

March 18, 2016

MEMORANDUM TO: Chairman Burns  
Commissioner Svinicki  
Commissioner Ostendorff  
Commissioner Baran

FROM: Jennifer Uhle, Director **/RA/**  
Office of New Reactors

SUBJECT: RESPONSE TO STAFF REQUIREMENTS MEMORANDUM M140910 –  
STAFF REPORT: 10 CFR PART 52 APPLICATION REVIEWS -  
EFFICIENCY OPPORTUNITIES AND REVIEW TIMELINES

This memorandum provides the staff's response to Commission direction in Staff Requirements Memorandum (SRM) M140910. Specifically, the Commission directed the staff to determine whether the U.S. Nuclear Regulatory Commission (NRC) can capture greater efficiencies in the implementation of the Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," process and if the agency should update the metrics for the length of time it will take to perform new reactor reviews under Part 52, based on experience.

The staff most recently conducted lessons learned reviews of Part 52 application reviews, including combined licenses (COLs) and standard design certifications (DCs) in April 2013, and identified actions for improvement. The staff has made significant progress on implementing these improvements. To address the Commission's questions, the staff chose to supplement the 2013 information by looking more closely at its experiences in reviewing DCs. This subset of Part 52 applications was selected for review because DC applications may often include first-of-a-kind approaches that may introduce technical and policy challenges to the review process. Therefore, DC reviews are likely to result in more lessons learned and afford more opportunities to capture additional efficiency gains in a variety of supporting processes.

The enclosed report provides background information on the DC process, describes the evolution of planning and scheduling assumptions used for Part 52 reviews, gives an overview of each DC review conducted, discusses the lessons learned while performing DC reviews and process improvements that are being incorporated in the Korea Hydro & Nuclear Power (KHNP) APR1400 DC review, and presents the staff's conclusions addressing SRM M140910.

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The report also describes the evolution of the DC review schedule assumptions provided in Secretary of the Commission (SECY) paper SECY-01-0188, the “Future Licensing and Inspection Readiness Assessment (FLIRA),” in the 2007 NRO Licensing Program Plan (LPP), and in the current KHNP APR1400 DC review schedule.

Similarities and differences in the assumptions used for a range of DC reviews are described and analyzed for lessons learned and opportunities for improvement.

To date, the staff’s DC review experience provides a rich source of information about internal and external factors that support or inhibit review efficiency. Examples of these internal factors include staff resource management, work prioritization, support for hearings, review phase discipline, critical skill set availability, budgetary limitations, computational tool availability for unique reactor designs, resolution of policy issues that may require rulemaking, and the overall staff workload and capacity. Examples of external factors include application quality, applicant experience, the degree of design finality, whether or not the technology presented is familiar to the staff, and the availability of contracted subject matter expertise. External factors also include regulatory and programmatic changes by other agencies (for example, the Department of Energy decision to de-prioritize development of the next-generation nuclear plant); public policy changes, such as the Energy Policy Act of 2005; and external events.

The staff continues to recognize and assess the impacts of these factors, continues to make improvements to the review process to minimize their impacts when possible, and continues to resolve policy issues that impact project plans and schedules.

An overview of DC reviews, describing basic design characteristics, review milestones, and areas of significant schedule impacts, is provided for the following designs: the advanced boiling-water reactor (ABWR), System 80+, Advanced Passive (AP) 600, AP1000, AP1000 amendment, Economic Simplified Boiling-Water Reactor (ESBWR), U.S. Evolutionary Power Reactor (EPR), U.S. Advanced Pressurized-Water Reactor (US-APWR), and APR1400. The report also presents a tabular summary of safety review and rulemaking durations, and key review milestones for each of these DC reviews.

For this report, the staff revisited selected lessons identified in the 2013 “New Reactor Licensing Process Lessons Learned Report” and identified additional areas for review that seemed likely to reveal additional opportunities for process improvements and efficiency gains in the context of performing DC reviews. The lessons learned described in the report include:

- “High-Quality Applications that Fully Address Relevant Regulatory Requirements and Staff Guidance Support the Conduct of the Review within a Predictable Timeframe”;
- “Applicants and NRC Staff Must Commit Resources to Promptly and Thoroughly Respond to Requests for Additional Information and Substantive Technical Matters to Support a Predictable Review Schedule”;
- “Early Identification and Timely Resolution of Complex Technical and Policy Issues Minimize Impacts on the Review Schedule”;
- “Improvements to All Aspects of Requests for Additional Information Can Contribute to a More Efficient Review”;
- “Living Our Mission,” an initiative to improve safety focus and efficiency; and
- “Summary of Lessons Learned Being Applied to the APR1400 Review”

Each of these topics is informed by the review experiences described in the report. Each topic also includes details on how the lessons learned are being incorporated in the DC review processes. A total of 15 lessons learned have been identified and are being applied to the KHNP APR1400 DC review. Examples include updating the Office of New Reactors (NRO) Office Instructions for acceptance reviews, preapplication readiness assessments, and requests for additional information; maintaining appropriate focus on the information needed to reach safety findings for the most safety-significant areas when creating NRC requests for additional information (RAIs) and reviewing KHNP responses; and placing emphasis on project management functions of the review, including the collection and analysis of review workflow metrics that could reveal additional process improvement opportunities.

With respect to the question on capturing greater efficiencies in the Part 52 review process, the staff has determined that the Part 52 DC review process is sound and allows for an efficient review as long as an applicant submits a high-quality, technically sufficient application; commits to providing the resources necessary to support the staff's review; and addresses key policy and technical issues during preapplication discussions with the staff. Also, the staff has made considerable efforts to implement the lessons learned from previous reviews and to implement other new changes to improve review efficiency. One example is the staff's effort to improve the quality and timeliness of RAIs beyond the actions identified in the 2013 lessons learned report, by applying additional project management focus on RAI processing. The staff will continue to monitor DC review efficiency improvements gained by the implementation of the actions identified in this report, and will continue to look for further opportunities to gain additional DC review efficiency.

The staff has also improved project schedule assumptions that have been used for many years in order to better reflect the NRC's accumulated DC review experience. The use of improved assumptions, such as a more realistic RAI response time and a more accurate picture of staff resource capacities and availabilities, should lead to more accurate modeling of review projects and the associated resource requirements. This is particularly important in the NRC's current operating environment in order to obtain the best possible match between staff critical skills, capacities, and review project resource demands. Better schedule assumptions should also provide project managers and technical staff with additional look-ahead time to mitigate schedule change impacts.

With respect to the question on updating the metrics for Part 52 reviews, the staff fully recognizes the value and importance of establishing challenging but achievable review timeliness goals, and the contribution of doing so to regulatory certainty. The staff also recognizes that, based on experience, fact-of-life changes during the review period, such as emerging technical issues or requests for review schedule changes by the applicant, can and often do occur.

The enclosed analysis of DC review experience has affirmed the staff's approach of setting challenging, but achievable review duration goals and metrics. For large LWR DC reviews, the following review timeliness goals are being adopted:

- 2 months for completion of the acceptance review

- 42 months for completion of the safety review (factors such as the uniqueness of the design, the need for and extent of vendor testing required, and whether technical or policy matters are effectively addressed in pre-application reviews, will affect the ability of the staff to apply this goal in some cases)
- 8 months after completion of Phase 4 of the safety review for completion of rulemaking (total rulemaking duration of 13 months)

For SMR DC reviews, the recently established goal of 39 months from acceptance of the application to completion of rulemaking will continue to be used. This goal will be periodically reviewed as licensing experience for these reactors is accumulated.

Further, the staff intends to review the existing published internal and external review duration guidance for each type of Part 52 application and to update the guidance as necessary to bring alignment with the review duration goals discussed above.

Finally, the staff has identified opportunities to improve how review timeliness goals and schedules are calculated and communicated to stakeholders. Recognizing that some project delays are not attributable to the NRC staff, the staff intends to change the manner in which project total durations are calculated and communicated, to provide clearer information on the cause of schedule changes. For example, an applicant's request for a 1-year pause or slow-down to allow time to resolve a technical issue in a 42-month review schedule could be described as an "NRC safety review duration" of 42 months and a "total review duration" of 54 months. In circumstances in which an applicant is not able to commit to or to provide the level of support resources necessary to accomplish a timely review, the NRC would consider formally suspending the application review. Similarly, if review delays are attributable to staff actions, that would be more clear. By communicating a more holistic picture of the overall schedule, all stakeholders should gain a better understanding of the staff's level of effort. This picture could include the major review activities and durations, applicant response times, and other unique circumstances associated with each review project.

The staff will further develop its approach to capturing and presenting this information in a manner that balances the needs of stakeholders to better understand the complexities of the Part 52 application review schedules with the regulatory efficiency the NRC commits to in its Principles of Good Regulation.

The staff plans to inform stakeholders of these changes through a Regulatory Issue Summary (RIS) and to communicate review schedule expectations, by updating NUREG/BR-0468 ("Frequently Asked Questions about License Applications for New Nuclear Power Reactors"), and by discussing this broadly in meetings with prospective applicants and in appropriate public meetings and presentations. The staff plans to issue the RIS and revision to NUREG/BR-0468 by the end of 2016. Discussions of and presentations on the proposed update to the guidance are expected to begin in the summer of 2016 and continue as the update is finalized.

The staff concludes that the changes discussed above, and other recent and on-going initiatives discussed in this report, provide a sound basis for high quality safety, security and

environmental reviews, which are consistent with the NRC's mission and responsive to applicant and stakeholder needs and expectations.

The Office of the General Counsel has reviewed this paper and has no legal objection.

Enclosure:

Staff Report: 10 CFR Part 52 Application Reviews—  
Efficiency Opportunities and Review Timelines

cc:    SECY  
      EDO  
      OGC  
      OCA  
      OPA  
      CFO

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