



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

February 6, 2017

NOTE TO: FILE

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

The minutes of the subject meeting were certified on November 25, 2016 as the official record of the proceedings of that meeting.



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

November 25, 2016

MEMORANDUM TO: ACRS Members

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

SUBJECT: CERTIFICATION OF THE MEETING MINUTES FROM
THE ADVISORY COMMITTEE ON REACTOR
SAFEGUARDS 638th FULL COMMITTEE MEETING
HELD ON NOVEMBER 3-5, 2016, IN ROCKVILLE, MARYLAND

The minutes of the subject meeting were certified on November 25, 2016 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**

November 18, 2016

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

FROM: Dennis C. Bley */RA/*
ACRS Chairman

SUBJECT: MINUTES OF THE 638th MEETING OF THE ADVISORY
COMMITTEE ON REACTOR SAFEGUARDS (ACRS),
NOVEMBER 3-5, 2016

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/SUNSI Review
NAME	SMeador	SMeador
DATE	11/18/2016	11/18/2016

OFFICIAL RECORD COPY

MINUTES OF THE 638th MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

ROCKVILLE, MARYLAND

The 638th 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 November 3-5, 2016. A copy of the meeting agenda is attached.

The summary report [ML17011A313] 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 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. Dennis Bley (Chairman), Dr. Michael Corradini (Vice-Chairman), Dr. Pete Riccardella (Member-at-Large), Dr. Ronald Bellinger, Mr. Charles Brown, Dr. Margaret Chu, Dr. Walter Kirchner, Dr. Jose March-Leuba, Dr. Dana A. Powers, Mr. Harold Ray, Dr. Joy Rempe, Mr. Gordon Skillman, Mr. John Stetkar, and Mr. Matthew Sunseri

ACRS Staff

A. Valentin
M. Banks
G. Shukla
Z. Abdullahi
D. Widmayer

A list of other attendees is attached.



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

**AGENDA
638th ACRS MEETING
NOVEMBER 3-5, 2016
11545 ROCKVILLE PIKE, ROCKVILLE, MD**

THURSDAY, NOVEMBER 3, 2016, CONFERENCE ROOM T-2B1

- 1) 8:30 AM – 8:35 AM Opening Remarks by the ACRS Chairman (Open) (DCB/ADV)
- 1.1) Opening Statement
 - 1.2) Items of Current Interest

- 2) 8:35 AM – 10:30 AM North Anna 3 Combined License Application (COLA) (Open) (PR/GSS)
- 2.1) Remarks by the Subcommittee Chairman
 - 2.2) Briefings by and discussion with representatives of the NRC staff and Virginia Electric & Power Co. to discuss the safety evaluation associated with the North Anna 3 COLA

10:30 AM - 10:45 AM

***** BREAK *****

- 3) 10:45 AM – 12:45 PM AREVA Extended Flow Window/Monticello (Open/Closed) (MLC/ZA)
- 3.1) Remarks by the Subcommittee Chairman
 - 3.2) Briefings by and discussions with representatives of the NRC staff, AREVA, and Xcel Energy regarding amendment requesting operation of Monticello at AREVA's Extended Flow Window

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

12:45 PM - 1:45 PM

***** LUNCH *****

- 4) 1:45 PM – 5:30 PM 10 CFR Part 61 Rulemaking (Open) (MYC/DAW)
- 4.1) Remarks by the Subcommittee Chairman
 - 4.2) Briefings by and discussions with the NRC staff regarding the proposed final rule, 10 CFR Part 61, “Low-Level Radioactive Waste,” and associated guidance documents
- 5) 5:30 PM – 6:00 PM Preparation of ACRS Reports (Open/Closed)
- 5.1) North Anna 3 Combined License Application (COLA) (PR/GSS)
 - 5.2) 10 CFR Part 61 Rulemaking (MYC/DAW)
 - 5.3) AREVA Extended Flow Window/Monticello (MLC/ZA)

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

FRIDAY, NOVEMBER 4, 2016, CONFERENCE ROOM T-2B1

- 6) 8:30 AM – 10:00 AM Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open/Closed) (DCB/ADV)
- 6.1) Discussion of the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the Full Committee during future ACRS meetings
 - 6.2) Report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, including anticipated workload and member assignments

[NOTE: A portion of this meeting may be closed pursuant to 5 U.S.C. 552b (c) (2) and (6) to discuss organizational and personnel matters that relate solely to internal personnel rules and practices of the ACRS, and information the release of which would constitute a clearly unwarranted invasion of personal privacy.]

- 7) 10:00 AM – 10:15 AM Reconciliation of ACRS Comments and Recommendations (Open) (DCB/ADV/MLB)
- 7.1) Discussion of the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters

10:15 AM - 10:30 AM

***** BREAK *****

8) 10:30 AM – 11:30 AM

Research Quality Review Panels (Open) (JLR/HPN)

8.1) Discussion of the assessment of the quality of selected NRC research projects

11:30 AM – 12:30 PM

***** LUNCH *****

9) 12:30 PM – 6:00 PM

Preparation of ACRS Reports (Open/Closed)

9.1) Continue discussion of the proposed ACRS reports listed under Item 5

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

SATURDAY, NOVEMBER 5, 2016, CONFERENCE ROOM T-2B1

10) 8:30 AM – 11:30 AM

Preparation of ACRS Reports (Open)

10.1) Continue discussion of the proposed ACRS reports listed under Item 5

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

11) 11:30 AM – 12:00 PM

Miscellaneous (Open) (DCB/ADV)

11.1) 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:

- When appropriate, members of the public and representatives of the nuclear industry may provide their views during the briefings.
- During the meeting, 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.

- Thirty five (35) hard copies and one (1) electronic copy of the presentation materials should be provided to the ACRS in advance of the briefing.
- One (1) electronic copy of each presentation should be emailed to the Designated Federal Official 1 day before the meeting. If an electronic copy cannot be provided within this timeframe, presenters should provide the Designated Federal Official with a CD containing each presentation at least 30 minutes before the meeting.



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

January 12, 2017

The Honorable Stephen G. Burns
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: SUMMARY REPORT – 638th MEETING OF THE ADVISORY COMMITTEE ON
REACTOR SAFEGUARDS, NOVEMBER 3-5, 2016

Dear Chairman Burns:

During its 638th meeting, November 3-5, 2016, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports, letter, and memoranda:

REPORTS

Reports to Stephen G. Burns, Chairman, NRC, from Dennis C. Bley, Chairman, ACRS:

- “Report on the Safety Aspects of Dominion Virginia Power Combined License Application for North Anna Unit 3,” dated November 15, 2016
- “Monticello Nuclear Generating Plant Licensing Amendment Request for Operation in the Extended Flow Window Domain, using AREVA Fuel, Methods and Codes” dated November 15, 2016
- “Review of SECY-16-0106, Proposed Final Rule 10 CFR Part 61, ‘Low-Level Radioactive Waste Disposal’,” dated November 14, 2016

LETTER

Letter to Michael Weber, Director, Office of Nuclear Regulatory Research, NRC, from Dennis C. Bley, Chairman, ACRS:

- “ACRS Assessment of the Quality of Selected NRC Research Projects - FY 2016,” dated January 11, 2017

MEMORANDA

Memoranda to Victor M. McCree, Executive Director for Operations, NRC, from Andrea D. Veil, Executive Director, ACRS:

- “Regulatory Guides,” dated November 7, 2016
 - DG-1291, “Evaluating Deviations and Reporting Defects and Noncompliance Under 10 CFR Part 21”
 - RG 1.3, Revision 2, “Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Boiling Water Reactors” (Withdrawal)
 - RG 1.4, Revision 2, “Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Pressurized Water Reactors” (Withdrawal)
 - RG 1.5, “Assumptions Used for Evaluating the Potential Radiological Consequences of a Steam Line Break Accident for Boiling Water Reactors” (Withdrawal)
 - RG 1.25, “Assumptions used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Building for Boiling and Pressurized Water Reactors” (Withdrawal)
- “Documentation of Receipt of Applicable Official NRC Notices to the Advisory Committee on Reactor Safeguards for November 2016,” dated November 7, 2016

HIGHLIGHTS OF KEY ISSUES

1. Report on the Safety Aspects of Dominion Virginia Power Combined License Application for North Anna Unit 3

The Committee met with representatives of the NRC staff and Dominion Virginia Power to discuss the combined license application (COLA) for North Anna Unit 3. The North Anna Unit 3 COLA incorporated, by reference, the certified ESBWR design control document (DCD) with some departures and exemptions, the approved early site permit for the North Anna site, and the approved reference COLA for Fermi 3. The staff verified that the site-specific differences between Fermi 3 and North Anna Unit 3 sites are adequately addressed. The staff concluded that the ESBWR standard design is adequate to meet the site-specific seismic demand, the North Anna Unit 3 site characteristics are bounded by the requirements of the ESBWR DCD, and the proposed departures and exemptions from the certified ESBWR DCD are acceptable.

Committee Action

The Committee issued a letter report to the NRC Chairman on this matter, dated November 15, 2016, with the following conclusions and recommendation: 1) There is reasonable assurance that North Anna Unit 3 can be built and operated without undue risk to the health and safety of the public. The COLA for North Anna Unit 3 should be approved, 2) Site-specific departures and exemptions from the ESBWR DCD, including those in the areas of seismic design and analysis, electrical power distribution system, liquid effluent discharge, and design for hurricane wind generated missiles, are acceptable and should be approved, and 3) There is reasonable assurance that the ESBWR design and the North Anna Unit 3 site satisfy the requirements resulting from the Fukushima Near-Term Task Force recommendations.

2. Monticello Nuclear Generating Plant Licensing Amendment Request for Operation in the Extended Flow Window Domain

The Committee met with representatives of the NRC staff, Xcel Energy and their consultants, and AREVA to discuss the operation of Monticello at the higher power/flow extended flow window (EFW) domain with AREVA fuel and licensing analyses methodology. Monticello is currently licensed to operate at the MELLLA+ domain, using GEH fuel and licensing methodology. The EFW operation is parametrically similar to the MELLLA+ domain. The AREVA analysis methods are not explicitly approved for EFW (or MELLLA+) conditions. Therefore, the staff reviewed and verified the validity of application of these previously approved AREVA licensing methods for performing safety analyses at the higher power/flow EFW domain, specifically for Monticello.

Committee Action

The Committee issued a letter report to the NRC Chairman on this matter, dated November 15, 2016, with the following conclusion and recommendation: The use of AREVA ATRIUM 10XM fuel and AREVA methods for Monticello in the EFW operating domain is acceptable with the limitations and conditions imposed by the staff to ensure an acceptable safety margin under EFW operation. We recommend that the Xcel Energy license amendment request for Monticello be approved.

3. Proposed Final 10 CFR Part 61, "Low-Level Radioactive Waste Disposal"

The Committee met with representatives of the NRC staff to discuss SECY-16-0106, the proposed final rule 10 CFR Part 61, "Low-Level Radioactive Waste Disposal." The staff presented the major revisions to Part 61 since the last revisions were presented to the Committee in 2014. The staff presented a summary of the main comments received on the draft proposed final rule and provided additional technical justifications for the proposed final rulemaking language.

Committee Action

The Committee issued a letter report to the NRC Chairman on this matter, dated November 15, 2016, with the following conclusions and recommendations: 1) The approach in proposed final rule 10 CFR Part 61, "Low-Level Radioactive Waste Disposal" can ensure that facilities meet Commission public health and safety objectives, 2) We remain concerned about the requirement that existing operating disposal facilities need to satisfy the new performance objectives even if they do not plan to add substantial long-lived waste for disposal, especially for already-buried waste. The final rule should retain the provision that allows compliance for existing facilities on a case-by-case basis, and 3) We prefer a regulatory approach consistent with that suggested in our previous reports making the site performance assessment with quantitative uncertainty analysis the basis for establishing the compliance and performance periods. The performance assessment results should inform qualitative requirements for periods exceeding the compliance period.

4. Assessment of the Quality of Selected NRC Research Programs – FY 2016

The Committee completed its report on the quality assessment of NRC research projects on NUREG/CR-7184, "Crack Growth Rate and Fracture Toughness Tests on Irradiated Cast Stainless Steel," NUREG/CR-7185, "Effects of Thermal Aging and Neutron Irradiation on Crack Growth Rate and Fracture Toughness of Cast Stainless Steels and Austenitic Stainless Steel Welds," and NUREG/CR-7200, "Influence of Coupling Erosion and Hydrology on the Long-Term Performance of Engineered Surface Barriers."

Committee Action

The Committee issued a letter dated January 11, 2017, transmitting this report to the Director, Office of Nuclear Regulatory Research. The Committee concluded that:

- NUREG/CR-7184 is of professional quality, but does not adequately address uncertainties and sensitivities that might affect one of the report's key findings.
- NUREG/CR-7185 is better than professional quality work that satisfies the research objectives and with some elements of innovation and insight.
- NUREG/CR-7200 is less than satisfactory. With some limitations, the results meet the research objectives

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee considered the Executive Director for Operations' responses of October 21, 2016, to the September 19, 2016 ACRS letter, "Response to the July 5, 2016 Staff Letter Regarding Interim Staff Guidance JLD-ISG-2016-01 for Focused Evaluations and Integrated Assessments of Reevaluated Flooding Hazards." The Committee was satisfied with the Executive Director for Operations' response.

- The Committee considered the Executive Director for Operations' responses of September 8, 2016, to the April 28, 2016 ACRS letter and report, "Review and Evaluation of the NRC Safety Research Program." The Committee was satisfied with the Executive Director for Operations' responses.

SCHEDULED TOPICS FOR THE 639th ACRS MEETING

The following topics are scheduled for the 639th ACRS meeting, to be held on November 30 - December 2, 2016:

- Draft Final Rulemaking Package for Mitigation of Beyond-Design-Basis Events
- Fukushima Tier 2 Recommendations Related to Task 3 Evaluations of Natural Hazards other than Seismic and Flooding

Sincerely,

/RA/

Dennis C. Bley
Chairman

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
638th FULL COMMITTEE MEETING
November 3-5, 2016

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TODAY'S DATE: November 3, 2016

	<u>NAME</u>	<u>NRC ORGANIZATION</u>
1	Marieliz Vera	NRO/DNRL
2	MAK MITCHELL MAM	
3	Bruce Musico	NSIR
4	Patricia Campbell	GEH
5	JOE HEGNER	DOMINION
6	Douglas Kemp	Bechtel
7	Steve Roth	Bechtel
8	JOSEPH GRACINTO	NRO
9	JOSH BERKOWITZ	NRR/DSS
10	Diego Suenz	NRR/DSS/SRAB
11	James Zhu	NRO/DNRL/LB3
12	Kevin Heller	NRR/DSS/SNPB
13	Glenn Adams	Xcel Energy
14	MARK HOLSCHON	XCEL
15	MIKE BAUMANN	"
16	GARY PETERS	AREVA
17	Pete Gardner	XCEL, Monticello
18	Pick Stultz/2nd	Xcel Monticello
19	TONY WILL	AREVA
20	Gino Eckhoff	Xcel
21	Tamara Malaney	Xcel Energy
22	Yousef Farawila	AREVA
23	Dan Tinkler	AREVA
24	Doug Pruitt	AREVA Consultant
25	Kevin Quick	AREVA
26	Alan Meginnis	AREVA
27	Aaron Wysocki	ORNL (NRC consultant)
28	Doug Honvitz	DOE EM 4.22

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
638th FULL COMMITTEE MEETING
November 3-5, 2016

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TODAY'S DATE: November 3, 2016

NAME

NRC ORGANIZATION

Edward Regner
Justin Marble
Johari Moore
PATRICK CASTLEMAN
GINA BORSH
Kimyata MorganButler

DOE
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OCM/SG B
OCM/KLS
DOMINION
NMSS/MSTR/RPMB

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
638th FULL COMMITTEE MEETING
November 3-5, 2016

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U.S. Nuclear Regulatory Commission Staff

TODAY'S DATE: November 3, 2016

NAME

NRC ORGANIZATION

Mathew Panicker
Shue-Jeng Peng
Rob Kuntz
Rick Stattel
~~David Ford~~
CHRIS McKenney
Daniel Mills
David Esh
Priya Yadav
Andrea Kock
Robert Lee Gladney

NRR/DSS/SNDB
NRR/DSS/SRXB
NRR/DOL/LPL37
NRR/DE/EICB
NMSS/DUWP/PAB
NMSS/DUWP/PAB
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NMSS/DUWP
NMSS/DUWP

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
638th FULL COMMITTEE MEETING
November 3-5, 2016

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U.S. Nuclear Regulatory Commission Staff

TODAY'S DATE: November 3, 2016

	<u>NAME</u>	<u>NRC ORGANIZATION</u>
1	Bob Fitzpatrick	MRR / DE / EEEB
2	Manas Chakravarty	NRO / DE / SEB
3	Steve Williams	NRO / RPAC / DSEA
4	Andrea Mayer	NRO / DSRA / SPSB
5	David Heessel	NRO / DSEA / RCS
6	Vladimir Goraizer	NRO / DSEA / RGS
7	Tim Lupold	NRO / DEIA / MEB
8	Alice Stieve	NRO / DSEA
9	Nicholas Hansing	NRO / DEIA / MEB
10	Chang-Yang Li	NRC / NRO / SPSB
11	Rebecca Krag	NRC / NRO / DSEA / SRSS
12	Kevin Quinlan	NRC / NRO / DSEA / RHML
13	Dinesh Taneja	NRC / NRO / DEIA / ICE
14	Jake Zimmerman	NRC / DE / EEEB
15	Tinsuo Nie	NRO / DEIA / SEB
16	Brad Harvey	NRO / DSEA / RHML / RMOT
17	George Wang	NRO / DEIA / SEB
18	ANGELO STUBBS	NRO / DSRA / SPSB
19	James Gilmer	NRO / DSRA / SRSS
20	Shana Helton	NRO / DSEA
21	Robert Krale	NRC / COM / JMR
22	Sumwoo Park	NRC / NRO / DEIA / SEB
23	Michael Dudek	NRC / DSEA
24	Zuhan Xi	NRC / DSEA
25	Robert Caldwell	NRC / DEIA
26	Chris Van Wert	NRO / DSRA
27	Geshagiri Tammana	NRO / DSEA / RPAC
28	Jessica Voveris	NRO / DSEA / RHMB