



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, D. C. 20555

June 3, 2002

The Honorable Richard A. Meserve  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Dear Chairman Meserve:

SUBJECT: SUMMARY REPORT - 492nd MEETING OF THE ADVISORY  
COMMITTEE ON REACTOR SAFEGUARDS, MAY 2-3, 2002  
AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

During its 492nd meeting, May 2-3, 2002, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports. In addition, the Committee authorized Dr. John T. Larkins, Executive Director, ACRS, to transmit the memorandum noted below:

REPORTS

The following reports were issued to Chairman Meserve, NRC, from George E. Apostolakis, Chairman, ACRS:

- PHEBUS-FP Program, dated May 8, 2002
- Core Power Uprate for the Brunswick Steam Electric Plant, Units 1 and 2, dated May 10, 2002

MEMORANDUM

The following memorandum was issued to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS:

- Proposed NRC Generic Letter 2002-XX: Control Room Envelope Habitability, dated May 7, 2002

## HIGHLIGHTS OF KEY ISSUES

### 1. Brunswick Steam Electric Plant, Units 1 & 2 Core Power Uprate

The Committee heard presentations by and held discussions with representatives of the Carolina Power and Light Company (CP&L) and the NRC staff regarding CP&L's request for a 14.3% increase in core thermal power for the Brunswick Steam Electric Plant, Units 1 and 2, and the NRC staff's associated draft safety evaluation. The CP&L uprate application is similar to power uprates approved for the Duane Arnold Energy Center, Dresden Nuclear Power Station, and Quad Cities Nuclear Power Station BWR plants. CP&L utilized the General Electric (GE) Nuclear Energy and NRC-approved Extended Power Uprate (EPU) licensing topical report framework, with a few exceptions that are consistent with those previously granted to other licensees and described in GE Topical Report NEDC-33004-P, "Constant Pressure Power Uprate" (CPPU). In an April 17, 2002, letter the Committee recommended approval of the CPPU topical report for application to BWR power increases of up to 20% of the original licensed thermal power.

#### Committee Action

The Committee issued a report on this matter, dated May 10, 2002, recommending that the application by CP&L for an increase in core thermal power from 2558 MWt to 2923 MWt be approved.

### 2. Expert Panel Recommendations on Source Terms for High Burnup and Mixed Oxide (MOX) Fuel

The Committee heard presentations by and held discussions with representatives of the Office of Nuclear Regulatory Research (RES) on the findings and recommendations of an expert panel to assess the applicability of NUREG-1465 (Accident Source Terms for Light Water Nuclear Power Plants, 1995) for high burnup and MOX fuels. The panel findings were documented in a draft report and principal findings include the following: 1) For both PWRs and BWRs the release duration from high burnup fuel should not be significantly different than that recommended in NUREG-1465 for UO<sub>2</sub> fuel irradiated to 40 GWD/Mt; 2) For MOX fuel, release parameters for the noble gases, halogens, and alkali metals would not be expected to be greatly different than that provided by NUREG-1465; 3) RES should cooperate in national and international research programs on fission product release from high burnup and MOX fuels.

The Honorable Richard A. Meserve

### Committee Action

This was an information briefing. However, the Committee plans to continue its discussion of this matter after further progress has been made by the RES staff.

#### 3. Confirmatory Research Program on High Burnup Fuel

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding the status of research being coordinated by RES on the use of high burnup fuel. The staff briefing was in response to the Committee's March 14, 2002, letter to the Executive Director for Operations, expressing concern that the Office of Nuclear Reactor Regulation (NRR) no longer supports the confirmatory research on high burnup fuel.

The Committee is concerned that the staff does not have a sufficient technical basis to show that high burnup fuel can maintain its integrity for plant power uprate conditions. The NRR staff stated that it had recently received a draft Topical Report on "Reactivity Initiated Accidents," from the Electric Power Research Institute (EPRI). The research involving high burnup fuel was given a low priority because, until the EPRI Topical Report was submitted for staff review, the staff did not have a licensing action which required such research. However, the staff is reassessing the priority of such research based, in part, on the EPRI Topical Report and other topical reports that the staff expects to receive on this matter. The staff intends to respond to the Committee's March 14, 2002, letter.

### Committee Action

This was an information briefing. However, the Committee will review the staff's response to its March 14, 2002, letter and will then determine whether further action is required.

#### 4. Reactor Fuels Subcommittee Report

Dr. Dana Powers summarized the April 10, 2002, presentation to the Reactor Fuels Subcommittee by Duke Cogema Stone and Webster, and the NRC staff regarding the Department of Energy announcement of changes to the Mixed Oxide fuel fabrication facility. The changes will cause a delay of the NRC review by about a year.

The Honorable Richard A. Meserve

Committee Action

This was an information only report and update to the full Committee of a recent subcommittee meeting.

5. Safeguards and Security Activities

In a closed session the Committee heard presentations by and held discussions with representatives of the NRC staff on the organization, structure and planned activities of the office of Nuclear Security and Incident Response as well as RES-sponsored activities in support of the NRC's current re-evaluation of safeguards and security issues.

Committee Action

The briefing was for information only. The Committee plans to continue its discussion of the NRC staff activities associated with safeguards and security during future meetings.

6. PHEBUS-FP, PHEBUS-2K AND PHEBUS-LOCA International Projects

The Committee heard presentations by and held discussions with representatives of the Institut de Radioprotection et de Surete Nucleaire (IRSN) regarding the PHEBUS-FP experimental program and plans for the PHEBUS-2K and PHEBUS-LOCA programs.

The PHEBUS-FP program is an international cooperative research program to develop experimental data for validating computer models used for severe accident analysis. The experimental work is performed at the Cadarache Centre in France. Partners in this research include the European Union, Canada, Japan, South Korea, Switzerland, and the United States. Both PHEBUS-2K and PHEBUS-LOCA are follow-on programs.

Committee Action

The Committee issued a report to Chairman Meserve, dated May 8, 2002, stating that the PHEBUS-FP program is an outstanding example of an international cooperative research program; PHEBUS-2K and PHEBUS-LOCA promise to provide pertinent data; and participation in these follow-on programs will yield important data not otherwise obtainable, but will require a long-term commitment.

### RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee considered the response from the EDO, dated April 24, 2002, to comments and recommendations included in an ACRS report dated March 14, 2002, concerning a licensee application for a core power uprate for the Clinton Power Station, Unit 1.

The Committee decided that it was satisfied with the EDO response.

- The Committee considered the response from the EDO dated April 19, 2002, to comments and recommendations included in the ACRS report dated March 14, 2002, concerning Phase 2 pre-application review for AP1000 passive plant design.

The Committee decided it was satisfied with the EDO's response.

### OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from April 10, 2002, through May 1, 2002, the following Subcommittee meetings were held:

- Reactor Fuels - April 10, 2002

The Subcommittee discussed both the Duke Cogema Stone & Webster application for construction authorization for a mixed oxide fuel fabrication facility as well as recently announced DOE changes to the application.

- Thermal-Hydraulic Phenomena - April 23, 2002

The Subcommittee reviewed the core power uprate application and associated NRC staff safety evaluation for the Brunswick Steam Electric Plant, Units 1 and 2.

- Planning and Procedures - May 1, 2002

The Subcommittee discussed proposed ACRS activities, practices, and procedures for conducting Committee business and organizational and personnel matters relating to ACRS and its staff.

The Honorable Richard A. Meserve

LIST OF MATTERS FOR THE ATTENTION OF THE EDO

- The Committee plans to review the EDO response to its March 14, 2002 letter regarding the confirmatory research program on high burnup fuel when made available and will then decide whether further action is required.
- The Committee plans to continue its discussion on source term for high burnup and MOX fuels after further progress has been made by the staff.
- The Committee would like an opportunity to review the draft final version of the NRC Generic Letter 2002-XX: Control Room Envelope Habitability after reconciliation of public comments.

PROPOSED SCHEDULE FOR THE 493rd ACRS MEETING

The Committee agreed to consider the following topics during the 493rd ACRS meeting, June 6-8, 2002:

- CRDM Cracking of Vessel Head Penetrations and Vessel Head Degradation
- Technical Assessment of Generic Safety Issue (GSI)-189, "Susceptibility of Ice Condenser and Mark III Containments to Early Failure from Hydrogen Combustion During a Severe Accident"
- Technical Assessment of GSI-168, "Environmental Qualification of Low-Voltage Instrumentation and Control Cables"
- Development of Reliability/Availability Performance Indicators and Industry Trends
- Technical and Policy Issues Related to Advanced Reactors
- Proposed Rulemaking to Endorse National Fire Protection Association (NFPA) 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants"
- Generic Resolution of Voids in the Concrete Containment
- Format and Content of the 2003 ACRS Report on the NRC Safety Research Program

Sincerely,



George E. Apostolakis  
Chairman

**CERTIFIED**

Date Issued: 5/29/2002  
Date Certified: 6/10/2002

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- VI. Safeguards and Security Activities (Open)
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  - B. Report on the Meeting of the Planning and Procedures Subcommittee Held on May 1, 2002 (Open)
  - C. Future Meeting Agenda

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## REPORTS

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- PHEBUS-FP Program, dated May 8, 2002
- Core Power Uprate for the Brunswick Steam Electric Plant, Units 1 and 2, dated May 10, 2002

## MEMORANDUM

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- Proposed NRC Generic Letter 2002-XX: Control Room Envelope Habitability, dated May 7, 2002

## APPENDICES

- I. *Federal Register Notice*
- II. Meeting Schedule and Outline
- III. Attendees
- IV. Future Agenda and Subcommittee Activities
- V. List of Documents Provided to the Committee

**CERTIFIED**

MINUTES OF THE 492nd MEETING OF THE  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
MAY 2-4, 2002  
ROCKVILLE, MARYLAND

The 492nd meeting of the Advisory Committee on Reactor Safeguards (ACRS) was held in Conference Room 2B3, Two White Flint North Building, Rockville, Maryland, on May 2-4, 2002. Notice of this meeting was published in the *Federal Register* on April 24, 2002 (65 FR 20185) (Appendix I). The purpose of this meeting was to discuss and take appropriate action on the items listed in the meeting schedule and outline (Appendix II). The meeting was open to public attendance. There were no written statements or requests for time to make oral statements from members of the public regarding the meeting.

A transcript of selected portions of the meeting is available in the NRC Public Document Room at the One White Flint North Building, Mail Stop 1F-15, Rockville, MD, 20852-2738. [Copies of the transcript are available for purchase from Neal R. Gross and Co., Inc., 1323 Rhode Island Avenue, NW, Washington, DC 20005-3701, and on the ACRS/ACNW Web page at ([www.NRC.gov/ACRS/ACNW](http://www.NRC.gov/ACRS/ACNW)).]

ATTENDEES

ACRS Members: ACRS Members: Dr. George Apostolakis (Chairman), Dr. Mario V. Bonaca (Vice Chairman), Dr. F. Peter Ford, Dr. Thomas S. Kress, Mr. Graham M. Leitch, Dr. Dana A. Powers, Dr. Victor H. Ransom, Mr. Stephen L. Rosen, Dr. William J. Shack, Mr. John D. Sieber, and Dr. Graham B. Wallis. For a list of other attendees, see Appendix III.

I. Chairman's Report (Open)

[Note: Dr. John T. Larkins was the Designated Federal Official for this portion of the meeting.]

Dr. George E. Apostolakis, Committee Chairman, convened the meeting at 8:30 a.m. and reviewed the schedule for the meeting. He summarized the agenda topics for this meeting and discussed the administrative items for consideration by the full Committee.

II. Brunswick Steam Electric Plant, Units 1 & 2 Core Power Uprate (Open)

[Note: Mr. Paul A. Boehnert was the Designated Federal Official for this portion of the meeting.]

Dr. Wallis, cognizant ACRS Member for this issue, introduced the topic to the Committee. He noted that this power uprate request is similar to the boiling water reactor (BWR) power uprate requests that the Committee has reviewed in the recent past.

Drs. F. P. Ford and V. Ransom declared themselves in conflict of interest in the review of this matter.

Carolina Power and Light (CP&L) Company Presentation (Open/Closed)

Representatives of CP&L discussed the following topics relative to the CP&L application for a core power uprate request for the Brunswick Steam Electric Plant (BSEP), Units 1 & 2:

1. Overview
  - Plant Modifications for Uprate
  - Control of Phase I Operations
  - Engineering Licensing Topical Report (ELTR) Exceptions
  - Key BSEP Differences from other BWR Uprate Submittals
  - Impact on Plant Margins
2. Core Considerations
  - Fuel/Core Design
  - Fuel/Event Response for ATWS & Power Excursions
  - Fuel Discharge Limits
  - Stability Monitor/Instability Avoidance(Closed)<sup>1</sup>
  - Emergency Core Cooling System (ECCS) Analysis (Closed)
  - Transient Analyses (Closed)
3. Materials Issues
4. Containment Response
5. Response to Questions
  - PRA Results
  - Feedline/Recirculation Line Break Analysis

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<sup>1</sup> The meeting was closed to discuss GE Nuclear Energy proprietary information.

- Appendix R Peak Cladding Temperature (PCT) Evaluation

## 6. Conclusion

The BSEP reactors are BWR/4 Mark 1 units, originally licensed to a power level of 2436 MWt. A 5% power uprate to 2558 MWt was approved by the NRC in 1996. The requested power uprate (14.3%, to 2923 MWt) is similar to those already approved for the Duane Arnold Energy Center, the Dresden Nuclear Power Station, and the Quad Cities Nuclear Power Station. The CP&L application follows the General Electric (GE) Nuclear Energy and NRC-approved ELTR1 and ELTR2 extended power uprate (EPU) licensing topical report framework, with a few exceptions that are consistent with those previously granted to other applicants and described in GE topical report NEDC-33004P, "Constant Pressure Power Uprate" (CPPU).

In response to Committee Members' questions, the following was noted:

- In response to Mr. Sieber, CP&L noted that the standby liquid control (SLC) system requires modification, given use of the GE 14 fuel type. The degree of change is optional. While CP&L has committed to the use of enriched boron which will allow the plant to meet ATWS shutdown requirements, and with the use of one (of two available) SLC pump, this requirement can also be met with the use of two pumps at the currently used boron enrichment level. CP&L also plans to change out the SLC relief valves which will gain approximately 50 psig in margin to opening.
- In response to Mr. Rosen, NRR said that it is developing formal criteria pursuant to a staff evaluation of the need for an uprated plant to perform large transient testing. This criteria should be available within a couple of months.
- Dr. Bonaca asked if CP&L performed an uncertainty analysis for their PRA results. CP&L said that they did not.

### NRC Staff Presentation

Representatives of the Office of Nuclear Reactor Regulation (NRR) made a brief presentation regarding their review of the BSEP core power uprate request. Topics discussed included: scope and depth of staff reviews, ATWS, and the SLC System. NRR also provided a response to the issue of the potential for damage to the reactor coolant system (RCS) internals, given a break of the feedwater or recirculation lines. NRR found the power uprate application acceptable, given that the analyses are based on NRC-approved analytical methods and codes, an on-site audit confirmed

compliance with staff-approved methods, and the safety analysis report is consistent with NRC-accepted guidelines and generic evaluations.

In response to Dr. Wallis, NRR said that it did not perform any independent calculations to verify the applicant's analytical methods. Dr. Kress asked if the staff evaluated the late containment failure probability for this applicant. Mr. Harrison, NRR, said that the staff did not review this matter. Mr. Harrison also said that the staff is evaluating the need to address late containment failure probability vis-a-vis Regulatory Guide 1.174. Mr. Rosen urged the staff to continue its audits of licensees seeking power uprates. NRR (R. Caruso) indicated that the staff does intend to continue this activity. In response to Mr. Leitch, NRR said that it is looking to enhance the efficiency of future power uprate reviews with the goal of decreasing staff effort and overall review time.

#### Committee Action

The Committee issued a report to Chairman Meserve on this matter, dated May 10, 2002. The Committee's report recommended that the CP&L application for a core power increase for the BSEP, Units 1 & 2 be approved.

#### III. Expert Panel Recommendations on Source Term for High Burnup and Mixed Oxide (MOX) Fuel (Open)

[Note: Mr. Sam Duraiswamy was the Designated Federal Official and Mr. August W. Cronenberg was the cognizant staff engineer for this portion of the meeting.]

Dr. Mario V. Bonaca, cognizant ACRS member for this briefing, introduced the topic to the Committee. He stated that the purpose of the meeting was to review the findings and observations of an expert panel, convened by the Office of Nuclear Regulatory Research (RES), to assess the applicability of the NUREG-1465 (Accident Source Terms for LWR Power Plants) to high-burnup and MOX fuels. Dr. Bonaca noted that two ACRS members, Dr. Dana Powers and Dr. Tom Kress, were members of the expert panel and thus by ACRS bylaws must recuse themselves from any potential findings of the Committee, but are not prohibited from providing the Committee with factual information on the subject. Dr. Bonaca stated that the staff had not requested a letter on the subject, and that this was an information briefing only.

#### NRC Staff Presentation

Mr. Jason Shaperow (RES) led the discussion for the staff. He noted that the expert panel was organized by RES and met several times between September 2001 and

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February 2002 to develop recommendations for changes, if necessary, to NUREG-1465 source term, to expand its application to high burnup (> 40 GWD/Mt) and MOX fuels. The effort was undertaken because NUREG-1465 was originally developed for Zirconium-clad/UO<sub>2</sub>-fueled cores, and limited to irradiation levels of about 40 GWD/Mt. The expert panel was comprised of:

Dr. Bernard Clement, Institut de Protection et de Surete Nucleaire (IPSN)  
Dr. James Gieske, Consultant  
Dr. David E. Leaver, Polestar Applied Technology, Inc.  
Dr. Thomas S. Kress, Consultant, ACRS member  
Dr. Dana A. Powers, Sandia National Laboratories, ACRS member

Dr. Brent Boyack, Los Alamos National Laboratory, served as the panel facilitator, while Energy Research, Inc. had responsibility for the preparation of the report which had been provided to the Committee.

The specific charter of the panel was to assess the applicability of NUREG-1465 to high-burnup and MOX fuels as far as fission product chemical and physical forms, release timing, and release magnitude. The panel was also requested to provide specific recommendations for changes, if necessary, to the NUREG-1465 source term for high-burnup and MOX fuels. The outcome or result of these efforts were source term values suggested by the experts for high burnup and MOX fuels, identification by the panel of the primary areas of source term uncertainties, as well as recommendations on research needs.

Mr. Shaperow's presentation was structured as follows. He first gave a brief overview of NUREG-1465, stating the terminology "source term" is essentially the amount/type of fission product to a reactor containment building which is available for release to the environment. He noted that the earlier TID-14844 source term assumed instantaneous release which was mainly vaporized fission products, while the revised NUREG-1465 source term involved timed-release of both vapor and aerosols. At the onset, Dr. Wallis questioned Mr. Schaperow if the expert panel followed the Phenomena Identification Ranking Table PIRT process. Mr. Shaperow responded that although the panel did indeed consider governing phenomena in its deliberations, there was no formalized ranking process, as would be the case in the PIRT process. He emphasized that the effort was as its' name implied, simply an expert panel solicitation. He also noted that several members of the expert panel, were deeply involved in the original formulation of NUREG-1465. He also pointed to several applications of the revised source term including license amendments regarding the exclusion boundary and low population zones, containment isolation valve closure times, and integrated dose for qualified containment equipment. He noted that both the NUREG-1465 and the source term

recommendations of the expert panel were based on assumptions of a low-pressure accident to the RCS. Dr. Shack asked for clarification of a "low-pressure scenario," which Mr. Shaperow responded would be something like a large-break loss of coolant accident (LOCA), due to a 2" or larger primary pipe break, where the RCS would depressurize and not be able to recover.

Dr. Bonaca noted to the Committee that the expert panel indicated a more complex (greater number of release categories) release process for high-burnup (45-75 GWD/t), with about 14 different release groups, compared to only 8 groups recommended in NUREG-1465 for burnups less than 60 GWD/t. Dr. Bonaca also stated that the draft expert panel report did not adequately convey some of the complexities and uncertainties identified by establishing a valid source term for both high-burnup and MOX fuel. Mr. Schaperow responded that the draft report was still undergoing some revisions and hopefully the final report would more clearly identify the uncertainties. Dr. Kress noted that one of the principal uncertainties pertained to tellurium (Te) release for high burnup fuel was the impact of tin (Sn), a Zircaloy cladding constituent, on Te release. He noted that severe fuel damage tests at Oak Ridge National Laboratory and Idaho National Engineering Laboratory-Prompt Burst Facility indicated Te tie-up with tin, while more recent French-VERCOR tests indicate a greater Te release for high burnup fuel. Dr. Shack questioned the impact of ZIRLO and M5 claddings on Te release, indicating that one would expect greater Te release for these cladding alloys since they contain less alloying tin.

The presentation and discussion then moved to MOX issues. He noted that the expert panel was less comfortable at recommending changes to NUREG-1465 for MOX than for high-burnup UO<sub>2</sub> fuel. He noted that some of the experts would not make any recommendations regarding heavy and noble metal releases due to a lack of source term and fission product release data from MOX fuels. Mr. Schaperow closed with panel recommendations for source term research needs for high burnup fuel and MOX; indicating the primary need for fission product test data. Mr. Sieber made a final remark that if the old TID-14844 source term could be deemed conservative for high burnup and MOX fuels, then it may not be best applied for high burnup and MOX license applications. Mr. Schaperow and Dr. Kress responded that TID-14844 may be conservative for most fission products, but not all; thus, there would still be considerable uncertainty in its use when applied to MOX and high burnup fuels.

#### Committee Action

This was an information briefing. The Committee will continue to be informed regarding RES activities on high-burnup MOX and source term effects.

IV. Confirmatory Research Program on High Burnup Fuel (Open)

[Note: Dr. Medhat El-Zeftawy was the Designated Federal Official for this portion of the meeting.]

Dr. Thomas S. Kress, the cognizant ACRS Member for this issue, introduced the topic to the Committee noting that the purpose of the briefing was for the staff to clarify for the Committee the extent of research that has been, and will be, performed on the use of high burnup fuel.

Representatives of the NRC staff discussed the status of research being coordinated by RES on the use of high burnup fuel. The staff briefing was in response to the Committee's March 14, 2002, letter to the Executive Director for Operations (EDO), expressing concern that NRR is no longer requesting confirmatory research from RES on the behavior of fuel with a burnup up to 62 GWd/t and beyond.

The Committee is concerned that the staff does not have sufficient technical basis to show that high burnup fuel can maintain its integrity for power uprate conditions. The NRR staff stated that it had recently received a draft Topical Report on "Reactivity Initiated Accidents," from the Electric Power Research Institute (EPRI). The NRR staff stated that research involving high burnup fuel had been given a low priority because, until the EPRI topical report was submitted for staff review, the staff did not have a licensing action which required the subject research. However, the staff is reassessing the priority of the research based, in part, on the EPRI topical report and other topical reports that the staff expects to receive on this matter. The staff intends to respond to the Committee's March 14, 2002, letter.

The staff began the briefing by presenting an overview of research and use of high burnup fuel. The staff noted that testing has shown that rods may fail at much lower deposited energies than 280 calories per gram as previously assumed. However, the staff stated that those tests were performed using fuel rods with much higher levels of cladding damage than normally found in operating pressurized water reactors. During the above discussions the ACRS Members noted the following points:

- Dr. Powers expressed concern that, since all testing was performed with only a portion of the fuel rod, the tests would not be conducted on the most limiting segment of the fuel rod. RES staff responded that the tests were performed on portions of the fuel rod assembly taken from the upper grid spacer section. The staff noted that previous testing found that this section exhibits the worst cladding condition of the assembly and fails similar testing when fuel from other fuel assembly areas did not.

- Dr. Wallis questioned whether sufficient data regarding high burnup fuel existed for NRR to make its safety decisions. NRR recognized that there were some uncertainties and that both the 170 cal/g and 280 cal/g limits (<170 cal/g no fuel rods failures, >280 cal/g all fuel rods fail) were too high as threshold limits to prevent fuel failure and suggested that 100 cal/g could be used in the future. NRR also noted that more research would cost more money.
- NRR identified that it was reassessing the need for additional research to support its review of the EPRI topical report.
- Dr. Powers noted that there may be a need for a future Subcommittee meeting to review the topical report, possibly before Fall 2002.

#### Committee Action

This was an information briefing. The Committee will review the staff's response to the March 14, 2002, letter after it becomes available and it will determine whether further action is required.

#### V. Reactor Fuels Subcommittee Report (Open)

Dr. Dana Powers, Chairman of the Reactor Fuels Subcommittee, summarized the presentation given by Duke Cogema Stone and Webster, and the NRC staff regarding the Department of Energy announcement of changes to the Mixed Oxide fuel fabrication facility. The changes will cause a delay of the NRC review by about a year.

#### VI. Safeguards and Security Activities (Closed)

[Note: Dr. Richard P. Savio was the Designated Federal Official for this portion of the meeting.]

In a closed session, the ACRS heard presentations by representatives of the NRC staff regarding the activities being sponsored by RES in support of the NRC's current reevaluation of safeguards and security issues. Mr. Zimmerman, Director of the Office of Nuclear Security and Incident Response (NSIR) briefed the Committee on the organization, structure, and planned activities of NSIR. The briefing was for information only. The Committee plans to continue its discussion of the NRC staff activities associated with safeguards and security during future meetings.

VII. PHEBUS-FP, PHEBUS-2K, and PHEBUS-LOCA International Projects (Open)

[Note: Dr. Medhat El-Zeftawy was the Designated Federal Official for this portion of the meeting.]

The PHEBUS-FP program is an international cooperative research program designed to develop experimental data for validating computer models used for severe accident reactor analysis. The experimental work is performed at the Cadarache Centre in France. Mr. A. Mailliat and Mr. M. Schwarz of the Institut de Radioprotection et de Surete Nucleaire discussed the PHEBUS-FP project and recent plans for the PHEBUS-2K and PHEBUS-LOCA projects. Partners in this research include the European Union, Canada, Japan, South Korea, Switzerland, and the United States.

Mr. M. Schwarz stated that based on phenomenological and analytic severe accident research, there is a very active international, cooperative research underway to investigate the behavior of fission products under the conditions of severe accidents. This program is called PHEBUS-FP. The PHEBUS-FP integral tests provide insights and information on integral fuel degradation, fission product release, transport and behavior of fission products in a simplified model of a reactor coolant system and a reactor containment. The PHEBUS-FP program receives support from the NRC pursuant to a bilateral agreement.

**PHEBUS-FP Facility-** the test device consists of a bundle of 20 fuel rods and 1 control rod of one meter in height, surrounded by insulating ceramic shroud which is fitted into a pressure tube. The test device is inserted into a pressurized water loop located at the center of the 40 MW PHEBUS driver core.

The upper plenum above the test bundle is connected to a horizontal pipe simulating the hot leg and cold leg sections of the reactor coolant system, and a single inverted U-tube simulating a pressurized water reactor steam generator. The outlet of the U-tube is connected to a vessel simulating the containment building. The containment vessel includes scaled painted surfaces and a water-filled sump to investigate iodine behavior in the containment. The overall scaling factor is 1/5000 with respect to a 900 Mwe French PWR. The facility is instrumented to allow measurement of fission product release, deposition in the primary circuit and release to the containment, and behavior in the containment. Extensive pot-test examination of the test bundle, circuit and containment are carried out after each test.

**Tests-**

- FPT-0: Objectives are degradation and fission product release from fresh fuel
- FPT-1: Same as FPT-0 but with pre-irradiated fuel (23 Gwd/t)
- FPT-2: Same as FPT-1 ( different sump pH)

- FPT-3: Same as FPT-1, but with different control rod  
FPT-4: Late phase core configuration using rubble bed fuel (33 Gwd/t)  
FPT-5: Same as FPT-1 with air ingress

Before a test, test fuel from the BR3 reactor (a Belgian reactor that uses 1 meter long fuel rods) is re-irradiated in the PHEBUS-FP in-pile section for up to two weeks using the existing pressurized water loop in order to generate a sufficient inventory of short and medium-lived fission products. The loop is then slowly blown down with simultaneous reduction of the reactor power, with the in-pile section isolated from the loop. After these steps, testing may begin. During the test phase, the in-pile section is connected to a circuit and a containment vessel.

Mr. A. Mailliat stated that during the test phase, the in-pile fuel bundle is heated by fission power from the driver-core at a rate typical of a severe accident up to temperatures at which the fuel is damaged. The test bundle is pushed to conditions in which fission product release takes place, and control rods and structural materials are vaporized, producing sufficient quantities of aerosols. The fuel bundle will be damaged to the extent necessary not only to release fission products, but also to study the mechanical behavior of the fuel during extensive degradation. The released fission products are swept away by a flow of steam into the circuit that simulates the primary cooling system up to the point of pipe break. Then the flow enters the containment vessel.

Two follow-on activities are being considered for the PHEBUS-FP program. One of these, PHEBUS-2K, will examine the degradation of high burnup (70 Gwd/t) reactor fuel, degradation of MOX fuel (23 Gwd/t) and the quenching of degrading reactor fuel. The second follow-on program, PHEBUS-LOCA, would expose bundles of high burnup fuel to the conditions of design basis LOCA. It is, then, something of a counterpoint to the CABRIS tests of high burnup fuel response to reactivity insertion events also underway at the Cadarache Research Centre. These tests of fuel bundle complement the single rod, out of pile tests of high burnup fuel under LOCA conditions planned by the NRC to confirm the regulatory judgment that permitting fuel burnup to 62 Gwd/t poses no undue risk to the public.

Observations from the Committee, regarding the PHEBUS-FP program, included such a program to be an outstanding example of an international cooperative research program. The follow-on programs, PHEBUS-2K and PHEBUS-LOCA, will provide pertinent data and participation will yield important data not otherwise obtainable.

#### Committee Action

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The Committee issued a report to Chairman Meserve on this matter, dated May 8, 2002.

X. Executive Session (Open)

[Note: Dr. John T. Larkins was the Designated Federal Official for this portion of the meeting.]

A. **Reconciliation of ACRS Comments and Recommendations**

[Note: Mr. Sam Duraiswamy was the Designated Federal Official for this portion of the meeting.]

The Committee discussed the response from the NRC Executive Director for Operations (EDO) to ACRS comments and recommendations included in recent ACRS reports:

- The Committee considered the response from the EDO, dated April 24, 2002, to comments and recommendations included in an ACRS report dated March 14, 2002, concerning a licensee application for a core power uprate for the Clinton Power Station, Unit 1.

The Committee decided it was satisfied with the EDO response.

B. **Report on the Meeting of the Planning and Procedures Subcommittee** (Open)

The Committee heard a report from ACRS Chairman and the Executive Director, ACRS, regarding the Planning and Procedures Subcommittee meeting held on May 1, 2002. The following items were discussed:

Review of the Member Assignments and Priorities for ACRS Reports and Letters for the May ACRS meeting

Member assignments and priorities for ACRS reports and letters for the May ACRS meeting were discussed. Reports and letters that would benefit from additional consideration at a future ACRS meeting were also discussed.

Anticipated Workload for ACRS Members

The anticipated workload for ACRS members through July 2002 was discussed. The objectives were:

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May 2-4, 2002

- Review the reasons for the scheduling of each activity and the expected work product and to make changes, as appropriate
- Manage the members' workload for these meetings
- Plan and schedule items for ACRS discussion of topical and emerging issues

During this session, the Subcommittee discussed and developed recommendations on the items that require Committee decision.

#### Quadripartite Meeting Update

The Quadripartite meeting is scheduled to be held on October 23-25, 2002, in Berlin, Germany. ACRS participation in the discussion of safeguards and security issues has been approved by the NRC Chairman and discussed with two other Commissioners. Care should be exercised not to divulge the proposed NRC and industry activities associated with enhancing the safeguards and security programs and other sensitive issues related to this matter.

As confirmed at the April meeting, the following technical papers will be discussed at the Quadripartite meeting.

- Safety Culture and Safety Management
- Risk-Informed Regulation
- Thermal-Hydraulic Analysis and Code Issues
- Stress Corrosion Cracks in Pressure Retaining Components in Nuclear Power Plants
- Risk Analysis of Spent Fuel Storage

In connection with the Quadripartite meeting trip, it has been suggested that members engaged in the review of the MOX Fuel Fabrication Facility visit a MOX facility in France prior to the meeting in Berlin, Germany.

#### Workshop on Nuclear Regulatory Decisionmaking Process in Switzerland

The Swiss Federal Safety Inspectorate (HSK), in coordination with the International Atomic Energy Agency (IAEA), is organizing a Workshop on Nuclear Regulatory Decisionmaking Process to be held in Switzerland on October 13-16, 2002. As a result of the Planning and Procedures discussion in April, the Committee asked the Executive Director to contact them to see if the workshop on Nuclear Regulatory Decisionmaking Process couldn't be moved to October 16-18, 2002, as opposed to October 13-16. The HSK has accommodated our request. Additionally, they have included ACRS participation in 2 places in the agenda. One would be a presentation on ACRS

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Perspective on Regulatory Decisionmaking and the second is a Panel Discussion. Both are on Wednesday, October 16, 2002. At the April meeting, 3 members expressed interest in participating in this meeting. The Committee needs to confirm their participation and approve the ACRS delegates' travel to Switzerland.

#### Staff Requirements Memorandum

In a Staff Requirements Memorandum (SRM) dated December 20, 2001, resulting from the ACRS meeting with the Commission on December 5, 2001, the Commission requested the following:

- The ACRS should continue to review staff efforts on risk-based PIs and improvements to the significance determination process.
- The staff, with ACRS input, should provide recommendations for resolving, in a transparent manner, apparent conflicts and discrepancies between aspects of the revised reactor oversight process that are risk-informed (e.g., significance determination process) and those that are performance-based (e.g., performance indicators).
- The ACRS should continue its efforts to ascertain regulatory challenges for future reactor designs. The Committee should also ensure that it is prepared to review NRC staff efforts on advanced reactors in the near term, including issues related to Westinghouse's AP1000, General Atomics' gas turbine modular helium reactor, and Exelon's pebble bed modular reactor.

The members agreed to meet with the staff to discuss a plan for addressing the reactor oversight process issues in the SRM after the staff has provided its proposal, which is expected in the next few months. As recommended by the Committee, Dr. Kress developed a proposed plan to address the issues on future plant designs.

#### ACRS Meeting with the NRC Commissioners

The ACRS is scheduled to meet with the NRC Commissioners on Wednesday, July 10, 2002, between 2:00 and 4:00 p.m. The Committee proposed the following topics during the March meeting:

- Overview by the ACRS Chairman
  - Status of ACRS activities on power uprates and license renewal
- Advanced reactor designs
- Mixed Oxide Fuel Fabrication Facility

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- Risk-Informing Special Treatment Requirements of 10 CFR Part 50
- PTS reevaluation project

As a result of delays in NRC staff briefings on some of these issues (PTS reevaluation project risk acceptance criteria, Human Reliability Research Plan, and technical issues associated with PBMR), the Committee discussed whether changes should be made to the proposed list of topics. The Committee agreed to drop the topic on Human Reliability Research Plan. All other topics remain the same subject to approval by the Commission.

#### Celebration of the 500<sup>th</sup> ACRS Meeting

During the April 2002 meeting, the Committee approved the agenda for celebrating the 500<sup>th</sup> ACRS meeting (planned for March 4-5, 2003, which is also coincidental with the Committee's 50<sup>th</sup> anniversary. Proposed letters of invitation were discussed.

#### ACRS Senior Fellow Position

The vacancy announcement for the ACRS Senior Fellow position was closed and a candidate from outside the NRC was offered the position. Dr. Hossein Nourbaksh, who has a Ph.D. in chemical engineering, has accepted the offer. He is the president and founder of Energy and Environmental Science, Inc. consulting company.

The ACRS management has re-advertised to solicit qualified candidates to fill the other Fellow position. The vacancy announcement will close on May 31, 2002.

#### Joint ACRS/ACNW Workshop

The ACRS and ACNW previously agreed to hold a joint workshop on August 27 (p.m.) - 29, 2002, to discuss uncertainty and the use of formal decision analysis in the regulatory decisionmaking process.

In March 2002, Dr. Apostolakis, representing MIT, provided a seminar to the NRC staff on this topic. Subsequently, he and Dr. Garrick, ACNW, discussed the need for this workshop. They agreed to cancel the workshop.

#### Program Plan for the 2003 Research Report

The Committee has agreed to submit a comprehensive report to the Commission on the NRC Safety Research Program for 2003. Dr. Ford has the lead responsibility for

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May 2-4, 2002

coordinating the report. A Program Plan has been developed for Committee consideration.

#### Members' Travel Plans

The members used to have blanket authorizations for travel to attend meetings other than the ACRS Subcommittee and full Committee meetings. Since blanket authorizations are no longer issued, individual authorizations must be submitted each time the members travel. Therefore, the members should notify Tanya Winfrey of their travel plans in advance. This should be done by filling out the "ACRS Special Travel Endorsement form" and sent to Tanya Winfrey at least two weeks prior to the meeting.

#### Change of Dates for the June 2002 ACRS Meeting

The June ACRS meeting is currently scheduled for June 5-7, 2002. To accommodate a Fire Protection Subcommittee meeting on June 4 and Materials and Metallurgy/Plant Operations Subcommittee meeting on June 5, 2002, we propose to change the June meeting dates from June 5-7 to June 6-8 (p. 23).

#### Members' Use of Internet on NRC-Issued Computer (Reminder)

NRC Management Directive 2.7 is being revised to ensure that NRC's internet use policy and guidance for agency equipment is adhered to by all. In light of this, members are reminded, and advised, that internet use through Citrix connections to the NRC LAN can be tracked, stored and potentially audited, and use should be restricted to NRC business only.

### **C. Future Meeting Agenda**

Appendix IV summarizes the proposed items endorsed by the Committee for the 493rd ACRS Meeting, June 6-8, 2002.

The 492nd ACRS meeting was adjourned at 7:00 pm on May 3, 2002.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, D. C. 20555

June 10, 2002

MEMORANDUM TO: Sherry Meador, Technical Secretary  
Advisory Committee on Reactor Safeguards

FROM: George E. Apostolakis, Chairman  
Advisory Committee on Reactor Safeguards

SUBJECT: CERTIFIED MINUTES OF THE 492nd MEETING OF THE  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
(ACRS), MAY 2-4, 2002

I certify that based on my review of the minutes from the 492nd ACRS full Committee meeting, and to the best of my knowledge and belief, I have observed no substantive errors or omissions in the record of this proceeding subject to the comments noted below.

A handwritten signature in black ink, appearing to read "G. Apostolakis", written over a horizontal line.

George E. Apostolakis, Chairman

June 10, 2002

Date



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, D. C. 20555  
May 29, 2002

MEMORANDUM TO: ACRS Members

FROM: Sherry Meador *Sherry Meador*  
Technical Secretary

SUBJECT: PROPOSED MINUTES OF THE 492nd MEETING OF THE  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS -  
MAY 2-4, 2002

Enclosed are the proposed minutes of the 492nd meeting of the ACRS. This draft is being provided to give you an opportunity to review the record of this meeting and provide comments. Your comments will be incorporated into the final certified set of minutes as appropriate.

Attachment:  
As stated

Please submit your comments on or before August 30, 2002. Written comments should be mailed to Mike Lesar, Chief, Rules and Directives Branch, Division of Administrative Services, Office of Administration, Mail Stop T-6D59, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Comments will also be accepted by e-mail. Interested parties may e-mail their comments to [teh@nrc.gov](mailto:teh@nrc.gov). Comments will also be accepted by fax at (301) 415-5398, Attention: Tim Harris.

**Tentative Schedule:** Based on available information, and assuming DCS submits a supplemental ER in July 2002, NRC has revised the EIS schedule as follows:

Conduct Acceptance Review of DCS Supplemental Environmental Report—August 2002  
 Conduct Informational Meetings—September 2002  
 Issue Draft Environmental Impact Statement—February 2003  
 Public Comment on DEIS—February–April 2003  
 Issue Final Environmental Impact Statement—August 2003

Signed in Rockville, MD, this 17th day of April, 2002.

For the Nuclear Regulatory Commission.

**Thomas H. Essig,**

Chief, Environmental and Performance Assessment Branch, Division of Waste Management, Office of Nuclear Material Safety and Safeguards.

[FR Doc. 02-9991 Filed 4-23-02; 8:45 am]

BILLING CODE 7590-01-P

## NUCLEAR REGULATORY COMMISSION

### Advisory Committee on Reactor Safeguards; Meeting Notice

In accordance with the purposes of sections 29 and 182b. of the Atomic Energy Act (42 U.S.C. 2039, 2232b), the Advisory Committee on Reactor Safeguards (ACRS) will hold a meeting on May 2-4, 2002, in Conference Room T-2B3, 11545 Rockville Pike, Rockville, Maryland. The date of this meeting was previously published in the **Federal Register** on Monday, November 26, 2001 (66 FR 59034).

#### Thursday, May 2, 2002

**8:30 a.m.–8:35 a.m.: Opening Remarks by the ACRS Chairman (Open)**—The ACRS Chairman will make opening remarks regarding the conduct of the meeting.

**8:35 a.m.–10:30 a.m.: Brunswick Steam Electric Plant, Units 1 & 2 Core Power Uprate (Open/Closed)**—The Committee will hear presentations by

and hold discussions with representatives of the NRC staff and the Carolina Power and Light Company regarding the license amendment to increase core power level by approximately 15% for the Brunswick Steam Electric Plant, Units 1 & 2, pursuant to the General Electric Nuclear Energy Extended Power Uprate Program.

[Note: A portion of this session may be closed to discuss General Electric proprietary information.]

**10:45 a.m.–11:45 a.m.: Expert Panel Recommendations on Source Term for High Burnup and Mixed Oxide (MOX) Fuel (Open)**—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the Expert Panel's recommendations on source term for high burnup and MOX fuel and on revising NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants."

**12:45 p.m.–1:45 p.m.: Confirmatory Research Program on High Burnup Fuel (Open)**—The Committee will hear presentations by and hold discussions with representatives of the Office of Nuclear Reactor Regulation and the Office of Nuclear Regulatory Research regarding their views on the need for the confirmatory research program on high burnup fuel.

**1:45 p.m.–2:45 p.m.: Subcommittee Report (Open)**—Report by the Chairman of the ACRS Subcommittee on Reactor Fuels regarding the staff's draft Safety Evaluation Report on the Duke Cogema Stone & Webster application for a construction authorization for a proposed MOX Fuel Fabrication Facility that was discussed during the April 10, 2002 Subcommittee meeting, and other related matters.

**3 p.m.–6:15 p.m.: Safeguards and Security Activities (Closed)**—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding ongoing and planned NRC activities in the safeguards and security areas.

[Note: The entire session will be closed to protect national security information and safeguards information.]

**6:30 p.m.–7:15 p.m.: Proposed ACRS Reports (Open)**—The Committee will discuss proposed ACRS reports on matters considered during this meeting.

#### Friday, May 3, 2002

**8:30 a.m.–8:35 a.m.: Opening Remarks by the ACRS Chairman (Open)**—The ACRS Chairman will make opening remarks regarding the conduct of the meeting.

**8:35 a.m.–11:30 A.M.: PHEBUS-FP, PHEBUS-2K and PHEBUS-LOCA International Projects (Open)**—The Committee will hear presentations by and hold discussions with representatives of the French PHEBUS-FP Project regarding the recent results of the PHEBUS-FP Project and plans for the PHEBUS-2K and PHEBUS-LOCA Projects.

**11:45 a.m.–12:30 p.m.: Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open)**—The Committee will discuss the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the full Committee during future meetings. Also, it will hear a report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, and organizational and personnel matters relating to the ACRS.

**1:30 p.m.–1:45 p.m.: Reconciliation of ACRS Comments and Recommendations (Open)**—The Committee will discuss the responses from the NRC Executive Director for Operations (EDO) to comments and recommendations included in recent ACRS reports and letters. The EDO responses are expected to be made available to the Committee prior to the meeting.

**1:45 p.m.–7:00 p.m.: Proposed ACRS Reports (Open)**—The Committee will discuss proposed ACRS reports.

#### Saturday, May 4, 2002

**8:30 a.m.–12:30 p.m.: Proposed ACRS Reports (Open)**—The Committee will continue its discussion of proposed ACRS reports.

**12:30 p.m.–1:00 p.m.: Miscellaneous (Open)**—The Committee will discuss matters related to the conduct of Committee activities and matters and specific issues that were not completed during previous meetings, as time and availability of information permit.

Procedures for the conduct of and participation in ACRS meetings were published in the **Federal Register** on October 3, 2001 (66 FR 50462). In accordance with those procedures, oral or written views may be presented by members of the public, including representatives of the nuclear industry. Electronic recordings will be permitted only during the open portions of the meeting and questions may be asked only by members of the Committee, its consultants, and staff. Persons desiring to make oral statements should notify Dr. Sher Bahadur, ACRS, five days before the meeting, if possible, so that appropriate arrangements can be made to allow necessary time during the meeting for such statements. Use of still,

motion picture, and television cameras during the meeting may be limited to selected portions of the meeting as determined by the Chairman.

Information regarding the time to be set aside for this purpose may be obtained by contacting Dr. Sher Bahadur prior to the meeting. In view of the possibility that the schedule for ACRS meetings may be adjusted by the Chairman as necessary to facilitate the conduct of the meeting, persons planning to attend should check with Dr. Sher Bahadur if such rescheduling would result in major inconvenience.

In accordance with Subsection 10(d) Public Law 92-463, I have determined that it is necessary to close portions of this meeting noted above to discuss proprietary information per 5 U.S.C. 552b(c)(4), to protect national security information per 5 U.S.C. 552b(c)(1), and to protect safeguards information per 5 U.S.C. 552b(c)(3).

Further information regarding topics to be discussed, whether the meeting has been canceled or rescheduled, the Chairman's ruling on requests for the opportunity to present oral statements, and the time allotted therefor can be obtained by contacting Dr. Sher Bahadur (telephone 301-415-0138), between 7:30 a.m. and 4:15 p.m., EDT.

ACRS meeting agenda, meeting transcripts, and letter reports are available through the NRC Public Document Room at [pdr@nrc.gov](mailto:pdr@nrc.gov), or by calling the PDR at 1-800-397-4209, or from the Publicly Available Records System (PARS) component of NRC's document system (ADAMS) which is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html>.

Videoteleconferencing service is available for observing open sessions of ACRS meetings. Those wishing to use this service for observing ACRS meetings should contact Mr. Theron Brown, ACRS Audio Visual Technician (301-415-8066), between 7:30 a.m. and 3:45 p.m., EDT, at least 10 days before the meeting to ensure the availability of this service. Individuals or organizations requesting this service will be responsible for telephone line charges and for providing the equipment and facilities that they use to establish the videoteleconferencing link. The availability of videoteleconferencing services is not guaranteed.

Dated: April 18, 2002.

Andrew L. Bates,

Advisory Committee Management Officer.

[FR Doc. 02-9993 Filed 4-23-02; 8:45 am]

BILLING CODE 7590-01-P

## NUCLEAR REGULATORY COMMISSION

### Report to Congress on Abnormal Occurrences Fiscal Year 2001 Dissemination of Information

Section 208 of the Energy Reorganization Act of 1974 (Pub. L. 93-438) identifies an abnormal occurrence (AO) as an unscheduled incident or event that the U.S. Nuclear Regulatory Commission (NRC) determines is significant from the standpoint of public health or safety. The Federal Reports Elimination and Sunset Act of 1995 (Pub. L. 104-66) requires that AOs be reported to Congress annually. During fiscal year 2001, two events, one at a facility licensed by the NRC and the other at a facility licensed by an Agreement State were determined to be AOs. These events are discussed below. As required by Section 208, the discussion for each event includes the date and place, the nature and probable consequences, the cause or causes, and the action taken to prevent recurrence. Each event is also being described in NUREG-0090, Vol. 24, "Report to Congress on Abnormal Occurrences, Fiscal Year 2001." This report will be available electronically at the NRC Web site <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/>.

#### Nuclear Power Plants

None of the events that occurred at U.S. nuclear power plants during this reporting period was significant enough to be reported as an AO.

#### Fuel Cycle Facilities (Other Than Nuclear Power Plants)

None of the events that occurred at fuel cycle facilities during this reporting period was significant enough to be reported as an AO.

#### Other NRC Licensees (Industrial Radiographers, Medical Institutions, etc.)

##### 01-1 Occupational Overexposure at Southeast Missouri State University in Cape Girardeau, Missouri

**Date and Place**—June 13-16, 2000, Southeast Missouri State University (the university), Cape Girardeau, Missouri. The information available to the staff prior to the publication of the FY 2000 report was not sufficient to determine if this event met the AO criteria.

**Nature and Probable Consequences**—In 1970, the university was licensed by the Atomic Energy Commission, NRC's predecessor, to possess and use up to 185 megabecquerel (MBq) [5 millicurie (5 mCi)] of americium-241 (Am-241) in unsealed form. The authorized user of

the Am-241 died in 1980. In 1991, the university requested and received an amendment to its NRC license to remove authorization to possess and use certain radionuclides, including Am-241. The university disposed of some radionuclides in its possession but inadvertently kept the unsealed Am-241.

On February 16, 2000, a routine NRC inspection at the university found that the radiation program had deteriorated significantly. Specifically, since August 1, 1999, the university had been without a radiation safety officer (RSO), and the university officials were not sure whether they had radioactive materials in their possession or what materials they were authorized to possess. They did not know the general terms and conditions of their license. During the inspection, the licensee and an NRC inspector found an apparently empty vial labeled as containing 185 MBq (5 mCi) of Am-241 in a safe, located in the basement of the university, along with additional unauthorized material.

After the discovery of the unauthorized material, the university hired a consultant to characterize the material in the safe, and assess contamination in and around the area. On April 19, 2000, the consultant inventoried the contents of the safe and found elevated radiation levels in the room where the safe was located. On June 13, 2000, the consultant began to perform surveys and decontamination activities and identified loose Am-241 contamination.

Inadequate radiological surveys and poor handling techniques used by the consultant resulted in contamination in a number of areas in the basement.

On June 21, 2000, the NRC initiated a special inspection in response to a report from the university on loose Am-241 contamination. NRC surveys independently confirmed the Am-241 contamination.

The licensee restricted access to all contaminated areas, interrupted the decontamination process, and performed internal dose assessments of individuals potentially exposed to Am-241 contamination. These assessments indicated that the consultant received a calculated committed dose equivalent to the bone surface of 2630 millisievert (263 rem). The consultant has seen a doctor, had one therapeutic medical treatment, and no adverse health effects are expected. The licensee hired a second consultant to complete the decontamination process.

**Cause or Causes**—The licensee possessed radioactive material not authorized by the NRC license and failed to perform adequate radiation



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
 WASHINGTON, D.C. 20555-0001  
 April 23, 2002

REVISED  
 SCHEDULE AND OUTLINE FOR DISCUSSION  
 492<sup>nd</sup> ACRS MEETING  
 MAY 2-4, 2002

**THURSDAY, MAY 2, 2002, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH,  
 ROCKVILLE, MARYLAND**

- 1) 8:30 - 8:35 A.M. Opening Remarks by the ACRS Chairman (Open)  
 1.1) Opening statement (GEA/JTL/SD)  
 1.2) Items of current interest (GEA/SD)
- 2) 8:35 - <sup>11:00</sup>~~10:30~~ A.M. Brunswick Steam Electric Plant, Units 1 & 2 Core Power Uprate (Open/Closed) (GBW/JDS/PAB)  
 2.1) Remarks by the Subcommittee Chairman  
 2.2) Briefing by and discussions with representatives of the NRC staff and the Carolina Power and Light Company regarding the license amendment to increase core power level by approximately 15% for the Brunswick Steam Electric Plant, Units 1 & 2, pursuant to the General Electric Nuclear Energy Extended Power Uprate Program.

NOTE: A portion of this session may be closed to discuss General Electric proprietary information.

<sup>11:00 - 11:10</sup>  
~~10:30 - 10:45~~ A.M. \*\*\*BREAK\*\*\*

- 3) 10:45 - <sup>11:50</sup>~~11:45~~ A.M. Expert Panel Recommendations on Source Term for High Burnup and Mixed Oxide (MOX) Fuel (Open) (MVB/AWC/MME)  
 3.1) Remarks by the Subcommittee Chairman  
 3.2) Briefing by and discussions with representatives of the NRC staff regarding an Expert Panel's recommendations on source term for high burnup and MOX fuel and on revising NUREG-1465, "Accident Source Terms for Light Water Nuclear Power Plants."

Representatives of the nuclear industry may provide their views, as appropriate.

<sup>11:50 - 12:50</sup>  
~~11:45 - 12:45~~ P.M. \*\*\*LUNCH\*\*\*

- 4) <sup>12:50 - 2:20</sup>  
~~12:45 - 1:45~~ P.M. Confirmatory Research Program on High Burnup Fuel (Open) (TSK/TJK/MME)  
 4.1) Remarks by the Subcommittee Chairman  
 4.2) Briefing by and discussions with representatives of the Office of Nuclear Reactor Regulation and the Office of Nuclear Regulatory Research regarding their views on the need for the confirmatory research program on high burnup fuel.

- 5) <sup>2:30-2:55</sup>  
1:45 - 2:45 P.M. Subcommittee Report (Open) (DAP/MWW)  
Report by the Chairman of the ACRS Subcommittee on Reactor Fuels regarding the staff's draft Safety Evaluation Report on the Duke Cogema Stone & Webster application for a construction authorization for a proposed MOX Fuel Fabrication Facility that was discussed during the April 10, 2002 Subcommittee meeting, and other related matters.

<sup>2:55-3:25</sup>  
2:45 - 3:00 P.M. **\*\*\*BREAK\*\*\***

- 6) 3:00 - 6:15 P.M. Safeguards and Security Activities (Closed) (GEA/RPS)  
(4:30 - 4:45 P.M. BREAK) 6.1) Remarks by the Subcommittee Chairman  
6.2) Briefing by and discussions with representatives of the NRC staff regarding ongoing and planned NRC activities in the safeguards and security areas.

NOTE: The entire session will be closed to protect national security information and safeguards information.

6:15 - 6:30 P.M. **\*\*\*BREAK\*\*\***

- 7) 6:30 - 7:15 P.M. Proposed ACRS Reports (Open)  
Discussion of proposed ACRS reports on:  
7.1) Brunswick Steam Electric Plant, Units 1 & 2 Core Power Uprate (GBW/JDS/PAB)  
7.2) Expert Panel Recommendations on Source Term for High Burnup Fuel (tentative) (MVB/AWC/MME)  
7.3) Confirmatory Research Program on High Burnup Fuel (tentative) (TSK/TJK/MME)

**FRIDAY, MAY 3, 2002, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND**

- 8) 8:30 - 8:35 A.M. Opening Remarks by the ACRS Chairman (Open) (GEA/JTL/SD)
- 9) 8:35 - 11:30 A.M. PHEBUS-FP, PHEBUS-2K and PHEBUS-LOCA International Projects (Open) (DAP/MME)  
(10:00-10:15 A.M. BREAK)  
<sup>10:05-10:25</sup>  
9.1) Remarks by the Subcommittee Chairman  
9.2) Briefing by and discussions with representatives of the French PHEBUS-FP Project regarding the recent results of the PHEBUS-FP Project and plans for the PHEBUS-2K and PHEBUS-LOCA Projects.

<sup>11:40</sup>  
11:30 - 11:45 A.M. **\*\*\*BREAK\*\*\***

- 10) <sup>11:40-12:45</sup>  
11:45 - 12:30 P.M. Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open) (GEA/JTL/SD)  
10.1) Discussion of the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the full Committee during future ACRS meetings.

10.2) Report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, and organizational and personnel matters relating to the ACRS.

*12:40-*  
12:30 - 1:30 P.M.

\*\*\*LUNCH\*\*\*

- 11) 1:30 - 1:45 P.M. Reconciliation of ACRS Comments and Recommendations (Open) (GEA, et al./SD, et al.)  
Discussion of the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters.
- 12) 1:45 - 7:00 P.M. Proposed ACRS Reports (Open)  
Discussion of proposed ACRS Reports on:
- 1:40-2:45* 12.1) Brunswick Steam Electric Plant, Units 1 & 2 Core Power  
*3:00-3:50* Uprate (GBW/JDS/PAB) *Final*
- 5:30-* 12.2) Expert Panel Recommendation on Source Term for High  
Burnup Fuel (tentative) (MVB/AWC/MME)
- 12.3) Confirmatory Research Program on High Burnup Fuel  
(tentative) (TSK/TJK/MME)
- 4:00-5:30* 12.4) PHEBUS-FP, PHEBUS-2K and PHEBUS-LOCA Projects  
(DAP/MME) *Final*

**SATURDAY, MAY 4, 2002, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH,  
ROCKVILLE, MARYLAND**

- ~~13) 8:30 - 12:30 P.M. Proposed ACRS Reports (Open)  
Continue discussion of proposed ACRS reports listed under Item 12.~~
- ~~14) 12:30 - 1:00 P.M. Miscellaneous (Open) (GEA/JTL)  
Discussion of matters related to the conduct of Committee activities and matters and specific issues that were not completed during previous meetings, as time and availability of information permit.~~

**NOTE:**

- Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.
- Thirty-Five (35) copies of the presentation materials should be provided to the ACRS.

## APPENDIX III: MEETING ATTENDEES

492nd ACRS MEETING  
MAY 2-4, 2002

### NRC STAFF (May 2, 2002)

R. Landry, NRR	K. Parczewski, NRR	D. Dorman, RES
M. Shuabi, NRR	J. Wigginton, NRR	G. Holahan, NRR
R. Eckenrode, NRR	J. Shaperow, RES	T. Jensen-Otsu, RES
J. Wermiel, NRR	F. Eltawila, RES	E. Thornsbury, RES
L. B. Marsh, NRR	T. Bloomer, NMSS	N. Siu, RES
D. Harrison, NRR	J. Mitchell, RES	R. Kennelly, RES
B. Mozafari, NRR	T. Huang, NRR	D. Ross, RES
H. Berkow, NRR	J. Golla, NRR	J. Mitchell, RES
R. Caruso, NRR	T. Scarborough, NRR	C. Schultz, RES
S. Bajwa, NRR	J. Raval, NRR	R. Zimmerman, NSIR
N. Trehan, NRR	S. Weerakkody, NRR	C. Tinkler, RES
D. Thatcher, NRR	Z. Abdullahi, NRR	A. Thadani, RES
K. Manoly, NRR	T. Attard, NRR	
Y. Orechwa, NRR	E. Kendrick, NRR	
G. Bagchi, NRR	A. Levin, OCM/RAM	
A. Passarelli, NRR	S. Basu, RES	
E. Weiss, NRR	R. Tripathi, RES	
R. Pettis, NRR	A. Persinko, NMSS	
D. Terao, NRR	U. Shoop, NRR	
E. Connell, NRR	R. Lee, RES	
J. Goshen, NRR	B. Nelson, NSIR	

### ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

M. Turkal, Progress Energy	W. Slagle, Westinghouse
P. Flados, Progress Energy	J. Mallay, Framatome
M. Grantham, Progress Energy	P. Hastings, DCS
Z. Hinds, GE Nuclear	J. Mihalcik, Constellation Energy
L. Lee, Erin Engineering	C. Brinkman, Westinghouse
L. Beller, Progress Energy	
C. Gannon, Progress Energy	
D. Pappowr, GE Nuclear	
M. Williams, Progress Energy	
T. Desau, Progress Energy	
B. Wilton, Progress Energy	
G. Stramback, GE Nuclear	
J. Post, GE Nuclear	

NRC STAFF (May 3, 2002)

F. Eltawila, RES

R. Lee, RES

R. Meyer, RES

J. Rosenthal, RES

ATTENDEES FROM OTHER AGENCIES AND GENERAL PUBLIC

W. Slagle, Westinghouse



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
 WASHINGTON, D. C. 20555

May 9, 2002

**SCHEDULE AND OUTLINE FOR DISCUSSION  
 493<sup>RD</sup> ACRS MEETING  
 JUNE 6-8, 2002**

**THURSDAY, JUNE 6, 2002, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH,  
 ROCKVILLE, MARYLAND**

- 1) 8:30 - 8:35 A.M. Opening Remarks by the ACRS Chairman (Open)
  - 1.1) Opening statement (GEA/JTL/SD)
  - 1.2) Items of current interest (GEA/SD)
  
- 2) 8:35 - 10:30 A.M. CRDM Cracking of Vessel Head Penetrations and Vessel Head Degradation (Open) (FPF/MWW)
  - 2.1) Remarks by the Subcommittee Chairman
  - 2.2) Briefing by and discussions with representatives of the NRC staff regarding issues related to the investigation of circumferential cracks in PWR control rod drive mechanism (CRDM) penetration nozzles and weldments, and reactor pressure vessel head degradation at the Davis-Besse Nuclear Power Plant.

Representatives of the nuclear industry may provide their views, as appropriate.
  
- 10:30 - 10:45 A.M. **\*\*\*BREAK\*\*\***
  
- 3) 10:45 - 12:15 P.M. Technical Assessment Generic Safety Issue (GSI)-189, "Susceptibility of Ice Condenser and Mark III Containments to Early Failure from Hydrogen Combustion During a Severe Accident" (Open) (TSK/RBE/SD)
  - 3.1) Remarks by the Subcommittee Chairman
  - 3.2) Briefing by and discussions with representatives of the NRC staff regarding its technical basis and proposed recommendations for resolving GSI-189.

Representatives of the nuclear industry may provide their views, as appropriate.
  
- 12:15 - 1:15 P.M. **\*\*\*LUNCH\*\*\***
  
- 4) 1:15 - 2:15 P.M. Technical Assessment of GSI-168, Environmental Qualification of Low-Voltage Instrumentation and Control Cables (Open) (GML/TJK/SD)
  - 4.1) Remarks by the Subcommittee Chairman
  - 4.2) Briefing by and discussions with representatives of the NRC staff regarding its technical basis and proposed recommendations for resolving GSI-168.

Representatives of the nuclear industry may provide their views, as appropriate.

- 5) 2:15 - 3:30 P.M. Development of Reliability/Availability Performance Indicators and Industry Trends (Open) (MVB/AWC/MWW)
- 5.1) Remarks by the Subcommittee Chairman
  - 5.2) Briefing by and discussions with representatives of the NRC staff regarding the staff's initiatives to integrate the NRC programs for risk-based analysis of reactor operating experience into the reactor oversight process, specifically the development of reliability/availability performance indicators and industry trends.

Representatives of the nuclear industry may provide their views, as appropriate.

3:30 - 3:45 P.M. **\*\*\*BREAK\*\*\***

- 6) 3:45 - 4:45 P.M. Technical and Policy Issues Related to Advanced Reactors (Open) (TSK/MME)
- 6.1) Remarks by the Subcommittee Chairman
  - 6.2) Briefing by and discussions with representatives of the NRC staff regarding technical and policy issues related to advanced reactors.

4:45 - 5:00 P.M. **\*\*\*BREAK\*\*\***

- 7) 5:00 - 7:15 P.M. Proposed ACRS Reports (Open)  
Discussion of proposed ACRS reports on:
- 7.1) CRDM Cracking of Vessel Head Penetrations and Vessel Head Degradation (FPF/MWW)
  - 7.2) Technical Assessment of GSI-189, "Susceptibility of Ice Condenser and Mark III Containments to Early Failure from Hydrogen Combustion During a Severe Accident" (TSK/RBE/SD)
  - 7.3) Technical Assessment of Generic Safety Issue-168, "Environmental Qualification of Low-Voltage I&C Cables" (GML/TJK/SD)
  - 7.4) Development of Reliability/Availability Performance Indicators and Industry Trends (MVB/AWC/MWW)
  - 7.5) Confirmatory Research Program on High Burnup Fuel (Tentative) (TSK/TJK/MME)
  - 7.6) Technical and Policy Issues Related to Advanced Reactors (Tentative) (TSK/MME)

**FRIDAY, JUNE 7, 2002, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND**

- 8) 8:30 - 8:35 A.M. Opening Remarks by the ACRS Chairman (Open) (GEA/JTL/SD)
- 9) 8:35 - 10:00 A.M. Proposed Rulemaking to Endorse National Fire Protection Association (NFPA) 805. "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants" (Open) (SLR/RBE/SD)
- 9.1) Remarks by the Subcommittee Chairman
- 9.2) Briefing by and discussions with representatives of the NRC staff and the Nuclear Energy Institute regarding the proposed rulemaking to endorse NFPA 805 fire protection standard, and related matters.
- 10:00 - 10:15 A.M. **\*\*\*BREAK\*\*\***
- 10) 10:15 - 11:15 A.M. Generic Resolution of Voids in the Concrete Containment (Open) (MVB/RBE/SD)
- 10.1) Remarks by the Subcommittee Chairman
- 10.2) Briefing by and discussions with representatives of the NRC staff regarding the generic resolution of the issue of voids in the concrete containment walls.
- 11) 11:15 - 12:00 Noon. Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open) (GEA/JTL/SD)
- 11.1) Discussion of the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the full Committee during future ACRS meetings.
- 11.2) Report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, and organizational and personnel matters relating to the ACRS.
- 12) 12:00 - 12:15 P.M. Reconciliation of ACRS Comments and Recommendations (Open) (GEA, et al./SD, et al.)  
Discussion of the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters.
- 12:15 - 1:15 P.M. **\*\*\*LUNCH\*\*\***

- 13) 1:15 - 7:15 P.M. Proposed ACRS Reports (Open)  
Discussion of proposed ACRS Reports on:
- 13.1) CRDM Cracking of Vessel Head Penetrations and Vessel Head Degradation (FPF/MWW)
  - 13.2) Technical Assessment of GSI-189, "Susceptibility of Ice Condenser and Mark III Containments to Early Failure from Hydrogen Combustion During a Severe Accident" (TSK/RBE/SD)
  - 13.3) Technical Assessment of GSI-168, "Environmental Qualification of Low-Voltage I&C Cables" (GML/TJK/SD)
  - 13.4) Development of Reliability/Availability Performance Indicators and Industry Trends (MVB/AWC/MWW)
  - 13.5) Proposed Rulemaking to Endorse NFPA 805 Fire Protection Standard (SLR/RBE/SD)
  - 13.6) Confirmatory Research Program on High Burnup Fuel (Tentative) (TSK/TJK/MME)
  - 13.7) Technical and Policy Issues Related to Advanced Reactors (Tentative) (TSK/MME)

**SATURDAY, JUNE 8, 2002, CONFERENCE ROOM 2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND**

- 14) 8:30 - 10:00 A.M. Proposed ACRS Reports (Open)  
Continue discussion of proposed ACRS reports listed under Item 13.
- 10:00 - 10:15 A.M. **\*\*\*BREAK\*\*\***
- 15) 10:15 - 11:30 A.M. Discussion of Topics for Meeting with the NRC Commissioners (Open) (GEA, et al./JTL, et al.)  
Discussion of topics for meeting with the NRC Commissioners on July 10, 2002.
- 11:30 - 12:45 P.M. **\*\*\*WORKING LUNCH\*\*\***
- 16) 12:45 - 1:45 P.M. Format and Content of the 2003 ACRS Report on the NRC Safety Research Program (Open) (FPF/MME)
- 16.1) Remarks by the Subcommittee Chairman
  - 16.2) Discussion of the format, content, schedule, and assignments for the 2003 ACRS report to the Commission on the NRC Safety Research Program.
- 17) 1:45 - 2:45 P.M. Proposed Papers for the Quadripartite Meeting (Open) (GEA, et al./JTL, et al.)  
Discussion of proposed papers on the following:
- 17.1) Safety Culture and Safety Management (MVB/DAP)
  - 17.2) Risk-Informed Regulation (GEA/TSK)
  - 17.3) Thermal-Hydraulic Analysis and Code Issues (GBW/VHR)
  - 17.4) Stress Corrosion Cracks in Pressure Retaining Components in Nuclear Power Plants (FPF/WJS)
  - 17.5) Risk Analysis of Spent Fuel Storage (TSK/DAP)

- 18) 2:45 - 3:00 P.M. Miscellaneous (Open) (GEA/JTL)  
Discussion of matters related to the conduct of Committee activities and matters and specific issues that were not completed during previous meetings, as time and availability of information permit.

**NOTE:**

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- **Thirty-Five (35) copies of the presentation materials should be provided to the ACRS.**

APPENDIX V  
LIST OF DOCUMENTS PROVIDED TO THE COMMITTEE  
RD ACRS MEETING  
, 2002

[Note: Some documents listed below may have been provided or prepared for Committee use only. These documents must be reviewed prior to release to the public.]

MEETING HANDOUTS

AGENDA  
ITEM NO.

DOCUMENTS

- |   |  |
|---|--|
| 1 | <u>Opening Remarks by the ACRS Chairman</u><br>1. Items of Interest, dated May 2-4, 2002   |
| 2 | <u>Brunswick Steam Electric Plant, Units 1 &amp; 2 Core Power Uprate</u><br>2. Brunswick Steam Electric Plant Core Power Uprate - Additional Background Material [Handout No. 2-1] <ul style="list-style-type: none"><li>- Report from S. Banerjee, ACRS Consultant, on April 23, 2002 Meeting of ACRS T/H Phenomena Subcommittee (limited distribution-ACRS internal document)</li><li>- Report from V. Shrock, ACRS Consultant dated 4/25/02: T/H Phenomena Subcommittee Meeting on Brunswick EPU (limited distribution-ACRS internal document)</li><li>- Working Copy of Minutes of April 23, 2002 Thermal-Hydraulic Phenomena Subcommittee Meeting (Draft-Prepared for Internal Committee Use)</li></ul> 3. Brunswick Steam Electric Plant Extended Power Uprate presentation by CP&L [Viewgraphs] |
| 3 | <u>Expert Panel Recommendations on Source Term for High Burnup and Mixed Oxide (MOX) Fuel</u><br>4. Applicability of Revised Fission Product Source Term (NUREG-1465) for High Burnup and MOX Fuels presentation by J. Schaperow, RES [Viewgraphs]   |
| 4 | <u>Confirmatory Research Program on High Burnup Fuel</u><br>5. High Burnup Fuel Research and Regulatory Issues presentation by R. Caruso and R. Meyer [Viewgraphs]   |
| 9 | <u>PHEBUS-FP, PHEBUS-2K and PHEBUS-LOCA International Projects</u><br>6. The International PHEBUS-FP Programme, presentation by M. Schwarz [Viewgraphs]<br>7. IRSN Future Programme in the Phebus Facility, presentation by A. Mailliat  |

[Viewgraphs]

- 10 Future ACRS Activities/Report of the Planning and Procedures Subcommittee
  7. Future ACRS Activities/Final Draft Minutes of Planning and Procedures Subcommittee Meeting - May 1, 2002 [Handout #10.1]
  
- 11 Reconciliation of ACRS Comments and Recommendations
  8. Reconciliation of ACRS Comments and Recommendations [Handout #11.1]

MEETING NOTEBOOK CONTENTS

TAB

DOCUMENTS

- 2 Brunswick Steam Electric Plant, Units 1 & 2 Core Power Uprate
1. Table of Contents
  2. Project Status Report
  3. Memorandum from J. Zwolinski, NRR, to J. Larkins, ACRS, transmitting Draft Safety Evaluation for Brunswick Steam Electric Plant Power Uprate License Amendment Request, dated March 29, 2002 (draft predecisional)
- 3 Expert Panel Recommendations on Source Term for High Burnup and Mixed Oxide (MOX) Fuel
4. Table of Contents
  5. Proposed Schedule
  6. Status Report
  7. Memorandum to Jack Rosenthal, manager of Safety Margins & Safety Analysis Branch of RES, dated March 26, 2002, from Jason Schaperow (project manager): Transmittal of Draft Report of the Source Term Expert Panel on the Applicability of the NUREG-1465 Source Terms to High-Burnup and MOX Fuels
- 4 Confirmatory Research Program on High Burnup Fuel
8. Table of Contents
  9. Proposed Schedule
  10. Status Report
  11. Memorandum from L. J. Callan, EDO, to the Commission, dated July 6, 1998
  12. Memorandum from S. Collins, NRR, to A. Thadani, RES, dated January 31, 2002
  13. ACRS Letter dated March 14, 2002
- 9 PHEBUS-FP, PHEBUS-2K, and PHEBUS-LOCA International Projects
14. Table of Contents
  15. Proposed Schedule
  16. Status Report
  17. ISPN PHEBUS 2000 Programme Overview
  18. Applicability of Phebus FP results to severe accident safety evaluations and management measures
  19. PHEBUS-FP: a severe accident research programme for current and advanced light water reactors

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

492<sup>nd</sup> FULL COMMITTEE MEETING

May 2-4, 2002

May 2, 2002

Today's Date

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NAME

NRC ORGANIZATION

RALPH LANDRY

NRR/DSSA/SRXB

Mohammed Shauhi

NRR/DLPM

Richard Eckenrodt

NRR/DIPM/IEHB

Jared Wermiel

NRR/DSSA/SRXB

L.B. Marsh

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Donnie Harrison

NRR/DSSA/SPSB

Brenda Mozafari

NRR/DLPM

HERB BERKOW

NRR/DLPM

RALPH CARUSO

NRR/SRXB

S. Singh Baywa

NRR/DLPM/PD III

N.K. TREHAN

NRR/DE/IEIB

D Thatcher

NRR/DIPM/IEHB

KAMAL MANDLY

NRR/DG/EMEB

Yuri Oreckwa

NRR/DSSA/SRXB

Goutam Bagchi

NRR/DE

Anne Passarelli

NRR/DSSA

ERIC WEISS

NRR/DSSA/SPLB

ROBERT PETTY

NRR

David Terao

NRR/DE/EMEB

ED CONNELL

NRR/SPLB

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

492<sup>nd</sup> FULL COMMITTEE MEETING  
May 2-4, 2002

May 2, 2002  
Today's Date

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NAME

NRC ORGANIZATION

John Goshen	NRR / DRPM
K. Parozewski	NRR / DE / EMCB
Jim Wigginton	NRR / DRIP
Jason Schaperow	RES
FAROUK ELTAWILA	RES
Tammy Bloomer	NMSS / HLWB
Jocelyn Mitchell	RES
Tai Chung	NRR / DSSA / SRXB
Raf Gort	NRR / DSSA / SOLB
Thomas Scarborough	NRR / DE / EMCB
J.H. Ravel	NRR / SPUB / DSSA
S. D. Weerakkody	NRR / SPUB / PSSA
Zena Abdullahi	NRR / <del>DE</del> DSSA / SRXB
Tony Attard	NRR / DSSA / SRXB
Edward D Konduzk	NRR / DSSA / SRXB
Alan Levin	OCM / RADM
Sud Basu	RES
Raji Prasad	RES
Andrzej Sosnicko	NMSS
Umaire Subor	NRR
Richard Lee	RES



ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

492<sup>nd</sup> FULL COMMITTEE MEETING

May 2-4, 2002

Safeguards & Security  
Activities - Closed  
(3:00-6:15)

May 2, 2002  
Today's Date

NRC STAFF PLEASE SIGN IN FOR ACRS MEETING

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NAME

NRC ORGANIZATION

DAN DORMAN

RES/DET/ERAB

JENNY GALLO

ACRS / ACNW

Gary Holahan

NRR / DSSA

RICHARD SAOIO

ACRS/ACNW

Tomako Jensen-Otsu

RES/DRAA/PRAB

RICHARD MAJOR

ACRS / ACNW

Eric Thornsbury

RES/DRAA/PRAB

NATHAN SUI

RES/DRAA/PRAB

Roger M. Kennedy

RES/DET/ERAB

Denny Ross

RES

Sher Bahadur

ACRS/ACNW

HOWARD LARSON

ACRS/ACNW

VONDT. LARKINS

ACRS/ACNW

Jocelyn Mitchell

RES

Christine Schulte

RES

ROY ZIMMERMAN

NSIR

Bob Nelson

NSIR/DNS

Charles Triakler

RES/DSARE

A. THADANI

RES

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
492<sup>ND</sup> FULL COMMITTEE MEETING

May 2-4, 2002

May 2, 2001  
TODAY'S DATE

ATTENDEES - PLEASE SIGN BELOW

PLEASE PRINT

<u>NAME</u>	<u>AFFILIATION</u>
Mark A. Turkal	Progress Energy - CP&L
Paul Flados	Progress Energy - CP&L
MARK GRANTHAM	PROGRESS ENERGY - CP&L
Zarl Hinds	GE Nuclear Energy
LAWRENCE LEE	ERIN ENGINEERING
Leonard R. Beller	Progress Energy - CP&L
C.J. Gannon	Progress Energy - CP&L
DAN PAPPONE	GE NUCLEAR ENERGY
Michael S. Williams	Progress Energy - CP&L
Tom Dresser	Progress Energy - CP&L
BLANE WILTON	PROGRESS ENERGY - CP&L
Jason Post	GE Nuclear Energy
George Stramback	GE Nuclear Energy
William Slagle	Westinghouse Electric Co.
JAMES F. MALLAY	FRAMATOME AND
Peter Hastings	DCS
Joe Mihalcik	Constellation Energy Group / EBR1
Charles Brinkman	Westinghouse



