoyuki Sugiyama *(JAERI)*, Wolfgang Wiesenack, Terje Tverberg *(OECD Halden Reactor Project)*

2:20 p.m.
Development of Dispersion Type Fuel Elements for Floating Nuclear Power Plants (FNPP) and Low Power Reactor Plants (LP RP), G.V. Kulakov, A.V. Vatulin, S.A. Ershov, Y.V. Konovalov, A.V. Morozov, A.M. Savchenko, V.I. Sorokin, V.V. Fedotov *(JSC VNIINM)*, A.E. Novoselov, V.A. Ovchinnikov, V.Y. Shishin *(JSC RIAR)*

2:40 p.m.
Westinghouse New BWR Fuel - Towards the Flawless Target, Aziz Dag, Lars Hallstadius, Anghel Enica, Sture Helmersson *(Westinghouse)*

3:00 p.m.
Key Parameters for the High Burnup Structure Formation Thresholds in Oxide Fuels, F. Lemoine *(CEA)*, D. Baron *(EDF)*, P. Blanpain *(AREVA NP)*

Corrosion, Crud and Cladding Behavior

Session Chair: Bo Cheng *(EPRI)*

Grand Cypress C

1:40 p.m.
Shadow Corrosion Behavior of BWR Channels in Cofrentes NPP, Pablo J. Garcia Sedano, Javier Iglesias Ayuela *(Iberdrola Ingenieria)*, Manuel Albendea *(Iberdrola Generacion)*

2:00 p.m.
Fracture Strength of Zirconium Hydrides Embedded in a Zircaloy-2 Matrix and its Effects on the Initiation of the Delayed Hydride Cracking, Toshio Kubo, Kan Sakamoto, Toru Higichi *(Nippon Nuclear Fuel Development Co., Ltd.)*

2:20 p.m.
Lead Use Experience and Shadow Corrosion Performance of Advanced BWR Cladding, Y.P. Lin, K. Ledford, R. Schneider, D. Lutz *(Global Nuclear Fuel)*, Y.J. Kim *(GE Global Research Center)*, J. Card *(Entergy Nuclear, Vermont Yankee)*

2:40 p.m.
Improved Electron Micro Analysis of BWR CRUD, D. Gavillet, R. Restani *(Paul Scherrer Institut)*, G. Ledergerber *(Kernkraft Leibstadt AG)*, L. Hallstadius *(Westinghouse)*

3:00 p.m.
A Combined Approach to Predict the Sensitivity of Fuel Cladding to Hydrogen-Induced Failures during Power Ramps, Anna-Maria A. Holston, Viatcheslav Grigoriev, Gunnar Lysell, Rikard Källström, Bo Johansson *(Studsvik Nuclear)*, Lars Hallstadius, Gang Zhou *(Westinghouse)*, Ioan Arimescu *(AREVA NP)*, Miriam Lloret *(ENUSA)*

MONDAY, SEPTEMBER 27, 2010 • 4:00 P.M. - 6:00 P.M.

BWR and PWR Fuel Assembly Technology

Session Chairs: Sadaaki Abeta *(Mitsubishi)*, Pierre Mollard *(AREVA NP)*
Grand Cypress A

4:00 p.m.
Chemical State of Alloying Elements in Oxide Layer of Zr-based Alloys, Kan Sakamoto, Katsumi Une, Masaki Aomi *(NFD)*

4:20 p.m.
Optimized ZIRLO™ Fuel Performance in Westinghouse PWRs, David Mitchell, Anand Garde, Dennis Davis *(Westinghouse)*

4:40 p.m.
Development of an Advanced Westinghouse Type PWR Fuel Assembly for 15X15 B&W Plants, Michael L. Boone *(Westinghouse)*, Ben A. Howell *(Duke Energy)*

5:00 p.m.
Channel - Control Blade Interference in GE Boiling Water Reactor, D-Lattice Plants with Zircaloy-2 Channels, Paul E. Cantonwine *(GNF)*, Harold Paustian *(Xcel Energy, Monticello Nuclear Generating Plant)*, Greg Hahn *(Progress Energy)*, James Tusar, Michael Reitmeyer *(Exelon Nuclear)*, Erik Mader *(EPRI)*

5:20 p.m.
Post Irradiation Examination of the Skeleton of a 15x15 PWR Fuel Assembly, Juan M. García-Infanta, Rodolfo Canencia *(ENUSA Industrias Avanzadas)*, Björn Peterson *(Ringhals AB)*, David Schrire *(Vattenfall Nuclear Fuel AB)*, Björn Claesson *(Studsvik Nuclear AB)*

Fuel Failure Mechanisms

Session Chair: Yang-pi Lin *(GNF)*
Grand Cypress C

4:00 p.m.
The Implementation of New PCI Threshold Curves for Fuel Assemblies of Various Vendors in the Automated Core Surveillance System of a 930 MWe BWR, Paul Schmidt *(EnKK, Kernkraftwerk Philippsburg)*

4:20 p.m.
Influence of Heterogeneities on Power Distribution in WWER-440 and WWER-1000 Type Cores and Fuel Failure Root Causes, Ján M. Mikuš *(Research Centre ež Ltd.)*

4:40 p.m.
IAEA Review on Fuel Failures in Water Cooled Reactors, D. Dangouleme *(EdF)*, V. Inozemtsev *(IAEA)*, K. Kamimura *(JNES)*, J. Killeen *(IAEA)*, A. Kucuk *(EPRI)*, V. Novikov *(VNIINM)*, V. Onufriev *(Consultant)*, M. Tayal *(AECL)*

5:00 p.m.
Robust PCI Monitoring During PWR Operation at Southern Nuclear, Adel Alapour, Ryan M. Joyce *(Southern Nuclear)*, Arthur S. DiGiovine, Shaun Tarves *(Studsvik)*, Andrew Worrall, Robbie Gregg *(UK National Nuclear Laboratory)*

5:20 p.m.
Experimental and Finite Element Modeling Parametric Study for Iodine-Induced Stress Corrosion Cracking of Irradiated Cladding, Clara Anghel, Anna-Maria Alvarez Holston, Gunnar Lysell, Sören Karlsson, Robert Jakobsson, Johan Flygare *(Studsvik Nuclear AB)*, S.T. Mahmood *(Global Nuclear Fuel)*, David Le Boulch *(CEA)*, Arimescu Ioan *(AREVA)*

5:40 p.m.
Prospects of Increase in Service Life of Fuel Rods in Advanced Light Water Reactors, K.N. Proskuryakov, K.S. Novikov, S.O Belikov, A.V. Belkin *(Moskow Power Engineering Institute-Technical Univ)*

TUESDAY, SEPTEMBER 28, 2010 • 8:00 A.M. -10:00 A.M.

Numerical Simulation and Testing (Fuel Technology)-I

Session Chair: Atul Karve *(GNF)*
Grand Cypress A

8:00 a.m.
Fuel Rod Flow Induced Vibration Simulation by VITRAN (Westinghouse) and MAVIC-NL (EDF) Codes, Corentin Richard, Guy Chaigne *(EDF)*, Roger Y. Lu *(Westinghouse)*

8:20 a.m.
Characterization of Fracture Behaviour of Thin Walled Fuel Tubes Using Experimental and Analytical Methods, J.K. Chakravartty, M.K. Samal, G. Sanyal *(Bhabha Atomic Research Centre)*

8:40 a.m.
AREVA's Comparative Process for CILC Risk Assessment Using Subchannel and CFD Modeling, John H. Jones, Mathieu G. Martin, Thomas H. Keheley, Richard L. Harne, Mike G. Pop, Céline C. Lascar, Jan-Patrice Simoneau *(AREVA)*

9:00 a.m.
Thermal-Hydraulic and Thermo-Mechanical Assessment of Dual-Cooled Annular Fuel for PWR Application, Wang-Kee In, Chang-Hwan Shin, Dong-Seok Oh, Tae-Hyun Chun *(KAERI)*

9:20 a.m.
COBRAG Subchannel Analysis of BWR Fuel Thermal Hydraulic Performance, Belgacem Hizoum, Jens Andersen, Asuka Sakouda, Scott Bowman *(GEH)*

Material Design (Fuel Technology)-I

Session Chair: Sean M. McDeavitt *(Texas A&M Univ)*
Grand Cypress C

8:00 a.m.
Mechanical Property of Oxide Film on Zr Alloys, Yoshinori Etoh, Masaki Aomi, Shinji Ishimoto *(NFD)*, Shunichiro Nishioka, Hiroaki Muta, Masayoshi Uno, Shinsuke Yamanaka *(Osaka Univ)*

8:20 a.m.
Critical Failure Strains for Incipient Crack Formation in the Oxide and Hydride Layers in the Outer Surface Region of Zircaloy Fuel Cladding Tubes, M. Nakatsuka, K. Sakamoto, T. Higuchi *(NFD)*

8:40 a.m.
Chemical Trap Effect of Alminosilicate Additive Fuel, Junji Matsunaga, Katsumi Une *(NFD)*, Kazuyuki Kusagaya *(GNF)*

9:00 a.m.
M5® a Breakthrough in Zr Alloy, J.P. Mardon *(AREVA NP SAS)*, G.L. Garner *(AREVA NP Inc)*, P.B. Hoffmann *(AREVA NP GmbH)*

9:20 a.m.
Methods to Increase Operation Properties of Zirconium Components for New Generation LWR Active Cores, S.V. Ivanova, E.M. Glagovsky *(MEPhI)*, V.K. Orlov, I.A. Shlepov, K.Yu. Nikonorov, V.V. Rozhko *(JSC A.A. Bochvar High-Technology Research Institute of Inorganic Materials)*, I.A. Khazov, Yu.V. Dubrovsky *(Krasnaya Zvezda)*, I.P. Chernov, Yu.P. Cherdantsev *(Tomsk Polytechnic Univ)*, E.A. Denisov *(Research Institute of Physics of the St.-Petersburg State Univ)*, S. Yu. Betsofen *(Moscow State Aviation Technological Univ)*

TUESDAY, SEPTEMBER 28, 2010 • 10:20 A.M. - 12:15 P.M.

Numerical Simulation and Testing (Fuel Technology)-II

Session Chair: Nayem Jahingir *(GNF)*
Grand Cypress A

10:20 a.m.
Evaluating PWR Fuel Performance Using Vessel CFD Analysis, Zeses Karoutas, Ken Lang, Paul Joffre *(Westinghouse)*, Emilio Baglietto, Robert Brewster, Eric Volpenhein *(CD Adapco)*

10:40 a.m.
Recovery of Thermal Conductivity of MOX Fuel with Fission Gas Release, Byung-Ho Lee, Yang-Hyun Koo, Han-Soo Kim, Jae-Yong Oh, Young-Wook Tahk, Dong-Seong Sohn *(KAERI)*

11:00 a.m.
EDF CYRANO3 Code, Recent Innovations, Gilles Thouvenin, Daniel Baron, Nathalie Largenton, Rodrigue Largenton, Philippe Thevenin *(EDF R&D)*

11:20 a.m.
Development of Standardless WDS Technique for Nuclear Spent Fuels, Hyoung-Mun Kwon, Yong-Sik Yang, Hang-Suk Seo, Jung-Nam Jang, Hyoung-Kwon Lee, Yong-Bum Chun *(KAERI)*

11:40 a.m.
Examination of VVER-440 Fuel Rods During and After their Testing in the MIR Reactor under Simulated Maneuvering Conditions, A.V. Burukin, A.L. Izhutov, V.A. Ovchinnikov, D.V. Markov, G.P. Kobylyansky *(JSC SSC RIAR)*, V.V. Novikov, A.V. Medvedev, B.I. Nesterov *(JSC VNIINM)*

Material Design (Fuel Technology)-II

Session Chair: Yong Hwan Jeong *(KAERI)*
Grand Cypress C

10:20 a.m.
Interim Examinations on the In-Pile Performance of HANA Claddings at Research and Commercial Reactors, Jeong-Yong Park, Byoung-Kwon Choi, Hyun-Gil Kim, Yong Hwan Jeong *(KAERI)*, Jong-Sung Yoo, Jae-Ik Kim, Young-Ki Jang, Kyeong-Lak Jeon *(KNF)*, Tae-Wan Kim, Yong-Bae Yoon, Han-Gug Lee *(KHNP)*

10:40 a.m.
J-Alloy™, Advanced PWR Fuel Cladding Material (1) Program of J-Alloy™ Development, Shinya Nishikawa *(The Kansai Electric Power Co.)*, Hajime Fujii *(Mitsubishi Nuclear Fuel Co.)*, Yoshihiro Tsuchiuchi *(Nuclear Fuel Industries)*, Manuel Novo Sanjurjo *(Comunidad de Bienes de Central Nuclear de Almaraz)*, José Manuel Alonso *(ENUSA Industrias Avanzadas)*

11:00 a.m.
J-Alloy™, Advanced PWR Fuel Cladding Material (2) In-pile Performance of J-Alloy™, Daiki Sato *(Mitsubishi Nuclear Fuel Co.)*, Shinji Ono *(Nuclear Fuel Industries)*, Toshiya Kido *(Nuclear Development Corporation)*, Shinya Nishikawa *(The Kansai Electric Power Co.)*, Cristina Muños-Reja Ruiz *(ENUSA Industrias Avanzadas)*, Jorge Benavides Peña *(Comunidad de Bienes de Central Nuclear de Almaraz)*

11:20 a.m.
Advanced Material for PWR Application: AXIOM™ Cladding, G. Pan, C.J. Long, A.M. Garde, A.R. Atwood, J.P. Foster, R. J. Comstock, L. Hallstadius, D. L. Nuhfer, R. Baranwal *(Westinghouse)*

11:40 a.m.
Evaluation of High Thermal Conductivity Oxide Nuclear Fuel Concept Containing Beryllium, Sean M. McDeavitt, Michael Naramore, Jean Ragusa *(Texas A&M Univ)*, Shripad T. Revankar, Alvin A. Solomon *(Purdue Univ)*, James Malone *(IBC Advanced Alloys Corp)*

TUESDAY, SEPTEMBER 28, 2010 • 1:40 P.M. - 3:40 P.M.

Thermal Mechanical Models

Session Chair: Zeses E. Karoutas *(Westinghouse)*
Grand Cypress A

1:40 p.m.
ZIRLO® High Performance Fuel Cladding Material High Stress Creep Model, Yun Long, Charles L. Beard, Schutte Henk, Gang Zhou *(Westinghouse)*

2:00 p.m.
Simulation of Fuel Rod Behavior by the RTOP Code for Transient Experiments, V.V.Likhanskii, T.N. Aliev, I.A. Evdokimov, V.D. Kanukova, A.A. Sorokin, V.G. Zborovskii *(SRC RF TRINITI)*

2:20 p.m.
Analysis of Fuel Rod Behaviour in EPR™ during the Base Irradiation and LOCA-transient Utilizing the FALCON Code, Younsuk Yun, Grigori Khvostov, Jordi Freixa, Martin A. Zimmermann *(PSI)*

2:40 p.m.
An Integrated Approach for Transient Fuel Behavior Modeling, P. Diller, M.N. Jahingir, R. Rand *(Global Nuclear Fuel)*

PCI/Failure

Session Chair: Jinzhao Zhang *(GDF-SUEZ Tractebel)*
Grand Cypress C

1:40 p.m.
Computational Determination of Allowable Power Ramps to Avoid PCI Induced Cladding Failures, G. Sauer, W. Besenböck *(TÜV Industrie Service GmbH)*

2:00 p.m.
The Effect of Pellet and Local Power Variations on PCI Margin, Y. Aleshin, C. Beard, G. Mangham, D. Mitchell, E. Malek, M. Young *(Westinghouse)*

2:20 p.m.
Crack Resistance Determination of Irradiated Fuel Cladding using the Cladding Tensile Fracture Test (CTFT), Johannes Bertsch, Stéphane Valance, Robert Zubler *(PSI)*

2:40 p.m.
Hydrogen Thermal Diffusion and Crack Propagation Behaviors in Irradiated Zircaloy-2 Cladding Tubes, Keizo Ogata, Toshikazu Baba, Katsuichiro Kamimura *(JNES)*, Toru Higuchi, Kan Sakamoto, Yoshinori Etoh *(NFD)*, Kunio Ito *(GNF)*

3:00 p.m.
Analysis of the Pin Power Peaking of the Hatch Unit 1 Cycle 21 Failed Fuel Assemblies, M. Asgari, T. Bahadir, D. Kropaczek *(Studsvik Scandpower)*, E. Gibson, J. Williams *(Southern Nuclear Operating Company)*

TUESDAY, SEPTEMBER 28, 2010 • 4:00 P.M. - 6:00 P.M.

Reactor Systems Simulation and Modeling

Session Chair: Jean Paul Mardon *(AREVA)*
Grand Cypress A

4:00 p.m.
Transient Analyses with the Sub-channel Code F-COBRA-TF to Support BWR Correlation Development and Stability Measurements, M. Glück, H. Gabriel, P. Knabe, J. Kronenberg *(AREVA NP GmbH)*, R. Macduff *(AREVA NP Inc)*, P. Pohl, R. Velten, F. Wehle *(AREVA NP GmbH)*

4:20 p.m.
BWR Stability Analysis with the Coupled Code Relap5/Parcs v2.7 in Ringhals NPP, A. Abarca, T. Barrachina, R. Miró, G. Verdú *(UPV)*

4:40 p.m.
Analysis of the Rod Ejection Accident with the Coupled Code RELAP5/PARCS v2.7 in Almaraz NPP, T. Barrachina, M. Garcia Fenoll, F. Anchel, R. Miró, G. Verdú *(UPV)*, A. Ortego *(IBERINCO)*, J.C. Martínez-Murillo *(Almaraz-Trillo AIE)*

5:00 p.m.
Severe Reactivity Initiated Accidents with SIMULATE-3K and SIMULATE-3K/RELAP5 in Forsmark-3 BWR, Christian Jönsson *(Studsvik Scandpower AB)*, Gerardo Grandi, Jerry Judd *(Studsvik Scandpower Inc)*, Gustav Dominicus, Henrik Bergersen *(Forsmarks Kraftgrupp AB)*

5:20 p.m.
PWR Transient Xenon Modeling and Analysis Using Studsvik CMS, Magnus Kruners *(Studsvik Scandpower AB)*, Gerardo Grandi *(Studsvik Scandpower Inc.)*, Mattias Carlsson *(Ringhals AB (Vattenfall))*

5:40 p.m.
Simulation of the Downstream Effects of Loss-of-Coolant-Accident (LOCA) Generated Debris with an Emphasis on Long-Term Fuel Cooling, C.J. Robert, J. Casillas, L.A. Klebanov, C.L. Heck, F.T. Bolger *(GEH)*

LOCA Effects on Fuel and Materials

Session Chair: Tomoyuki Sugiyama *(JAEA)*
Grand Cypress C

4:00 p.m.
Thermodynamic Modeling and Mechanical Properties of LOCA Simulated Zr-Nb Alloy, Hiroaki Muta, Masato Ito, Ken Kurosaki, Shinsuke Yamanaka *(Osaka Univ)*, Shin-ya Nishikawa *(Kansai Electric Power Co.)*, Yoshihiro Tsuchiuchi *(Nuclear Fuel Industries)*

4:20 p.m.
Behavior of High Burnup LWR Fuels during Design-basis Accidents: Key Observations and an Outline of the Coming Program, Toyoshi Fuketa, Fumihisa Nagase, Tomoyuki Sugiyama, Masaki Amaya *(JAEA)*

4:40 p.m.
Correlation between Microstructure Changes and Fission Gas Release Mechanism during a LOCA Type Experiment: An E.S.E.M. Investigation, M. Marcet, L. Desgranges, I. Félines, Y. Pontillon *(CEA)*

5:00 p.m.
Finite Element Modelling of Ring Compression Tests on Post-quenched Single Side Oxidised Zirconium-based Alloys (LOCA Conditions), A.Cabrera, V. Vandenbergue *(CEA-DEN)*, J. Besson *(Centre des Matériaux)*, M. Le Saux *(CEA-DEN)*, J.P. Mardon *(AREVA-NP)*, B. Hafidi *(EDF-SEPTEN)*

5:20 p.m.
Influence of the Cooling Scenario on the Post-Quench Mechanical Properties of Pre-Hydrided Zircaloy-4 Fuel Claddings after High Temperature Steam Oxidation (LOCA Conditions), V. Vandenberghe, J.C. Brachet, M. Le Saux, D. Gilbon *(CEA-DEN)*, M. Billone *(ANL)*, D. Hamon *(CEA-DEN)*, J.P. Mardon *(AREVA NP)*, B. Hafidi *(EDF SEPTEN)*

5:40 p.m.
Influence of a Pre-oxide Layer on Oxygen Diffusion and on the Post-quench Mechanical Properties of Zircaloy-4 after Steam Oxidation at 900°C, S. Guilbert, C. Duriez, C. Grandjean *(IRSN)*

TUESDAY, SEPTEMBER 28, 2010 • 6:30 P.M. - 8:30 P.M.

Poster Event

Session Chair: Jim Klapproth *(GEH)*
Grand Cypress D

In addition to the general poster session, the LWR Fuel Performance Meeting/Top Fuel/WRFPM paper review committee announces this Meeting's BEST PAPERS from each Track, which will be highlighted and given extra time for Q & A during the Poster Event.

Fuel Performance, Reliability and Operational Experience

Design Reviews for Reliable Fuel Performance, Alfred Strasser *(Aquarius Services Corp.)*, Kenny Epperson *(Epperson Engineering)*, Jerry Holm *(Consultant)*, Peter Rudling *(ANT International)*

PWR Fuel Surveillance in Spain: A Decade of Fuel Examinations, C. Muñoz-Reja, M. Quecedo *(ENUSA Industrias Avanzadas, S.A)*, J.A. Gago *(Asociación Nuclear Ascò-Vandellòs)*, M. Novo *(Centrales Nucleares Almaraz Trillo)*

PWR Fuel Reliability and Safety Concerns in Korea, Joosuk Lee, Swengwoong Woo *(KINS)*

Brunswick Plant Fuel Failure Reduction, John Siphers *(Progress Energy)*, Rob Schneider *(Global Nuclear Fuel)*

Stability and Void Fraction Measurements for the ATRIUM™10XM BWR Fuel Bundle, D.W. Pruitt, K.R. Greene *(AREVA NP Inc)*, F. Wehle, R. Velten, J. Kronenberg, A. Beisiegel *(AREVA NP GmbH)*, Y.M. Farawila *(Farawila et al., Inc)*

Post Irradiation Examination of High Burnup Assemblies in Vandellós II, Miguel Aulló, Juan M. García-Infanta *(ENUSA Industrias Avanzadas)*, David Chapin *(Westinghouse Electric Company)*, José Luis Gago, Antonio Pontejo Calvente, José Sánchez Baptista *(Asociación Nuclear Ascó-Vandellós II)*

Development of an Advanced Westinghouse Type PWR Fuel Assembly for 15X15 B&W Plants, Michael L. Boone *(Westinghouse)*, Ben A. Howell *(Duke Energy)*

Channel - Control Blade Interference in GE Boiling Water Reactor, D-Lattice Plants with Zircaloy-2 Channels, Paul E. Cantonwine *(GNF)*, Harold Paustian *(Xcel Energy, Monticello Nuclear Generating Plant)*, Greg Hahn *(Progress Energy)*, James Tusar, Michael Reitmeyer *(Exelon Nuclear)*, Erik Mader *(EPRI)*

Shadow Corrosion Behavior of BWR Channels in Cofrentes NPP, Pablo J. Garcia Sedano, Javier Iglesias Ayuela *(Iberdrola Ingenieria)*, Manuel Albendea *(Iberdrola Generacion)*

Transient Fuel Behavior and Safety Related Issues

1D and 3D Modeling of PCMI during a RIA with ALCYONE V1.1, J. Sercombe, E. Fédérici, M. Le Saux, B. Michel, C. Poussard *(CEA)*

An Integrated Approach for Transient Fuel Behavior Modeling, P. Diller, M.N. Jahingir, R. Rand *(Global Nuclear Fuel)*

Transient Analyses with the Sub-channel Code F-COBRA-TF to Support BWR Correlation Development and Stability Measurements, M. Glück, H. Gabriel, P. Knabe, J. Kronenberg *(AREVA NP GmbH)*, R. Macduff *(AREVA NP Inc)*, P. Pohl, R. Velten, F. Wehle *(AREVA NP GmbH)*

The Effect of Pellet and Local Power Variations on PCI Margin, Y. Aleshin, C. Beard, G. Mangham, D. Mitchell, E. Malek, M. Young *(Westinghouse)*

Analysis of the Pin Power Peaking of the Hatch Unit 1 Cycle 21 Failed Fuel Assemblies, M. Asgari, T. Bahadir, D. Kropaczek *(Studsvik Scandpower)*, E. Gibson, J. Williams *(Southern Nuclear Operating Company)*

Advances in Water Reactor Fuel Technology

Fuel Performance Beyond Design – Exploring the Limits, Guido Ledergerber *(Kernkraftwerk Leibstadt KKL)*, Sima Valizadeh, Jonathan Wright, Magnus Limbäck, Lars Hallstadius *(Westinghouse)*, Didier Gavillet, Sousan Abolhassani *(PSI)*, Fumihisa Nagase, Tomoyuki Sugiyama *(JAERI)*, Wolfgang Wiesenack, Terje Tverberg *(OECD Halden Reactor Project)*

Critical Failure Strains for Incipient Crack Formation in the Oxide and Hydride Layers in the Outer Surface Region of Zircaloy Fuel Cladding Tubes, M. Nakatsuka, K. Sakamoto, T. Higuchi *(NFD)*

Advanced Material for PWR Application: AXIOM™ Cladding, G. Pan, C.J. Long, A.M. Garde, A.R. Atwood, J.P. Foster, R. J. Comstock, L. Hallstadius, D. L. Nuhfer, R. Baranwal *(Westinghouse)*

Thermal-Hydraulic and Thermo-Mechanical Assessment of Dual-Cooled Annular Fuel for PWR Application, Wang-Kee In, Chang-Hwan Shin, Dong-Seok Oh, Tae-Hyun Chun *(KAERI)*

Evaluating PWR Fuel Performance Using Vessel CFD Analysis, Zeses Karoutas, Ken Lang, Paul Joffre *(Westinghouse),* Emilio Baglietto, Robert Brewster, Eric Volpenhein *(CD Adapco)*

Examination of VVER-440 Fuel Rods During and After their Testing in the MIR Reactor under Simulated Maneuvering Conditions, A.V. Burukin, A.L. Izhutov, V.A. Ovchinnikov, D.V. Markov, G.P. Kobylyansky *(JSC SSC RIAR)*, V.V. Novikov, A.V. Medvedev, B.I. Nesterov *(JSC VNIINM)*

Innovative Fuel Design and Core Management

Advanced CheckmateSM Design for BWR Fuel Management, Magnus Kruners *(Studsvik Scandpower AB)*, Emilio Fuentes *(NextEra Energy Resources)*

Emerging Fuel Performance and Fuel Cycle Issues

Fuel Assembly Fabrication Monitoring and Inspection – 30 Years in Charge, Dan Slabu, Christian Hellwig *(Axpo AG)*

Application of OPTIMA2 Fuel to Reduce Shadow-Corrosion Induced Channel Distortion in Low Hot Excess Reactivity BWR Core Designs, John Wheeler, Peter Weggeman *(Exelon Nuclear)*, Anghel Enica *(Westinghouse Electric Company)*

Behavior of Homogeneous and Heterogeneous MOX Fuel, T. Tverberg, W. Wiesanck *(OECD Halden Reactor Project)*, S.K. Yagnik *(EPRI)*, G. Rossiter *(NNL)*

General Poster Session

A Novel Manufacturing Process of Zr-based Alloys for Nuclear Applications, Yang-Il Jung, Byoung-Kwon Choi, Hyun-Gil Kim, Dong-Jun Park, Sang-Yoon Park, Jeong-Yong Park, Yong-Hwan Jeong *(KAERI)*

Experience in Modeling LWR Fuel in MSC.MARC&MENTAT, G.V. Kulakov, B.A. Kashirin, A.A. Kosaurov, Y.V. Konovalov, A.V. Kuznetsov, A.V. Medvedev, V.V. Novikov, A.V. Vatulin *(JSC VNIINM)*

Development of Comprehensive Fuel Reliability Monitoring and Analysis Workstation: i-FRIMA (Integrated Fuel Reliability Management System), Ki-Young Kim, Sung-Tae Yang *(KHNP)*, Yong-soo Kim *(Hanyang Univ)*

LWR Fuel Power Transient Testing at SCK•CEN, M. Wéber, Ph. Benoit, Ph. Gouat, L. Vermeeren, V. Kuzminov, S. Kalcheva, E. Koonen, T. Cardinaels, M. Verwerft *(SCK•CEN)*

First Attempt to Model the Expansion Due to Compression Test using Finite Element Code COSMOSM, Martin Dostál, Mojmír Valach *(Nuclear Research Institute Řež plc)*

Development of a Welding System for the Storage Canister Used in a Hot Laboratory, Wan-June Chiu, Yaw-Hwa Shiu, Shih-Chung Cheng *(Institute of Nuclear Energy Research)*

WEDNESDAY, SEPTEMBER 29, 2010 • 8:00 A.M. - 10:00 A.M.

Fuel Reliability and Experience-I

Session Chair: Erik Mader *(EPRI)*
Grand Cypress Ballroom

8:00 a.m.
Design Reviews for Reliable Fuel Performance, Alfred Strasser *(Aquarius Services Corp.)*, Kenny Epperson *(Epperson Engineering)*, Jerry Holm *(Consultant)*, Peter Rudling *(ANT International)*

8:20 a.m.
PWR Fuel Surveillance in Spain: A Decade of Fuel Examinations, C. Muñoz-Reja, M. Quecedo *(ENUSA Industrias Avanzadas, S.A)*, J.A. Gago *(Asociación Nuclear Ascò-Vandellòs)*, M. Novo *(Centrales Nucleares Almaraz Trillo)*

8:40 a.m.
GNF Defense in Depth 2010 Update, Kevin L. Ledford, Andrew A. Lingenfelter, Robert J. Schneider, Paul E. Cantonwine, M. Nayem Jahingir, Kazuki Hida, Doug C. Crawford *(Global Nuclear Fuel)*

9:00 a.m.
How AREVA Improves Fuel Quality & Reliability: Zero Tolerance for Failure and Fuel Excellence Plan Outcomes, Thomas S. Wilkerson, John Strumpell *(AREVA NP Inc)*, Jean-Pierre Devort, Pierre Mollard *(AREVA NP)*

9:20 a.m.
Baseline Fuel Inspections of Westinghouse Fuel Products, A. Reparaz, J.L. Bradfute, M.Y. Young *(Westinghouse)*

WEDNESDAY, SEPTEMBER 29, 2010 • 10:20 A.M. - 12:15 P.M.

Fuel Reliability and Experience-II

Session Chair: Doug Crawford *(GNF)*
Grand Cypress A

10:20 a.m.
PWR Fuel Reliability and Safety Concerns in Korea, Joosuk Lee, Swengwoong Woo *(KINS)*

10:40 a.m.
Brunswick Plant Fuel Failure Reduction, John Siphers *(Progress Energy)*, Rob Schneider *(Global Nuclear Fuel)*

11:00 a.m.
Stability and Void Fraction Measurements for the ATRIUM™10XM BWR Fuel Bundle, D.W. Pruitt, K.R. Greene *(AREVA NP Inc)*, F. Wehle, R. Velten, J. Kronenberg, A. Beisiegel *(AREVA NP GmbH)*, Y.M. Farawila *(Farawila et al., Inc)*

11:20 a.m.
Post Irradiation Examination of High Burnup Assemblies in Vandellós II, Miguel Aulló, Juan M. García-Infanta *(ENUSA Industrias Avanzadas)*, David Chapin *(Westinghouse Electric Company)*, José Luis Gago, Antonio Pontejo Calvente, José Sánchez Baptista *(Asociación Nuclear Ascó-Vandellós II)*

Numerical Simulation and Testing (Fuel Technology)-III

Session Chair: Kenneth Geelhood *(PNNL)*
Grand Cypress C

10:20 a.m.
Modeling of the Fission Gas Release in LWR Fuel Using Potts Kinetic Monte Carlo Technique, Veena Tikare *(SNL)*, Pavel G. Medvedev *(INL)*

10:40 a.m.
Development of Measurement Technique of Thermal Diffusivity for Nuclear Fuels in a Hot-Laboratory, Heemoon Kim, Dae Gyu Park, Sang Ho Na, Chang Je Park, Kweon Ho Kang, Sang Bok Ahn, Woo Seog Ryu *(KAERI)*

11:00 a.m.
Development and Qualification of a System for Spent Fuel Characterization Combining Gamma Spectrometry and Neutron Measurements, Alicia Sanchez, Pedro Alvarez, Jose M. Rodero *(ENUSA Industrias Avanzadas)*

11:20 a.m.
Verification of LS-DYNA Finite Element Impact Analysis by Comparison to Test Data and Classic First Principle Calculations, Andy Langston, Victor Smith *(GNF)*

11:40 a.m.
Modeling of through-wall Defects in Fuel Cladding Based on Out-of-pile Investigation, I. Loktev *(JSC "NCCP")*

WEDNESDAY, SEPTEMBER 29, 2010 • 1:40 P.M. - 3:40 P.M.

Mixed Oxide Fuel Behavior

Session Chair: David Schrire *(VATTENFALL)*
Grand Cypress A

1:40 p.m.
Irradiation Behavior of MOX Fuel under Ultra High Burnup, N. Nakae, H. Ikehata, T. Baba, K. Kamimura *(JNES)*, H. Fujii *(MNF)*, Y. Kosaka *(NDC)*

2:00 p.m.
MOX Fuel Performance and Database Development for MOX Fuel Use in LWRs, Takayuki Ozawa, Yoshihisa Ikusawa *(JAEA)*

2:20 p.m.
Hot Cell Examination of Weapons-Grade MOX Fuel, Kevin McCoy *(AREVA Federal Services)*, Patrick Blanpain *(AREVA)*, Robert Morris, Bruce Bevard *(ORNL)*

2:40 p.m.
Code Analyses Supporting PIE of Weapons-Grade MOX Fuel, L.J. Ott, B.B. Bevard, D.J. Spellman *(ORNL)*, Kevin McCoy *(AREVA Federal Services)*

3:00 p.m.
MOX in Reactors: Present and Future, Marc Arslan, Jean Pierre Gros, Aurelie Niquille, Alexis Marincic *(AREVA NC)*

Innovative Fuel Design and Core Management-I

Session Chair: Yang-Hyun Koo *(KAERI)*
Grand Cypress C

1:40 p.m.
Mechanical Design and Integrity of the Currently Designed Structural Components of a Dual Cooled Fuel, Hyung-Kyu Kim, Kang-Hee Lee, Young-Ho Lee, Jae-Yong Kim, Kyung-Ho Yoon, Heung-Seok Kang *(KAERI)*

2:00 p.m.
The Fuel Rod - Design and Evaluation from Expert's Point of View, Steffen Kaefer, Dietmar Goeck *(TUEV SUED)*

2:20 p.m.
Study of the Impact of the AP1000™ Upper Internals Design on Fuel Performance, Michael E. Conner, Zeses Karoutas, Steven A. Beltz, Yiban Xu, Kun Yuan, Milorad B. Dzodzo, Teresa A. Bissett *(Westinghouse)*, Ching-Chang Chieng, Min-Tsung Kao, Chung-Yun Wu *(National Tsing Hua Univ)*

2:40 p.m.
Computational Fluid Dynamics Analysis of AP1000™ Reactor Vessel Upper Plenum and Top Core Slab, Yiban Xu, Kun Yuan, Milorad B. Dzodzo, Michael E. Conner, Steve A. Beltz, Sumit Ray, Teresa A. Bissett *(Westinghouse)*, Ching-Chang Chieng, Min-Tsung Kao, Chung-Yun Wu *(National Tsing Hua Univ)*

3:00 p.m.
Burn-up and Neutronic Analysis of VVER-1000 Nuclear Reactor, K. Hadad *(Shiraz Univ, Univ of Arizona)*, M. Yousefnia *(Shiraz Univ)*

WEDNESDAY, SEPTEMBER 29, 2010 • 4:00 P.M. - 6:00 P.M.

Modeling of RIA Behavior

Session Chair: Steve Shelton *(GEH)*
Grand Cypress A

4:00 p.m.
Modeling High Burnup RIA Tests with FRAPTRAN, Ken Geelhood *(PNNL)*

4:20 p.m.
Advanced Models for the Simulation of Post-DNB Phenomena during Reactivity Initiated Accidents with SCANAIR, Alain Moal *(IRSN)*

4:40 p.m.
1D and 3D Modeling of PCMI during a RIA with ALCYONE V1.1, J. Sercombe, E. Fédérici, M. Le Saux, B. Michel, C. Poussard *(CEA)*

5:00 p.m.
Analysis of High Burnup Fuel Failures at Low Temperatures in RIA using CSED, Wenfeng Liu, John Alvis, Robert Montgomery *(ANATECH Corp)*, Ken Yueh *(EPRI)*

Innovative Fuel Design and Core Management-II

Session Chair: Anghel Enica *(Westinghouse)*
Grand Cypress C

4:00 p.m.
LWR Hydride Fuel Rod Irradiation, K.A. Terrani, M. Balooch *(Univ of California Berkeley)*, W. Siekhaus *(LLNL)*, D.R. Olander *(Univ of California Berkeley)*

4:20 p.m.
Innovative MOX Fuels: Advanced MIMAS-MOX and (U,Pu)O2 MOX and (Th,Pu)O2 MOX, Thomas Cardinaels, Marc Verwerft *(SCK•CEN)*, Didier Haas *(EC, JRC)*, Joseph Somers, Grégoire Toury *(EC, JRC, ITU)*

4:40 p.m.
Clinton Power Station - Bulk Isotope Generation, Michael Reitmeyer *(Exelon Generation)*, Bradley Bloomquist *(GEH)*, Michael Downs *(Global Nuclear Fuels)*, Timothy Byam, Douglas Wise *(Exelon Generation)*

5:00 p.m.
Quantification of the Improved Protection Provided by Additive Fuel in Challenging Operational Environments, Mason D. Makovicka, Myles L. Connor, Nayem Jahingir, Hartney Yeager *(Global Nuclear Fuel)*

5:20 p.m.
Advanced Checkmate℠ Design for BWR Fuel Management, Magnus Kruners *(Studsvik Scandpower AB)*, Emilio Fuentes *(NextEra Energy Resources)*

Fuel Cladding Integrity Challenges by Foreign Material

Thursday, September 30, 2010
8:00 A.M. - 12:00 P.M.
Location: Lakeside Casita

Facilitated by EPRI

Topics for this workshop include:

- Threat and scope foreign material plays on fuel cladding integrity.
- Sources of foreign material that threaten fuel integrity and research activities designed to reduce the threat.
- Actions taken by utilities to reduce incidents of fuel failures by foreign material.
- New fuel designs that block debris from contacting fuel cladding.
- LOCA susceptibility concerns related to advanced fuel filter designs.

In 2006 a large-scale effort began in the U.S. to eliminate LWR fuel failures by 2010 ("Zero-by-Ten Initiative"). The more traditional fuel failure mechanisms, such as pellet-cladding interaction (PCI), grid-to-rod fretting and crud-induced corrosion are being addressed through the use of new fuel integrity guidelines and concerted effort by utilities and fuel vendors to improve fuel integrity. An equally important failure mechanism that is also being addressed is fuel cladding failure by foreign material, or debris. This failure mechanism afflicts all LWR designs.

This is the first session at an ANS LWR Fuel Performance Meeting/Top Fuel/WRFPM Conference devoted to reviewing fuel failures by foreign material. It is intended to communicate the scope of the issue, as well as the types of activities being conducted by utilities, fuel vendors and researchers to eliminate cladding failures by debris. Attendees will be encouraged to assess what they have learned during the session and review with their respective companies whether enough is being done to eradicate this mechanism, and if not, how their companies can improve the effort.

SCHEDULE:

08:00 Threat and scope foreign material plays on fuel cladding integrity – Scott Hawn, INPO

08:20 Sources of foreign material that threaten fuel integrity – Steve Leroux, AmerenUE

08:40 Research activities designed to reduce the threat – Lee Rogers, EPRI

09:00 Actions taken by Brunswick to reduce incidents of fuel failures by foreign material – Greg Westmoreland, Progress Energy

09:20 Actions taken by utilities to reduce incidents of fuel failures by foreign material –Utility FME Coordinator

09:40 Break

10:00 New fuel designs that block debris from contacting fuel cladding – Rob Schneider, GNF

10:20 New fuel designs that block debris from contacting fuel cladding - Jeremy King, Westinghouse

10:40 New fuel designs that block debris from contacting fuel cladding - Norm Garner, AREVA

11:00 LOCA susceptibility concerns related to advanced fuel filter designs – David Schrire, Vattenfall

11:30 Panel Discussion - Jim Lemons (TVA), Progress Energy (TBD), Rob Schneider (GNF), Jeff Deshon (EPRI)

12:00 Adjourn