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SOUTHERN COMPANY
Energy to Serve Your World™

Docket Nos.: 50-348
50-364

NEL-99-0272

U. S. Nuclear Regulatory Commission
ATTN.: Document Control Desk
Washington, DC 20555-0001

Joseph M. Farley Nuclear Plant
Response to Requests for Additional Information – Beyond Scope Issue, Chapter 3.5
Revised Responses to Requests for Additional Information Related to Conversion to the
Improved Technical Specifications – Chapters 3.6 and 3.8

Ladies and Gentlemen:

By letters dated March 12, 1998, and April 24, 1998, Southern Nuclear Operating Company (SNC) submitted the Farley Nuclear Plant (FNP) - specific Improved Technical Specifications (ITS) conversion documentation packages in accordance with 10 CFR 50.90. By letter dated August 20, 1998, SNC submitted an electronic copy of the Discussion of Changes (DOCs) and Significant Hazards Evaluations (SHEs) associated with the ITS conversion. By letter dated November 20, 1998, SNC submitted responses to a Request for Additional Information (RAI) for Chapters 3.6 and 5.0. By letter dated February 20, 1999, SNC submitted responses to a RAI for Chapter 3.4. By letters (2) dated April 30, 1999, SNC submitted responses to RAIs for Chapters 3.1, 3.2, 3.5, 3.7, 3.8, and 3.9. By letter dated May 28, 1999, SNC submitted responses to a RAI for Chapter 3.3. By letter dated June 30, 1999, SNC submitted responses to a RAI for Chapter 4.0 and revised responses to RAIs related to Chapters 3.4, 3.5, 3.6, 3.7, and 3.9. Included with the above responses were hard copies of changes to the original submittal to correct minor editorial errors and inconsistencies within the package and to reflect the SNC responses to the RAIs.

This letter addresses the following: 1) Clarifications to selected responses to the Chapter 3.8 RAI requested in an NRC conference call on June 24, 1999. 2) Resolution of an open issue related to Containment Purge in Chapter 3.6. 3) An RAI response related to beyond scope issues for Chapter 3.5 requested by an NRC e-mail dated May 27, 1999.

During meetings held with the NRC on April 19-20, 1999, the Staff stated that it was not necessary to provide mark-ups of the Current Technical Specifications (CTS) with responses to RAIs. Therefore, the attached pages do not contain CTS mark-ups. Attachment I provides the SNC revised responses to NRC RAI questions on Chapters 3.6 and 3.8 and responses to the beyond scope issues. Attachment II includes the associated revisions to the ITS license amendment request related to these RAIs, grouped by RAI number. Attachment III provides changes made to Chapters 3.3 and 3.8 to address editorial changes and inconsistencies in the package identified after the original submittal.

A001/1

A change to one SHE was required. As denoted in 10 CFR 50.92(c), SNC has determined the proposed changes to the FNP TS do not involve a significant hazards consideration. The revised SHE is included in Attachment III. SNC has also determined that the proposed changes will not significantly affect the quality of the human environment. A copy of the proposed changes has been sent to Dr. D. E. Williamson, the Alabama State Designee, in accordance with 10 CFR 50.91(b)(i).

Clean-typed copies of the affected ITS pages are not included. A complete clean-typed copy of the FNP ITS will be re-submitted at the end of the NRC review process.

Mr. D. N. Morey states that he is a Vice President of Southern Nuclear Operating Company and is authorized to execute this oath on behalf of Southern Nuclear Operating Company and that, to the best of his knowledge and belief, the facts set forth in this letter and attachments are true.

If there are any questions, please advise.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

DN Morey

Dave Morey

Sworn to and subscribed before me this 27th *day of* July 1999

Martha Gayle Dow
Notary Public

My Commission Expires: November 1, 2001

WAS/maf:ITSRAI_7.DOC

Attachments:

I. SNC Responses to Beyond Scope Questions for Chapter 3.5 and Revised Responses to NRC Requests for Additional Information Related to Conversion to the Improved Technical Specifications - Chapters 3.6 and 3.8.

II. SNC Responses to Beyond Scope Questions for Chapter 3.5 and Revised Responses to NRC Requests for Additional Information Related to Conversion to the Improved Technical Specifications, Chapters 3.6 and 3.8 - Associated Package Changes Grouped by RAI Number.

III. SNC Identified Changes - Associated Package Changes.

cc: See next page.

cc: Southern Nuclear Operating Company
Mr. L. M. Stinson, General Manager – Farley

U. S. Nuclear Regulatory Commission, Washington, D. C.
Mr. L. M. Padovan, Licensing Project Manager – Farley

U. S. Nuclear Regulatory Commission, Region II
Mr. L. A. Reyes, Regional Administrator
Mr. T. P. Johnson, Senior Resident Inspector – Farley

Alabama Department of Public Health
Dr. D. E. Williamson, State Health Officer

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Dr. D. E. Williamson, State Health Officer

ATTACHMENT I

SNC Responses to Beyond Scope Questions for Chapter 3.5 and Revised Responses to NRC Requests for Additional Information Related to Conversion to the Improved Technical Specifications Chapters 3.6 and 3.8

Chapter 3.5

SNC Response to NRC RAI Related to Chapter 3.5
Beyond Scope Issue

NRC Question:

Tech. staff has questions about your TS 3/4.4.7.2e out-of-scope TS change. The following question pertains to RCP seal injection flow requirements.

a) How did you obtain the Fig. B3.5.5-1 "Seal Injection Flow Limits" graph?
b) Please justify the three values shown that form the graph.
c) Is centrifugal charging pump discharge header pressure 2480 psig as specified in your original TS? If not, why?

SNC Response:

As previously provided to the staff, the following are the agreed upon answers to the above questions:

a) The graph is determined based on a minimum differential pressure between the charging header and the pressurizer and total seal injection flow verified to be within the limits determined in accordance with the seal injection resistance assumed in the ECCS safety analyses.

b) The 24 gpm and 31 gpm points are based on the required flow and differential pressure determined in accordance with the conditions discussed above. The 27 gpm point is based on the linear graph between the previous points, which is conservative as compared to the actual 27 gpm point that would be determined in accordance with the conditions discussed above.

c) No, there is no centrifugal charging pump discharge header pressure specified in the current TS.

Chapter 3.6

NRC Question:

3.6.3-12 DOC 3/4.6.1.7-3LA
JFD 2
JFD TSC 2
CTS 3.6.1.7. b
STS SR 3.6.3.2 and Associated Bases
ITS B3.6.3 Bases - BACKGROUND and LCO

CTS 3.6.1.7.b states that "The 8-inch containment mini-purge supply and exhaust valves ... may be open for safety related reasons." This wording implies that the 8-inch mini-purge valves should be maintained in the closed position but can be opened during operation for safety related reasons. ITS B3.6.3 Bases states that these valves may be opened on a continuous basis for reducing airborne radioactivity and pressure control. The wording of the CTS would allow this. STS SR 3.6.3.2 is not used in the Farley ITS. Based on the words "may be opened for safety related reasons" in CTS 3.6.1.7.b. and in the staff Safety Evaluation implementing Amendments 74 for Unit 1 and 66 for Unit 2, the staff believes that CTS 3.6.1.7.b cannot be relocated to the Bases because it is part of the current licensing basis and that STS SR 3.6.3.2 is applicable to the Farley ITS, and therefore should be included. See Comment Numbers 3.6.3-7 and 3.6.3-11. **Comment:** Revise the CTS/ITS markup to include STS SR 3.6.3.2 and associated Bases. Provide the appropriate discussion and justification for this change. See Comment Numbers 3.6.3-7 and 3.6.3-11

Additional Comment: In lieu of adopting STS SR 3.6.3.2, the Staff maintains that CTS LCO statement 3.6.1.7.b has to be retained in the ITS since it was part of the original bases which allowed Farley to deviate from the requirements specified in NUREG-0452. Revise the response to maintain CTS LCO statement 3.6.1.7.b in the ITS.

SNC Response:

The wording for CTS 3.6.1.7.b states that "The 8-inch containment mini-purge supply and exhaust isolation valves ... may be open for safety-related reasons." It does not say, "may be opened," implying that the 8-inch mini-purge valves should be maintained in the closed position but can be opened during operation. The CTS Bases states that "Safety-related reasons for venting containment during operation (MODES 1, 2, 3 and 4) include controlling containment pressure and reducing airborne radioactivity." ITS B3.6.3 Bases states the following: "The Minipurge System operates to: a. Maintain radioactivity levels in the containment consistent with occupancy requirements with continuous system operation, and b. Equalize internal and external pressures with continuous system operation." The issue of mini-purge operation at Farley Nuclear Plant has been well documented as demonstrated by the following excerpts below:

Alabama Power Company (APCo) to NRC letter dated April 19, 1985, stated the following: "At the Farley Nuclear Plant, it is considered essential to continue operation with unlimited purging to preclude excessive containment pressurization and to minimize the buildup of containment radiation levels. Because of the threat to operation and reliability which would result from the elimination of continuous purging, Alabama Power Company chose to respond to the November 28, 1978 NRC letter by following the second alternative presented in that letter."

NRC to APCo letter dated June 19, 1986, the staff stated the following: "The enclosed Technical Specifications, which we have modified after discussion and agreement with your staff, are found acceptable. We consider this action will close out the multiplant Action B-24 Technical Specifications, will resolve Farley Unit 2 License Condition 2.C.(17), and will permit the continued use of the 8-inch mini-purge system. The system may be used for safety related reasons without a time-limit restriction, but with enhanced surveillance requirements and with new action requirements."

APCo to NRC letter dated May 4, 1987, which submitted Technical Specification amendment requests based on the NRC proposed technical specifications, stated the following: "Alabama Power Company considers NRC acceptance of these Technical Specification changes with normally open minipurge valves and no operational limit goals stated or implied to completely resolve and close out Multiplant Action B-24, Farley Unit 2 License Condition 2.C.(17), NUREG-0737 Item II.E.4.2 and all other current open issues of the NRC regarding Farley Nuclear Plant's use of a continuous minipurge system.

In the NRC to APCo letter dated November 16, 1987, which issued Amendments 74 for Unit 1 and 66 for Unit 2, the NRC stated the following in their Safety Evaluation: "In proposed TS 3.6.1.7.b, the 8-inch mini-purge supply and exhaust containment isolation valves may be open for safety-related reasons including control of containment pressure and reducing airborne radioactivity." The Safety Evaluation goes on to say the following: "By letter dated April 19, 1985, the licensee advised that additional leakage testing and a study to reduce containment building purging is the initiation of a requirement for backfitting. During subsequent discussions between the NRC staff and the licensee staff, agreement was reached to proceed with TSs to meet current regulatory requirements relating to the issue of purging or venting of reactor containments."

The operability of the mini-purge valves is demonstrated in the CTS by satisfactory leak rates, satisfactory isolation times, satisfactory actuation to their isolation position on receipt of an isolation test signal, and a satisfactory cycle test after maintenance by surveillances associated with CTS 3.6.1.7 and 3.6.3. The current Farley licensing basis allows for the mini-purge system to be used for safety related reasons without a time-limit restriction. Verification of mini-purge valves in the closed position is not a current license requirement. Based on the above discussion, STS SR 3.6.3.2 is not applicable to Farley, and therefore should not be included in the ITS.

CTS 3.6.1.7.b contains detail which provides an allowance for valve configuration. This is a detail of system operation. Such details are also contained in the FSAR where changes are controlled via the 10 CFR 50.59 process. It is appropriate to move this information to the Bases because changes to the bases will be controlled by the bases control program in the administrative section of the TS.

SNC Revised Response:

While SNC maintains that relocation to the Bases should be acceptable, SNC agrees to retain the CTS LCO statement in the ITS. The package has been revised to reflect this addition to the STS for Farley. The associated package changes are included in Attachment II.

Chapter 3.8

3.8.1, AC Sources - Operating

NRC Question:

3.8.1-11 ITS SR 3.8.1.10
CTS 4.8.1.1.2.c.3

In subpart e. of ITS SR 3.8.1.10 (NUREG 3.8.1.12) the requirement to auto-connect emergency loads through the load sequencer is deleted.
Comment: The staff does not understand this deletion. It is the staff's understanding that the Farley design includes sequencing emergency loads onto the offsite source. Therefore, the automatic sequence requirement of this SR should be retained. The licensee is requested to include this requirement, or provide a justification for why it should not be included.

Additional Comment: The NRC Staff requested that SNC include information in the Bases which discusses the fact that with offsite power available, the ESF loads are "block loaded" through the sequencer.

SNC Response:

The Farley design for Safety Injection (ESF per ITS) without LOSP is for the DGs to start in response to the ESF signal and operate in standby. The sequencers are also activated by the ESF signal. However, due to logic sensing that offsite power is available, start signal outputs to the various ESF loads are initiated simultaneously. The required loads start at the same time rather than being started in sequence when offsite power remains available in conjunction with ESF initiation. Therefore, SNC has deleted the subject statement in ITS SR 3.8.1.10 because it implies that loads are started in sequence.

SNC Revised Response:

Based on the additional NRC comment, a discussion that emergency loads are started simultaneously by sequencer logic sensing that offsite power is available has been added to the Bases for Section SR 3.8.1.10. The associated package changes are included in Attachment II.

3.8.2, AC Sources - Shutdown

NRC Question:

3.8.2-03 Bases discussion for ITS LCO 3.8.2
Page B 3.8-37

On Pg. B3.8-37 in the LCO 3.8.2 discussion, the paragraph which begins "Proper sequencing of loads..." is modified.
Comment: The staff does not understand the proposed modification. Do the proposed Bases mean that the sequencer performs some function associated with a DG start on loss of power or degraded voltage? The licensee is requested to explain in greater detail the meaning of the proposed Bases change. In addition, the licensee is requested to provide a discussion of how the sequencer functions, or does not function, in Modes 5 and 6.

Additional Comment: The NRC Staff requested that SNC include information in the Bases which discusses the following sequencer functions when offsite power is not available: 1) Opening the offsite power breaker, 2) Starting the Diesel Generator (DG), and 3) Closing the DG output breaker.

SNC Response:

Many electrical loads required operable and available for sequencing in Modes 1 through 4 are not required to be operable in Modes 5 and 6. In addition, the timing of sequenced loads required (and assumed in accident analysis) during Modes 1 through 4 is not required in Modes 5 and 6 because operating mode accidents are not possible during shutdown. Finally, due to lower decay heat and pressure/temperature conditions in Modes 5 and 6, any required electrical loads can be manually started if necessary. Therefore the ability of the sequencer to properly sequence ESF loads is not a safety requirement in Modes 5 and 6.

In the event of degraded voltage during Modes 5 and 6, the sequencers are required to sense the condition, trip ESF bus offsite supply breakers and initiate DG start and breaker closure. The sequencers are also required to initiate DG start and breaker closure for LOSP events during Modes 5 and 6. Any load normally sequenced during Modes 1 through 4 that is in service during either of the above events while in Modes 5 and 6 will receive a start signal at the appropriate sequence step following DG breaker closure. However, as stated above, the sequencing of such loads is not required from a safety standpoint during Modes 5 and 6.

SNC Revised Response:

Based on the additional NRC comment, a discussion of sequencer function during shutdown to detect loss of offsite power, initiate DG start, trip offsite supply breakers and close the DG breaker has been added to the Bases discussion for LCO 3.8.2. The associated package changes are included in Attachment II.

3.8.3, Diesel Fuel Oil, Lube Oil, and Starting Air

NRC Question:

3.8.3-01 DOC M.1, JD 5
ITS SR 3.8.3.1
CTS 3.8.1.1 item b.3
CTS 4.8.1.1.2

(1) Condition A of LCO 3.8.3 as well as SR 3.8.3.1 address the "useable" volume of fuel oil in the storage tanks. However, the term "useable" is not defined in the Bases for either TS. Consequently, the TS have no real meaning.
(2) CTS 3.8.1.1 item b.3 states that each EDG shall be equipped with a fuel storage system containing a minimum of 25,000 gallons of useable fuel for each required EDG. CTS 4.8.1.1.2.a.2 requires verifying the fuel level in the fuel storage tanks. These requirements have been retained in corresponding ITS SR 3.8.3.1 in accordance with the STS.

Comment:

(1) The licensee should define what is meant by "useable" volume of fuel oil, or, revise the TS to state a volume that includes the unusable volume of fuel oil in the storage tanks. JD 5 does not provide any clarification on this issue.
(2) No justification has been provided to support this proposed administrative change. Revise the submittal to provide the appropriate justification for the proposed change.

Additional Comment: The NRC Staff requested that SNC include information in the Bases which discusses how to determine "useable fuel" (i.e., tank curves, etc.).

SNC Response:

The useable volume of fuel oil available in a storage tank is that amount above the pump suction piping nozzle available for transfer from the storage tank to the DG day tank. Since the nozzle(s) are located some distance above the bottom of the tank(s), the volume between the bottom of the tank(s) and the nozzle(s) is not considered useable fuel.

Comment 1: JD 5 has been revised to address this comment and a definition of "useable" fuel has been incorporated in the Background section of Bases Section 3.8.3.

Comment 2: DOC 3A addresses relocation of CTS 3.8.1.1 LCO requirements for DG auxiliary systems to the appropriate sections of the STS. This DOC combined with the clarifications added as a result of Comment 1 provide the appropriate detail and explanation of the conversion from CTS to ITS.

SNC Revised Response:

As a result of the additional NRC comment, a discussion regarding use of Main Control Room tank level indication correlated with tank curves to determine the amount of useable fuel available has been added to the Bases for Section 3.8.3. The associated package changes are included in Attachment II.

3.8.4, DC Sources - Operating

NRC Question:

3.8.4-03 Bases for ITS SR 3.8.4.8, STS Bases markup page B 3.8-57
Bases for STS SR 3.8.4.8

The Bases for STS SR 3.8.4.8 states the that a battery performance discharge test is "normally done in the as found condition." This statement has not been adopted in the Bases for corresponding ITS SR 3.8.4.8.
Comment: No justification has been provided to support this proposed difference. Revise the submittal to provide the appropriate justification for the proposed difference, or conform to the STS.

Additional Comment: IEEE-450 requires that Section 6.1 (1) and (2) be omitted for a service test. A modified performance test envelopes the requirements of a service test. A normal performance test, which preconditions the battery, does not envelope the requirements of a service test. Justify the substitution of a performance test for a service test once per 60 months.

SNC Response:

The CTS bases states that battery surveillances are based on the recommendations of IEEE 450-1980. Section 5 of the standard entitled "Capacity Test Schedule" states that tests are used to: 1) determine whether the battery meets its specification or the manufacturer's rating, or both; 2) periodically determine whether the rating of the battery, as found, is holding up; and 3) if required, determine whether the battery meets the design requirements of the system to which it is connected."

Item 1 applies to Acceptance Tests performed on new batteries following initial installation. Item 2 applies to Performance Tests performed within the first two years of service and every five years thereafter. Item 3 applies to Service Tests that are performed every 18 months at FNP.

Section 5.2 (1) of IEEE 450 regarding performance tests states: "Initial conditions shall be as described in 6.1, omitting requirements (1) and (2). Results of this test reflect all factors, including maintenance, that determine the battery capability. It is desirable for comparison purposes that the performance tests be similar in duration to the battery acceptance test (see 5.1). If on a performance test the battery does not deliver its expected capacity, the test should be repeated after the requirements of 6.1 (1) and (2) have been completed."

Initial Condition 6.1 (1) states: "Verify that the battery has had an equalizing charge completed more than 3 days and less than 7 days prior to the start of the test." Initial Condition 6.1 (2) states: "Check all battery connections and make sure that all connectors are clean, tight, and free of corrosion."

As stated in NUREG 1431 at the bottom of Page B 3.8-57, "The test is intended to determine overall battery degradation due to age and usage." In order to assess whether a battery has undergone degradation, it is necessary to compare the results of periodic performance tests with the results of the acceptance test performed upon initial installation. As such, Farley procedures for performance tests require completion of equalizing charges as prerequisites. This is necessary to ensure the batteries are in the equivalent fully charged state as they were when acceptance tests were initially performed. This permits like for like comparison of performance test results with acceptance test results in determining the amount of degradation batteries have undergone due to age and usage.

Since the testing is performed following completion of equalize charges, the phrase "normally done in the as found condition" is not included in the bases discussion for ITS SR 3.8.4.8. Deletion of the phrase makes the statement correct in that the FNP performance tests provide indication of degradation due to age and usage. The FNP approach is in accordance with IEEE 450 Initial Conditions 6.1(1) and (2) which are permissible prior to performance tests when effects of maintenance are not under consideration.

SNC Revised Response:

The design load profile demonstrated by Service Tests for the Unit 1 and 2 Auxiliary Building (AB) Batteries is 500 amperes for one minute followed by 350 amperes for the remaining 119 minutes of the 2 hour profile. Performance Tests on the Unit 1 and 2 batteries are performed for 2-hours at constant discharge rates of 615 and 650 amperes respectively. The performance test discharge rate exceeds the one minute load profile requirement by 23% on Unit 1 and 30% on Unit 2 and the remaining 119 minute load profile 76% and 86% on Unit 1 and 2, respectively. In terms of overall capacity, performance testing demonstrates 1230 and 1300 ampere-hours capacity for Unit 1 and 2, respectively, compared to 702 ampere-hours required by the load profiles for each unit.

The design load profile demonstrated by service tests for the Service Water Intake Structure (SWIS) Batteries is 30 amperes for 1-minute followed by 3 amperes for the remaining 119 minutes of the 2-hour profile. Performance tests are conducted at 9.4 amperes for 8-hours. The performance test discharge rate is greater than 3 times the design load profile for all but the first minute of the load profile. The 0.5 ampere-hour expended in the first minute of service tests as required by the design load profile is 0.67% of the overall 76 ampere-hour capacity of the batteries and therefore considered insignificant. In terms of total capacity, performance testing on the SWIS Batteries demonstrates 76 ampere-hours capacity compared to 6.5 ampere-hours required by the load profiles.

As discussed above, FNP performance testing places significantly more demand on the batteries than service testing. This is due to design margin above the load profile requirements. The tests are conducted every 60 months following equalize charging to compare capacity with original acceptance and previous performance tests. This approach allows for accurate detection of degradation due to age and usage.

Weekly and quarterly surveillances are performed to ensure the batteries remain fully capable of performing their design functions. Equalize charges may be administered as required to correct any detrimental conditions noted during such surveillances. Service tests are performed during each refueling outage followed by equalize charges to restore full charge. The periodic surveillance and testing activities provide a high degree of assurance that the batteries are well maintained and fully charged during the periods between 5-year performance testing. Equalize charges will not add significant capacity to fully charged, well maintained batteries. Therefore, the current practice of performing equalize charges before performance tests is not considered equivalent to pre-conditioning a battery that has not been properly maintained. The charging will not significantly add to battery capacity demonstrated during performance testing. As a result, utilization of performance test results in lieu of service testing once every 60 months is appropriate and consistent with the current licensing basis.

NRC Question:

3.8.4-04 ITS SR 3.8.4.6
JD 5, JD 6

The proposed changes to ITS/NUREG SR 3.8.4.6 are confusing. The change to add "required" to the SR is interpreted by the staff to mean that the battery changer(s) for which credit is taken to satisfy the LCO must be subject to the SR. This is contrary to the SR Note proposed for deletion as discussed in JD 5.
Comment: The purpose of the Note is to preclude conducting this SR on a battery charger for which credit is taken to satisfy the LCO. Consideration should be given to retaining the Note in a revised form which states that the SR will not be conducted on the required battery charger(s) in Modes 1, 2, 3, or 4.

Additional Comment: The Staff is still concerned that ITS SR 3.8.4.6 could be misinterpreted in its current form. The Staff requests that SNC reword the SR and/or associated note to clarify the intent and limitations of the surveillance requirement.

SNC Response:

The FNP design for the Auxiliary Building Batteries includes battery chargers dedicated to each train and a spare charger that can be aligned to either train. This allows the spare charger to be aligned to either train when a train related charger is taken out of service for maintenance or testing. The SWIS Battery design includes redundant batteries and chargers (two of each) for each train. Either SWIS battery/charger on a given train may be placed in service to supply its associated SWIS DC train while the other is out of service for maintenance or testing. Therefore, the design of both DC systems provides operational flexibility that eliminates the need to prohibit testing of chargers dedicated to a given train during Modes 1 through 4.

The staff interpretation on insertion of the word "required" is correct in that it means chargers used to satisfy the LCO must be subjected to the SR testing. As discussed above, any charger can be taken out of service and tested because a spare or redundant battery/charger is available to maintain operability of the DC train. As such, SNC intends to maintain the deletion of the note that prohibits testing of chargers in Modes 1 through 4 consistent with the CTS.

JD 5 has been revised to specify that any of the chargers may be tested without affecting battery/battery charger operability.

SNC Revised Response:

Based on the additional NRC comment, a revised note has been inserted for SR 3.8.4.6. In addition, the Bases for SR 3.8.4.6 has been expanded to address the operational flexibility afforded by spare or redundant chargers which permits performance of charger testing in any operational mode. JD-5 has also been revised to reflect insertion of the revised note. The associated package changes are included in Attachment II.

3.8.5, DC Sources - Shutdown

NRC Question:

3.8.5-01 ITS LCO 3.8.5
CTS LCO 3.8.2.4
DOC 1M

LCO 3.8.4 includes the Auxiliary Building batteries and the SWIS batteries. LCO 3.8.5, however, does not appear to include the SWIS batteries. What is the justification for this? Is the Service Water System not required in Modes 5 and 6?
Comment: Some revision to the LCO appears to be required. When making revision, consideration should also be given to the fact that, in some circumstances, more than one Aux. Bldg., DC power subsystem may be required in Modes 5 and 6. Also "DC electrical power subsystem" should be corrected to read "DC electrical power subsystem(s)"

Additional Comment: Insert SS should be revised to clearly state "one train of Auxiliary Building DC and one train of SW DC consisting of..."

SNC Response:

STS LCO 3.8.4 addresses DC Sources during operation. LCO 3.8.5 generically addresses the minimum DC electrical power sources during Modes 5 and 6. The Background Section of Bases for LCO 3.8.5 states that a description of DC sources is provided in the Bases for LCO 3.8.4. Insert HH written for the Bases of LCO 3.8.4, Page B 3.8-50 states that the 125VDC electrical power system consists of two main systems, the Auxiliary Building and SWIS systems.

The proposed Insert SS to LCO 3.8.5 for Page B 3.8-60 begins "The DC electrical power sources required to support the necessary portions of AC, DC and AC vital bus electrical power distribution subsystems required by LCO 3.8.10, "Distribution Systems – Shutdown" shall be OPERABLE." It further states, "At a minimum, at least one train of DC electrical power source (train A or B) consisting of one battery, one battery charger, and the corresponding control equipment and interconnecting cabling within the train, are required operable." This is considered to require at least one train per subsystem (i.e., Auxiliary Building and SWIS DC electrical power sources).

Neither the Auxiliary Building nor the SWIS batteries are specifically mentioned in the generic LCO 3.8.5 discussion. LCO 3.8.4 specifies both the Auxiliary Building and SWIS 125VDC systems as DC electrical power sources. Therefore, at least one train from each system is required during Modes 5 and 6 per the second requirement of Insert SS to LCO 3.8.5 quoted above.

Insert SS to LCO 3.8.5, aside from requiring at least one train of DC electrical power operable, also addresses cases where LCO 3.8.10 calls for portions of a second train of DC distribution systems to be operable. Since LCO 3.8.5 invokes the requirements of LCO 3.8.10 and references DC power sources defined by LCO 3.8.4, SNC submits that the wording of the STS as modified by Insert SS adequately addresses shutdown DC power requirements and that there is no need for revision.

The following is provided in response to the question on Service Water system requirements during Modes 5 and 6. There are no Technical Specification LCO requirements for the Service Water system during Modes 5 and 6. However, portions of at least one train of the system are required to be functional to support the operation of other systems.

The phrase "DC electrical power subsystem" at the beginning of LCO 3.8.5 on Page 3.8-28 will be clarified to "DC electrical power subsystem(s)."

SNC Revised Response:

Insert SS to the ITS LCO Bases Section 3.8.5 has been revised to clearly delineate that at least one train of Auxiliary Building and SWIS DC distribution are required operable during shutdown based on the additional NRC comment. The associated package changes are included in Attachment II.

3.8.6, Battery Cell Parameters

NRC Question:

3.8.6-7 CTS TABLE 4.8-2 Note (4)
ITS LCO 3.8.6, CONDITION A

The Actions of Condition A allow 31 days to restore Battery Cell Parameters to within Category A and B limits of TABLE 3.8.6-1.
Comment: The Category A and B float voltage per cell is 2.08 Volts. This voltage is inconsistent with the last part of Condition B which addresses the average cell float voltage as 2.13 Volts. Even if the Battery Cell Parameters met Category A and B limit, there is a high probability that Condition B would apply; i.e., less than 2.13 Volts on average. It would appear that the values in ITS Table 3.8.6-1 need to be revised.

Additional Comment: As currently submitted, the additional Farley-specific Condition B statement is meaningless since there is no surveillance to verify average cell float voltage is [illegible] 2.13 volts. ITS SR 3.8.4.1, which verifies that battery terminal voltage is ≥ 127.8 volts on float charge, effectively measures this parameter. The submittal should be revised to link SR 3.8.4.1 to the additional Farley-specific Condition B statement.

SNC Response:

The battery cell parameters in ITS Table 3.8.6-1 have been revised consistent with FNP CTS values. The CTS values were approved in the Safety Evaluation by Office of NRR Related to Amendment 59 for Unit 1 and Amendment 50 for Unit 2. This was transmitted by letter from Mr. Edward A. Reeves (NRC) to Mr. R. P. McDonald (Alabama Power Company) dated May 24, 1985.

In the event the voltage of a cell (or cells) falls below 2.08V requiring entry into Condition A, all battery cell voltages must be verified above the Category C limit within 24 hours and once every seven days thereafter. The cell voltages below 2.08V must be restored to the Category A and B limits of ≥ 2.08V before the 31 day completion time of Action A.3. During the 31 day period, the 7 day frequency of SR 3.8.4.1 to "Verify battery terminal voltage is ≥ 127.8V on float charge" will still be in effect. If terminal voltage measures less than 127.8V on any measurement, the battery will have to be declared inoperable.

The minimum terminal voltage of 127.8V equates to an average cell voltage of 2.13V for 60 cell batteries. Therefore, for any cell or number of cells below 2.13V, an equal or greater number must be above 2.13V by an equivalent magnitude to maintain the terminal voltage at 127.8V.

Experience has shown that only one cell of a battery at a time is typically found to be below acceptable voltage limits. In an instance involving the very remote possibility of more than one cell falling below the Category A or B limit, the much larger population of cells with voltage above 2.13V will maintain overall terminal voltage above 127.8V.

Therefore, SNC maintains that the additional condition of "One or more required batteries with the average cell float voltage ≤ 2.13V" added to ITS LCO 3.8.6, Condition B and requiring declaration of inoperability if not met, is both appropriate and conservative.

SNC Revised Response:

A Note has been added to the additional ITS LCO 3.8.6 Condition B to equate minimum average cell voltage with minimum battery terminal voltage as measured in SR 3.8.4.1. The associated package changes are included in Attachment II.

NRC Question:

3.8.6-8 ITS TABLE 3.8.6-1
SR 3.8.4 SR

Table 3.8.6-1 is applicable to both the Auxiliary Building batteries and the SWIS batteries. This means that footnotes b and c are also applicable to both batteries. **Comment:** The staff questions if the value of 2 amps on float charge is correct for the SWIS batteries. This is based primarily on the LCO 3.8.4 SR which requires that the SWIS battery charger be capable of supplying 3 amps for 4 hours. If the upper capacity of the battery charger is 3 amps, it would seem that the amperage on float charge would be substantially less than 3 amps. The licensee is requested to verify whether or not 2 amps on float charge is appropriate for the SWIS batteries.

Additional Comment: The response states that the value of 2 amps on float charge is correct for the SWIS batteries. The Staff requests that SNC explain why 2 amps is the appropriate value for the SW batteries.

SNC Response:

The SWIS battery chargers are rated at 12 amperes continuous. The requirement that the charger be capable of supplying at least 3 amperes for 4 hours is related to the capability of the charger to recharge a battery while supplying duty cycle load of the batteries. The SWIS batteries have substantial capacity margin (better than double) beyond that required by the design duty cycle. In practice, determination that the current has stabilized is confirmed by consecutive measurements at one hour intervals with digital clamp-on ammeters. Actual stabilized values may be substantially less than 2 amperes for both large and small capacity batteries. However, the final values may vary over the life of a battery. Therefore, the standard stabilized charging current value of < 2 amperes from the STS following a recharge is appropriate for the SWIS batteries.

SNC Revised Response:

The value of < 2 amperes in ITS Table 3.8.6-1 maintains the CTS value from Table 4.8-2 that is currently applicable to the Auxiliary Building and SWIS Batteries. The continuous capacity of the SWIS Battery Chargers is 12 amperes rather than an upper limit of 3 amperes mentioned as the basis for the original question. The charger current limit is factory set at 115% or 13.8-amperes.

Annex B of IEEE 450-1995 discusses the pattern of charging current delivered by a conventional, voltage-regulated battery charger after a discharge. Immediately after the discharge, when voltage is applied to the battery, the current will rise to the current limit of 13.8 amperes and remain at this level until approximately 100% of the ampere-hours discharged have been restored to the battery. At this point, the current will begin to decay exponentially until it stabilizes at the float current level. When the current has decayed to 13.5% (2 time constants) of its initial value, it can be mathematically proven that the batteries are adequately charged to meet their design function.

Computing 13.5% of the current limit value of 13.8-amperes yields approximately 2-amperes. Therefore, once the charging current reaches this value, the battery can be returned to service with assurance that the battery will meet its design function. The charging current will continue to decrease for several hours to a final value dependent upon float voltage and temperature. As stated in the original response, final stabilized float current values are determined by consecutive hourly measurements. Based on batteries being capable of performing as required once charger current decays to 13.5% of the current limit value during re-charge, the CTS and ITS value of < 2 amperes is appropriate for the SWIS batteries.

For the Auxiliary Building Batteries, an identical analysis would yield a much higher value than 2-amperes when the batteries would be capable of performing their design function. However, the lower CTS and ITS value is more conservative and therefore remains appropriate and acceptable.

NRC Question:

3.8.6-11 Bases for ITS Table 3.8.6-1, STS Bases markup page B 3.8-68, second paragraph
Bases for STS Table 3.8.6-1

The Bases for STS Table 3.8.6-1 states that the Category A float voltage limit is based on "… the recommendations of IEEE-450, which states that prolonged operation of cells < [2.13] V can reduce the life expectancy of cells." This statement has not been adopted in the Bases for corresponding ITS Table 3.8.6-1, which refers instead to "operating experience".

Comment: No justification has been provided to support this proposed difference. Revise the submittal to provide the appropriate justification for the proposed difference.

Also, expand the Bases to explain how operating experience has shown the specified voltage limit value to be acceptable.

Additional Comment: The Staff interprets IEEE-450 to indicate that a cell with voltage ≤ 2.07 volts on float charge is defective. In light of this, the Staff is concerned with the Farley values in ITS Table 3.8.6-1 of 2.08v and 2.02v in place of the STS values of 2.13v and 2.07v. The Staff requests that SNC reconsider using the current values.

SNC Response:

JD 7 briefly addresses Float Voltage and Specific Gravity sections of Table 3.8.6-1, noting that the revisions incorporate FNP CTS requirements. The CTS values were approved in the Safety Evaluation by Office of NRR Related to Amendment 59 for Unit 1 and Amendment 50 for Unit 2. This was transmitted by letter from Mr. Edward A. Reeves (NRC) to Mr. R. P. McDonald (Alabama Power Company) dated May 24, 1985.

The Category A and B float voltage limit of 2.08V versus 2.13V per cell was approved based on the following: 1) cell float voltage by itself is not a comprehensive indicator of the state of charge of a battery; 2) a single pilot cell can exhibit ≤ 2.13V while the battery itself can still perform its design function; 3) IEEE 450-1980 Appendix C1 does not consider a cell potentially degraded unless its voltage on float charge is ≤ 2.07V; and 4) in twenty different instances at FNP with at least one cell ≤ 2.13V, the minimum average specific gravity was 1.197, equating to approximately 90% capacity, which is well above that required by the design load profile. Additionally, FNP adopted the requirement that the average float voltage be greater than 2.13V per cell (127.8V overall) in order for a battery to be considered operable.

JD7 and the Bases for Table 3.8.6.1 have been expanded to address the differences from the STS and origin of the numerical values in more detail.

SNC Revised Response:

The original FNP Category A, B and Allowable Limits for cell float voltage were 2.02 volts. These values were approved during the licensing review of the facility. The Category A and B limits were revised in the licensing amendment described in the original response. The limits were raised to 2.08 volts with an additional new requirement that overall terminal voltage be ≥ 127.8 volts. The staff recognized the values were less than STS values at the time. The acceptability of the change was based on safety improvements in excess of the original requirements along with the additional requirement for terminal voltage to be greater than 127.8 volts. Since overall battery terminal voltage must be greater than 127.8 volts, FNP, on an average cell voltage basis, meets the STS requirement that individual voltages be ≥ 2.13 volts.

The IEEE 450 criteria of maintaining float voltage ≥ 2.13 volts is based more on optimizing cell life expectancy rather than determining battery degradation. The Technical Specifications should define parameters necessary to meet minimum acceptable functional requirements rather than long-term optimization practices. Cells less than 2.13 but ≥ 2.08 volts are not an uncommon occurrence and, based on FNP experience, have not indicated operability concerns with entire batteries. As stated in the original response, cell float voltage is not by itself an indicator of the overall state of charge of the battery. Individual lead-calcium battery cells are susceptible to variation in float voltages. The CTS and ITS Category A and B values allow for individual cell float voltage variation below 2.13 volts without requiring entry into Technical Specification Action Statements when a battery remains fully capable of meeting design requirements.

The open circuit voltage of lead-calcium cells with nominal specific gravity of 1.215 is approximately 2.08 volts. Cells are considered discharged at 1.75 volts assuming minimum battery terminal voltage of 105 volts. Therefore, a cell on float 2.05 volts is still 0.30 volts above where it would be considered discharged. Experience has shown that only one cell of a battery at a time is typically found to be below acceptable voltage limits. In an instance involving the very remote possibility of more than one cell in a 60-cell battery below 2.08 volts, the much larger population of cells with higher voltages will maintain overall terminal voltage above 127.8 volts. The lower 2.08 volt value for individual cells allows time for corrective action without declaring a battery inoperable when the it remains fully capable of performing its design function.

An individual cell floating at 2.07 volts or less may have an internal problem that necessitates replacement. Such a condition warrants timely attention from a maintenance standpoint but does not mean that the cell is unable to contribute to the design function of the overall battery. Our experience within the Southern Company with cells floating at 2.07 volts or less is that all the cells removed from service delivered adequate capacity when given a capacity test immediately after removal with no preconditioning. Teardowns on some of the cells revealed internal plate to plate shorting that could cause premature failure over time. However, there was no evidence to suggest an immediate challenge to functionality. The battery manufacturer also concurred with this assessment. A battery must be declared inoperable if the CTS allowable and ITS Category C limit of > 2.02 volts for a cell (or cells) is not satisfied. This is considered conservative since a battery with a cell in such a condition would still be able to perform as required.

SNC therefore submits that the current and proposed values are appropriate and ensure that the batteries maintain capability to perform their design function.

ATTACHMENT II

SNC Responses to Beyond Scope Questions for Chapter 3.5 and Revised Responses to NRC Requests for Additional Information Related to Conversion to the Improved Technical Specifications Chapters 3.6 and 3.8

Associated Package Changes Grouped by RAI Number

Chapter 3.6

Associated Package Changes for RAI – 3.6.3-12
Revised Response

CTS 3/4.6.1.7 CONTAINMENT VENTILATION SYSTEM

FNP ITS 3.6.3 CONTAINMENT ISOLATION VALVES

DOC NO	SHE	DISCUSSION
1	A	The CTS 3/4.6.1.7, "Containment Ventilation System" is incorporated into the STS LCO 3.6.3, Containment Isolation Valves consistent with the STS. In the STS all containment isolation valve requirements are located in one TS. The CTS 3/4.6.1.7 LCO statement is revised accordingly. As this discussion only addresses the reorganization of the CTS 3/4.6.1.7 TS requirements consistent with the STS format and presentation, the associated change is considered an administrative change.
2	A	The CTS 3/4.6.1.7 LCO and surveillance requirement regarding the 48 inch purge supply and exhaust valves being deactivated and secured in the closed position is revised consistent with the STS. This LCO requirement is incorporated into surveillance requirement SR 3.6.3.1 in the STS Containment Isolation Valve TS which defines the operable status of this valve. In addition, the CTS terms "de-activated and secured" are replaced with the STS term "sealed" in referring to the means by which the valve is maintained closed. The essential requirement for the valve to be maintained closed is not altered. The STS term "sealed" is described in the STS bases for SR 3.6.3.1 and effectively requires the valve to be maintained in a similar condition as the CTS requirement of de-activated and secured. As the revision of this CTS requirement is made to conform with the format and language of the STS and no significant technical change in the required status of the affected valve is made, this change is considered administrative.
RAI 3.6.3-12 Revised Response		
3	A	The CTS 3/4.6.1.7.b LCO provision regarding the 8 inch mini-purge supply and exhaust isolation valves is maintained in the LCO statement of ITS LCO 3.6.3. CTS 3.6.1.7.b contains an allowance for valve configuration. This CTS allowance for these valves to be open for "safety-related" reasons is retained in the LCO statement and discussed in the bases for LCO 3.6.3.
4	LA	The CTS 3/4.6.1.7 LCO statements a and b are revised consistent with the STS. The valve numbers for the 48 inch and 8 inch purge supply and exhaust isolation valves are removed from the LCO and placed in the bases of the Containment Isolation Valve TS (3.6.3). The removal of this type of information from the TS and placement in the bases is consistent with the format and presentation of the STS. The valve numbers listed in CTS 3.6.1.7.a and .b provide plant nomenclature for the valves listed in the LCO statement (Containment purge supply and exhaust valves). This

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3.6 CONTAINMENT SYSTEMS

3.6.3 Containment Isolation Valves (Atmospheric, Subatmospheric, Ice Condenser, and Dual)

RAI 3.6.3-12 Revised Response

LCO 3.6.3 Each containment isolation valve shall be OPERABLE. The 8-inch containment mini-purge supply and exhaust isolation valves may be open for safety-related reasons. (7)

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

------------------------------------NOTES------------------------------------

1. Penetration flow path(s) (except for [42] 48 inch purge valve flow paths) may be unisolated intermittently under administrative controls.

2. Separate Condition entry is allowed for each penetration flow path.

3. Enter applicable Conditions and Required Actions for systems made inoperable by containment isolation valves.

4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ---------NOTE--------- Only applicable to penetration flow paths with two containment isolation valves. --------------------- One or more penetration flow paths with one containment isolation valve inoperable [except for purge valve or shield building bypass leakage not within limit]. (penetration) (5)	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	4 hours
		(continued)

STS 3.6.3 CONTAINMENT ISOLATION VALVES

FNP ITS 3.6.3 CONTAINMENT ISOLATION VALVES

JD NUMBER	JUSTIFICATION
	leakage from all Type B and C tests within limits (≤ 0.6 L_a). If during testing it is determined that a penetration flow path containing containment purge valves has leakage in excess of the individual penetration flow path leakage limit (≤ 0.05 L_a), leakage must be reduced to within the limit prior to the next time the unit transitions from MODE 5 to MODE 4. However, provided that the penetration flow path leakage does not cause the total leakage from all Type B and C tests to exceed the limits (≤ 0.6 L_a) no additional action is required (i.e., isolation or unit shutdown). Therefore, ITS Condition E has been revised to specify that it is only applicable to Conditions A, B, C, and D. This change maintains the current licensing basis for Farley.
7	The STS 3.6.3 LCO statement is revised by the addition of a specific allowance to maintain the 8-inch containment mini-purge valves open for safety related reasons consistent with the CTS allowance. This change maintains the current licensing basis for Farley.

RAI 3.6.3-12
Revised
Response

Chapter 3.8

Associated Package Changes for RAI - 3.8.1-11
Revised Response

Associated Package Changes for RAI 3.8.2-03
Revised Response

BASES

LCO (continued)

provide electrical power support, assuming a loss of the offsite circuit. Together, OPERABILITY of the required offsite circuit and DG ensures the availability of sufficient AC sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

The qualified offsite circuit must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the Engineered Safety Feature (ESF) bus(es). Qualified offsite circuits are those that are described in the FSAR and are part of the licensing basis for the unit.

PSC

INSERT BB

[Offsite circuit #1 consists of Safeguards Transformer B, which is supplied from Switchyard Bus B, and is fed through breaker 52-3 powering the ESF transformer XNB01, which, in turn, powers the #1 ESF bus through its normal feeder breaker. The second offsite circuit consists of the Startup Transformer, which is normally fed from the Switchyard Bus A, and is fed through breaker PA 0201 powering the ESF transformer, which, in turn, powers the #2 ESF bus through its normal feeder breaker.]

12 PSC

The DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ESF bus on detection of bus undervoltage. This sequence must be accomplished within [10] seconds. The DG must be capable of accepting the required loads manually within the assumed loading sequence intervals and continue to operate until offsite power can be restored to the ESF buses. These capabilities are required to be met from a variety of initial conditions such as DG in standby with the engine hot and DG in standby at ambient conditions.

TSC-3

Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY.

[In addition, proper sequencer operation is an integral part of offsite circuit OPERABILITY since its inoperability impacts on the ability to start and maintain energized loads required OPERABLE by LCO 3.8.10.] TSC-1

Proper sequencer operation to sense loss of power or degraded voltage, initiate tripping of ESF bus offsite breakers and initiate DG start and DG output breaker closure are required functions for DG OPERABILITY.

RAI 3.8.2-03 Revised Response

(continued)

Associated Package Changes for RAI 3.8.3-01
Revised Response

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scs input

Connected to a fuel oil storage and transfer system. The storage tanks provide the capacity to operate the required DGs

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

PSC

BASES

BACKGROUND

Each diesel generator (DG) is provided with a storage tank having a fuel oil capacity sufficient to operate that diesel for a period of 7 days while the DGs is supplying maximum post loss of coolant accident load demand discussed in the FSAR, Section [9.5.4.2] (Ref. 1). The maximum load demand is calculated using the assumption that a minimum of any two DGs is available. This onsite fuel oil capacity is sufficient to operate the DGs for longer than the time to replenish the onsite supply from outside sources.

8.3.1.1.7

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are

Fuel oil is transferred from storage tank to day tank by either of two transfer pumps associated with each storage tank. Redundancy of pumps and piping precludes the failure of one pump, or the rupture of any pipe, valve or tank to result in the loss of more than one DG. All outside tanks, pumps, and piping are located underground.

The useable fuel in a storage tank is the amount above the transfer pump suction nozzles that is available for transfer from a storage tank to a day tank. The amount of useable fuel is determined by correlating Control Room percent level indication to the applicable tank curve.

RAI 3.8.3-01 Revised Response

PSC

ASTM-D270-65

ASTM-D975-74

scs input

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 2) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. 3). The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level.

and

The DG lubrication system is designed to provide sufficient lubrication to permit proper operation of its associated DG under all loading conditions. The system is required to circulate the lube oil to the diesel engine working surfaces and to remove excess heat generated by friction during operation. Each engine oil sump contains an inventory capable of supporting a minimum of [7] days of operation. The onsite storage in addition to the engine oil sump is sufficient to ensure 7 days of continuous operation. This supply is sufficient to allow the operator to replenish lube oil from outside sources.

PSC

Each DG has an air start system with adequate capacity for five successive start attempts on the DG without recharging the air start receiver(s).

PSC

Each air start system consists of redundant air receivers. Each receiver has sufficient capacity to perform the required number of DG starts.

FSAR 9.5.6.1

(continued)

Associated Package Changes for RAI 3.8.4-04
Revised Response

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(5) This Surveillance may be performed in MODE 1, 2, 3, 4, 5, or 6 provided spare or redundant charger(s) placed in service are within surveillance frequency to maintain DC subsystem(s) OPERABLE.

SURVEILLANCE REQUIREMENTS (continued)

RAI 3.8.4-04 Revised Response

	SURVEILLANCE	FREQUENCY
SR 3.8.4.6	-----NOTE----- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. (5) TSTF-8 ---------- [required Auxiliary Building] (6) Verify each battery charger supplies ≥ [400] amps at ≥ [125] V for ≥ [8] hours. [536] [4] [required] [and each SWIS battery charger supplies ≥ 3 amps at ≥ 125V for ≥ 4 hours] (6)	[18 months]
SR 3.8.4.7	-----NOTES----- 1. 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. (7) [2. The modified performance discharge test in SR 3.8.4.8 may be performed in lieu of the service test at any time.] 2. [3.] This Surveillance shall not be performed [for the Auxiliary Building batteries] (8) in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. TSTF-8 ---------- 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. [load profile described in the Final Safety Analysis Report, section 8.3.2, by subjecting the battery to a service test.] (9)	[18 months]

(continued)

STS 3.8.4 DC SOURCES - OPERATING

FNP ITS 3.8.4 DC SOURCES - OPERATING

JD NUMBER	JUSTIFICATION
	consistent with the above cited references.
5	The STS SR 3.8.4.6 note prohibiting performance of this surveillance in Modes 1 through 4 is replaced with a note permitting performance of the surveillance in any MODE. The revision of the note is consistent with FNP CTS. The FNP design is such that any battery charger may be tested while a spare (or redundant battery / charger) is in service in its place. This operational flexibility maintains TS operability of the applicable battery and DC train. The additional Auxiliary Building battery charger may be aligned to supply either train which allows flexibility in testing the associated chargers. The SWIS battery design includes a redundant battery and charger for each train. The design of the SWIS DC system is such that either battery/battery charger set may be selected to supply the associated SWIS DC train. Therefore, this change maintains the requirements of the FNP CTS and is consistent with the FNP electrical system design which includes more battery chargers than the minimum required and allows testing of the chargers without impacting the operability of the TS required battery/battery charger.
	RAI 3.8.4-04 Revised Response
6	The STS surveillance SR 3.8.4.6 is revised to incorporate the FNP design which includes two types of battery chargers with different ampere ratings. In addition, the surveillance is revised to include the word "required" for each specified charger since the FNP design includes an additional redundant charger for the Auxiliary Building batteries and redundant battery chargers for each train of the SWIS DC system. Therefore, this change maintains the requirements of the FNP CTS consistent with the FNP electrical system design.
7	The STS surveillance SR 3.8.4.7 Note 1 is revised consistent with the FNP CTS. The STS permissive for a "modified" performance discharge test is revised to delete the word "modified" consistent with the requirements of the FNP CTS. The FNP CTS allow a performance discharge test to be substituted for a service test once per 60 months. Therefore, this change maintains the requirements of the FNP CTS. A new Note 2 is added, consistent with the original STS Note 1 with the exception that the 60-month limitation is removed. This change is consistent with the wording in IEEE-450. IEEE-450 states "A modified performance test can be used in lieu of a service test at any time." The modified performance test is a test that envelopes the service test. Thus, the successful completion of the modified performance test completes the requirements of the service test. The limitation in the original STS Note 1, with respect to the modified performance test, is inconsistent with IEEE-450 and has been removed.

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(Auxiliary Building chargers) and 3 amps (SWIS chargers) at

BASES PSC

SURVEILLANCE REQUIREMENTS (continued)

RAI 3.8.4-04 Revised Response

TSC-5

This surveillance is modified by a Note which clarifies that it may be performed in any mode of operation provided certain conditions are met. The design is such that any battery charger may be tested while a spare (or redundant battery and/or charger is in service in its place. The spare or redundant battery and/or charger must be within the 18 month surveillance frequency to maintain the DC subsystem(s) to which they are aligned OPERABLE. This operational flexibility maintains TS OPERABILITY ~~of the~~ applicable battery and DC train while testing the normally aligned charger.

PSC

SR 3.8.4.6

536 required 4

This SR requires that each battery charger be capable of supplying [400] amps and [125] V for ≥ [8] hours. These requirements are based on the design capacity of the chargers (Ref. 4). According to Regulatory Guide 1.32 (Ref. 10), the battery charger supply is required to be based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensures that these requirements can be satisfied.

The Surveillance Frequency is acceptable, given the unit conditions required to perform the test and the other administrative controls existing to ensure adequate charger performance during these [18 month] intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.

~~This Surveillance is required to be performed during MODES 5 and 6 since it would require the DC electrical power subsystem to be inoperable during performance of the test.~~

~~This SR is modified by a Note. The reason for the Note is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR.~~

TSTF-8

4.8.2.3.2.c.5 PSE

SR 3.8.4.7

A battery service test is a special test of battery capability, as found, to satisfy the design requirements (~~battery duty cycle~~ design load profile) of the DC electrical power system. The discharge rate and test length should 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. 10) ~~and Regulatory Guide 1.129 (Ref. 11)~~, 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]. (applicable to Auxiliary Building ~~batteries only~~)

PSC not committed to 1.129

5

(continued)

TSC-8

Associated Package Changes for RAI - 3.8.5-01
Revised Response

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CHAPTER 3.8

RAI 3.8.5-01 Revised Response

INSERT SS
STS BASES PAGE B 3.8-60
FNP SPECIFIC 3.8.5 DC SOURCES-SHUTDOWN LCO SECTION OF BASES

The DC electrical power sources required to support the necessary portions of AC, DC, and AC vital bus electrical power distribution subsystems required by LCO 3.8.10, "Distribution Systems - Shutdown," shall be OPERABLE. At a minimum, at least one train of DC electrical power source from the Auxiliary Building (Train A or B) and Service Water Intake Structure (Train A or B) consisting of one battery, one battery charger, and the corresponding control equipment and interconnecting cabling within the train, is required operable.

In the case where the requirements of LCO 3.8.10 call for portions of a second train of the distribution subsystems to be OPERABLE (e.g., to support two trains of RHR, two trains of CREFS, or instrumentation such as source range indication, containment purge and exhaust isolation actuation, or CREFS actuation), the required DC buses associated with the second train of distribution systems are OPERABLE if energized to the proper voltage from either:

- An OPERABLE DC Source consisting of one battery, one battery charger, and the corresponding control equipment and interconnecting cabling associated with that train, or

- a battery charger using the corresponding control equipment and interconnecting cabling within the train.

The above requirements ensure the availability of sufficient DC electrical power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

Associated Package Changes for RAI - 3.8.6-7
Revised Response

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. **OR** One or more required batteries with average electrolyte temperature of the representative cells < 60°F for the Auxiliary Building batteries or < 35°F for the SWIS batteries. **OR** One or more required batteries with one or more battery cell parameters not within Category C values. **OR** One or more batteries with the average cell float voltage ≤ 2.13 volts.	B.1 Declare associated battery inoperable.	Immediately

NOTE: Battery terminal voltage of 127.8 volts as measured by SR 3.8.4.1 is equivalent to average cell float voltage of 2.13 volts per cell.

RAI 3.8.6-7 Revised Response

(2) (3) (4)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.6.1	Verify battery cell parameters meet Table 3.8.6-1 Category A limits.	7 days

(continued)

STS 3.8.6 BATTERY CELL PARAMETERS

FNP ITS 3.8.6 BATTERY CELL PARAMETERS

JD NUMBER	JUSTIFICATION
1	The STS 3.8.6 LCO statement is revised consistent with the FNP design and CTS requirements. The STS LCO is revised to address both FNP battery systems specified in the CTS. The FNP DC electrical systems design consists of two battery systems. The Auxiliary Building system supplies all the required loads except for the Service Water system. The Service Water Intake Structure (SWIS) battery system supplies the required loads in the Service Water System. These batteries are addressed by CTS 3/4.8.2.3 and CTS 3/4.8.2.5. In the FNP ITS, the two battery systems, which have similar requirements, have been combined into the STS 3.8.6 LCO. As such, this change maintains the requirements of the FNP CTS in a format and presentation as close as possible to the STS.
2	The STS 3.8.6 Conditions A and B are revised to incorporate the word "required" in front of batteries. This change is made to account for the redundant SWIS batteries in each train. The SWIS DC system consists of an extra battery in each train that is 100% redundant. One SWIS battery may be inoperable in each train and each DC system train would still be capable of providing 100% capacity from the remaining battery. Therefore, the associated Actions Conditions is revised to address only the "required" batteries inoperable. As both Auxiliary Building batteries are required, this change has no affect on those batteries. This change is consistent with the FNP specific electrical system design and the standard STS format for such information.
2a	The Completion Time of STS 3.8.6 Required Action A.1 is revised from one hour to two hours. This Action requires all pilot cell electrolyte level and float voltages to be verified within category C limits. For the FNP batteries two hours provides a more reasonable time in which to complete this Action. As this STS Action is new to the FNP TS, the proposed Completion Time of two hours is considered a reasonable time consistent with the relatively quick verification required by the STS and providing sufficient time for plant personnel to physically perform the required verifications.
3	The STS 3.8.6 Conditions B is revised to incorporate the two temperature limitations for the two different battery types used at FNP. This change is consistent with the design specifications, as discussed in the FSAR, for each type of TS required battery at FNP. The inclusion of the two temperatures limits accurately incorporates the FNP specific design into the STS.
RAI 3.8.6-7 Revised Response 4	The STS 3.8.6 Conditions B is revised to incorporate the FNP specific action to declare the battery inoperable if the average cell float voltage is less than or equal to 2.13 volts. The 2.13 volts per cell average is equivalent to overall battery terminal

STS 3.8.6 BATTERY CELL PARAMETERS

FNP ITS 3.8.6 BATTERY CELL PARAMETERS

JD NUMBER	JUSTIFICATION
1 RAI 3.8.6-7 Revised Response	voltage of 127.8 measured under SR 3.8.4.1. This CTS requirement is contained in note 4 to Table 4.8-2 in CTS 3/4.8.2.3, Auxiliary Building DC Distribution - Operating. The incorporation of this additional action into the STS maintains the requirements of the FNP CTS.
5	The STS surveillance SR 3.8.6.2 is revised consistent with the CTS. The STS surveillance frequency is revised from 24 hours to 7 days consistent with the CTS 4.8.2.3.2.b surveillance interval. Therefore, this change maintains the requirements of the FNP CTS.
6	The STS surveillance SR 3.8.6.3 is revised to incorporate the two temperature limitations for the two different battery types used at FNP. This change is consistent with the design specifications, as discussed in the FSAR, for each type of TS required battery at FNP. The inclusion of the two temperatures limits accurately incorporates the FNP specific design into the STS.
7	The STS Table 3.8.6-1, Battery Cell Parameters Requirements, are revised consistent with the corresponding FNP requirements in CTS Table 4.8-2. The Float Voltage and Specific Gravity sections of this STS Table are revised to incorporate the FNP CTS requirements. These changes maintain the requirements of the FNP CTS.

The Category A limit specified for float voltage is ≥2.08V per cell. This value is less than the 2.13V which IEEE 450 (Ref. 3) recommends for optimum life expectancy of cells. The lower FNP value is based on the following: 1) cell float voltage is not, by itself, the only indicator of the state of charge; 2) a single cell voltage can be ≤2.13V while the battery itself is still capable of performing design function; 3) a cell is not be considered potentially degraded unless ≤2.07V per IEEE 450. In addition, operating experience has shown that for numerous instances at FNP with at least one cell below 2.13V, the minimum average specific gravity for the battery equated to capacity well above that required by the design load profile.

The STS limits for specific gravity at the time the FNP CTS were approved were based on manufacturers recommended full charge value of 1.215. The STS Category A and B test criteria based on that value was 1.200 and 1.195 respectively. FNP batteries have manufacturers recommended specific gravity of 1.210 for the SWIS and 1.215 for the Auxiliary Building batteries. As a result, the specific gravity criteria of 1.195 and 1.190 for Category A and B respectively were approved for use in the CTS for both batteries.

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BASES

ACTIONS

A.1, A.2, and A.3 (continued)

Continued operation is only permitted for 31 days before battery cell parameters must be restored to within Category A and B limits. With the consideration that, while battery capacity is degraded, sufficient capacity exists to perform the intended function and to allow time to fully restore the battery cell parameters to normal limits, this time is acceptable prior to declaring the battery inoperable.

TSC-3 the minimum temperature limit

TSC-2 required

B.1

TSC-4 or the average cell float voltage ≤ 2.13 volts, which is equivalent to overall battery terminal voltage ≤ 127.8 volts,

With one or more batteries with one or more battery cell parameters outside the Category C limit for any connected cell, sufficient capacity to supply the maximum expected load requirement is not assured and the corresponding DC electrical power subsystem must be declared inoperable. Additionally, other potentially extreme conditions, such as not completing the Required Actions of Condition A within the required Completion Time or average electrolyte temperature of representative cells falling below 60°F, are also cause for immediately declaring the associated DC electrical power subsystem inoperable.

RAI 3.8.6-7 Revised Response

SURVEILLANCE REQUIREMENTS

PSC the values specified in Table 3.8.6-1.

SCS input

SR 3.8.6.1

This SR verifies that Category A battery cell parameters are consistent with IEEE-450 (Ref. 3), which recommends regular battery inspections (at least one per month) including voltage, specific gravity, and electrolyte temperature of pilot cells.

TSC-5 7 days

SR 3.8.6.2

The quarterly inspection of specific gravity and voltage is consistent with IEEE-450 (Ref. 3). In addition, within 24 hours of a battery discharge < [110] V or a battery overcharge > [150] V, the battery must be demonstrated to meet Category B limits. Transients, such as motor starting transients, which may momentarily cause battery voltage to drop to ≤ [110] V, do not constitute a battery discharge

(continued)

ATTACHMENT III

SNC Identified Changes - Associated Package Changes

Chapter 3.3

Chapter 3.3 Editorial Revision

During preparation of draft procedures for implementation of the ITS, a potential source of confusion was noted in Table 3.3.4-1. The table is divided into two sections, one for monitoring instrumentation and one for transfer and control circuits. In the originally submitted version, the same numbers were used on the table for different functions. To address this source of potential confusion, the numbering scheme has been revised such that each function has a unique number.

INSERT T
TO CTS PAGE 3/4.3-50 AND TO STS PAGE 3.3-46
FNP SPECIFIC REMOTE SHUTDOWN INSTRUMENTATION AND CONTROLS

Table 3.3.4-1 (page 1 of 1)
Remote Shutdown System Instrumentation and Controls

FUNCTION/INSTRUMENT OR CONTROL PARAMETER	REQUIRED NUMBER OF CHANNELS
MONITORING INSTRUMENTATION	
1. Steam Generator Wide Range Level	1/SG
2 Steam Generator Pressure	1/SG
3. Pressurizer Water Level	1
4. Pressurizer Pressure	1
5. RCS Hot Leg Temperature (Loop A)	1
6. RCS Cold Leg Temperature (Loop A)	1
7. Source Range Neutron Flux (Gammametrics)	1
8. Condensate Storage Tank Level	1
TRANSFER AND CONTROL CIRCUITS	
9. Reactivity Control	
a. Boric Acid Transfer System	1
10. RCS Pressure	
a. Pressurizer Heater control	1
11. RCS Inventory	
a. Charging System	1
b. Letdown Orifice Isolation Valves	1
12. Decay Heat Removal	
a. Auxiliary Feedwater System	1
b. SG Atmospheric Relief Valves	1
13. Safety Grade Support Systems Required For Functions Listed Above.	1

Editorial

Chapter 3.8

Chapter 3.8 Editorial Revision

During preparation of draft procedures for implementation of the ITS, a potential source of confusion was noted in the Bases for SR 3.8.3.3. The Bases state that "A statement of conformance is required at the time of delivery in lieu of testing the new fuel oil onsite." This wording was originally included to provide flexibility but it could be a source of confusion since it is not the normal plant procedure for receipt of fuel. To address this source of potential confusion, the above sentence has been replaced with the following sentence, "New fuel is tested to verify acceptability."

Chapter 3.8 Correction

During preparation of draft procedures for implementation of the ITS, a potential problem was identified in Table 3.8.6-1. In the STS, battery charging current can only be substituted for specific gravity following a battery recharge, for a maximum of 7 days – although it is applicable to all cells in the battery. In the Current Technical Specifications (CTS), battery charging current can be substituted for specific gravity at any time, but only for the pilot cell. Plant history has shown that the CTS allowance is more necessary for plant operation than the STS allowance with respect to the specific gravity measurement. Therefore, the submittal has been revised to maintain the current licensing basis contained in the CTS.

SNC 3.8 Editorial

CHAPTER 3.8

INSERT RR
STS BASES PAGE B 3.8-46
SR 3.8.3.3 DG FUEL OIL TESTING REQUIREMENTS

A sample from each fuel oil storage tank is analyzed for water and sediment in accordance with ASTM D-270-65 (Ref. 2). The sample is also used to ensure the oil is within the specifications of Table 1 of ASTM-D975-74 (Ref. 3) when checked for viscosity, water, and sediment. The frequency of this testing is in accordance with the DG Fuel Oil Testing Program and takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals. New fuel oil must meet the requirements of ASTM D-975-78 (Ref. 6) when delivered. New fuel is tested to verify acceptability.

Editorial

SNC 3.8 Correction

CTS 3/4.8.2.3 AUXILIARY BUILDING DC DISTRIBUTION - OPERATING

FNP ITS 3.8.9 DISTRIBUTION SYSTEMS OPERATING

FNP ITS 3.8.4 DC SOURCES - OPERATING

FNP ITS 3.8.6 BATTERY CELL PARAMETERS

DOC NO	SHE	DISCUSSION
23	A	The CTS 3/4.8.2.3 Table 4.8-2, Battery Surveillance Requirements footnote (b) is revised consistent with the STS. This CTS footnote which allows the use of charging current in place of specific gravity readings at all times for Category A limits (applicable to pilot cells) is re-labeled footnote (c) consistent with the STS. This change is made to conform with the format and presentation of this information in the STS and is considered an administrative change.
24	A	The CTS 3/4.8.2.3 Table 4.8-2, Battery Surveillance Requirements footnotes 1-4 represent Required Actions and are stated as such in the STS 3.8.6, Battery Cell Parameters. These Actions are modified by a note consistent with the STS 3.8.6. The STS note clarifies that separate Condition entry is made for each affected battery. The use of this type of STS note is explained in example 1.3-5 in Section 1.0 in the STS. The clarification provided by this note is consistent with the intent of the battery cell parameter Actions which provide adequate remedial measures for each affected battery. In the case of STS Condition A, the Actions address a situation in which the battery is degraded but not inoperable as described in the STS bases for the associated Actions. Therefore, it is an appropriate clarification that the Condition A Actions are applied individually to each battery. The STS 3.8.6 Condition B requires that the associated battery be declared inoperable immediately and is therefore essentially unaffected by the provisions of the STS note. In addition, the CTS for the FNP Auxiliary Building and Service Water Intake Structure batteries currently consist of two separate TS which would provide the same allowance (independent application of actions for each battery) as the STS note provides. Therefore, the addition of this note to the TS actions for battery cell parameters is considered an administrative change made to conform with the presentation and format of the STS.
25	L	The CTS 3/4.8.2.3 Table 4.8-2, Battery Surveillance Requirements footnotes 1 and 2 are revised consistent with the STS. The CTS footnotes are combined in the new battery cell parameter STS LCO 3.8.6 as Condition A Required Actions. In this process, CTS footnote 2 is

III. SPECIFIC SIGNIFICANT HAZARDS EVALUATIONS

CTS 3/4.3.8.2.3 AUXILIARY BUILDING DC DISTRIBUTION - OPERATING

FNP ITS 3.8.9 DISTRIBUTION SYSTEMS OPERATING

FNP ITS 3.8.4 DC SOURCES - OPERATING

FNP ITS 3.8.6 BATTERY CELL PARAMETERS

23-L

(Deleted)

SNC correction

Table 3.8.6-1 (page 1 of 1)
Battery Cell Parameters Requirements

PARAMETER	CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL	CATEGORY B: LIMITS FOR EACH CONNECTED CELL	CATEGORY C: ALLOWABLE LIMITS FOR EACH CONNECTED CELL
Electrolyte Level	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[a]	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[a]	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 V	≥ 2.13 V	> 2.07 V
Specific Gravity[b][c]	≥ [1.200]	≥ [1.195] AND Average of all connected cells > [1.205]	Not more than 0.020 below average of all connected cells AND Average of all connected cells ≥ [1.195]

(a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum during equalizing charges provided it is not overflowing.

(b) Corrected for electrolyte temperature and level. Level correction is not required, however, when battery charging is < [2] amps when on float charge.

(c) A battery charging current of < [2] amps when on float charge is acceptable for meeting specific gravity limits following a battery recharge, for a maximum of [7] days. When charging current is used to satisfy specific gravity requirements, specific gravity of each connected cell shall be measured prior to expiration of the [7] day allowance.

STS 3.8.6 BATTERY CELL PARAMETERS

FNP ITS 3.8.6 BATTERY CELL PARAMETERS

JD NUMBER	JUSTIFICATION
8	The STS Table 3.8.6-1, Battery Cell Parameters Requirements, note c is revised to allow the use of charging current in place of specific gravity readings at all times for Category A limits (applicable to pilot cells). Note c is edited to be consistent with the requirements of the FNP CTS. Therefore, this change maintains the current licensing basis for FNP.

SNC correction

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

Category C defines the limits for each connected cell. These values, although reduced, provide assurance that sufficient capacity exists to perform the intended function and maintain a margin of safety. When any battery parameter is outside the Category C limits, the assurance of sufficient capacity described above no longer exists, and the battery must be declared inoperable.

The Category C limits specified for electrolyte level (above the top of the plates and not overflowing) ensure that the plates suffer no physical damage and maintain adequate electron transfer capability. The Category C limits for float voltage is based on IEEE-450 (Ref. 3), which states that a cell voltage of 2.07 V or below, under float conditions and not caused by elevated temperature of the cell, indicates internal cell problems and may require cell replacement.

The Category C limit of average specific gravity ≥ 1.195 is based on manufacturer recommendations (0.020 below the manufacturer recommended fully charged, nominal specific gravity). In addition to that limit, it is required that the specific gravity for each connected cell must be no less than 0.020 below the average of all connected cells. This limit ensures that the effect of a highly charged or new cell does not mask overall degradation of the battery.

The footnotes to Table 3.8.6-1 are applicable to Category A, B, and C specific gravity. Footnote (b) to Table 3.8.6-1 requires the above mentioned correction for electrolyte level and temperature, with the exception that level correction is not required when battery charging current is < [2] amps on float charge. This current provides, in general, an indication of overall battery condition.

Because of specific gravity gradients that are produced during the recharging process, delays of several days may occur while waiting for the specific gravity to stabilize. A stabilized charger current is an acceptable alternative to specific gravity measurement for determining the state of charge. This phenomenon is discussed in IEEE-450 (Ref. 3). Footnote (c) to Table 3.8.6-1 allows the float charge current to be used as an alternate to specific gravity, for

(continued)

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

TSC-8

SNC correction

up to [7] days following a battery recharge. Within [7] days, each connected cell's specific gravity must be measured to confirm the state of charge. Following a minor battery recharge (such as equalizing charge that does not follow a deep discharge) specific gravity gradients are not significant, and confirming measurements may be made in less than [7] days.

E

[Reviewer's Note: The value of [2] amps used in footnote (b) and (c) is the nominal value for float current established by the battery vendor as representing a fully charged battery with an allowance for overall battery condition.]

REFERENCES

1. FSAR, Chapter [6].

2. FSAR, Chapter [15].

3. IEEE-450-[1980].

SCS input