

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
OFFICE OF NEW REACTORS
WASHINGTON, DC 20555-0001

December 28, 2012

**NRC REGULATORY ISSUE SUMMARY 2012-12
LICENSING SUBMITTAL INFORMATION AND DESIGN DEVELOPMENT ACTIVITIES
FOR SMALL MODULAR REACTOR DESIGNS**

ADDRESSEES

All holders of and applicants for a power reactor early site permit (ESP), combined license (COL), standard design certification (DC), standard design approval (DA), or manufacturing license (ML) referencing a small modular reactor (SMR) design under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," or all holders of and applicants for a power reactor construction permit (CP) referencing an SMR design under 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." SMRs are defined using the International Atomic Energy Agency definition of small- and medium-sized reactors with an electrical output of less than 700 megawatts.

INTENT

The U.S. Nuclear Regulatory Commission (NRC) is issuing this regulatory issue summary (RIS) to obtain new or updated information on the scheduling of CP, ESP, COL, DC, DA, or ML application submissions related to SMR designs. These designs include integral pressurized-water reactors, high-temperature gas-cooled reactors, liquid-metal-cooled reactors, and other SMR designs. The purpose of this RIS is to help establish a predictable and consistent method for reviewing applications. To this end, the NRC also seeks new or updated information on the status of a number of other addressee activities, as discussed below. This RIS follows up on RIS 2011-02, Revision 1, "Licensing Submittal Information and Design Development Activities for Small Modular Reactor Designs," dated December 27, 2011, which seeks similar information. The staff asks any potential applicant that meets the criteria in the addressee section above also to submit a response to this RIS.

This RIS does not transmit or imply any new or changed requirements or staff positions. Submission of advanced notice of the addressee's plans or comments in response to this RIS is strictly voluntary. Although no specific action or written response is required, this information will enable the NRC to plan effectively for anticipated licensing-related review and inspection activities.

BACKGROUND INFORMATION

The design-centered review approach (DCRA) is the NRC's strategy to manage the licensing review workload, and the updated information that this RIS solicits will aid the agency's schedule and resource planning efforts. The NRC outlined the DCRA in RIS 2006-06, "New Reactor Standardization Needed To Support the Design-Centered Licensing Review Approach," dated May 31, 2006. In summary, the DCRA is a review strategy for COL applications that reference a particular design. This approach will use, to the maximum extent practicable, a "one issue, one review, one position" strategy to optimize the review effort, the resources needed to perform these reviews, and the review schedules. Specifically, the staff will conduct one review for each issue associated with a particular design; reach a decision on each issue; and, if possible, rely on that decision in reviewing subsequent applications. Applicants must achieve a consistent level of standardization for the DCRA to be fully effective. As discussed at an NRC-sponsored workshop on SMRs in October 2009, the philosophy of "one issue, one review, one position" can also be used across designs and reactor technologies to address policy or technical issues generic to SMR designs.

SUMMARY OF ISSUE

The NRC anticipates receiving a number of CP, ESP, COL, DC, DA, and ML applications, starting as early as 2013, for a number of SMR designs. RIS 2006-06 suggests that COL and DC applicants form design-centered working groups (DCWGs) to facilitate the standardization of COL applications. The NRC staff seeks information on potential DCWGs for each of the designs. As discussed at the October 2009 SMR workshop, this process also may benefit working groups generally associated with SMRs and with specific reactor technologies. The NRC is seeking information on the formation of such groups that may interact with the staff on generic or technology-related policy or technical issues. The NRC must identify possible applications and other interactions to formulate resource needs and budget requests for future fiscal years.

The NRC encourages potential applicants to provide the agency with design and licensing plans, construction plans, and pre-application activities that will be used to demonstrate compliance with the NRC's safety and environmental requirements. In addition, information that potential applicants submit to the NRC will allow the agency to coordinate pre-application activities and, as appropriate, conduct vendor audits before the submission of applications. Furthermore, it will facilitate a more efficient licensing review of the applications. Regulatory Position C.IV.7 in Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)," issued June 2007, provides more information on pre-application activities (<http://www.nrc.gov/reading-rm/doc-collections/reg-guides/power-reactors/rq/01-206/>).

In the staff requirements memorandum on SECY-11-0024, "Use of Risk Insights To Enhance the Safety Focus of Small Modular Reactor Reviews," dated May 11, 2011, the Commission directed the staff to use the risk-informed and integrated review framework for staff pre-application and application review activities on integral pressurized-water reactors design applications. To do this effectively, and to take advantage of lessons-learned from recently completed reactor design reviews, the staff expects to expand the scope of pre-application activities. Information submitted in response to the questions related to white papers and technical or topical reports will be especially useful in helping the NRC plan and schedule staff activities.

VOLUNTARY RESPONSE

The NRC is developing pre-application, licensing, and project plans for the advanced reactor program. To support this effort, the NRC is seeking new or updated information on schedules for submitting CP, ESP, COL, DC, DA, and ML applications and on the status of a variety of design-related activities for SMRs. The NRC may share the planned application schedules with other Federal agencies to support its planning efforts on the licensing of new plants. If a prospective applicant deems this information proprietary, a request to withhold information from public disclosure in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Request for Withholding," must accompany the information. RIS 2004-11, "Supporting Information Associated with Requests for Withholding Proprietary Information," dated June 29, 2004, provides additional information about requests for withholding proprietary information from public disclosure. The NRC asks potential applicants to request withholding only for information that they currently treat as proprietary and to provide, where necessary, the proprietary information in designated attachments to their response to this RIS.

If an addressee chooses to provide a voluntary response, the NRC would like to obtain the information within 45 days of the date of this RIS. Respondents should provide the NRC with the following information, based on realistic, best-estimate predictions of applications or other submittals:

Design and Licensing Submittal Information

- When (month and year) are applications planned for design-related applications and what NRC action will be requested (i.e., a CP, DC, DA, or ML, or a COL that does not reference a DC or DA)?
- Will the applicants be organized into DCWGs? If known, what is the membership of the DCWG, and which party is the primary point-of-contact designated for each DCWG?
- Have protocols been developed to provide coordinated responses for requests for additional information with generic applicability to a design center?
- Which applicant that references the design will be designated as the reference COL applicant, or, alternatively, how will various applications (e.g., CP, DC, or COL applications) be coordinated to achieve the desired design-centered licensing review approach?
- When (month and year) will CP, COL, or ESP applications be submitted for review? In addition, what are the design, site location, and number of units at each site?
- Are vendors or consultants assisting in the preparation of the application(s)? If so, please describe their roles and responsibilities for the design and licensing activities.

Design, Testing, and Application Preparation

- What is the current status of the development of the plant design (i.e., conceptual, preliminary, or finalizing)? Has the applicant established a schedule for completing the design? If so, please describe the schedule.
- What is the applicant's current status (i.e., planning, in progress, or complete) for the qualification of fuel and other major systems and components? Has the applicant established a schedule for completing the qualification testing? If so, please describe the schedule.
- What is the applicant's status (i.e., planning, in progress, or complete) in developing computer codes and models to perform design and licensing analyses? Has the applicant defined principal design criteria, licensing-basis events, and other fundamental design and licensing relationships? Has the applicant established a schedule for completing the design and licensing analyses? If so, please describe the schedule.
- What is the applicant's status in designing, constructing, and using thermal-fluidic testing facilities and in using such tests to validate computer models? Has the applicant established a schedule for the construction of testing facilities? If so, please describe the schedule. Has the applicant established a schedule for completing the thermal-fluidic testing? If so, please describe the schedule.
- What is the applicant's status in defining system and component suppliers (including fuel), manufacturing processes, and other major factors that could influence design decisions? Has the applicant established a schedule for identifying suppliers and key contractors? If so, please describe the schedule.
- What is the applicant's status in the development and implementation of a quality assurance program?
- What is the applicant's status in the development of probabilistic risk assessment (PRA) models needed to support applications (e.g., needed for Chapter 19 of safety analysis reports or needed to support risk-informed licensing approaches)? Does the applicant plan to use the PRA for any risk-informed applications (i.e., risk-informed technical specifications, risk-informed inservice inspection, risk-informed categorization and treatment, risk-informed inservice testing, etc.). What are the applicant's plans for using the PRA models in the development of the design? At what level will the PRA be prepared, and when will it be submitted in the application process?
- What is the applicant's status in the development, construction, and use of a control room simulator?
- What are the applicant's current staffing levels (e.g., full-time equivalent staff) for the design and testing of the reactor design? Does the applicant have plans to increase staffing? If so, please describe future staffing plans.
- What are the applicant's plans on the submittal of white papers or technical and topical reports related to the features of its design or the resolution of policy or technical issues?

- Has the applicant established a schedule for submitting such reports? If so, please describe the schedule.
- Will ESP applicants seek approval of either “proposed major features of the emergency plans” in accordance with 10 CFR 52.17(b)(2)(i) or “proposed complete and integrated emergency plans,” in accordance with 10 CFR 52.17(b)(2)(ii)?
- Describe possible interest in the use of the provisions in Subpart F, “Manufacturing Licenses,” of 10 CFR Part 52, instead of, or in combination with, other licensing approaches (e.g., DC or DA).
- Describe the desired scope of a possible ML and what design or licensing process would address the remainder of the proposed nuclear power plant. For example, would the ML address an essentially complete plant or would it be limited to the primary coolant system that basically comprises the integral reactor vessel and internals?
- Describe the expected combination of manufacturing, fabrication, and site construction that results in a completed operational nuclear power plant. For example, what systems, structures, and components are being fabricated and delivered? Which of these are being assembled onsite? Which of these are being constructed onsite?

Addressees that choose to provide a voluntary response should send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001.

BACKFIT DISCUSSION

This RIS requires no action or written response. Any action on the part of addressees to provide information on standardization or advanced notice of intent to pursue a CP, ESP, COL, DC, DA, or ML, in accordance with the guidance contained in this RIS, helps the NRC to plan its resources and is strictly voluntary. Therefore, this RIS does not constitute a backfit under 10 CFR 50.109, “Backfitting.” Consequently, the staff did not perform a backfit analysis.

FEDERAL REGISTER NOTIFICATION

The NRC did not publish a notice of opportunity for public comment on this RIS in the *Federal Register* because it pertains to an administrative aspect of the regulatory process that involves the voluntary submission of information on the part of addressees.

CONGRESSIONAL REVIEW ACT

The NRC has determined that this RIS is not a rule under the Congressional Review Act (CRA) (5 U.S.C. 801–808) and, therefore, is not subject to the CRA.

PAPERWORK REDUCTION ACT STATEMENT

This RIS contains information collection requirements that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). The Office of Management and Budget (OMB) approved these existing requirements under OMB control number 3150-0011.

The NRC estimates that the burden to the public for these voluntary information collections will average 12 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments on this burden estimate or any other aspects of these information collections, including suggestions for reducing the burden, to the Information Services Branch (T-5F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-00011), Office of Management and Budget, Washington, DC 20503.

PUBLIC PROTECTION NOTIFICATION

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.

CONTACT

Please direct any questions about this matter to the technical contact listed below.

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Note: NRC generic communications may be found on the NRC public Web site, <http://www.nrc.gov>, under the headings "NRC Library," "Document Collections."

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