

June 19, 2012

Mr. Dennis R. Madison, Vice President - Hatch
Southern Nuclear Operating Company, Inc.
Plant: Edwin I. Hatch
11028 Hatch Parkway North
Baxley, GA 31513

Dear Mr. Madison:

This letter responds to your October 28, 2011, correspondence, "Edwin I. Hatch Nuclear Plant Appeal to the Executive Director for Operations: Backfit and Applicability of 'Compliance Backfit' Exception" (Agencywide Document Access and Management System (ADAMS) Accession No. ML11335A179). In consideration of your appeal, I forwarded the issue to an independent Backfit Appeal Panel that reviewed the facts and related correspondence. I understand the Panel had discussions with members of your staff, along with U.S. Nuclear Regulatory Commission (NRC) Region II staff, to ensure they understood both perspectives. The Panel recently gave me its summary and its recommendation (Enclosure), which supports the NRC staff's imposition of a backfit at the Edwin I. Hatch Nuclear Plant (HNP) and the application of the compliance backfit exception. I have considered and agree with the Backfit Appeal Panel's findings in this case.

In your October 28, 2011, letter of appeal you state that "the approval of the current HNP degraded voltage configuration in 1995 was not based on a mistake of fact or error," for the following reasons:

- The NRC staff in 1995 was cognizant of, and understood the approved deviation from, the 1977 guidance.
- The NRC staff understood that the approved deviation included licensee commitments that added design features for enhanced safety. These enhancements guard against spurious disconnections from the preferred backup power source, when available.
- The 1995 safety evaluation report (SER) expressly approved reliance on manual actions to respond to a narrow 3-percent band of degraded grid voltages. In addition, the SER acknowledged that certain Class 1E loads at voltage levels of 600 volts and below might not receive sufficient voltage upon automatic disconnection from the grid with the HNP configuration.

As further explained in the enclosed Backfit Appeal Panel summary, that summarizes the "Backfit Appeal Panel Response Associated with Component Design Bases Inspection at Edwin I. Hatch Nuclear Plant" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12047A218 dated March 9, 2012); the staff has determined that the degraded voltage protection configuration for the two HNP units approved in the 1995 SER does not meet regulatory requirements. The licensee's automatic protection system, by itself, does not protect all necessary Class 1E equipment. In 1995, the staff approved a license amendment that allowed manual actions as an essential part of the plant's protection system for dealing with a degraded voltage condition. The Panel has concluded that the NRC erred in accepting this approach because the protection system did not meet the regulatory

requirements of General Design Criterion (GDC) 17, "Electric Power Systems," of Appendix A, "General Design Criteria for Nuclear Power Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," and 10 CFR 50.55a(h)(2), and an NRC exemption was not granted from those requirements. The Panel agrees with the staff's September 29, 2011, letter stating that the 1995 approval does not constitute a *de facto* exemption. The requirements for granting an exemption from the requirements in 10 CFR Part 50 of the NRC's regulations are described in 10 CFR 50.12, "Specific Exemptions." The 1995 license amendment request did not request an exemption from the requirements of 10 CFR 50.55a(h)(2) and the SER did not analyze whether the amendment request met the exemption requirements.

Your letter makes the following additional statements:

- The current HNP degraded voltage configuration is adequate relative to risk and complies with the applicable regulations.
- The "compliance backfit exception" is not applicable to the change in NRC staff positions on this matter.
- Imposition of the backfit as a compliance backfit would be contrary to the NRC's principles of good regulation in that it would not promote a stable regulatory environment.

The NRC has determined that the current configuration does not comply with applicable NRC regulations. Although the staff notes that the relative risk is low (based on the very small probability of the initiating events occurring simultaneously), any discussion of risk and use of alternate methods to meet the intent of the regulations can only be approved by a formal exemption from the regulations. Although the staff's approval in 1995 followed lengthy discussion of the issue, it was still granted in error and resulted in a noncompliance with the regulations; therefore, the compliance exception to the backfit rule can be applied. Because only the compliance exception to the backfit rule was at issue in this appeal, I reserve judgment as to the applicability of the other exceptions. Finally, I believe that correcting this situation is directly in line with each of the NRC's principles of good regulation.

In summary, although the NRC made an error in approving the use of manual actions through the 1995 SER addressing the HNP degraded voltage scenario, the agency considers the application of the backfit rule, and the compliance exception, appropriate in this situation.

I request that you inform Region II of your plans and schedule to resolve this issue.

Sincerely,

/RA by Michael R. Johnson for/

R. W. Borchardt
Executive Director
for Operations

Enclosure:
As stated

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Backfit Appeal Panel Summary

Technical Analysis

General Design Criterion (GDC) 17, "Electric Power Systems," of Appendix A, "General Design Criteria for Nuclear Power Plants," to Title 10 of the Code of Federal Regulations (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," describes the fundamental requirements for electric power systems. According to GDC 17, electric power from the transmission network to the onsite distribution system must be supplied by two physically independent circuits (not necessarily on separate rights of way) designed and located to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated by the nuclear unit or the loss of power from the transmission network. GDC 17 requirements also state that the safety function for each system shall be to provide sufficient capacity and capability to ensure that fuel design limits are not exceeded in the event of anticipated operational occurrences and that the core is cooled in the event of postulated accidents. Such accidents may include those associated with degraded grid voltage conditions that challenge the operating low-voltage limits of safety-related equipment.

Regulations in 10 CFR 50.55a(h)(2) require nuclear power plants with construction permits issued after January 1, 1971, but before May 13, 1999, to have protection systems that must meet the requirements stated in either IEEE Standard 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations," or IEEE Standard 603 1991, "Criteria for Safety Systems for Nuclear Power Generating Stations," and the correction sheet dated January 30, 1995. For nuclear power plants with construction permits issued before January 1, 1971, protection systems either must be consistent with their licensing basis or meet the requirements of IEEE Standard 603 1991 and the correction sheet dated January 30, 1995. IEEE Standard 279 1971 applies to both HNP units and includes a general functional requirement that the protection systems must automatically initiate appropriate protective actions whenever a condition the system monitors reaches a preset level. In addition to automatic initiation of actions to protect safety systems, the standard requires the system to include the means to manually initiate protective actions.

The degraded voltage protection configuration for the two HNP units approved in the 1995 SER does not meet regulatory requirements. The degraded voltage relays are set below the minimum required voltage at the component level for the automatic protection of the safety-related equipment. The licensee's automatic protection system, by itself, does not protect all necessary Class 1E equipment. In 1995, the NRC staff approved a license amendment that allowed manual actions as an essential part of the plant's protection system for dealing with a degraded voltage condition. The Panel has concluded that the NRC erred in accepting this approach because the licensee did not meet the regulatory requirements of GDC 17 and 10 CFR 50.55a(h)(2) and the NRC granted no exemption from those requirements, as discussed more fully below. The Panel agrees with the staff's September 29, 2011, letter stating that the 1995 approval does not constitute a *de facto* exemption. The criteria for granting an exemption from the requirements in 10 CFR Part 50 are described in 10 CFR 50.12, "Specific Exemptions." The 1995 license amendment request did not ask for an exemption from the requirements of 10 CFR 50.55a(h)(2), and the SER did not analyze whether the amendment request met the exemption requirements.

ENCLOSURE

GDC 17 of Appendix A, to 10 CFR Part 50, and 10 CFR 50.55a(h)(2), which incorporates IEEE Standard 279-1971, define the regulatory requirements (the licensing basis for HNP, as confirmed by the licensee). Specifically, the intent of the regulations are for HNP's degraded voltage relay scheme to be designed as a protection system, in accordance with IEEE Standard 279-1971, which will automatically separate either of the offsite circuits (circuits required by GDC 17 as the preferred power supplies for the plant's Class 1E systems) from supplying the Class 1E buses when it detects a grid-degraded voltage condition and to begin using the GDC 17 onsite power supplies (emergency diesel generators (EDG)) to supply the Class 1E systems. To accomplish this, the system uses degraded voltage relays set with appropriate voltage and time-delay settings to ensure that the power supply meets the voltage requirements of the Class 1E systems. Contrary to these requirements, the voltage settings of the relays at HNP do not protect all Class 1E systems. The NRC staff identified this issue during its electrical distribution system functional inspection (EDSFI) in the early 1990s. As a result of the EDSFI, the licensee requested a change to its license to add an alarm (at a higher voltage setting) and manual actions; together, these measures were intended to protect the Class 1E systems that the automatic relay voltage settings for degraded voltage did not protect. The licensee made no changes to the technical specification's values for the degraded voltage relays. Allowing manual operator actions to replace automatic relay actions with proper voltage settings is contrary to the requirements of IEEE Standard 279-1971. Per the IEEE standard, such a protective function is the sensing of one or more variables for a station condition (offsite power supply voltage), signal processing, and the automatic initiation and completion of the protective action (removal of the degraded voltage offsite circuit and connection of the EDG to the Class 1E systems). Section 2, "Protective Function," and Section 4.1, "General Functional Requirement," of the standard clearly define this function. Standard Section 4.17, "Manual Initiation" also requires protection systems to have the additional capability to be initiated manually. This does not mean that manually initiated protective actions for safety systems are allowable as a substitute for automatically initiated protective actions.

Legal Analysis

By granting a license amendment in 1995 that allowed manual actions as part of the automatic initiation scheme of protective action for some of the safety systems, the NRC changed the licensing basis of the HNP. The Panel agrees with the staff's backfit position that the subsequent imposition of the regulatory requirement in 10 CFR 50.55a(h)(2), which disallows such manual action in place of automatic initiation, constitutes a change in position on the regulatory requirements applied to HNP. To meet the compliance exception to the backfit analysis requirement under 10 CFR 50.109(a)(4)(i), the NRC staff must show "[t]hat a modification is necessary to bring a facility into compliance with a license or the rules or orders of the Commission, or into conformance with written commitments by the licensee." In this instance, the current licensing basis for HNP does not meet the requirement of the regulations in 10 CFR 50.55a(h)(2), which incorporates, by reference, IEEE Standard 279-1971. In its 1985 Statements of Consideration, the Commission explained that the compliance exception is "intended to address situations in which the licensee has failed to meet known and established standards of the Commission because of omission or mistake of fact." The staff previously explained that this backfit meets the compliance exception because it addresses a failure to meet the regulatory requirement of 10 CFR 50.55a(h)(2) because of a mistake. The NRC staff correctly determined that the new position imposed on HNP was a backfit that meets the compliance exception due to a mistake.

In 1982, the NRC approved setpoints in the HNP technical specifications based on calculations, at the time that showed that adequate voltage protection would automatically be provided to Class 1E equipment. However, during the 1991 EDSFI, the staff determined, based on new

calculations and a review of HNP's methodology, that the setpoints specified in the HNP technical specifications would not automatically protect Class 1E equipment from degraded voltage conditions. Subsequent to the EDSFI, the licensee sought and received a license amendment culminating in the approval of the use of manual action as a supplement to automatic actuation to protect some Class 1E equipment. As part of the 2009 component design-basis inspection (CDBI) conducted at HNP, the staff identified in its May 25, 2011 inspection report that approval of the 1995 license amendment was an error, and that the degraded voltage protection system configuration for the two HNP units are inadequate to meet the regulatory requirements because they do not automatically protect the Class 1E equipment during a degraded voltage condition. Although the NRC staff may have thoroughly reviewed the amendment application in 1995, they did not correctly identify the regulatory requirements necessary to evaluate the request and both the licensee and the staff should have realized that an exemption to the regulations would be necessary to grant such a relief.

In the 1995 amendment request, both the licensee and the NRC staff referred to the regulatory action as a deviation. However, neither the licensee nor the NRC staff identified that the amendment request had to be analyzed for compliance with the requirements of IEEE Standard 279-1971, as incorporated into the regulations by 10 CFR 50.55a(h)(2). Both the staff and the licensee further failed to recognize that if the licensee sought relief from the regulatory requirement in 10 CFR 50.55a(h)(2), then that relief could only be granted as an exemption under 10 CFR 50.12. The staff's 1995 SER clearly focused on the question of whether the NRC can approve a deviation from the staff position stated in a June 2, 1977, Generic Letter specifying the staff position on onsite emergency power systems. In its review, the staff concludes that "the requested deviation from the Generic Letters is acceptable because of the added design features and the compensatory measures at HNP as discussed in the above Safety Evaluation." The staff also determined that "both an offsite and onsite power system is available, each with the capability of providing power for the required safety components in accordance with GDC 17 of 10 CFR Part 50, Appendix A." In its approval, therefore, the staff made two mistakes: (1) the staff failed to identify that they must find compliance with 10 CFR 50.55a(h)(2) and (2) that in order to allow credit for the "added design features and compensatory measures" an exemption must be granted from the requirements of IEEE Standard 279-1971, as incorporated by reference in 10 CFR 50.55a(h)(2).

Because the staff's 1995 SER focused on the approval of a deviation from a staff position, it does not address compliance with 10 CFR 50.55a(h)(2), despite its broad generalization of compliance with the more general requirement of GDC 17. There is no indication that the staff even considered the necessity of automatic actuation of protection systems to be anything more than a staff position rather than a requirement. Further, because the staff allowed credit for "added design features and compensatory measures," the staff does not appear to have been focused on the requirements of 10 CFR 50.55a(h)(2) and its connection with IEEE Standard 279-1971. Standard 279-1971 requires the automatic initiation of protective actions to protect all safety systems, and in its language, it does not allow credit for "added design features and compensatory measures." Therefore, in granting approval of the 1995 license amendment, the staff made a mistake by not evaluating compliance with an applicable regulatory requirement, and allowed a deviation from a staff position instead of determining whether or not to grant an exemption from the regulatory requirement in order to consider other means to provide assurance of adequate protection.

In its appeal (October 28, 2011, letter, Enclosure 1, page 3) the licensee argues that at the time of the 1995 SER, the staff—

...was fully aware and cognizant of the issue at hand and of the resolution that it was approving. The documentation underlying the NRC's approval of the 1995 license amendment establishes that the deviation from the 1977 staff guidance was approved only after the particular facts and circumstances related to degraded grid on the Southern electric system and the HNP degraded voltage protection scheme were reviewed. The approval was risk-informed and appropriately considered the relative alternatives.

Even considering the licensee's argument as true, if the staff fully considered the facts and circumstances in its decision to approve a deviation from a staff position, the fact remains that it did not correctly identify the regulatory requirements or review and approve an exemption.

Another argument in the licensee's appeal is that the compliance exception does not apply because, "the NRC in 1995 expressly addressed the compliance of the HNP system under the same regulations and came to a different conclusion than the NRC staff does today" (October 28, 2011, letter, Enclosure 1, page 11). As described above, the staff in 1995 apparently did not consider the same applicable regulations that the staff is considering today. Furthermore, the NRC has not reinterpreted the requirements of 10 CFR 50.55a(h)(2) and IEEE Standard 279-1971, specifically with regard to the automatic initiation of protective systems for the full range of conditions, since the rule was adopted in 1971. The 1977 generic letter, the EDSFI, and the CDBI did not change the interpretation of the requirement to have automatic initiation for the full range of conditions. The 1995 SER specifically approved a deviation from the 1977 generic letter rather than determining that the licensee was in compliance with the positions stated in the generic letter. As described in the 1995 SER, the deviation from the position in the letter was the credit for added design features and compensatory measures at HNP. The deviation, therefore, cannot be considered a finding that the proposed measures "complied" with the staff positions stated in the 1977 generic letter, nor can it be considered a reinterpretation of the regulatory requirement.

Accordingly, the compliance exception to the backfit rule applies to HNP. Due to a mistake by the staff in identifying what was merely guidance or staff position versus what was a requirement, and consideration of design features and compensatory measures not allowed by the regulation without an exemption, there has been a change in position as to whether the HNP degraded voltage protection scheme meets the applicable regulatory requirements. In fact, the HNP degraded voltage scheme does not meet the regulatory requirements, and therefore, a modification is necessary to bring HNP into compliance with the rules of the Commission.

The HNP Backfit Panel also discussed the 1991 enforcement action, in light of the subsequent backfit and general guidance in the enforcement policy, with the Office of Enforcement. The Enforcement Policy discusses reopening closed enforcement actions and states that under special circumstances (e.g., when the NRC receives significant new information showing that an enforcement sanction was incorrectly applied), the agency may consider, on a case-by-case basis, reopening a closed enforcement action to increase or decrease the severity of a sanction or to correct the record. The staff has not reopened the previous action, but did determine that a backfit is appropriate. The Panel agrees with this position.