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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Edwin I. Hatch Nuclear Plant
Annual Update of License Renewal Application

Ladies and Gentlemen:

Pursuant to 10 CFR 54.21(b), Southern Nuclear (SNC) hereby submits the required amendment to the license renewal application (LRA) originally submitted February 29, 2000. This amendment is presented in Enclosure 3 and identifies those changes to the current licensing basis (CLB) that materially affect the contents of the LRA.

Enclosure 1 provides a description of each CLB change that resulted in a change to the LRA. Enclosure 2 provides a list of changed pages.

If you have any questions regarding this matter, please contact R. D. Baker at (205) 992-7367.

Respectfully submitted,

Lewis Sumner

H. L. Sumner, Jr.

HLS/JAM

Enclosure 1 Annual Review of Current Licensing Basis Changes
Enclosure 2 List of Changed Pages
Enclosure 3 Amendment 1 to the Plant Hatch License Renewal Application

A083

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ENCLOSURE 1
Annual Review of Current Licensing Basis Changes

SNC performed a review of changes to the current licensing basis covering September 15, 1999 through November 17, 2000. September 15, 1999 was the initial cutoff date for preparing the original LRA. Pursuant to 10 CFR 54.21(b), subsequent changes to the CLB that materially affect the LRA are to be submitted in an annual amendment. The review identified four CLB changes that meet the threshold for inclusion in this amendment. Each of the five changes is described in a summary fashion below.

I. Nuclear Safety Operational Analysis (FSAR Supplement 15C)

The NSOA identifies the active system level requirements that assure the safety analysis is valid for all limiting operational conditions. While the safety analysis is essentially consequences oriented, the NSOA is event/system oriented.

The License Renewal scoping and screening process was performed prior to incorporation of the updated/enhanced NSOA, Supplement 15C, into the FSAR. Previously, FSAR supplement 15C was regarded as historical, and not reflective of the current plant configuration. Therefore, following issuance of the updated/enhanced NSOA as part of the updated FSAR, a review was completed to ensure that the information relied on to generate the scoping and screening results was consistent with information in the NSOA.

The methodology used in completing this review focused on the consideration of each of the NSOA events and the system functions required to accomplish the required action (e.g., reactor shutdown, core cooling, etc.). In performing the review, each event diagram and corresponding evaluation was compared to the LRA and supporting documentation to determine if, in each case, the required action is achieved by system functions which are in the scope of the LRA. In addition, supporting documentation for the NSOA events found in Supplement 15C (e.g., definitions, tables, support systems, etc.) was also reviewed in light of the events to ensure that the information was addressed by the LRA. The support systems/functions for each function (e.g. dc and auxiliary ac power for Core Spray) were also evaluated.

One function initially identified in the LRA as not in scope has been brought in scope as a result of this NSOA review. Function C51-02, Rod Block Monitor, has been brought in scope based on the NSOA. No new component types were added to the list of plant-wide electrical components subject to aging management review as a result of this scoping change.

II. Removal of Halon Fire Suppression from Unit 2 Remote Shutdown Panel

Subsequent to the cutoff date for preparation of the LRA, Plant Hatch processed a design change as permitted under 10 CFR 50.59 that removed the Halon fire suppression system from the Unit 2 remote shutdown panel. This CLB change reflects the current status of the plant. NRC Inspection Report 2000/009 also addressed this plant modification.

III. Environmentally Qualified Electrical Component Changes

Section 4.4 of the LRA presents electrical time-limited aging analyses summary sheets. Environmentally qualified (EQ) component types are represented by summary descriptions of qualification data packages (QDPs) in Figures 4.4-1 through 4.4-107. During the period covered

by this amendment, two QDPs have been deleted and two new QDPs have been produced. These changes are routinely performed in accordance with the EQ program. Figure 4.4-7a describes QDP 2C/2C, a conformal coating that has been qualified for use in outside containment applications as described in the QDP. The qualification for EGS Grayboot Connectors previously presented in QDP 70/76 has been deleted from Figure 4.4-77. In its place, a new QDP 70C/76C for Grayboot Series A connectors has been completed. This QDP is described in figure 4.4-77a. Finally, temperature elements described in Unit 2 QDP 50 have been replaced with other temperature elements, and temperature elements addressed by this QDP are no longer installed in any EQ applications. Thus, the QDP is no longer applicable, and has been deleted from the EQ program.

IV. Surface Water Use and Deep Well Permit Changes

Subsequent to the cutoff date for preparing the LRA, Plant Hatch requested, and received, permits to increase the total number of deep wells to six. A total of five wells are in use. The sixth well has not been installed. Pages from sections 2, 3 and 4 of LRA appendix D have been revised to reflect the groundwater use and permit changes brought about by the additional wells. In addition, subsequent to extended power uprate, Plant Hatch requested, and received, an increase in the monthly average surface water usage. This change did not affect the maximum daily withdrawal limit specified in the permit.

V. Withdrawal of Proposed Technical Specifications Changes

LRA Appendix E identified a proposed change to the Unit 1 and 2 Technical Specifications in support of extended operation from 40 years to 60 years. Pressure-temperature operating limits based on the effects of irradiation on the core beltline up to 32 effective full-power years were incorporated in the Technical Specifications at the time of submittal of the LRA. Subsequently, in conjunction with other licensing actions, SNC has separately requested, and received, amendments to the Technical Specifications that incorporate changes to the pressure-temperature operating limits. Consequently, further action regarding this subject by NRC in association with review of the LRA is not required. This LRA amendment removes the proposed change to the Technical Specifications. However, Enclosure 3 to LRA Appendix E is retained, since it supports certain reactor vessel TLAA issues. Those portions of Enclosure 3 specifically addressing the pressure-temperature limits are superseded by the separate licensing action taken by NRC in issuing Amendments 222 and 163 to the Unit 1 and Unit 2 operating licenses, respectively.

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4.4-16b	Add
4.4-86	Replace
4.4-86a	Add
4.4-86b	Add
4.4-97	Replace
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2-27	Replace
Appendix D Section 3	
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3-8	Replace
Appendix D Section 4	
4-3	Replace
Appendix E	
E.1-1	Replace
E.1-2	Add
Appendix E Enclosure 1	Replace
Unnumbered pages of Enclosure 1	Delete
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Table 2.2-1 Plant Hatch System/Structure Function Scoping Results

System Number	System Name	In Scope	Function Number/Name
A70	Analog Transmitter Trip System	Yes	A70-01 Process Parameter Monitoring
A71	Nuclear Steam Supply Shutoff	Yes	A71-01 Signal Transmission
B11	Reactor Assembly	Yes	B11-01 Nuclear Boiler
		Yes	B11-02 Reactivity Control
B21	Nuclear Boiler System	Yes	B21-01 Pressure Control
		Yes	B21-02 Reactor Coolant Pressure Boundary Integrity
		Yes	B21-03 Rod Worth Minimizer
		Yes	B21-04 Nuclear Boiler Instrumentation
B31	Reactor Recirculation	No	B31-01 Reactivity Control
		Yes	B31-02 RPT Breaker Trip
		Yes	B31-03 Reactor Coolant Pressure Boundary Integrity
C11	Control Rod Drive	No	C11-01 Normal Control Rod Movement
		No	C11-02 Vessel Injection
		No	C11-03 Control Rod Cooling
		Yes	C11-04 Reactivity Control (Reactor Scram)
		No	C11-05 Alternate Boron Injection
		No	C11-06 Pump Seal Purge
		Yes	C11-07 Alternate Rod Insertion (ARI)
C32	Feedwater Control	No	C32-01 Regulate Feedwater Flow to Vessel
C41	Standby Liquid Control	Yes	C41-01 Reactivity Control
		No	C41-02 Vessel Injection
		Yes	C41-03 SBLC Testing
		No	C41-04 SBLC System Draining
C51	Neutron Monitoring System	No	C51-01 Reactivity Monitoring
		Yes	C51-02 Rod Block Monitor
		No	C51-03 Traversing Incore Probe
C61	Primary Containment Isolation	Yes	C61-01 Primary Containment Isolation & Integrity
		Yes	C61-02 Signal Transmission

Table 2.2-1 Plant Hatch System/Structure Function Scoping Results (Continued)

System Number	System Name	In Scope	Function Number/Name
X42	Potable/Sanitary Water	No	X42-01 Drinking & Sanitary Water
X43	Fire Protection	Yes	X43-01 Cardox Fire Suppression for EDG's
		No	X43-02 Halon Fire Suppression for Remote Shutdown Panel (Unit 2)
		No	X43-03 RPV Inventory Makeup
		Yes	X43-04 Plant Wide Fire Suppression With Water
		No	X43-05 Halon Fire Suppression For Miscellaneous Applications
		Yes	X43-06 Fire Detection
		Yes	X43-07 Penseals & Fire Barriers For Preventing Fire Propagation
		Yes	X43-08 Manual CO_2 Fire Protection
		No	X43-09 EDG Building Fire Protection[5]
		Yes	X43-10 Cardox Fire Suppression for the Computer Room
X75	Emergency Response Facilities	Yes	X75-01 Class 1E Signal Isolation
		No	X75-02 Plant Parameter Monitoring (SPDS/ERFDS)
		No	X75-03 Emergency Response Coordination/Support
		No	X75-04 Plant Simulator
Y29	Yard Structures	Yes	Y29-01 Equipment Integrity and Personnel Habitability
Y32	Off-Gas Stack[6]	Yes	Y32-01 Gaseous Effluent Elevated Release
Y33	Meteorological Tower	No	Y33-01 Weather Monitoring
Y34	Security	No	Y34-01 Facility Protection
Y39	EDG Building	Yes	Y39-01 EDG and Equipment Integrity
Y42	Deep Well Pumps	No	Y42-01 Sanitary Water Supply
Y44	Sewage & Sanitary Drains	No	Y44-01 Sewage Treatment
Y47	Microwave	No	Y47-01 Intra Company Communication
Y52	Fuel Oil	Yes	Y52-01 EDG Fuel Oil Supply
		No	Y52-02 Auxiliary Boiler Fuel Oil Supply

Intended Functions

X43-01 – Cardox Fire Suppression for EDGs. The cardox fire suppression for EDGs provides an automatic gaseous total flooding fire suppression system for diesel engine compartment fire to contain and control the level of fire damage. The scope includes a rollup fire door, HVAC fire dampers, carbon dioxide discharge controls, and detection devices. The rollup fire door releasing mechanism is controlled by a nonsafety-related fusible link.

X43-04 – Plant Wide Fire Suppression With Water. Dedicated water storage and plantwide water distribution system to supply manual hose stations and automatic water suppression systems for areas of Plant Hatch.

This is applicable to portions of L43, T43, U43, V43, W43, X43, Y43, and Z43. The fire protection water supply is furnished from deep wells and stored in tanks. All powerblock structures consist of looped headers and dual feeds from the underground loop mains. The distribution headers supply risers for hose stations and risers for the suppression systems where practical. The water curtains in the reactor building provide separation of safe shutdown paths by serving as an equivalent fire barrier.

X43-06 – Fire Detection. Provide early warning fire detection systems to alert station personnel of incipient stage of fire development to ensure fast and timely response.

This is applicable to portions of L43, T43, U43, W43, X43, Y43, and Z43. Fire detection is necessary to comply with the original license basis described in Fire Hazards Analysis, Appendix D, and to comply with 10 CFR 50 Appendix R requirements detailed in the Plant Hatch FHA, Appendix E.

X43-07 – Penseals and Fire Barriers for Preventing Fire Propagation. Fire barriers consist of fire-rated doors, dampers, and penetration seals for the respective buildings and provide separation between safe shutdown trains to ensure a fire in any single area will not prevent safe shutdown.

This is applicable to portions of L48, R90, T43, U43, X43, and Z43. Fire barriers consist of fire doors, fire dampers, and barrier penetration seals to provide passive protection features to maintain cable separation and restrict fire to a single fire area as required under 10 CFR 50 Appendix R.

X43-08 – Manual Carbon Dioxide Fire Protection. Provide first response fire fighting capability with carbon dioxide hose reels to reduce cleanup and prevent water damage to high voltage electrical equipment. This applies only to X43. Manual hose reels are provided as an alternative to water-based hose stations.

X43-10 – Cardox Fire Suppression for the Computer Room. Provide an automatic gaseous fire suppression system for the computer room and the cable spreading room. This is a total flooding system actuated by ionization detection.

2.5.16 NEUTRON MONITORING SYSTEM [C51]

2.5.16.1 System Description

The purpose of the neutron monitoring system to measure the neutron flux in the reactor over the entire range of reactor operation. As the local neutron flux is directly proportional to the reactor power generation rate in the vicinity, the neutron flux measurements are used to calculate the local reactor power, and these results are integrated to give the total reactor power.

The flux measurements generated by the neutron monitoring system are used to scram the reactor if the neutron flux measured is outside the permissible limits, block improper control rod withdrawals on undesirable neutron flux distribution, and provide information to the reactor operator to assist in the proper operation of the reactor.

Additional information may be found in Unit 1 FSAR section 7.5 and Unit 2 FSAR section 7.6.2.

The above system description is general information provided as an aid in the review of this license renewal application. As described in Section 2.1.2, the initial scoping was performed on the basis of functions. The following intended functions have been assigned to be primarily associated with this system. Note, however, that functions cross over traditional system nomenclature boundaries so that the intended functions, in some cases, are supported by components with various system designations. The intended function descriptions convey the extent to which the function may extend into other systems.

Intended Functions

C51-02- Rod Block Monitor

The rod block monitor (RBM) function of the neutron monitoring system acts to inhibit rod withdrawal during a rod withdrawal error. If a flux trip is encountered, the RBM initiates a control rod withdrawal block to terminate control rod withdrawal. If a flux trip does not occur, the reactor will stabilize in a new steady-state operating condition.

Component Groups Requiring an Aging Management Review.

Identification of electrical components is presented in Section 2.5.15.1.

Figure 4.4-7a Equipment Qualification TLAA Demonstration

Commodity Type:	Conformal Coating
Specific Description:	Patel Engineering PECC-1 Conformal Coating
Location:	Outside Containment
QDP:	Unit 1/2, QDP 2C/2C
Methodology:	10 CFR 50.49

TLAA Demonstration Option: Criterion (i): Valid for the Period of Extended Operation

The Patel Engineering PECC-1 Conformal Coating may be used in terminal block applications as an aide to reduce corrosion. It is qualified for use in outside containment applications, excluding the Standby Gas Treatment System (due to radiation considerations).

Thermal

The maximum temperature outside containment is considered to be 160°F based on calculations SINH 90-001 and SINH 90-002. The Patel Engineering PECC-1 Conformal Coating was aged for 100 hours at 130°C. The activation energy was determined to be 2.59 eV based on thermogravimetric analysis performed by Corporate Consulting and Development, Ltd. Qualified life has been established by Arrhenius analysis to be 60 years at a service temperature of 191°F, which bounds all applications.

Radiation

The coating was tested to 2.0 E7 Rads. The worst-case 60-year total integrated dose, plus margin is 1.55 E7 Rads outside containment, per Calculation SMNH 98-011.

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Figure 4.4-77 Equipment Qualification TLAA Demonstration

Commodity Type:	Connectors
Specific Description:	EGS Quick Disconnects[1]
Location:	Inside/Outside Containment
QDP:	Unit 1/2, QDP 70/76
Methodology:	10 CFR 50.59
TLAA Demonstration Option:	Criterion (ii): Projection to the End of the Period of Extended Operation

Conclusion:

The EGS Quick Disconnect qualified lives have been projected to the end of the period of extended operation for all currently installed applications.

For future applications at certain higher service temperatures, and falling short of qualification through the renewal term, aging effects will be managed by the EQ program.

The EGS Quick Disconnects are qualified to radiation levels greater than the worst-case 60-year total integrated dose, plus margin.

[1] This figure originally included EGS Grayboot Connectors qualified in QDPs 70B and 76B. Due to thermal life limitations at higher temperatures for the original Grayboot connectors, the new Grayboot Series A connectors have been qualified as documented in new QDPs 70C and 76C. A review of plant records indicates none of the original Grayboots have been installed. Subsequently the decision was made to use the new Series A Grayboots exclusively, and that none of the original Grayboots will be installed. The original Grayboot qualification as documented in QDPs 70B and 76B has been deleted.

Figure 4.4-77a Equipment Qualification TLAA Demonstration

Commodity Type:	Connectors
Specific Description:	Grayboot Series A Connectors
Location:	Inside/Outside Containment
QDP:	Unit 1/2, QDP 70C/76C
Methodology:	10 CFR 50.59
TLAA Demonstration Option:	Criterion (i): Valid for the Period of Extended Operation

Conclusion:

The Grayboot Series A Connectors were recently qualified for new applications at Plant Hatch. They are qualified for use in all outside containment areas, and for inside containment areas at the 152' elevation or below.

Thermal

The worst-case environment for proposed Grayboot Series A Connector applications, is in the electrical penetration local junction boxes. The electrical penetrations are located at elevation 152' or below in both units. Based on actual temperature measurements given in calculations SMNH 89-051 (Unit 1) and SINH 92-010 (Unit 2), the ambient temperature will be 150°F or less for these applications. An activation energy of 1.31 eV was used for the EPDM in the connector. Aging was performed at 131°C for 246 hours. The vendor qualified the Grayboot Series A Connectors for 40 years at 150°F. Based on the earliest possible installation date for either unit (Unit 2 Spring 2000 refueling outage), the 40-year qualified life qualifies the Grayboot Series A Connectors through the end of the period of extended operation for both units.

Radiation

The test specimens received a test dose of 2.0 E8 Rads. The worst-case 60-year total integrated dose is 1.22 E8 Rads, per calculation SMNH 98-011.

Mechanical Cycle Aging

The Grayboot Series A Connectors went through 160 connect/disconnect cycles during testing. This equates to more than 6 cycles per 18-month outage over the remaining life of the plant. This is conservative for normal outage maintenance activities and any circuit troubleshooting that might occur between outages.

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Figure 4.4-88 Equipment Qualification TLAA Demonstration

Commodity Type:	Temperature Element
Specific Description:	Rosemount 88-51-90 and 88-13-6
Location:	Outside Containment
QDP:	Unit 2, QDP 50
Methodology:	DOR Guidelines
TLAA Demonstration Option:	N/A

Conclusion:

The Rosemount 88-51-90 & 88-13-6 Temperature Elements have been replaced with a model qualified to the requirements of 10 CFR 50.49 in accordance with the DOR upgrade requirement. The Rosemount 88-51-90 & 88-13-6 Temperature Elements are no longer installed in any EQ applications. The qualification package is no longer applicable, and has been deleted from the EQ program.

2.1.3 Heat Dissipation System

The excess heat produced by HNP's two nuclear units is absorbed by cooling water flowing through the condensers and the service water system. Main condenser cooling is provided by mechanical draft cooling towers. Each HNP circulating water system is a closed-loop cooling system that utilizes three cross-flow and one counter-flow mechanical-draft cooling towers for dissipating waste heat to the atmosphere.

Cooling tower makeup water for Units 1 and 2 is withdrawn from the Altamaha River through a single intake structure. The intake structure is located along the shoreline of the Altamaha River (Figure 2-3) and is positioned so that water is available to the plant at both minimum flow and probable flood conditions. The intake is approximately 150 feet long, 60 feet wide, and the roof is approximately 60 feet above normal river level. To account for varying river stages, the water passage entrances are from 16 feet below to 33 feet above normal water levels.

Water is returned to the Altamaha River via a submerged discharge structure that consists of two 42-inch lines extending approximately 120 feet out from the shore at an elevation of 54 feet mean sea level. The point of discharge is approximately 1,260 feet down-river from the intake structure and approximately 4 feet below the surface when the river is at its lowest level (Figure 2-3).

The National Pollutant Discharge Elimination System (NPDES) Permit for HNP (GA0004120) issued by the Environmental Protection Division (EPD) of the Georgia Department of Natural Resources (GA DNR) in 1997 requires weekly monitoring of discharge temperatures, but does not stipulate a maximum discharge temperature or maximum temperature rise across the condenser. Maximum discharge temperatures in the mixing box, which are reported to EPD on a quarterly basis, range from 62°F in winter to 94°F in summer (see Table 2-1).

To control biofouling of cooling system components such as condenser tubes and cooling towers, an oxidizing biocide (typically sodium hypochlorite or sodium bromide) is injected into the system as needed to maintain a concentration of free oxidant sufficient to kill most microbial organisms and algae. When the system is being treated, blowdown is secured to prevent the discharge of residual oxidant into the river. After biocide addition, water is recirculated within the system until residual oxidant levels are below discharge limits specified in the NPDES permit (GA0004120).

2.1.4 Surface Water Use

The Altamaha River is the major source of water for the plant. Water is withdrawn from the River to provide cooling for certain once-through loads and makeup water to the cooling towers. SNC is permitted (GADNR Permit 001-0690-01) to withdraw a monthly average of up to 85 million gallons per day with a maximum 24-hour rate of up to 103.6 million gallons. As a condition of this permit, SNC is required to monitor and report withdrawals. Table 2-2 provides the annual average daily withdrawal and the maximum daily withdrawal for the years 1989 through 1997. As shown in Table 2-2, HNP withdraws an annual average of 57.18 million gallons per day.

The evaluation of surface water use in the 1978 FES (Reference 5) concluded that the consumptive losses would be approximately 46 percent of the total water withdrawn from the River. In NRC's environmental assessment for an extended power uprate (Volume 63 Number 192 FR pages 53473-53478, at page 53474), NRC concluded that the necessary increase in makeup water to support the higher heat load would be insignificant and that cooling tower blowdown would decrease by approximately 626 gallons per minute. As evaluated by NRC in the extended power uprate review, consumptive water use for the plant operating at the extended power level is expected to be 57 percent of the total withdrawal (Reference 7).

2.1.5 Groundwater Use

HNP withdraws groundwater for potable and process use from the Floridan Aquifer. HNP is permitted (GADNR Permit 001-0001) to withdraw a monthly average of 1.1 million gallons per day or 764 gallons per minute with an annual average of 0.550 million gallons per day from 6 wells. Although the current permit indicates 6 onsite wells, there are actually only 5 wells providing groundwater for domestic and process use. The sixth well was intended to provide makeup water for a wildlife habitat pond that was not completed; and therefore, the well has not been installed.

Site Well Number 3 provides water for potable use only at the site recreational facility. Operation of this well as the source water supply for the GPC Recreation Facility potable water system is conducted under GADNR Permit NG0010011. Site Wells Number 1 and Number 2 provide water for potable use, sanitary facilities, and process use (e.g., demineralized water, fire protection). Operation of these wells as the source water supply for the Plant is conducted under GADNR Permit PG0010005. New wells four and five were permitted in late 1999 and provide water for irrigation of ornamental vegetation. Figure 2-3 indicates the locations of the five production wells.

GADNR requires SNC to monitor and report withdrawal from these five wells. Table 2-3 lists the monthly withdrawal volumes and annual average pumping rates (in gallons per minute) from wells 1 - 3 for the period from 1990 to 1997. The two-unit operation requirements for this period averaged 126 gallons per minute with a high month (January 1992) average of 236 gallons per minute.

2.1.6 Transmission Facilities

GPC built four transmission lines for the specific purpose of connecting HNP to the transmission system. Two additional 500-kV lines were added to HNP in 1981 to support an expansion of the GPC transmission system to Florida. The additional two lines have been evaluated as part of this environmental report.

The list below identifies the lines by the name of the substation at which each line connects to the transmission system. The list indicates the general direction of line routes from HNP, voltage, date of construction, and whether NRC has previously analyzed the line. Figure 2-5 shows the locations of the lines and substations together with some regional features.

- Eastman Line – The 230-kilovolt (kV) Eastman line was constructed in 1972 and extends northwest from the Site. The AEC analyzed the environmental impacts of this line in the final environmental statement for HNP Unit 1 operation and Unit 2 construction (Reference 4 at pages III-1, IV-3, and V-1).

- S. Hazelhurst (Douglas) Line – The 230-kV Douglas line was constructed in 1971 and extends southwest from the Site. The environmental impacts of this line were analyzed by AEC in the 1972 FES (ibid.).

- North Tifton Line – The 500-kV North Tifton line was constructed in 1971 and extends southwest from the Site. AEC analyzed the environmental impacts of this line in the 1972 FES (ibid.).

- Bonaire Line – The 500-kV Bonaire line was constructed in 1976 and extends northwest from the Site. AEC analyzed the environmental impacts of this line in the 1972 and 1978 FESs (ibid. and Reference 5 at pages 2-1, 2-3, 2-6, 3-12, and 5-1 in the 1978 FES).

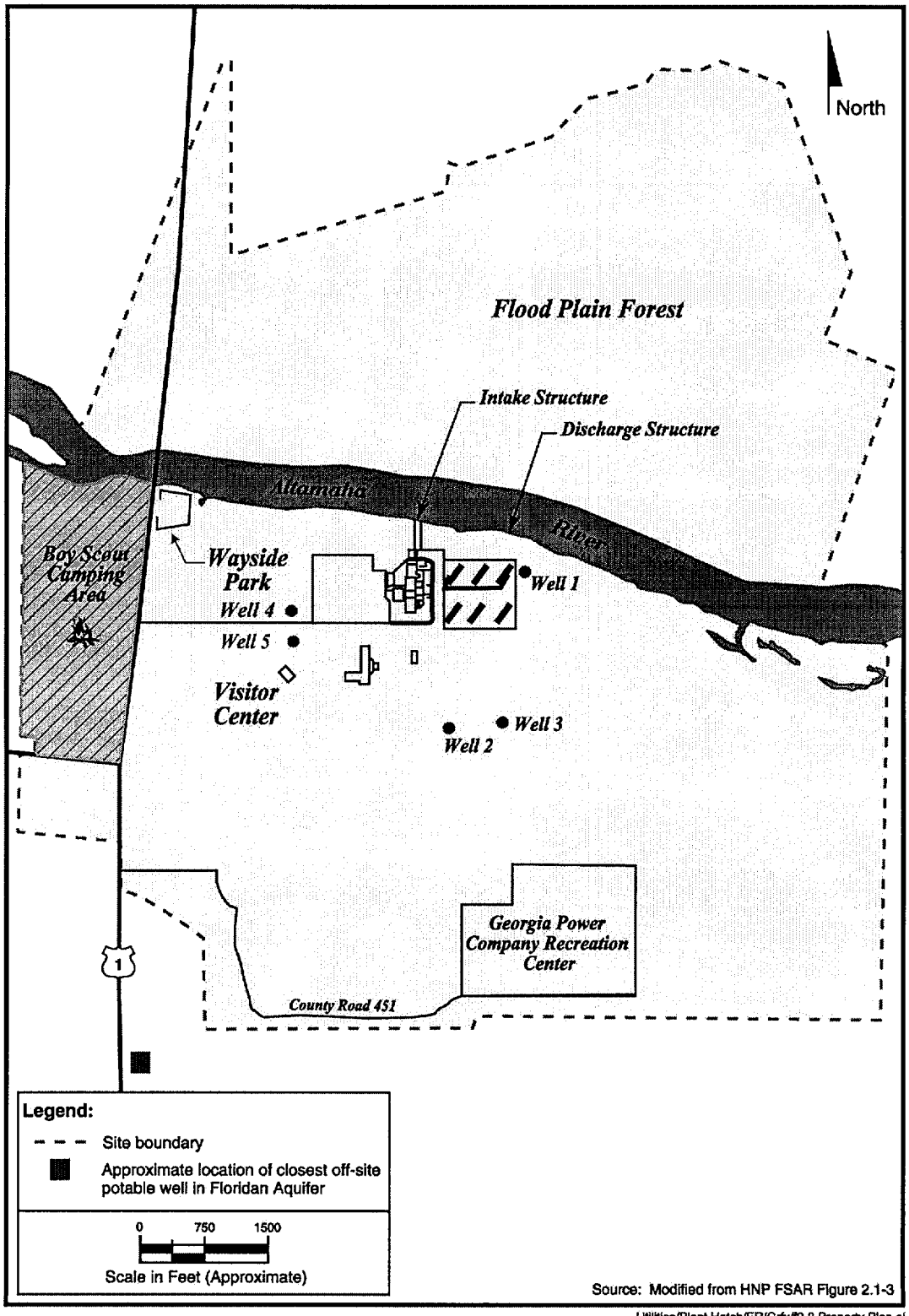

Figure 2-3. Edwin I. Hatch Nuclear Plant property plan.

The minor confined aquifer is recharged locally in the southwest portion of the Site where the middle portion of the Hawthorn is exposed. Natural discharge of the aquifer takes place where the aquifer comes into contact with the alluvium of the Altamaha River. Permeability of the aquifer increases with depth. The potentiometric surface of the aquifer has a gradient of 23 feet per mile to the north, toward the Altamaha River. The aquifer unit is approximately 65 feet thick and can yield up to 10 gallons per day. A confining unit separates the minor confined aquifer from the underlying aquifer.

The principal artesian aquifer (Floridan) beneath the Site, and the aquifer of major interest, is approximately 1,000 feet thick. Recharge to the aquifer is about 60 miles northwest of the site at the outcrop area for the formations that comprise the aquifer. The potentiometric surface of the aquifer slopes gently to the southeast beneath the Site. The aquifer is isolated from the overlying aquifers by a confining unit that prevents the vertical migration of groundwater. The Floridan Aquifer also has a higher potentiometric head than the overlying aquifers. The presence of the higher potentiometric head also prevents a downward migration of groundwater.

Site Wells Number 1 and Number 2, described in Section 2.1.5, are screened to the principal artesian (Floridan) aquifer. During HNP construction, pump tests were conducted to determine the groundwater characteristics for this unit. The wells pumped for 9 hours at rates of 752 gallons per minute (Well Number 1) and 797 gallons per minute (Well Number 2). Drawdown in the wells stabilized at 5 feet in Well Number 1 and 8 feet in Well Number 2. The results of the pumping tests indicated a specific capacity of 100 to 125 gallons per day per foot of drawdown within the well (Reference 32). Based on published literature, the transmissivity in the vicinity of the Site is approximately 130,000 gallons per day per foot, and the effective permeability is 0.1 and 0.2 feet per minute (Reference 32). Data gathered during pumping tests and existing data for this aquifer indicate that a properly designed well installed within this aquifer unit can safely yield over 1,100 gallons per minute. Well 3 was added to supply domestic water to the recreation facility. The well use for Well 3 (normally less than 1,000 gallons per day) will not significantly impact the water usage of the aquifer. Wells 4 and 5 were added for irrigation of ornamental vegetation and are used as needed. These wells typically draw 9000 GPD each, and will not significantly impact the water usage of the aquifer.

Within the immediate vicinity of the Site, the primary use of groundwater is for domestic needs, with a limited amount for livestock. Most domestic wells are screened within the unconfined aquifer. The closest well to the Site boundary that is screened to the principal aquifer is located approximately 1,000 feet southwest of the Site (Figure 2-3). Currently, there is no industrial demand for groundwater within the vicinity of the Site, and no groundwater is used for irrigation. The nearest appreciable demand is 10 miles south of the Site, where the town of Baxley has applied for a permit modification dated September 1, 1997. The permit modification request is for 4 wells withdrawing approximately 850,000 gallons per day from the principal aquifer.

As described above, each of the onsite production wells is capable of producing approximately 750 gallons per minute. The pump test conducted during construction demonstrated that at this rate of pumping there was no interference between Site Wells 1 and 2. These two wells are located approximately 1,780 feet apart; therefore, the effective radius is conservatively assumed to be approximately 2,000 feet. The onsite well closest to the facility boundary is Well 1 at approximately 3,400 feet. Based on the conservative pumping rate of 750 gallons per minute and a conservative effective radius of 2,000 feet, the resulting drawdown in Well 1 would not extend to the facility boundary. Given that the actual plant groundwater requirements (126 gallons per minute) are about one fifth of that used to determine the effective radius, the drawdown of the groundwater potentiometric surface attributable to plant operations would be substantially less than that demonstrated by the original site pump test data, creating no interference with offsite wells.

The site production wells are located in the Floridan Aquifer. This aquifer unit is isolated geologically from the minor confined aquifer by a confining unit that is approximately 100 feet

thick. Since monitoring began at the facility in 1969, there has been little to no fluctuation of the water level in the minor confined aquifer. Water levels in the unconfined aquifers have been observed to vary according to normal seasonal fluctuations. There have been no observed effects in the monitoring wells installed in the shallow on-site aquifers from the pumping of groundwater from the Floridan on-site wells.

Due to the high potential yields the Floridan aquifer is capable of producing and the low production yields required by HNP, the Plant will have little to no effect on the aquifer. There is some limited domestic and agricultural use of groundwater in rural areas surrounding the site, but no groundwater use conflicts have been identified. SNC has concluded that HNP groundwater-use impacts (Issue 33) would be small. The impacts would not be detectable or would be so minor that they would neither destabilize nor noticeably alter any important attribute of the groundwater resources. Given the fact that groundwater usage during the period of continued operations would not have a noticeable impact boundary in the Floridan Aquifer at the Site and would not alter offsite groundwater usage either in the Floridan or the shallower aquifers, SNC has also concluded that mitigation measures would not be warranted.

3.1.4 Terrestrial Resources

NRC

The environmental report must contain an assessment of ". . . the impact of refurbishment and other license-renewal-related construction activities on important plant and animal habitats." [10 CFR 51.53(c)(3)(ii)(E)]

Refurbishment impacts are insignificant if no loss of important plant and animal habitat occurs. However, it cannot be known whether important plant and animal communities may be affected until the specific proposal is presented with the license renewal application. [10 CFR Part 51, Subpart A, Appendix B, Table B-1 (Issue 40)]

If no important resources would be affected, the impacts would be considered minor and of small significance. If important resources could be affected by refurbishment activities, the impacts would be potentially significant. (GEIS Section 3.6)

The NRC made impacts to terrestrial resources a Category 2 issue because the significance of ecological impacts cannot be determined without considering site-specific and project-specific details (GEIS Section 3.6). Aspects of the site and the project to be ascertained are: (1) the identification of important ecological resources; (2) the nature of refurbishment and other license-renewal-related construction activities; and (3) the extent of impacts to plant and animal habitat.

HNP Site and Environs

The HNP site consists of two tracts of land, an approximately 900-acre parcel north of the Altamaha River in Toombs County and a 1,340-acre parcel south of the Altamaha River in Appling County (see Figure 2-3). Of the 2,240 total acres that make up the site, approximately 300 acres are committed to generation facilities, parking lots, laydown areas, roads, and maintenance facilities. Approximately 350 acres are comprised of wetlands and transmission corridors. Approximately 1,600 acres are actively managed for wildlife and timber production. GPC prepared a comprehensive land management plan for HNP in 1987. The plan recommended land management practices (e.g., controlled burning and timber thinning) to enhance forest productivity while at the same time preserving the aesthetic qualities of the site and improving wildlife habitat. In 1994, in recognition of its successful natural resources management programs, HNP was awarded the Wildlife Habitat Council's Corporate Wildlife Habitat Certification.

Table 4-1. Federal, state, local, and regional licenses, permits, consultations, and other approvals pertinent to current HNP Station operation (page 1 of 2).

Agency	Authority	Requirements	HNP Number	Issue Date	Expiration Date	Remarks
COE	Federal Clean Water Act (Section 404)	Maintenance Dredging Permit	940003870	03/19/95	09/31/04	The permit authorizes periodic dredging in the Altamaha river at the HNP intake structure.
COE	River and Harbor Act (Section 10) Clean Water Act (Section 404)	Permit for construction of a Weir	199101536	04/08/93	02/01/03	The permit authorizes construction of a temporary water retaining wall structure (weir) in the Altamaha River near the HNP intake structure. The weir would be placed in the river on in the event of an extreme low flow situation in the river, after supplemental flows from upstream reservoirs are near exhaustion.
GADNR	Georgia Groundwater Use Act, (Georgia Laws 1972 et seq., as amended by Georgia Laws 1973, et seq.)	State Groundwater Use Permit	001-0001	11/23/99	12/04/04	The permit authorizes withdrawal of groundwater from 6 wells for use at HNP sanitary facilities, process water, central water supply, and make-up water for a wildlife habitat pond
GADNR	Georgia Water Quality Control Act, (Georgia Law 1964, et seq.)	State Surface Water Withdrawal Permit	001-0690-01	04/07/00	04/07/10	Permit authorizes withdrawal of surface water from the Altamaha for cooling water at HNP.
EPA; GADNR	Federal Clean Water Act (33 USC 1251 et seq.); Georgia Water Quality Control Act, (Georgia Law 1964, et seq.)	Individual Discharge Permit	GA 0004120	09/15/97	08/31/02	Permit contains effluent limits for HNP combined plant waste steams, including sanitary wastewater, cooling water, and cooling tower blow down. SNP would have to submit a renewal application to GADNR no later than 180 days beyond the expiration date to receive authorization to discharge beyond the expiration date of August 31, 2002.
EPA; GADNR	Federal Clean Water Act (33 USC 1251 et seq.); Georgia Water Quality Control Act, (Georgia Law 1964, et seq.)	Stormwater Discharge Permit	GAR000000	06/01/98	05/31/03	The permit covers all discharges of storm water associated with industrial activities. SNC would have to notify GADNR before new storm water discharges from sites where industrial activity will occur.

E.1 PROPOSED CHANGES

E.1.1 DESCRIPTION OF CHANGES

As part of the license renewal application development process for Plant Hatch, Southern Nuclear Operating Company (SNC) proposes to revise the Plant Hatch Unit 1 and Unit 2 Technical Specifications requirements for reactor vessel pressure and temperature (P/T) limits. In evaluating the reactor pressure vessel (for both Hatch 1 and 2) for the license renewal term, the effects of irradiation on the core beltline region have been analyzed to determine the impact of the extended operating period on the pressure-temperature operating limits, as required by 10CFR50, Appendix G.

The evaluation (incorporating Extended Power Uprate at 17 Effective Full Power Years (EFPY)) has been performed for a lifetime of 54 EFPY for both Units. This input was used to generate pressure-temperature curves for 54 EFPY for both Units. In addition, intermediate curves for 36, 40, 44, and 48 EFPY for Unit 1 have been developed, due to the expected irradiation shift for the Hatch 1 vessel.

In support of the proposed changes, General Electric (GE) has prepared and issued GE-NE-B1100827-00-01, "Plant Hatch Units 1 & 2, RPV Pressure Temperature Limits License Renewal Evaluation," which is provided as Enclosure 3.

E.1.2 PROPOSED CHANGES TO FIGURES 3.4.9-1, 3.4.9-2, AND 3.4.9-3 OF HATCH UNIT 1 AND 2 TECHNICAL SPECIFICATIONS

The proposed change replaces the current P-T curves with new curves generated as part of GE's evaluation contained in GE-NE-B1100827-00-01. The evaluation provides for a lifetime of 54 Effective Full Power Years for both Units, which encompasses the 60-year renewed operating license term. In addition, intermediate curves for 36, 40, 44, and 48 EFPY for Unit 1 have been provided, due to the expected irradiation shift for the Hatch 1 vessel. The existing 20 and 24 year curves for RPV inservice hydrostatic and inservice leakage tests are retained for Unit 1. On August 29, 2000 by Amendments 222 and 163 to the Unit 1 and 2 operating licenses, respectively, NRC granted the requested changes to the Unit 1 and 2 Technical Specficiations. Based on this approval, no further Technical Specification changes are proposed for the renewal term, and the Technical Specification pages provided with the original license renewal application are withdrawn by Revision 1 to the application. Because the GE analysis provided as Enclosure 3 to this appendix also supports various topics related to time-limited aging analyses, Enclosure 3 is retained in Revision 1 to the application.

E.1.3 JUSTIFICATION FOR CHANGES

One of the major considerations for extended life of the reactor pressure vessel is irradiation of the core region, or beltline. The effect of irradiation is to shift the reference nil-ductility transition temperature (RT_{NDT}) of the beltline materials. This shift must be evaluated in order to conform to the requirements of 10 CFR 50, Appendix G. To encompass the effects of irradiation for the license renewal term, a maximum lifetime of 54 EFPY was used to determine the effects of irradiation and to develop the P-T curves.

GE has evaluated the effect of an additional twenty years of operation on the P-T limits in the above referenced report. New curves have been generated, incorporating the effects of the renewal term into the existing curves which already consider the effects of extended power uprate. P-T curves were developed for three

reactor conditions: pressure test, non-nuclear heatup and cooldown, and core critical operation. The new curves ensure that vessel P-T limits are not exceeded during all phases of operation for the renewal period. There are no proposed changes to the Limiting Condition for Operation or to any of the surveillances of specification 3.4.9. All the curves were generated based on the approved methodologies of 10 CFR 50 Appendix G.

Enclosure 1

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Enclosure 2

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