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

February 2, 2011

NRC REGULATORY ISSUE SUMMARY 2011-02
LICENSING SUBMITTAL INFORMATION AND DESIGN DEVELOPMENT ACTIVITIES FOR SMALL MODULAR REACTOR DESIGNS

ADDRESSEES

All applicants for a construction permit (CP), early site permit (ESP), combined license (COL), standard design certification (DC), standard design approval (DA), or manufacturing license (ML) for a nuclear power plant that references a small modular reactor (SMR) design under the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," or 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." For the purpose of this regulatory issue summary (RIS), 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 RIS to obtain new or updated information on the scheduling of CP, ESP, COL, DC, DA, or ML application submissions related to advanced reactor designs. These designs include integral pressurized-water reactors, high-temperature gas-cooled reactors, liquid-metal-cooled reactors, and other small- or medium-sized reactor designs. The purpose of this RIS is to facilitate the establishment of 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 is a follow-on to RIS 2010-03, "Licensing Submittal Information for Small Modular Reactor Designs" dated February 25, 2010, which seeks similar information. The staff asks any potential applicant that meets the criteria in the addressee section above to also 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 in October 2009 on SMRs, the philosophy of "one issue, one review, one position" can also be used across designs and reactor technologies to address policy or technical issues generally associated with SMRs.

SUMMARY OF ISSUE

The NRC anticipates receiving a number of CP, ESP, DC, DA, ML, and COL applications starting as early as 2012 for a number of advanced reactor designs. The review of these advanced reactor designs will require the resolution of a number of important policy and technical issues. The NRC expects that many of these issues will require an indepth review and that the resolution of some issues will involve decisions by the Commission.

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 may also be beneficial for working groups generally associated with SMRs and with specific reactor technologies. The NRC would appreciate information about 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. In addition, the NRC staff expects to issue requests for additional information (RAIs) to complete its reviews. The staff seeks standardized responses to RAIs associated with applications consistent with the DCWGs or generic or technology-related working groups. Applicants will need to adhere to a specified RAI response period, including coordination within the DCWG or other working groups, to enable the NRC to maintain its anticipated review schedules.

The NRC encourages potential applicants to provide the agency with design and licensing plans, construction plans, and preapplication activities that will be used to demonstrate compliance with NRC safety and environmental requirements, such as quality assurance requirements. In addition, information that potential applicants submit to the NRC will allow it to coordinate preapplication activities and, as appropriate, conduct vendor audits before the submission of applications. Furthermore, information on vendors and consultants that assist in the preparation of the application 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 preapplication activities (http://www.nrc.gov/reading-rm/doc-collections/reg-guides/power-reactors/rg/01-206/).

VOLUNTARY RESPONSE

The NRC is developing preapplication, 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, DC, DA, ML, ESP, and COL applications and on the status of a variety of design-related activities for small- and medium-sized reactors. The NRC may share the planned application schedules with other Federal agencies to support its planning efforts related to 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," may accompany the information. RIS 2004-011, "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 requests that potential applicants request withholding only for information that they currently treat as proprietary and, 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 information outlined below, 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., DC, DA, ML, or 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 RAIs 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, COL) 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 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/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 models needed to support applications (e.g., needed for Chapter 19 of safety analysis reports or needed to support risk-informed licensing approaches)? What are the applicants' plans for using the probabilistic risk assessment models in the development of the design?

- 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 current and future plans for using contractors to support plant design and testing (e.g., how many part-time and full-time contractors does or will the applicant employ)?

White Papers and Technical/Topical Reports

- What are the applicant's plans on the submittal of white papers or technical/topical reports related to the features of their 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.

- For ESP applicants, will the applicant 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)?

Manufacturing Licenses

- 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 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 on site; and which are being constructed on site?

- Describe the desired scope of a possible manufacturing license and what design or licensing process would address the remainder of the proposed nuclear power plant. For example, would the manufacturing license address an essentially complete plant or would it be limited to the primary coolant system basically consisting of the integral reactor vessel and internals?

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 COL in accordance with the guidance contained in this RIS aids the NRC in planning the use of its resources and is strictly voluntary. Therefore, this RIS does not constitute a backfit under 10 CFR 50.109, "Backfitting," and 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 the RIS 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 action is not a rule as designated by the Congressional Review Act (5 U.S.C. §§ 801–808) and, therefore, is not subject to the Act.

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.). These information collections were approved by the Office of Management and Budget (OMB) under OMB control numbers 3150-0011 and 3150-0151.

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-5 F53), 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, (3150-0011), Office of Management and Budget, Washington, DC 20503.

PUBLIC PROTECTION NOTIFICATION

The NRC may neither conduct nor sponsor, and a person is not required to respond to, an information collection request or 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 Electronic Reading Room/Document Collections.

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