



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

August 2, 2016

NOTE TO: FILE

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

The minutes of the subject meeting were certified on April 22, 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**

April 22, 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 633rd FULL COMMITTEE MEETING
HELD ON APRIL 7-9, 2016, IN ROCKVILLE, MARYLAND

The minutes of the subject meeting were certified on April 22, 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**

April 15, 2016

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

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

SUBJECT: MINUTES OF THE 633rd MEETING OF THE ADVISORY
COMMITTEE ON REACTOR SAFEGUARDS (ACRS),
APRIL 7-9, 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	04/15/2016	04/15/2016

OFFICIAL RECORD COPY

MINUTES OF THE 633rd MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

ROCKVILLE, MARYLAND

The 633rd 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 7-9, 2016. A copy of the meeting agenda is attached.

The summary report [ML16134A302] 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. Dana A. Powers, Mr. Harold Ray, Dr. Joy Rempe, Mr. Gordon Skillman, and Mr. John Stetkar.

ACRS Staff

A. Valentin
M. Banks
P. Wen
C. Brown

A list of other attendees is attached.



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

**AGENDA
633rd ACRS MEETING
APRIL 7-9, 2016
11545 ROCKVILLE PIKE, ROCKVILLE, MD**

REVISED

THURSDAY, APRIL 7, 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 AP1000 Generic Design Changes (Open/Closed) (HBR/PCW)
2.1) Remarks by the Subcommittee Chairman
2.2) Briefings by and discussions with representatives of the
 NRC staff and Westinghouse regarding the AP1000
 generic design changes

**[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).]**

10:30 AM - 10:45 AM

***** BREAK *****

3) 10:45 AM – 12:00 PM Regulatory Guide (RG) 1.229 (Open) (RB/CLB)
3.1) Remarks by the Subcommittee Chairman
3.2) Briefings by and discussions with representatives of the
 NRC staff regarding RG 1.229 and its risk-informed
 approach for addressing the effects of debris on post-
 accident long-term core cooling

12:00 PM - 2:00 PM

***** LUNCH *****

- 4) 2:00 PM – 4:00 PM Spent Fuel Storage and Transportation (Open) (RB/CLB)
- 4.1) Remarks by the Subcommittee Chairman
 - 4.2) Briefings by and discussions with representatives of the NRC staff and NEI regarding framework for storage and transportation of spent fuel and NUREG-1927, “Standard Review Plan for Renewal of Specific Licenses and Certificates of Compliances for Dry Storage of Spent Fuel”
- 5) 4:00 PM – 6:00 PM Preparation of ACRS Reports (Open/Closed)
- 5.1) AP1000 Generic Design Changes (HBR/PCW)
 - 5.2) Regulatory Guide 1.229 (RB/CLB)
 - 5.3) Spent Fuel Storage and Transportation (RB/CLB)

[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, APRIL 8, 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 Biennial Review and Evaluation of the NRC Safety Research Program (Open) (MLC/HPN)
8.1) Discussion regarding the NRC Safety Research Program

....11:30 AM - 2:00 PM

*** LUNCH ***

- 9) 2:00 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, APRIL 9, 2016, CONFERENCE ROOM T-2B1

- 10) 8:30 AM – 11:30 AM Preparation of ACRS Reports (Open/Closed)
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/EMH)
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**

May 18, 2016

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

SUBJECT: SUMMARY REPORT – 633rd MEETING OF THE ADVISORY COMMITTEE ON
REACTOR SAFEGUARDS, April 7-9, 2016

Dear Chairman Burns:

During its 633rd meeting, April 7-9, 2016, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports, letters, and memorandum:

REPORTS

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

- “Exemptions to the AP1000 Certified Design Included in the Levy Nuclear Plant Units 1 and 2 Combined License Application,” dated April 18, 2016
- “Review and Evaluation of the NRC Safety Research Program,” dated April 28, 2016

LETTERS

Letters to Victor M. McCree, Executive Director for Operations, NRC, from Dennis C. Bley, Chairman, ACRS:

- “Regulatory Guide 1.229, ‘Risk-Informed Approach for Addressing the Effects of Debris on Post Accident Long-Term Core Cooling’,” dated April 19, 2016
- “NUREG-1927, Revision 1, ‘Standard Review Plan for Renewal of Specific Licenses and Certificates of Compliance for Dry Storage of Spent Nuclear Fuel’,” dated April 20, 2016

MEMORANDUM

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

- “Documentation of Receipt of Applicable Official NRC Notices to the Advisory Committee on Reactor Safeguards for April 2016,” dated April 8, 2016

HIGHLIGHTS OF KEY ISSUES

1. Exemptions to the AP1000 Certified Design Included in the Levy Nuclear Plant Units 1 and 2 Combined License Application

The Committee met with representatives of the NRC staff, Westinghouse, and Duke Energy Carolinas, LLC (the applicant) to discuss the five exemption requests in the Levy Nuclear Plant (Levy) Units 1 and 2 combined license application. These five exemptions to the AP1000 certified design include: 1) Condensate return and passive residual heat removal, 2) Main control room operator dose, 3) Main control room heat load, 4) Plant monitoring system flux doubling to comply with IEEE 603, and 5) Hydrogen vent in containment. For each exemption, the applicant and Westinghouse discussed the reason for the design change, analysis performed, and issue resolution. The staff presented its technical evaluation, review results, and conclusions. The staff has identified that each of the exemptions is necessary to perform the intended functions, and therefore, meet the underlying purposes of the AP1000 certification rule.

Committee Action

The Committee issued a report to the NRC Chairman on this matter, dated April 18, 2016, with the following conclusions and recommendation: 1) Five exemptions to the AP1000 certified design have been included in the Levy combined license application. The five exemptions are needed to enable the certified design to perform intended functions and should be approved, 2) The causes for the exemptions have been identified and addressed for the AP1000 certification, and 3) Generic lessons learned, relative to the reactor design process leading to certification, should be identified and further evaluated.

2. Regulatory Guide 1.229, “Risk-Informed Approach for Addressing the Effects of Debris on Post Accident Long-Term Core Cooling”

The Committee met with representatives of the NRC staff, industry, and the Nuclear Energy Institute (NEI) to discuss draft Regulatory Guide 1.229 that outlined an acceptable approach for demonstrating compliance with the voluntary, risk-informed alternative for addressing the effects of debris during long-term cooling as required in 10 CFR 50.46c, “Emergency Core Cooling

System Performance during Loss-of-Coolant Accidents (LOCA).” The staff and NEI made presentations to the Committee. Both presentations noted the need for issuing Regulatory Guide 1.229 without delay as a number of licensees have been waiting to use the guidance in their planned applications on the subject.

Committee Action

The Committee issued a letter report to the Executive Director for Operations on this matter, dated April 19, 2016, with the following conclusion and recommendations: 1) If implemented properly, the approaches outlined in Regulatory Guide 1.229 provide reasonable alternatives to support a risk-informed regulatory decision about the effect of debris on long-term cooling and the potential need to remove sources of debris from the containment. Regulatory Guide 1.229 should be issued after the staff addresses the following recommendations, 2) The staff should clarify expectations for the assessment of scenarios that involve recirculation from the containment sump, but are not initiated by a loss of coolant accident, 3) The staff should clarify expectations for the assessment of uncertainties, with particular attention to how uncertainties about debris generation, transport, and deposition on strainers and downstream coolant flow paths are used to support the risk-informed conclusions, and 4) The staff should clarify how the “base PRA” or other techniques should be used to define the most limiting equipment operating configurations and flow scenarios for a simplified assessment. The staff should also clarify that the post-assessment PRA models should be updated to include the risk from debris-related scenarios consistently with the scope and level of detail applied in these analyses.

3. NUREG-1927, Revision 1, “Standard Review Plan for Renewal of Specific Licenses and Certificates of Compliance for Dry Storage of Spent Nuclear Fuel”

The Committee met with representatives of the NRC staff and NEI to discuss NUREG-1927, Revision 1 and Interim Staff Guidance (ISG)-2, Revision 2, “Fuel Retrievability in Spent Fuel Applications.” NUREG-1927 provides guidance for the safety review of renewal applications for specific licenses of independent spent fuel storage installations and certificates of compliance of dry storage systems and identifies aging effects requiring management with a time dependent operating life. ISG-2, Revision 2 presents an approach for implementation of fuel retrievability that will continue to protect public health and safety while reducing the negative impacts associated with dose to workers. The staff discussed the major changes in NUREG-1927, Revision 1. NEI discussed the industry’s perspective on NUREG-1927, Revision 1 and ISG-2, Revision 2. Members of the public also made comments.

Committee Action

The Committee issued a letter to the Executive Director for Operations, dated April 20, 2016, with the following recommendations: 1) NUREG-1927, Revision 1, “Standard Review Plan for Renewal of Specific Licenses and Certificates of Compliance for Dry Storage of Spent Nuclear Fuel,” should be issued and 2) A future revision should be undertaken that places a priority on the development of a risk-informed approach, which includes analysis of event consequences, for aging management of dry storage systems.

4. Biennial Review and Evaluation of the NRC Safety Research Program

The Committee completed its biennial review and evaluation of the NRC safety research program. In its evaluation of the NRC research activities, the Committee considered the programmatic justification for the research, as well as the technical approaches and progress of the work.

Committee Action

The Committee issued a report to the NRC Chairman on this matter, dated April 28, 2016, transmitting the ACRS report entitled, "Review and Evaluation of the Nuclear Regulatory Commission Safety Research Program." The final report will be issued as NUREG-1635, Volume 12.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee considered the Executive Director for Operations' response of March 14, 2016, to recommendations included in the February 17, 2016 ACRS letter on "Peach Bottom Atomic Power Station Units 2 and 3 Maximum Extended Load Line Limit Analysis Plus (MELLLA+) License Amendment Request." The Committee was satisfied with the Executive Director for Operations' response.

SCHEDULED TOPICS FOR THE 634th ACRS MEETING

The following topics are scheduled for the 634th ACRS meeting, to be held on May 5-7, 2016:

- Additional Guidance to Support the Closure Plan for the Reevaluation of Flooding Hazards
- Review of Fukushima Tier 2 Group 3 Recommendation Regarding Other Natural Hazards Screening Evaluations
- NuScale Topical Report TR-0515-13952, Risk Significance Determination - Use of RAW Importance Measure

Sincerely,

/RA/

Dennis C. Bley
Chairman

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
633rd FULL COMMITTEE MEETING

April 7-9, 2016

PLEASE PRINT

TODAY'S DATE: April 7, 2016

	<u>NAME</u>	<u>AFFILIATION</u>
1	RICHARD GRUMBIR	APOG
2	Wes Sparkman	SNC
3	JAMES THORNTON	DUKE ENERGY
4	JOHN THRASHER	DUKE ENERGY
5	PAUL JACOBS	FLORIDA POWER & LIGHT CO
6	ERIK WAGNER	DUKE ENERGY
7	Larry Taylor	Duke Energy
8	Bob Kitchen	Duke Energy
9	Jennifer McNeely	Westinghouse
10	Andrew Phizer	Westinghouse
11	Zachary Harper	Westinghouse
12	Steve Franzone	FPL
13	Robert Gamberg	Duke Energy
14	CHRIS FALLON	DUKE ENERGY
15	Stephen Geier	NEI
16	MCC	
17	Phil GRISSEM	SNC
18	Rod McCullum	NEI
19	Steve FRAWTZ	MLB
20	Bernard White	NRC/NMCR
21	Kris Cummings	NEI
22		
23		
24		
25		
26		
27		
28		

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
633rd FULL COMMITTEE MEETING
April 7-9, 2016

PLEASE PRINT

TODAY'S DATE: April 7, 2016

NAME

NRC ORGANIZATION

Many Thanks
Mehdi Reisi Fard
Donnie Harrison
Daniel Doyle
Ashley Smith
Geay S. Mizu
Patrick Castleman
Emma Wang
Patti Silva
Mark Lombard
Wendy Reed.
Christina Leggett
Haile Lindsay
A. Hsia
Kristina Banovac
Al Bontus
Darrell Dunn

~~NBS/DRA~~
 NRR/DRA
 NRO/DSRA
 NRR/DPR
 NRR/DSS
 OGC/RMR
 OCM/KLS
 NMSS/DSF
 NMSS/DSFM
 NMSS/DSFM
 NMSS/DSFM.
 NMSS/DSFM.
 NMSS/DSFM
 NMSS/DSFM
 NMSS/DSFM
 NMSS/DSFM