Idaho National Laboratory

September 29, 2006 CCN 207126

Mr. T. L. Cook
NGNP Project Manager
NE-20
U.S. Department of Energy
19901 Germantown Road
Germantown, MD 20874

SUBJECT: Contract No. DE-AC07-05ID14517 – Milestone Completion for G-I0201L02 – Next Generation Nuclear Plant Project Integration Management Licensing and Trade Studies

Dear Mr. Cook:

The Nuclear Regulatory Commission's (NRC) National Environmental Policy Act (NEPA) Regulations, at 10 CFR Part 51, require that the NRC prepare an Environmental Impact Statement (EIS) for a permit to construct a nuclear power reactor. The permit applicant is required to submit an Environmental Report to aid the NRC in complying with NEPA, and the NRC is responsible for evaluating the reliability of any of the information that it uses to prepare the EIS. In advance of this activity, Idaho National Laboratory (INL) Work Package G-I0201L02, "NGNP Project Integration Management Licensing and Trade Studies," includes the following Level 2 milestone:

> *As part of the site identification/characterization, provide a report to DOE-NE that describes the execution plan and the status of INL's activities to initiate development of an Environmental Report that will support the NRC's efforts to prepare an NGNP Environmental Impact Statement (EIS) in accordance with NEPA Regulations found in 10 CFR Part 51.*

The attached report documents completion of this Level 2 milestone and addresses the initial activities and plans associated with site selection and site characterization that have taken place at the INL.
If you have any questions, please contact me at (208) 526-4250 or Mr. Mark Holbrook at (208) 526-4362, or e-mail at mark.holbrook@inl.gov.

Sincerely,

Rafael Soto, Deputy Project Manager
Next Generation Nuclear Plant Project

MH:cn

Attachment

cc: M. L. Adams, DOE-ID, MS 1221
C. P. Fineman, DOE-ID, MS 1235
J. J. Grossenbacher, INL, MS 3695
L. A. Sehlke, INL, MS 3810
R. M. Versluis, DOE-HQ

NGNP SITE SELECTION STATUS REPORT

September 29, 2006

Background

The *Energy Policy Act of 2005* (Title VI, Subtitle C, Section 644) states that the "Nuclear Regulatory Commission shall have licensing and regulatory authority for any reactor authorized under this subtitle." This stipulates that the Nuclear Regulatory Commission (NRC) will license the Next Generation Nuclear Plant (NGNP) for operation, which is consistent with the Energy Reorganization Act of 1974 that assigns the responsibility for licensing new Department of Energy (DOE) reactors to the NRC if they are used to generate power for an electric utility system or operated in any manner to demonstrate the suitability for subsequent use by the commercial power industry.

The NRC NEPA Regulations (10 CFR Part 51) require that the NRC prepare an Environmental Impact Statement (EIS) for a permit to construct a nuclear power reactor. The applicant is required to submit an Environmental Report (ER) to aid the NRC in complying with NEPA, and the NRC is responsible for evaluating the reliability of any of the information that it uses to prepare the EIS.

This report provides an overview of the NRC licensing process, the preliminary site activities that have taken place in the current fiscal year (FY-06), and the site-related plans for FY-07.

1. NRC LICENSING PROCESS

The NRC maintains oversight of the construction and operation of a facility throughout its lifetime to assure compliance with the Commission's regulations for the protection of public health and safety, the common defense and security, and the environment. To implement this process, all nuclear power plant applications must undergo a safety review, an environmental review, and antitrust review by the NRC.

The following elements of the 10 CFR Part 50 licensing process address the site selection and characterization activities that must be developed to support NGNP licensing.

Construction Permit (CP)

An application for a Construction Permit (CP) must contain four types of information:

1. Preliminary safety analyses,
2. An environmental review,
3. Financial and antitrust statements, and
4. Assessment of the need for the power plant.

The CP application includes a Preliminary Safety Analysis Report (PSAR). This document contains the design information and criteria for the proposed reactor and comprehensive data on the proposed site. It also discusses various hypothetical accident situations and the safety features of the plant that prevents accidents or, if accidents should occur, lessens their effects. In addition, the application must contain a comprehensive assessment of the environmental impacts and information for antitrust reviews of the proposed plant.

Site Technical Review

The NRC staff then reviews the application to determine whether the plant design meets all applicable regulations (10 CFR Parts 20, 50, 73, and 100). The review includes, in part:

- Characteristics of the site, including surrounding population, seismology, meteorology, geology and hydrology,
- Design of the nuclear plant,
- Anticipated response of the plant to hypothetical accidents,
- Plant operations including the applicant's technical qualifications to operate the plant,
- Discharges from the plant into the environment (i.e., radiological effluents), and
- Emergency plans.

When the NRC completes its review, it prepares a Safety Evaluation Report (SER) summarizing the anticipated effect of the proposed facility on public health and safety.

NEPA Review

The NRC NEPA Regulations, at 10 CFR Part 51, require that the NRC prepare an Environmental Impact Statement (EIS) for a permit to construct a nuclear power reactor. The permit applicant is required to submit an ER to aid the NRC in complying with NEPA, and the NRC is responsible for evaluating the reliability of any of the information that it uses to prepare the EIS. After completing this review, the NRC issues a Draft Environmental Impact Statement (EIS) for comment by the appropriate Federal, State, and local agencies as well as by the public. Afterwards, the agency issues a Final EIS that addresses all comments received.

The ER contains a description of the proposed action, a statement of its purposes, and a description of the environment affected, and discusses the following considerations:

- The impact of the proposed action on the environment, discussed in proportion to their significance.
- Any adverse environmental effects that cannot be avoided should the proposal be implemented.
- Alternatives to the proposed action. The discussion of alternatives must be sufficiently complete to aid the NRC in developing and exploring, pursuant to section 102(2)(E) of NEPA, "appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." To the extent possible, the environmental impacts of the proposal and the alternatives should be presented in comparative form.
- The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity.
- Any irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented.

The ER includes an analysis that considers and balances the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and alternatives available for reducing or avoiding adverse environmental effects. The analysis in the ER will also include consideration of the economic, technical, and other benefits and costs of the proposed action and of alternatives, and will contain sufficient data to aid the NRC in its development of an independent analysis.

The ER should list all Federal permits, licenses, approvals, and other entitlements that must be obtained and describe the status of compliance with these requirements. The ER should also include a discussion of the status of compliance with applicable environmental quality standards and requirements including, but not limited to, applicable zoning and land-use regulations, and thermal and other water pollution limitations or requirements that have been imposed by federal, state, regional, and local agencies having responsibility for environmental protection. The discussion of alternatives in the report will include a discussion of whether the alternatives will comply with such applicable environmental quality standards and requirements.

Potential Use of 10 CFR Part 52

A potential alternative NEPA/licensing approach may be to use the provisions of 10 CFR 52, Early Site Permits (ESP). For an ESP, INL would prepare a comprehensive ER, as for a CP, with the exception that the ER would use bounding generic information about maximum impacts based on the reactor type and size. Other environmental information would be essentially the same as for a CP, with the exception that in an early site environmental report, economic benefit of the project does not have to be addressed. The NRC would evaluate the ER and prepare and publish an EIS and Record of Decision. Following this, the NRC would issue an ESP.

An ESP allows the applicant to conduct site preparation, installation of temporary construction support facilities, excavation for facility structures, construction of service facilities, and construction of structures, systems and components that do not prevent or mitigate the consequences of postulated accidents (i.e., non safety-related equipment). However, a CP would still be required to continue with construction past the site preparations allowed by the ESP. The application for the CP would include an ER that provides all the necessary environmental information not previously addressed. This would then be evaluated by NRC, and the EIS would be supplemented as necessary.

Operating License (OL)

After a CP is issued, the applicant must, if it did not as part of the original application, submit a Final Safety Analysis Report (FSAR) to support its application for an Operating License (OL). This report describes the final design of the facility as well as its operational and emergency procedures. The NRC prepares a Final SER for the operating license, and the ACRS makes an independent evaluation and presents its advice to the Commission.

2. PRELIMINARY SITE ACTIVITIES

In 1983, a site selection was performed by the DOE for the New Production Reactor (NPR) at the INL. In 1989, the original site selection process was reviewed to determine if the primary site selected in 1983 was still considered the best site in light of the most recent site characterization data (see Report EGG-NPR-8517, Rev. 1, "*Site Selection Report for the New Production Reactor at the Idaho National Engineering Laboratory,*" dated July 1989).

This report determined that there was no reason to alter the previously selected primary location (called "Site E") for the NPR. It is important to note that this activity was taken with the understanding that suitability would be based on NRC siting criteria. Site E is close to established roads, the railroad, and the INL site electrical transmission loop. Considerable resources were expended in characterizing the selected site that is located east of the INTEC facility. Given the type of facility that planned, it is logical that Site E would be a prime candidate for locating the NGNP facility.

Based on the work that was done in the 1980s, it would be cost beneficial to gather any existing data from the NPR effort and not redo the site characterization activities. However, much of that data is currently controlled by the Idaho Cleanup Project (ICP). Therefore, activities have been initiated to determine the location of existing NPR site characterization data.

The current status is as follows:

- A large number (approximately 700 boxes) of NPR documents are located in the INL's records storage facility. These boxes contain a variety of information (including plant design data) that will need to be reviewed to identify and separate out the site characterization data that is of interest to the NGNP project.
- ICP has control of some of the Site E characterization and environmental data. These data are located (along with other site data) in a controlled area in Idaho Falls (Building TS-B). ICP personnel are tasked to electronically scan records that support their activities and to subsequently dispose of the original hard copies once the scanning is complete. We do not know (yet) if any NPR data has been processed in this manner. However, preventing the potential destruction of any original NPR-related site characterization documents is a high-priority issue. Given the costs of re-creating the data, saving the well logs has the highest priority.
- The project must identify where to organize and control our project records (over the long term) that will be needed to support the NRC licensing process. The space needed and the control requirements that must be applied to meet NQA-1 are not trivial. Initial inquiries have found that the laboratory resources for a large controlled library are scarce. This issue will require management attention.
- Other laboratory activities may benefit from the gathering and organization of the NPR site characterization data. Therefore, we will pursue any opportunities to enter cost-share arrangements with other interested organizations within the laboratory. This issue will require management attention.
- The ICP has a well-established site characterization database that should be a useful resource for general site data that will be needed by the NGNP environmental report.
- We know that the NPR project did not complete their seismic studies before the project was terminated. Therefore, this is one area that will require new work activities, even if Site E is selected for the NGNP facility.

3. FY-07 SITE SELECTION AND CHARACTERIZATION TASKS

It is anticipated that the following site-related tasks will be initiated in FY-07. This work has been identified in Work Package G-IN07NG0802. In general, this work package addresses the initial work needed to gather existing characterization data that was developed during the NPR project. This includes identifying new activities needed to develop an environmental report and meet current licensing requirements.

Once the existing data is gathered, it will be evaluated to ensure that the site is still acceptable in today's regulatory environment. Work activities needed to update or add additional supporting data will be identified.

The FY-07 work tasks are summarized below:

- Develop plan to gather existing NPR site data,
- Gather existing NPR site data,
- Develop site selection/characterization plan,
- Identify site monitoring needs,
- Procure monitoring equipment, and
- Develop site selection/characterization status report.

High-level deliverables associated with this work package will include:

- Develop draft plant for site selection and characterization (January 12, 2007)
- Complete site selection and characterization status report (September 30, 2007)

If you have any questions regarding information contained in this report, please contact Mark Holbrook, NGNP Licensing Coordinator, by telephone at 208-526-4362, or e-mail at mark.holbrook@inl.gov.