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

SECRETARY

December 17, 2012

COMMISSION VOTING RECORD

DECISION ITEM: SECY-12-0064

TITLE: RECOMMENDATIONS FOR POLICY AND TECHNICAL DIRECTION TO REVISE RADIATION PROTECTION REGULATIONS AND GUIDANCE

The Commission acted on the subject paper as recorded in the Staff Requirements Memorandum (SRM) of December 17, 2012.

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 Macfarlane
Commissioner Svinicki
Commissioner Apostolakis
Commissioner Magwood
Commissioner Ostendorff
OGC
EDO
PDR

VOTING SUMMARY - SECY-12-0064

RECORDED VOTES

	APRVD	DISAPRVD	ABSTAIN	NOT PARTICIP	COMMENTS	DATE
CHRM. MACFARLANE	X				X	7/12/12
	X				X	11/13/12
COMR. SVINICKI	X	X			X	11/29/12
COMR. APOSTOLAKIS	X	X			X	10/31/12
COMR. MAGWOOD	X				X	7/31/12
	X				X	11/29/12
COMR. OSTENDORFF	X				X	6/27/12

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: Chairman Allison M. Macfarlane

SUBJECT: SECY-12-0064 – RECOMMENDATIONS FOR POLICY AND TECHNICAL DIRECTION TO REVISE RADIATION PROTECTION REGULATIONS AND GUIDANCE

Approved __X___ Disapproved _____ Abstain _____

Not Participating _____

COMMENTS: Below ___ Attached _X__ None ___

SIGNATURE

7/12/12

DATE

Entered on "STARS" Yes X No ___

Chairman Macfarlane's Comments on SECY-12-0064,
"Recommendations for Policy and Technical Direction to Revise Radiation Protection Regulations and Guidance"

I approve the staff's recommended Option 3, to develop the regulatory basis for greater alignment of 10 CFR Part 20 dosimetry and limits, and parallel alignment of 10 CFR part 50, appendix I. This regulatory basis will likely provide an increase in overall protection of public health and safety for workers and members of the public. I appreciate the staff's considerable efforts engaging with a variety of professional societies, licensee organizations, the States, and public interest groups, and how a range of various perspectives were presented in the staff's paper.

The significant changes in radiation risk estimates and the methodologies for recommending dose limits since the 1991 revision to NRC's radiation protection regulations lead me to agree with the staff's conclusions that there is a sufficient scientific basis to amend the NRC's regulatory framework. Option 3 provides the best approach for improving our regulations to provide better assurance of protection and will make these changes applicable to our licensees in a consistent and complete manner. I support the staff's ongoing efforts to obtain dose data from a wide range of licensees in order to better inform the regulatory basis and to better understand the potential regulatory options. I also support the staff's efforts to explore the merits of the use of SI units.

7/12/12

Allison M. Macfarlane Date

SUPPLEMENTAL NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: Chairman Allison M. Macfarlane

SUBJECT: SECY-12-0064 – RECOMMENDATIONS FOR POLICY AND TECHNICAL DIRECTION TO REVISE RADIATION PROTECTION REGULATIONS AND GUIDANCE

Approved X **Disapproved** _____ **Abstain** _____

Not Participating _____

COMMENTS: **Below** X **Attached** X **None** ___

Attached comments supplement those provided with previous vote of 7/12/2012.

SIGNATURE

11/13/12

DATE

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

Chairman Macfarlane's Supplemental Comments on SECY-12-0064, "Recommendations for Policy and Technical Direction to Revise Radiation Protection Regulations and Guidance"

I thank the Advisory Committee on Reactor Safeguards for providing their October 16, 2012 radiation protection regulation letter to the Commission for our consideration. I particularly appreciate the inclusion of the "Additional Comments." The Commission's decision making process is enriched by hearing multiple perspectives from experts in technically complex areas. I am supplementing my previous vote in order to make a specific comment on the dose limits.

First, I would like to address a few areas of the ACRS letter with which I am skeptical. I was struck by the seemingly dual standards set in the letter. The letter demands that the staff demonstrate health improvements associated with a lower dose limit. However, the ACRS' arguments that the reduction of the limit could cause issues with licensees were hypothetical and there was no data or demonstrations to back them up. Also, the letter implies that because the optimization programs work well for some licensees that they should work well for all licensees. Again, no demonstration or data is provided to backup these statements. That said, these are exactly the types of issues, data, and analyses that should be addressed in the rulemaking process. Rather than make a decision based on assumptions, the rulemaking process allows the collection of information to make an informed decision about the pros and cons of moving forward.

Second, the letter only addressed operating reactor facilities. While I agree and am impressed with the success of the operating reactors' ALARA programs, the operating reactors are only a fraction (1%) of the licensees to which our dose limits apply. Not all of the tens of thousands of other licensees use a voluntary practice to constrain exposures as much as the reactors facilities. In considering this issue, we must consider all licensees, reactors as well as the other 99% to ensure that the dose limit is appropriate for them all.

Third, I do not agree with the argument in the letter that ALARA can be used as a way to regulate dose. The "As Low as is Reasonably Achievable" concept is an optimization measure. It is meant to be used in conjunction with, and to complement, the dose limits. It is not meant to replace dose limits themselves. Since licensees are legally allowed to reach the limits we establish, the NRC should use the best available scientific information to set appropriate dose limits. If a lower level is needed, NRC should not and cannot use ALARA to artificially enforce that lower limit.

In addition to some of the logic issues I have with the ACRS letter, I believe the main point is being missed. The science has changed and no longer supports the assumptions that NRC made when establishing these limits originally. As half of the Advisory Committee on Reactor Safeguards membership notes, the preponderance of scientific evidence shows that NRC's existing dose limit equates to a risk three times higher than what was understood to be appropriate when the current limit was developed.

The 1987 Federal Radiation Protection Guidance for Occupational Exposure (52 FR 2822, January 27, 1987) estimated that the increased risk of premature death due to radiation-induced cancer for an average dose of 0.2 rem (the average dose in 1980) was approximately 2 to 5 in 100,000. This was compared to 5 in 100,000 for retail and wholesale trade at the time. So at the time radiation related jobs were comparable in risk to retail jobs.

By contrast, for 2011, the risk of job-related accidental death for retail trade is now 1.9 per 100,000; a decrease of more than 50%. While there have been great improvements, NRC-licensed activities have not kept up with this decrease. Actually quite the opposite. Although the current average dose has dropped to 0.13 rem (NUREG-0713, v32), because the risk of exposure have been reevaluated and raised, this risk now equates to about 6 in 100,000. I believe NRC should lower its dose limits not only to respond to scientific advancements, but also to restore NRC-licensed activities at the level of risk consistent with other industries such as retail.

We are at the very beginning of the rulemaking process, which will take years to fully implement. I believe the staff will find ways to successfully mitigate some of the secondary concerns noted by the Advisory Committee on Reactor Safeguards – such as the need for 'frequent authorizations to exceed the reduced dose limits.' The rulemaking process before us will provide opportunities to work out many minor complications, which is the purpose of the process. The last radiation protection rulemaking, completed 21 years ago, captured many similar concerns, which were worked out through the rulemaking process.

Finally, while I appreciate and will continue to value the opinions and advice from the ACRS, I must also recognize other radiation protection bodies such as the International Commission on Radiological Protection; the United Nations Scientific Committee on the Effects of Atomic Radiation; the National Council on Radiation Protection and Measurements; and the National Academy of Sciences in their report on the Biological Effects of Ionizing Radiation, all of which support lowering the dose standards.

Therefore, I repeat my July 12, 2012 vote on this paper: the significant changes in radiation risk estimates lead me to agree with the staff's conclusions that there is a sufficient scientific basis to amend the NRC's regulatory framework. I continue to support the staff's recommendation in Option 3.

11/13/12

Allison M. Macfarlane Date

AFFIRMATION ITEM

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: COMMISSIONER SVINICKI

SUBJECT: SECY-12-0064 – RECOMMENDATIONS FOR POLICY AND TECHNICAL DIRECTION TO REVISE RADIATION PROTECTION REGULATIONS AND GUIDANCE

Approved XX in part Disapproved XX in part Abstain _____

Not Participating _____

COMMENTS: Below ___ Attached XX None ___

SIGNATURE

11/29/12
DATE

Entered on "STARS" Yes ✓ No ___

Commissioner Svinicki's Comments on SECY-12-0064
Recommendations for Policy and Technical Direction to Revise Radiation Protection Regulations and Guidance

I approve in part and disapprove in part the staff's recommendations contained in SECY-12-0064. I disapprove the staff's recommended course of action as contained in Option 3, to develop the regulatory basis for a revision of 10 CFR Part 20 occupational dose limits.

I approve the following actions:
(1) The staff should develop a regulatory basis for a revision to 10 CFR Part 20 and parallel alignment of 10 CFR Part 50, Appendix I, to align with the most recent methodology and terminology for dose assessment. The staff should provide the regulatory basis to the Commission as a voting matter.
(2) The staff should develop improvements in the NRC guidance for those segments of the regulated community that would benefit from more effective implementation of ALARA (as low as is reasonably achievable) strategies and programs to comply with regulatory requirements.

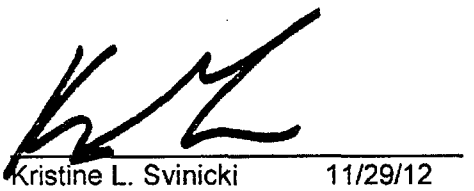
A decision to amend the dose limits of our regulations must be based on a thorough and disciplined technical showing of demonstrated health and safety benefits and should only be undertaken with clear consideration of any negative or unintended safety consequences. The Commission's Advisory Committee on Reactor Safeguards (ACRS) has considered the staff's recommendation with respect to dose limits in Option 3, to conform our regulations to ICRP recommendations, and has concluded that these changes should not be implemented and, moreover, that they could have negative, unintended consequences for nuclear and medical personnel (Letter report, Dr. J. Sam Armijo to Chairman Macfarlane, dated October 16, 2012). As noted in the paper, the NRC staff continues to support a finding that the current radiation protection framework provides adequate protection. I support these conclusions and consequently, find no current basis to support proceeding with the recommendations regarding dose limits in Option 3.

Additionally, I agree with several of my Commission colleagues and with the ACRS that there are several topics within the staff recommendations that are not currently ready for inclusion in the draft regulatory basis development. Specifically, the staff should continue discussions with stakeholders regarding dose limits for the lens of the eye and the embryo/fetus radiation exposures. The staff should also continue discussions with stakeholders on alternative approaches to deal with individual protection at or near the current dose limits and work with stakeholders to develop proposals to improve reporting of occupational exposure for industry segments not currently reporting.

The staff should pursue its activities, and the development of any regulatory basis for action in these areas, with the extensive engagement of other Federal and State government partners, including both Agreement and non-Agreement States, as well as the regulated community and the public.

Also, I agree with Commissioners Magwood and Apostolakis that there are substantive and negative implications to operational safety posed by the elimination of traditional units from the NRC metrication policy. I disapprove initiating activities to develop regulatory measures that would compel the conversion to, and exclusive use of, SI units.

Finally, I share the observation expressed by Commissioner Magwood that the scientific community has not addressed definitively the question of the application of the linear, no-threshold model to low dose, radiation exposure. The institutions he invokes, along with many others, have reached conclusions casting doubt on the current application of this model. Additional, conclusive study would benefit our understanding.



Kristine L. Svinicki 11/29/12

R-E-V-I-S-E-D

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: Commissioner Apostolakis

SUBJECT: SECY-12-0064 – RECOMMENDATIONS FOR POLICY AND TECHNICAL DIRECTION TO REVISE RADIATION PROTECTION REGULATIONS AND GUIDANCE

Approved X(in part) Disapproved X(in part) Abstain ___

Not Participating _____

COMMENTS: Below ___ Attached X None ___

SIGNATURE

October 31, 2012
DATE

Entered on "STARS" Yes √ No ___

Commissioner Apostolakis' Revised Vote on SECY-12-0064, "Recommendations for Policy and Technical Direction to Revise Radiation Protection Regulations and Guidance"

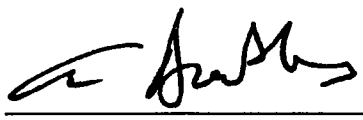
In my earlier vote, I refrained from taking a position on this policy matter until the views of the Advisory Committee on Reactor Safeguards (ACRS) were provided to the Commission. Now that the ACRS has issued its letter report on SECY-12-0064, I revise my vote as follows.

I approve in part and disapprove in part staff's recommendations. I disapprove staff's recommendation in Option 3 to develop a regulatory basis to reduce the occupational dose to 2 rem (20 millisieverts) or less. I approve staff's development of the regulatory basis for a revision to 10 CFR Part 20 and parallel alignment of 10 CFR Part 50, Appendix I, to align with the most recent methodology and terminology for dose assessment. Conforming changes will need to be made to make these methods consistent throughout all NRC regulations. The staff's proposed regulatory basis document should also reflect extensive engagement of the federal family (DOE, EPA, FEMA, and OSHA), the Agreement States, the Non-Agreement States, industry and the public.

Staff has provided no scientific basis to justify changing the previous conclusions of the Commission and the ACRS that the current occupational dose limits are adequate and the use of traditional radiation units is appropriate. I agree with Commissioner Magwood that elimination of traditional units from the NRC regulations may have unintended consequences on safety and that both units should be maintained.

I also support ACRS's conclusions and recommendations. Staff should develop NRC guidance and an outreach program for those segments of the regulated community that would benefit from more effective implementation of ALARA strategies and programs to comply with regulatory requirements. Staff should also continue discussions with stakeholders on alternative approaches to deal with individual protection at or near the current dose limit and improve reporting of occupational exposure by NRC and Agreement State licensees not currently reporting.

Staff should continue discussions with stakeholders regarding the dose limits for the lens of the eye and the embryo/fetus. Any future recommendations that propose a change in the dose limits should consider the views of Federal agencies and other stakeholders.



SIGNATURE

October 31, 2012
DATE

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: COMMISSIONER MAGWOOD

SUBJECT: SECY-12-0064 – RECOMMENDATIONS FOR POLICY AND TECHNICAL DIRECTION TO REVISE RADIATION PROTECTION REGULATIONS AND GUIDANCE

Approved X Disapproved _____ Abstain _____

Not Participating _____

COMMENTS: Below ___ Attached X None ___

SIGNATURE

31 July 2012

DATE

Entered on "STARS" Yes X No ___

Commissioner Magwood's Comments on SECY-12-0064,
"Recommendations for Policy and Technical Direction
to Revise Radiation Protection Regulations and Guidance"

I thank the staff for its hard, diligent work over the last few years in engaging our broad stakeholder community to discuss the revision of one of the agency's most important regulations. Unlike many of our regulations, 10 CFR Part 20 is something of a living regulation; one that encapsulates our best understanding of the potential hazards radiation presents to the public, workers in nuclear facilities, and patients receiving medical treatments. As such, its evolution has drawn and continues to draw upon radiation protection expertise from across the United States and, appropriately, across the international community. The important work of the International Commission on Radiological Protection (ICRP), in which U.S.—and particularly NRC—experts are key participants, has played a vital role in the development of standards that are captured by 10 CFR Part 20.

The last major revision of Part 20 was completed in 1991 and was based on ICRP reports that date back to the 1970s. Clearly, our understanding of radiation protection has evolved considerably over that period. Staff's recommendation in SECY-12-0064 largely reflects a path to update Part 20 to adopt scientific information and models contained in ICRP Publication 103, which was approved in 2007 and stands as the most recent and authoritative international standards available.

I believe it is far past time that we have updated our standards. I approve staff's plan under Option 3 to develop the regulatory basis of performing the recommended updates, with the exceptions and comments provided below.

While, as discussed above, we clearly benefit from our close cooperation with international processes such as ICRP and our work with our colleagues in many countries across the world, I remind staff that alignment with international standards and practices is not, in and of itself, an appropriate goal for the NRC. It should be our goal to work with others to develop scientific understanding, but not necessarily our goal to establish standards adopted in other countries simply to "foster global consistency."

As staff notes in SECY-12-0064, "The vast majority of occupational exposures in the U.S. are less than the international recommendations and standards, not because of the value of the limit, but because of the application of the ALARA principle." We have approaches in place that work very well and should be hesitant to adopt every international standard without a clear-eyed consideration of the benefits inherent in the U.S. approach.

For example, staff has recommended that NRC adjust its limits for occupational exposure to align with international standards—which would reduce allowed annual worker doses from the current 5 rem to 2 rem. Staff has indicated that there is no evidence that our current radiation protection controls are not already effective in assuring public health and safety. Further, staff notes that a limited number of licensees in the medical and industrial sectors regularly exceed annual doses of 2 rem. Changing the occupational dose limit could have significant impacts on these licensed activities, could impact the delivery of health care, and could have profound impacts on individual livelihoods. Such a change could reduce the availability of some vital medical treatments and our Advisory Committee on the Medical Uses of Isotopes has suggested that some health providers might remove their dosimetry in order to complete treatments and not run afoul of new standards.

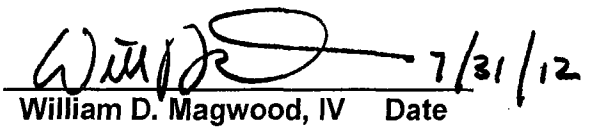
Without a strong, scientific basis to make such a change, I am not willing to entertain a modification of U.S. occupational dose standards simply to bring U.S. standards into alignment with other countries.

However, I do think it is worth exploring the option of developing an ALARA planning basis that strives to reduce occupational dose to 2 rem or less. If this can be done in a way such that it does not become a *de facto* dose limit, staff should include such an approach as part of its proposal and discuss the concept with stakeholders.

I am similarly skeptical of the need to align NRC regulations with international standards associated with exposures to lens of the eye. However, I support staff's recommendation to explore this matter further with stakeholders.

Further, I do not approve the elimination of traditional units from the NRC metrication policy. I believe that this is not simply a matter of convenience, but a matter of safety. Those practiced in operations at U.S. nuclear facilities have an innate understanding of traditional units that allow for quick, accurate decision-making. Therefore, rather than eliminate traditional units, I support the reversal of current NRC policy such that both units are maintained, but with SI units reported first. The need to maintain traditional units may certainly change over time; thus the Commission can review this matter again with the next major revision of Part 20.

Finally, I note with some impatience that the world's radiation protection experts have not fully engaged the scientific community in a discussion of the appropriateness of the current linear, non-threshold model for estimating risk at low dose. Scientific studies performed by innumerable organizations, including the Department of Energy's Office of Science and, earlier this year, the Massachusetts Institute of Technology's Department of Biological Engineering (working under a grant from the National Institutes of Health) have reached conclusions that place the current risk model in doubt. It is time for the radiation protection community to address this matter and increase confidence in the standards that protect public health and safety.



7/31/12

William D. Magwood, IV Date

SUPPLEMENTAL NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: COMMISSIONER MAGWOOD

SUBJECT: SECY-12-0064 – RECOMMENDATIONS FOR POLICY AND TECHNICAL DIRECTION TO REVISE RADIATION PROTECTION REGULATIONS AND GUIDANCE

Approved X Disapproved _____ Abstain _____

Not Participating _____

COMMENTS: Below ____ Attached X None ____

SIGNATURE

29 November 2012

DATE

Entered on "STARS" Yes X No ___

Commissioner Magwood's Supplemental Comments on SECY-12-0064,
"Recommendations for Policy and Technical Direction
To Revise Radiation Protection Regulations and Guidance"

After having the opportunity to review the ACRS letter on SECY-12-0064 and conducting numerous conversations with radiation workers in nuclear power plants, I have decided to supplement my vote. I wish to address two matters.

First, I have reconsidered my original vote in which I recommended that SI units should be reported, with traditional units carried in parenthetical form. Subsequent to my vote on SECY-12-0064, I had the opportunity to travel to several nuclear power plants and other facilities. During these visits, I made a special point to talk to radiation workers and radiation safety mangers about the potential impacts of a conversion to SI units. The answers I received have been unanimous that workers at U.S. nuclear facilities have an innate understanding of traditional units that allow them to make quick, accurate decisions and converting to SI units would, in the view of those to whom I spoke, have a very real impact on safety.

As a result of these consultations, I have concluded that the benefits to a change in our current practices do not outweigh the potential safety impacts. As a result, I have concluded that the current system should remain in place, with traditional units reported and SI units captured in parenthetical form.

Second, I have given further consideration to the comments made by some members of the ACRS regarding the lack of a limit on cumulative dose. Although I understand the reasons why this matter was not considered during the previous revision of Part 20, there may be a need to revisit that decision once the dose conversion factors are developed by ICRP and before the Commission contemplates revising Part 20.

11/29/12

William D. Magwood, IV Date

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: COMMISSIONER OSTENDORFF

SUBJECT: SECY-12-0064 – RECOMMENDATIONS FOR POLICY AND TECHNICAL DIRECTION TO REVISE RADIATION PROTECTION REGULATIONS AND GUIDANCE

Approved __X___ Disapproved _____ Abstain _____

Not Participating _____

COMMENTS: Below ___ Attached _X__ None ___

_____
SIGNATURE

6/27/12
_____
DATE

Entered on "STARS" Yes _X__ No ___

Commissioner Ostendorff's Comments on SECY-12-0064, "Recommendations for Policy and Technical Direction to Revise Radiation Protection Regulations and Guidance"

I appreciate the staff's significant effort to obtain stakeholder feedback on whether the NRC's regulations should be revised to incorporate the most recent recommendations of the International Commission on Radiation Protection (ICRP). I found the staff's analysis of the complex issues associated with incorporating the ICRP recommendations thorough and thoughtful. I welcome the chance to update the outdated and inconsistent terminology used in current NRC regulations. Therefore, I approve Option 3. But, while I support exploring options to further align our regulations with the ICRP recommendations, I did not find a strong technical basis for reducing the occupational dose limits to the thresholds recommended by the staff. Therefore, the staff should: (1) further develop the technical basis for the proposed occupational dose limits; and (2) explore other options for further aligning our occupational dose limits with the ICRP recommendations.

Based on my review of the paper, the information discussed during a Commissioner Assistant's briefing, and my discussions with radiation protection experts, I find nothing to indicate that reducing the dose limits to the thresholds proposed by the staff would necessarily provide a substantial increase in safety. First, the approximate 4 additional cancer effects in 10,000 per Rem increase, the basis for the proposed revision to the occupation dose limits, is very small compared to the already small risk of cancer effects due to low doses of radiation. Second, the ICRP recognized that there is large uncertainty in the risk numbers. In fact, both the current and revised risk numbers are included in the range of the actual risk estimate and are equally probable of being the "true" estimate. Third, the NRC's regulations already provide a level of protection below the current occupational dose limit by requiring that doses be kept as low as is reasonable achievable (ALARA). The most recently published information on occupational exposures, the NRC's 2010 version of NUREG-0713, demonstrates the success of ALARA, since only 35 individuals received annual doses in excess of 2 Rem.

That being said, I do agree with aligning the NRC's regulations with the ICRP's underlying goal of limiting cumulative occupational exposure to an effective dose of 100 Rem. It is important to note that the ICRP's recommendation was to limit occupational exposure to an *average* of 2 Rem over 5 years, not to exceed 5 Rem in any year. The ICRP's focus on cumulative exposure, and their recognition of the large uncertainties in the already small risk estimate, clearly indicate that flexibility is needed to balance the health risks of occupational exposure with the benefits of the use of radiation. In fact, the ICRP stated that its proposed framework for radiation protection would "aim to do more good than harm, should call for protection arrangements that maximise (sic) the net benefit, and should aim to limit the inequality that may arise from a conflict of interest between individuals and society as a whole." Further, I do not find that the concern expressed about the significant recordkeeping requirements that might be associated with the ICRP's recommendation to be a sufficient basis for not adopting such flexible approaches.

In addition, in the absence of a strong safety basis for the proposed reductions, I am troubled that both our international counterparts and the Advisory Committee on the Medical Uses of

Isotopes have expressed a concern that a reduction in the dose limits may possibly lead to some doctors removing their dosimetry when they reach the occupational dose limit in order to continue to care for patients. I believe that once radiation safety is assured, we should balance the risks of radiation exposure from a regulated activity with the benefits to society. I believe the Commission needs additional information on the benefits and practical challenges of various options for aligning our occupational exposure regulations with the ICRP's most recent recommendations.

To better inform the Commission's decision, the staff should provide the regulatory basis for the proposed rulemaking to the Commission as a voting matter. The regulatory basis should include additional information on the operational impacts of the proposed revisions on the medical community. Further, the staff should provide the pros and cons of a broad range of options beyond reducing dose limits to the thresholds recommended by the staff in SECY-12-0064, including adopting the ICRP's recommended 5 year average approach and strengthening the current ALARA provisions.

Finally, the staff's recommendations should be informed by other federal agencies' actions on the ICRP recommendations. Since the Department of Energy has not adopted the ICRP's recommended dose limit, a better understanding of the implications of different approaches among federal agencies should be fully explored as part of the development of the regulatory basis.