



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001**

October 22, 2012

NOTE TO: FILE

FROM: Sherry Meador, Technical Secretary **/RA/**  
Advisory Committee on Reactor Safeguards

The minutes of the subject meeting were certified on April 23, 2010 as the official record of the proceedings of that meeting.



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001**

May 1, 2012

MEMORANDUM TO: ACRS Members

FROM: Sherry Meador **/RA/**  
Technical Secretary, ACRS

SUBJECT: CERTIFICATION OF THE MEETING MINUTES FROM  
THE ADVISORY COMMITTEE ON REACTOR  
SAFEGUARDS 593<sup>rd</sup> FULL COMMITTEE MEETING  
HELD ON APRIL 12-14, 2012, IN ROCKVILLE, MARYLAND

The minutes of the subject meeting were certified on April 23, 2010 as the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment:  
As stated



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001**

April 23, 2012

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

FROM: J. Sam Armijo */RA/*  
ACRS Chairman

SUBJECT: MINUTES OF THE 593<sup>rd</sup> MEETING OF THE ADVISORY  
COMMITTEE ON REACTOR SAFEGUARDS (ACRS),  
APRIL 12-14, 2012

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting are an accurate record of the proceedings for that meeting.

OFFICE	ACRS	ACRS:RSB/Sunsi
NAME	SMeador	DWidmayer/sam
DATE	04/23/12	04/23/12

**OFFICIAL RECORD COPY**

# MINUTES OF THE 593<sup>rd</sup> MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

## ROCKVILLE, MARYLAND

The 593<sup>rd</sup> meeting of the Advisory Committee on Reactor Safeguards (ACRS) was held in Conference Room T2B1, Two White Flint North Building, 11545 Rockville Pike, Rockville, Maryland, on April 12-14, 2012. A copy of the meeting agenda is attached.

The summary report from the ACRS Chairman to the NRC Chairman contains the following information for this meeting: (1) an accurate description of each matter discussed and (2) a list of all the documents issued or approved by the Committee. A copy of the summary report is attached. The documents received by the Committee are listed in the references of each committee letter associated with this meeting.

A transcript of selected portions of the meeting is available in the NRC's public document room ([pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov) or 1-800-397-4209), or from the Publicly Available Records System (PARS) component of NRC's document system (ADAMS), or at <http://www.nrc.gov/reading-rm/doc-collections/acrs/agenda/>. The presentation slides and handouts used during the meeting are attached to these transcripts.

### ATTENDEES

#### ACRS Members

Dr. J. Sam Armijo (Chairman), Mr. John Stetkar (Vice-Chairman), Mr. Harold Ray (Member-at-Large) Dr. Said Abdel-Khalik, Dr. Sanjoy Banerjee, Mr. Charles Brown, Dr. Michael Corradini, Dr. Dana A. Powers, Dr. Joy Rempe, Dr. Michael Ryan, Dr. Stephen Schultz, Mr. Gordon Skillman, Dr. William Shack, and Mr. John Sieber. Mr. Dennis Bley did not attend this meeting.

#### ACRS Staff

E. Hackett  
C. Santos  
K. Weaver  
C. Brown  
K. Howard  
J. Lai  
M Banerjee

A list of other attendees is attached.



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 – 0001**

**AGENDA  
593<sup>rd</sup> ACRS MEETING  
April 12-14, 2012**

**THURSDAY, APRIL 12, 2012, CONFERENCE ROOM T-2B1, 11545 ROCKVILLE PIKE,  
ROCKVILLE, MD**

- 1) 8:30 AM - 8:35 AM      Opening Remarks by the ACRS Chairman (Open) (JSA/EMH)  
1.1)    Opening Statement  
1.2)    Items of Current Interest
- 2) 8:35 AM - 10:00 AM      Selected Chapters of the Safety Evaluation Report (SER) with  
Open Items Associated with the Calvert Cliffs Unit 3 Combined  
License (COL) Application (Open/Closed) (DAP/KDW)  
2.1)    Remarks by the Subcommittee Chairman  
2.2)    Briefing by and discussions with representatives of the  
         NRC staff and UniStar Nuclear Energy regarding selected  
         chapters of the NRC staff's SER with open items  
         associated with the Calvert Cliffs Unit 3 COL application.

**[NOTE: A portion of this session may be closed in order to  
discuss and protect information designated as proprietary,  
pursuant to 5 U.S.C 552b(c)(4)]**

**10:00 AM - 10:15 AM      \*\*\* BREAK \*\*\***

- 3) 10:15 AM - 11:45 AM      Spent Fuel Pool Scoping Study (Open) (JSA/CLB)  
3.1)    Remarks by the Subcommittee Chairman  
3.2)    Briefing by and discussions with representatives of the  
         NRC staff regarding the current scoping study on spent  
         fuel pools subjected to seismic events.

**11:45 AM - 12:45 PM      \*\*\* LUNCH \*\*\***

- 4) 12:45 PM - 2:15 PM      Final Safety Evaluation Report Associated with the License Renewal Application for the Columbia Generating Station (Open) (JDS/KLH)
- 4.1)    Remarks by the Subcommittee Chairman
  - 4.2)    Briefing by and discussions with representatives of the NRC staff and Energy Northwest regarding the final safety evaluation report associated with the license renewal application for the Columbia Generating Station.
- 2:15 PM - 2:30 PM      \*\*\* BREAK \*\*\***
- 5) 2:30 PM - 4:00 PM      Risk-Informed Regulatory Framework for New Reactors (Open) (JWS/JCL)
- 5.1)    Remarks by the Subcommittee Chairman
  - 5.2)    Briefing by and discussions with representatives of the NRC staff and Industry regarding a draft Commission Paper on risk-informed regulatory framework for new reactors.
- 6) 4:00 PM - 7:00 PM      Preparation of ACRS Reports (Open/Closed)
- 6.1)    Extremely Low Probability of Rupture (JSA/CLB)
  - 6.2)    Response to the January 24, 2012, EDO Letter Regarding the COL Application for Levy Nuclear Plant, Units 1 and 2 (HBR/PCW)
  - 6.3)    Selected Chapters of the SER with Open Items Associated with the Calvert Cliffs Unit 3 COL Application (DAP/KDW)
  - 6.4)    Spent Fuel Pool Scoping Study (JSA/CLB)
  - 6.5)    Final SER Associated with the License Renewal Application for the Columbia Generating Station (JDS/KLH)
  - 6.6)    Risk-Informed Regulatory Framework for New Reactors (JWS/JCL)

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**FRIDAY, APRIL 13, 2012, CONFERENCE ROOM T-2B1, 11545 ROCKVILLE PIKE, ROCKVILLE, MD**

- 7) 8:30 AM - 8:35 AM      Opening Remarks by the ACRS Chairman (Open) (JSA/EMH)

- 8) 8:35 AM - 10:00 AM      Draft Final NUREG-1921, "Fire Human Reliability Analysis (HRA) Guidelines" (Open) (JWS/JCL)
- 8.1)    Remarks by the Subcommittee Chairman
  - 8.2)    Briefing by and discussions with representatives of the NRC staff and Industry regarding draft final NUREG-1921 on fire HRA guidelines.

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- 9) 10:15 AM - 11:45 AM      Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open/Closed) (JSA/EMH)
- 9.1)    Discussion of the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the Full Committee during future ACRS meetings.
  - 9.2)    Report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, including anticipated workload and member assignments.

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- 10) 11:45 AM - 12:00 PM      Reconciliation of ACRS Comments and Recommendations (Open) (JSA/EMH/CS)
- Discussion of the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters.

**12:00 PM - 1:00 PM**

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- 11) 1:00 PM - 2:00 PM      Staff Assessment of Responses to NRC Bulletin 2011-01, "Mitigating Strategies" (Open) (SAK/MB)
- 11.1)    Remarks by the Subcommittee Chairman
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  - 12.7) Draft Final NUREG-1921, "Fire HRA Guidelines" (JWS/JCL)

There may be 15-minute breaks at some point during this activity.

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**SATURDAY, APRIL 14, 2012, CONFERENCE ROOM T-2B1, 11545 ROCKVILLE PIKE, ROCKVILLE, MARYLAND**

- 13) 8:30 AM - 11:30 AM      Preparation of ACRS Reports (Open/Closed)
- Continue discussion of the proposed ACRS reports listed under Item 12. There may be a 15 break at some point during this activity.

**[NOTE: A portion of this session may be closed in order to discuss and protect information designated as proprietary, pursuant to 5 U.S.C 552b(c)(4)]**

- 14) 11:30 AM - 12:00 PM      Miscellaneous (Open) (JSA/EMH)
- Discussion of matters related to the conduct of Committee activities and specific issues that were not completed during previous meetings, as time and availability of information permit.



**NOTES:**

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- During the meeting, phone number 301-415-7360 should be used in order to contact anyone in the ACRS Office.
- Presentation time should not exceed 50 percent of the total time allocated for a given item. The remaining 50 percent of the time is reserved for discussion.
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April 12-14, 2012**

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**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001**

May 8, 2012

The Honorable Gregory B. Jaczko  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

SUBJECT: SUMMARY REPORT – 593<sup>rd</sup> MEETING OF THE ADVISORY COMMITTEE ON  
REACTOR SAFEGUARDS, APRIL 12-14, 2012

Dear Chairman Jaczko:

During its 593<sup>rd</sup> meeting, April 12-14, 2012, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports, letters, and memoranda:

**REPORTS**

Reports to Gregory B. Jaczko, Chairman, NRC, from J. Sam Armijo, Chairman, ACRS:

- Report on the Safety Aspects of the License Renewal Application for the Columbia Generating Station, dated April 24, 2012
- Spent Fuel Pool Scoping Study, dated April 25, 2012

**LETTERS**

Letters to R. W. Borchardt, Executive Director for Operations, NRC, from J. Sam Armijo, Chairman, ACRS:

- Draft Commission Paper, "Risk-informed Regulatory Framework for New Reactors," dated April 26, 2012
- Chapters 6, 7, 15, and 18 of the Safety Evaluation Report with Open Items Associated with the Calvert Cliffs Nuclear Power Plant, Unit 3, Combined License Application, dated April 25, 2012
- Extremely Low Probability of Rupture Project, dated April 23, 2012
- Response to the January 24, 2012, EDO Letter Regarding the Progress Energy Florida Combined License Application for Levy Nuclear Plant, Units 1 and 2, dated April 25, 2012

## MEMORANDA

Memoranda to R. W. Borchardt, Executive Director for Operations, NRC, from Edwin M. Hackett, Executive Director, ACRS:

- Draft Final Revision 1 to Regulatory Guide 4.20, dated April 16, 2012
- Proposed Regulatory Guides DG-5028 and DG-1279, dated April 16, 2012
- Disposition of the Advisory Committee on Reactor Safeguards' Review of Draft 10 CFR 50.54(f) Letter on Implementation of the Near-Term Task Force Recommendations from the Fukushima Dai-ichi Event, dated April 16, 2012

## HIGHLIGHTS OF KEY ISSUES

### 1. Selected Chapters of the Safety Evaluation Report (SER) with Open Items Associated with the Review of the Calvert Cliffs Unit 3 Combined License (COL) Application

The Committee met with representatives of the NRC staff and UniStar Energy Nuclear Inc., (UniStar) to discuss the following chapters of the Safety Evaluation Report (SER) with Open Items associated with the review of the Calvert Cliffs COL application for Unit 3. Portions of Chapter 6, "Engineered Safety Features" (except for Sections 6.2.1, 6.2.2, and 6.3); Chapter 7, "Instrumentation and Controls"; Chapter 15, "Transient and Accident Analysis"; and Chapter 18, "Human Factors Engineering." Representatives of UniStar provided information on the characteristics of the Calvert Cliffs site, a general overview of the COL Information Items, and the major site-specific features of the U.S. EPR design which is referenced by the Calvert Cliffs Unit 3 COL application. The staff discussed its schedule for reviewing the COL application and summarized the number of open items in each of these SER chapters.

### Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter, dated April 25, 2012, concluding that its review of these SER chapters has not identified any issues that merit further consideration by the Committee at this time. The Committee recommended that these chapters be moved to Phase 4 of the staff's strategy for the preparation of the SER.

### 2. Spent Fuel Pool Scoping Study

The Committee met with representatives of the NRC staff to discuss the methods and approaches being used in the Office of Nuclear Regulatory Research Spent Fuel Pool Scoping Study (SFPSS). The SFPSS assesses the potential safety benefits of moving older spent nuclear fuel stored in the spent fuel pools to dry cask storage systems in an expedited manner. Staff was tasked with developing updated information on key aspects of potential spent fuel pool



accident consequences on an aggressive 1-year schedule. The staff was directed to move expeditiously, but to also conduct work in a technically rigorous manner, using state-of-the-art tools. During the briefing the staff discussed the seismic methods for the SFPSS since seismic hazard has been considered a key piece of overall spent fuel risk. Also, structural methods, scenario delineation, accident progression, and consequences analysis were discussed. Depending on the results obtained from this study, additional work might be appropriate to obtain a more holistic answer on the path forward on this issue.

A member of the public provided comments on spent fuel pool Zircaloy-fire research.

#### Committee Action

The Committee issued a report to the NRC Chairman on this matter, dated April 25, 2012, concluding that (1) the study is being performed in an organized and systematic manner, using modern NRC codes to evaluate the change in consequences from seismically induced spent fuel pool accidents with high and low-density loading; (2) the study consists of a detailed deterministic analysis of the consequences of a severe seismic event on a spent fuel pool at a single boiling water reactor site; and (3) the study will contribute to the technical basis for making decisions regarding expedited transfer of older irradiated spent nuclear fuel from spent fuel pools.

Additional comments on this report were provided by ACRS Members J. Sam Armijo, Michael T. Ryan, Stephen P. Schultz, and Gordon R. Skillman.

3. Final Safety Evaluation Report Associated with the License Renewal Application for the Columbia Generating Station

#### Committee Action

The Committee issued a report to the NRC Chairman on this matter, dated April 24, 2012, concluding that the programs established and committed to by the applicant provide reasonable assurance that the Columbia Generating Station can be operated in accordance with its current licensing basis without undue risk to the health and safety of the public. The Committee recommended that the Energy Northwest application for the renewal of the operating license for the Columbia Generating Station be approved.

#### 4. Draft Commission Paper, "Risk-informed Regulatory Framework for New Reactors"

The Committee met with representatives of the NRC staff to discuss the draft Commission Paper in response to the Staff Requirements Memorandum (SRM) of March 2, 2011, on SECY-10-0121, "Modifying the Risk-informed Regulatory Guidance for New Reactors." The staff discussed the results of the tabletop exercises conducted with the industry from May to November 2011 and presented the recommendations stated in the draft Commission paper.

For the Tier 2 change process, the staff recommends Option 1(B) to address the potential gap in the change process. By adopting this option, changes affecting non-ex-vessel severe accident design features would be evaluated against criteria more appropriate for severe accidents. Having sufficient detail on all key severe accident features in Tier 1 would preclude major plant changes that could remove this equipment without prior NRC approval.

In discussing the transition from large release frequency (LRF) to large early release frequency (LERF), the staff recommends Option 2(C). This option harmonizes the risk-informed applications for the new reactors consistent with the risk metrics used by the currently operating fleet. Moreover, this option does not introduce confusion and create burden on licensees as would be the case if both LRF and LERF were used going forward. The staff believes that adding a reference to containment performance for new reactors in Regulatory Guide (RG) 1.174 per SECY-90-016 and SECY-93-087 is appropriate and entirely consistent with established Commission policy.

For the Reactor Oversight Process (ROP), the staff recommends Option 3(B). The staff would work with internal and external stakeholders to formulate the process changes as necessary to provide for an appropriate regulatory response for new reactor applications. The staff would provide a paper to the Commission with its proposed ROP guidance changes at least one year prior to their scheduled implementation.

#### Committee Action

The Committee issued a letter to the EDO on this matter dated April 26, 2012, concurring with the staff's recommendations of Options 1(B) and 2(C). The Committee also made the following recommendations:

- Approvals for the implementation of risk-informed licensing applications that address structures, systems, and components which do not have a unique design or different function from those in currently operating reactors should not require the compilation of additional new reactor operating experience as a prerequisite.
- The staff should assess what effort is necessary to ensure that the scope and level of detail in the Level 2 offsite release categories and Level 3 consequence categories from the evolving consensus PRA standards and their supporting methods are adequate to support metrics that address aspects of societal risk.
- A fourth Option 3(D) should be developed for Commission consideration with regard to risk significance determinations to support the ROP and other risk-informed applications. That option should employ relative measures of the change in risk as a metric for safety significance, rather than absolute measures. Use of these relative measures should also be clarified in an update to Regulatory Guide 1.174.

5. Draft Final NUREG-1921, "Fire Human Reliability Analysis (HRA) Guidelines"

The Committee met with representatives of the NRC staff and Electric Power Research Institute (EPRI) to discuss the draft final report on fire HRA guidelines. This report is the result of the joint effort by EPRI and the NRC. The staff discussed the background, challenges, and applications of the report. This report reflects a state-of-the-art fire HRA approach. It offers fire HRA practitioners specific guidance and relates the HRA process to fire PRA development, which is typically performed in parallel. This report builds on information documented in NUREG/CR-6850 and addresses the performance of HRA in a manner intended to satisfy the requirements of the combined PRA Standard. This fire HRA methodology is intended to provide an in-depth, realistic way to account for the key fire-induced influencing factors that impact human actions needed to prevent core damage or large early releases. It is anticipated that further improvements will be identified through the development of fire PRAs and through the application of these methods and guidelines, such as during the transition to a performance-based approach under National Fire Protection Association (NFPA) Standard 805.

The EPRI representative noted that their focus has been on ensuring that the guidance meets the technical needs of users and ensuring that adequate review, testing, and trial application are performed. Important attributes of the report's technical approach were discussed including addressing the range of fire response strategies in place at nuclear plants, coordinating with development of actual fire PRA models, the ability to produce useful insights, and seeking consistency with HRA methodology for internal events.

Advances from the development of the fire HRA guidelines were also discussed. The presenters concluded that the report is a comprehensive, useful guidance for fire HRA.

### Committee Action

The Committee plans to consider a letter on this matter during its May 10-12, 2012, meeting.

#### 6. Staff Assessment of Responses to NRC Bulletin 2011-01, "Mitigating Strategies"

The Committee met with representatives of the NRC staff regarding their review and analysis of licensees' responses to Bulletin 2011-01, "Mitigating Strategies." This bulletin was issued to obtain a comprehensive verification of licensees' compliance with the regulatory requirements of 10 CFR 50.54(hh)(2) regarding mitigative measures. The staff noted that all licensees verified compliance with 10 CFR 50.54(hh)(2). The staff review of the responses and dialog with the industry identified areas for improvement. The staff also noted that the recent emergency planning rulemaking would require licensees to undertake exercises/drills to verify compliance with 50.54(hh)(2). The members asked about licensees' arrangements to bring in outside equipment to the plant after a significant event and whether licensees are providing adequate training on how to operate the additional equipment.

### Committee Action

This was an information briefing. No Committee action was necessary.

#### 7. Draft Final Regulatory Guide 4.20

The Committee considered draft final Revision 1 to Regulatory Guide 4.20, "Constraint on Releases of Airborne Radioactive Materials to the Environment for Licensees other than Power Reactors," and decided not to review it. The Committee has no objection to the staff's proposal to issue this Regulatory Guide as final.

#### 8. Proposed Regulatory Guides DG-5028 and DG-1279

The Committee considered the following proposed draft regulatory guides and decided not to review them. The Committee has no objection to the staff's proposal to issue these Guides for public comment and waives its opportunity to review the draft final versions of these Guides after the public comment period.

- DG-5028, "Special Nuclear Material Control and Accounting Systems for Nuclear Power Plants"
- Proposed Revision 4 to Regulatory Guide 1.31 (DG-1279), "Control of Ferrite Content in Stainless Steel Weld Metal"

## RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee considered the EDO's response of January 24, 2012, to comments and recommendations included in the December 7, 2011, ACRS report on the safety aspects of the Progress Energy Florida Inc. combined license application for Levy Nuclear Plant, Units 1 and 2. The Committee decided that it was not satisfied with the EDO's response.

The Committee issued a response to the EDO on this matter, dated April 25, 2012, requesting that the staff present additional information to the Committee regarding two generic issues. The Committee would like to review the status of the availability of guidance applicable to probabilistic tsunami hazard assessment (PTHA) and consider whether additional actions should be taken to ensure the inclusion of PTHA in PRAs as soon as practical. In addition, the Committee expects that all combined license holders will submit a PRA addressing external hazards, including flooding, and that any screening used to eliminate certain hazards from the PRA are based on quantitative estimates of the hazard frequency and associated likelihood of core damage. The Committee also expects that the site-specific evaluation of flooding hazards in the PRA will include any adjacent shipping canals and watercourse, as discussed in its initial letter report on the Levy site. The Committee would like to confirm these understandings with the staff.

- The Committee considered the EDO's response of March 21, 2012, to comments and recommendations included in the February 15, 2012, ACRS report on the draft 10 CFR 50.54(f) letter on implementation of the Near-Term Task Force recommendations from the Fukushima Dai-Ichi event. The Committee decided that it was not satisfied with the EDO's response.

The ACRS Executive Director issued a response to the EDO on this matter, dated April 16, 2012, requesting a meeting between ACRS members and the appropriate members of the NRC staff in order to provide the technical reason(s) for not adopting the recommendation in the February 15, 2012, ACRS letter. The Committee requested this meeting take place during its 594<sup>th</sup> meeting scheduled for May 10-12, 2012.

## SCHEDULED TOPICS FOR THE 594<sup>th</sup> ACRS MEETING

The following topics are scheduled for the 594<sup>th</sup> ACRS meeting, to be held on May 10-12, 2012:

- U.S. EPR Spent Fuel Cask Transfer Facility
- Selected Chapters of the Safety Evaluation Report (SER) with Open Items Associated with the U.S. EPR Design Certification Application

- State-of-the-Art Reactor Consequence Analysis (SOARCA) Project
- St. Lucie, Unit 1, Extended Power Uprate Application
- Preparation for Meeting with the Commission on June 7, 2012

Sincerely,

/RA/

J. Sam Armijo  
Chairman

- State-of-the-Art Reactor Consequence Analysis (SOARCA) Project
- St. Lucie, Unit 1, Extended Power Uprate Application
- Preparation for Meeting with the Commission on June 7, 2012

Sincerely,

/RA/

J. Sam Armijo  
Chairman

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<b>NAME</b>	DWidmayer	DWidmayer	CSantos	EMHackett	EMH for JSA
<b>DATE</b>	05/04/12	05/04/12	05/04/12	05/08/12	05/08/12

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**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
593<sup>rd</sup> FULL COMMITTEE MEETING**

April 12-14, 2012

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TODAY'S DATE: April 12, 2012

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3	Vincent Sorel	UniStar
4	Paul Infanger	UniStar
5	MARK FINLEY	UniStar
6	Sebastien THOMAS	UniStar
7	Andrew Dercher	ERIN
8	Steven KRAFT	NCI
9	Andrea KOCIK	NRC/OCM
10	Rebecca Tessaro	NRC/OCM
11	Maureen Conley	Platts/McGraw-Hill
12	Andrew Banta	NRC/NMSS
13	ABBA'S MOSTALA	ENERGY NORTHWEST
14	Don Gregoire	ENERGY Northwest
15	MASSOUD TAFAZZOLI	AREVA
16	DALE ATKINSON	ENERGY NORTHWEST
17	JOHN SISK	" "
18	JEFF PIERSON	ENERGY NORTHWEST
19	JAIME WORTHINGTON	" "
20	Carolyn Beaudry	Energy Northwest
21	JOHN TWOMEY	ENERGY NORTHWEST
22	Brian Adami	Energy Northwest
23	David Lee	AREVA
24	Pick CLICHE	NEXTERA ENERGY SERRAVALLO
25	Mat Hedges	Energy Northwest
26	Steve Gosselin	Lucius Pitkin, Inc.
27	Steve Richter	Energy Northwest
28	Edward Cox	Northwest Energy



ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
593<sup>rd</sup> FULL COMMITTEE MEETING

April 12-14, 2012

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Biff Brzollay  
Dan Gallagher

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John Wise	NRR / DLR
Roger Kalikian	NRR / DLR
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Brian Harris	NRR / DLR
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Ron Frahm	NRR / DIRS
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Greg Makar	NRO / DE
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**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS**  
**593<sup>rd</sup> FULL COMMITTEE MEETING**  
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3	Tanya Ford	NRO/DNRL/LBI
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12	Deirdre Spaulding	NRC/NRO/DE
13	Andrew Murphy	NRC/RES/DE
14	Hernando Candia	NRC/RES/DE/SGSEB
15	Andrew Nosek	NRC/RES/DSA
16	Jose Pires	NRC/RES/DE/SGSEB
17	April Pulvirenti	NRC/RES/DE/CMB
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19	Kent Ward	NRR/DSS/SRXB
20	Tim Collins	NRR/DSS
21	Kevin Witt	NRR/JLD
22	ERIC SCHANDLER	NSA/IRTB
23	GREG CASO	NRR/DSS
24	Jeffrey Mitman	NRR/DRA
25	Chris Van Wert	NRO/DSRA/SRSG
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27	Tina Ghosh	RES/DSA
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	Kevin Coyne	RES/DRA/PRATB

## ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

593<sup>rd</sup>

**April 12-14, 2012**

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
593<sup>rd</sup> FULL COMMITTEE MEETING

April 12-14, 2012

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
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April 12-14, 2012

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12	Kim Morgan Butler	NRR / DPR / PGCB
13	DON DUBE	NRO / DSRA
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