UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SECRETARY

March 8, 2011

# COMMISSION VOTING RECORD

DECISION ITEM: SECY-11-0006

TITLE: PROPOSED RULE – ECONOMIC SIMPLIFIED BOILING WATER REACTOR DESIGN CERTIFICATION

The Commission (with all Commissioners agreeing) approved the subject paper as recorded in the Staff Requirements Memorandum (SRM) of March 8, 2011.

This Record contains a summary of voting on this matter together with the individual vote sheets, views and comments of the Commission.

Annette L. Vietti-Cook
Secretary of the Commission

Attachments:
1. Voting Summary
2. Commissioner Vote Sheets

cc: Chairman Jaczko
Commissioner Svinicki
Commissioner Apostolakis
Commissioner Magwood
Commissioner Ostendorff
OGC
EDO
PDR

# VOTING SUMMARY - SECY-11-0006

## RECORDED VOTES

| | APRVD | DISAPRVD | ABSTAIN | NOT PARTICIP | COMMENTS | DATE |
|---|---|---|---|---|---|---|
| CHRM. JACZKO | X | | | | X | 2/14/11 |
| COMR. SVINICKI | X | | | | X | 3/2/11 |
| COMR. APOSTOLAKIS | X | | | | X | 2/25/11 |
| COMR. MAGWOOD | X | | | | X | 2/25/11 |
| COMR. OSTENDORFF | X | | | | X | 2/10/11 |

## COMMENT RESOLUTION

In their vote sheets, all Commissioners approved the staff's recommendation and provided some additional comments. Subsequently, the comments of the Commission were incorporated into the guidance to staff as reflected in the SRM issued on March 8, 2011.

# NOTATION VOTE

## RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: Chairman Gregory B. Jaczko

SUBJECT: SECY-11-0006 – PROPOSED RULE—ECONOMIC SIMPLIFIED BOILING-WATER REACTOR DESIGN CERTIFICATION

Approved __X__ Disapproved _____ Abstain _____

Not Participating _____

COMMENTS: Below ___ Attached _X__ None ___

SIGNATURE

2/9/11

DATE

Entered on "STARS" Yes _X__ No ___

**Chairman Jaczko's Comments on SECY-11-0006,**
**"Proposed Rule: Economic Simplified Boiling-Water Reactor Design Certification"**

As I mentioned in my vote for the proposed rule for the AP1000 standard design, I continue to believe that certification of reactor designs through rulemaking is important to promoting design standardization, ensuring safety and security through rigorous independent technical and engineering reviews, promoting early resolution of technical and regulatory issues, and providing greater regulatory certainty and efficiencies to applicants seeking combined licenses. I approve the staff's recommendation to publish the proposed rule that would certify the Economic Simplified Boiling-Water Reactor (ESBWR) standard design.

In addition to approving publication of the proposed rule, I want to express my support for the Commission's long-standing position on the limited use of design acceptance criteria (DAC) in certified standard designs and for ensuring DAC are met by combined license (COL) applicants through the licensing review process or COL holders through the inspection process (i.e., the inspection of COL holders implementation and verification of inspections, tests, analyses, and acceptance criteria (ITACC)).

An applicant for a standard design must provide the NRC with an essentially complete design. However, in a small number of technical areas, technologies are changing so rapidly that it would be unwise to freeze the detail of the design for many years or the applicant does not have sufficient as-built or as procured information to provide detailed design information. In those very limited instances, the applicant can propose the use of DAC, which is part of the essentially complete design. As stated in SECY-92-053, "Use of Design Acceptance Criteria during 10 CFR Part 52 Design Certification Reviews," DAC are a set of prescribed limits, parameters, procedures, and attributes that the NRC will use in making a final safety determination. The concept of DAC has enabled the NRC to make final safety determinations on design certifications, subject to satisfactory design implementation and verification by COL holders through appropriate ITAAC. In addition, DAC may be satisfied by COL applicants providing detailed design information in its COL application. The Commission approved the use of DAC in SRM COMSECY-94-024, "Implementation of Design Certification and Light-Water Reactor Design Issues."

At the time of the Commission's approval of the use of DAC, the Advisory Committee on Reactor Safeguards (ACRS) role with regards to DAC was unclear. The ACRS provides the Commission with valuable, independent advice on technical matters as required by the Atomic Energy Act or at the direction of the Commission. Currently, the ACRS reviews DAC as part of the Committee's review of the standard design applications and the closure of DAC as part of the Committee's review of combined license applications. The ACRS should continue to review the adequacy and clarity of DAC as part of the Committee's review of standard design certification and combined license applications. In addition, I believe it would beneficial to have the ACRS review the inspection procedures that describe the staff's plan for DAC inspection activities. Reviews by the ACRS with regards to DAC, in these three areas, will keep the Commission adequately advised on this important technical matter.

Gregory B. Jaczko Date 2/15/11

# NOTATION VOTE

## RESPONSE SHEET

**TO:** Annette Vietti-Cook, Secretary

**FROM:** COMMISSIONER SVINICKI

**SUBJECT:** SECY-11-0006 – PROPOSED RULE–ECONOMIC SIMPLIFIED BOILING-WATER REACTOR DESIGN CERTIFICATION

**Approved** XX **Disapproved** _____ **Abstain** _____

**Not Participating** _____

**COMMENTS:** **Below** XX **Attached** XX **None** ___

I approve the proposed amendment to 10 CFR Part 52 for publication in the *Federal Register*, subject to the attached edits, and with the proposed exclusion of Human Factors Engineering procedures and training from design certification finality, as recommended by the staff. I join Chairman Jaczko in finding benefit in the ACRS review of selected Design Acceptance Criteria inspection procedures, on a limited basis and in consultation with the staff, until greater experience is gained in this area.

**Original vote was on 3/2/11.**

**SIGNATURE**

03/ 3 /11

**DATE**

**Entered on "STARS"** Yes XX No ___

meet the thermal performance acceptance criteria. The NRC finds that the applicant's acceptance criteria are consistent with the advanced light-water reactor control room envelope atmosphere temperature limits in NUREG-1242, "NRC Review of Electric Power Research Institute's advanced light water reactor Utility Requirements Document," and the use of the wet bulb globe temperature index in evaluation of heat stress conditions as described in NUREG-0700, "Human-System Interface Design Review Guidelines." The NRC finds the control building structure thermal performance analysis and ITAAC acceptable based on the analysis using bounding environmental assumptions which will be confirmed by the ITAAC. Accordingly, the NRC finds that the acceptance criteria, control building structure thermal performance analysis, and the ITAAC, provide reasonable assurance that acceptable temperatures will be maintained in the control building for 72 hours. Therefore, the NRC finds that the control building design in regard to thermal performance conforms to the guidelines of SRP Section 6.4 and complies with the requirements of GDC 19.

*Feedwater Temperature Operating Domain*

In operating boiling-water reactors the recirculation pumps are used in combination with the control rods to control and maneuver reactor power level during normal power operation. The ESBWR design is unique in that the core is cooled by natural circulation during normal operation, and there are no recirculation pumps. In Chapter 15 of the DCD, GEH references the licensing topical report (LTR) NEDO-33338, Revision 1, "ESBWR Feedwater Temperature Operating Domain Transient and Accident Analysis." This LTR describes a broadening of the ESBWR operating domain, which allows for increased flexibility of operation by adjusting the FWT. This increased flexibility accommodates the so-called "soft" operating practices, which reduce the duty to the fuel and minimize the probability of pellet-clad interactions and associated fuel failures. ↳ this & "fuel duty" concepts are not well known & should be explained

for a specific plant referencing a design certification rule, the adequacy of that matter *for that plant* is resolved and would constitute part of the licensing basis for that plant. Therefore, that matter would not ordinarily be subject to challenge in any subsequent proceeding or action for that plant (e.g., an enforcement action) listed in the introductory portion of paragraph IV.B. By contrast, there would be no legally binding issue resolution on that subject matter *for any other plant*, or in a subsequent rulemaking amending the applicable design certification rule. However, the NRC's consideration of the safety, regulatory or policy issues necessary to the determination of the exemption or license amendment may, in appropriate circumstances, be relied upon as part of the basis for NRC action in other licensing proceedings or rulemaking.

Paragraph VI.B.7 would provide that, for those plants located on sites whose site characteristics fall within the site parameters assumed in the GEH evaluation of SAMDAs, all issues with respect to SAMDAs arising under the National Environmental Policy Act of 1969, as amended (NEPA), associated with the information in the EA for this design and the information regarding SAMDAs in NEDO-33306, "ESBWR Severe Accident ~~Management~~ Mitigation Design Alternatives" are also resolved within the meaning and intent of 10 CFR 52.63(a)(5). If a deviation from a site parameter is granted, the deviation applicant has the initial burden of demonstrating that the original SAMDA analysis still applies to the actual site characteristics; but, if the deviation is approved, requests for litigation at the COL stage must meet the requirements of 10 CFR 2.309 and present sufficient information to create a genuine controversy in order to obtain a hearing on the site parameter deviation.

Paragraph VI.C would reserve the right of the Commission to impose operational requirements on applicants that reference this appendix. This provision would reflect the fact that only some operational requirements, including portions of the generic TS in Chapter 16 of the DCD, and no operational programs, such as operational QA, were completely or comprehensively reviewed by the NRC in this design certification rulemaking proceeding.

Therefore, the special backfit and finality provisions of 10 CFR 52.63 would apply only to those operational requirements that either the NRC completely reviewed and approved, or formed the basis for an NRC safety finding of the adequacy of the ESBWR, as documented in the NRC's safety evaluation report for the ESBWR. This is consistent with the currently approved design certifications in 10 CFR Part 52, Appendices A through D. Although information on operational matters is included in the DCDs of each of these currently approved designs, for the most part these design certifications do not provide approval for operational information, and none provide approval for operational "programs" (e.g., emergency preparedness programs, operational quality assurance programs). Most operational information in the DCD simply serves as "contextual information" (i.e., information necessary to understand the design of certain SSCs and how they would be used in the overall context of the facility). The NRC did not use contextual information to support the NRC's safety conclusions, and such information does not constitute the underlying safety bases for the adequacy of those SSCs. Thus, contextual operational information on any particular topic would not constitute one of the "matters resolved" under paragraph VI.B.

The NRC notes that operational requirements may be imposed on licensees referencing this design certification through the inclusion of license conditions in the license, or inclusion of a description of the operational requirement in the plant-specific FSAR.[2] The NRC's choice of the regulatory vehicle for imposing the operational requirements will depend upon, among other things: (1) whether the development and/or implementation of these requirements must occur prior to either the issuance of the COL or the Commission finding under 10 CFR 52.103(g), and

[2] Certain activities, ordinarily conducted following fuel load and therefore considered "operational requirements" but which may be relied upon to support a Commission finding under 10 CFR Part 52.103(g), may themselves be the subject of ITAAC to ensure their implementation prior to the 10 CFR Part 52.103(g) finding.

(2) the nature of the change controls which the NRC believes are appropriate given the regulatory, safety, and security significance of each operational requirement.

Paragraph VI.C would allow the NRC to impose future operational requirements (distinct from design matters) on applicants who reference this design certification. Also, license conditions for portions of the plant within the scope of this design certification (e.g., start-up and power ascension testing), are not restricted by 10 CFR 52.63. The requirement to perform these testing programs is contained in Tier 1 information. However, ITAAC cannot be specified for these subjects because the matters to be addressed in these license conditions cannot be verified prior to fuel load and operation, when the ITAAC are satisfied. Therefore, another regulatory vehicle is necessary to ensure that licensees comply with the matters contained in the license conditions. License conditions for these areas cannot be developed now because this requires the type of detailed design information that will be developed during a COL review. In the absence of detailed design information to evaluate the need for and develop specific post-fuel load verifications for these matters, the Commission is reserving in this rule the right to impose, at the time of COL issuance, license conditions addressing post-fuel load verification activities for portions of the plant within the scope of this design certification.

Paragraph VI.D would reiterate the restrictions (contained in Section VIII) placed upon the Commission when ordering generic or plant-specific modifications, changes or additions to structures, systems, or components, design features, design criteria, and ITAAC (paragraph VI.D.3 would address ITAAC) within the scope of the certified design.

Paragraph VI.E would provide that the NRC will specify at an appropriate time the procedures for interested persons to obtain access to proprietary information, SUNSI and SGI information for the ESBWR design certification rule. Access to such information would be for the sole purpose of requesting or participating in certain specified hearings, such as (1) the hearing required by 10 CFR 52.85 where the underlying application references this appendix; (2)

*NRC's Electronic Reading Room (ERR).* The NRC's public electronic reading room is located at http://www.nrc.gov/reading-rm.html.

| Document | PDR | Web | ERR (ADAMS) |
|---|---|---|---|
| SECY-~~XX-XXXX~~, "Proposed Rule - ESBWR Design Certification" | x | x | ML102220172 |
| GE-Hitachi Nuclear Energy application for design certification of the ESBWR design | x | x | ML052450245 |
| ESBWR Design Control Document, Revision 9 | x | x | ML103440266 |
| ESBWR Final Safety Evaluation Report | x | ..... | ML103070392 |
| ESBWR Environmental Assessment | x | x | ML102220247 |
| NEDO-33306, "ESBWR Severe Accident ~~Management~~ Mitigation Design Alternatives" | x | | ML102990433 |
| Regulatory History of Design Certification[3] | x | ..... | ML003761550 |

## VIII. Procedures for Access to SUNSI (Including Proprietary Information) and Safeguards Information for Preparation of Comments on the Proposed ESBWR Design Certification Rule

This section contains instructions regarding how interested persons who wish to comment on the proposed design certification may request access to documents containing SUNSI (including proprietary information[4]), and SGI, in order to prepare their comments. Requirements for access to SGI are primarily set forth in 10 CFR Parts 2 and 73. This notice of proposed rulemaking provides information specific to this rulemaking; however, nothing in this notice is intended to conflict with the SGI regulations.

[3] The regulatory history of the NRC's design certification reviews is a package of documents that is available in NRC's PDR and ERR. This history spans the period during which the NRC simultaneously developed the regulatory standards for reviewing these designs and the form and content of the rules that certified the designs.

[4] For purposes of this discussion, "proprietary information" constitutes trade secrets or commercial or financial information that are privileged or confidential, as those terms are used under the Freedom of Information Act and the NRC's implementing regulation at 10 CFR Part 9.

design in a rule. The NRC will evaluate the environmental impacts and issue an EIS as appropriate under NEPA as part of the application for the construction and operation of a facility referencing any particular design certification rule.

In addition, consistent with 10 CFR 51.30(d) and 10 CFR 51.32(b), the NRC has prepared a draft EA for the ESBWR design addressing various design alternatives to prevent and mitigate severe accidents. The EA is based, in part, upon the NRC's review of GEH's evaluation of various design alternatives to prevent and mitigate severe accidents in NEDO-33306, "ESBWR Severe Accident Mitigation Design Alternatives." Based upon review of GEH's evaluation, the Commission concludes that: (1) GEH identified a reasonably complete set of potential design alternatives to prevent and mitigate severe accidents for the ESBWR design; (2) none of the potential design alternatives are justified on the basis of cost-benefit considerations; and (3) it is unlikely that other design changes would be identified and justified during the term of the design certification on the basis of cost-benefit considerations, because the estimated core damage frequencies for the ESBWR are very low on an absolute scale. These issues are considered resolved for the ESBWR design.

The Commission is requesting comment on the draft EA. As provided in 10 CFR 51.31(b), comments on the draft EA will be limited to the consideration of SAMDAs as required by 10 CFR 51.30(d). The Commission will prepare a final EA following the close of the comment period for the proposed standard design certification. If a final rule is issued, all environmental issues concerning SAMDAs associated with the information in the final EA and NEDO-33306 will be considered resolved for facility applications referencing the ESBWR design if the site characteristics at the site proposed in the facility application fall within the site parameters specified in NEDO-33306.

ADAMS Accession No. ML103440266. If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, then contact the NRC's Public Document Room (PDR) reference staff at (800) 397-4209, (301) 415-4737, or by e-mail to pdr.resource@nrc.gov. A copy of the generic DCD is also available for examination and copying at the NRC PDR, Room O-1F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852. Copies are also available for examination at the NRC Library, Two White Flint North, 11545 Rockville Pike, Rockville, Maryland, 20852, telephone (301) 415-5610, e-mail library.resource@nrc.gov. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call (202) 741-6030 or go to http://www.archives.gov/federal-register/cfr/ibr-locations.html. The generic DCD can also be viewed at the Federal Rulemaking Web site, http://www.regulations.gov, by searching for documents filed under Docket ID NRC-2010-0135.

B. An applicant or licensee referencing this appendix, in accordance with Section IV of this appendix, shall incorporate by reference and comply with the requirements of this appendix, including Tier 1, Tier 2 (including the availability controls in Appendix 19ACM of the DCD), and the generic TS except as otherwise provided in this appendix. Conceptual design information in the generic DCD and the evaluation of severe accident mitigation design alternatives in NEDO-33306, "ESBWR Severe Accident ~~Management~~ Mitigation Design Alternatives" are not part of this appendix.

C. If there is a conflict between Tier 1 and Tier 2 of the DCD, then Tier 1 controls.

D. If there is a conflict between the generic DCD and either the application for design certification of the ESBWR design or NUREG-XXXX, "Final Safety Evaluation Report Related to Certification of the ESBWR Standard Design," (FSER), then the generic DCD controls.

1. All nuclear safety issues, except for the generic TS and other operational requirements such as human factors engineering procedure development and training program development in Chapters 18.9 and 18.10 of the generic DCD, associated with the information in the FSER, Tier 1, Tier 2 (including referenced information, which the context indicates is intended as requirements, and the availability controls in Appendix 19ACM of the DCD), and the rulemaking record for certification of the ESBWR design;

2. All nuclear safety and safeguards issues associated with the referenced information in SUNSI (including proprietary information) and safeguards information which, in context, are intended as requirements in the generic DCD for the ESBWR design, with the exception of human factors engineering procedure development and training program development in Chapters 18.9 and 18.10 of the generic DCD;

3. All generic changes to the DCD under and in compliance with the change processes in paragraphs VIII.A.1 and VIII.B.1 of this appendix;

4. All exemptions from the DCD under and in compliance with the change processes in paragraphs VIII.A.4 and VIII.B.4 of this appendix, but only for that plant;

5. All departures from the DCD that are approved by license amendment, but only for that plant;

6. Except as provided in paragraph VIII.B.5.f of this appendix, all departures from Tier 2 under and in compliance with the change processes in paragraph VIII.B.5 of this appendix that do not require prior NRC approval, but only for that plant;

7. All environmental issues concerning severe accident mitigation design alternatives associated with the information in the NRC's EA for the ESBWR design (ADAMS Accession No. ML102220247) and NEDO-33306, "ESBWR Severe Accident ~~Management~~ Mitigation Design Alternatives," (ADAMS Accession No. ML102990433) for plants referencing this appendix whose site characteristics fall within those site parameters specified in NEDO-33306.

# NOTATION VOTE

## RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: Commissioner Apostolakis

SUBJECT: SECY-11-0006 – PROPOSED RULE–ECONOMIC SIMPLIFIED BOILING-WATER REACTOR DESIGN CERTIFICATION

Approved __XX__ Disapproved _____ Abstain _____

Not Participating _____

COMMENTS: Below ___ Attached _XX_ None ___

SIGNATURE

2/25/11

DATE

Entered on "STARS" Yes _X_ No ___

**Commissioner Apostolakis' Comments on SECY-11-0006,**
**"Proposed Rule: Economic Simplified Boiling-Water Reactor Design Certification"**

I approve the proposed amendment to 10 CFR Part 52 for publication in the Federal Register, including the proposed exclusion of human factors engineering procedures and training from design certification finality. I find the proposed exclusion to be consistent with the established Commission policy of not approving operational program elements through design certification except where necessary to find design elements acceptable.

# NOTATION VOTE

## RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: COMMISSIONER MAGWOOD

SUBJECT: SECY-11-0006 – PROPOSED RULE–ECONOMIC SIMPLIFIED BOILING-WATER REACTOR DESIGN CERTIFICATION

Approved X Disapproved _____ Abstain _____

Not Participating _____

COMMENTS: Below ___ Attached X None ___

SIGNATURE

25 February 2011

DATE

Entered on "STARS" Yes X No ___

**Commissioner Magwood's Comments on SECY-11-0006,**
**"Proposed Rule: Economic Simplified**
**Boiling-Water Reactor Design Certification"**

I approve staff's recommendation to publish the proposed rule to certify the ESBWR standard design, including its proposal to exclude human factors engineering procedures. The ESBWR represents one of the most advanced nuclear power technologies this agency has reviewed. Completing this work represents the culmination of efforts in the NRC, the Department of Energy, and industry that reach back to the 1980s. Despite many fits, starts, and changes over decades—and considerable uncertainty about the future of this design in recent years—the staff has completed its review of this technology in a timely and efficient manner. This accomplishment stands as a clear testament to the NRC's ability to effectively analyze, evaluate, and approve unique and innovative nuclear technologies.

The ESBWR is but one of seven design certification applications, amendments, or renewals under review. The last several years have presented a challenging workload replete with first-of-a-kind technologies. I commend the staff for its impressive accomplishments and look forward to a methodical and comprehensive assessment and review of comments from the public we serve.

2/25/11

William D. Magwood, IV Date

# NOTATION VOTE

## RESPONSE SHEET

**TO:** Annette Vietti-Cook, Secretary

**FROM:** COMMISSIONER OSTENDORFF

**SUBJECT:** SECY-11-0006 – PROPOSED RULE—ECONOMIC SIMPLIFIED BOILING-WATER REACTOR DESIGN CERTIFICATION

**Approved** __X__ **Disapproved** _____ **Abstain** _____

**Not Participating** _____

**COMMENTS:** **Below** _X_ **Attached** ___ **None** ___

I approve the proposed amendment to 10 CFR 52 for publication in the *Federal Register*, including the proposed exclusion of Human Factors Engineering procedures and training from design certification finality

_____
**SIGNATURE**

2/10/11
_____
**DATE**

**Entered on "STARS"** **Yes** _x_ **No** ___