OECD Nuclear Energy Agency (NEA)
Committee on the Safety of Nuclear Installations (CSNI)
Working Group on Fuel Safety (WGFS)

OECD/NEA Workshop

Nuclear Fuel Behaviour during Reactivity Initiated Accidents

Organised in cooperation with
Institut de Radioprotection et de Sûreté Nucléaire (IRSN)

Paris, France, September 9 – 11, 2009
OECD Headquarters; 2, Rue André Pascal – 75775 Paris, Room CC 15

Workshop Programme

On-line information is available
www.nea.fr/html/nsd/calendar.html
Wednesday, 9 September 2009

12.00 – 14.00 Registration of the participants

14.00 Opening Session
Chair: Marc Petit – Workshop Chair (IRSN, France)
Co-Chair: Toyoshi Fuketa – CSNI/WGFS Chair (JAEA, Japan)

OPENING AND WELCOME
Mr. Javier Reig, Head, Nuclear Safety Division, OECD Nuclear Energy Agency
Dr. Jean-Claude Micaelli, Director of the Major Accident Prevention Division, IRSN

14.30/a.01 NEA ACTIVITIES IN THE REACTIVITY INITIATED INCIDENTS AREA, AIMS AND STRUCTURE OF THE WORKSHOP
Radomir Rehacek (NEA, France)

14.50/a.02 THE NUCLEAR FUEL SAFETY AND THE IAEA SAFETY STANDARDS (P002)
Nicolas Tricot (IAEA, Austria)

15.15 Coffee Break

15.45/a.03 A REVIEW OF EXPERIMENTS AND COMPUTER ANALYSES ON RIAs (P025)
Lars Olof Jernkvist¹, Ali R. Massih¹, Jan In de Betou² (¹QT, ²SSM, Sweden)

16.15/a.04 CURRENT RIA-RELATED REGULATORY CRITERIA IN JAPAN AND THEIR TECHNICAL BASIS (P011)
Toyoshi Fuketa and Tomoyuki Sugiyama (JAEA, Japan)

16.45/a.05 REGULATORY ANALYSIS OF REACTIVITY TRANSIENTS (P010)
Carl Beyer¹, Paul Clifford², Ken Geelhood¹, John Voglewede² (¹PNNL, ²US NRC, USA)

17.15 Panel Session
Open discussion from the floor with all the presenters in Opening Session

18.00 The End of the First Day
Thursday, 10 September 2009

08.25  
**Session 1 – Recent experimental results and experimental technique used**

*Chair:* Motoe Suzuki (JAER, Japan)  
*Co-Chair:* Carlo Vitanza (HRP, Norway)

08.30/1.01  
MICROSTRUCTURE AND MECHANICAL PROPERTY CHANGES IN FUEL CLADDING DURING RIA-TYPE TEMPERATURE TRANSIENTS (P014)  
Fumihisa Nagase, Tomoyuki Sugiyama and Toyoshi Fuketa (JAER, Japan)

08.55/1.02  
EXPANSION-DUE-TO-COMPRESSION TEST RESULTS ON HIGH BURNUP ZIRLO CLADDING (P007)  
Manuel Quecedo¹, Jose Manuel Conde², M. Lloret¹, Jose Manuel Rey² (¹ENUSA, ²CSN, Spain)

09.20/1.03  
DUCTILITY AND FAILURE BEHAVIOUR OF BOTH UNIRRADIATED AND IRRADIATED ZIRCALOY-4 CLADDING USING PLANE STRAIN TENSILE SPECIMENS (P005)  
Sebastian Carassou¹, M. Le Saux¹, Xavier Averty¹, J.P. Pizzanelli¹, Christophe Poussard¹, Bernard Cazalis², Jean Desquines² and Christian Bernaudat³ (¹CEA Saclay, ²IRSN, ³EDF, France)

09.45  
**Coffee Break**

10.10/1.04  
DUCTILITY DEGRADATION OF HIGH BURNUP CLADDING IN PCMI-SIMULATING CONDITION (P026)  
Sun-Ki Kim, Je-Geon Bang, Dae-Ho Kim, Ik-Sung Lim, Yong-Sik Yang, Kun-Woo Song, Do-Sik Kim, Hang-Seok Seo (KAERI, Korea)

10.35/1.05  
APPLICABILITY OF NSRR ROOM/HIGH TEMPERATURE TEST RESULTS TO FUEL SAFETY EVALUATION UNDER POWER REACTOR CONDITIONS (P012)  
Tomoyuki Sugiyama, Miki Umeda, Yutaka Udagawa, H. Sasajima, Motoe Suzuki and Toyoshi Fuketa (JAER, Japan)

11.00  
**Panel Session**  
Open discussion from the floor with all the presenters in Session 1

12.00  
**Lunch Break**

13.15  
**Session 2 - Modelling and data interpretation**

*Chair:* John Voglewede (US NRC, USA)  
*Co-Chair:* Martin Zimmermann (PSI, Switzerland)

13.20/2.01  
NUMERICAL ANALYSIS AND SIMULATION OF BEHAVIOUR OF HIGH BURNUP PWR FUEL PULSE-IRRADIATED IN REACTIVITY-INITIATED ACCIDENT CONDITIONS (P013)  
Motoe Suzuki, Tomoyuki Sugiyama, Yutaka Udagawa, Fumihisa Nagase and Toyoshi Fuketa (JAER, Japan)
13.45/2.02  INFLUENCE OF INITIAL CONDITIONS ON ROD BEHAVIOUR DURING BOILING PHASE FOLLOWING A REACTIVITY INITIATED ACCIDENT (P019)  
Vincent Georgenthum¹, Tomoyuki Sugiyama² (¹ IRSN, France, ² JAEA, Japan)

14.10/2.03  APPLICATION OF THE SCANAIR CODE FOR VVER RIA CONDITIONS – BORON DILUTION ACCIDENT (P016)  
Asko Arffman¹, Alain Moal² (¹ VTT, Finland, ² IRSN, France)

14.35/2.04  ANALYSIS OF MIXED-OXIDE FUEL BEHAVIOR DURING RIA TESTS USING FALCON MOD01 (P027)  
Robert Montgomery¹, Ken Yueh², Odelli Ozer², John Alvis¹ (¹ ANATECH Corp., ² EPRI, USA)

15.00  Coffee Break

15.25  Session 3 - Code assessment  
Chair: Zoltan Hozer (FKFI, Hungary)  
Co-Chair: Robert Montgomery (EPRI, USA)

15.30/3.01  PARAMETRIC STUDY OF FUEL ROD BEHAVIOUR DURING THE RIA USING THE MODIFIED FALCON CODE (P008)  
Grigori Khvostov¹, Martin Zimmermann¹, Guido Ledergerber² (¹ PSI, ² KKL Switzerland)

15.55/3.02  MAJOR SENSITIVITIES OF MODELLING A HIGH BURNUP FUEL ROD WITH FRAPCON-3/FRAPTRAN CODES (P009)  
Maria Teresa del Barrio, Isabel Vallejo, Luis Enrique Herranz (CIEMAT, Spain)

16.20/3.03  CAPABILITIES OF TRANSURANUS CODE IN SIMULATING POWER RAMP TESTS FROM THE IFPE DATABASE (P020)  
Martina Adorni, Davide Rozzia, Alessandro Del Nevo, Francesco D’Auria (GRNSPG, Italy)

16.45  Coffee Break

17.10  Panel Session  
Open discussion from the floor with all the presenters in Session 2 and 3

18.40  The End of the Second Day
Friday, 11 September 2009

08.25  Session 4 - RIA Core analysis
Chair: Marek Stepniewski (Vattenfall, Sweden)

08.30/4.01  ANALYSIS OF PWR CONTROL ROD EJECTION ACCIDENT WITH THE COUPLED CODE SYSTEM SKETCH-INS/TRACE BY INCORPORATING PIN POWER RECONSTRUCTION MODEL  (P001)
Tetsuo Nakajima, Tomohiro Sakai (JNES, Japan)

08.50/4.03  A SURVEY OF AVAILABLE MARGIN IN A PWR RIA WITH STATISTICAL METHODS AND 3D KINETICS  (P021)
Javier Riverola, Tomas Nunez (ENUSA, Spain)

09.10  Panel Session
Open discussion from the floor with all the presenters in Session 4

09.30  Short Break

09.40  Session 5 - Revision and application of safety criteria
Chair: Jose Manuel Conde (CSN, Spain)
Co-Chair: Nicolas Waeckel (EdF, France)

09.45/5.01  EXPECTATION TO RIA CRITERIA TO BE APPLICABLE FOR FUEL UNDER HIGH DUTY  (P024)
Hajime Fujii¹, Noyomu Murakami², Satoshi Imura² (¹MNF, ²MHI, Japan)

10.10/5.02  SWISS REGULATORY RIA CRITERIA AND THE VERIFICATION PROCEDURES BY THE OPERATORS  (P006)
Andreas Gorzel (ENSI, Switzerland)

10.35/5.03  EXAMPLE OF APPLICATION OF THE IRSN APPROACH TO ASSESS SAFETY CRITERIA FOR REACTIVITY INITIATED ACCIDENTS  (P022)
Christine Sartoris, Aude Taisne, Marc Petit, Francois Barré, Olivier Marchand (IRSN, France)

10.50  Coffee Break

11.20/5.04  BURNUP-dependent RIA CRITERION FOR VVER FUEL  (P004)
Zoltan Hózer (KFKI, Hungary)

11.45/5.05  AN ANALYTICAL CRITERION TO PREVENT PCMI FUEL ROD CLADDING FAILURE DURING RIA TRANSIENTS  (P003)
Christian Bernaudat, S. Cambier, J. Guion, Serge Benjamin (EdF, France)

12.10/5.06  DEVELOPMENT OF ACCEPTANCE CRITERIA FOR SAFETY ANALYSIS OF CONTROL ROD EJECTION AND CONTROL ROD DROP ACCIDENTS USING A MECHANISTIC APPROACH  (P028)
Robert Montgomery¹, Ken Yueh², Odelli Ozer², John Alvis¹ (¹ANATECH Corp., ²EPRI, USA)
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<td>Open discussion from the floor with all the presenters in Session 5</td>
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<td><em>Radomir Rehacek</em> (NEA, France)</td>
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<td>15.30</td>
<td><strong>SESSION CHAIRS REMARKS, SUMMARY AND CONCLUSIONS</strong></td>
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<td>Motoe Suzuki, John Voglewede, Zoltan Hozer, Marek Stepniewski, Jose Manuel Conde</td>
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<td><strong>DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS</strong></td>
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