

**Lewis Sumner**  
Vice President  
Hatch Project Support

**Southern Nuclear  
Operating Company, Inc.**  
40 Inverness Parkway  
Post Office Box 1295  
Birmingham, Alabama 35201  
  
Tel 205.992.7279  
Fax 205.992.0341



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Docket Nos. 50-321  
50-366

HL-6143

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

**Edwin I. Hatch Nuclear Plant**  
**Response to Request for Additional Information Regarding Diesel Generator**  
**Technical Specifications Change Request**

Ladies and Gentlemen:

This letter transmits Southern Nuclear Company's (SNC's) response to an NRC request for additional information concerning a Plant Hatch Technical Specifications change request dated August 31, 2001. The proposed change increases the emergency diesel generator allowed outage time from 3 to 14 days.

The enclosure contains a transcription of each NRC question sent to SNC by facsimile transmission, followed by SNC's response. These questions were further discussed in a teleconference between SNC Licensing personnel and NRC staff on October 23, 2001.

Should you have any questions in this regard, please contact this office.

Respectfully submitted,

A handwritten signature in cursive script that reads "Lewis Sumner".

H. L. Sumner, Jr.

OCV/eb

Enclosure: **Response to Request Additional Information Regarding Diesel Generator  
Technical Specifications Change Request**

cc: Southern Nuclear Operating Company  
Mr. P. H. Wells, Nuclear Plant General Manager  
SNC Document Management (R-Type A02.001)

U.S. Nuclear Regulatory Commission, Washington, D.C.  
Mr. L. N. Olshan, Project Manager - Hatch

U.S. Nuclear Regulatory Commission, Region II  
Mr. L. A. Reyes, Regional Administrator  
Mr. J. T. Munday, Senior Resident Inspector - Hatch

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1. *Discuss and provide information on the reliability and availability of offsite power sources relating to the proposed change. The discussion should include duration, cause, date and time of each loss-of-offsite power (partial or complete) event.*

**SNC Response:**

A comprehensive search of Plant Hatch Unit 1 and Unit 2 Licensee Event Reports (LERs) failed to identify any LER that described a loss of offsite power; i.e., the loss of all three 4-kV essential busses. Several LERs described events in which an individual emergency bus was lost; however, in most cases, power was immediately returned to the bus via its alternate source. Others identified the loss of power to nonessential busses and the loss of unit auxiliary transformers. The LERs of interest are as follows:

- 50-321/1976-5
- 50-366/1985-35
- 50-321/1988-18
- 50-321/1985-026
- 50-366/1980-104
- 50-321/1991-01
- 50-321/2001-02.

Although all the above LERs are on the docket, hardcopy versions will be provided. Note that, with the exception of the earlier LERs, the reports begin with an event summary followed by a detailed description.

2. *The staff believes that certain compensatory measures are needed during the extended EDG AOT to assure safe operation of the plant.*
  - a. *The Technical Specifications (TS) should include verification that the required systems, subsystems, trains, components, and devices that depend on the remaining EDG as a source of emergency power are operable before removing an EDG for PM. In addition, positive measures should be provided to preclude subsequent testing or maintenance activities on these systems, subsystems, trains, components, and devices while the EDG is inoperable.*
  - b. *Voluntary entry into a limiting condition of operation (LCO) action statement to perform PM should be contingent upon a determination that the decrease in plant safety is small enough and the level of risk is acceptable for the period and is warranted by operational necessity, and not by convenience.*

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- c. *Removal from service of safety systems and important non-safety equipment should be minimized during the extended outage of the EDG.*
- d. *Component testing or maintenance that increases the likelihood of a plant transient should be avoided; plant operation should be stable during the extended outage of the EDG.*
- e. *Switchyard access should be controlled. All activity in the switchyard should be closely monitored and controlled. No activity in the switchyard should be allowed that could challenge the operability of the offsite power circuits.*

**SNC Response:**

- 2.a. Technical Specifications (TS) boundaries for the proposed change remain the same. The present surveillances and operability requirements were modified only to reflect the change in time for the proposed 14-day allowed outage time (AOT). Technical Specification 3.8.1.B.2 accounts for the equipment powered from the 4160-VAC emergency buses that are ultimately backed up by the operable diesels. Failure of this equipment, either by planned maintenance or random events, invokes additional requirements beyond those associated solely with a single diesel being out of service. From the standpoint of these existing TS, it is not only unlikely, but impractical, to simultaneously attempt planned maintenance on a diesel generator and equipment whose emergency power source is one of the existing operable diesels.
- 2.b. Maintenance during power operation is based on either improving the level of plant performance, availability, and reliability, or increasing the nuclear safety margin. Procedure 90AC-OAM-002-0S requires an evaluation of any combination of components that are to be removed from service for maintenance. This evaluation is performed using qualitative and quantitative tools based upon a unit-specific PSA risk model. Procedure AG-OAM-002-0701N, which covers work planning, includes the need for pre-job evaluation and preparation. Additionally, procedure DI-MNT49-0796N provides for planning and scheduling personnel affected by the previously referenced procedures to review the actual maintenance work order used to initiate the maintenance process. This will allow addition, if necessary, of specific instructions to maintenance foremen, as well as reminders to control room personnel, addressing the need for unique considerations for using the proposed AOT.
- 2.c. Procedure 90AC-OAM-002-0S contains existing limitations on removal from service of certain systems and components in combination with a diesel, based on qualitative and quantitative analyses performed for maintenance rule activities. The specific PSA analysis performed for the extended diesel outage identified additional SSCs that are also risk significant if the diesel is out of service for the extended time. This equipment is already within the scope of the existing procedure, but the procedure will be modified to specifically identify these systems and components, and provide additional restrictions during extended diesel outages.

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- 2.d. Procedure 90AC-OAM-002-0S already addresses transients that can be potentially affected by work activities. Additionally, the specific PSA analysis referenced in 2.c above identifies 5 transients (i.e., loss of offsite power, loss of condensate, loss of station batteries, loss of 600-V bus C, and loss of plant service water) that are very significant if a diesel is out of service for an extended period of time. As a result, additional restrictions on work activities that could increase the likelihood of the subject five transients when a diesel is out for an extended period will be added to the procedure.
- 2.e. Access to and egress from the Low Voltage Switchyard, which contains the startup transformers, main transformers, and unit auxiliary transformers, is controlled as part of the plant protected area. Access to the High Voltage Switchyard located outside the protected area is keylock controlled. Only operations personnel and selected Georgia Power Company (GPC) Transmission Maintenance and SNC employees have a key; all others requiring access need special consideration. Operation of equipment, such as vehicles or wheeled-cranes, in the Low Voltage Switchyard is not only under Security entry/egress control, but is also functionally controlled by procedure. Procedures (AG-MGR-30-0690N and 51GM-MLH-003-0S) govern the operation of this special equipment within the switchyard and addresses inclement weather operation, the use of ground individuals to aid in maneuvering, and equipment stay time within the area.

The use of SNC employees to operate the special equipment within the High Voltage Switchyard is addressed in plant procedures. For GPC employees, planning for and operation of equipment is controlled via executive agreements referenced in plant procedure 90AC-OAM-002-0S, "Scheduling Maintenance." Evolutions requiring switchyard maintenance, especially those requiring the use of special equipment, are planned in advance with SNC operations and work planning staff. This procedure identifies which portions of the high voltage switchyard require controls, and defines what "work in the switchyard" means. The procedure already identifies that work in the switchyard, in combination with a diesel out of service should be avoided. Use of this procedure will continue the avoidance of intentional combinations that cause degradation of the offsite electrical supply to the plant in combination with work activities affecting on-site supplies.

3. *The purpose of the requested amendment is to allow an increased outage time during plant power operation for performing EDG inspection, maintenance, and overhaul, which would include disassembly of the EDG. EDG operability verification after a major maintenance or overhaul may require a full load rejection test. If a full load rejection test is performed at power, the following should be addressed:*
- a. *What would be the typical and worse-case voltage transients on the 4160-V safety buses as a result of a full-load rejection?*

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- b. *If a full-load rejection test is used to test the EDG governor after maintenance, what assurance would there be that an unsafe transient condition on the safety bus (i.e., load swing or voltage transient) due to improperly performed maintenance or repair of a governor would not occur?*
- c. *Using maintenance and testing experience on the EDG, identify possible transient conditions caused by improperly performed maintenance on the EDG governor and voltage regulator. Discuss the electrical system response to these transients.*
- d. *Also, the licensee should provide the tests to be performed after the overhaul to declare the EDG operable and provide justification of performing those tests at power.*

**SNC Response:**

For an overhaul of a diesel generator performed on line, a load rejection test, such as TS Surveillance Requirements (SRs) 3.8.1.7 and 3.8.1.8 is not performed. The purpose of a load rejection surveillance is to test the ability of the diesel generator to reject a large load without tripping. This test is performed as a normal outage surveillance activity or after a design modification to the diesel generator speed and/or voltage controls. Normal maintenance or overhaul of the diesel generator does not involve design modification of these controls. If the speed or voltage control components were replaced with different components (not like kind), this would constitute a design change modification and would be subject to load rejection tests as a part of post modification testing. This work would be scheduled during unit outages. Furthermore, the TS specifically prohibit the performance of these surveillances on line.

Following an on-line overhaul of the diesel generator, SR 3.8.1.5, the TS semi-annual test, is primarily relied upon to prove diesel operability. This test involves starting the diesel generator and verifying that it automatically connects to its emergency bus within 12 seconds. Additionally, the diesel is operated at specified loads for at least 1 hour. This test is routinely performed on line.

The load reject test will exercise the governor, however, it is not necessarily used as a governor test for routine maintenance. Hatch has replaced the diesel generator governors during maintenance and overhaul activities, but used exact replacement governors. These components are calibrated and adjusted at the manufacturer's facility using known plant parameters. When the governors are installed at the site on the diesel generators, several speed step changes are performed (up to rated speed) during the performance runs to confirm proper operation of the governors. These tests, which are immediately followed by a full-load fast-start test, are used to confirm operability of the diesel generator after a governor replacement.

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4. *The condition of offsite sources of electrical power prior to and during the extended EDG outage time have additional importance. Discuss what considerations should be given to not performing the extended maintenance of EDG when the offsite grid condition or configuration is degraded or when adverse or extreme weather conditions (e.g., high winds, lightning, icing conditions) are expected. Discuss how planning of the extended EDG maintenance should consider the time needed to complete the extended EDG maintenance and the ability to accurately forecast weather conditions that are expected to occur during the maintenance. Discuss what, if any, contingency plans should be developed to restore the inoperable EDG in the event of unanticipated adverse weather or degraded grid conditions occurring which can significantly increase the probability of losing offsite electrical power.*

**SNC Response:**

Existing Plant Hatch procedures are sufficient to address adverse weather and grid conditions, and the performance of maintenance and surveillances on safety-related equipment, including the diesel generators.

An abnormal operating procedure for naturally occurring phenomena (34AB-Y22-002-0S) prevents and stops the performance of maintenance and surveillance on safety systems under adverse weather conditions or when those conditions are threatening. For example, the procedure prevents maintenance and surveillance on key safety systems, including diesel generators, upon the National Weather Service forecasting high winds for the site within the next 24 hours. The procedure also requires confirming that normal offsite power is available to the essential power busses. For hurricane force winds, the procedure requires a dual unit shutdown at least 2 hours prior to the arrival of the high winds on site. The procedure has similar requirements for other natural phenomena such as tornadoes and floods.

With respect to a degraded offsite grid, abnormal operating procedure 34AB-S11-001-0S addresses these situations. When the offsite system is in jeopardy of not being able to maintain minimum voltage, the Power Coordination Center will notify the on shift operations staff. Upon this notification, the procedure requires returning inoperable diesel generators to service as soon as possible. Of course, this means that diesel generator maintenance would not be started during this degraded mode. If minimum voltage cannot be maintained, the plant would proceed with an orderly shutdown if the emergency bus voltages cannot be restored to at least minimal voltage within 1 hour.

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5. *Does the licensee's Risk Management Procedures cover a comprehensive walk-down just prior to entering the period of reduced equipment availability (EDG extended maintenance on-line)?*

**SNC Response:**

A comprehensive walkdown to evaluate out-of-service equipment is not normally performed prior to planned diesel maintenance, nor is it intended to be a required part of the proposed extended AOT actions. However, it is standard practice to maintain a running account of equipment operability at Plant Hatch. This is accomplished by the Operations Department, Planning and Scheduling Group, and to some degree, the Maintenance Department. The Planning and Scheduling Group procedurally evaluates (DI-MNT-049-0796) this account for all preplanned maintenance and emergent work by preparing, on a rolling basis, a weekly work schedule 4 weeks in advance. Prior to final schedule approval, weekly planning meetings during the 4-week period are held with representatives from several departments, including those previously mentioned. During these meetings, the effect that items such as diesel maintenance have on other proposed work is evaluated, taking into consideration all items that are or will be in a planned out-of-service condition.