

1.0 Introduction

Southern Nuclear Operating Company (SNC) operates the Edwin I. Hatch Nuclear Plant (HNP), Units 1 and 2, in Appling County, Georgia, under operating licenses (OLs) DPR-57 and NPF-5 issued by the U.S. Nuclear Regulatory Commission (NRC). These OLs will expire on August 6, 2014, and June 13, 2018, respectively. By letter dated February 29, 2000, SNC submitted an application to the NRC to renew the HNP OLs for an additional 20 years under Title 10 of the Code of Federal Regulations (CFR) Part 54. SNC is a *licensee* for the purposes of its current OLs and an *applicant* for the renewal of the OLs. HNP is co-owned by Georgia Power Company (GPC), Oglethorpe Power Corporation, the Municipal Electric Authority of Georgia, and the city of Dalton, Georgia. Southern Company, based in Atlanta, Georgia, is the parent company of SNC. SNC provides services to Southern Company's nuclear power plants. Southern Company is also the parent company of five electric utilities, including GPC.

The National Environmental Policy Act (NEPA) requires an environmental impact statement (EIS) for major Federal actions significantly affecting the quality of the human environment. As provided in the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS), NUREG-1437 (NRC 1996; 1999),^(a) under NRC's environmental protection regulations in 10 CFR Part 51 implementing NEPA, renewal of a nuclear power plant operating license is identified as a major Federal action significantly affecting the quality of the human environment. Therefore, an EIS is required for a plant license renewal review. The EIS requirements for a plant-specific license renewal review are specified in 10 CFR Part 51. Pursuant to 10 CFR 54.23 and 51.53(c), SNC submitted an Environmental Report (ER; SNC 2000a) in which SNC analyzed the environmental impacts associated with the proposed action, considered alternatives to the proposed action, and evaluated any alternatives for reducing adverse environmental effects.

As part of NRC's evaluation of the application for license renewal, the NRC staff is required under 10 CFR Part 51 to prepare an EIS for the proposed action, issue the statement in draft form for public comment, and issue a final statement after considering public comments on the draft. This report is the final plant-specific supplement to the GEIS (supplemental environmental impact statement [SEIS]) for the SNC license renewal application for HNP, Units 1 and 2. The EIS is a supplement to the GEIS because it relies in part on the findings of the GEIS. The staff will also prepare a separate safety evaluation report in accordance with 10 CFR Part 54.

(a) The GEIS was originally issued in 1996. Addendum 1 to the GEIS was issued in 1999. Hereafter, all references to the "GEIS" include the GEIS and its Addendum 1.

Introduction

The following sections of this introduction describe the background and the process used by the staff to assess the environmental impacts associated with license renewal, describe the proposed Federal action, discuss the purpose and need for the proposed action, and present the status of compliance with environmental quality standards and requirements that have been imposed by Federal, State, regional, and local agencies that have responsibility for environmental protection. Chapter 2 describes the site, power plant, and interactions of the plant with the environment. Chapters 3 and 4 discuss the potential environmental impacts of plant refurbishment and plant operation during the renewal term, respectively. Chapter 5 contains an evaluation of potential environmental impacts of plant accidents and includes consideration of severe accident mitigation alternatives. Chapter 6 discusses the uranium fuel cycle and solid waste management, and Chapter 7 discusses decommissioning. The alternatives to license renewal are considered in Chapter 8. Finally, Chapter 9 summarizes the findings of the prior chapters, draws conclusions related to the adverse impacts that cannot be avoided (the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and the irreversible or irretrievable commitments of resources), and presents the recommendation of the staff with respect to the proposed action. Additional information is included in Appendices. Appendix A contains a discussion of comments obtained during the public scoping meetings and the public meetings held to discuss the draft SEIS. Appendix B lists preparers of this supplement, and Appendix C lists the chronology of correspondence between NRC and SNC with regard to this supplement. The remaining appendices are identified in subsequent sections.

Generic Environmental Impact Statement

The NRC initiated a generic assessment of the environmental impacts associated with the license renewal term to improve the efficiency of the license renewal process by documenting the assessment results and codifying the results in the Commission's regulations. This assessment is provided in the GEIS, which serves as the principal reference for all nuclear power plant license renewal EISs.

The GEIS documents the results of the systematic approach that was taken to evaluate the environmental consequences of renewing the licenses of individual nuclear power plants and operating them for an additional 20 years. For each potential environmental issue, the GEIS (1) described the activity that affects the environment, (2) identified the population or resource that is affected, (3) assessed the nature and magnitude of the impact on the affected population or resource, (4) characterized the significance of the effect for both beneficial and adverse effects, (5) determined whether the results of the analysis applied to all plants, and (6) considered whether additional mitigation measures would be warranted for impacts that would have the same significance level for all plants.

The NRC established its standard of significance using the Council on Environmental Quality (CEQ) terminology for “significantly” (40 CFR 1508.27) for assessing environmental issues. Using the CEQ guidelines, the NRC established three significance levels, as follows:

SMALL: Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

MODERATE: Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.

LARGE: Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

The GEIS assigned a significance level to each environmental issue, assuming that ongoing mitigation measures would continue.

The GEIS included a determination of whether the analysis of the environmental issue could be applied to all plants, and whether additional mitigation measures would be warranted. Issues were then assigned a Category 1 or a Category 2 designation. As set forth in the GEIS, **Category 1** issues are those that meet all of the following criteria:

- (1) The environmental impacts associated with the issue have been determined to apply either to all plants or, for some issues, to plants having a specific type of cooling system or other specified plant or site characteristics.
- (2) A single significance level (i.e., SMALL, MODERATE, or LARGE) has been assigned to the impacts (except for collective offsite radiological impacts from the fuel cycle and from high-level waste and spent fuel disposal).
- (3) Mitigation of adverse impacts associated with the issue has been considered in the analysis, and it has been determined that additional plant-specific mitigation measures are not likely to be sufficiently beneficial to warrant implementation.

For issues that meet the three Category 1 criteria, no additional plant-specific analysis is required unless new and significant information is identified.

Category 2 issues are those that do not meet one or more of the criteria of Category 1, and therefore, additional plant-specific review for these issues is required.

Introduction

In the GEIS, the staff assessed 92 environmental issues and determined that 69 qualified as Category 1 issues, 21 qualified as Category 2 issues, and 2 issues were not categorized. The latter two issues, environmental justice and chronic effects of electromagnetic fields, are to be addressed in a plant-specific analysis. Of the 92 issues, 10 are related to refurbishment, 74 are related to operations during the renewal term, and 8 apply to both refurbishment and operation during the renewal term. A summary of the findings for all 92 issues of the GEIS is codified in 10 CFR Part 51, Subpart A, Appendix B, Table B-1.

License Renewal Evaluation Process

An applicant seeking to renew its OL is required to submit an ER as part of its application. This ER must provide an analysis of the issues listed as Category 2 in 10 CFR Part 51, Subpart A, Appendix B, Table B-1 in accordance with 10 CFR 51.53(c)(3)(ii). The ER must include a discussion of actions to mitigate adverse impacts associated with the proposed action and environmental impacts of alternatives to the proposed action. In accordance with 10 CFR 51.53(c)(2), the ER need not consider the economic benefits and costs of the proposed action and alternatives to the proposed action except insofar as such benefits and costs are either essential for determination of whether an alternative should be included in the range of alternatives considered, or relevant to mitigation. Section 51.53(c)(2) also provides that certain other issues, including the need for power and other issues not related to the environmental effects of the proposed action, need not be considered in the ER. In addition, the ER need not discuss any aspect of the storage of spent fuel within the scope of the generic determination in 10 CFR 51.23(a) in accordance with 10 CFR 51.23(b). Pursuant to 10 CFR 51.53(c)(3)(iii) and (iv), the ER is not required to contain an analysis of any Category 1 issues unless there is significant new information on a specific issue. New and significant information is (1) information that identifies a significant environmental issue not covered in the GEIS and codified in 10 CFR Part 51, Subpart A, Appendix B, Table B-1, or (2) information that was not considered in the analyses summarized in the GEIS and that leads to an impact finding different from that codified in 10 CFR Part 51.

In preparing to submit its application to renew the HNP OLs, SNC developed a process to ensure that new and significant information regarding the environmental impacts of license renewal for HNP would be properly reviewed before submitting the ER and to ensure that new and significant information related to renewal of the HNP licenses would be identified, reviewed, and addressed during the period of NRC review. SNC reviewed the Category 1 issues appearing in 10 CFR Part 51, Subpart A, Appendix B, Table B-1, to verify that the conclusions of the GEIS remained valid with respect to HNP. This review was performed by personnel from SNC's Corporate Environmental Services Organization and HNP staff.

The NRC staff also has a process for identifying new and significant information. That process is described in detail in *Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal* (ESRP), NUREG-1555, Supplement 1 (NRC 2000a). The search for new information includes a review of an applicant's ER and process for discovering and evaluating the significance of new information; review of records of public meetings and correspondence; review of environmental quality standards and regulations; coordination with Federal, State, and local environmental protection and resource agencies; and review of the technical literature. Any new information discovered by the staff is evaluated for significance using the criteria set forth in the GEIS. For Category 1 issues where new and significant information is identified, reconsideration of the conclusions for those issues is limited in scope to the assessment of the relevant new and significant information; the scope of the assessment does not include other facets of the issue that are not affected by the new information. Neither SNC nor the staff has identified any new issue applicable to HNP that has a significant environmental impact.

Chapters 3 through 7 discuss the environmental issues considered in the GEIS that are applicable to HNP. At the beginning of the discussion of each set of issues, there is a table that identifies the issues to be addressed and lists the sections in the GEIS where the issues are discussed. Category 1 and Category 2 issues are listed in separate tables. For Category 1 issues for which there is no new and significant information, the table is followed by a set of short paragraphs that state the GEIS conclusion codified in 10 CFR Part 51, Subpart A, Appendix B, Table B-1, followed by the staff's analysis and conclusion. For Category 2 issues, in addition to the list of GEIS sections where the issue is discussed, the tables list the subparagraph of 10 CFR 51.53(c)(3)(ii) that describes the analysis required and the SEIS sections where the analysis is presented. The SEIS sections that discuss the Category 2 issues are listed immediately following the table.

The NRC prepares an independent analysis of the environmental impacts of license renewal as well as a comparison of those impacts with the environmental impacts of alternatives to license renewal. The evaluation of SNC's license renewal application began with publication of a notice of acceptance for docketing and opportunity for a hearing in the *Federal Register* (65 FR 17543, April 3, 2000). The staff then published a notice of intent to prepare an EIS and to conduct scoping (65 FR 19797, April 12, 2000).

Two public scoping meetings were held on May 10, 2000, in Vidalia, Georgia. The comments received during the scoping meeting and comment period are summarized in the *Environmental Impact Statement Scoping Process, Hatch Nuclear Station, Units 1 and 2, Summary Report*, August 23, 2000 (NRC 2000b).

Introduction

The staff visited the HNP site on May 10 and 11, 2000, reviewed the comments received during scoping, and consulted with Federal, State, regional, and local agencies. A list of the organizations consulted is provided in Appendix D of this document. Other documents related to HNP were also reviewed and are referenced.

The staff followed the review guidance contained in the ESRP. The staff issued requests for additional information to SNC by letters dated May 30, 2000 (NRC 2000c) and June 23, 2000 (NRC 2000d). SNC provided its responses in letters dated July 26, August 11, and August 31, 2000 (SNC 2000b, 2000c, and 2000d). The staff reviewed this information and incorporated it into its analysis. The results of the staff evaluation and its recommendation are contained in this SEIS.

On the date of publication of the U.S. Environmental Protection Agency Notice of Filing of the draft SEIS (November 9, 2000), a 75-day comment period commenced, during which members of the public could comment on the preliminary results of the NRC staff's review. During this comment period, two public meetings were held in Vidalia, Georgia, on December 12, 2000. During these meetings, the staff described the preliminary results of the NRC environmental review and was available to answer questions related to it to provide members of the public with information to assist them in formulating their comments. The comment period for the HNP draft SEIS ended January 24, 2001.

This SEIS presents the staff's analysis that considers and weighs the environmental effects of the proposed renewal of the HNP licenses, the environmental impacts of alternatives to license renewal, and alternatives available for avoiding adverse environmental effects. The staff considered the comments that were received during the comment period, and the disposition of the comments is addressed in Appendix A of this final SEIS. The staff modified the analysis set forth in the draft SEIS to address certain comments, as appropriate. A vertical bar in the margin indicates where the staff made changes to the draft SEIS. In addition, Chapter 9, Summary and Conclusions, provides the NRC staff's final recommendation to the Commission on whether the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.

1.1 The Proposed Federal Action

The proposed Federal action is renewal of the OLs for HNP, Units 1 and 2. HNP is located in Appling County, Georgia, approximately 18 km (11 mi) north of Baxley, Georgia. The plant has two boiling-water reactors, each with a design rating for a net electrical power output of 860 megawatts (MW[e]). Plant cooling is provided by a cooling-tower heat dissipation system. The current OL for Unit 1 expires on August 6, 2014, and for Unit 2 on June 13, 2018. By letter

dated February 29, 2000 (SNC 2000a), SNC submitted an application to renew these OLs for an additional 20 years of operation (i.e., until August 6, 2034, for Unit 1 and June 13, 2038, for Unit 2).

1.2 Purpose and Need for the Action

A licensee must have a renewed license to operate a plant beyond the term of the existing OL. However, the possession of this license is just one of a number of conditions that must be met for the licensee to continue plant operation during the term of the renewed license. Once an OL is renewed, State regulatory agencies and the owners of the plant will ultimately decide whether the plant will continue to operate based on factors such as the need for power or other matters within the State's jurisdiction or the purview of the owners.

Thus, for license renewal reviews, the Commission has adopted the following definition of purpose and need (GEIS, Section 1.3):

The purpose and need for the proposed action (renewal of an operating license) is to provide an option that allows for power generation capability beyond the term of a current nuclear power plant operating license to meet future system generating needs, as such needs may be determined by State, utility, and where authorized, Federal (other than NRC) decision makers.

This definition of purpose and need reflects the Commission's recognition that, unless there are findings in the safety review required by the Atomic Energy Act of 1954, as amended, or findings in the NEPA environmental analysis that would lead the NRC to reject a license renewal application, the NRC does not have a role in the energy-planning decisions of State regulators and utility officials as to whether a particular nuclear power plant should continue to operate. From the perspective of the licensee and the State regulatory authority, the purpose of renewing an OL is to maintain the availability of the nuclear plant to meet system energy requirements beyond the current term of the plant's license.

1.3 Compliance and Consultations

SNC is required to hold certain Federal, State, and local environmental permits, as well as meet relevant Federal and State statutory requirements. SNC provided a list in its ER of the status of authorizations from Federal, State, and local authorities for current operations as well as environmental approvals and consultations associated with HNP license renewal. Authorizations most relevant to the proposed license renewal action are summarized in Table 1-1.

Introduction

The staff reviewed the list and has consulted with the appropriate Federal, State, and local agencies to identify any compliance or permit issues or significant environmental issues of concern to the reviewing agencies. These agencies did not identify any new and significant environmental issues. Correspondence related to these consultations is provided in Appendix E. The staff has also not identified any new and significant environmental issues.

Table 1-1. Federal, State, and Local Authorizations

Agency	Authority	Requirement	License Permit Number	Permit Expiration or Consultation Date	Activity Covered
NRC	Atomic Energy Act, 10 CFR Part 50	Operating license	DPR-57 (Unit 1) NPF-5 (Unit 2)	August 6, 2014 (Unit 1) June 13, 2018 (Unit 2)	Operation of HNP, Units 1 and 2
FWS and NMFS	Endangered Species Act, Section 7	Consultation Informal consultation	NA	Consultation initiated by NRC August 31, 2000	Operation during the renewal term
EPA and GADNR	Clean Air Act, Section 112	State air quality permit	4911-001-0001-V-01-0	February 4, 2004	Air quality permit
EPA and GADNR	Safe Drinking Water Act, 42 U.S.C. 300f	State drinking water quality	PG0010005 and NG0010011	March 31, 2009	SNC has a drinking water permit for two wells and a separate permit for a third well
GADNR	Georgia Water Quality Control Act	State surface water withdrawal	001-0690-01	January 1, 2010	Authorized withdrawal of Altamaha River water for cooling water
EPA and GADNR	FWPCA (33 U.S.C.) Section 402	State storm water discharge permit	GAR000000	May 31, 2003	General storm water permit
EPA and GADNR	FWPCA (33 U.S.C.) Section 402	State NPDES discharge permit	GA0004120	August 31, 2002	Discharges of process waste water (NPDES permit)
EPA and GADNR	RCRA Section 3005	State solid waste landfill	001-004 D(L)(I)	Upon closure	Part A Hazardous Waste Permit, Interim Storage Facility for Mixed Wastes
GADNR	National Historic Preservation Act, Section 106	Consultation	NA	Licensee consulted with GADNR, completed October 29, 1999	Operation during the renewal term

EPA - U.S. Environmental Protection Agency
FWPCA - Federal Water Pollution Control Act (also known as the Clean Water Act)
FWS - U.S. Fish and Wildlife Service
GADNR - Georgia Department of Natural Resources
NMFS - National Marine Fisheries Service
NPDES - National Pollutant Discharge Elimination System
RCRA - Resource Conservation and Recovery Act
NA - Not applicable

1.4 References

10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions."

10 CFR Part 51, Subpart A, Appendix B, "Environmental effect of renewing the operating license of a nuclear power plant."

10 CFR 51.23, "Temporary storage of spent fuels after cessation of reactor operation - generic determination of no significant environmental impact."

10 CFR 51.53(c), "Operating license renewal stage."

10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants."

10 CFR 54.23, "Contents of application - environmental information."

40 CFR 1508.27, "Terminology and Index - Significantly."

65 FR 17543, "Notice of Acceptance for Docketing of the Application, and Notice of Opportunity for a Hearing Regarding Renewal of Licenses Nos. DPR-57 and NPR-5, for an Additional Twenty-Year Period." April 3, 2000.

65 FR 19797, "Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping Process." April 12, 2000.

Atomic Energy Act of 1954, as amended, 42 USC 2011, et seq.

Clean Air Act (CAA), as amended, 42 USC 7401, et seq.

Endangered Species Act of 1973, as amended, 16 USC 1531, et seq.

Federal Water Pollution Control Act (FWPCA) of 1977, as amended, 33 USC 1251, et seq. (also known as the Clean Water Act).

Georgia Water Quality Control Act, Georgia Law 1964, et seq.

National Environmental Policy Act (NEPA) of 1969, as amended, 42 USC 4321, et seq.

National Historic Preservation Act of 1966, as amended, 16 USC 470, et seq.

Resource Conservation and Recovery Act (RCRA) of 1976, as amended, 42 USC 6901, et seq.

Safe Drinking Water Act of 1974, as amended, 42 USC 300f, et seq.

Southern Nuclear Operating Company (SNC). 2000a. *Application for License Renewal for the Edwin I. Hatch Nuclear Plant, Units 1 and 2. Appendix D, Applicant's Environmental Report—Operating License Renewal Stage, Edwin I. Hatch Nuclear Plant.*

Southern Nuclear Operating Company (SNC). 2000b. Letter from Mr. H. L. Sumner, Jr., Southern Nuclear Operating Company to U.S. Nuclear Regulatory Commission. Subject: Edwin I. Hatch Nuclear Plant, Additional Information Related to the Staff's Review of Severe Accident Mitigation Alternatives (TAC Nos. MA8096 and MA8098). July 26, 2000.

Southern Nuclear Operating Company (SNC). 2000c. Letter from Mr. H. L. Sumner, Jr., Southern Nuclear Operating Company to U.S. Nuclear Regulatory Commission. Subject: Edwin I. Hatch Nuclear Plant, Additional Information Related to the Staff's Review of the License Renewal Environmental Report (TAC Nos. MA8096 and MA8098). August 11, 2000.

Southern Nuclear Operating Company (SNC). 2000d. Letter from Mr. H. L. Sumner, Jr., Southern Nuclear Operating Company to U.S. Nuclear Regulatory Commission. Subject: Edwin I. Hatch Nuclear Plant, Additional Information Related to the Staff's Review of Severe Accident Mitigation Alternatives (TAC Nos. MA8096 and MA8098). August 31, 2000.

U.S. Nuclear Regulatory Commission (NRC). 1996. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants*. NUREG-1437, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC). 1999. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Main Report, Section 6.3 - Transportation, Table 9.1, Summary of findings on NEPA issues for license renewal of nuclear power plants*. NUREG-1437, Vol. 1, Addendum 1, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC). 2000a. Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal. NUREG-1555, Supplement 1, Washington, D.C.

U.S. Nuclear Regulatory Commission (NRC). 2000b. *Environmental Impact Statement Scoping Process, Hatch Nuclear Station, Units 1 and 2, Summary Report*. Washington, D. C. August 23, 2000.

Introduction

U.S. Nuclear Regulatory Commission (NRC). 2000c. Letter from Mr. James H. Wilson, U.S. NRC, to Mr. H. L. Sumner, Jr., Southern Nuclear Operating Company. Subject: Request for Additional Information Related to the Staff's Review of Severe Accident Mitigation Alternatives for the Edwin I. Hatch Nuclear Plant, Units 1 and 2. May 30, 2000.

U.S. Nuclear Regulatory Commission (NRC). 2000d. Letter from Mr. James H. Wilson, U.S. NRC, to Mr. H. L. Sumner, Jr., Southern Nuclear Operating Company. Subject: Request for Additional Information Related to the Staff's Review of the License Renewal Environmental Report for the Edwin I. Hatch Nuclear Plant, Units 1 and 2. June 23, 2000.