

Georgia Power Company  
333 Piedmont Avenue  
Atlanta, Georgia 30308  
Telephone 404 526-6724

Mailing Address:  
Post Office Box 4545  
Atlanta, Georgia 30302

R. E. Conway  
Senior Vice President

*the southern electric system*

NED-84-085

November 7, 1984

Director of Nuclear Reactor Regulation  
Attention: Mr. John F. Stolz, Chief  
Operating Reactors Branch No. 4  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

NRC DOCKETS 50-321, 50-366  
OPERATING LICENSES DPR-57, NPF-5  
EDWIN I. HATCH NUCLEAR PLANT UNITS 1, 2  
RESPONSE TO NRC GENERIC LETTER 84-15/REQUEST  
TO AMEND DIESEL GENERATOR TECHNICAL SPECIFICATIONS

Gentlemen:

Georgia Power Company (GPC) has completed a review of NRC Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability". Enclosure 1 of this letter and its attachments form GPC's response. Included as part of our response and in accordance with the provisions of 10 CFR 50.90, as required by 10 CFR 50.59(c)(1), GPC hereby submits a request to amend diesel generator Technical Specifications for Plant Hatch Units 1 and 2. The proposed changes (Attachment 1) would revise the Technical Specifications associated with the Limiting Conditions for Operation, Surveillance Requirements, and bases for diesel generator operability. GPC and the diesel manufacturer (Colt Industries) have determined that some of the current Technical Specification surveillance requirements are not beneficial to the reliable performance of the onsite emergency power system. The proposed changes to the Technical Specifications provide improvements which we believe will enhance the reliability of the diesel generators. We have previously addressed our concern in our letter dated January 9, 1984 which was prepared as a response to your letter (Generic Letter 83-41) dated December 16, 1983, regarding fast cold starts of diesel generators.

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Director of Nuclear Reactor Regulation  
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Page Two

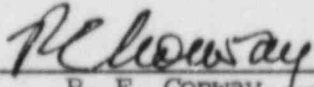
The proposed changes have been reviewed and approved by the Plant Review Board and the Safety Review Board and have been determined not to constitute an unreviewed safety question. The probability of occurrence or the consequences of an accident or malfunction of equipment important to safety would not be increased above those analyzed in the FSAR because the operation of safety-related equipment is not affected by the proposed changes. The possibility of an accident or malfunction of a different type than any analyzed in the FSAR would not result from these changes because no new mode of failure is introduced. As stated above, the proposed changes to the Technical Specifications provide improvements which enhance D/G reliability, thus the margin of safety would not be reduced by these proposed changes. Also, the proposed changes have been evaluated and determined not to involve significant hazards considerations. Enclosed is a complete safety evaluation as required by CFR 50.59 (Attachment 2), and a significant hazards review as required by 10 CFR 50.92 (Attachment 3).

Pursuant to 10 CFR 170.21 a check for the amendment application of \$150.00 is enclosed.

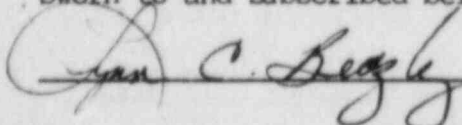
Pursuant to the requirements of 10 CFR 50.92, J. L. Ledbetter of the Georgia Department of Natural Resources will be sent a copy of this letter and all applicable attachments.

R. E. Conway states that he is Senior Vice President of Georgia Power Company and is authorized to execute this oath on behalf of Georgia Power Company, and that to the best of his knowledge and belief the facts set forth in this letter are true.

GEORGIA POWER COMPANY

By:   
R. E. Conway

Sworn to and subscribed before me this 7th day of November, 1984.

  
Notary Public

Notary Public, Georgia, State at Large  
My Commission Expires July 26, 1985

CT/mb

Enclosure

xc: H. C. Nix, Jr.

Senior Resident Inspector  
J. P. O'Reilly, (NRC-Region II)  
J. L. Ledbetter

Enclosure 1

Information Requested to Address Proposed Staff Actions to  
Improve and Maintain Diesel Generator Reliability  
(Generic Letter 84-15)

Item 1 - Reduction in Number of Cold Fast Start Surveillance  
Tests for Diesel Generators

This item is directed towards reducing the number of cold fast start surveillance tests for diesel generators which the staff has determined results in premature diesel engine degradation. The details relating to this subject are provided in Enclosure 1 of Generic Letter 84-15. Licensees are requested to describe their current programs to avoid cold fast start surveillance testing or their intended actions to reduce cold fast start surveillance testing for diesel generators.

Response:

Georgia Power has long been concerned with the reliability of the diesel generators at Plant Hatch. This is demonstrated by Georgia Power's initiation of a Diesel Generator Reliability Study, in the latter part of 1980, to determine the reliability of the diesels and provide recommended actions for improving diesel reliability. The results of this study, published in February of 1982, showed that the availability of the Plant Hatch diesels was better than the national average. However, Georgia Power was still concerned with the number of diesel failures and in the fall of 1982 formed a Diesel Generator Task Force to resolve diesel generator problems with respect to testing requirements, regulatory concerns and failure reduction.

The Diesel Generator Task Force members include design, licensing and site engineers as well as representatives from Colt Industries, the diesel's manufacturer. The Task Force has currently developed fifty-six action items of which only ten remain open. Although the Task Force did not use NUREG-0660, "Enhancement of On-site Emergency Diesel Generator Reliability", as a guide, many of the action items developed were recommendations of NUREG-0660 (see discussion in response to item 3). The action items include procedural, design and technical specification changes. Several of these action items are directly related to the reduction in the number of cold fast starts.

In the fall of 1982 the Task Force implemented two procedural changes. The first procedural change incorporated a four minute prelubrication time preceding all engine starts except actual or simulated emergency starts. This change will reduce the number of cold fast starts on the diesel generators. The second change revised loading and unloading procedures, which includes loading the diesels in incremental steps in accordance with the manufacturer's recommendations. This procedural change will decrease the number of cold fast starts.

As discussed in Georgia Power letter dated January 9, 1984 on fast cold starts of diesel generators, a lube oil keep warm/circulation system was installed on diesels 2A and 2C and the swing diesel 1B during the recent



Unit 2 refueling outage. A lube oil keep warm/circulation system is scheduled to be installed on the Unit 1 diesels during the current 1984 outage. The installation of this system was recommended by the diesel manufacturer. The lube oil system will automatically provide prelubrication upon normal and emergency startup, while the keep warm/circulation system will provide better lubrication by continuously circulating warm oil through the header. The addition of this system should significantly enhance the overall performance and reliability of the diesel generators.

In addition to the procedural and design changes already discussed, the Diesel Generator Task Force has been developing proposed technical specification changes to eliminate the excessive testing requirements. The proposed changes should reduce the number of cold fast starts, improve diesel performance and increase overall reliability of the diesel generators. These proposed Unit 1 and Unit 2 Technical Specifications are being submitted as part of this response and are included as Attachment 1.

The proposed Unit 1 Technical Specifications include eliminating diesel generator testing when certain emergency core cooling systems (i.e., core spray and low pressure coolant injection) and essential service water systems (i.e., plant service water and RHR service water) are declared inoperable, as recommended in Generic Letter 84-15.

Several other proposed diesel generator technical specifications for both units will help eliminate excessive testing and increase diesel reliability. It is proposed that the test schedule be revised so that routine testing is done only in fourteen or seven day intervals and that these intervals be determined by the number of failures per diesel rather than per nuclear unit basis. It is proposed that the testing requirements, when an onsite AC source(s) and/or offsite power source(s) is declared inoperable, be revised to allow more time for testing and loading the diesels. Finally it is proposed to reduce the frequency of the abusive tests, which require five successive starts of the diesels to verify the capability of the air start receivers, and that the overload test be revised to require the overload operation to occur in the last two hours of the twenty-four hour test. All of these technical specification changes are being proposed per the diesel manufacturer's recommendations and are compatible with the recommendations contained in Generic Letter 84-15.

#### Item 2 - Diesel Generator Reliability Data

This item requests licensees to furnish the current reliability of each diesel generator at their plant(s), based on surveillance test data. Licensees are requested to provide the information requested in Enclosure 2 of Generic Letter 84-15.

Response:

The reliability of the diesel generators at Hatch Nuclear Plant has been determined in accordance with Regulatory Guide 1.108 position C.2.e and is provided below. Table 1 provides the number of failures in the last 20 and 100 valid demands through August 1984 and the associated reliability for each diesel. Table 2 lists the time history (failure date) for the three Diesel 2C failures.

In developing this response to Generic Letter 84-15 the Diesel Generator Reliability Study, published in February of 1982, was updated. The data from this original study went from startup for both units to mid-1981. In comparing the results of the original study to the data collected from the last three years there is a significant improvement in diesel reliability, with four diesels having no failures in the last 456 tests. The only exception is diesel 2C whose reliability has remained about the same. This might be attributed to the fact that diesel 2C has been tested over twice as much as any other diesel in the same time period. With the incorporation of the proposed technical specifications provided in Attachment 1, this excessive testing will be reduced. In addition, the design and procedural changes developed by the Diesel Generator Task Force, as discussed in the response to Item 1 above, should increase the reliability of the diesels.

Regarding the question concerning records, Georgia Power does maintain a log of diesel generator trials and failures for each diesel. Tests which are valid according to Regulatory Guide 1.108 position C.2.e are entered. Failures are indicated and a brief description is entered indicating the cause of the failure. This log does not include all the provisions of Regulatory Guide 1.108 position C.3.a. However Georgia Power feels that the information given in the log and in the procedural data sheets are adequate for determining diesel reliability.

A yearly data report is currently not maintained for the diesel generators. However the proposed technical specifications for both units, provided in Attachment 1 to this response, requires that an annual report be submitted to the NRC in lieu of the reportable occurrences requirement (Unit 2 Technical Specification 4.8.1.1.3). The annual report would provide the NRC with the number of valid tests and the number of failures to start on demand and would provide a monitor on diesel reliability.

### Item 3 - Diesel Generator Reliability

Licensees are requested to describe their program, if any, for attaining and maintaining a reliability goal for their diesel generators. An example of a performance Technical Specification to support a desired diesel generator reliability goal has been provided by the staff in Enclosure 3 of Generic Letter 84-15. Licensees are requested to comment on, and compare their existing program or any proposed program with the example performance specification.

#### Response:

Georgia Power has several ongoing activities designed to improve and maintain diesel generator reliability. In the fall of 1982 the Diesel Generator Task Force began implementing the fifty-six action items referred to in the response to Item 1 above. Although NUREG-0660, "Enhancement of On-site Emergency Diesel Generator Reliability", was not used as a guide in developing the action items, the Task Force action items address many of the recommendations of NUREG-0660. Table 3 provides a summary of which recommendations were addressed and how they were implemented. Also, a list of Task Force action items not recommended by NUREG-0660 but which are significant to Georgia Power's program for improving diesel reliability is provided in Table 4.

The major Task Force action item involved revising the Hatch Technical Specifications. The revised technical specifications proposed changes to the surveillance and testing performed to demonstrate diesel generator reliability per the diesel manufacturer's recommendations. The proposed technical specifications are enclosed as Attachment 1. These changes, as summarized in the response to Item 1 and discussed in detail in the safety evaluation (Attachment 2) and significant hazard evaluation (Attachment 3) will reduce the number of cold fast starts, eliminate excessive testing and reduce the frequency of abusive testing. Georgia Power is confident that these changes will improve diesel performance and increase diesel reliability. Also, the proposed technical specifications will require that an annual report on diesel reliability be submitted to the NRC as discussed in the response to Item 2. This report will allow diesel reliability to be monitored.

A trend analysis was performed using the data collected for the response to Item 2. As stated in the response to Item 2 this data shows an increase in diesel reliability over the last three years as compared to the reliability prior to mid-1981. Since the Task Force has been implementing recommendations for the last two years, some of this improvement may be attributed to their activities.

Considering the overall high reliability of the diesels during the past three years, Georgia Power believes that with the ongoing work of the Diesel Generator Task Force, whose main objective is to improve diesel reliability, and with NRC approval of the proposed technical specifications (Attachment 1) that the current Georgia Power programs are attaining and will continue to maintain a high reliability goal. For these reasons Georgia Power is of the opinion that the proposed changes to the technical specifications contained in Attachment 1 are in our best interest for maintaining high diesel generator reliability in lieu of the performance specifications contained in Generic Letter 84-15. In addition the surveillance testing requirements contained in Generic Letter 84-15 are not consistent with those recommended by the diesel generator manufacturer.



Table 1: Diesel Generator Reliability

<u>Diesel</u>	<u>Failures in last 20 Demands</u>	<u>Reliability (20 Demands)</u>	<u>Failures in last 100 Demands</u>	<u>Reliability (100 Demands)</u>
1A	0	100%	0	100%
1C	0	100%	0	100%
1B*	0	100%	0	100%
2A	0	100%	0	100%
2C	1	95%	3	97%

\*Diesel 1B is a swing diesel and serves both units.

Table 2: Time History of Failures

<u>Diesel</u>	<u>Failure Date</u>
2C	7/27/82
2C	6/10/83
2C	11/17/83

Table 3: NUREG-0660 COMPARISON

<u>NUREG-0660 Item</u>	<u>Subject</u>	<u>Task Force Action</u>
A-1	Air Driers in Air Start System	The Diesel Generator Task Force found that moisture related failures were not a recurring problem in the starting air system therefore air driers would not be beneficial.
A-2	Air Quality In Diesel Generator Room	It was found that the problems discussed in NUREG-0660 do not exist at Plant Hatch, therefore no corrective actions were initiated.
A-3	Turbocharger Heavy Duty Gear Drive	Plant Hatch has Elliott type "H" turbo chargers and has experienced no problems. Therefore this recommendation is not applicable.
A-4	Personnel Training	The diesel manufacturer has conducted a class for operators, maintenance personnel and engineers. Georgia Power is working with Colt Industries to develop a training course to be taught on a regular basis
B-1, 2	Pre-Lube Engine Starts	The procedures have been revised to include a four minute prelube. Also, a lube oil keep warm/ circulation system has been installed on Unit 2 and is being installed on Unit 1.
B-3	Testing, Test Loading and Preventive Maintenance	The proposed Technical Specifications revise the surveillance requirements per the diesel generator manufacturer's recommendations.

Table 3: NUREG-0660 COMPARISON (CONTINUED)

<u>NUREG-0660 Item</u>	<u>Subject</u>	<u>Task Force Action</u>
B-3a	Minimizing no-load and light load operations	The plant procedures have been revised to set minimum loading of Diesels at 25% of rated load.
B-3b	Testing Frequencies	The proposed technical specifications revise the test frequencies per the diesel manufacturer's recommendation.
B-3c	Maintenance Procedures	The procedures were reviewed by site engineers and the diesel manufacturer and revised accordingly.
B-4	"Root Cause" and Corrective Action	The Task Force investigates problems to determine causes and implements action items to correct them.
C-1	DG Room Ventilation and Combustion Air Inlet	Plant Hatch has experienced no problems. Therefore no corrective action has been taken. The roads are paved and the grounds are properly prepared surrounding the diesel building. Therefore dust is not a problem.
C-2a	Fuel Storage and Handling gravity drains in bulk storage fuel tanks	Plant Hatch has no drain line at the bottom of the tank. However, fuel oil analysis is performed once per 92 days to check for water per the Technical Specifications (Unit 1 - 4.9.A.2.D and Unit 2 - 4.8.1.1.2.B.). Moisture in fuel has not been a problem at Plant Hatch.



Table 3: NUREG-0660 COMPARISON (CONTINUED)

<u>NUREG-0660 Item</u>	<u>Subject</u>	<u>Task Force Action</u>
C-2b	Fuel Storage and Handling Fuel Supply Pumps	Plant Hatch fuel supply pumps are engine driven as recommended. The fuel supply to this engine driven pump is gravity fed.
C-3	High Temperature Insulation for Overload	Plant Hatch diesels use class F insulation which is designed for a 105°C temperature rise (resistance method)
C-4	Engine Cooling Water Temperature Control	This was included in the original diesel generator design.
C-5	Concrete Floors- Painting	Due to the age of the floors in the diesel generator building, the concrete has properly set. Therefore, crumbling and dust experienced from new concrete is no problem.
C-6	Instrument and Controls Mounting	Plant Hatch has experienced no problems with the instruments and controls. Therefore no corrective action has been taken. The instruments are mounted on the same concrete pad as the diesel but not directly on the diesel itself.

Table 4: Major Task Force Action Items  
Not Included in the Recommendations of NUREG-0660

1. Replace diesel generator starting air compressor pressure switch to correct setpoint drift problems.
2. Revise operating procedures according to diesel manufacturer's recommendations.
3. Install more reliable governor booster units to deter start failures or long starting times.
4. Install sample test point for oil analysis on diesels and incorporate oil analysis into diesel operating procedures. Such an analysis may detect potential failures.
5. Remove the practice of barring-over the diesel from the procedures to prevent damage to the diesel, per manufacturer's recommendations.
6. Remove cylinder relief valves from diesel generators because they leak and create a potential fire hazard. These valves were intended for nuclear submarine service only.
7. Replace unloader bonnets with brass sleeved bonnets to correct corrosion problems associated with compressor unloader valves.
8. Install an air filter on the air compressors for better quality air.