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10 CFR 50.90

April 21, 2003
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United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Oyster Creek Generating Station
Facility Operating License No. DPR-16
NRC Docket No. 50-219

Subject: License Amendment Request No. 306 – DC Electrical Power Sources Based on TSTF-360

Reference: Technical Specifications Task Force (TSTF) Traveler-360, "DC Electrical Rewrite," Revision 1

In accordance with 10 CFR 50.4(b)(1), enclosed is License Amendment Request No. 306.

The purpose of this License Amendment Request is to revise the Oyster Creek Technical Specifications (TS) for station batteries B and C, and associated battery chargers, through revision of Specifications 3.7 and 4.7 ("Auxiliary Electrical Power") and addition of new Specification 6.8.5, "Station Battery Monitoring and Maintenance Program." The proposed TS requirements are generally consistent with the requirements of Specifications 3.8.4, 3.8.6, and 5.5.14 described in NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4," Revision 2, which are based on the NRC approved industry Technical Specification Task Force (TSTF) change TSTF-360, Revision 1 (Reference above). In addition, editorial changes are proposed to Specifications 3.7 and 4.7.

Information supporting this License Amendment Request is contained in Enclosure 1 to this letter. The proposed markup of Technical Specification pages (and associated Bases) is contained in Enclosure 2. Enclosure 3 provides the camera-ready retyped Technical Specification and Bases pages. Enclosure 4 presents a summary of the new regulatory commitments that will be established upon issuance of an approved amendment reflecting these changes.

Using the standards in 10 CFR 50.92, AmerGen Energy Company, LLC (AmerGen) has concluded that these proposed changes do not constitute a significant hazards consideration, as described in the enclosed analysis performed in accordance with 10 CFR 50.91(a)(1). A copy of this License Amendment Request is provided to the designated official of the State of New Jersey, Bureau of Nuclear Engineering (pursuant to 10 CFR 50.91(b)(1)), as well as the Chief Executive of the township in which the facility is located.

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The proposed changes to the Technical Specifications have undergone a safety review in accordance with Section 6.5 of the Oyster Creek Technical Specifications.

NRC approval of the proposed amendment is requested by April 30, 2004. It is requested that an implementation period of 60 days be provided.

If any additional information is needed, please contact me at (610) 765-5664.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,

Executed on 04-21-03

Michael P. Gallagher

Michael P. Gallagher
Director, Licensing and Regulatory Affairs
AmerGen Energy Company, LLC

Enclosures
(1) Evaluation of Proposed Changes
(2) Markup of Technical Specification and Bases Pages
(3) Typed Technical Specification and Bases Pages
(4) List of Commitments

cc: H. J. Miller, Administrator, USNRC Region I
P. S. Tam, USNRC Senior Project Manager, Oyster Creek
S. Dennis, USNRC Senior Resident Inspector (Acting), Oyster Creek
File No. 03042

United States of America
Nuclear Regulatory Commission

In the Matter of)

AmerGen Energy Company, LLC) Docket No. 50-219

Certificate of Service

This is to certify that a copy of License Amendment Request No. 306 for the Oyster Creek Generating Station Operating License, filed with the U.S. Nuclear Regulatory Commission on April 21, 2003, has this 21st day of April 2003 been served on the State of New Jersey Bureau of Nuclear Engineering, as well as the Chief Executive of the township in which the facility is located, by deposit in the United States mail, addressed as follows:

The Honorable Brian Reed
Mayor of Lacey Township
818 West Lacey Road
Forked River, NJ 08731

Mr. Kent Tosch, Director
Bureau of Nuclear Engineering
Department of Environmental Protection
CN 415
Trenton, NJ 08628

By: [signature]
Michael P. Gallagher

ENCLOSURE 1

Oyster Creek License Amendment Request No. 306

Evaluation of Proposed Changes

1.0 INTRODUCTION

This letter is a request to amend Operating License No. DPR-16.

The proposed changes would modify the Oyster Creek Technical Specifications (TS) for station batteries B and C, and associated station battery chargers, through revision of Specifications 3.7 and 4.7 ("Auxiliary Electrical Power"). Additionally, a new Administrative Controls Section 6.8.5, "Station Battery Monitoring and Maintenance Program," is being proposed for the restoration and maintenance of station batteries based on the recommendations of the Institute of Electrical and Electronics Engineers (IEEE) Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications."

The proposed changes are related to the TS Actions and Surveillance Requirements of the B and C station batteries and associated battery chargers. New, less restrictive Actions are proposed for inoperable station batteries and associated charger(s), as well as for out-of- limits conditions for station battery cell voltage, battery float current, electrolyte level, and electrolyte temperature.

Station battery surveillance requirement changes are proposed to replace monitoring electrolyte specific gravity with battery float current, as well as revise certain details and frequency of performance. These changes are generally consistent with the requirements of Specifications 3.8.4, 3.8.6, and 5.5.14 presented in NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4," Revision 2 (Reference 1) and the NRC approved industry Technical Specification Task Force (TSTF) change TSTF-360, Revision 1, "DC Electrical Rewrite" (Reference 2), and with IEEE Standard 450-1995 (Reference 3). Differences between these generic documents and the Oyster Creek proposed TS are discussed in the following sections.

This change will provide reasonable restoration times for various auxiliary DC electrical power supply (station battery and charger) degradations, which will minimize the potential for unnecessary plant shutdown transients. Furthermore, station battery and battery charger testing is revised, and in some cases added, to provide testing consistent with the latest approved recommendations from IEEE Standard 450 and NUREG-1433, Revision 2. The revised testing scope, methods, and frequencies reflect an overall enhancement to maintaining and monitoring station battery and battery charger functions.

Additional editorial changes to 3.7.A are proposed to present the various auxiliary electrical power panels, MCCs, and distribution centers required to be energized, consistent with existing plant terminology. No actual changes in requirements are proposed to this section.

This amendment does not include changes to the TS requirements for the diesel generator starting batteries related to TSTF-360. The diesel generator starting batteries are Exide model 4-LMS-450 batteries typically used for railroad engine applications. Since these batteries are not consistent with typical stationary applications (as are the Oyster Creek station batteries), IEEE Standard 450 recommendations, and TSTF-360 changes are not applicable to these batteries. Therefore, no changes are being proposed for the Oyster Creek diesel generator starting batteries related to TSTF-360.

Additionally, changes are made to the surveillances in 4.7.B to enhance the editorial presentation by eliminating duplicative requirements for the diesel generator starting batteries. These changes result in no technical changes, no changes in operation, and no changes to the surveillance of the diesel generator starting batteries.

2.0 DESCRIPTION OF PROPOSED AMENDMENT

This License Amendment Request revises Oyster Creek TS 3.7 and 4.7 for station batteries and associated battery chargers, and adds new Specification 6.8.5. These changes are generally consistent with NUREG-1433 (Reference 1) and with the NRC approved industry Technical Specification Task Force (TSTF) traveler TSTF-360, Revision 1 (Reference 2). Since Oyster Creek Technical Specifications are not converted to Improved Standard Technical Specification content and format, differences in content and format from NUREG-1433 and TSTF-360 are required (e.g., NUREG-1433 Specification 3.8.6 provides a separate Specification for battery parameters -- that format is not utilized in Oyster Creek TS; rather the applicable Actions and Surveillance Requirements are incorporated in the Oyster Creek Auxiliary Electrical Power Specifications). The TS Bases for Oyster Creek TS 3.7 and 4.7 have also been revised to present content generally consistent with NUREG-1433 for Specifications 3.8.4 and 3.8.6 as they relate to the requested changes.

The Oyster Creek Technical Specifications do not explicitly address operability requirements or related actions for auxiliary electrical power systems during plant operations in cold shutdown or refueling. As such, the TSTF-360 related changes to NUREG-1433 Specification 3.8.5 ("DC Sources – Shutdown") do not directly apply to the Oyster Creek Technical Specifications and will not be addressed as part of this License Amendment Request.

The NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4," Revision 2, which include changes based on the NRC approved industry Technical Specification Task Force (TSTF) change TSTF-360, Revision 1, encompasses surveillances and Actions for diesel generator batteries and battery chargers. These generic requirements are based on typical large batteries used for stationary standby power applications where commitments to IEEE Standard 450 recommended practices apply. However, the Oyster Creek diesel generator starting batteries (Exide model 4-LMS-450), typically used for railroad engine applications, provide the starting power for the diesels, but perform no standby power source function. Many of the recommended maintenance practices in IEEE Standard 450 cannot be performed on the diesel generator starting batteries. The batteries do not have clear plastic cases, so the electrolyte level cannot be checked against gradations – evaluating cell plate coverage is possible only when viewing from the top. The diesel generator starting battery has a nominal 8-year life, compared to the typical station battery life of 20 years. Because of the reduced life expectancy, IEEE Standard 450 trending methods (performance discharge tests) are also not applicable.

Since the diesel generator starting battery design and function is not consistent with typical stationary applications, IEEE Standard 450 recommendations and TSTF-360 changes do not apply. Therefore, no changes are being proposed for the Oyster Creek diesel generator starting batteries in accordance with the guidance of TSTF-360 and NUREG-1433.

Enclosure 2 contains the markup of the Oyster Creek Technical Specifications. The markup of Specification 4.7.B is duplicated ("Copy 1" and "Copy 2") for the surveillances related to diesel generator starting batteries and station batteries. The "Copy 1" markup reflects the 4.7.B requirements for diesel generator starting batteries, while excluding all station battery surveillances (by striking through these requirements). The "Copy 2" markup of these same 4.7.B pages provides the proposed requirements for the station batteries (and associated battery chargers), renumbering the proposed surveillances as 4.7.C.

Each related change is grouped and discussed in detail below. These groupings follow the general presentation found in TSTF-360, Revision 1. Section 4.0, "Technical Analysis," presents subsections that are numbered following the below numbered summary of changes, e.g., Section 4.1 addresses change (1). All changes are within the scope of TSTF-360, Revision 1, except as noted. Additionally, revised Bases consistent with these changes are provided for information only within Enclosures 2 and 3 to assist the review of the proposed changes.

(1) <u>Provide Specific Actions and Increased Restoration Time for An Inoperable Station Battery Charger And Add Station Battery Charger Load Test</u>

(a) Specification 3.7.B currently requires a plant shutdown in the event that auxiliary electrical power is not available as required by Specification 3.7.A, except as allowed by 3.7.B.1 and 3.7.B.2. The proposed change adds a new 3.7.B.3 allowance that references the acceptability of continuing reactor operation as allowed by the proposed Actions of new 3.7.D. The proposed Actions of 3.7.D.1 address restoration Actions for an inoperable station battery charger that consist of:
   (i) Ensuring that a battery charging source is applied to the battery within 2 hours (Action 3.7.D.1.a: Restore associated station battery terminal voltage to greater than or equal to the minimum established float voltage);
   (ii) Ensuring that the station battery is fully recharged within 12 hours and periodically re-verifying it remains charged (Action 3.7.D.1.b: Verify battery float current is ≤ 2 amps once per 12 hours); and
   (iii) Restoring the station battery charger to operable status within 7 days (Action 3.7.D.1.c).

(b) New Surveillance 4.7.C.4.b is added to require a station battery charger load test.

(2) Replace Station Battery Specific Gravity Monitoring With Battery Float Current Monitoring

The specific gravity limits and monitoring frequencies of Specification 4.7.B.1.d, 4.7.B.2.c, and 4.7.B.3.c are deleted. In their place, new Surveillance Requirement 4.7.C.1.b will require weekly confirmation that station battery B and C float current is $\leq$ 2 amps when battery terminal voltage is greater than or equal to the minimum established float voltage of 4.7.C.1.a. New Action 3.7.D.2.b will add additional monitoring of the battery float voltage and impose the requirement to restore battery float current to within these limits within 12 hours.

(3) Relocate (and Increase) Limiting Values For Station Battery Float Voltage

The specific value for station battery float voltage in 4.7.B.1.c (renumbered 4.7.C.1.a) is relocated from TS to the Bases. The existing float voltage limits (125.4 V for station battery B and 120 V for station battery C) are being increased to reflect the manufacturers' minimum float voltage of 2.17 V per cell or 130.2 V, as presented in the Bases.

(4) Revise Surveillance Frequency for Station Battery Surveillance Requirements

(a) The frequency of monitoring station battery electrolyte level is revised from "weekly" (4.7.B.1.a), "quarterly" (4.7.B.2.a), and "annual" (4.7.B.3.a), to "monthly" (proposed 4.7.C.2.a),
(b) The frequency of monitoring each station battery pilot cell voltage is revised from "weekly" (4.7.B.1.b), to "monthly" (proposed 4.7.C.2.b), and
(c) The frequency of monitoring each station battery connected cell voltage is revised from "quarterly" (4.7.B.2.b) and "annual" (4.7.B.3.b), to "quarterly" (proposed 4.7.C.3).

(5) Add Station Battery Electrolyte Temperature Limit and Surveillance

An operability limit (with specific value reflected in the Bases) and monthly surveillance monitoring for station battery pilot cell electrolyte temperature (proposed 4.7.C.2.c) is added as a more restrictive change. To address situations where pilot cell electrolyte temperature is less than minimum established design limits, a new Action 3.7.D.2.d, with restoration time of 12 hours, is also added.

(6) Create New Station Battery Monitoring and Maintenance Program

Oyster Creek TS 6.8.5, "Station Battery Monitoring and Maintenance Program," is added to require a program that provides for restoration and maintenance, based on the recommendations of IEEE Standard 450, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries For Stationary Applications," consisting of the following:

(a) Actions to restore station battery cells with float voltage < 2.13 volts, and

(b) Actions to equalize and test station battery cells that have been discovered with electrolyte level below the top of the plates.

(7) Provide Specific Actions with Increased Restoration Time For Certain Station Battery And Battery Cell Parameter Out-Of-Limits Conditions

New Actions under 3.7.D.2 are added to provide Action restoration times for station batteries with out-of-limits parameters. New Action 3.7.D.3 provides an Action for one inoperable station battery where the inoperability is other than one of the addressed parameter limits not met. These new Actions (not discussed elsewhere in this submittal) address:

(a) Action 3.7.D.2.a: Cell float voltages < 2.07 volts with restoration time of 24 hours. In conjunction with these specific Actions for battery cell voltage, proposed surveillance 4.7.C.2.b and 4.7.C.3 revise the acceptance criteria to 2.07 volts.

(b) Action 3.7.D.2.c: Cell electrolyte level less than minimum established design limits with restoration time of 31 days provided level is above the top of the plates within 8 hours and no evidence of leakage is found within 12 hours. The Footnote to Action 3.7.D.2.c assures the verification that there is no evidence of leakage is completed regardless of when electrolyte level is restored. In conjunction with these specific Actions for electrolyte level, proposed surveillance 4.7.C.2.a includes a more restrictive acceptance criteria for monitoring station battery electrolyte level (i.e., "minimum established design limit," which is well above the existing plates-covered criterion).

(c) Action 3.7.D.2.e: This Action restricts continued operation with degradation of more than one station battery at any one time to less than two hours,

(d) Action 3.7.D.2.f: This Action imposes a 2-hour restoration time for failing to meet any of the other parameter restoration times of Actions 3.7.D.2.a through 3.7.D.2.e. Failing to correct the condition(s) within 2 hours would require the plant to proceed to cold shutdown.

(e) Action 3.7.D.2.g: This Action imposes a 2-hour restoration time for any battery having both cell(s) voltage < 2.07 volts and battery float current not within limits or for any of the new battery parameter restoration times not met. Failing to correct these conditions within 2 hours would require the plant to proceed to cold shutdown.

(f) Action 3.7.D.3: This Action imposes a 2-hour restoration time for one station battery that is inoperable for reasons other than addressed by the parameter degradation Actions provided.

(8) Revise Frequency of Station Battery Performance Discharge Tests and Add Option to Satisfy Station Battery Service Test by Modified Performance Discharge Test

(a) Existing Surveillance Requirement 4.7.B.5 currently requires a station battery capacity discharge test (editorially revised to be referred to as "performance discharge test") every 24 months and includes criteria for battery replacement. This is replaced with proposed 4.7.C.5, which will require either

a performance discharge test or modified performance discharge test (as defined by IEEE Standard 450) once per 60 months, with criteria for increasing the frequency of testing to 24 or 12 month intervals. Actual battery replacement criteria will be deleted from the TS.

With the addition of more restrictive criteria for increased testing frequencies, the new 12-month frequency is modified by a footnote to allow deferral of implementation for the C station battery until the next refueling outage (1R20). This one time exception is not based on TSTF-360.

(b) The station battery service test required every 24 months (existing 4.7.B.5.c being renumbered 4.7.C.4.a) is provided a new option. In lieu of a battery service test the proposed change allows a modified performance discharge test to satisfy the service test requirement.

(9) Eliminate Duplicative Diesel Generator Starting Battery Testing

Editorial presentation changes are made to delete surveillance requirements 4.7.B.2.a and 4.7.B.3.a since they are duplicative of 4.7.B 1.a.

These changes are not based on TSTF-360.

(10) Enhance Presentation of Required Buses, Panels, MCCs, and Distribution Centers

Specification 3.7.A lists the required buses, panels, MCCs, and distribution centers required to be energized. The proposed change is an editorial enhancement to present these components more consistently with actual as-built Oyster Creek specific terminology and enhance the presentation format. No changes in actual requirements are proposed to this section.

These changes are not based on TSTF-360.

3.0 BACKGROUND

The plant 125V Station DC System consists of three batteries and associated distribution system. Station batteries B and C are designated as the safety related subsystems while battery A is designated as a non-safety related subsystem (and not addressed within the scope of this request). Safety related loads are supplied by station batteries B and C, each with two associated full capacity chargers. One charger on each battery is in service at all times with the second charger available in the event of a charger failure. The battery chargers supply normal system loads with the batteries acting as a standby source of DC power upon failure of the battery chargers or their power supplies or during high demand transients.

Station battery B is rated at 1504 ampere hours (based on an eight-hour discharge rate) and is sized to provide power for all connected loads for up to 3 hours while maintaining adequate voltage levels to all loads. Station battery C is rated at 1200 ampere hours (at an eight hour discharge rate) and is sized to provide power for all connected loads for up to 8 hours while maintaining adequate voltage levels to all loads. The only exception to

the assumed loads on station batteries are the DC motor-operated valves, which rely on the station battery chargers to provide adequate voltage for high energy line break (HELB) isolation. The Oyster Creek specific impact of this exception is discussed further in Section 4.0 below.

Station batteries B and C are estimated to be 98% charged when stable battery charging current is ≤ 2 amps. Each battery is sized to perform its duty cycle at the 98% charged level. When measured at float voltage, the charging current of a correctly charged battery is an accurate measure of the capability of the battery. References to "fully charged" throughout this amendment request assume a battery charge that is reflected by a charging current of ≤ 2 amps.

For each system, one station battery charger is maintained in-service and connected to maintain the battery in a fully charged condition at a nominal 132 V while supplying normal steady state DC loads. Each charger can also provide equalizing charge voltage to its connected battery as required. Each station battery also has an alternate Class 1E full capacity qualified charger that can be manually placed in service if needed. Each Class 1E station battery charger has sufficient capacity to maintain the normal steady state DC loads during station operation while fully recharging its respective battery.

DC motor operated valves in the Isolation Condenser and Reactor Water Cleanup (RWCU) Systems required for HELB isolation are part of the Generic Letter (GL) 89-10 Program for Oyster Creek Nuclear Generating Station. These valves take credit for the availability of the DC system at voltages that require the station battery chargers to be connected and supplying DC load to meet the assumed isolation requirements. The battery chargers for the B and C Distribution Systems are designed to automatically load, restart onto the Emergency Diesel Generators, and pickup vital loads. The battery chargers can supply float voltage within the time required such that the DC MOVs can perform their isolation function within their time requirements.

Battery chargers C1 and C2 for the C Distribution System and charger A/B for the B Distribution System are static type chargers that remain connected to their respective power supplies and restart when power is restored. Battery Charger B for the B Distribution System is a MG Set type charger that will restart and reload automatically on restoration of AC power.

4.0 TECHNICAL ANALYSIS

4.1 Provide Specific Actions and Increased Restoration Time for An Inoperable Station Battery Charger And Add Station Battery Charger Load Test

Current TS Actions (3.7.B) for an inoperable battery charger are the same as for an inoperable battery or a completely deenergized DC distribution subsystem, which require placing the reactor in the cold shutdown condition.

New Actions with associated restoration times to address battery charger inoperability would be added as Specification 3.7.D.1 (as referenced by new 3.7.B.3). Each of these Actions addresses the condition where the required station battery charger for any one system becomes inoperable. While the proposed Action 3.7.D.1.c provides a 7-day

restoration time for an inoperable battery charger on one DC system, this time is contingent on a focused and tiered approach to assuring adequate station battery capability is maintained.

The first priority is to minimize the battery discharge. Action 3.7.D.1.a assures that the discharge is terminated within 2 hours by requiring that the station battery terminal voltage be restored to greater than or equal to the minimum established float voltage within that time. There is no comparable limitation in the current Oyster Creek TS. As such, including this Action provides an enhancement to continued safe plant operation.

The second tier Action (Action 3.7.D.1.b) requires that within 12-hours (and continuing at 12-hour intervals) verification is made that the battery has sufficient capacity to perform its assumed duty cycle. This is accomplished by verifying the battery float current is $\leq$ 2 amps (further discussion of the basis for this criteria is presented in Section 4.2 below). The 12-hours is provided since some recharging of lost capacity that occurred during the initial 2 hours may be required. This provides a reasonable time to fully recharge the battery.

The final Action (Action 3.7.D.1.c) extends the restoration time for an inoperable charger (beyond the existing immediate plant shutdown) to 7 days. The 7 days is reasonable given that the DC bus remains energized (as required by Specification 3.7.A.1.e), the battery discharge (if it was occurring) is terminated (Action 3.7.D.1.a), and the battery is fully recharged (Action 3.7.D.1.b).

The revised Actions are acceptable because they focus efforts on retaining battery capabilities, retaining the requirement for charger operability, and applying a reasonable restoration time for an inoperable battery charger while avoiding an unnecessary plant shutdown transient.

During periods when one or more station battery chargers are inoperable, the Oyster Creek design is such that certain Isolation Condenser and RWCU isolation valves would not be capable of performing the intended function in the event of specific HELBs. As such, in conjunction with the proposed Actions of 3.7.D.1 for an inoperable station battery charger, the impacted isolation valves would also be declared inoperable (as required by the definition of Operability). This would also require the Technical Specification Actions associated with these inoperable valves to be taken.

The additional Actions applicable to inoperable HELB MOVs would initially be directed by Specification 3.5.A.3.a, which allows 4-hours to isolate the affected penetration. Once isolated, Specification 3.8.C (for an inoperable Isolation Condenser) will require restoration within 7 days. These additional Actions provide appropriate compensatory actions for the Oyster Creek specific plant design that would be necessary in the event of an inoperable station battery charger, and would continue to support the basis for the proposed 3.7.D.1 Actions.

A new station battery charger load test is added as Oyster Creek TS Surveillance Requirement 4.7.C.4.b, which verifies the design capacity of the station battery chargers. As described in Oyster Creek FSAR Section 8.3.2.1, the battery charger capability is based on the normal steady state DC system loads during station operation and the charging capacity to restore the battery from the design minimum charge state to the

fully charged state. The battery is fully recharged when the measured charging current is $\leq$ 2 amps.

Surveillance Requirement 4.7.C.4.b(i) requires that each required station battery charger (i.e., only one charger per station battery is "required" for compliance with 3.7.A.4) be capable of supplying the amps listed for the specified charger at the minimum established float voltage for 4 hours. The ampere requirements are based on the output rating of the chargers. The voltage requirements are based on the normal minimum established float voltage. This time period is sufficient for the charger temperature to have stabilized and to have been maintained for at least 2 hours.

Alternately, 4.7.C.4.b(ii) allows that the battery charger load test be capable of recharging the battery after a service test coincident with normal steady state DC loads during station operation. This level of loading may not normally be available following the battery service test and may need to be supplemented with additional loads. The duration for this test may be longer than the charger sizing criteria since the battery recharge is affected by float voltage, temperature, and the exponential decay in charging current. The Oyster Creek presentation of this optional testing method differs slightly from the optional criteria in TSTF-360 and NUREG-1433 for SR 3.8.4.2. The specific wording of the Oyster Creek criteria is taken from FSAR 8.3.2.1, which does not express an explicit minimum time required to complete this recharge. Since no design basis assumptions depend on this recharge time, omission of this acceptance criterion constitutes plant-specific implementation of the "bracketed" duration from the Standard TS surveillance.

4.2 Replace Station Battery Specific Gravity Monitoring With Battery Float Current Monitoring

Existing Oyster Creek Surveillance Requirements 4.7.B.1.d, 4.7.B.2.c, and 4.7.B.3.c require monitoring of individual cell specific gravity. In their place, new Surveillance Requirement 4.7.C.1.b will require weekly confirmation that station battery B and C float current is $\leq$ 2 amps when battery terminal voltage is greater than or equal to the minimum established float voltage of 4.7.C.1.a. Additionally, new Action 3.7.D.2.b will ensure additional monitoring of the battery float voltage (assuring the charger's ability to maintain the minimum established float voltage) and impose the requirement to restore battery float current to within these limits within 12 hours.

As supported by Oyster Creek specific analyses/testing and generic industry information provided in TSTF-360, the battery is estimated to be 98% charged when stable charging current measurement is less than or equal to 2 amps for the station batteries. Each battery is sized to perform its duty cycle at the 98% charged level. Therefore, the appropriate battery float current limit for the Oyster Creek station batteries is 2 amps.

Verifying battery float current while on float charge is used to determine the state of charge of the battery. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a charged state. The float current requirements are based on the float current indicative of a charged battery. Use of float current to determine the state of charge of the battery is consistent with Section 4.5 of IEEE Standard 450-1995. The acceptability of utilizing float current in lieu of specific gravity to determine the state of charge (as

reflected in IEEE Standard 450 and TSTF-360) has been the focus of significant discussion within IEEE Standard 450 committee and with the NRC technical staff. Based on the continuing interaction over many years between the IEEE Standard 450, SSC 29, Nuclear Task Force Tech Spec Subcommittee, and the NRC Staff, and supported by industry testing data, this change has been found to be acceptable and will not have a significant impact on safety or the ability to accurately determine the operability of the batteries.

4.3 Relocate (and Increase) Limiting Values For Station Battery Float Voltage

The specific value for minimum station battery float voltage in 4.7.B.1.c, which is renumbered to 4.7.C.1.a, is revised to state: "greater than or equal to the minimum established float voltage." The basic premise of TS Surveillances based on 10 CFR 50.36 is that Surveillance Requirements represent the minimum acceptable requirements for operability of the required equipment. However, failures to meet station battery float voltage requirements do not necessarily mean that the battery is not capable of performing its safety function. The corrective action is generally a routine or preventive maintenance type activity.

The proposed change relocates the details of the surveillance acceptance criteria to the TS Bases. This will make all changes subject to review under 10 CFR 50.59, "Changes, tests, and experiments" to determine if the proposed changes will require prior NRC review and approval, and will require reporting of all changes to the NRC in accordance with 10 CFR 50.71(e), "Maintenance of records, making of reports."

The proposed Bases also reflect increased float voltage acceptance criteria. The existing float voltage limits (125.4 V for station battery B and 120 V for station battery C) are being increased to reflect the manufacturers' minimum float voltage (130.2 V) as presented in the Bases.

Based on the above, the proposed changes provide adequate assurance of system operability commensurate with the safety significance.

4.4 Revise Surveillance Frequency for Station Battery Surveillance Requirements

(a) The frequency of monitoring station battery electrolyte level is revised from "weekly" (4.7.B.1.a) to "monthly" (proposed 4.7.C.2.a). The "quarterly" (4.7.B.2.a) and "annual" (4.7.B.3.a) electrolyte level monitoring are extraneous since they are completely encompassed by the proposed monthly frequency. As such, the quarterly and annual frequencies are deleted.
(b) The frequency of monitoring each station battery pilot cell voltage is revised from "weekly" (4.7.B.1.b) to "monthly" (proposed 4.7.C.2.b).
(c) The "quarterly" frequency of monitoring each station battery connected cell voltage is editorially renumbered from 4.7.B.2.b to 4.7.C.3. The "annual" (4.7.B.3.b) frequency for monitoring connected cell voltage was extraneous to the quarterly requirement. As such, the annual frequency is deleted.

As part of this License Amendment Request, Oyster Creek is adopting a commitment to IEEE Standard 450, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," 1995 edition

(with the exception of specific gravity monitoring frequency which will be discussed in Section 5.2 of this request). Consistent with IEEE Standard 450-1995, the frequency of monitoring station battery electrolyte level and pilot cell voltage is being extended from weekly to monthly. Changes in these parameters are expected to occur gradually and monthly monitoring is deemed adequate to provide reasonable assurance of operability. Additionally, the weekly monitoring of station battery float voltage and float current can detect changes in cell voltage at more frequent intervals.

4.5 Add Station Battery Electrolyte Temperature Limit and Surveillance

An operability limit (with specific value reflected in the Bases) and monthly surveillance monitoring for station battery pilot cell electrolyte temperature (proposed 4.7.C.2.c) is added as a more restrictive change. To address situations where pilot cell electrolyte temperature is less than minimum established design limits, a new Action 3.7.D.2.d, with restoration time of 12 hours, is also added. Since these new limitations provide monitoring consistent with IEEE Standard 450-1995 and will enhance operability monitoring of the battery, these changes will ensure that the batteries are maintained in a highly reliable condition.

4.6 Create New Station Battery Monitoring and Maintenance Program

A new Administrative Controls Specification, 6.8.5, "Station Battery Monitoring and Maintenance Program," requires corrective actions based on IEEE Standard 450 (refer to Section 4.4.2c) to address the restoration and maintenance of the battery when cells below a manufacturer's predetermined limit (i.e., 2.13 V) are discovered. Currently, Oyster Creek TS do not address Actions to be taken in the event battery cell voltage is found < 2.13 volts.

Furthermore, new limitations are introduced in the new Administrative Controls Specification, 6.8.5, "Station Battery Monitoring and Maintenance Program," that require provisions to equalize and test battery cells that have been discovered with electrolyte level below the top of the plates. Testing of these cells will be based on the informational Annex D attached to IEEE Standard 450-1995. The proposed Specification 6.8.5.b wording "top of the plates" is more specific than the TSTF-360, Revision 1, wording "the minimum established design limit." The TSTF-360 Bases for the Actions to be taken in the event electrolyte level below the minimum level mark, acknowledge that the Station Battery Monitoring and Maintenance Program applies when level is below the top of the plates. TSTF-360 wording could create confusion with the monthly surveillance requirement, which also uses the phrase "the minimum established design limit" in referring to the minimum level mark on the side of the battery cell.

Together, these new more restrictive programmatic requirements associated with the new Station Battery Monitoring and Maintenance Program will ensure that the batteries are maintained in a highly reliable condition.

4.7 Provide Specific Actions with Increased Restoration Time For Certain Station Battery And Battery Cell Parameter Out-Of-Limits Conditions

New Actions 3.7.D.2 (as referenced by new 3.7.B.3) are added to provide Action restoration times for out-of-limits parameters. New Action 3.7.D.3 provides an Action for one inoperable station battery where the inoperability is other than one of the addressed parameter limits not met. These new Actions address:

(a) Cell voltages < 2.07 volts with restoration time of 24 hours (Action 3.7.D.2.a). In conjunction with these specific Actions for battery cell voltage, proposed surveillance 4.7.C.2.b and 4.7.C.3 revise the acceptance criteria to 2.07 volts. With any cell voltage < 2.07 volts, the battery is considered degraded. The Action is to verify: (a) the battery terminal voltage to be greater than or equal to minimum established float voltage; and (b) the battery float current is within limits. These Actions assure that there is still sufficient capacity in the battery to perform its intended function. Continued operations up to 24 hours is permitted to allow the restoration of the affected cell(s) voltage to greater than or equal to 2.07 volts.

(b) Cell electrolyte level less than minimum established design limits with restoration time of 31 days, provided level is above the top of the plates within 8 hours and no evidence of leakage is found within 12 hours (Action 3.7.D.2.c). The Footnote to Action 3.7.D.2.c assures the verification that there is no evidence of leakage is completed regardless of when electrolyte level is restored. If the level is above the top of the battery plates, but below the minimum established design limit, the battery still has sufficient capacity. These Actions restore the level and ensure that the cause of the loss of electrolyte level is not due to a leak in the battery casing. In addition, the Station Battery Monitoring and Maintenance Program described in proposed TS Section 6.8.5 and discussed under paragraph 4.6 above, would require action, based on IEEE Standard 450-1995, to equalize and test battery cells that have been discovered with an electrolyte level below the top of the plates.

These Actions are proposed in conjunction with a more restrictive surveillance criterion for station battery electrolyte level (i.e., 4.7.C.2.a is revised to require level be verified above the "minimum established design limit," which is well above the existing plates-covered criterion).

With electrolyte level below the top of the plates, there is a potential for dryout and plate degradation. Therefore, the more restrictive surveillance criterion and additional Actions for when level is discovered below the plates represents enhanced assurance of continued battery capability.

(c) Action 3.7.D.2.e restricts degradations to one station battery at any one time. If both station batteries are degraded for any parameters discussed above, there is not sufficient assurance that the DC system will be able to perform its intended function. With both B and C station batteries with an out-of-limit parameter, loss of an assumed function for systems that depend upon the batteries is possible. Thus, it is proposed that battery parameters be restored to within limits on one battery within 2 hours.

(d) Action 3.7.D.2.f imposes a 2-hour restoration time for failing to meet any of the other parameter restoration times of Actions 3.7.D.2.a through 3.7.D.2.e. Failing to correct the condition(s) within 2 hours would require the plant to proceed to cold shutdown.

(e) Action 3.7.D.2.g imposes a 2-hour restoration time for any station battery having both cell voltage < 2.07 volts and battery float current not within limits. Discovering station battery B or C with one or more battery cell float voltages < 2.07 volts and float current not within limits indicates that the battery capacity may not be sufficient to perform the intended functions. Failing to correct these conditions within 2 hours would require the plant to proceed to cold shutdown.

(f) Action 3.7.D.3: This Action imposes a 2-hour restoration time for one station battery that is inoperable for reasons other than addressed by the parameter degradation Actions provided. With one station battery inoperable, the battery charger is supplying the DC bus. The 2-hour limit allows sufficient time to effect restoration of an inoperable battery given that the majority of the conditions that lead to battery inoperability (e.g., loss of battery charger, battery cell voltage less than 2.07 V, etc.) are identified in Actions 3.7.D.2 together with additional specific completion times. Failing to correct this inoperability within 2 hours would require the plant to proceed to cold shutdown.

These proposed changes are consistent with TSTF-360.

4.8 Revise Frequency of Station Battery Performance Discharge Tests and Add Option to Satisfy Battery Service Test by Modified Performance Discharge Test

(a) Existing Surveillance Requirement 4.7.B.5 currently requires a station battery capacity discharge test (editorially revised to be referred to as "performance discharge test") be performed every 24 months and includes timing for battery replacement. This is replaced with proposed 4.7.C.5, which will require either a performance discharge test or modified performance discharge test (as defined by IEEE Standard 450) be performed once per 60 months, with criteria for increasing the frequency of testing to 24 or 12 month intervals. Actual battery replacement timing will be deleted from the TS.

In accordance with IEEE Standard 450-1995, the Frequency for this test is normally 60 months. If the battery shows degradation, or if the battery has reached 85% of its expected life and capacity is < 100% of the manufacturer's rating, the Surveillance Frequency is reduced to 12 months. However, if the battery shows no degradation but has reached 85% of its expected life, the Surveillance Frequency is only reduced to 24 months for batteries that retain capacity ≥ 100% of the manufacturer's rating. Degradation is indicated, according to IEEE Standard 450, when the battery capacity drops by more than 10% relative to its capacity on the previous performance test or when it is 10% below the manufacturer's rating. The details of what constitutes "degradation," are provided in the proposed Bases, consistent with the format and content of NUREG-1433.

These frequencies are appropriate for trending station battery capacity over the expected life of the station batteries.

With the addition of more restrictive criteria for increased testing frequencies, the new 12-month frequency is modified by a footnote to allow implementation deferral until the following refueling outage (1R20) for station battery C. (This one-time exception is not based on TSTF-360.)

Station battery C will be 17 years old in the fall of 2003, which is 85% of its expected life. Proposed 4.7.C.5.b imposes either a 24-month or a 12-month testing frequency depending on battery capacity being ≥ 100% or < 100%, respectively. During the latest refueling outage (1R19, October 2002), capacity testing of station battery C demonstrated the capacity to be at 99%, however, it did not show signs of degradation. As such, in the fall of 2003, the requirements for a discharge test at a 12-month frequency would be imposed by 4.7.C.5.b(ii). This would impose an unnecessary plant shutdown required for performance of this test.

The current Technical Specifications do not require replacing the battery until < 80% capacity, with no increase in the current 2-year testing frequency based on reaching 85% of battery life. The schedule for replacement of station battery C is in the fall 2004 (1R20) -- 2 years before end of expected life.

Refueling outage testing of the station batteries has consisted of performing a service test discharge, after which the battery was recharged to a charging current of 5 amps, then the discharge capacity test was performed. Recharging to 5 amps instead of completing a full 7-day recharge of the battery cuts the recharge time from about 7 days to about 10 hours. This recharge is adequate to restore approximately 95% to 99% of the full charge (based on Oyster Creek analyses). Therefore, the previous test resulted in battery discharge capacity that was conservative by 1 to 5%. As stated above, the measured capacity from the last capacity test was 99%. As such, the actual battery capacity is judged to be > 100%, which meets the intent of the requirement. Furthermore, there were no other signs of degradation during the discharge test. Therefore, deferral of this new requirement will not present any significant risk of operating with an inoperable station battery.

If the battery was nearing the point at which accelerated capacity loss would be experienced, other monitored parameters would show this accelerated loss. All cell voltages for Battery C are measured, recorded, and trended every quarter. Battery degradation would show as one or more cells having low voltage that could not be recovered. Currently, trending of cell voltages does not show the dropping off of any cell voltages. In addition, the battery is visually inspected every week. Battery C exhibits no signs of accelerated degradation. Therefore, the battery would be expected to retain required capacity until the next outage.

The implementation of requirement 4.7.C.5.b is being deferred to prevent an unnecessary plant shutdown to demonstrate the station battery C capacity. This will allow Oyster Creek to follow its present procurement and replacement plan (batteries have a lead time of up to 1 year) without imposing undue risk on plant operation. This is a one-time exception.

Station battery B is 11 years old and will not fall under the age requirement of proposed 4.7.C.5.b until well after the following refueling outage (1R20). Therefore, no exception to the requirement of proposed 4.7.C.5.b is necessary.

(b) The station battery service test required every 24 months (current 4.7.B.5.c being renumbered 4.7.C.4.a) is provided with a new option. In lieu of a battery service test the proposed change allows a modified performance discharge test to satisfy the service test requirement. Since the modified performance discharge test envelopes the duty cycle of the service test, it is appropriate to allow this substitution.

4.9 Eliminate Duplicative Diesel Generator Starting Battery Testing

Editorial presentation changes are made to the surveillances for diesel generator starting batteries in 4.7.B to eliminate duplicative requirements. Specifically, since station battery surveillances are taken from 4.7.B and presented in new section 4.7.C, appropriate renumbering is done in 4.7.B. Also, 4.7.B.1.a requires a weekly verification that diesel generator starting battery plates are fully covered with electrolyte. This surveillance is repeated with a frequency of quarterly (4.7.B.2.a) and annually (4.7.B.3.a). The quarterly and annual frequencies are deleted as an editorial change since the weekly requirement (4.7.B.1.a) continues to satisfy these requirements.

These changes are not based on TSTF-360.

4.10 Enhance Presentation of Required Buses, Panels, MCCs, and Distribution Centers

Specification 3.7.A lists the auxiliary electrical power buses, panels, MCCs, and distribution centers required to be energized. The proposed change is an editorial enhancement to present these components more consistently with actual as-built terminology and enhance the presentation format. No changes in actual requirements are proposed to this section.

These changes are not based on TSTF-360.

4.11 Summary

The increased restoration times and extended frequencies for monitoring the capacity of the station batteries to perform their intended function, are reasonable and generally consistent with approved standards, guidance, and regulations. In conjunction with added testing, added requirements for station battery chargers, and addition of explicit corrective actions for specific degraded conditions, the requested changes will provide greater assurance of reliability for the Oyster Creek Auxiliary Electric Power System.

5.0 REGULATORY ANALYSIS

5.1 NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC)

AmerGen has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

Response: No.

The station batteries and battery chargers of the Oyster Creek Auxiliary Electrical Power System are not initiators to any accident sequence analyzed in the Final Safety Analysis Report (FSAR). Operation in accordance with the proposed Technical Specification (TS) ensures that the station batteries and battery chargers are capable of performing their function as described in the FSAR, therefore the mitigative functions supported by the system will continue to provide the protection assumed by the analysis. The newly created TS 6.8.5, "Station Battery Monitoring and Maintenance Program," will not challenge the ability of the station batteries and battery chargers to perform the design function. Appropriate monitoring and maintenance, consistent with industry standards, will continue to be performed. In addition, the station batteries and battery chargers are within the scope of 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," which will ensure the control of maintenance activities associated with the station batteries and battery chargers.

These changes do not involve any physical change to structures, systems, or components (SSCs) and do not alter the method of operation or control of SSCs. The current assumptions in the safety analysis regarding accident initiators and mitigation of accidents are unaffected by these changes. No additional failure modes or mechanisms are being introduced and the likelihood of previously analyzed failures remains unchanged.

The integrity of fission product barriers, plant configuration, and operating procedures as described in the FSAR will not be affected by these changes. Therefore, the consequences of previously analyzed accidents will not increase because of these changes.

Based on the above discussion, the proposed TS changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

The station batteries and battery chargers are relied upon to provide power to accident mitigation and safe shutdown equipment. The proposed changes do not involve a physical alteration of the plant. No new equipment is being introduced, and installed equipment is not being operated in a new or different manner. There are no setpoints, at which protective or mitigative actions are initiated, affected by this change. These changes will not alter the

manner in which equipment operation is initiated, nor will the function demands on credited equipment be changed. No alteration in the procedures utilized to maintain the plant within analyzed limits is being proposed, and no change is being made to the procedures relied upon to respond to an off-normal event as described in the FSAR. As such, no new failure modes are being introduced. The change does not alter assumptions made in the safety analysis and licensing basis.

Therefore, the changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

Response: No.

The margin of safety is established through equipment design, operating parameters, and the setpoints at which automatic actions are initiated. The proposed change is acceptable because the operability of the station batteries and battery chargers are unaffected, there is no detrimental impact on any equipment design parameter, and the plant will still be required to operate within assumed conditions. Operation in accordance with the proposed TS ensures that the station batteries and battery chargers are capable of performing their function as described in the FSAR, therefore the support of the station batteries and battery chargers to the plant response to analyzed events will continue to provide the margins of safety assumed by the analysis.

The DC motor operated valves for HELB isolation require an operable charger to be operable. The proposed changes do not affect the operability of these valves. In the event no required charger is operable, the valves are immediately inoperable and remain so until the required charger becomes operable, even if battery voltage is returned to normal by some other means.

Appropriate monitoring and maintenance, consistent with industry standards, will continue to be performed. In addition, the station batteries and battery chargers are within the scope of 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," which requires the control of maintenance activities associated with the station batteries and battery chargers. This provides sufficient management control of the requirements that assure the station batteries and battery chargers are maintained in a highly reliable condition.

The increased restoration times and extended frequencies for monitoring the capacity of the station batteries to perform their intended function, are reasonable and generally consistent with approved standards, guidance, and regulations. In conjunction with added testing, added requirements for station battery chargers, and addition of explicit corrective actions for specific degraded conditions, the requested changes provide greater assurance of reliability for the Oyster Creek Auxiliary Electric Power System.

Based on the above discussion, the proposed TS changes do not involve a significant reduction in a margin of safety.

Conclusion

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

5.2 APPLICABLE REGULATORY REQUIREMENTS/CRITERIA

Oyster Creek Final Safety Analysis Report (FSAR) 8.3.2.4 provides detailed discussion of Oyster Creek compliance with the applicable regulatory requirements and guidance. The proposed TS amendment:

(a) Does not alter Oyster Creek's compliance with the regulatory requirements listed in FSAR 8.3.2.4;
(b) Does not alter the design or function of any DC electrical power system;
(c) Does not result in any change in the qualifications of any component; and
(d) Does not result in the reclassification of any component's status in the areas of shared, safety related, independent, redundant, and physically or electrically separated.

This amendment will result in changes to Oyster Creek commitment to IEEE Standard 450, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications." The current TS Bases state that the station surveillance procedures for battery care and maintenance follow the recommended maintenance and testing practices of IEEE Standard 450-1975. With the issuance of an approved amendment reflecting these requested changes, Oyster Creek will be committed to the 1995 edition of IEEE Standard 450, with the exception of specific gravity monitoring frequency. This commitment will be reflected in the TS Bases. The inclusion of weekly Surveillance Requirement 4.7.C.1.b will require that each station battery float current is ≤ 2 amps when battery terminal voltage is greater than or equal to the minimum established float voltage of 4.7.C.1.a. This will assure adequate periodic verification of the charged state of the battery is provided without reliance on specific gravity measurements.

The increased restoration times and extended frequencies for monitoring the capacity of the station batteries to perform their intended function, are reasonable and generally consistent with approved standards, guidance, and regulations.

Relocation of the specific values for station battery float voltage is in accordance with the requirements of 10 CFR 50.36, "Technical Specifications". The basic premise of TS Surveillances based on 10 CFR 50.36 is that Surveillance Requirements represent the minimum acceptable requirements for operability of the required equipment. Since failure to meet station battery float voltage requirements does not necessarily mean that the battery is not capable of performing its safety function, the details of this surveillance requirement can be relocated.

In conclusion, based on the considerations discussed above, (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.

6.0 ENVIRONMENTAL CONSIDERATION

An environmental assessment is not required for the proposed changes since the proposed changes conform to the criteria for "actions eligible for categorical exclusion" as specified in 10 CFR 51.22(c)(9). In accordance with 10 CFR 51.22(c)(9) a proposed amendment to an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant hazards consideration, (2) result in a significant change in the types or significant increase in the amount of any effluents that may be released offsite, or (3) result in an increase in individual or cumulative occupational radiation exposure. AmerGen has reviewed the proposed license amendment and concludes that it 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 needs to be prepared in connection with issuance of the proposed license change. The basis for this determination is as follows:

1. The proposed license amendment does not involve significant hazards as described previously in the no significant hazards consideration evaluation.

2. As discussed in the no significant hazards consideration evaluation, the proposed change does not introduce any new equipment, nor does it require any existing equipment or systems to perform a different type of function than they are presently designed to perform. AmerGen has concluded that there will not be a significant increase in the types or amounts of effluents that may be released offsite and this change does not involve irreversible environmental consequences beyond those already associated with normal operation.

3. The proposed change involves a revision to the TS requirements that in some instances involve changes to procedural methods of verifying operability of the DC system, however, these revised methods will not affect worker radiation exposure. Thus, the proposed change does not increase individual or cumulative occupational radiation exposure.

7.0 REFERENCES

1. NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4," Revision 2, dated June 2001.

2. Industry/Technical Specifications Task Force Standard Technical Specification Change Traveler-360, "DC Electrical Rewrite," Revision 1.

3. Institute of Electrical and Electronics Engineers (IEEE) Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications."

4. U.S. Nuclear Regulatory Commission issued Amendment No. 164 to Facility Operating License No. NPF-39 and Amendment No. 126 to Facility Operating License No. NPF-85 for the Limerick Generating Station, Units 1 and 2, letter dated January 29, 2003.

7.1 PRECEDENT

In a letter dated January 29, 2003, the U.S. Nuclear Regulatory Commission issued Amendment No. 164 to Facility Operating License No. NPF-39 and Amendment No. 126 to Facility Operating License No. NPF-85 for the Limerick Generating Station, Units 1 and 2 (Reference 4). The amendment revised the Actions taken for an inoperable battery charger, revised the battery charger testing criteria, and relocated certain safety-related battery surveillance requirements from the Technical Specifications to a licensee-controlled program that were based on TSTF-360, Revision 1.

AmerGen has provided an amendment request that is generally consistent with the NRC approved TSTF-360, Revision 1, and other license amendments granted based on this TSTF.

ENCLOSURE 2

Oyster Creek License Amendment Request No. 306

MARKUP OF TECHNICAL SPECIFICATIONS PAGES

"Revision to Technical Specifications Regarding DC Electrical Power Sources Based on TSTF-360"

REVISED TS and BASES PAGES

TECHNICAL SPECIFICATIONS INSERTS

INSERT 3.7.A.1.b *(page 3.7-1)*

b. 460 volt buses:

USS 1A2, USS 1B2, MCC 1A21, MCC 1B21, Vital MCC 1A2, and Vital MCC 1B2 in the Reactor Building 480 V Switchgear Room.

USS 1A3 and USS 1B3 in the Intake Structure.

MCC 1A21A, MCC 1A21B, MCC 1B21A, MCC 1B21B, and Vital MCC 1AB2 on Reactor Building Elevation 23'6".

MCC 1A24 and 1B24 in the Boiler House.

INSERT 3.7.A.1.c *(page 3.7-1)*

c. 208/120 volt panels CIP-3, IP-4, IP-4A, IP-4B, IP-4C and VACP-1 in the Reactor Building Switchgear Room.

INSERT 3.7.A.1.e *(page 3.7-1)*

e. 125 VDC Distribution Centers DC-B and DC-C.
125 VDC Power Panels DC-D and DC-F.
125 VDC MCCs DC-1 and DC-2.

INSERT 3.7.B.3 *(page 3.7-2)*

3. The reactor may remain in operation provided the requirements of Specification 3.7.D are met.

TECHNICAL SPECIFICATIONS ACTIONS INSERTS

INSERT 3.7.D *(page 3.7-3)*

D. Station Batteries and Associated Battery Chargers

1. With one required station battery B or C charger inoperable:

   a. Restore associated station battery terminal voltage to greater than or equal to the minimum established float voltage within 2 hours,

   b. Verify affected station battery float current ≤ 2 amps once per 12 hours, and

   c. Restore station battery charger to OPERABLE status within 7 days.

2. With one or more station B and C batteries inoperable due to:

   a. One station battery B or C having one or more battery cells float voltage < 2.07 volts, perform 4.7.C.1.a and 4.7.C.1.b for the affected battery within 2 hours and restore affected cell(s) voltage ≥ 2.07 volts within 24 hours.

   b. One station battery B or C float current > 2 amps, perform 4.7.C.1.a for the affected battery within 2 hours and restore affected battery float current to within limits within 12 hours.

   c. One station battery B or C having one or more cells electrolyte level less than minimum established design limits, if electrolyte level was below the top of the plates restore electrolyte level to above top of plates within 8 hours and verify no evidence of leakage(*) within 12 hours. In all cases, restore electrolyte level to greater than or equal to minimum established design limits within 31 days.

   d. One station battery B or C having pilot cell electrolyte temperature less than minimum established design limits, restore battery pilot cell temperature to greater than or equal to minimum established design limits within 12 hours.

(*) If electrolyte level was below the top of the plates, the verification that there is no evidence of leakage is required to be completed regardless of when electrolyte level is restored.

INSERT 3.7.D *(page 3.7-3)*
(CONTINUED)

e. Both station batteries B and C inoperable due to entering one or more Actions 3.7.D.2.a through 3.7.D.2.d, restore battery parameters for one battery to within limits within 2 hours.

f. Station battery B or C not meeting any Action 3.7.D.2.a through 3.7.D.2.e, meet the Action(s) within 2 hours or the reactor shall be PLACED IN the COLD SHUTDOWN CONDITION.

g. One station battery B or C having:

(i) One or more battery cells float voltage < 2.07 volts (Action 3.7.D.2.a)

<u>AND</u>

(ii) Float current > 2 amps (Action 3.7.D.2.b)

Restore one battery parameter to within limits within 2 hours or the reactor shall be PLACED IN the COLD SHUTDOWN CONDITION.

3. With one station battery inoperable for reasons other than allowed in 3.7.D.2.a through 3.7.D.2.g, restore the battery to OPERABLE status within 2 hours or the reactor shall be PLACED IN the COLD SHUTDOWN CONDITION.

TECHNICAL SPECIFICATIONS SURVEILLANCE INSERTS

INSERT 4.7.C.1 *(page 4.7-3a)*

a. ... the minimum established float voltage.

b. Each station battery float current is ≤ 2 amps when battery terminal voltage is greater than or equal to the minimum established float voltage of 4.7.C.1.a.

INSERT 4.7.C.2.a *(page 4.7-3b)*

a. The electrolyte level in each station battery is greater than or equal to minimum established design limits.

INSERT 4.7.C.2.c *(page 4.7-3b)*

c. The electrolyte temperature of each station battery pilot cell is greater than or equal to minimum established design limits.

INSERT 4.7.C.4 *(page 4.7-3b)*

a. ... The modified performance discharge test may be substituted for the service test.

b. (i) Verify required station battery charger supplies ≥ 480 amps for the B MG Set charger, ≥ 600 amps for the A/B static charger, and ≥ 500 amps for the C charger, for ≥ 4 hours at greater than or equal to the minimum established float voltage, or
   (ii) Verify each required battery charger can recharge the battery to the fully charged state while supplying the normal steady state DC loads during station operation, after a battery discharge to the bounding design basis event discharge state.

INSERT 4.7.C.5.b & c *(page 4.7-3c)*

b. Performance discharge tests or modified performance discharge tests of station battery capacity shall be given at least once per 12 months (*) when:

   (i) The station battery shows degradation, or
   (ii) The station battery has reached 85% of expected life with battery capacity < 100% of manufacturer's rating.

c. Performance discharge tests or modified performance discharge tests of station battery capacity shall be given at least once per 24 months when the battery has reached 85% of expected life with battery capacity ≥ 100% of manufacturer's rating.

(*) For the C station battery, applicability of the 12-month Surveillance commences upon startup from refueling outage 1R20.

ADMINISTRATIVE CONTROLS INSERT

INSERT 6.8.5 *(page 6-12)*

6.8.5 Station Battery Monitoring and Maintenance Program

This Program provides for restoration and maintenance, based on the recommendations of IEEE Standard 450, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries For Stationary Applications," of the following:

a. Actions to restore station battery cells with float voltage < 2.13 volts, and

b. Actions to equalize and test station battery cells that have been discovered with electrolyte level below the top of the plates.

INSERT 3.7 Bases *(page 3.7-4)*

Action 3.7.D.1 is for one required safety related battery B or battery C charger (i.e., no station battery charger operable for the associated battery) inoperable (e.g., the battery float voltage limit of 4.7.C.1.a is not maintained for battery B or battery C). These Actions provide a tiered response that focuses on returning the battery to the fully charged state and restoring a fully qualified charger to OPERABLE status in a reasonable time period. Action 3.7.D.1.a requires that the battery terminal voltage be restored to greater than or equal to the minimum established float voltage within 2 hours. This time provides for returning the inoperable charger to OPERABLE status or providing an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage. Restoring the battery terminal voltage to greater than or equal to the minimum established float voltage provides good assurance that, within 12 hours, the associated battery will be restored to its fully charged condition (as verified by Action 3.7.D.1.b) from any discharge that might have occurred due to the charger inoperability.

A discharged battery having terminal voltage of at least the minimum established float voltage indicates that the battery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus, there is good assurance of fully recharging the battery within 12 hours, avoiding a premature shutdown with its own attendant risk.

If established battery terminal float voltage cannot be restored to greater than or equal to the minimum established float voltage within 2 hours, and the charger is not operating in the current-limiting mode, a faulty charger is indicated. A faulty charger that is incapable of maintaining established battery terminal float voltage does not provide assurance that it can revert to and operate properly in the current limit mode that is necessary during the recovery period following a battery discharge event that the DC system is designed for.

If the charger is operating in the current limit mode after 2 hours that is an indication that the battery is partially discharged and its capacity margins will be reduced. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within 12 hours (Action 3.7.D.1.b).

Action 3.7.D.1.b requires that the affected station battery float current be verified $\leq$ 2 amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it has now been fully recharged. If at the expiration of the initial 12 hour period the battery float current is not within limits this indicates there may be additional battery problems.

Action 3.7.D.1.c limits the restoration time for the inoperable battery charger to 7 days. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g., balance of plant non-Class 1E battery charger or the standby charger in the event it was inoperable but continued to supply minimum established float voltage). The 7 days reflects a reasonable time to effect restoration of the qualified battery charger to OPERABLE status.

With one or more cells in one station battery < 2.07 V, the battery cell(s) is degraded. Per Action 3.7.D.2.a, within 2 hours, verification of the required battery charger OPERABILITY is made by monitoring the battery terminal voltage (4.7.C.1.a) and of the overall battery state of charge by monitoring the battery float charge current (4.7.C.1.b). This assures that there is still sufficient battery capacity to perform the intended function. Therefore, with one or more cells in one or more batteries < 2.07 V, continued operation is permitted for a limited period up to 24 hours.

One safety related station battery float current > 2 amps indicates that a partial discharge of the battery capacity has occurred. This may be due to a temporary loss of a battery charger or possibly due to one or more battery cells in a low voltage condition reflecting some loss of capacity. Per Action 3.7.D.2.b, within 2 hours verification of the required battery charger OPERABILITY is made by monitoring the battery terminal voltage.

Since Actions 3.7.D.2.a and 3.7.D.2.b only specify "perform," a failure of 4.7.C.1.a or 4.7.C.1.b acceptance criteria does not result in this Action not being met. However, if one of the Surveillance Requirements is failed the appropriate Action(s), depending on the cause of the failure(s), is also entered.

If the Action 3.7.D.2.b condition is due to one or more cells in a low voltage condition but still greater than 2.07 V and float voltage is found to be satisfactory, this is not indication of a substantially discharged battery and 12 hours is a reasonable time prior to declaring the battery inoperable.

With one station battery with one or more cells electrolyte level above the top of the plates, but below the minimum established design limits, the battery still retains sufficient capacity to perform the intended function. Per Action 3.7.D.2.c, within 31 days the minimum established design limits for electrolyte level must be re-established.

With electrolyte level below the top of the plates there is a potential for dryout and plate degradation. Action 3.7.D.2.c addresses this potential (as well as provisions in Specification 6.8.5, "Station Battery Monitoring and Maintenance Program"). Within 8 hours, level is required to be restored to above the top of the plates. The Action requirement to verify that there is no leakage by visual inspection and the Specification 6.8.5 item to initiate action to equalize and test in accordance with manufacturers' recommendation are taken from Annex D of IEEE Standard 450-1995. They are performed following the restoration of the electrolyte level to above the top of the plates. Based on the results of the manufacturer's recommended testing, the battery may have to be declared inoperable and the affected cell(s) replaced.

Per Action 3.7.D.2.d, with one station battery with pilot cell temperature less than the minimum established design limits, 12 hours is allowed to

restore the temperature to within limits. A low electrolyte temperature limits the current and power available. Since the battery is sized with margin, while battery capacity is degraded, sufficient capacity exists to perform the intended function and the affected battery is not required to be considered inoperable solely as a result of the pilot cell temperature not met.

Per Action 3.7.D.2.e, with both station batteries with battery parameters not within limits there is not sufficient assurance that battery capacity has not been affected to the degree that the batteries can still perform their required function, given that both safety related station batteries are involved. With both safety related station batteries involved, this potential could result in a total loss of function on multiple systems that rely upon the batteries. The longer restoration times specified for battery parameters on one safety related battery not within limits are therefore not appropriate, and the parameters must be restored to within limits on one required station battery within 2 hours.

Per Action 3.7.D.2.f, when any battery parameter is outside the allowances of Actions 3.7.D.2.a, b, c, d, or e, sufficient capacity to supply the maximum expected load requirement is not ensured and a 2 hour restoration time is appropriate. Additionally, per Action 3.7.D.2.g, discovering one or both station batteries with one or more battery cells float voltage less than 2.07 V and float current greater than limits indicates that the battery capacity may not be sufficient to perform the intended functions. The battery must therefore be restored within 2 hours or the reactor placed in the COLD SHUTDOWN CONDITION.

Action 3.7.D.3 imposes a 2-hour restoration time for one station battery that is inoperable for reasons other than addressed by the parameter degradation Actions provided. With one station battery inoperable, the battery charger is supplying the DC bus. The 2-hour limit allows sufficient time to effect restoration of an inoperable battery given that the majority of the conditions that lead to battery inoperability (e.g., loss of battery charger, battery cell voltage less than 2.07 V, etc.) are identified in Actions 3.7.D.2 together with additional specific completion times. Failing to correct this inoperability within 2 hours would require the plant to proceed to cold shutdown.

INSERT 4.7.C Bases *(page 4.7-5)*

Verifying, per 4.7.C.1.a, battery terminal voltage while on float charge for the batteries helps to ensure the effectiveness of the battery chargers, which support the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a fully charged state while supplying the continuous steady state loads of the associated DC subsystem. On float charge, battery cells will receive adequate current to optimally charge the battery. The voltage requirements are based on the minimum float voltage established by the battery manufacturer (2.17 V per cell average, or 130.2 V at the battery terminals). This voltage maintains the battery plates in a condition that supports maintaining the grid life (expected to be approximately 40 years for B station battery; 20 years for C station battery). The weekly frequency is consistent with manufacturer recommendations and IEEE Standard 450-1995.

Verifying battery float current while on float charge (4.7.C.1.b) is used to determine the state of charge of the battery. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a charged state. The float current requirements are based on the float current indicative of a charged battery. Use of float current to determine the state of charge of the battery is consistent with IEEE Standard 450-1995. The weekly frequency is consistent with IEEE Standard 450-1995.

This Surveillance Requirement (4.7.C.1.b) provides that the float current requirement is not required to be met when battery terminal voltage is less than the minimum established float voltage of 4.7.C.1.a. When this float voltage is not maintained the Actions of 3.7.D.1 are being taken, which provide the necessary and appropriate verifications of the battery condition. Furthermore, the float current limits are established based on the float voltage range and is not directly applicable when this voltage is not maintained.

The 4.7.C.2.a minimum established design limit for electrolyte level ensures that the plates suffer no physical damage and maintains adequate electron transfer capability. For the station batteries, this is the minimum level mark on the side of the battery cell. The Frequency is consistent with IEEE-450-1995.

Surveillance Requirements 4.7.C.2.b and 4.7.C.3 require verification that the cell float voltages are equal to or greater than 2.07 V. The frequencies for cell voltage verification (monthly for pilot cell, and quarterly for each connected cell) are consistent with IEEE Standard 450-1995.

Surveillance Requirement 4.7.C.2.c verifies that the pilot cell temperature is greater than or equal to the minimum established design limit (i.e., 60 degrees Fahrenheit for station battery B; 50 degrees Fahrenheit for station battery C). Cell electrolyte temperature is maintained above these temperatures to assure the battery can provide the required current and voltage to meet the design requirements. Temperatures lower than assumed in

battery sizing calculations act to inhibit or reduce battery capacity. The Frequency is consistent with IEEE Standard 450-1995.

A battery service test, per 4.7.C.4.a, is a special test of the station battery capability, as found, to satisfy the design requirements (battery duty cycle) of the DC auxiliary electrical power system. The discharge rate and test length corresponds to the design duty cycle requirements.

Surveillance Requirement 4.7.C.4.b verifies the design capacity of the station battery chargers. The battery charger supply is based on normal steady state DC loads during station operation and the charging capacity to restore the battery from the design minimum charge state to the fully charged state. The minimum required amperes and duration ensures that these requirements can be satisfied. The battery is recharged when the measured charging current is ≤ 2 amps.

Surveillance Requirement 4.7.C.4.b(i) requires that each required station battery charger (i.e., only one charger per station battery "required" for compliance with 3.7.A.4) be capable of supplying the amps listed for the specified charger at the minimum established float voltage for 4 hours. The ampere requirements are based on the output rating of the chargers. The voltage requirements are based on the normal minimum established float voltage. This time period is sufficient for the charger temperature to have stabilized and to have been maintained for at least 2 hours. Alternately, 4.7.C.4.b(ii) allows that the battery charger load test be capable of recharging the battery after a service test coincident with normal steady state DC loads during station operation. This level of loading may not normally be available following the battery service test and may need to be supplemented with additional loads. The duration for this test may be longer than the charger sizing criteria since the battery recharge is affected by float voltage, temperature, an the exponential decay in charging current.

A battery performance discharge test (4.7.C.5) is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage. Degradation (as used in 4.7.C.5.b(i)) is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying 4.7.C.5; however, only the modified performance discharge test may be used to satisfy the battery service test requirements of 4.7.C.4.a.

3.7 AUXILIARY ELECTRICAL POWER

Applicability: Applies to the OPERATING status of the auxiliary electrical power supply.

Objective: To assure the OPERABILITY of the auxiliary electrical power supply.

Specifications:

A. The reactor shall not be made critical unless all of the following requirements are satisfied:

1. The following buses or panels energized.

   a. 4160 volt buses 1C and 1D in the turbine building switchgear room.

   b. 460 volt buses 1A2, 1B2, 1A21, 1B21 vital MCC 1A2 and 1B2 in the reactor building switchgear room: 1A3 and 1B3 at the intake structure; 1A21A, 1B21A, 1A21B, and 1B21B and vital MCC 1AB2 on 23'6" elevation in the reactor building; 1A24 and 1B24 at the stack.

   c. 208/120 volt panels 3, 4, 4A, 4B, 4C and VACP-1 in the reactor building switchgear room.

   d. 120 volt protection panel 1 and 2 in the ~~cable room.~~

   e. 125 volt DC distribution centers C and B, and panel D, Panel DC-F, isolation valve motor control center DC-1 and 125V DC motor control center DC-2.

   f. 24 volt D.C. power panels A and B in the ~~cable room.~~

2. One 230 KV line is fully operational and switch gear and both startup transformers are energized to carry power to the station 4160 volt AC buses and carry power to or away from the plant.

3. An additional source of power consisting of one of the following is in service connected to feed the appropriate plant 4160 V bus or buses:

   a. A 69 KV line fully operational.

   b. A 34.5 KV line fully operational.

4. Station batteries B and C and an associated battery charger are OPERABLE. Switchgear control power for 4160 volt bus 1D and 460 volt buses 1B2 and 1B3 are provided by battery B. Switchgear control power for 4160 volt bus 1C and 460 volt buses 1A2 and 1A3 are provided by battery C.

5. Bus tie breakers ED and EC are in the open position.

B. The reactor shall be PLACED IN the COLD SHUTDOWN CONDITION if the availability of power falls below that required by Specification A above, except that

1. The reactor may remain in operation for a period

not to exceed 7 days in any 30 day period if a startup transformer is out of service. None of the engineered safety feature equipment fed by the remaining transformer may be out of service.

2. The reactor may remain in operation for a period not to exceed 7 days if 125 VDC Motor Control Center DC-2 is out of service, provided the requirements of Specification 3.8 are met.

INSERT 3.7.B.3 →

C. Standby Diesel Generators

1. The reactor shall not be made critical unless both diesel generators are operable and capable of feeding their designated 4160 volt buses.

2. If one diesel generator becomes inoperable during power operation, repairs shall be initiated immediately and the other diesel shall be operated at least one hour every 24 hours at greater than 80% rated load until repairs are completed. The reactor may remain in operation for a period not to exceed 7 days in any 30-day period if a diesel generator is out of service. During the repair period none of the engineered safety features normally fed by the operational diesel generator may be out of service or the reactor shall be placed in the cold shutdown condition. If a diesel is made inoperable for biennial inspection, the testing and engineered safety feature requirements described above must be met.

3. If both diesel generators become inoperable during power operation, the reactor shall be placed in the cold shutdown condition.

4. For the diesel generators to be considered operable:

A) There shall be a minimum of 14,000 gallons of diesel fuel in the standby diesel generator fuel tank,

OR

B) To facilitate inspection, repair, or replacement of equipment which would require full or partial draining of the standby diesel generator fuel tank, the following conditions must be met:

1) There shall be a minimum of 14,000 gallons of fuel oil contained in temporary tanker trucks, connected and aligned to the diesel generator fill station.

-AND-

2) The reactor cavity shall be flooded above elevation 117 feet with the spent fuel pool gates removed, or all reactor fuel shall be contained in the spent fuel pool with spent fuel pool gates installed.

AND

3) The plant shall be placed in a configuration in which the core spray system is not required to be OPERABLE.

INSERT 3.7.D →

Bases

The general objective is to assure an adequate supply of power with at least one active and one standby source of power available for operation of equipment required for a safe plant shutdown, to maintain the plant in a safe shutdown condition and to operate the required engineered safety feature equipment following an accident.

AC power for shutdown and operation of engineered safety feature equipment can be provided by any of three active (one or two 230 KV lines, one 69 KV line, and one 34.5 KV line) and either of two standby (two diesel generators) sources of power. (In applying the minimum requirement of one active and one standby source of AC power, since both 230 KV lines are on the same set of towers, either one or both 230 KV lines are considered as a single active source.) Normally all six sources are available. However, to provide for maintenance and repair of equipment and still have redundancy of power sources the requirement of one active and one standby source of power was established. The plant's main generator is not given credit as a source since it is not available during shutdown.

The plant 125V DC system consists of three batteries and associated distribution system. Batteries B and C are designated as the safety related subsystems while battery A is designated as a non-safety related subsystem. Safety related loads are supplied by batteries B and C, each with two associated full capacity chargers. One charger on each battery is in service at all times with the second charger available in the event of charger failure. These chargers are active sources and supply the normal 125V DC requirements with the batteries and standby sources. (1)

INSERT 3.7 BASES

The probability analysis in Appendix "L" of the FDSAR was based on one diesel and shows that even with only one diesel the probability of requiring engineered safety features at the same time as the second diesel fails is quite small. The analysis used information on peaking diesels when synchronization was required which is not the case for Oyster Creek. Also the daily test of the second diesel when one is temporarily out of service tends to improve the reliability as does the fact that synchronization is not required.

As indicated in Amendment 18 to the Licensing Application, there are numerous sources of diesel fuel which can be obtained within 6 to 12 hours and the heating boiler fuel in a 75,000 gallon tank on the site could also be used. As indicated in Amendment 32 of the Licensing Application and including the Security System loads, the load requirement for the loss of offsite power would require 12,410 gallons for a three day supply. For the case of loss of offsite power plus loss-of-coolant plus bus failure 9790 gallons would be required for a three day supply.

4.7 AUXILIARY ELECTRICAL POWER

Applicability: Applies to surveillance requirements of the auxiliary electrical supply.

Objective: To verify the availability of the auxiliary electrical supply.

Specification:

A. Diesel Generator

1. Each diesel generator shall be started and loaded to not less than 80% rated load every two weeks.

2. The two diesel generators shall be automatically actuated and functionally tested during each refueling outage. This shall include testing of the diesel generator load sequence timers listed in Table 3.1.1.

3. Deleted.

4. The diesel generators' fuel supply shall be checked following the above tests.

5. The diesel generators' starting batteries shall be tested and monitored per Specification 4.7.B.

B. ~~Station Batteries and~~ Diesel Generator Starting Batteries

1. Weekly surveillance will be performed to verify the following:

<see "COPY 2">

a. The active metallic surface of the plates shall be fully covered with electrolyte in all batteries.

~~b. The designated pilot cell voltage is greater than or equal to 2.09 volts for Station Battery B and 2.0 volts for Station Battery C while the respective battery is on a float charge.~~

(b) ~~c.~~ The overall battery voltage is greater than or equal to ~~125.4 volts for Station Battery B and 120 volts for Station Battery C~~ while the ~~respective~~ battery is on a float charge. ~~(Diesel battery~~ 112 volts~~)~~

(c) ~~d.~~ The pilot cell specific gravity, corrected to 77°F, is greater than or equal to 1.190.

2. Quarterly Surveillance will be performed to verify the following:

a. The active metallic surface of the plates shall be fully covered with electrolyte in all batteries.

<see "Copy 2"> b. The voltage of each connected cell is greater than or equal to 2.09 volts for Station Battery B and 2.0 volts for Station Battery C while the respective battery is on a float charge.

c. The specific gravity, for each tenth cell, is greater than or equal to 1.190 when corrected to 77°F. The specific gravity and electrolyte temperature of every tenth cell (Diesel, every fourth cell) shall be recorded for surveillance review.

3. Annual surveillance will be performed to verify the following:

a. The active metallic surface of the plates shall be fully covered with electrolyte in all batteries.

<see "Copy 2"> b. The voltage of each connected cell is greater than or equal to 2.09 volts for Station Battery B and 2.0 volts for Station Battery C while the respective battery is on a float charge.

c. The specific gravity for each cell is greater than or equal to 1.190 when corrected to 77°F. The electrolyte temperature and specific gravity for every cell shall be recorded for surveillance review.

4. At least once per 12 months, the diesel generator battery capacity shall be demonstrated to be able to supply the design duty loads (diesel start) during a battery service test.

5. At least once per 24 months, the following tests will be performed to verify battery capacity (Perform during plant shutdowns for Station Batteries B and C. Perform during plant shutdowns or during the 24-month Diesel Generator inspections for the Diesel Generator Starting Batteries.):

a. Battery capacity shall be demonstrated to be at least 80% of the manufacturers' rating when subjected to a battery capacity discharge test.

b. If Station Battery B or C is demonstrated to have less than 85% of manufacturers ratings during a capacity discharge test it shall be replaced during the subsequent refueling outage. If a Diesel Generator Starting Battery is demonstrated to have less than 85% of manufacturers ratings during a capacity discharge test. it shall be replaced within 2 years.

<see "Copy 2"> c. Station battery capacity shall be demonstrated to be able to supply the design duty cycle loads during a battery service test.

4.7 AUXILIARY ELECTRICAL POWER

Applicability: Applies to surveillance requirements of the auxiliary electrical supply.

Objective: To verify the availability of the auxiliary electrical supply.

Specification:

A. Diesel Generator

1. Each diesel generator shall be started and loaded to not less than 80% rated load every two weeks.

2. The two diesel generators shall be automatically actuated and functionally tested during each refueling outage. This shall include testing of the diesel generator load sequence timers listed in Table 3.1.1.

3. Deleted.

4. The diesel generators' fuel supply shall be checked following the above tests.

5. The diesel generators' starting batteries shall be tested and monitored per Specification 4.7.B.

< see "COPY 1" >

C B. Station Batteries and Diesel Generator Starting Batteries

1. Weekly surveillance will be performed to verify the following:

a. The active metallic surface of the plates shall be fully covered with electrolyte in all batteries.

b. The designated pilot cell voltage is greater than or equal to 2.09 volts for Station Battery B and 2.0 volts for Station Battery C while the respective battery is on a float charge.

a c. The overall battery voltage is greater than or equal to 125.4 volts for Station Battery B and 120 volts for Station Battery C while the respective battery is on a float charge. (Diesel battery: 112 volts).

INSERT 4.7.C.1

b d. The pilot cell specific gravity, corrected to 77°F, is greater than or equal to 1.190.

<CONTINUE PAGE #ing FROM THE END OF "COPY 1" MARKUP>

4.7.C (continued)

2. ~~Quarterly~~ Monthly Surveillance will be performed to verify the following:

INSERT 4.7.C.2.a

a. ~~The active metallic surface of the plates shall be fully covered with electrolyte in all batteries.~~

b. The voltage of each ~~connected~~ pilot cell is greater than or equal to ~~2.09~~ 2.07 volts ~~for Station Battery B and 2.0 volts for Station Battery C~~ while the respective battery is on a float charge.

INSERT 4.7.C.2.c

c. ~~The specific gravity, for each tenth cell, is greater than or equal to 1.190 when corrected to 77°F. The specific gravity and electrolyte temperature of every tenth cell (Diesel every fourth cell) shall be recorded for surveillance review.~~

3. ~~Annual~~ Quarterly surveillance will be performed to verify the following:

~~a. The active metallic surface of the plates shall be fully covered with electrolyte in all batteries.~~

~~b.~~ c. The voltage of each connected cell is greater than or equal to ~~2.09~~ 2.07 volts ~~for Station Battery B and 2.0 volts for Station Battery C~~ while the respective battery is on a float charge.

~~c. The specific gravity for each cell is greater than or equal to 1.190 when corrected to 77°F. The electrolyte temperature and specific gravity for every cell shall be recorded for surveillance review.~~

4. (a.) At least once per ~~12~~ 24 months, the ~~diesel generator~~ Station battery capacity shall be demonstrated to be able to supply the design duty cycle loads ~~(diesel start)~~ during a battery service test.

INSERT 4.7.C.4 (b.)

5. At least once per ~~24~~ 60 months, the following tests will be performed to verify battery capacity ~~(Perform during plant shutdowns for Station Batteries B and C. Perform during plant shutdowns or during the 24 month Diesel Generator inspections for the Diesel Generator Starting Batteries.):~~

a. Battery capacity shall be demonstrated to be at least 80% of the manufacturers' rating when subjected to a ~~battery capacity discharge test~~ performance discharge test or a modified performance discharge test

4.7.C
(continued)

INSERT 4.7.C.5.b & C →

b. If Station Battery B or C is demonstrated to have less than 85% of manufacturers ratings during a capacity discharge test it shall be replaced during the subsequent refueling outage. If a Diesel Generator Starting Battery is demonstrated to have less than 85% of manufacturers ratings during a capacity discharge test it shall be replaced within 2 years.

~~c. Station battery capacity shall be demonstrated to be able to supply the design duty cycle loads during a battery service test.~~

COPY 2

Basis: The biweekly tests of the diesel generators are primarily to check for failures and deterioration in the system since last use. The manufacturer has recommended the two week test interval, based on experience with many of their engines. One factor in determining this test interval (besides checking whether or not the engine starts and runs) is that the lubricating oil should be circulated through the engine approximately every two weeks. The diesels should be loaded to at least 80% of rated load until engine and generator temperatures have stabilized (about one hour). The minimum 80% load will prevent soot formation in the cylinders and injection nozzles. Operation up to an equilibrium temperature ensures that there is no over-heat problem. The tests also provide an engine and generator operating history to be compared with subsequent engine-generator test data to identify and correct any mechanical or electrical deficiency before it can result in a system failure.

The test during refueling outages is more comprehensive, including procedures that are most effectively conducted at that time. These include automatic actuation and functional capability tests, to verify that the generators can start and assume load in less than 20 seconds and testing of the diesel generator load sequence timers which provide protection from a possible diesel generator overload during LOCA conditions.

The manufacturer's instructions for battery care and maintenance with regard to the floating charge, the equalizing charge, and the addition of water will be followed. In addition, written records will be maintained of the battery performance. Station batteries will deteriorate with time, but precipitous failure is unlikely. The station surveillance procedures follow the recommended maintenance and testing practices of IEEE STD. 450 which have demonstrated, through experience, the ability to provide positive indications of cell deterioration tendencies long before such tendencies cause cell irregularity or improper cell performance.

The battery service test is a special capacity test to demonstrate the capability of the battery to meet the system design requirements. The Oyster Creek design duty cycle loads are determined by a LOCA subsequent to a loss of AC power. The battery performance test is a capacity test on the battery to check it against the manufacturer's specified capacity and is used to determine when the battery has arrived at the end of its life.

IEEE Standard 450-1975 recommends battery performance testing once per five years. IEEE Standard 308-1974 recommends battery performance testing once per three years. The Oyster Creek Technical Specifications require a performance test once per two years. Both IEEE Standards recommend decreasing the surveillance interval to annually when battery capacity falls below 85% of rated.

The diesel generator batteries are challenged every two weeks to perform the 80% load test. This effectively performs an uninstrumented battery service test. The biweekly diesel start, when combined with the annual battery service test, provides an extensive amount of data on battery performance characteristics. This test data negates the need to lower the battery performance test interval from biennial to annually.

The station batteries are required for plant operation, and performing the station battery performance test requires the reactor to be in COLD SHUTDOWN. The guidance in IEEE 450-1975 would result in 3 performance tests to reach 85% service life, followed by 3 performance tests to complete battery life. The guidance in IEEE 308-1974 would result in 5 performance tests to reach 85% service life, followed by 3 performance tests to complete battery life. The Oyster Creek Technical Specifications require 8 performance tests to reach 85% service life, followed by 2 performance tests to complete battery life. The requirement which would result in a reactor shutdown for the sole purpose of performing a battery performance test during the last 15% of battery life cannot be justified to increase battery test performance from 2 to 3 in a 3-year period. Additionally, the increase in battery performance testing during the first 85% of battery service life would result in a greater level of battery reliability by identifying, and causing to be corrected, small anomalies in cell performance thereby reducing battery failure probability.

The diesel batteries shall be tested and monitored in accordance with the requirements of Specification 4.7.B to ensure their viability.

The requirement to replace any battery in the next refueling outage or within 2 years which demonstrates less than 85% of manufacturers capacity during a capacity discharge test provides additional assurance of continued battery operability.

INSERT 4.7.C BASES

9. Limitations on the annual and quarterly doses to a MEMBER OF THE PUBLIC from 1-131, 1-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluent released beyond the SITE BOUNDARY conforming to Appendix I of 10 CFR 50,

10. Limitations on the annual dose or dose commitment to any MEMBER OF THE PUBLIC due to releases of radioactivity and to radiation from Uranium fuel cycle sources conforming to 40 CFR Part 190.

b. Radiological Environmental Monitoring Program

A program shall be provided to monitor the radiation and radionuclides in the environs of the plant. The program shall provide (1) representative measurements of radioactivity in the highest potential exposure pathways, and (2) verification of the accuracy of the effluent monitoring program and modeling of environmental exposure pathways. The program shall (1) be contained in the ODCM, (2) conform to the guidance of Appendix I to 10 CFR Part 50, and (3) include the following:

1. Monitoring, sampling, analysis, and reporting of radiation and radionuclides in the environment in accordance with the methodology and parameters in the ODCM,

2. A Land Use Census to ensure that changes in the use of areas at and beyond the SITE BOUNDARY are identified and that modifications to the monitoring program are made if required by the results of this census, and

3. Participation in an Interlaboratory Comparison Program to ensure that independent checks on the precision and accuracy of the measurements of radioactive materials in environmental sample matrices are performed as part of the quality assurance program for environmental monitoring.

INSERT 6.8.5 → {STATION BATTERY MONITORING AND MAINTENANCE PROGRAM}

ENCLOSURE 3

Oyster Creek License Amendment Request No. 306

TYPED TECHNICAL SPECIFICATION PAGES

"Revision to Technical Specifications Regarding DC Electrical Power Sources Based on TSTF-360"

REVISED TS PAGES

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3.7 AUXILIARY ELECTRICAL POWER

Applicability: Applies to the OPERATING status of the auxiliary electrical power supply.

Objective: To assure the OPERABILITY of the auxiliary electrical power supply.

Specification:

A. The reactor shall not be made critical unless all of the following requirements are satisfied:

1. The following buses or panels energized.

   a. 4160 volt buses 1C and 1D in the Turbine Building Switchgear Room.

   b. 460 volt buses:

      USS 1A2, USS 1B2, MCC 1A21, MCC 1B21, Vital MCC 1A2, and Vital MCC 1B2 in the Reactor Building 480 V Switchgear Room.

      USS 1A3 and USS 1B3 in the Intake Structure.

      MCC 1A21A, MCC 1A21B, MCC 1B21A, MCC 1B21B, and Vital MCC 1AB2 on Reactor Building Elevation 23' 6".

      MCC 1A24 and 1B24 in the Boiler House.

   c. 208/120 volt panels CIP-3, IP-4, IP-4A, IP-4B, IP-4C and VACP-1 in the Reactor Building Switchgear Room.

   d. 120 volt protection panels PSP-1 and PSP-2 in the Lower Cable Spreading Room.

   e. 125 VDC Distribution Centers DC-B and DC-C.
      125 VDC Power Panels DC-D and DC-F.
      125 VDC MCCs DC-1 and DC-2

   f. 24 volt DC power panels DC-A and DC-B in the Lower Cable Spreading Room.

2. One 230 KV line is fully operational and switch gear and both startup transformers are energized to carry power to the station 4160 volt AC buses and carry power to or away from the plant.

3. An additional source of power consisting of one of the following is in service connected to feed the appropriate plant 4160 V bus or buses:

   a. A 69 KV line fully operational.

   b. A 34.5 KV line fully operational.

4. Station batteries B and C and an associated battery charger are OPERABLE. Switchgear control power for 4160 volt bus 1D and 460 volt buses 1B2 and 1B3 is provided by 125 VDC Distribution Center DC-B. Switchgear control power for 4160 volt bus 1C and 460 volt buses 1A2 and 1A3 is provided by 125 VDC Distribution Center DC-C.

5. Bus tie breakers ED and EC are in the open position.

B. The reactor shall be PLACED IN the COLD SHUT DOWN CONDITION if the availability of power falls below that required by Specification A above, except that

1. The reactor may remain in operation for a period not to exceed 7 days in any 30 day period if a startup transformer is out of service. None of the engineered safety feature equipment fed by the remaining transformer may be out of service.

2. The reactor may remain in operation for a period not to exceed 7 days if 125 VDC Motor Control Center DC-2 is out of service, provided the requirements of Specification 3.8 are met.

3. The reactor may remain in operation provided the requirements of Specification 3.7.D are met.

C. Standby Diesel Generators

1. The reactor shall not be made critical unless both diesel generators are operable and capable of feeding their designated 4160 volt buses.

2. If one diesel generator becomes inoperable during power operation, repairs shall be initiated immediately and the other diesel shall be operated at least one hour every 24 hours at greater than 80% rated load until repairs are completed. The reactor may remain in operation for a period not to exceed 7 days in any 30-day period if a diesel generator is out of service. During the repair period none of the engineered safety features normally fed by the operational diesel generator may be out of service or the reactor shall be placed in the cold shutdown condition. If a diesel is made inoperable for biennial inspection, the testing and engineered safety feature requirements described above must be met.

3. If both diesel generators become inoperable during power operation, the reactor shall be placed in the cold shutdown condition.

4. For the diesel generators to be considered operable:

A) There shall be a minimum of 14,000 gallons of diesel fuel in the standby diesel generator fuel tank,

OR

B) To facilitate inspection, repair, or replacement of equipment which would require full or partial draining of the standby diesel generator fuel tank, the following conditions must be met:

1) There shall be a minimum of 14,000 gallons of fuel oil contained in temporary tanker trucks, connected and aligned to the diesel generator fill station.

-AND-

2) The reactor cavity shall be flooded above elevation 117 feet with the spent fuel pool gates removed, or all reactor fuel shall be contained in the spent fuel pool with spent fuel pool gates installed.

AND

3) The plant shall be placed in a configuration in which the core spray system is not required to be OPERABLE.

D. Station Batteries and Associated Battery Chargers

1. With one required station battery B or C charger inoperable:

   a. Restore associated station battery terminal voltage to greater than or equal to the minimum established float voltage within 2 hours,

   b. Verify affected station battery float current $\leq$ 2 amps once per 12 hours, and

   c. Restore station battery charger to OPERABLE status within 7 days.

2. With one or more station B and C batteries inoperable due to:

   a. One station battery B or C having one or more battery cells float voltage < 2.07 volts, perform 4.7.C.1.a and 4.7.C.1.b for the affected battery within 2 hours and restore affected cell(s) voltage $\geq$ 2.07 volts within 24 hours.

   b. One station battery B or C float current > 2 amps, perform 4.7.C.1.a for the affected battery within 2 hours and restore affected battery float current to within limits within 12 hours.

   c. One station battery B or C having one or more cells electrolyte level less than minimum established design limits, if electrolyte level was below the top of the plates restore electrolyte level to above top of plates within 8 hours and verify no evidence of leakage(*) within 12 hours. In all cases, restore electrolyte level to greater than or equal to minimum established design limits within 31 days.

   d. One station battery B or C having pilot cell electrolyte temperature less than minimum established design limits, restore battery pilot cell temperature to greater than or equal to minimum established design limits within 12 hours.

(*) If electrolyte level was below the top of the plates, the verification that there is no evidence of leakage is required to be completed regardless of when electrolyte level is restored.

e. Both station batteries B and C inoperable due to entering one or more Actions 3.7.D.2.a through 3.7.D.2.d, restore battery parameters for one battery to within limits within 2 hours.

f. Station battery B or C not meeting any Action 3.7.D.2.a through 3.7.D.2.e, meet the Action(s) within 2 hours or the reactor shall be PLACED IN the COLD SHUTDOWN CONDITION.

g. One station battery B or C having:

(i) One or more battery cells float voltage < 2.07 volts (Action 3.7.D.2.a)

<u>AND</u>

(ii) Float current > 2 amps (Action 3.7.D.2.b)

Restore one battery parameter to within limits within 2 hours or the reactor shall be PLACED IN the COLD SHUTDOWN CONDITION.

3. With one station battery inoperable for reasons other than allowed in 3.7.D.2.a through 3.7.D.2.g, restore the battery to OPERABLE status within 2 hours or the reactor shall be PLACED IN the COLD SHUTDOWN CONDITION.

Bases:

The general objective is to assure an adequate supply of power with at least one active and one standby source of power available for operation of equipment required for a safe plant shutdown, to maintain the plant in a safe shutdown condition and to operate the required engineered safety feature equipment following an accident.

AC power for shutdown and operation of engineered safety feature equipment can be provided by any of three active (one or two 230 KV lines, one 69 KV line, and one 34.5 KV line) and either of two standby (two diesel generators) sources of power. In applying the minimum requirement of one active and one standby source of AC power, since both 230 KV lines are on the same set of towers, either one or both 230 KV lines are considered as a single active source. Normally all six sources are available. However, to provide for maintenance and repair of equipment and still have redundancy of power sources the requirement of one active and one standby source of power was established. The plant's main generator is not given credit as a source since it is not available during shutdown.

The plant 125V DC system consists of three batteries and associated distribution system. Batteries B and C are designated as the safety related subsystems while battery A is designated as a non-safety related subsystem. Safety related loads are supplied by batteries B and C, each with two associated full capacity chargers. One charger on each battery is in service at all times with the second charger available in the event of charger failure. These chargers are active sources and supply the normal 125V DC requirements with the batteries and standby sources. (1)

Action 3.7.D.1 is for one required safety related battery B or battery C charger (i.e., no station battery charger operable for the associated battery) inoperable (e.g., the battery float voltage limit of 4.7.C.1.a is not maintained for battery B or battery C). These Actions provide a tiered response that focuses on returning the battery to the fully charged state and restoring a fully qualified charger to OPERABLE status in a reasonable time period. Action 3.7.D.1.a requires that the battery terminal voltage be restored to greater than or equal to the minimum established float voltage within 2 hours. This time provides for returning the inoperable charger to OPERABLE status or providing an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage. Restoring the battery terminal voltage to greater than or equal to the minimum established float voltage provides good assurance that, within 12 hours, the associated battery will be restored to its fully charged condition (as verified by Action 3.7.D.1.b) from any discharge that might have occurred due to the charger inoperability.

A discharged battery having terminal voltage of at least the minimum established float voltage indicates that the battery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus, there is good assurance of fully recharging the battery within 12 hours, avoiding a premature shutdown with its own attendant risk.

If established battery terminal float voltage cannot be restored to greater than or equal to the minimum established float voltage within 2 hours, and the charger is not operating in the current-limiting mode, a faulty charger is indicated. A faulty charger that is incapable of maintaining established battery terminal float voltage does not provide assurance that it can revert to and operate properly in the current limit mode that is necessary during the recovery period following a battery discharge event that the DC system is designed for.

If the charger is operating in the current limit mode after 2 hours that is an indication that the battery is partially discharged and its capacity margins will be reduced. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within 12 hours (Action 3.7.D.1.b).

Action 3.7.D.1.b requires that the affected station battery float current be verified $\leq$ 2 amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it has now been fully recharged. If at the expiration of the initial 12 hour period the battery float current is not within limits this indicates there may be additional battery problems.

Action 3.7.D.1.c limits the restoration time for the inoperable battery charger to 7 days. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g., balance of plant non-Class 1E battery charger or the standby charger in the event it was inoperable but continued to supply minimum established float voltage). The 7 days reflects a reasonable time to effect restoration of the qualified battery charger to OPERABLE status.

With one or more cells in one station battery < 2.07 V, the battery cell(s) is degraded. Per Action 3.7.D.2.a, within 2 hours, verification of the required battery charger OPERABILITY is made by monitoring the battery terminal voltage (4.7.C.1.a) and of the overall battery state of charge by monitoring the battery float charge current (4.7.C.1.b). This assures that there is still sufficient battery capacity to perform the intended function. Therefore, with one or more cells in one or more batteries < 2.07 V, continued operation is permitted for a limited period up to 24 hours.

One safety related station battery float current > 2 amps indicates that a partial discharge of the battery capacity has occurred. This may be due to a temporary loss of a battery charger or possibly due to one or more battery cells in a low voltage condition reflecting some loss of capacity. Per Action 3.7.D.2.b, within 2 hours verification of the required battery charger OPERABILITY is made by monitoring the battery terminal voltage.

Since Actions 3.7.D.2.a and 3.7.D.2.b only specify "perform," a failure of 4.7.C.1.a or 4.7.C.1.b acceptance criteria does not result in this Action not being met. However, if one of the Surveillance Requirements is failed the appropriate Action(s), depending on the cause of the failure(s), is also entered.

If the Action 3.7.D.2.b condition is due to one or more cells in a low voltage condition but still greater than 2.07 V and float voltage is found to be satisfactory, this is not indication of a substantially discharged battery and 12 hours is a reasonable time prior to declaring the battery inoperable.

With one station battery with one or more cells electrolyte level above the top of the plates, but below the minimum established design limits, the battery still retains sufficient capacity to perform the intended function. Per Action 3.7.D.2.c, within 31 days the minimum established design limits for electrolyte level must be re-established.

With electrolyte level below the top of the plates there is a potential for dryout and plate degradation. Action 3.7.D.2.c addresses this potential (as well as provisions in Specification 6.8.5, "Station Battery Monitoring and Maintenance Program"). Within 8 hours, level is required to be restored to above the top of the plates. The Action requirement to verify that there is no leakage by visual inspection and the Specification 6.8.5 item to initiate action to equalize and

test in accordance with manufacturers' recommendation are taken from Annex D of IEEE Standard 450-1995. They are performed following the restoration of the electrolyte level to above the top of the plates. Based on the results of the manufacturer's recommended testing, the battery may have to be declared inoperable and the affected cell(s) replaced.

Per Action 3.7.D.2.d, with one station battery with pilot cell temperature less than the minimum established design limits, 12 hours is allowed to restore the temperature to within limits. A low electrolyte temperature limits the current and power available. Since the battery is sized with margin, while battery capacity is degraded, sufficient capacity exists to perform the intended function and the affected battery is not required to be considered inoperable solely as a result of the pilot cell temperature not met.

Per Action 3.7.D.2.e, with both station batteries with battery parameters not within limits there is not sufficient assurance that battery capacity has not been affected to the degree that the batteries can still perform their required function, given that both safety related station batteries are involved. With both safety related station batteries involved, this potential could result in a total loss of function on multiple systems that rely upon the batteries. The longer restoration times specified for battery parameters on one safety related battery not within limits are therefore not appropriate, and the parameters must be restored to within limits on one required station battery within 2 hours.

Per Action 3.7.D.2.f, when any battery parameter is outside the allowances of Actions 3.7.D.2.a, b, c, d, or e, sufficient capacity to supply the maximum expected load requirement is not ensured and a 2 hour restoration time is appropriate. Additionally, per Action 3.7.D.2.g, discovering one or both station batteries with one or more battery cells float voltage less than 2.07 V and float current greater than limits indicates that the battery capacity may not be sufficient to perform the intended functions. The battery must therefore be restored within 2 hours or the reactor placed in the COLD SHUTDOWN CONDITION.

Action 3.7.D.3 imposes a 2-hour restoration time for one station battery that is inoperable for reasons other than addressed by the parameter degradation Actions provided. With one station battery inoperable, the battery charger is supplying the DC bus. The 2-hour limit allows sufficient time to effect restoration of an inoperable battery given that the majority of the conditions that lead to battery inoperability (e.g., loss of battery charger, battery cell voltage less than 2.07 V, etc.) are identified in Actions 3.7.D.2 together with additional specific completion times. Failing to correct this inoperability within 2 hours would require the plant to proceed to cold shutdown.

The probability analysis in Appendix "L" of the FDSAR was based on one diesel and shows that even with only one diesel the probability of requiring engineered safety features at the same time as the second diesel fails is quite small. The analysis used information on peaking diesels when synchronization was required which is not the case for Oyster Creek. Also the daily test of the second diesel when one is temporarily out of service tends to improve the reliability as does the fact that synchronization is not required.

As indicated in Amendment 18 to the Licensing Application, there are numerous sources of diesel fuel which can be obtained within 6 to 12 hours and the heating boiler fuel in a 75,000 gallon tank on the site could also be used. As indicated in Amendment 32 of the Licensing Application and including the Security System loads, the load requirement for the loss of offsite power would require 12,410 gallons for a three day supply. For the case of loss of offsite power plus loss-of-coolant plus bus failure 9790 gallons would be required for a three day supply.

4.7 AUXILIARY ELECTRICAL POWER

Applicability: Applies to surveillance requirements of the auxiliary electrical supply.

Objective: To verify the availability of the auxiliary electrical supply.

Specification:

A. Diesel Generator

1. Each diesel generator shall be started and loaded to not less than 80% rated load every two weeks.

2. The two diesel generators shall be automatically actuated and functionally tested during each refueling outage. This shall include testing of the diesel generator load sequence timers listed in Table 3.1.1.

3. Deleted.

4. The diesel generators' fuel supply shall be checked following the above tests.

5. The diesel generators' starting batteries shall be tested and monitored per Specification 4.7.B.

B. Diesel Generator Starting Batteries

1. Weekly surveillance will be performed to verify the following:

   a. The active metallic surface of the plates shall be fully covered with electrolyte in all batteries.

   b. The overall battery voltage is greater than or equal to 112 volts while the battery is on a float charge.

   c. The pilot cell specific gravity, corrected to 77°F, is greater than or equal to 1.190.

2. Quarterly surveillance will be performed to verify the specific gravity for each fourth cell is greater than or equal to 1.190 when corrected to 77°F. The specific gravity and electrolyte temperature of every fourth cell shall be recorded for surveillance review.

3. Annual surveillance will be performed to verify the specific gravity for each cell is greater than or equal to 1.190 when corrected to 77°F. The electrolyte temperature and specific gravity for every cell shall be recorded for surveillance review.

4. At least once per 12 months, the diesel generator battery capacity shall be demonstrated to be able to supply the design duty loads (diesel start) during a battery service test.

5. At least once per 24 months, the following tests will be performed (perform during plant shutdowns or during 24-month Diesel Generator inspections):

   a. Battery capacity shall be demonstrated to be at least 80% of the manufacturers' rating when subjected to a battery capacity discharge test.

   b. If a Diesel Generator Starting Battery is demonstrated to have less than 85% of manufacturers ratings during a capacity discharge test, it shall be replaced within 2 years.

C. Station Batteries

1. Weekly surveillance will be performed to verify the following:

   a. The overall battery voltage is greater than or equal to the minimum established float voltage.

   b. Each station battery float current is ≤ 2 amps when battery terminal voltage is greater than or equal to the minimum established float voltage of 4.7.C.1.a.

2. Monthly Surveillance will be performed to verify the following:

   a. The electrolyte level in each station battery is greater than or equal to minimum established design limits.

   b. The voltage of each pilot cell is greater than or equal to 2.07 volts while the respective battery is on a float charge.

   c. The electrolyte temperature of each station battery pilot cell is greater than or equal to minimum established design limits.

3. Quarterly surveillance will be performed to verify the voltage of each connected cell is greater than or equal to 2.07 volts while the respective battery is on a float charge.

4. At least once per 24 months:

   a. The station battery capacity shall be demonstrated to be able to supply the design duty cycle loads during a battery service test. The modified performance discharge test may be substituted for the service test.

   b. (i) Verify required station battery charger supplies ≥ 480 amps for the B MG Set charger, ≥ 600 amps for the A/B static charger, and ≥ 500 amps for the C charger, for ≥ 4 hours at greater than or equal to the minimum established float voltage, or

      (ii) Verify each required battery charger can recharge the battery to the fully charged state while supplying the normal steady state DC loads during station operation, after a battery discharge to the bounding design basis event discharge state.

5. The following tests will be performed to verify battery capacity (perform during plant shutdowns for Station Batteries B and C):

   a. At least once per 60 months, battery capacity shall be demonstrated to be at least 80% of the manufacturers' rating when subjected to a performance discharge test or a modified performance discharge test.

   b. Performance discharge tests or modified performance discharge tests of station battery capacity shall be given at least once per 12 months (*) when:

      (i) The station battery shows degradation, or

      (ii) The station battery has reached 85% of expected life with battery capacity < 100% of manufacturer's rating.

   c. Performance discharge tests or modified performance discharge tests of station battery capacity shall be given at least once per 24 months when the battery has reached 85% of expected life with battery capacity ≥ 100% of manufacturer's rating.

(*) For the C station battery, applicability of the 12-month Surveillance commences upon startup from refueling outage 1R20.

Basis: The biweekly tests of the diesel generators are primarily to check for failures and deterioration in the system since last use. The manufacturer has recommended the two week test interval, based on experience with many of their engines. One factor in determining this test interval (besides checking whether or not the engine starts and runs) is that the lubricating oil should be circulated through the engine approximately every two weeks. The diesels should be loaded to at least 80% of rated load until engine and generator temperatures have stabilized (about one hour). The minimum 80% load will prevent soot formation in the cylinders and injection nozzles. Operation up to an equilibrium temperature ensures that there is no over-heat problem. The tests also provide an engine and generator operating history to be compared with subsequent engine-generator test data to identify and correct any mechanical or electrical deficiency before it can result in a system failure.

The test during refueling outages is more comprehensive, including procedures that are most effectively conducted at that time. These include automatic actuation and functional capability tests, to verify that the generators can start and assume load in less than 20 seconds and testing of the diesel generator load sequence timers which provide protection from a possible diesel generator overload during LOCA conditions.

The diesel generator batteries are challenged every two weeks to perform the 80% load test. This effectively performs an uninstrumented battery service test. The biweekly diesel start, when combined with the annual battery service test, provides an extensive amount of data on battery performance characteristics. This test data negates the need to lower the battery performance test interval from biennial to annually.

The diesel batteries shall be tested and monitored in accordance with the requirements of Specification 4.7.B to ensure their viability. The requirement to replace any battery in the next refueling outage or within 2 years which demonstrates less than 85% of manufacturers capacity during a capacity discharge test provides additional assurance of continued battery operability.

Verifying, per 4.7.C.1.a, battery terminal voltage while on float charge for the batteries helps to ensure the effectiveness of the battery chargers, which support the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a fully charged state while supplying the continuous steady state loads of the associated DC subsystem. On float charge, battery cells will receive adequate current to optimally charge the battery. The voltage requirements are based on the minimum float voltage established by the battery manufacturer (2.17 V per cell average, or 130.2 V at the battery terminals). This voltage maintains the battery plates in a condition that supports maintaining the grid life (expected to be approximately 40 years for B station battery; 20 years for C station battery). The weekly frequency is consistent with manufacturer recommendations and IEEE Standard 450-1995.

Verifying battery float current while on float charge (4.7.C.1.b) is used to determine the state of charge of the battery. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a charged state. The float current requirements are based on the float current indicative of a charged battery. Use of float current to determine the state of charge of the battery is consistent with IEEE Standard 450-1995. The weekly frequency is consistent with IEEE Standard 450-1995.

This Surveillance Requirement (4.7.C.1.b) provides that the float current requirement is not required to be met when battery terminal voltage is less than the minimum established float voltage of 4.7.C.1.a. When this float voltage is not maintained the Actions of 3.7.D.1 are being taken, which provide the necessary and appropriate verifications of the battery condition. Furthermore, the float current limits are established based on the float voltage range and is not directly applicable when this voltage is not maintained.

The 4.7.C.2.a minimum established design limit for electrolyte level ensures that the plates suffer no physical damage and maintains adequate electron transfer capability. For the station batteries, this is the minimum level mark on the side of the battery cell. The Frequency is consistent with IEEE-450-1995.

Surveillance Requirements 4.7.C.2.b and 4.7.C.3 require verification that the cell float voltages are equal to or greater than 2.07 V. The frequencies for cell voltage verification (monthly for pilot cell, and quarterly for each connected cell) are consistent with IEEE Standard 450-1995.

Surveillance Requirement 4.7.C.2.c verifies that the pilot cell temperature is greater than or equal to the minimum established design limit (i.e., 60 degrees Fahrenheit for station battery B; 50 degrees Fahrenheit for station battery C). Cell electrolyte temperature is maintained above these temperatures to assure the battery can provide the required current and voltage to meet the design requirements. Temperatures lower than assumed in battery sizing calculations act to inhibit or reduce battery capacity. The Frequency is consistent with IEEE Standard 450-1995.

A battery service test, per 4.7.C.4.a, is a special test of the station battery capability, as found, to satisfy the design requirements (battery duty cycle) of the DC auxiliary electrical power system. The discharge rate and test length corresponds to the design duty cycle requirements.

Surveillance Requirement 4.7.C.4.b verifies the design capacity of the station battery chargers. The battery charger supply is based on normal steady state DC loads during station operation and the charging capacity to restore the battery from the design minimum charge state to the fully charged state. The minimum required amperes and duration ensures that these requirements can be satisfied. The battery is recharged when the measured charging current is $\leq$ 2 amps.

Surveillance Requirement 4.7.C.4.b(i) requires that each required station battery charger (i.e., only one charger per station battery "required" for compliance with 3.7.A.4) be capable of supplying the amps listed for the specified charger at the minimum established float voltage for 4 hours. The ampere requirements are based on the output

rating of the chargers. The voltage requirements are based on the normal minimum established float voltage. This time period is sufficient for the charger temperature to have stabilized and to have been maintained for at least 2 hours. Alternately, 4.7.C.4.b(ii) allows that the battery charger load test be capable of recharging the battery after a service test coincident with normal steady state DC loads during station operation. This level of loading may not normally be available following the battery service test and may need to be supplemented with additional loads. The duration for this test may be longer than the charger sizing criteria since the battery recharge is affected by float voltage, temperature, an the exponential decay in charging current.

A battery performance discharge test (4.7.C.5) is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage. Degradation (as used in 4.7.C.5.b(i)) is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying 4.7.C.5; however, only the modified performance discharge test may be used to satisfy the battery service test requirements of 4.7.C.4.a.

9. Limitations on the annual and quarterly doses to a MEMBER OF THE PUBLIC from 1-131, 1-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluent released beyond the SITE BOUNDARY conforming to Appendix I of 10 CFR 50,

10. Limitations on the annual dose or dose commitment to any MEMBER OF THE PUBLIC due to releases of radioactivity and to radiation from Uranium fuel cycle sources conforming to 40 CFR Part 190.

b. Radiological Environmental Monitoring Program

A program shall be provided to monitor the radiation and radionuclides in the environs of the plant. The program shall provide (1) representative measurements of radioactivity in the highest potential exposure pathways, and (2) verification of the accuracy of the effluent monitoring program and modeling of environmental exposure pathways. The program shall (1) be contained in the ODCM, (2) conform to the guidance of Appendix I to 10 CFR Part 50, and (3) include the following:

1. Monitoring, sampling, analysis, and reporting of radiation and radionuclides in the environment in accordance with the methodology and parameters in the ODCM,

2. A Land Use Census to ensure that changes in the use of areas at and beyond the SITE BOUNDARY are identified and that modifications to the monitoring program are made if required by the results of this census, and

3. Participation in an Interlaboratory Comparison Program to ensure that independent checks on the precision and accuracy of the measurements of radioactive materials in environmental sample matrices are performed as part of the quality assurance program for environmental monitoring.

6.8.5 Station Battery Monitoring and Maintenance Program

This Program provides for restoration and maintenance, based on the recommendations of IEEE Standard 450, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries For Stationary Applications," of the following:

a. Actions to restore station battery cells with float voltage < 2.13 volts, and

b. Actions to equalize and test station battery cells that have been discovered with electrolyte level below the top of the plates.

ENCLOSURE 4

LIST OF COMMITMENTS

The following table identifies those actions committed to by AmerGen Energy Company, LLC (AmerGen), in this document. Any other statements in this submittal are provided for information purposes and are not considered to be commitments.

COMMITMENT	Due Date/Event
The existing Oyster Creek commitments to IEEE Standard 450, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," will be revised to reflect commitment to the 1995 edition of IEEE Standard 450, with the exception of specific gravity monitoring frequency for the station batteries.	Upon implementation of the License Amendment