



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

March 2, 2011

SECRETARY

COMMISSION VOTING RECORD

DECISION ITEM: SECY-10-0121

TITLE: MODIFYING THE RISK-INFORMED REGULATORY
GUIDANCE FOR NEW REACTORS

The Commission (with Chairman Jaczko and Commissioners Svinicki, Magwood, and Ostendorff approving in part and disapproving in part and Commissioner Apostolakis approving) acted on the subject paper as recorded in the Staff Requirements Memorandum (SRM) of March 2, 2011.

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

A handwritten signature in black ink, appearing to read "Annette Vietti-Cook", written over a horizontal line.

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-10-0121

RECORDED VOTES

| | APRVD | DISAPRVD | ABSTAIN | NOT PARTICIP | COMMENTS | DATE |
|-------------------|-------|----------|---------|-----------------|----------|----------|
| CHRM. JACZKO | X | X | | | X | 11/1/10 |
| COMR. SVINICKI | X | X | | | X | 11/17/10 |
| COMR. APOSTOLAKIS | X | | | | X | 10/27/10 |
| COMR. MAGWOOD | X | X | | | X | 11/23/10 |
| COMR. OSTENDORFF | X | X | | | X | 11/12/10 |

COMMENT RESOLUTION

In their vote sheets, Chairman Jaczko and Commissioners Svinicki, Magwood, and Ostendorff approved in part and disapproved in part and Commissioner Apostolakis 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 2, 2011.

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary
FROM: Chairman Gregory B. Jaczko
SUBJECT: SECY-10-0121 – MODIFYING THE RISK-INFORMED
REGULATORY GUIDANCE FOR NEW REACTORS

Approved in Part X Disapproved in Part X Abstain

Not Participating

COMMENTS: Below Attached X None



SIGNATURE

11/11/12

DATE

Entered on "STARS" Yes X No

**Chairman Jaczko's Comments on SECY-10-0121,
"Modifying the Risk-Informed Regulatory Guidance for New Reactors"**

I approve in part and disapprove in part option 2 for the staff to identify and implement appropriate changes to the existing risk-informed guidance and processes. The staff should:

- Conduct a comprehensive assessment of all risk-informed guidance and processes to ensure that the guidance and processes when applied holistically to new large light water reactors ensure that the Commission's policies identified in SECY-10-0121 are fully met,
- Identify specific changes to the guidance for risk-informed licensing-basis changes that would prevent a significant decrease in the new reactor's level of safety over its life, and
- Identify specific changes to the risk-informed guidance for the Reactor Oversight Process to provide for meaningful regulatory oversight.

This assessment should be completed within one year. Prior to implementing any changes, the staff should inform the Commission of the changes that need to be made and request Commission approval for any proposed change to current Commission's policies or regulations.

My understanding of the staff's intent under option 2 is to ensure that risk-informed guidance and practices when applied to new reactors:

- Preserve sufficient safety margins and enhanced safety of new reactors,
- Preserve the ability to identify adverse trends in operations and safety, so effective and early actions can be taken to correct those trends, and
- Preserve the use of risk-information as a relevant tool in regulatory decision making.

I fully support that intent and commend the staff for seeking to proactively ensure that the application of risk-informed regulatory decision making to new large light water reactors is predictable and well communicated to all of our stakeholders. Ever since Commission's direction in SRM COMJSM-00-003, the early identification of regulatory issues and potential process improvements has been a strength of the NRC's new reactor activities. The current guidance and process were developed, in part, around an understanding of the baseline risk metric estimates for operating reactors. Because the current baselines risk metric estimates are orders of magnitude lower than the baseline risk metrics of operating reactors, there is a chance that all aspects of the current risk-informed guidance may not be suitable for new reactors.

As the staff conducts its assessment, I would encourage the staff to keep in mind that the Commission's safety goals are inherently relative to other societal risks, and the risk from the operation of nuclear reactors needs to be considered in the context of other societal risks. The safety goals may not need to change, but other societal risk may have decreased because safety improvements in non-nuclear industries. Therefore, it may be appropriate to change the surrogates for the safety goals, because of decreases in societal risks without the need to change the safety goals themselves.



Gregory B. Jaczko



Date

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary
FROM: COMMISSIONER SVINICKI
SUBJECT: SECY-10-0121 – MODIFYING THE RISK-INFORMED
REGULATORY GUIDANCE FOR NEW REACTORS

Approved XX In Part Disapproved XX In Part Abstain _____

Not Participating _____

COMMENTS: Below ___ Attached XX None ___



SIGNATURE

11/17 /10

DATE

Entered on "STARS" Yes No _____

**Commissioner Svinicki's Comments on SECY-10-0121
Modifying the Risk-Informed Regulatory Guidance for New Reactors**

I approve in part and disapprove in part the staff's recommendations to modify the risk-informed regulatory guidance in SECY-10-0121. I disapprove the staff's recommended Option 2, but I approve Option 1 – defined as continued use of the existing risk-informed framework for licensing changes and the Reactor Oversight Process (ROP). I would accompany this option, however, with some specific, near term, staff actions to better inform the issue. After completing these actions, the staff should prepare a notation vote paper for the Commission's consideration, outlining policy issues and recommending any needed changes to the agency's approach, with greater specificity and definition than was contained in this SECY paper.

From my review of relevant history, I believe the Commission has been consistent in maintaining that new reactors should not be measured against a lower quantitative risk threshold than operating reactors. For example, the 2008 *Federal Register* notice promulgating the Commission's Advanced Reactor Policy Statement states:

“The policy statement does not state that advanced reactor designs must be safer than the current generation of reactors, but rather that they must provide the same degree of protection of the environment and public health and safety and the common defense and security that is required for current-generation light-water reactors. The goal of the policy statement update is to encourage advanced reactor designers to consider safety and security in the early stages of design in order to identify potential design features and/or mitigative measures that provide a more robust and effective security posture with less reliance on operational programs.”

In light of the enhanced safety features of the new reactor designs currently undergoing design certification review, I think it is fair to claim some measure of success toward this desired outcome. The principal “issue” identified by the staff regarding the new reactors' lower risk estimates is that of adapting the regulatory framework, or perhaps, the regulator, to the new paradigm of regulating an inherently safer reactor fleet. This strikes me as a problem worth having. Consequently, I agree with my colleagues who, in their votes on this paper, find that the Commission should not take a position that suggests the existing safety goals, the subsidiary risk goals, or the risk guidance derived from them are inadequate.

That being said, I believe it would be beneficial to engage with industry stakeholders in a series of tabletop exercises to better inform the specifics at issue here, and to move us beyond generalities, to a position of either validating or exploding the myth of some of the concerns we have heard -- of redundant safety trains being taken out of commission willy-nilly or rampant degradation in safety culture going unnoticed and unchecked. To this end, the staff should test a series of hypothetical scenarios of different types against our current regulations and guidance, looking realistically at both the likelihood of these events occurring and the regulatory tools available to make us aware of such events and to exert regulatory influence over them. I suspect that in the case of the more breathless examples, the NRC has existing regulatory tools to insert itself into the process and in the case of examples with a more modest effect on plant risk estimates, it is appropriate to question on what basis the regulator would need to insert itself

into the process. New reactors with enhanced safety features should, appropriately, be granted more operational flexibility than current reactors. This flexibility will provide a more efficient use of resources by the regulator, along with the ability to focus more fully on issues of true safety significance.

For the operating phase, staff and stakeholders should discuss how enhanced safety margins will be maintained. Since the objective is to confirm that the enhanced safety margins will not significantly decrease, it will be critical to define what constitutes "significant." Other changes to the Reactor Oversight Process can, in my view, wait until more information is available, such as operating experience from as-built/as-operated, new plants, as well as validated probabilistic risk assessments. As noted by the Advisory Committee on Reactor Safeguards, further analysis and operating experience could cause the current risk estimates for new plants to increase significantly, which would obviate the revisions to guidance currently contemplated by the staff under Option 2.

Finally, the staff should continue to work with stakeholders to develop a 10 CFR 50.59-like process for combined license holders to implement changes during the construction phase of a new nuclear power plant, including the development of guidance related to changes that would not require NRC approval. The staff should also assess the sufficiency of guidance to support new reactor application of risk-managed technical specifications. The results of these assessments and of the tabletop exercises, and any associated recommendations, should be included in the notation vote paper mentioned above.



Kristine L. Svinicki 11/17/10

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary
FROM: Commissioner Apostolakis
SUBJECT: SECY-10-0121 – MODIFYING THE RISK-INFORMED
REGULATORY GUIDANCE FOR NEW REACTORS

Approved XX Disapproved _____ Abstain _____

Not Participating _____

COMMENTS: Below _____ Attached XX None _____



SIGNATURE

10/27/10

DATE

Entered on "STARS" Yes No _____

**Commissioner Apostolakis' Comments on SECY-10-0121,
"Modifying the Risk-Informed Regulatory Guidance for New Reactors"**

I approve Option 2 because it seeks to explore ways to prevent a significant decrease in the level of safety over the life of a new plant while allowing for more regulatory flexibility due to its overall lower risk. However, more information is needed before Option 2 is implemented.

I agree with the ACRS that "Pragmatic considerations must continue to guide the regulatory decision-making process." In my view, these considerations include the following items:

- a) Current estimates of core damage frequency (CDF) and large release frequency (LRF) for new reactors are substantially lower (up to three orders of magnitude) than those for existing plants.
- b) Site-specific external-event (earthquakes, tornadoes, et al) risk contributions are not included in the above estimates. These contributions may raise the current estimates significantly.
- c) Operating experience and additional PRAs performed by independent groups may also raise the current estimates. The evolution of PRAs for the current fleet provides useful examples of the latter, e.g., the recognition of the risk significance of external events in the early 1980s and that of low-power and shutdown operations several years later.
- d) The Commission expects, as a minimum, at least the same degree of protection of the public and the environment that is required for current-generation light water reactors.
- e) The Commission expects that new reactors will provide enhanced margins of safety.
- f) The NRC should be aware of significant changes in the risk profile of a licensed new reactor and should not rely on deterministic requirements alone to assure that the Commission's expectation is satisfied.
- g) RG 1.174 states that the cumulative effect of increases in estimated CDF and LERF resulting from proposed licensing basis changes should be tracked and considered in the decision-making process. No quantitative guidance is given.
- h) New reactors with enhanced safety features should have more operational flexibility than current reactors.
- i) The safety goals have effectively defined how safe is safe enough.

Some of these considerations are in conflict with one another. At this time, Option 2 does not provide specific guidance as to how these considerations would be addressed. However, it allows the staff to interact with stakeholders to develop options for addressing them. The staff should report back to the Commission in one year with a paper describing these options, a description of specific changes to guidance necessary to implement Option 2 and possible policy issues, if any. The staff should describe how they will confirm that the enhanced margins are not significantly degraded or define "significant" in this context. The ACRS should review this paper prior to it being forwarded to the Commission.

In the light of considerations (b) and (c), the proposed options should prioritize potential modifications to the risk-informed regulatory guidance. The prioritization process should start with the four major categories that the staff has identified. These are:

1. Guidance for changes to a licensee's approved licensing basis without prior NRC approval.
2. Risk-informed guidance to support changes to a licensee's approved licensing basis, including operational programs, with prior NRC approval.
3. Guidance to support implementation of risk-informed regulations.

4. Guidance to support implementation of the ROP.

The staff should continue to work with stakeholders to:

- (1) identify specific changes to the guidance for risk-informed licensing-basis changes that would prevent a significant decrease in the new reactor's level of safety over its life, and
- (2) identify specific changes to the risk-informed guidance for the ROP to provide for meaningful regulatory oversight.

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary
FROM: COMMISSIONER MAGWOOD
SUBJECT: SECY-10-0121 – MODIFYING THE RISK-INFORMED
REGULATORY GUIDANCE FOR NEW REACTORS

Approved Disapproved Abstain

Not Participating

COMMENTS: Below Attached None



SIGNATURE

23 November 2010

DATE

Entered on "STARS" Yes No

Commissioner Magwood's Comments on SECY-10-0121
"Modifying the Risk-Informed Regulatory Guidance for New Reactors"

I appreciate the staff's efforts to describe the potential issues with applying the current guidance for risk-informed changes to the licensing bases and the Reactor Oversight Process (ROP) for new reactors. It is quite clear that the staff has given considerable thought to this subject and is taking appropriate, initial steps to ask the right questions about the ability of our current regulatory framework to adequately address the advent of a new generation of nuclear power plants. I am also aware that there is a diversity of opinions among the staff about how best to approach this matter and that, perhaps, is reflected in the rather general nature of the options presented in the staff paper. I do not find that any of the three options presented in SECY-10-0121 provide either sufficient detail to anticipate a solution or a convincing roadmap toward a practical approach to answering the questions at hand. Although the continued use of the existing risk-informed framework for licensing changes and the ROP may not be the ultimate answer, Option 1 of the staff paper could be adopted as an interim approach.

The challenge before us is to encompass Generation III+ (and possibly Generation IV) nuclear power plants in a regulatory framework that has served this agency well as it has sought to assure the protection of the health, safety, and security of the American public. These plants have characteristics that, by design and intent, should allow them to operate with levels of safety that, in terms of risk, exceed currently operating nuclear power plants by two to three orders of magnitude. The reason that this exercise has proven difficult rests on the fact that our current framework was designed and developed explicitly around the knowledge base derived from the operation of second generation nuclear power plants. Given the fact that all 104 power reactors in the U.S. fall in this category (as do essentially all power reactors in operation around the world), this approach was quite reasonable and adequate—especially when one recalls that when the safety goals (for Core Damage Frequency [CDF] and Large Early Release Frequency) and the ROP were established, few believed that new U.S. nuclear power plants were likely to be built in the foreseeable future.

However justifiable this approach, the current regulatory framework was not created with advanced reactor technologies in mind. I view the state of our current framework as analogous to Newtonian physics at the close of the 19th Century. Based on careful observation of the world as we understood it, this physics served us well in understanding Earthly speeds and everyday objects. However, as the 20th Century brought new science and an understanding of speeds approaching that of light and masses at the sub-atomic scale, we found that special relativity and quantum mechanics—which incorporate Newtonian physics in a larger framework—were better able to describe the wider world.

Now, we must wonder whether our 20th Century regulatory framework, built on observation of 20th Century technologies, is the best tool to address the technologies of the 21st Century. I suspect that the true task at hand is to recognize the potential limitations of our current framework—built on deterministic factors derived from observation and decades of operating experience—and create a more rigorous, risk-based framework that can both provide a strong basis for regulating currently operating plants while absorbing changes in technology. As we consider the challenge of modifying our regulatory guidance to accommodate the attributes of new reactors, I believe that this task is comprised of two components: management of the licensing bases for new reactors and the implementation of the ROP as new technologies come into operation.

First, with regard to the issue of the licensing bases for new reactors, this matter revolves around the agency's safety goals. The safety goals derive not from any intrinsic character of nuclear plant technology, but from a deterministic policy action. As such, these goals stand as a reasonable level of expected safety for the public and while they should not be viewed as unassailable, they have served well for the regulation of current nuclear power plants. They are and should be viewed less as "goals" to which licensees aspire, but more accurately as a floor below which plant operation is not permitted. Until and unless a convincing technical rationale is presented to change the safety goals, I can see no reason why they cannot serve as the foundation of our efforts to assure public safety during the operation of safer, more advanced nuclear plant technologies. Thus, I agree with both Commissioners Ostendorff and Svinicki that the Commission's current safety goals and safety performance expectations provide an adequate minimum standard for new reactors. Past Commissions have gone on record several times on the issue of safety goals and safety performance expectations and have been consistent in maintaining that new reactors should not be measured against a lower quantitative CDF threshold than the current operating reactors.

When the staff proposed in SECY 90-0016 that new reactors be evaluated using a mean CDF target of less than 1×10^{-5} event per reactor-year, the Commission rejected the recommendation and reiterated its previous position in the Staff Requirements Memorandum on SECY 89-0102 supporting the use of 10^{-4} per year of reactor operation as a CDF goal. Again in 2008, with the release of the revised Advanced Reactor Policy Statement, the Commission made it clear that "the policy statement does not state that advanced reactor designs must be safer than the current generation of reactors, but rather that they must provide the same degree of protection of the environment and public health and safety and the common defense and security that is required for current-generation light-water reactors."

One of the main concerns expressed by staff is that continued use of the existing framework "may not prevent significant decrease in enhanced safety through changes to the licensing basis and plant operations over plant life". I am not convinced. I have yet to hear a reasonable scenario under which such a "decrease in enhanced safety" is likely to occur. Many of the elements of plant design that are intended to make new plants safer than current plants also, in large respect, are intended to make them more economic than current plants. What incentive would licensees have to make changes to reduce safety? Further, there are a host of regulatory barriers that would make it challenging for a licensee to make substantive changes to a certified design. If this can be shown to be a matter of true concern, it may be a more reasonable approach to establish a Commission policy regarding what types of changes are and are not to be entertained. Until a policy is established, should staff receive a proposal of this nature, it should consult with the Commission.

Similarly for the ROP, the staff is concerned that the enhanced safety of new reactor designs will create a larger window for operational behavior than is permitted in the case of currently operating plants. On this point, I have several comments:

- 1) First, I observe that there is some truth to this concern, but that is not necessarily an undesirable outcome. Licensees seek to establish operating margins to allow for future flexibility and upgrades. These changes are not inherently antithetical to appropriate levels of safety. The agency has routinely authorized power uprates for many licensees that take advantage of margins in safety. Would we cease this practice for future plants? Would we resist changes in the operation of new plants that reduce safety margins but still maintain levels of safety that exceed those of current plants by orders of magnitude? I tend to think not.

The staff's paper does not demonstrate why the current ROP would not provide meaningful regulatory oversight and NRC engagement for unintended increases in CDF caused by performance deficiencies for new reactors. A significance determination process result is not a prerequisite for identifying a more-than-minor performance deficiency. As in the case of plant licensing bases discussed above, we have regulatory tools at our disposal that would identify and address problematic behavior by a licensee.

Moreover, even if the Commission were to accept a new standard for Generation III+ reactors, SECY-10-0121 does not demonstrate how a relative change in CDF measurement would support the ROP objectives. Until further risk analyses, failure modes, operating experience, and "significant relative degradation" are better understood and defined, it would be premature to conclude that the current suite of ROP and enforcement tools (e.g., cross-cutting area performance evaluations, problem identification and resolution inspection samples, or enforcement consequences for failing to correct violations), as applied to new reactors, would be inadequate for meeting the ROP objectives.

- 2) While we are engaged in a discussion about how best to regulate a safer generation of nuclear power plants, we must recognize the reality that no such plants have yet been built in this country. I agree entirely with the observation made by Commissioner Apostolakis that site-specific external-event risk contributions, operating experience and additional Probabilistic risk assessments could cause the current risk estimates for new plants to increase significantly. If so, the concerns that prompted SECY-10-0121 may fade. It is vital that whatever approach is ultimately adopted be sufficiently flexible to deal with new information about advanced nuclear plants as it is developed and understood.
- 3) A portion of the staff's concern rises to some degree from a mythological construct: that the current plants are held to a common operational safety standard. Though we often discuss the current plants using language that suggests the existence of singular standard, each of the operating reactors has a unique licensing basis composed of a myriad of requirements ranging from the generic to reactor design and site-specific. The aggregate of those requirements for each plant forms a "safety envelope" within which they are permitted to operate. There are, in effect, 104 ROP microcosms.

Perhaps the time has come to fully embrace this reality and recognize that—from the perspective of how NRC provides safety oversight—a new, Generation III+ reactor is no more different from a conventional 4-loop PWR than is a conventional 4-loop PWR from a Mark 1 BWR. The deployment of Generation III+ technologies presents the agency with an opportunity to review the ROP in a holistic manner and set the framework a firmer technical ground.

- 4) Obviously, such an effort would take considerable time. In the interim, the current ROP process can adapt as the unique licensing bases for each the new reactors are firmly established. Once this is done, I can see no reason the NRC's comprehensive regulatory framework cannot ensure that the new plants will maintain their defined safety envelope—which should include maintenance of their enhanced safety margins.

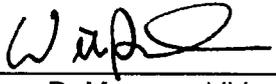
The immediate path-forward, then, is to do little until additional work is completed. I hasten to add that the staff should not view my comments as a negative commentary on their efforts to date. This is a difficult subject and I believe the staff's presentation is an appropriate step in engaging the Commission in what I expect will be a long, complex dialogue.

Thus, I believe that staff should develop a schedule of activities to develop a proposal for Commission review. As the staff considers the comments I and others have made, I believe it essential that staff concerned with both existing and new reactors be engaged in this activity. While my comments point to a broad front of considerations, I will highlight a few areas that can serve as starting points.

First, I note that SECY-10-0121 does not reflect that there has been a comprehensive evaluation of the NRC's integrated regulatory framework for ensuring new reactor safety. I propose staff perform a thorough assessment of the aggregate of requirements that are or will be relevant to the licensing bases of the new reactors. It seems prudent to assess the full gamut of NRC's regulatory framework before we undertake change. Staff may wish to initiate this effort by referring to Office of Nuclear Reactor Regulation Office Instruction LIC-100, "Control of Licensing Bases for Operating Reactors".

After completing this assessment, I agree with Commissioner Svinicki that it would be beneficial to engage with industry stakeholders in a series of tabletop exercises as a litmus test of the sufficiency of the regulatory framework. I also support the analysis outlined by Commissioner Apostolakis.

As suggested by Commissioner Apostolakis, I believe it is appropriate for the staff to establish a plan of analysis and outreach as discussed above and report back to the Commission in one year with a refined proposed path forward. While this matter is prompted by the issues raised by new reactors, I encourage the staff to view this effort as an opportunity to review expansively our overall regulatory framework.

 11/23/90

William D. Magwood IV Date

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary
FROM: COMMISSIONER OSTENDORFF
SUBJECT: SECY-10-0121 – MODIFYING THE RISK-INFORMED
REGULATORY GUIDANCE FOR NEW REACTORS

Approved X Disapproved X Abstain _____

Not Participating _____

COMMENTS: Below ___ Attached X None _____

M. Ostendorff
SIGNATURE

11/12/10
DATE

Entered on "STARS" Yes X No _____

Commissioner Ostendorff's Comments on SECY 10-0121
"Modifying the Risk-Informed Regulatory Guidance for New Reactors"

I approve in part and disapprove in part the staff's recommendation to modify risk guidance for new reactors as described in SECY10-0121. While I agree with the staff that Option 1 (status quo) has shortcomings, I do not support the wholesale changes contained in Options 2 and 3. Hence, I support a pragmatic, measured approach, described below, that represents a hybrid of Options 1 and 2. The staff's paper is an excellent example of anticipating potential challenges and having the foresight to seek the Commission's early direction.

The central issue involves the adequacy of first, the NRC's current safety goals and derivative standards and second, the existing NRC processes, requirements, and regulatory practices as applied to new reactors. I agree with Commissioner Apostolakis that some of the agency's guidance may be in conflict with one another. I am supportive of an effort to improve coherence in staff guidance and enhance knowledge management as proposed below.

With respect to the first point, I believe that the Commission's current safety goals and safety performance expectations are adequate for new reactors. In fact, the Commission has reinforced this finding during release of the 2008 Advanced Reactors Policy Statement indicating that the next generation of reactors must provide at least the same degree of protection and safety that is required for current-generation light-water reactors. Naturally, this expectation would be no different for the new reactors (*non-advanced*) and is a legacy of previous Commission positions and policies for new reactors. Previous Commissions have set forth the ground rules for new reactors to ensure there is a clear and reliable regulatory environment. Applicants for a design certification or a combined license (COL) have made their decisions with the assumption that new reactors would be regulated in a manner consistent with stated Commission policies and expectations for new reactor performance and consistent with oversight and license amendment processes used for current operating reactors with the exception of those provisions unique to the Part 52 process. Barring operational experience with new reactors, I would find it problematic for the Commission to take a position that suggests the existing safety goals, the subsidiary risk goals, or risk guidance that is a derivative of these goals are inadequate or inappropriate. Furthermore, early research insights from the state-of-the-art reactor consequence analysis (SOARCA) project indicate previously held perceptions of severe accident phenomena and public consequences may have been overly conservative, meaning our subsidiary risk goals and derivative standards may in themselves be highly conservative. I believe that COL holders should maintain the safety margins and projected low risk levels afforded by the enhanced features in new reactor designs. However, the NRC should not adopt industry risk objectives as requirements or further restrict operational flexibility in managing risk for plant equipment that is out of service. Therefore, reexamination of risk guidance and thresholds would be premature in light of the above factors.

With respect to the second point, I believe that any prospective changes to risk-informed regulatory guidance have to be understood and evaluated in the context of all existing NRC processes, procedures, requirements, regulatory practices, and actual experience. In my view, SECY 10-0121 does not fully reflect the NRC's comprehensive regulatory framework for new reactor safety, regulatory controls to ensure their safety, and performance based approaches that provide licensees operational flexibility without compromising safety. The NRC has over 10 years of experience with the Reactor Oversight Process (ROP), Maintenance Rule §50.65 implementation, and risk-informed licensing initiatives that has, in part, driven risk reduction and improved industry performance trends without reducing risk thresholds for reactor oversight and licensing activities. These results and regulatory practices should be juxtaposed against the Commission's long history of providing guidance and expectations for safety performance of new reactor plants. For example, the Commission in 1990 addressed the issue of risk thresholds. Specifically in Staff Requirements Memorandum (SRM) SECY 90-016, the Commission reemphasized its commitment to the NRC's subsidiary quantitative safety goals by rejecting the staff's proposal to further reduce the core damage frequency (CDF) goal by an order of magnitude. The

Commission clearly stated that the CDF goal should be 10^{-4} /year, and the large release goal should be less than 10^{-6} /year, which was a reiteration of a 1989 Commission decision. The Commission clearly stated that the NRC should not adopt industry risk objectives as a basis for new expectations or requirements. The Commission also required new reactors to have a reliability assurance program (RAP) per SRM SECY 95-132, "Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems (RTNSS) in Passive Plant Designs (SECY 94-084)." A RAP is to provide reasonable assurance that a new reactor is designed, constructed, and operated in a manner that is consistent with the assumptions and risk insights for structures, systems, and components (SSCs), and that these SSCs do not degrade to an unacceptable level during plant operations. In essence this Commission policy (SECY 95-132) already addresses measures necessary to prevent significant erosion of safety in new reactors from a risk significance and reliability standpoint.

I believe a comprehensive review and assessment (outlined below) of these existing processes, requirements and regulatory practices is warranted before the Commission endorses a plan to supplement NRC's risk guidance for new reactors. This retrospective must be placed in the context of the ROP, Maintenance Rule §50.65, and other risk-informed initiatives that have influenced licensees' efforts to reduce risk through performance-based approaches that would also be applicable to new reactors.

Therefore the SRM for SECY 10-0121 should require the following actions:

1) State that the Commission reaffirms its commitment to previous policies and expectations regarding safety performance and risk management of new reactor designs, operations, and maintenance. The statement should indicate that this Commission supports the risk metrics and thresholds cited in SRM SECY 90-016 and that the CDF and LERF metrics and thresholds provided in Regulatory Guide 1.174 should apply equally to both current operating reactors and new reactors. The enhanced safety features in the new reactor designs are expected to provide plant operational flexibility while concurrently maintaining sufficient safety margins. If COL holders significantly erode these safety margins, the Commission may reconsider its policies. The NRC's performance-based ROP will be a key element in monitoring COL holder performance for industry-wide trends in managing risk and safety margins.

2) As a high priority the staff should articulate, in a single document, a coherent overview or roadmap of the Commission's policies and decisions regarding new reactor performance. The document should capture risk metrics, risk and reliability management (programmatic expectations) and the regulatory controls that already exist to prevent erosion of safety. This public communication and knowledge management document should also capture major NRC shifts to performance based, risk informed oversight and licensing practices that have evolved in the intervening years including the advent of the Maintenance Rule §50.65 and the ROP to illustrate the reduction in operating reactor CDFs and improved industry performance trends. Combined with the openness and transparency of the ROP, the document should illustrate that this regulatory approach has created performance-based incentives for licensees to maintain or increase margins without imposing additional NRC requirements or adjustments to risk thresholds used in licensing activities and the ROP. The document should emphasize that the Commission expects similar performance from COL holders operating new reactors.

3) As a high priority, the staff should continue to develop the §50.59 guidance for COL holders to implement plant changes that would not require NRC approval. The staff should also assess the sufficiency of NRC guidance to support new reactor application of risk managed technical specifications (e.g., Technical Specifications (T/S) 4b flexible allowed outage times and T/S 5b initiative on risk-informed surveillance intervals).

4) As a medium priority, the staff should provide a plan to describe what areas of the ROP might need adjustment for new reactors or provide for a creative yet effective approach. This action should involve engaging stakeholders in table top exercises to test hypothetical licensee performance issues against ROP guidance. Because most new reactors have not accumulated operating experience, the plan could

emphasize focused inspection on the operational phase of a RAP, operating experience programs, and licensee self-assessment performance (e.g., Maintenance Rule §50.65(a)(3)). The staff should consider developing sunset criteria to reduce the inspection effort. The staff should also evaluate the feasibility of developing a reactor technology neutral performance indicator (PI) based on RMTS T/S 4b. Because COL holders would frequently calculate changes in the CDF profile to support equipment allowed outage times, it may be feasible to ratio changes in estimated CDF to the baseline CDF and trend the results. This approach may allow for a visible record of changes in the CDF, highlight trends in station performance, and provide insights on how well the licensee is managing risk. Thresholds for regulatory response could be established, but should be consistent with the current ROP PI program.