

May 1, 2007

Mr. J. V. Parrish
Chief Executive Officer
Energy Northwest
P.O. Box 968 (Mail Drop 1023)
Richland, WA 99352-0968

SUBJECT: COLUMBIA GENERATING STATION - ISSUANCE OF AMENDMENT RE: AC
AND DC ELECTRICAL POWER (TAC NO. MC7273)

Dear Mr. Parrish:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 204 to Facility Operating License No. NPF-21 for the Columbia Generating Station. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated May 31, 2005, as supplemented by letters dated February 8, 2006, and January 5, February 13, February 22, and March 22, 2007.

The amendment modifies TS Sections 3.8.1, "AC [Alternating Current] Sources - Operating," 3.8.4, "DC [Direct Current] Sources - Operating," 3.8.5, "DC Sources - Shutdown," 3.8.6, "Battery Cell Parameters," and 5.5, "Programs and Manuals." The change incorporates clarifying requirements in surveillance testing of diesel generators and new actions for an inoperable battery charger. The change includes a revision to the Administrative Program to be consistent with Institute of Electrical and Electronics Engineers Standard 450-2002, and changes consistent with TS Task Force (TSTF) Traveler TSTF-360, Revision 1, "DC Electrical Rewrite," and TSTF-283, Revision 3, "Modify Section 3.8 Mode Restriction Notes." The enclosed TS pages include changes approved by Amendment No. 203, dated March 23, 2007.

A copy of the related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

/RA/

Carl F. Lyon, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-397

Enclosures: 1. Amendment No. 204 to NPF-21
2. Safety Evaluation

cc w/encls: See next page

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*previously concurred

ADAMS Accession Nos.: Pkg ML070920467 (Amdt./License ML070920469, TS Pgs ML070920471) **SE dated 3/28/07

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Columbia Generating Station

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ENERGY NORTHWEST

DOCKET NO. 50-397

COLUMBIA GENERATING STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 204
License No. NPF-21

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Energy Northwest (licensee), dated May 31, 2005, as supplemented by letters dated February 8, 2006, and January 5, February 13, February 22, and March 22, 2007, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications and paragraph 2.C.(2) of Facility Operating License No. NPF-21 as indicated in the attachment to this license amendment.

3. The license amendment is effective as of its date of issuance and shall be implemented within 120 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Thomas G. Hiltz, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Facility
Operating License and
Technical Specifications

Date of Issuance: May 1, 2007

ATTACHMENT TO LICENSE AMENDMENT NO. 204

FACILITY OPERATING LICENSE NO. NPF-21

DOCKET NO. 50-397

Replace the following pages of the Facility Operating License No. NPF-21 and Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change.

Facility Operating License

REMOVE

3

INSERT

3

Technical Specifications

REMOVE

iii

3.8.1-8

3.8.1-9

3.8.1-10

3.8.1-11

3.8.1-12

3.8.1-13

3.8.1-14

3.8.1-15

3.8.1-16

3.8.1-17

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3.8.4-1

3.8.4-2

3.8.4-3

3.8.4-4

3.8.4-5

3.8.5-1

3.8.5-2

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3.8.6-1

3.8.6-2

3.8.6-3

3.8.6-4

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5.5-12

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INSERT

iii

3.8.1-8

3.8.1-9

3.8.1-10

3.8.1-11

3.8.1-12

3.8.1-13

3.8.1-14

3.8.1-15

3.8.1-16

3.8.1-17

3.8.1-18

3.8.4-1

3.8.4-2

3.8.4-3

3.8.4-4

3.8.4-5

3.8.5-1

3.8.5-2

3.8.5-3

3.8.6-1

3.8.6-2

3.8.6-3

3.8.6-4

3.8.6-5

5.5-12

5.5-13

- (3) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required any byproduct, source of special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (5) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- (6) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to store byproduct, source and special nuclear materials not intended for use at Columbia Generating Station. The materials shall be no more than 9 sealed neutron radiation sources designed for insertion into pressurized water reactors and no more than 40 sealed beta radiation sources designed for use in area radiation monitors. The total inventory shall not exceed 24 microcuries of strontium-90, 20 microcuries of uranium-235, 30 curies of plutonium-238, and 3 curies of americium-241.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at reactor core power levels not in excess of full power (3486 megawatts thermal). Items in Attachment 1 shall be completed as specified. Attachment 1 is hereby incorporated into this license.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 204 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

- a. For Surveillance Requirements (SRs) not previously performed by existing SRs or other plant tests, the requirement will be considered met on the implementation date and the next required test will be at the interval specified in the Technical Specifications as revised in Amendment No. 149.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 204

TO FACILITY OPERATING LICENSE NO. NPF-21

ENERGY NORTHWEST

COLUMBIA GENERATING STATION

DOCKET NO. 50-397

1.0 INTRODUCTION

By application dated May 31, 2005 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML051650320), as supplemented by letters dated February 8, 2006 (ADAMS Accession No. ML060530542), and January 5 (ADAMS Accession No. ML070170359), February 13 (ADAMS Accession No. ML070520398), February 22 (ADAMS Accession No. ML070650322), and March 22, 2007 (ADAMS Accession No. ML070930295), Energy Northwest (the licensee) requested changes to the Technical Specifications (Appendix A to Facility Operating License No. NPF-21) for the Columbia Generating Station (CGS).

The proposed change modifies Technical Specification (TS) Sections 3.8.1, "AC [Alternating Current] Sources - Operating," 3.8.4, "DC Sources - Operating," 3.8.5, "DC Sources - Shutdown," 3.8.6, "Battery Cell Parameters," and 5.5, "Programs and Manuals." The proposed change incorporates clarifying requirements in surveillance testing of diesel generators (DGs) and new actions for an inoperable battery charger. The proposed change includes a revision to the Administrative Program to be consistent with Institute of Electrical and Electronics Engineers Standard (IEEE) 450-2002, and changes consistent with TS Task Force (TSTF) Traveler TSTF-360, Revision 1, "DC Electrical Rewrite," TSTF-283-A, Revision 3, "Modify Section 3.8 Mode Restriction Notes," and TSTF 451, Revision 0, "Correct the Battery Monitoring and Maintenance Program and the Bases of SR 3.8.4.2."

The supplemental letters dated February 8, 2006, and January 5, February 13, February 22, and March 22, 2007, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on February 27, 2007 (72 FR 8803).

2.0 REGULATORY EVALUATION

The following NRC requirements and guidance documents are applicable to the staff's review of the licensee's amendment request:

- Title 10 of the *Code of Federal Regulations* (10 CFR), Appendix A of Part 50, General Design Criterion (GDC) 17, "Electric power systems," requires, in part, that "An onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety ... The onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure. Electric power from the transmission network to the onsite electric distribution system shall be supplied by two physically independent circuits (not necessarily on separate rights of way) designed and located so as to minimize to the extent practical the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions ... Provisions shall be included 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 power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies."
- GDC 18, "Inspection and testing of electric power systems," requires, in part, that "Electric power systems important to safety shall be designed to permit appropriate periodic inspection and testing of important areas and features ..."
- Section 50.63 of 10 CFR, "Loss of all alternating current power," requires, in part, that "Each light-water-cooled nuclear power plant licensed to operate must be able to withstand for a specified duration and recover from a station blackout as defined in §50.2 ..."
- Paragraph 50.65(a)(3) of 10 CFR, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," requires, in part, that "Performance and condition monitoring activities and associated goals and preventive maintenance activities shall be evaluated at least every refueling cycle provided the interval between evaluations does not exceed 24 months ... Adjustments shall be made where necessary to ensure that the objective of preventing failures of structures, systems, and components through maintenance is appropriately balanced against the objective of minimizing unavailability of structures, systems, and components due to monitoring or preventive maintenance."
- Paragraph 50.36(c)(2)(ii) of 10 CFR, "Technical specifications," requires that "[a] technical specification limiting condition for operation of a nuclear reactor must be established for each item meeting one or more of the [criteria set forth in 10 CFR 50.36(c)(2)(ii)(A)-(D)]."
- Paragraph 50.36(c)(3) of 10 CFR, "Technical specifications," requires that TSs include surveillance requirements, which "are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is

maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.”

- Regulatory Guide (RG) 1.9, Rev. 3, “Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants,” provides guidance for DG testing.
- RG 1.32, Rev. 3, “Criteria For Power Systems For Nuclear Power Plants,” provides guidance for complying with GDCs 17 and 18 with respect to the design, operation, and testing of safety-related electric power systems of all types of nuclear power plants.

3.0 TECHNICAL EVALUATION

3.1 Description of the CGS AC Electrical Power System

The CGS Class 1E AC electrical power distribution system AC sources consists of the offsite power sources and the onsite standby power sources (DGs 1, 2, and 3). The Class 1E AC distribution system supplies electrical power to three divisional load groups, Divisions 1, 2, and 3, with each division powered by an independent Class 1E 4160 Volt (V) Engineered Safety Feature (ESF) bus. Divisions 1 and 2 ESF buses have two separate and independent offsite sources of power. The Division 3 ESF bus has one offsite source of power. The ESF systems of any two of the three divisions provide for the minimum safety functions necessary to shut down the unit and maintain it in a safe shutdown condition.

The plant onsite electrical power system consists of the main generator and the normal auxiliary transformers, standby AC power system, high-pressure core spray (HPCS) power system, 4160 V, 6900 V, and 480 Vac (Volts alternating current) power distribution systems, the 120/208 and 120/240 Vac instrumentation and uninterruptible power systems, and the 120 Vac reactor protection system (RPS) power system.

An automatic fast transfer system is provided to transfer the 4160 V and 6900 V non-Class 1E buses from the normal auxiliary transformer to the startup transformer if the main generator source is lost. This 230 kilo V (kV) source has sufficient capacity to carry both the plant normal auxiliary loads and the plant ESF loads. If power is not available from the main generator source and the 230 kV source, Class 1E buses SM-7 and SM-8 will be automatically transferred to the 115 kV system source. This 115 kV source has sufficient capacity to carry the Division 1 and 2 ESF loads only; therefore, the tie breakers between the 4160 V Class 1E and non-Class 1E buses are automatically opened prior to the backup source breakers closing.

The standby AC power system provides an onsite power source for all ESF loads when the normal, preferred (startup), and backup offsite power supplies are not available. The Division 1 and 2 standby AC power sources consist of two independent 4160 V Class 1E DGs, each connected to one of the two 4160 V Class 1E switchgear buses via two main circuit breakers. The Division 3 standby AC power source, which is supplied for the HPCS system and support auxiliaries, consists of one independent 4160 V Class 1E DG connected to its own 4160 V Class 1E switchgear bus via a main circuit breaker located in the switchgear. It does not have as high a capacity as the Division 1 and 2 DGs; however, it is capable of providing power to critical Division 1 or 2 components required to maintain safe shutdown.

The onsite standby power source for each 4160 V ESF bus is a dedicated DG. A DG starts automatically on a loss-of-coolant accident (LOCA) signal or on an ESF bus degraded voltage or undervoltage signal. After the DG has started, it automatically ties to its respective ESF bus after offsite power is tripped as a consequence of emergency bus undervoltage or degraded voltage, independent of or coincident with a LOCA signal. The DGs also start and operate in the standby mode without tying to the ESF bus on a LOCA signal alone.

The CGS AC electrical distribution system is further described in the CGS Final Safety Analysis Report (FSAR), Chapter 8, Section 8.2, "Offsite Power System," and Section 8.3, "Onsite Power System."

3.2 Description of the CGS Direct Current (DC) Electrical Power System

The CGS DC electrical power system provides the AC emergency power system with control power. It also provides both motive and control power to selected safety-related equipment. The 125 Vdc (Volts direct current) electrical power system consists of three independent Class 1E DC electrical power subsystems, Divisions 1, 2, and 3. The 250 Vdc electrical power system consists of one Class 1E DC electrical power subsystem, Division 1. Each subsystem consists of a battery, associated battery charger, and all the associated control equipment and interconnecting cabling. The Division 1 and 2 125 Vdc subsystems each also have an additional full-capacity 125 Vdc battery charger. 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.

The CGS DC electrical distribution system is further described in the CGS Final Safety Analysis Report (FSAR), Chapter 8, Section 8.3, "Onsite Power System."

3.3 Evaluation of Proposed Changes

In its letter dated May 31, 2005, the licensee proposed a license amendment to the TSs for CGS, using TSTF-283, TSTF-360, TSTF-451, and NUREG-1434, Revision 3, "Standard Technical Specifications General Electric Plants, BWR [Boiling-Water Reactor]/6 Specifications." The proposed changes would revise TS Section 3.8.1, "AC Sources - Operating," TS Section 3.8.4, "DC Sources - Operating," TS Section 3.8.5, "DC Sources - Shutdown," TS Section 3.8.6, "Battery Cell Parameters," and TS Section 5.5, "Programs and Manuals."

The staff reviewed and evaluated each of the proposed changes to the CGS TSs as follows:

3.3.1 TS 3.8.1 (AC Sources - Operating) Changes

The licensee proposes the following changes to TS 3.8.1:

- (1) Surveillance Requirement (SR) 3.8.1.8 currently contains a Note which states:

The automatic transfer function of this Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.

The licensee proposes to replace the existing Note in SR 3.8.1.8 with the following:

The automatic transfer function of this Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.

- (2) SR 3.8.1.9 currently contains Note 2, which states:

If performed with the DG synchronized with offsite power, it shall be performed at a power factor as close to the power factor of the single largest post-accident load as practicable.

The licensee proposes to replace existing Note 2 in SR 3.8.1.9 with the following:

If performed with the DG synchronized with offsite power, it shall be performed at a power factor as close to the power factor of the single largest post-accident load as practicable. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable.

- (3) SR 3.8.1.10 currently contains Note 2, which states:

If performed with the DG synchronized with offsite power, it shall be performed at the accident load power factor, or at a power factor as close to the accident load power factor as practicable with the field excitation current > 90% of the continuous rating.

The licensee proposes to replace existing Note 2 in SR 3.8.1.10 with the following:

If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9 for DG-1 and DG-2 and ≤ 0.91 for DG-3. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable.

- (4) SR 3.8.1.11 currently contains Note 2 which states:

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 licensee proposes to replace existing Note 2 in SR 3.8.1.11 with the following:

This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.

- (5) SR 3.8.1.12 currently contains Note 2, which states:

This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.

The licensee proposes to replace existing Note 2 in SR 3.8.1.12 with the following:

This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.

- (6) SR 3.8.1.14 currently contains Note 3 which states:

If performed with the DG synchronized with offsite power, it shall be performed at the accident load power factor, or at a power factor as close to the accident load power factor as practicable with the field excitation current > 90% of the continuous rating.

The licensee proposes to replace existing Note 3 in SR 3.8.1.14 with the following:

If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9 for DG-1 and DG-2 and ≤ 0.91 for DG-3. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable.

- (7) SR 3.8.1.16 currently contains the following 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.

The licensee proposes to replace the existing Note in SR 3.8.1.16 with the following:

This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.

(8) SR 3.8.1.18 currently contains the following 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.

The licensee proposes to replace the existing Note in SR 3.8.1.18 with the following:

This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.

(9) SR 3.8.1.19 currently contains Note 2, which states:

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 licensee proposes to replace existing Note 2 in SR 3.8.1.19, with the following:

This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.

Evaluation of TS 3.8.1 Changes

The licensee proposes modifying the aforementioned SRs to allow more flexibility for DG testing, when required to reestablish OPERABILITY following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and for other unanticipated DG OPERABILITY concerns during plant operation. Specifically, the licensee stated that the aforementioned changes to SRs 3.8.1.8, 3.8.1.11, 3.8.1.12, 3.8.1.16, 3.8.1.18, and 3.8.1.19 could help avoid a plant shutdown if corrective maintenance (planned or unplanned) performed during power operation results in the need to perform any of the above surveillances to demonstrate OPERABILITY. Furthermore, the proposed allowance to perform the aforementioned SRs during power operation would be contingent upon the licensee performing a safety assessment prior to conducting the surveillances. In its March 22, 2007, letter, the licensee stated that the assessment would consider the potential outcomes and transients associated with a failed surveillance, a successful partial surveillance, and a perturbation of the offsite or on-site system when they are tied together or operated independently, as well as the operator procedures available to cope with potential outcomes. The licensee stated that it would measure the potential outcomes against the avoided risk of a plant shutdown and startup

using risk insights or deterministic methods. Furthermore, the licensee stated that the assessment would also consider safety systems or components rendered inoperable during the testing and the potential to cause perturbations to the electrical distribution systems that could challenge steady state operation and, as a result, challenge plant safety systems. If the assessment could not demonstrate that plant safety is maintained or enhanced (i.e., that the proposed testing will not cause electrical perturbations that would challenge continued steady state operation or challenge plant safety systems), the licensee stated that it would not invoke the note and the surveillance testing would not be performed. Based on the information provided by the licensee, the NRC staff concludes that there is reasonable assurance that safe plant conditions will continue to be maintained. Therefore, the proposed changes to SRs 3.8.1.8, 3.8.1.11, 3.8.1.12, 3.8.1.16, 3.8.1.18, and 3.8.1.19 are acceptable.

The licensee also proposed modifying Note 2 in SRs 3.8.1.9 and 3.8.1.10, and Note 3 in SR 3.8.1.14, to allow the surveillance to be conducted at a power factor other than ≤ 0.9 for the Division 1 and 2 DGs, or ≤ 0.91 for the Division 3 DG under certain conditions. These conditions could occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ 0.9 for the Division 1 and 2 DGs, or ≤ 0.91 for the Division 3 DG, results in excitation levels that are in excess of those recommended by the DG manufacturer. In such cases, the power factor shall be maintained as close as practicable to ≤ 0.9 for the Division 1 and 2 DGs, or ≤ 0.91 for the Division 3 DG, without exceeding the DG excitation limits.

Furthermore, the licensee has provided information that shows (1) its intent is to test as close to the SR value as practicable without undue reliance on the SR Notes 2 and 3 mentioned above, (2) the testing is as close to the SR power factor as practicable without exceeding the rated limit for the exciter, (3) the testing demonstrates the DGs' capability to supply design accident loads when operating isolated from the power system 100 percent of the time, and (4) in all cases, the field current is required to be greater than or equal to 90 percent of the rated limit for exciter current.

The staff concludes that the proposed changes to Note 2 in SRs 3.8.1.9 and 3.8.1.10, and to Note 3 in SR 3.8.1.14 are acceptable since the above SRs will avoid putting the DG at risk from excessive excitation during routine testing of the DGs while connected to the grid. This testing also complies with GDC 18, which requires that systems shall be designed with the capability to periodically test the operability of the system as a whole, and under conditions as close to the design as practical. In addition, the proposed changes adhere to the load-run test guidance of RG 1.9, Revision 3, that testing (1) should demonstrate 90 to 100 percent of the continuous rating of the DG, and (2) may be accomplished by synchronizing the generator with offsite power.

Based on the information provided by the licensee, the NRC staff concludes that there is reasonable assurance that safe plant conditions will continue to be maintained. Therefore, the proposed changes to SRs 3.8.1.9, 3.8.1.10, and 3.8.1.14 are acceptable.

3.3.2 TS 3.8.4 (DC Sources - Operating) Changes

3.3.2.1 TS 3.8.4 Change (1)

The licensee proposed the following change to Condition A. The existing Condition A, with its associated Required Actions and Completion Times (CTs), addresses an inoperable Division 1 or 2 125 Vdc electrical power subsystem. It will be redesignated and replaced with a new Condition A as follows:

New Condition A, with associated Required Actions and CTs, addresses a situation with one required Division 1 or 2 125 Vdc battery charger inoperable.

New Required Action A.1 would require restoring battery terminal voltage to greater than or equal to the minimum established float voltage within 2 hours.

New Required Action A.2 would require verification that battery float current is less than or equal to 2 amps once per 12 hours.

New Required Action A.3 would require restoring the required battery charger to OPERABLE status within 72 hours.

Existing TS 3.8.4 Conditions A, B, C, and D will be re-designated to reflect the addition of new Conditions A, B, C, D, E, and F.

Evaluation of TS 3.8.4 Change (1)

The proposed change to TS 3.8.4 addresses the condition where one required Division 1 or 2 125 Vdc battery charger is inoperable. The licensee proposes to increase the battery charger CT from 2 hours to 72 hours, provided that it is able to restore battery terminal voltage to greater than or equal to the minimum established float voltage within 2 hours, and is able to verify that battery float current is less than or equal to 2 amps once per 12 hours.

The battery charger, in addition to maintaining battery operability, provides DC control power to AC circuit breakers and thus supports the recovery of AC power following events such as loss of offsite power or station blackout. New Required Action A.1 would provide assurance that a battery discharge is terminated, by requiring that the battery terminal voltage be restored to greater than or equal to the minimum established float voltage (126 Vdc for the Division 1, 2, and 3 125 Vdc systems, and 252 Vdc for the 250 Vdc systems) in 2 hours. This time period provides an allowance for returning an inoperable charger to operable status or for reestablishing an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage.

New Required Action A.1 provides assurance that the battery will be restored to its fully charged condition from any discharge that might have occurred due to the battery charger being inoperable. At the end of the 2 hours, a terminal voltage of at least the minimum established float voltage provides an indication that the battery is on the exponential charging current portion of its recharging cycle.

New Required Action A.2 would require that once per 12 hours, the battery float current be verified to be less than or equal to 2 amps. This provides an indication that, if the battery has been discharged as the result of an inoperable battery charger, it has now been fully charged. If at the expiration of the 12-hour period, the battery float current is not less than or equal to 2 amps, there may be additional problems and the battery must be declared inoperable (see staff evaluation of Section 3.3.4.2 for a more detailed discussion on the 2-amp float current value). This verification provides assurance that the battery has sufficient capacity to perform its safety function.

Given that (1) the DC bus remains energized, (2) the battery discharge is terminated based on restoration of the battery terminal voltage (New Required Action A.1), and (3) the battery is fully recharged based upon battery float current (New Required Action A.2), the licensee has established a reasonable basis for extending the restoration time for an inoperable battery charger beyond the existing 2-hour limit to 72 hours (New Required Action A.3). The NRC staff's approval of the extended CT for the CGS battery chargers is based on the availability of a spare battery charger that is appropriately sized and the alignment of the battery charger CT with the 72-hour TS CT for the CGS emergency DGs.

In its February 13, 2007, supplemental letter, the licensee stated that the CGS TS Bases will be revised to state that the alternate means being credited for the extended battery charger CT would be a charger of sufficient capacity such that it is fully capable of restoring the battery voltage to the minimum acceptable limits, carrying respective DC bus loads, and maintaining the battery in a fully charged condition. The NRC staff has no objection to the proposed change to the TS Bases.

Redesignating existing TS 3.8.4 Conditions A, B, C, and D as Conditions G, H, I, and J, respectively, to reflect the addition of new Conditions A, B, C, D, E, and F is administrative in nature and, therefore, is acceptable.

Based on the above, the NRC staff concludes that there is reasonable assurance that safe plant conditions will continue to be maintained; therefore, the proposed change is acceptable.

3.3.2.2 TS 3.8.4 Change (2)

The licensee proposed the following change to Condition B. The existing Condition B, with its associated Required Actions and CTs, addresses an inoperable Division 3 DC electrical power subsystem. It will be redesignated and replaced with a new Condition B as follows:

New Condition B, with associated Required Actions and CTs, addresses a situation with one required Division 3 125 Vdc battery charger inoperable.

New Required Action B.1 would require restoring battery terminal voltage to greater than or equal to the minimum established float voltage within 2 hours.

New Required Action B.2 would require verification that battery float current is less than or equal to 2 amps once per 12 hours.

New Required Action B.3 would require restoring the battery charger to OPERABLE status within 72 hours.

Evaluation of TS 3.8.4 Change (2)

The proposed change to TS 3.8.4 addresses the condition where one required Division 3 125 Vdc battery charger is inoperable. The licensee proposes to increase the battery charger CT from 2 hours to 72 hours, provided that it is able to restore battery terminal voltage to greater than or equal to the minimum established float voltage within 2 hours, and is able to verify that battery float current is less than or equal to 2 amps once per 12 hours.

The licensee's proposed change to Condition B for Division 3 is similar to the above proposed change to Condition A for Divisions 1 and 2. Based on its evaluation of the proposed change to Condition A above, the NRC staff concludes that there is reasonable assurance that safe plant conditions will continue to be maintained; therefore, the proposed change to Condition B of TS 3.8.4 is acceptable.

3.3.2.3 TS 3.8.4 Change (3)

The licensee proposed the following change to Condition C. The existing Condition C, with its associated Required Actions and CTs, addresses an inoperable Division 1 250 Vdc electrical power subsystem. It will be redesignated and replaced with a new Condition C as follows:

New Condition C, with its associated Required Actions and CTs, addresses a situation with one required Division 1 250 Vdc battery charger inoperable.

New Required Action C.1 would require restoring battery terminal voltage to greater than or equal to the minimum established float voltage within 2 hours.

New Required Action C.2 would require verification that battery float current is less than or equal to 2 amps once per 12 hours.

New Required Action C.3 would require restoring the battery charger to OPERABLE status within 72 hours.

Evaluation of TS 3.8.4 Change (3)

The proposed change to Condition C of TS 3.8.4 addresses the condition where one required Division 1 250 Vdc battery charger is inoperable. The licensee proposed increasing the battery charger CT from 2 hours to 72 hours provided that they are able to restore battery terminal voltage to greater than or equal to the minimum established float voltage within 2 hours, and are able to verify that battery float current is less than or equal to 2 amps once per 12 hours.

The licensee's proposed change to Condition C is similar to the above proposed change to Condition A for Divisions 1 and 2. Based on its evaluation of the proposed change to Condition A above, the NRC staff concludes that there is reasonable assurance that safe plant conditions will continue to be maintained; therefore, the proposed change to Condition C of TS 3.8.4 is acceptable.

3.3.2.4 TS 3.8.4 Change (4)

The licensee proposed the following new Conditions D, E, and F, with associated Required Actions and CTs:

New Condition D, associated Required Actions and CTs for one required Division 1 or 2 125 Vdc battery inoperable.

New Required Action D.1 would require restoring battery to OPERABLE status within 2 hours.

New Condition E, associated Required Actions and CTs for one required Division 3 125 Vdc battery inoperable.

New Required Action E.1 would require restoring battery to OPERABLE status within 2 hours.

New Condition F, associated Required Actions and CTs for one required Division 1 250 Vdc battery inoperable.

New Required Action F.1 would require restoring battery to OPERABLE status within 2 hours.

Evaluation of TS 3.8.4 Change (4)

The licensee proposed adding new Conditions D, E, and F, with associated Required Actions and CTs, to address an inoperable battery separately from an inoperable battery charger. The new Conditions address the situation in which one required battery becomes inoperable. The current 2-hour CT will remain for an inoperable battery. The addition of the new Conditions will allow a 2-hour CT to restore battery operability prior to declaring supported systems inoperable or initiating a plant shutdown.

The new Conditions simply specify more discrete equipment than the current Conditions and do not change any existing requirements. Since no existing requirements are changed, the NRC staff concludes that there is reasonable assurance that safe plant conditions will continue to be maintained; therefore, the proposed addition of new Conditions D, E, and F is acceptable.

3.3.2.5 TS 3.8.4 Change (5)

The licensee proposes to relocate the following preventive maintenance SRs to licensee-controlled programs:

Delete SRs 3.8.4.2, 3.8.4.3, 3.8.4.4, and 3.8.4.5 from the CGS TSs and relocate these surveillances to a licensee-controlled program. These SRs are also listed in SR 3.8.5.1 and will be deleted from SR 3.8.5.1. This change requires redesignating SR 3.8.4.6 as SR 3.8.4.2, and SR 3.8.4.7 as SR 3.8.4.3.

The licensee proposes to delete the Note in current SR 3.8.4.6 (redesignated as SR 3.8.4.2), which states:

This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR.

Evaluation of TS 3.8.4 Change (5)

In accordance with SR 3.0.1, when any SR is not met, the limiting condition for operation (LCO) is not met. This is because the SRs represent the minimum acceptable requirements for operability of the required equipment. However, for SR 3.8.4.2, SR 3.8.4.3, SR 3.8.4.4, and SR 3.8.4.5, failure to meet the SR does not necessarily mean that the equipment is not capable of performing its safety function. Furthermore, the corrective action is generally a routine or preventive maintenance-type activity. These activities are inappropriate for SRs and can be controlled in the maintenance programs for batteries.

With regard to the resistance verifications of SR 3.8.4.2 and SR 3.8.4.5, the values are nominal values and represent limits at which some corrective action should be taken, but do not necessarily represent limits meaning that the operability of the battery is in question.

The licensee's safety analyses do not assume a specific battery resistance value, but typically assume the batteries will supply adequate power. Therefore, the key issue is the overall battery resistance. Between the performance of SRs, the resistance of each battery cell connection varies independently from all the others. Some of these connection resistance values may be higher or lower than others, and the battery may still be able to perform its function and should not be considered inoperable. Overall resistance has a direct impact on operability and is adequately determined as acceptable through completion of the battery service and discharge tests. Therefore, these activities are more appropriately controlled under the maintenance program for batteries. Specifically, these surveillances will be addressed by the new Battery Monitoring and Maintenance Program described in proposed TS Section 5.5.13.

Based on the above, the NRC staff concludes that SRs 3.8.4.2, 3.8.4.3, 3.8.4.4, and 3.8.4.5 do not meet the criteria of 10 CFR 50.36(c)(2)(ii) or (c)(3) for inclusion in the TSs and may be relocated to a licensee-controlled program. Proposed changes to the program will be subject to evaluation under 10 CFR 50.59, "Changes, tests, and experiments," to whether the proposed changes require prior NRC review and approval, as discussed below in Section 3.3.4.4. The staff also concludes that there is reasonable assurance that safe plant conditions will continue to be maintained. Therefore, SRs 3.8.4.2, 3.8.4.3, 3.8.4.4, and 3.8.4.5 may be relocated from the TSs to a licensee-controlled program.

Redesignating existing SRs 3.8.4.6 and 3.8.4.7 to reflect the relocation of the aforementioned SRs is administrative in nature and, therefore, is acceptable.

The licensee also proposed deleting the Note in existing 3.8.4.6. Deleting this Note would remove the Mode restrictions for performing the SR. CGS Division 1 and 2 125 Vdc systems feature installed redundant battery chargers. The licensee stated that this design feature allows the battery charger load testing of SR 3.8.4.6 to be performed with the charger isolated without affecting the ability of the Division 1 and 2 125 Vdc systems to perform their design safety

function. For the Division 3 (high-pressure core spray (HPCS)) 125 Vdc and the Division 1 250 Vdc battery chargers, the CGS TSs currently allow systems supported by these DC sources to be removed from service during MODES 1, 2, or 3 for periods of time sufficient to conduct battery charger load testing. Based on this information, the NRC staff finds that there is reasonable assurance that safe plant conditions will continue to be maintained; therefore, the proposed change to delete the Note is acceptable.

3.3.2.6 TS 3.8.4 Change (6)

The licensee proposed the following changes to Notes in SRs 3.8.4.7 and 3.8.4.8:

The current Note 1 in SR 3.8.4.7 states:

The modified performance discharge test in SR 3.8.4.8 may be performed in lieu of the service test in SR 3.8.4.7 once per 60 months.

The licensee proposes to revise current Note 1 in SR SR 3.8.4.7 (redesignated as SR 3.8.4.3) with the following:

The modified performance discharge test in SR 3.8.6.6 may be performed in lieu of SR 3.8.4.3.

The current Note 2 in SR 3.8.4.7 states:

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 licensee proposes to replace current Note 2 in SR 3.8.4.7 (redesignated as SR 3.8.4.3) with the following:

This Surveillance shall not be performed in MODE 1, 2, or 3 for the Division 1 and 2 125 VDC batteries. However, credit may be taken for unplanned events that satisfy this SR.

The current Note in SR 3.8.4.8 states:

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 licensee proposes to replace the current Note in SR 3.8.4.8 (redesignated as SR 3.8.6.6) with the following:

This Surveillance shall not be performed in MODE 1, 2, or 3 for the Division 1 and 2 125 VDC batteries. However, credit may be taken for unplanned events that satisfy this SR.

Evaluation of TS 3.8.4 Change (6)

The licensee proposed modifying the existing Notes in SRs 3.8.4.7 and 3.8.4.8. The licensee's proposed change would remove the words "the service test in" and "once per 60 months," from the first Note of newly renamed SR 3.8.4.3. The NRC staff finds that the proposed change will not impact the intent of the SR and, therefore, is acceptable.

The licensee also proposes revising Note 2 in SR 3.8.4.7 and the Note in SR 3.8.4.8 to clarify when the SR may be performed. The purpose of the new Note is to limit the restrictions, based on MODE, for performing the surveillance to reestablish OPERABILITY. Specifically, the licensee proposed limiting the MODE restrictions to the Division 1 and 2 125 Vdc batteries.

The Division 3 125 Vdc battery supports operability of the HPCS system. The CGS TSs allow Division 3 (HPCS) to be inoperable for up to 14 days with the plant in MODES 1, 2, or 3. Therefore, deleting Division 3 from the Note would remove unnecessary mode restrictions for the Division 3 battery SRs. Similarly, with the Division 1 250 Vdc battery inoperable, the CGS TSs requires the licensee to declare supported systems (e.g., reactor core isolation cooling (RCIC), certain primary containment isolation valves (PCIVs), etc.) to be inoperable. The CGS TSs allow RCIC to be inoperable for up to 14 days and allow continued plant operation in MODES 1, 2, and 3 while certain PCIVs are inoperable. Therefore, deleting the Note would remove unnecessary MODE restrictions for the 250 Vdc battery SRs.

Based on the above, the NRC staff concludes that there is reasonable assurance that safe plant conditions will continue to be maintained; therefore, the proposed changes are acceptable.

3.3.2.7 TS 3.8.4 Change (7)

The licensee proposes redesignating SR 3.8.4.7 to SR 3.8.4.3, and SR 3.8.4.6 to SR 3.8.4.2 due to the deletion of existing SRs 3.8.4.2, 3.8.4.3, 3.8.4.4, and 3.8.4.5.

Evaluation of Proposed TS 3.8.4 Change (7)

Redesignating SR 3.8.4.7 to SR 3.8.4.3, and SR 3.8.4.6 to SR 3.8.4.2 is administrative in nature and, therefore, is acceptable.

3.3.3 TS 3.8.5 (DC Sources - Shutdown) Changes

3.3.3.1 TS 3.8.5 Change (1)

The licensee proposes the following:

Replace existing TS 3.8.5 Condition A with a new Condition A, with specific Required Actions and associated CTs, to address the situation of one required battery charger on one division inoperable with the redundant required division battery and battery charger operable.

Redesignating the current TS 3.8.5 Condition A as Condition B, and revising it to address the situation in which the Required Actions and associated CTs of new Condition A are not met, or for reasons other than those in Condition A.

Evaluation of TS 3.8.5 Change (1)

The licensee proposes replacing existing TS 3.8.5 Condition A with a new Condition A that specifies Required Actions and associated CTs for one required battery charger on one division inoperable with the redundant required division battery and battery charger operable. The basis for this change to TS 3.8.5 (DC Sources - Shutdown) is similar to that which was provided for TS 3.8.4 (DC Sources - Operating) above. The changes provide a tiered response that focuses on returning the equipment to operable status within a reasonable time. Based on its evaluation of TS 3.8.4 Change (1) above, the NRC staff concludes that there is reasonable assurance that safe plant conditions will continue to be maintained; therefore, the proposed change to Condition A of TS 3.8.5 is acceptable.

The licensee also proposed revising TS 3.8.5 Condition B to address the situation in which the Required Actions and associated CTs of revised Condition A are not met, or for reasons other than those in Condition A. The staff finds that this change is conservative in nature and, therefore, is acceptable.

3.3.3.2 TS 3.8.5 Change (2)

The licensee proposes to revise SR 3.8.5.1 to reflect the deletions and redesignation of SRs in TS 3.8.4.

Evaluation of TS 3.8.5 Change (2)

The NRC staff finds that the proposed changes to SR 3.8.5.1 are administrative in nature, do not change substantive requirements, and therefore, are acceptable.

3.3.4 TS 3.8.6 (Battery Cell Parameters) Changes

3.3.4.1 TS 3.8.6 Change (1)

The licensee proposed the following:

Relocate SR 3.8.4.8 to TS 3.8.6 and redesignate it SR 3.8.6.6.

Evaluation of TS 3.8.6 Change (1)

The NRC staff finds that relocating SR 3.8.4.8 to TS 3.8.6 is appropriate, since the SR demonstrates the operability of the battery. Redesignating it as SR 3.8.6.6 is administrative in nature and is acceptable.

3.3.4.2 TS 3.8.6 Change (2)

The licensee proposes the following:

Delete the word “cell” from TS Section 3.8.6, and revise the LCO statement to delete reference to the specific limits of TS Table 3.8.6-1. With regard to the specific limits of TS Table 3.8.6-1, the following limits are relocated to the Battery Monitoring and Maintenance Program specified in new TS Section 5.5.13:

- Category A and B limits for cell voltage and electrolyte level.
- Category C specific value limit for electrolyte level.

Also, the verification requirements for battery cell specific gravity monitoring will be replaced with float current monitoring requirements.

The proposed changes result in the deletion of TS Table 3.8.6-1 and the relocation of its requirements to other parts of the TSs or to the licensee-controlled Battery Monitoring and Maintenance Program specified in new TS Section 5.5.13.

Evaluation of TS 3.8.6 Change (2)

The NRC staff considers deleting the word “cell” from TS Section 3.8.6 to be an editorial change, and therefore, is acceptable. Regarding TS Table 3.8.6-1, the table specifies the battery cell parameter requirements, including electrolyte level, float voltage, and specific gravity. Since the licensee proposed to delete TS Table 3.8.6-1, deleting references to TS Table 3.8.6-1 are administrative changes and do not change substantive requirements. Therefore, the staff finds that these changes are acceptable.

The Category A and B values of TS Table 3.8.6-1 represent appropriate monitoring levels and appropriate preventive maintenance levels for long-term battery quality and extended battery life. Paragraph 50.36(c)(2)(i) of 10 CFR states, in part “[LCOs] are the lowest functional capability or performance levels of equipment required for safe operation of the facility.” As such, the Category A and B values for cell voltage and electrolyte level do not reflect the 10 CFR 50.36 criteria for LCOs. The licensee proposes to relocate these parameters and the Required Actions associated with restoration to a licensee-controlled program. In its January 5, 2007, supplemental letter, the licensee provided a regulatory commitment to relocate portions of the TSs that are being revised to its proposed Battery Monitoring and Maintenance Program. In its February 13, 2007, supplemental letter, the licensee clarified this regulatory commitment by identifying that the following battery parameters will be relocated to the Battery Monitoring and Maintenance Program: specific gravity, electrolyte level, cell temperature, float voltage, connection resistance, and physical condition. Based on its review of the information provided by the licensee, the NRC staff has reasonable assurance that the battery parameter values will continue to be controlled at their current level, and that actions to restore deficient values will be implemented in accordance with the licensee’s corrective action program. Furthermore, the battery and its preventive maintenance and monitoring program are under the regulatory requirements of 10 CFR 50.65, “Requirements for monitoring the effectiveness of maintenance at nuclear power plants.” This relocation will continue to assure that the battery is maintained at

current levels of performance, and that operators appropriately focus on monitoring the battery parameters for degradation.

The licensee also proposes to relocate the Category C specific limiting values of TS Table 3.8.6-1 for the battery electrolyte levels to a licensee-controlled program. However, new TS 3.8.6, Conditions C and D, will require the electrolyte temperature (pilot cell only) and level (any battery cell) to be greater than or equal to minimum established design limits. The licensee proposed to relocate the electrolyte temperature and level criteria (i.e., the minimum established design limits) to the CGS TS Bases. Depending on the available excess capacity of the associated battery, the minimum temperature necessary to support operability of the battery can vary. Relocating these values to a licensee-controlled program will provide the licensee with added flexibility to monitor and control this limit at values directly related to the battery's ability to perform its assumed function. The NRC staff concludes that the Category C specific limiting values for TS Table 3.8.6-1 for the battery electrolyte levels do not meet the criteria of 10 CFR 50.36(c)(2)(ii) for inclusion in the TSs and may be relocated to a licensee-controlled program. Proposed changes to the program will be subject to evaluation under 10 CFR 50.59, "Changes, tests, and experiments," to whether the proposed changes require prior NRC review and approval, as discussed below in Section 3.3.4.4. Therefore, the staff finds that these changes are acceptable.

The licensee proposes to replace the requirements to measure battery cell specific gravity with requirements to monitor float current. In its February 13, 2007, supplemental letter, the licensee provided letters from its battery manufacturers (C&D Technologies, Inc., and EnerSys), which concurred with the use of float current monitoring for the purpose of determining the state of charge of the CGS batteries. More specifically, C&D Technologies stated that a float current value of less than 2 amps is both a reliable and an accurate parameter to use to ascertain a state of full charge in lieu of specific gravity readings for the CGS batteries. Recognizing that the 2-amp float current value is an indication that the battery is 99 percent charged for the CGS Division 1 and 2 125 Vdc and Division 1 250 Vdc batteries and 95 percent charged for the CGS Division 3 125 Vdc battery, the licensee provided a regulatory commitment to maintain a 1 percent design margin for the Division 1 and 2 125 Vdc and Division 1 250 Vdc batteries and a 5 percent design margin for the Division 3 125 Vdc battery.

Furthermore, in its January 5, 2007, supplemental letter, the licensee provided a regulatory commitment to ensure that the capability of the monitoring equipment that will be used to monitor float current is within 10 percent of the float current reading. The licensee committed to locate this criteria in the Battery Monitoring and Maintenance Program (prescribed in TS Section 5.5.13). The licensee stated that the basis for the 10 percent margin is that a reading error of this magnitude is within the margin specified in the CGS calculation that supports the 2-amp float current value mentioned above. The licensee further stated that the expected variations in float current measurement are bounded by the station design analysis. Based on its review of the information provided by the licensee, the NRC staff has reasonable assurance that the equipment for monitoring battery float current will have the necessary accuracy and capability to measure electrical currents in the expected range.

The staff finds that the concurrence of the battery manufacturer coupled with the licensee's statement concerning the accuracy and capability of the float monitoring equipment provides

reasonable assurance that the deletion of the requirement to monitor specific gravity will not have a significant impact on safety or the ability to accurately determine the operability of the CGS batteries.

The proposed changes discussed above ensure the battery parameters (maintenance, testing, and monitoring) are performed in accordance with the Battery Monitoring and Maintenance Program, as specified in TS Section 5.5.13. The NRC staff concludes that there is reasonable assurance that safe plant conditions will continue to be maintained; therefore, the proposed changes are acceptable.

3.3.4.3 TS 3.8.6 Change (3)

The licensee proposes to replace the current two Conditions in TS 3.8.6 with six new Conditions. These new Conditions, with their associated Required Actions, provide compensatory actions for specific abnormal battery conditions, as follows:

Condition A addresses the situation in which one or more batteries have one or more battery cells with a float voltage less than 2.07 V.

Condition B addresses the situation in which one or more batteries are found with a float current greater than 2 amps.

Condition C addresses the situation in which one or more batteries have one or more battery cells with electrolyte level less than the minimum established design limits.

Condition D addresses the situation in which one or more batteries are found with pilot cell electrolyte temperature less than minimum established design limits.

Condition E addresses the situation in which two or more batteries in redundant divisions are found with battery parameters not within limits.

Condition F addresses the situation in which one or more batteries with a required battery parameter not met for reasons other than Condition A, B, C, D, or E, OR Required Action and associated Completion Time of Condition A, B, C, D, or E not met, OR one or more cells with float voltage less than 2.07 V and float current greater than 2 amps.

The licensee also proposes to replace the current three SRs in TS 3.8.6 with the following five SRs:

SR 3.8.6.1 requires verification that float current for each battery is less than or equal to 2 amps every 7 days.

SR 3.8.6.2 requires verification that each battery pilot cell voltage is greater than or equal to 2.07 V every 31 days.

SR 3.8.6.3 requires verification that each battery connected cell electrolyte level is greater than or equal to minimum established design limits every 31 days.

SR 3.8.6.4 requires verification that each battery pilot cell temperature is greater than or equal to minimum established design limits every 31 days.

SR 3.8.6.5 requires verification that each battery connected cell voltage is greater than or equal to 2.07 V every 92 days.

The above five SRs are in addition to the new SR 3.8.6.6 (previously designated SR 3.8.4.8), discussed above in section 3.3.4.1.

Evaluation of TS 3.8.6 Change (3)

The licensee proposed adding new TS 3.8.6, Condition A to address what was formerly the Category C limit for float voltage in TS Table 3.8.6-1. This new Condition would be applicable when one or more batteries is found with one or more battery cells with a float voltage less than 2.07 V. Once Condition A has been entered, the battery cell is considered degraded and the Required Actions are to verify: (a) the battery terminal voltage to be greater than or equal to the minimum established float voltage (SR 3.8.4.1), and (b) each battery's float current is less than or equal to 2 amps (SR 3.8.6.1). The above actions assure that there is still sufficient capacity for the battery to perform its intended function without considering it to be inoperable. Continued operations for up to 24 hours are proposed to allow the restoration of the affected cell(s) voltage to greater than or equal to 2.07 V. The NRC staff considers that the 24-hour restoration time is reasonable, that it maintains safe plant conditions and, therefore, is acceptable.

The licensee proposed adding new TS 3.8.6, Condition B to address battery state of charge. This new Condition would be applicable when one or more batteries are found with a float current greater than 2 amps. A float current of greater than 2 amps provides an indication that a partial discharge has occurred. The Required Action is to verify within 2 hours that the battery terminal voltage is greater than or equal to the minimum established float voltage (SR 3.8.4.1), thus confirming battery charger operability. If the terminal voltage is satisfactory and there are no battery cells with a voltage less than 2.07 V, Required Action B.2 of Condition B assures that within 12 hours the battery will be restored to its fully-charged condition from any discharge that might have occurred due to a temporary loss of the battery charger.

If the terminal voltage is found to be less than the minimum established float voltage, it indicates that the battery charger is either inoperable or is operating in the current limit mode. If the battery charger is operating in the current limit mode for 2 hours, it is an indication that the battery has been substantially discharged and likely cannot perform its required design functions.

If the float voltage is found to be satisfactory, but there are one or more battery cells with a float voltage less than 2.07 V, the associated "OR" statement in the revised Condition F of TS 3.8.6 would be applicable, and the battery must immediately be declared inoperable. If float voltage is satisfactory and there are no cells less than 2.07 V, and the out-of-limit float current condition is due to one or more battery cells with low voltage, the battery is not substantially discharged and the 12-hour CT to restore battery float current to within limits is reasonable. The NRC staff concludes that adding new TS 3.8.6, Condition B is reasonable, maintains safe plant conditions and, therefore, is acceptable.

The licensee proposes to add new TS 3.8.6, Condition C to address the electrolyte level in a cell. This new Condition would be applicable when one or more batteries are found with one or more cells with an electrolyte level less than the minimum established design limits. If the level is above the top of the battery plates, but below the minimum limit (i.e., minimum level indication mark on the battery cell jar), the battery still has sufficient capacity to perform its intended safety function and it is considered operable. With the electrolyte level below the top of the plates, there is a potential for dry-out and plate degradation. New Required Actions C.1 and C.2 (as well as provisions in new TS 5.5.13) restore the electrolyte level, ensure that the cause of the loss of the electrolyte level is not due to a leak in the battery cell jar, and equalize and test the battery cells that have been discovered with an electrolyte level below the top of the plates. The NRC staff concludes that these changes are adequate to ensure that minimum electrolyte levels are maintained and, therefore, are acceptable.

The licensee proposes to add new TS 3.8.6, Condition D which applies to a battery found with a pilot cell electrolyte temperature less than the minimum established design limit. This new Condition would be applicable when one or more batteries have a pilot cell electrolyte temperature less than minimum established design limits. A low electrolyte temperature limits the current and power available from the battery.

In a letter dated April 3, 2006, the staff requested the licensee to provide assurance that a battery with a battery pilot cell electrolyte temperature slightly greater than or equal to the minimum established design limit will remain capable of performing its minimum design function. In its January 5, 2007, response, the licensee stated that the design temperature for the CGS battery cells is 60 degrees Fahrenheit (°F). The licensee further stated that the CGS battery rooms are maintained at a temperature above 74 °F. The licensee verifies that the CGS battery rooms are above this level once per shift. Furthermore, the licensee stated that historical data has shown that cell temperatures deviate only slightly from the average (82 °F) and that minimum/maximum temperatures are well within a 5 degree Fahrenheit variance.

Based on this information, the NRC staff concludes that the pilot cell temperature is an accurate representation of the temperature of the battery bank. The 12-hour CT provides a reasonable time to restore the electrolyte temperature within established limits. The staff concludes that the proposed change is adequate to ensure that the minimum electrolyte temperature is maintained and, therefore, is acceptable.

The licensee proposes to add new TS 3.8.6, Condition E to address the condition where two or more redundant division battery parameters are not within established limits. If this condition exists, there is not sufficient assurance that the batteries will be capable of performing their intended safety function. With redundant batteries involved, loss of function is possible for multiple systems that depend upon the batteries. The licensee proposed that battery parameters for the affected battery in one division be restored to within limits within 2 hours. The NRC staff finds that the proposed change is reasonable, maintains safe plant conditions and, therefore, is acceptable.

The licensee proposes to add new TS 3.8.6, Condition F to provide a default condition for battery parameters that fall outside the allowance of the Required Actions for Condition A, B, C, D, or E. Under this condition, it is assumed that there is not sufficient capacity to supply the maximum expected load requirements. New Condition F also addresses the case where one or

more batteries is found with one or more battery cells having a float voltage less than 2.07 V and a float current greater than 2 amps. The NRC staff concludes that the proposed change is reasonable, maintains safe plant conditions and, therefore, is acceptable.

The licensee proposes to add new SR 3.8.6.1, which will require verification that the float current for each battery is less than or equal to 2 amps every 7 days. The purpose of this SR is to determine the state of charge of the battery. Float charge is the condition in which the battery charger is supplying the continuous small amount of current (i.e., less than 2 amps) required to overcome the internal losses of a battery to maintain the battery in a fully charged state. The float current requirements are based on the float current indicative of a charged battery. As stated in the evaluation of TS 3.8.6 change (2) above, the use of float current to determine the state of charge of the battery is consistent with CGS's battery manufacturer recommendations. Therefore, the NRC staff concludes that this change is reasonable, maintains safe plant conditions and, therefore, is acceptable.

The licensee proposes to add new SR 3.8.6.2 and SR 3.8.6.5, which will require verification that the float voltage of pilot cells and all connected cells are greater than or equal to 2.07 V every 31 and 92 days, respectively. This voltage level represents the point where battery operability is in question. The Battery Monitoring and Maintenance Program (in new TS Section 5.5.13) includes actions to restore battery cells with float voltage less than 2.13 V and actions to verify that the remaining cells are greater than or equal to 2.07 V, when a cell or cells have been found to be less than 2.13 V. The NRC staff concludes that these changes are reasonable, maintain safe plant conditions and, therefore, are acceptable.

The licensee proposes to add SR 3.8.6.3, which will require verification that the connected cell electrolyte level of each battery is greater than or equal to the minimum established design limits every 31 days. Operation of the batteries at electrolyte levels greater than the minimum established design limit ensures that the battery plates do not suffer physical damage and continue to maintain adequate electron transfer capability. The NRC staff concludes that this change is adequate to ensure that minimum electrolyte levels are maintained and, therefore, is acceptable.

The licensee proposes to add SR 3.8.6.4, which will require verification that the temperature of each battery pilot cell is greater than or equal to the minimum established design limits every 31 days. As mentioned previously, in its January 5, 2007, response to a request for additional information, the licensee stated that the design temperature for the CGS battery cells is 60 °F. The licensee further stated that the CGS battery rooms are maintained at a temperature above 74 °F. The licensee verifies that the CGS battery rooms are above this level once per shift. Furthermore, the licensee stated that historical data has shown that cell temperatures deviate only slightly from the average (82 °F) and that minimum/maximum temperatures are well within a 5 °F variance.

Based on this information, the NRC staff concludes that the pilot cell temperature is an accurate representation of the temperature of the battery bank. Therefore, the staff concludes that this change is adequate to ensure that the minimum electrolyte temperature is maintained and, therefore, is acceptable.

3.3.4.4 TS 3.8.6 Change (4)

The licensee proposes to create a new program, called the Battery Monitoring and Maintenance Program, in a new TS Section 5.5.13. This program will have elements relocated from the different affected TSs. The program will be specified in the TSs as follows:

5.5.13 Battery Monitoring and Maintenance Program

This Program provides for restoration and maintenance, which includes the following:

- a. Actions to restore battery cells with float voltage < 2.13 V; and
- b. Actions to equalize and test battery cells that had been discovered with electrolyte level below the top of the plates; and
- c. Actions to verify that the remaining cells are ≥ 2.07 V when a cell or cells have been found to be < 2.13 V.

Evaluation of TS 3.8.6 Change (4)

The licensee proposed adding a new program, the Battery Monitoring and Maintenance Program, to be specified in new TS Section 5.5.13. The licensee states that this program will be contained in the Licensee-Controlled Specifications, which is incorporated by reference in the CGS FSAR. Thus, proposed changes to the program will be subject to evaluation under 10 CFR 50.59, "Changes, tests, and experiments," to whether the proposed changes require prior NRC review and approval. Additionally, any changes to the program would be required to be reported to the NRC in accordance with 10 CFR 50.71(e), "Maintenance of records, making of reports."

As noted above, the licensee provided a regulatory commitment in its January 5, 2007, supplemental letter, to relocate portions of the TSs that are being revised to the proposed Battery Monitoring and Maintenance Program. In its February 13, 2007, supplemental letter, the licensee clarified this regulatory commitment by identifying that the following battery parameters will be relocated to the Battery Monitoring and Maintenance Program: specific gravity, electrolyte level, cell temperature, float voltage, connection resistance, and physical condition.

Based on its review of the information provided by the licensee, the NRC staff has reasonable assurance that the battery parameter values will continue to be controlled at their current level, and actions to restore deficient parameters will be implemented in accordance with the licensee's corrective action program. Furthermore, the battery and its preventive maintenance and monitoring program continue to be subject to the regulatory requirements of 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants."

The NRC staff concludes that this change will continue to assure the battery is maintained at current levels of performance, and appropriately focuses operators on the monitoring of battery parameter degradations and, therefore, is acceptable.

3.4 Conclusion

Based on the above evaluation, the NRC staff finds the proposed revisions to the CGS TSs provide reasonable assurance of the continued availability of the required AC and DC power to shut down the reactor and to maintain the reactor in a safe condition after an anticipated operational occurrence or a postulated design-basis accident. The staff also concludes that the proposed TS changes are in accordance with 10 CFR 50.36 and the requirements of GDCs 17 and 18. Therefore, the staff finds the proposed changes acceptable.

4.0 REGULATORY COMMITMENTS

In its application dated May 31, 2005, as supplemented by letters dated February 8, 2006, and January 5, February 13, February 22, and March 22, 2007, the licensee made the following regulatory commitments:

1. Energy Northwest will relocate SRs that perform preventive maintenance on safety-related batteries and TS Table 3.8.6-1 to a licensee-controlled program.
2. Energy Northwest will establish a licensee-controlled program to perform maintenance and monitoring of station batteries based on the recommendations of IEEE-450-2002, "Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications."
3. Portions of Technical Specifications that are being revised will be relocated to the proposed Battery Maintenance [and] Monitoring Program of proposed Technical Specification 5.5.13.
4. The specific gravity of all cells will be measured periodically at [CGS] as part of the Battery Maintenance and Monitoring Program.
5. The Battery Maintenance [and] Monitoring Program document will describe the capability of the monitoring equipment that will be used to monitor float current to be within 10% of the float current reading. The Battery Maintenance [and] Monitoring Program document will also contain a discussion regarding the significance of SG [specific gravity] measurements to support troubleshooting.
6. [CGS's] Battery [Maintenance and Monitoring] Program will describe additional actions to be taken when pilot cell voltage is measured to be < 2.13 Volts.
7. The Technical Specifications Bases for [SR] 3.8.4.1 and SRs 3.8.6.1 through 3.8.6.6 will be revised as described in the response to question 4.a in Attachment 1 [of the licensee's letter dated January 5, 2007] to contain plant-specific justifications in lieu of referencing consistency with IEEE Standard 450.
8. The TS Bases will be revised to add the following description of the "alternate means."

The alternate means will be a charger of sufficient capacity such that it is fully capable of restoring the battery voltage to the minimum acceptable limits, carrying respective DC bus loads, and maintaining the battery in a fully charged condition.

9. The Bases for [TS] LCO 3.8.6 will be revised to contain the following:

The minimum established design limit for cell temperature for the Division 1, 2, and 3 and 250 VDC system[s] is 60°F.

The minimum established design limit for electrolyte level for the Division 1, 2, and 3 and 250 VDC systems is the low level mark.

10. The Bases for [TS] LCO 3.8.4 will be revised to contain the following:

The minimum float voltage for the Division 1, 2, and 3 systems is 126 VDC. The minimum float voltage for the 250 VDC system is 252 VDC.

11. CGS commits to maintaining 1% design margin to support the use of float current monitoring for the Division 1 [and] 2 125 VDC and Division 1 250 VDC batteries.
12. CGS commits to maintaining 5% design margin to support the use of float current monitoring for the Division 3 125 VDC battery.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Washington State official was notified of the proposed issuance of the amendment. The State official had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes an inspection or surveillance requirement. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding (72 FR 8803). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

7.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: May 1, 2007