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GNRO-2003/00033

May 12, 2003

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License Amendment Request
Removal of MODE Restrictions for Surveillance Testing of the Division 3
Battery

Dear Sir or Madam:

Pursuant to 10CFR50.90, Entergy Operations, Inc. (Entergy) hereby requests the following amendment for Grand Gulf Nuclear Station, Unit 1 (GGNS). The proposed change will remove the MODE restrictions for performance of Surveillance Requirements (SR) 3.8.4.7 and 3.8.4.8 for the Division 3 DC electrical power subsystem. The batteries tested by these surveillances are part of the DC power source of control and motive power as required for the High Pressure Core Spray (HPCS) system logic, HPCS diesel-generator set control and protection, and all Division 3 related controls. These surveillances verify that the battery capacity is adequate to perform their required functions. The purpose of the proposed changes is to allow performance of the surveillances during normal plant operation in conjunction with a planned HPCS system outage rather than only during refueling outages. This will help reduce the complexity of activities and resource requirements during refueling outages.

The proposed change has been evaluated in accordance with 10 CFR 50.91(a)(1) using criteria in 10 CFR 50.92(c) and it has been determined that this change involves no significant hazards considerations. The bases for these determinations are included in the attached submittal.

The proposed change contains one new commitment as summarized in Attachment 4.

Entergy requests approval of the proposed amendment by January 30, 2004. The requested approval date and implementation period will enable GGNS to optimize refueling outage planning and activities. Once approved, the amendment shall be implemented within 60 days. Although this request is neither exigent nor emergency, your prompt review is requested.

If you have any questions or require additional information, please contact Matt Crawford at 601-437-2334.

I declare under penalty of perjury that the foregoing is true and correct. Executed on May 12, 2003

Sincerely,



JCR/RWB/amt

Attachments:

1. Analysis of Proposed Technical Specification Change
2. Proposed Technical Specification Changes (mark-up)
3. Changes to TS Bases pages – for information only
4. List of Regulatory Commitments

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Mr. N. S. Reynolds
Mr. H. L. Thomas

Attachment 1

GNRO-2003/00033

Analysis of Proposed Technical Specification Change

1.0 DESCRIPTION

This letter is a request to amend Operating License NPF-29 for Grand Gulf Nuclear Station, Unit 1 (GGNS).

Entergy requests changes to Section 3.8.4, "DC Sources – Operating" of the Technical Specification (TS), Appendix A of the Operating License. Specifically, the proposed change will remove the MODE restrictions for performance of Surveillance Requirements (SR) 3.8.4.7 and 3.8.4.8 for the Division 3 DC electrical power subsystem. The batteries tested by these surveillances are part of the DC power source of control and motive power as required for the High Pressure Core Spray (HPCS) system logic, HPCS diesel-generator set control and protection, and all Division 3 related controls. These surveillances verify that the battery capacity is adequate to perform their required functions. The purpose of the proposed changes is to allow performance of the surveillances during MODES 1, 2, or 3 in conjunction with a planned HPCS system outage such that the testing will no longer have to be performed only during plant outages. This will help reduce the complexity of activities and resource requirements during refueling outages.

The next GGNS refueling outage is scheduled for the first quarter of 2004. Entergy desires that this amendment be issued by January 30, 2004 to support work planning prior to the outage.

2.0 PROPOSED CHANGE

TS Limiting Condition for Operation (LCO) 3.8.4 "DC Sources – Operating" governs the DC electrical power subsystem requirements for all three divisions of Engineered Safety Feature (ESF) systems. The DC electrical power sources are required to be operable in plant Modes 1 (Run), 2 (Startup), and 3 (Hot Shutdown). Currently certain TS 3.8.4 Surveillance Requirements (SRs) contain notes which prohibit performance during MODES 1, 2 and 3. The proposed changes will modify the notes associated with these SRs for Division 3.

Specifically, Entergy proposes to modify Note 2 for SR 3.8.4.7 and the note for SR 3.8.4.8, that currently read "This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR." The Note for each of these SRs will be revised to state "This Surveillance shall not be performed in MODE 1, 2, or 3 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR."

In summary, Entergy is proposing to remove the mode restrictions for performing SR 3.8.4.7 and SR 3.8.4.8 for the Division 3 DC electrical power subsystem batteries to allow SR performance during plant operation.

Changes to the TS Bases associated with the proposed changes to SR 3.8.4.7 and SR 3.8.4.8 are provided in Attachment 3 for your information and will be implemented with TS 5.5.11, Technical Specification Bases Control Program.

3.0 BACKGROUND

Grand Gulf Nuclear Station Technical Specification 3.8.4 "DC Sources – Operating" specifies the requirements for the ESF DC electrical power subsystems. The DC electrical power subsystems are required to be OPERABLE to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an Anticipated Operational Occurrence (AOO) or a postulated DBA. The DC power system provides the AC emergency power system with control power and both motive and control power to selected safety related equipment. The 125 VDC electrical power system consists of three independent Class 1E DC electrical power subsystems, Divisions 1, 2, and 3. Each subsystem consists of a battery, associated battery charger(s), and all the associated control equipment and interconnecting cabling. As required by 10 CFR 50, Appendix A, General Design Criteria (GDC) 17 and GDC 18, the DC electrical power system is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure.

During normal operation, the DC loads are powered from the battery chargers with the batteries floating on the system. In case of loss of normal power to the battery charger, the DC loads are automatically powered from the ESF batteries. Each DC battery subsystem is separately housed in a ventilated room apart from its charger and distribution centers. Each subsystem is located in an area separated physically and electrically from the other subsystems to ensure that a single failure in one subsystem does not cause a failure in a redundant subsystem. There is no sharing between redundant Class 1E subsystems such as batteries, battery chargers, or distribution panels.

The function of the Division 3 125 V DC power system is to provide a reliable, continuous, and independent 125 V DC power source of control and motive power as required for the HPCS system logic, HPCS diesel-generator set control and protection, and all Division 3 related controls. A battery charger is provided for the battery. The Division 3 125 V DC system is classified as Class 1E. The Division 3 125 V DC system is independent of all other divisional batteries and there is no manual or automatic connection to any other battery.

The Division 3 DC power source is required for HPCS diesel generator field flashing, control logic, and control and switching function of 4.16 kV breakers. UFSAR Table 8.3-8 lists the Division 3 peak amperage requirements per time interval after AC power loss during accident conditions. The Division 3 battery has adequate storage to carry the required load continuously for at least 2 hours. The battery charger of Division 3 DC electrical power subsystem has sufficient capacity to restore the battery bank from the design minimum charge to its fully charged state in 8 hours while supplying normal steady state loads.

The ESF divisional batteries are required by TS SR 3.8.4.7 and 3.8.4.8 to be service tested and performance discharge tested periodically. The battery service test verifies the battery's capability to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length (2 hours for Division 3) correspond to the design duty cycle requirements. The battery performance test is a test of constant current capacity of the battery to detect any change in the capacity. The performance discharge test is intended to determine overall battery degradation due to age and usage.

The required surveillance frequency for the battery service test is every 18 months. The frequency for the performance discharge test is normally 60 months. If the battery shows degradation, or if the battery has reached 85% of its expected life and capacity is less than 100% of the manufacturer's rating, the surveillance frequency is reduced to 12 months. However, if the battery shows no degradation but has reached 85% of its expected life, the surveillance frequency is only reduced to 24 months for batteries that retain capacity of at least 100% of the manufacturer's rating. Degradation is indicated when the battery capacity drops by more than 10% of rated capacity from its average on previous performance tests or is below 90% of the manufacturer's rating.

4.0 TECHNICAL ANALYSIS

The TS Bases, as currently written, state that the reason for the MODE restriction note for SRs 3.8.4.7 and 3.8.4.8 is to preclude the potential for perturbations of the electrical distribution system during plant operation. However, the noted concern is unwarranted with respect to Division 3. By virtue of the HPCS being a stand-alone system with its dedicated DG and independent distribution system, there is minimal opportunity for the performance of these SRs to have any impact on other safety related plant equipment. The Division 3 DC system is independent of all other divisional batteries and there is no manual or automatic connection to any other battery. The Division 3 batteries are disconnected from the battery chargers during the test and have no connection with any other equipment that is required to be operable. Therefore, performance of the required testing during plant operation would not result in a challenge to any plant safety system.

Currently, the Division 3 HPCS DG and HPCS system are removed from service to perform scheduled maintenance while in MODE 1, 2, or 3 as allowed by the TS. The TS change is desired to allow the battery tests to be performed in conjunction with these scheduled system outages. The Division 3 battery service test required by SR 3.8.4.7 and the Division 3 battery performance discharge test required by SR 3.8.4.8 will only be performed in MODES 1, 2, and 3 in conjunction with a HPCS system outage or for unplanned events. The TS allow up to 14 days of inoperability if the Reactor Core Isolation Cooling system is operable. This provides ample time for the performance of the battery SRs. The time needed to perform the battery testing is approximately 24 hours.

The required SRs make the Division 3 batteries unavailable for supporting the HPCS system during portions of the tests. However, as noted above, the batteries are not expected to be unavailable for more than 24 hours. This testing period is within the period of time that the system is scheduled to be out of service for other planned maintenance. Therefore the battery test does not increase unavailability of the supported system or represent any change in risk above the current practice of planned system maintenance outages as currently allowed by the TS.

Regarding risk management, the testing of the Division 3 batteries will be enveloped by the risk management of the system outage. Risk management of the system outage is addressed in several ways. First, in addition to TS LCO limitations, the Safety Function Determination Program (SFDP) of TS 5.5.10 is required to protect against a loss of safety function. Secondly, the GGNS approach to performing maintenance also uses a protected division concept. This means that without special considerations work is performed on only one division at a time.

GGNS has a Configuration Risk Management Program (CRMP) in place in accordance with GGNS commitments for compliance with 10 CFR 50.65, "Monitoring the Effectiveness of Maintenance". The program provides assurance that risk-significant plant equipment configurations are precluded or minimized when plant equipment is removed from service. Additionally, the HPCS system reliability and availability are monitored and evaluated in relationship to Maintenance Rule goals to ensure that total outage times do not degrade operational safety over time.

5.0 REGULATORY ANALYSIS

5.1 Applicable Regulatory Requirements/Criteria

The proposed changes have been evaluated to determine whether applicable regulations and requirements continue to be met.

Entergy has determined that the proposed changes do not require any exemptions or relief from regulatory requirements, other than the TS. As required by 10 CFR 50, Appendix A, GDC 17 and GDC 18, the DC electrical power system is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure. The proposed changes do not affect the design or function of the DC system.

UFSAR Appendix 3A discusses compliance with Regulatory Guide 1.129, "Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Nuclear Power Plants", April 1977 edition. This version of the Regulatory Guide does not address any plant condition limitations for the test. Therefore, Grand Gulf's compliance with this edition as discussed in the UFSAR is not affected by the proposed change. It is noted, however, that Regulatory Guide 1.129 was revised in 1978 to state that the battery service test should be done during refueling operations or at some other outage. This amendment will allow the battery test for the Division 3 battery to be performed on-line.

In addition, this change deviates from the Standard TS for BWR-6 plants, NUREG 1434. This deviation is acceptable because the GGNS Division 3 system is designed as a stand-alone ECCS system with its dedicated DG and independent distribution system. Therefore, there is minimal opportunity for the performance of these SRs to have any impact on plant operation or on other safety related plant equipment.

5.2 No Significant Hazards Consideration

The Entergy request is to change Section 3.8.4, "DC Sources - Operating" of the Technical Specification (TS), Appendix A of the Operating License. Specifically, the proposed change will remove the MODE restrictions for performance of Surveillance Requirements (SR) 3.8.4.7 and 3.8.4.8 for the Division 3 DC electrical power subsystem. The battery tested by these surveillances is part of the direct current (DC) power source of control and motive power as required for the High Pressure Core Spray (HPCS) system logic, HPCS diesel-generator set control and protection, and all Division 3 related controls. These surveillances verify the battery capacity is adequate to perform the required functions. The purpose of the proposed changes is to allow performance of the surveillances during MODE 1, 2, or 3 such that the testing will no

longer have to be performed only during plant outages. Entergy Operations, Inc. has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The power supplied by the battery is used only as a source of control and motive power for the HPCS system logic, HPCS diesel-generator set control and protection, and other Division 3 related controls. The loads supplied by this system are only loads associated with Division 3 of the Emergency Core Cooling Systems (ECCS).

The battery testing period is within the period of time that the system is scheduled to be out of service for other planned maintenance. The battery test does not increase unavailability of the supported system or represent any change in risk above the current practice of planned system maintenance outages as currently allowed by the TS. Any risk associated with the testing of the Division 3 batteries will be enveloped by the risk management of the system outage.

The out of service condition is controlled and evaluated for safety implications in accordance with 10 CFR 50.65. The HPCS system reliability and availability are monitored and evaluated in relationship to Maintenance Rule goals to ensure that total outage times do not degrade operational safety over time.

Therefore, the proposed change will have no effect on the probability or consequences of any previously evaluated accident.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

This request involves the testing of the HPCS battery on-line while the system is already out of service. The testing will not add additional out of service time. Testing during this period has no influence on, nor does it contribute in any way to, the possibility of a new or different kind of accident or malfunction from those previously analyzed. The method of performing the test is not changed. No new accident modes are created by testing during the period when the system is already unavailable. Because the system is already out of service, no safety-related equipment or safety functions are altered as a result of this change.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The battery testing will be performed when the HPCS system is already out of service for maintenance. The out of service condition is controlled and evaluated for safety implications in accordance with 10 CFR 50.65. The batteries are not expected to be unavailable for more than 24 hours. This testing period is within the period of time that the system is scheduled to be out of service for other planned maintenance. Therefore the battery test does not increase unavailability of the supported system or represent any change in risk above the current practice of planned system maintenance outages as currently allowed by the TS. Timing of this test has no effect on any fission product barrier.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Entergy concludes that the proposed amendment(s) present no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.3 Environmental Considerations

The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

Attachment 2

GNRO-2003/00033

Proposed Technical Specification Changes (mark-up)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.4.7 -----NOTES-----</p> <ol style="list-style-type: none"> 1. SR 3.8.4.8 may be performed in lieu of SR 3.8.4.7 once per 60 months. 2. This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.</p>	<p>(not applicable to Division 3)</p> <p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.4.8</p> <p>----- ----- -NOTE- ----- This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. ----- -----</p> <p>Verify battery capacity is $\geq 80\%$ of the manufacturer's rating when subjected to a performance discharge test.</p>	<p><i>(not applicable to Division 3)</i></p> <p>60 months</p> <p><u>AND</u></p> <p>12 months when battery shows degradation, or has reached 85% of the expected life with capacity < 100% of manufacturer's rating</p> <p><u>AND</u></p> <p>24 months when battery has reached 85% of the expected life with capacity $\geq 100\%$ of manufacturer's rating</p>

Attachment 3

GNRO-2003/00033

Changes to Technical Specification Bases Pages

For Information Only

BASES

**SURVEILLANCE
REQUIREMENTS**
(continued)

SR 3.8.4.7

A battery service test is a special test of the battery's capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length (4 hours for Division 1 and Division 2 and 2 hours for Division 3) correspond to the design duty cycle requirements as specified in Reference 4.

The Surveillance Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.32 (Ref. 9) and Regulatory Guide 1.129 (Ref. 10), which state that the battery service test should be performed during refueling operations or at some other outage, with intervals between tests not to exceed 18 months.

The Division 3 test may be performed in MODE 1, 2, or 3 in conjunction with HPCS system outages.

This SR is modified by two Notes. Note 1 allows the once per 60 months performance of SR 3.8.4.8 in lieu of SR 3.8.4.7. This substitution is acceptable because SR 3.8.4.8 represents a more severe test of battery capacity than SR 3.8.4.7. The reason for Note 2 is that performing the Surveillance would remove a required DC electrical power subsystem from service, perturb the electrical distribution system, and challenge safety systems. Credit may be taken for unplanned events that satisfy the Surveillance.

SR 3.8.4.8

A battery performance test is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

The acceptance criteria for this Surveillance is consistent with IEEE-450 (Ref. 8) and IEEE-485 (Ref. 11). These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating. A capacity of 80% shows that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements.

(continued)

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.8.4.8 (continued)

The Surveillance Frequency for this test is normally 60 months. If the battery shows degradation, or if the battery has reached 85% of its expected life and capacity is < 100% of the manufacturer's rating, the Surveillance Frequency is reduced to 12 months. However, if the battery shows no degradation but has reached 85% of its expected life, the Surveillance Frequency is only reduced to 24 months for batteries that retain capacity \geq 100% of the manufacturer's rating. Degradation is indicated when the battery capacity drops by more than 10% of rated capacity from its average on previous performance tests or is below 90% of the manufacturer's rating. These Frequencies are based on the recommendations in IEEE-450 (Ref. 8).

The Division 3 test may be performed in MODE 1, 2, or 3 in conjunction with HPCS system outages.

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required DC electrical power subsystem from service, perturb the electrical distribution system, and challenge safety systems. [↑]Credit may be taken for unplanned events that satisfy the Surveillance.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.
2. Regulatory Guide 1.6, March 10, 1971.
3. IEEE Standard 308, 1978.
4. UFSAR, Section 8.3.2.
5. UFSAR, Chapter 6.
6. UFSAR, Chapter 15.
7. Regulatory Guide 1.93, December 1974.
8. IEEE Standard 450, 1987.
9. Regulatory Guide 1.32, February 1977.
10. Regulatory Guide 1.129, December 1974.
11. IEEE Standard 485.

Attachment 4

GNRO-2003/00033

List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE- TIME ACTION	CONTINUING COMPLIANCE	
The Division 3 battery service test required by SR 3.8.4.7 and the Division 3 battery performance discharge test required by SR 3.8.4.8 may only be performed in MODES 1, 2, and 3 in conjunction with a HPCS system outage or for unplanned events.		X	Within 60 days of amendment issuance