



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

September 21, 2011

SECRETARY

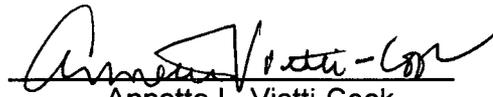
COMMISSION VOTING RECORD

DECISION ITEM: SECY-11-0089

TITLE:                    OPTIONS FOR PROCEEDING WITH FUTURE LEVEL 3  
                              PROBABILISTIC RISK ASSESSMENT ACTIVITIES

The Commission (with Chairman Jaczko and Commissioners Svinicki, Apostolakis, and Magwood agreeing in part and disagreeing in part and Commissioner Ostendorff agreeing) acted on the subject paper as recorded in the Staff Requirements Memorandum (SRM) of September 21, 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-11-0089

RECORDED VOTES

	APRVD	DISAPRVD	ABSTAIN	NOT PARTICIP	COMMENTS	DATE
CHRM. JACZKO	X	X			X	8/29/11
COMR. SVINICKI	X	X			X	9/6/11
COMR. APOSTOLAKIS	X	X			X	8/9/11
COMR. MAGWOOD	X	X			X	8/25/11
COMR. OSTENDORFF	X				X	8/9/11

**NOTATION VOTE**

**RESPONSE SHEET**

TO: Annette Vietti-Cook, Secretary  
FROM: Chairman Gregory B. Jaczko  
SUBJECT: SECY-11-0089 – OPTIONS FOR PROCEEDING WITH  
FUTURE LEVEL 3 PROBABILISTIC RISK  
ASSESSMENT ACTIVITIES

Approved in Part  X  Disapproved in Part  X  Abstain  \_\_\_\_\_

Not Participating  \_\_\_\_\_

COMMENTS: Below  \_\_\_\_\_  Attached  X  None  \_\_\_\_\_

  
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8/29/11  
\_\_\_\_\_  
DATE

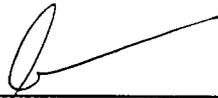
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**Chairman Jaczko's Comments on  
SECY-11-0089, "Options For Proceeding With Future Level 3  
Probabilistic Risk Assessment Activities"**

As Commissioners Apostolakis stated in his vote a full-scope and high quality Level 3 probabilistic risk assessment (PRA) is the most complete representation of plant risk. I appreciate Commissioners Apostolakis leadership in this area and have benefited from his invaluable experience. A modern and comprehensive full-scope Level 3 PRA for a site will provide invaluable insights into whether our current metrics are sufficient or whether additional metrics are needed to provide a more complete understanding of risk to the public. With the publication of the 1995 PRA Policy Statement, the Commission has endorsed and encouraged the use of PRAs and other risk tools to strengthen the regulatory framework. Although not all of our activities necessarily lend themselves to PRA type analysis, both the NRC and our licensees rely much more on this technology to make important and routine decisions. Because of this greater and ever expanding reliance on this type of analysis, it is important to ensure our common understanding of not only individual plant risk - but site risk - is complete. In addition, a more complete understanding of site risk may make it possible to expand this valuable tool to other areas such as risk-informed and performance-based emergency preparedness.

I approve in part and disapprove in part Option 3 in SECY-11-0089. I agree with Commissioner Apostolakis that the staff should proceed with a new full-scope comprehensive site Level 3 PRA that will address integrated risk consistent with the recommendations of the ACRS in its June 22, 2011 letter. The staff working with licensees or applicants should select one or more sites that they believe is most suitable for this study based on the staff's judgment.

As I stated during the July 28, 2011 Commission meeting on this topic, there is value from a safety perspective in licensees and applicants developing and maintaining comprehensive site Level 3 PRAs. If all licensees had full-scope and high quality PRAs, licensees would be better able to ensure safety because of a more complete understanding of risk at each site. In addition, the NRC would be in a better position to replace prescriptive regulatory requirements with more flexible and effective risk-informed performance-based requirements along the lines of § 50.48, "Fire Protection," and § 50.69, "Risk-informed categorization and treatment of structures, systems and components for nuclear power reactors." As I did during the 2011 Regulatory Information Conference, I call on the industry to put the infrastructure in place so every site can have a comprehensive Level 3 PRA within the next 5 years.

  
\_\_\_\_\_  
Gregory B. Jaczko

8/29/11  
\_\_\_\_\_  
Date

**NOTATION VOTE**

**RESPONSE SHEET**

**TO:** Annette Vietti-Cook, Secretary  
**FROM:** COMMISSIONER SVINICKI  
**SUBJECT:** SECY-11-0089 – OPTIONS FOR PROCEEDING WITH  
FUTURE LEVEL 3 PROBABILISTIC RISK  
ASSESSMENT ACTIVITIES

Approved XX In Part Disapproved XX In Part Abstain \_\_\_\_\_

Not Participating \_\_\_\_\_

COMMENTS: Below \_\_\_ Attached XX None \_\_\_

  
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09 / 11  
\_\_\_\_\_  
DATE

Entered on "STARS" Yes  No \_\_\_\_\_

**Commissioner Svinicki's Comments on SECY-11-0089**  
**Options for Proceeding with Future Level 3 Probabilistic Risk Assessment Activities**

I disapprove, in part, the staff's recommended Option 2 to conduct focused research to address identified gaps in existing PRA technology before performing a full-scope comprehensive site Level 3 probabilistic risk assessment (PRA). Instead, I approve directing the staff to conduct a Level 3 PRA using the modified approach proposed by Commissioner Apostolakis, in his vote, and as described in the comments below.

I join my colleagues in expressing appreciation for the staff's hard work in performing a Level 3 PRA scoping study. The agency's endeavors towards a Level 3 PRA will need to be developed with rigor and discipline to ensure that the end results of the analysis will meet the vision of maintaining and enhancing the NRC's technical competence and regulatory decision making. A necessary outgrowth of this effort should be the development, early in the project, of a clear articulation of how the results of the analysis can be applied consistent with the NRC's Principles of Good Regulation. A paper describing the staff's plans to apply the Level 3 PRA results to the NRC's regulatory framework should be provided to the Commission for information within 12 months of the issuance of the staff requirements memorandum (SRM) resulting from SECY-11-0089.

Results from the NRC's ongoing, state-of-the-art reactor consequence analysis (SOARCA) project should have a bearing on any development of a Level 3 PRA. Unfortunately, SOARCA has suffered from a history of changing scope and schedules. This has resulted in substantial delay in the opportunity to benefit by applying the results of SOARCA in further risk informing our regulations. Nevertheless, the insights from SOARCA could prove to be particularly useful for the Level 3 PRA, and I join Commissioner Ostendorff in proposing that the staff incorporate both technical and project management insights from the SOARCA project to ensure technically sound, disciplined, and timely completion of any planned pilot site Level 3 PRA activities. The staff should build on the SOARCA work to gain a better understanding of potential radiological effects of postulated accident sequences, particularly in the analysis of accidents at multiple units on a site and from the additional source terms contributed by spent fuel pools and dry casks.

Mindful of the significant resources that will be required for this project and of the resource management demands that likely face the NRC in coming years, I support Commissioner Magwood's proposal that the staff develop a detailed project plan of the steps and resources needed to complete this work and provide a copy to the Commission for its information within six months of the SRM resulting from this paper. I also support his proposal that the staff provide briefings to Commissioner staff on at least an annual basis to assure that the Commission remains fully informed and engaged as this work proceeds.

  
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Kristine L. Svinicki

09/11

**NOTATION VOTE**

**RESPONSE SHEET**

**TO:** Annette Vietti-Cook, Secretary  
**FROM:** COMMISSIONER APOSTOLAKIS  
**SUBJECT:** SECY-11-0089 – OPTIONS FOR PROCEEDING WITH  
FUTURE LEVEL 3 PROBABILISTIC RISK  
ASSESSMENT ACTIVITIES

Approved XX Disapproved XX Abstain \_\_\_\_\_

Not Participating \_\_\_\_\_

COMMENTS: Below \_\_\_ Attached XX None \_\_\_



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8/9/11

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DATE

Entered on "STARS" Yes X No \_\_\_

**Commissioner Apostolakis' Comments on SECY-11-0089**  
**Options for Proceeding with Future Level 3 Probabilistic Risk Assessment Activities**

I appreciate the staff's work in performing a Level 3 PRA scoping study to identify potential uses for Level 3 PRAs and develop various options for proceeding with future Level 3 PRA activities. The staff recommends Option 2. However, I agree with the ACRS recommendation that a modified version of the staff's proposed Option 3 should be adopted to account for the resource limitations that appear to have driven the staff to recommend Option 2.

The staff should plan for and perform a new full-scope comprehensive site Level 3 PRA for an operating plant, as described in Option 3. A full-scope Level 3 PRA is the most complete representation of plant risk. It has been 36 years since the first Level 3 PRA was published (WASH-1400) and over 20 years since the last Level 3 PRA work (NUREG-1150). These PRAs used the technology available at the time and focused on risk per reactor. In light of the accident at Fukushima Dai-ichi that involved multiple reactors and spent fuel pools, we need an updated assessment of risk, including consideration of risk per site.

The staff's main argument against Option 3 appears to be the lack of qualified risk analysts who are not already fully engaged in high-priority activities. I acknowledge the need to keep qualified resources dedicated to ongoing important PRA activities, such as the review of license amendments for licensee's transitioning to NFPA 805. I point out, however, that future work emanating from the recommendations of the Fukushima Dai-ichi Near-Term Task Force would, in fact, support the conduct of a Level 3 PRA. Conversely, the development of a comprehensive Level 3 PRA would provide the overall risk context for the evaluation and implementation of many of the issues recommended for long-term consideration by the Near-Term Task Force. For example, the Task Force stated, "Dose assessment is the primary means for assessing the potential consequences of a radiological emergency." A Level 3 PRA for a multi-unit site, including spent fuel pools, would provide such a rigorous assessment.

I agree with the ACRS statement that "Knowledge and experience gained from the performance of a modern Level 3 PRA will also enhance our capabilities to address emerging issues for operating plants, to support emergency planning, and to evaluate the integrated risks from proposed new plant designs and siting configurations." An example is better regulatory decision making in new areas such as licensing of small modular reactors. An additional benefit of pursuing a full-scope Level 3 PRA is that it will broaden the NRC's pool of experts who will be exposed to the PRA systems approach and methods for uncertainty analysis<sup>1</sup>.

To alleviate some of the near-term resource challenges and to allow adequate time for a careful site selection process, the schedule for the Level 3 PRA described in Option 3 should be extended to 4 years. In addition, the staff should explore the benefits of working collaboratively, as appropriate, with the Electric Power Research Institute.

The performance of a full-scope comprehensive site Level 3 PRA that incorporates recent advancements in technical knowledge is essential to maintaining and enhancing the NRC's technical competence and its regulatory decision making.

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<sup>1</sup> Typically, a risk analyst is considered to be an expert in the use of the main PRA tools such as fault and event trees and uncertainty analysis. However, it takes many more kinds of expertise to perform a Level 3 PRA, such as thermal hydraulics, severe accident phenomenology, and consequence calculations. These experts are not necessarily familiar with the PRA approach.

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary  
FROM: COMMISSIONER MAGWOOD  
SUBJECT: SECY-11-0089 – OPTIONS FOR PROCEEDING WITH  
FUTURE LEVEL 3 PROBABILISTIC RISK  
ASSESSMENT ACTIVITIES

Approved  Disapproved  Abstain \_\_\_\_\_

Not Participating \_\_\_\_\_

COMMENTS: Below \_\_\_\_\_ Attached  None \_\_\_\_\_

  
\_\_\_\_\_  
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25 AUGUST 2011  
\_\_\_\_\_  
DATE

Entered on "STARS" Yes  No \_\_\_\_\_

**Commissioner Magwood's Comments on SECY-11-0089,  
"Options for Proceeding with Future  
Level 3 Probabilistic Risk Assessment Activities"**

I appreciate the staff's effort in providing a very informative paper describing options for proceeding with future Level 3 PRA activities. The staff has recommended that the Commission approve the implementation of Option 2, under which staff would perform focused research to address "gaps" in current PRA methods, models and develop data to support an eventual full-scope Level 3 PRA. However, I agree with Commissioner Apostolakis and the ACRS that we should proceed with a modified version of Option 3. Such an approach would achieve results sooner than Option 2 while mitigating resource impacts.

As Commissioner Apostolakis points out in his vote, there have been significant advancements in our understanding of severe accidents and their potential offsite consequences in the decades since the completion of the Level 3 PRA work of WASH-1400 and NUREG-1150. We have also gained a wealth of nuclear power plant operating experience and significantly improved plant-specific strategies to prevent or mitigate the potential consequences from severe accidents. The application of Level 3 PRA could improve our understanding of how the many changes in operational practices integrate to affect overall plant safety. As such, Level 3 PRA could prove to be a very important advancement in how the NRC makes regulatory decisions.

The primary concern raised with respect to Option 3 of SECY-11-0089 is that it would be resource-intensive and would require reallocation of qualified risk analysts from other activities. This is a reasonable concern, but one which I believe can be managed. First, as noted above, I support Commissioner Apostolakis' recommendation for a modified version of Option 3 that would be implemented over four years. I also support fully the concept that this work should be performed in collaboration with other, including EPRI and licensees interested in providing plants that could serve as pilots for this analysis. Moreover, I believe the alternate approach described in the "Other Options" section of SECY-11-0089 has merit in that we should explore how best to leverage existing technical information in pursuing this work.

If this approach is approved by the Commission, staff should engage industry stakeholders to expeditiously select the most appropriate pilot site. Staff should develop a detailed project plan to complete this work and provide a copy to the Commission for its information within six months of the SRM resulting from this paper. I also recommend that staff provide briefings to Commission staff on at least an annual basis to assure that the Commission remains fully informed and engaged as this work proceeds.

  
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William D. Magwood, IV      8/25/11  
Date

**NOTATION VOTE**

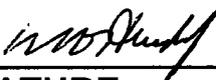
**RESPONSE SHEET**

TO: Annette Vietti-Cook, Secretary  
FROM: COMMISSIONER OSTENDORFF  
SUBJECT: SECY-11-0089 – OPTIONS FOR PROCEEDING WITH  
FUTURE LEVEL 3 PROBABILISTIC RISK  
ASSESSMENT ACTIVITIES

Approved  X  Disapproved   Abstain

Not Participating

COMMENTS: Below   Attached  X  None

  
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8/9/11   
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DATE

Entered on "STARS" Yes  X  No

**Commissioner Ostendorff's Comments on SECY-11-0089,  
"Options for Proceeding with Future Level 3 Probabilistic Risk Assessment Activities"**

I approve the staff's recommended Option 2 in SECY-11-0089. Option 2 provides a pragmatic approach to prepare for future full-scope comprehensive site Level 3 probabilistic risk assessment (PRA). I continue to believe that Level 3 PRA research may offer future regulatory benefits. As noted in my vote on SECY-11-0053, Level 3 PRA may provide the technical basis for risk-informing emergency planning requirements and guidance. I agree with Commissioner Apostolakis that performance of a full-scope site Level 3 PRA could enhance and maintain "... the NRC's technical competence and its regulatory decision making."

I appreciated stakeholder input in the development of the options and recommendations offered including both the ACRS full committee's views and the candid and insightful comments by Dr. Dana Powers.<sup>1</sup> The NRC staff has provided a realistic assessment of priorities and demands regarding the skill sets and resources required to sustain NRC risk-informed activities over the next two years. I am also mindful that the technical expertise to conduct a Level 3 PRA requires specialists with requisite experience to ensure proper analysis and execution of a pilot project if approved by the Commission. Overall, the staff's assessment and current fiscal climate provides an important context for the staff's recommendations regarding Level 3 PRA work.

Currently allocated risk-assessment resources and other needed technical expertise should not be diverted at this time to support Level 3 PRA activities. Risk-assessment resources to support the Reactor Oversight Process, reviews of forthcoming NFPA-0805 license amendment requests, and ongoing work for new and advanced reactors should remain top priorities. Furthermore, the Commission's direction on the NRC Fukushima Task Force report may also affect current priorities that may require risk-assessment resources. There are two additional ongoing agency activities that should be resolved prior to the Commission's approval of a site Level 3 PRA project. First, the Commission would benefit greatly by having results from the task force led by Commissioner Apostolakis.<sup>2</sup> Per the Chairman's tasking, the task force is assessing potential enhancements of the NRC's current risk-informed, performance-based regulatory approach and is expected to have its report completed in 2012. Second, the staff should incorporate both technical and project management insights from the ongoing state-of-the-art reactor consequence analysis (SOARCA) project to ensure technically sound, disciplined, and timely completion of any planned site Level 3 PRA activities.

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<sup>1</sup> ACRS Chairman Said Abdel-Khalik Letter to NRC Chairman Jaczko, "Draft SECY Paper, "Options for Proceeding with Future Level 3 Probabilistic Risk Assessment Activities"." (June 22, 2011) (ADAMS Accession Number ML11164A050).

<sup>2</sup> "Charter for Task Force for Assessment of Options for More Holistic Risk-Informed, Performance-Based Regulatory Approach." (February 11, 2011) (ADAMS Accession Number ML110680621).