AFFIRMATION ITEM

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: COMMISSIONER MAGWOOD

SUBJECT: SECY-11-0145 – FINAL RULE: AP1000 DESIGN CERTIFICATION AMENDMENT

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

Not Participating _____

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

SIGNATURE

6 December 2011

DATE

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

Commissioner Magwood's Comments on
SECY-11-0145, "Final Rule: AP1000 Design Certification Amendment"

In 2006, the AP1000 became the first Generation III+ reactor to be granted design certification by the NRC. Since that time, the design has been enhanced to meet additional stringent NRC requirements, including those emplaced to assure that an AP1000 could withstand the impact of an aircraft crash. If the AP1000 Design Certification Amendment is approved by the Commission, it will represent a significant accomplishment for the hundreds of people who have been involved in the development of the AP1000 design over the course of many years.

Because much of this effort was conducted under a partnership between industry and the Department of Energy, there were early questions as to whether the NRC's review of the AP1000 would be influenced by the fact that another Federal agency sponsored the development of the technology. The NRC staff, in conducting its review of this design in its typically rigorous, professional, and wholly independent manner has clearly dispelled any such doubts. The staff has spent many thousands of hours in its review of the AP1000 and challenged the applicant to validate all aspects of its design and supporting analyses. Staff's work in the instance has been exemplary and I commend the staff, led by the NRC's Office of New Reactors, for its excellent and very thorough review.

Obviously, this amendment is the result of a very significant effort by the applicant and its numerous allies and subcontractors around the world. But it also reflects the contributions of many experts and managers from leading electric utilities—particularly those with companies that seek to build the first new U.S. nuclear power plants since the 1970s as well as those that have participated in the NuStart Energy effort. Moreover, the Department of Energy's Office of Nuclear Energy played an indispensible role from the very beginning of this work and stayed its course through to the completion of its Nuclear Power 2010 program.

In addition, many outside experts—such as those aligned with the various nongovernmental organizations that have commented on the AP1000 design certification amendment—have made very important contributions to this activity. These independent voices have raised challenging questions and highlighted issues with which the staff and the Commission were obligated to grapple. In some cases, the comments were not within the scope of the design certification amendment rulemaking. Nevertheless, such issues have not been ignored; they were all the subject of careful consideration.

For example, while recognizing that this issue is outside the scope of the rulemaking, I reviewed the issue raised by outside experts regarding the potential for the corrosion of the steel containment shell. This concern arose in the aftermath of the discovery of corrosion damage to the steel liner in the Beaver Valley nuclear plant. The Beaver Valley case presents an important lesson learned, but I find that the design of the AP1000, which provides for a three foot air gap between the liner and the shield building, precludes the chain of events that led to the Beaver Valley corrosion. This three foot gap also promotes easier inspectability to allow operators to assure the integrity of the liner during the operational life of the plant.

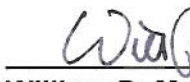
I also found the matter of the differing professional opinion related to the ductility of the AP1000 shield building to be a matter worthy of detailed review. This debate between engineers expert in the response of structures to seismic and other events was based in large measure upon how the existing American Concrete Institute (ACI) codes for engineered structures are applied and interpreted. I met with the highly-regarded engineer who raised this issue and reviewed his analysis; I also met with the staff experts and discussed some aspects of the matter with outside experts. This was a good debate to have within the agency as the unique design of the AP1000 shield building—which was developed in the aftermath of the September 11, 2001 terrorist attacks in the United States—breaks new ground and will likely spur some revision of the ACI code. Based on tests performed on modules that comprise the AP1000 shield building and other analyses presented by the staff, I emerged from this debate convinced that a plant based on the AP1000 design will fully protect public health and safety in the face of a wide range of postulated challenges.

During the past several months, many citizen organizations have highlighted the essential need to absorb the lessons of this year's tragic events at Japan's Fukushima Dai-ichi nuclear site. These concerns are appropriate and the interest of members of the public in this important issue is to be lauded.

While some of the technical details associated with understanding the events at Fukushima will likely require years of investigation and analysis, I find that many of the broad lessons are already apparent. For example, the simultaneous loss of onsite and offsite AC power for an extended period would present an extreme challenge to any nuclear power plant in the world. However, as has been pointed out to me by Japanese colleagues as they reflect upon Fukushima, had the plant been operating AP1000 reactors, it is likely that the outcome would have been very different. The AP1000's passive safety systems provide the ability to maintain core cooling for at least 72 hours with little human intervention. 72 hours to make repairs, transport emergency equipment, and take other actions in response to the earthquake and tsunami that assaulted the Fukushima site would have made a very significant difference.

However, as we develop a regulatory response to Fukushima, it is certainly possible that some changes may need to be made to the AP1000 or at least to any combined construction/operating licenses that reference it. If so, the agency can and must make any changes required—whether they become apparent in the next few months or in the next few years. In no event can we allow the lessons from Fukushima not to be reflected in any future AP1000 plant. It is our clear responsibility to assure that any iota of insight or knowledge gleaned from Fukushima is reflected in any power reactor operating in the United States.

It is in the context of all the above that I approve staff's recommendation to publish in the Federal Register the final rule that amends Title 10 of the Code of Federal Regulations (10 CFR), Part 52, Appendix D, "Design Certification Rule for the AP1000 Design."



12/6/11

William D. Magwood, IV **Date**