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PG&E Letter DCL-06 -120

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Docket No. 50-275, OL-DPR-80
Diablo Canyon Unit 1
Exigent License Amendment Request 06-08
Revision to Technical Specification 3.8.4, "DC Sources – Operating," Condition B

In accordance with 10 CFR 50.90, enclosed is an application for amendment to Facility Operating License No. DPR-80 for Diablo Canyon Power Plant (DCPP) Unit 1.

In accordance with the provisions of 10 CFR 50.91(a)(6), PG&E requests that this amendment be processed on an exigent one-time basis to support timely corrective action for a degraded condition affecting a single cell that impacts the long term reliability of Unit 1 Vital Battery 1-1. The basis for the exigency is discussed in Enclosure 1. Consistent with NRC Regulatory Issue Summary 2005-01, "Changes to Notice of Enforcement Discretion (NOED) Process and Staff Guidance," this change will be submitted as a permanent change for both units.

The enclosed exigent license amendment request (LAR) would revise Technical Specification (TS) Section 3.8.4, "DC Sources – Operating," Condition B to extend the completion time (CT) to restore an inoperable battery from 2 hours to 12 hours provided certain required actions are taken. The extended CT would allow sufficient time to correct a degraded condition (e.g., either bypass or replace an inoperable battery cell) without introducing time pressure as an error precursor.

This LAR represents a risk-informed licensing change. The proposed changes meet the criteria of Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," for risk-informed changes.

Enclosure 1 contains a description of the proposed changes, the supporting technical analyses, and the no significant hazards consideration determination. Enclosures 2 and 3 contain marked-up and retyped (clean) TS pages, respectively. Enclosure 4 provides the marked-up TS Bases changes for information only. TS Bases changes are provided for information only and will be implemented pursuant

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to TS 5.5.14, "Technical Specifications Bases Control Program," at the time this amendment is implemented.

PG&E has determined that this LAR does not involve a significant hazards consideration as determined per 10 CFR 50.92. Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of this amendment.

PG&E requests the license amendment be made effective upon NRC issuance, to be implemented within 7 days from the date of issuance. PG&E will be prepared to either bypass or replace the degraded cell upon issuance of the license amendment.

PG&E makes no regulatory commitments (as defined by NEI 99-04) in this letter. This letter includes no revisions to existing regulatory commitments.

If you have any questions or require additional information, please contact Stan Ketelsen at 805-545-4720.

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

Executed on October 18, 2006.

Sincerely,

James R. Becker
Vice President - Diablo Canyon Operations and Station Director

why1/4279
Enclosures

cc:	Edgar Bailey, DHS
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EVALUATION

1.0 DESCRIPTION

This letter is a request to amend Operating License No. DPR-80 for Unit 1 of the Diablo Canyon Power Plant (DCPP).

The proposed changes would revise Technical Specification (TS) Section 3.8.4, "DC Sources – Operating," Condition B to add additional required actions that would extend the completion time (CT) to restore an inoperable battery from 2 hours to 12 hours provided certain required actions are taken. The extended CT would allow sufficient time to correct a degraded condition on Unit 1 Vital Battery 1-1 (e.g., either bypass or replace an inoperable battery cell) without introducing time pressure as an error precursor.

2.0 PROPOSED CHANGES

TS 3.8.4 Condition B Required Action B.1 is revised to add the following:

"<u>OR</u>

B.2.1.1 ----------------------------Note------------------------------------
Required Actions B.2.1.1, B.2.1.2, and B.2.2 are applicable, on a one time basis, for Unit 1 cycle 14.

Determine OPERABLE batteries are not inoperable due to common cause failure.

<u>OR</u>

B.2.1.2 Perform SR 3.8.4.1 and SR 3.8.6.1 for OPERABLE batteries.

<u>AND</u>

B.2.2 Restore battery to OPERABLE status."

A CT of 2 hours is added for new Required Actions B.2.1.1, and B.2.1.2, and a CT of 12 hours is added for new Required Action B.2.2.

The TS Bases 3.8.4 is also updated to reflect the proposed changes. The TS Bases changes are included for information only.

The proposed TS changes are noted on the marked-up TS page provided in Enclosure 2. The proposed retyped TS are provided in Enclosure 3. The revised TS Bases is contained for information only in Enclosure 4.

3.0 BACKGROUND

3.1 Description of DC electrical system and battery

The Class 1E DC electrical power system provides the AC emergency power system with control power. It also provides both motive and control power to selected safety-related equipment and backup 120 Vac vital bus power via inverters. As required by 10 CFR 50, Appendix A, General Design Criterion (GDC) 17, the Class 1E DC electrical power system is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure. The DC electrical power system also conforms to the recommendations of Regulatory Guide 1.6, "Independence Between Redundant Standby (Onsite) Power Sources and Between Their Distribution Systems," dated March 10, 1971, and IEEE Standard 308-1971, "Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations," dated 1971.

The 125 Vdc electrical power system consists of three independent safety-related Class 1E DC electrical power subsystems. Each subsystem consists of one dedicated 60-cell 125 Vdc battery (Batteries 11(21), 12(22), and 13(23)), one dedicated battery charger (Battery Chargers 11(21), 12(22), and 132(232)), a backup charger, and all the associated switchgear, control equipment, and interconnecting cabling. Although the three 125 Vdc batteries consist of a 60-cell configuration, analysis is in place to fully support a 59-cell configuration.

The backup chargers provide backup service in the event that the dedicated battery charger is out of service. There are two backup chargers for the three Class 1E DC subsystems. One backup charger (Backup Charger 121(221)) is shared between two Class 1E DC subsystems and supplies either Battery 11(21) or Battery 12(22). The other backup charger (Backup Charger 131(231)) is dedicated to the third Class 1E DC subsystem and supplies Battery 13(23). For each battery, the backup charger is supplied from a different 480 Vac vital bus than the dedicated charger is supplied from. There are certain backup battery charger alignments wherein one of the 480 Vac vital busses supplies two battery chargers, aligned to different DC busses. During these backup battery charger alignments, the requirements of independence and redundancy between subsystems are not maintained. As a result, operation with more than one charger receiving power simultaneously from a single 480 Vac vital bus or any DC bus not receiving power from its associated AC electrical power distribution subsystem is limited to 14 days by TS 3.8.4 Condition D.

During normal operation, the 125 Vdc load is powered from the battery chargers with the batteries floating on the system. In case of loss of normal power to the battery charger, the DC load is automatically powered from the station batteries. Each battery has adequate storage capacity to carry the required load continuously for at least 2 hours.

The DC electrical power subsystems provide the control power for the associated Class 1E AC power load group, 4.16 kV switchgear, and 480 V load centers. The DC electrical power subsystems also provide DC electrical power to the inverters, which in turn are backup sources to power the 120 Vac vital buses.

Each 125 Vdc battery is separately housed in a ventilated room apart from its charger and distribution centers. Each subsystem is located in an area separated physically and electrically from the other subsystem to ensure that a single failure in one subsystem does not cause a failure in a redundant subsystem.

The batteries for the three DC electrical power subsystems are sized to produce required capacity at 80 percent of nameplate rating, corresponding to warranted capacity at end of life cycles and the 100 percent design demand. The minimum design voltage limit is 112.1 V for a 59-cell battery.

Each DC electrical power subsystem has ample power output capacity for the steady state operation of connected loads required during normal operation, while at the same time maintaining its battery bank fully charged. Each battery charger also has sufficient capacity to restore the battery from the design minimum charge to its fully charged state within 12 hours while supplying normal steady state loads.

The initial conditions of design basis accident (DBA) and transient analyses assume that engineered safety feature (ESF) systems are operable. The DC electrical power system provides normal and emergency DC electrical power for the emergency diesel generators (EDGs), emergency auxiliaries, and control and switching during all modes of operation.

The operability of the DC sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining the DC sources operable during accident conditions in the event of an assumed loss of all offsite AC power or all onsite AC power; and a worst case single failure.

Each DC electrical power subsystem consists of one battery, battery charger for each battery and the corresponding control equipment and interconnecting cabling supplying power to the associated bus. The DC subsystems are required to be operable to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA.

Loss of any one DC electrical power subsystem does not prevent the minimum safety function from being performed.

An operable DC electrical power subsystem requires the battery and its normal or backup charger to be operating and connected to the associated DC bus.

3.2 Description of Battery Cell Parameters

The battery cells are of flooded lead acid construction with a nominal specific gravity of 1.215. This specific gravity corresponds to an open circuit battery voltage of approximately 125 V for a 60-cell battery (i.e., cell voltage of 2.06 volts per cell (Vpc)). The open circuit voltage is the voltage maintained when there is no charging or discharging. Once fully charged with its open circuit voltage greater than or equal to 2.06 Vpc, the battery cell will maintain its capacity for 30 days without further charging per manufacturing instructions. Optimal long term performance however, is obtained by maintaining a float voltage range of 2.20 to 2.25 Vpc. This provides adequate over-potential, which limits the formation of lead sulfate and self discharge. The float voltage range of 2.20 to 2.25 Vpc corresponds to a total float voltage output range of 132.0 through 135.0 V for a 60-cell battery.

Battery cell parameters must remain within acceptable limits to ensure availability of the required DC power to shut down the reactor and maintain it in a safe condition after an AOO or a postulated DBA. Electrolyte limits are conservatively established, allowing continued DC electrical system function.

The battery cell parameters are required solely for the support of the associated DC electrical power subsystems. Therefore, battery operability is only required when the DC power source is required to be operable.

3.3 Reason for Proposed Amendment

This extension of the CT of an inoperable battery is requested to provide reasonable time to conduct an orderly repair and return to service from a degraded condition.

4.0 JUSTIFICATION AND BASIS FOR THE EXIGENT CIRCUMSTANCES

Unit 1 Battery 1-1 (one of the three Class 1E vital batteries) has been in service for approximately 11 years. It was replaced during the Unit 1 Seventh Refueling Outage on October 13, 1995. Subsequent quarterly surveillance testing has shown normal voltages for all 60 cells, including the surveillance test completed on July 13, 2006. Throughout this period, there was no indication of a problem with Cell 15.

Then, on October 3, 2006, during performance of the quarterly surveillance of Battery 1-1, it was noted that Cell 15 had a low voltage of 2.093 Vdc compared to a typical cell voltage between 2.20 to 2.25 Vdc on float voltage. The 2.093 Vdc cell voltage is still above the minimum cell voltage of greater than 2.07 Vdc as required by TS 3.8.6, "Battery Parameters" Condition A. Therefore, Battery 1-1 remained operable. Visual inspection of the low voltage cell of Battery 1-1 revealed that sulfation was forming on the positive plates of the cell which is a confirmatory indication of low cell voltage.

An equalizing charge was placed on Battery 1-1 when the problem was discovered, and although sulfation was removed, the charge was ineffective in bringing Cell 15 voltage up. Single cell charging was then performed for a week, and was also ineffective. Per the battery vendor's recommendation, single cell charging was performed again but at a higher charging voltage; this was also ineffective. Consequently PG&E has elected to either bypass or replace the low voltage cell.

Plant Class 1E vital batteries typically consist of 60 cells. Bypassing the low voltage cell in Battery 1-1 is an acceptable alternative to replacing the cell because the plant battery sizing calculation supports a 59-cell configuration while still allowing the battery to perform its safety function as described in the accident analysis. Replacing the cell would restore the battery to its original design configuration.

Bypassing or replacing the cell requires disconnecting Battery 1-1 from its associated vital bus which, while the unit is on line, makes the battery inoperable, and requires entry into TS 3.8.4 Condition B. The associated Required Action is to restore the inoperable battery to operable status within two hours. Bypassing the cell involves installation of wiring and takes approximately 90 minutes when no problems occur and when there are no contingencies. Replacement of a cell involves disassembly of the seismically qualified rack assembly, installation of rigging to support cell removal, removing connectors on cell(s), installation of a switch to disconnect the battery from the bus, rigging the old cell out and rigging the new cell in, connection of the new cell, reassembly of the rack assemblies, performance of post-maintenance and surveillance testing, and any additional actions to address problems or contingencies. Previous cell replacements have taken 8 hours to complete with no additional time required to address problems or contingencies. Since bypass or replacement of the low voltage cell along with the post-modification/maintenance tests may take longer than two hours to complete, an extension of the CT for TS 3.8.4 Condition B from 2 hours to 12 hours is necessary to prevent a TS-required shutdown.

Currently Battery 1-1 is operable since the low cell voltage of 2.093 Vdc is still greater than or equal to 2.07 Vdc as required in TS 3.8.6 Condition A. However, if Cell 15 degrades to below the TS minimum limit of 2.07 Vdc, the Required Action requires restoring the affected cell float voltage to greater than or equal to

2.07 Vdc in 24 hours. If this Required Action and associated CT are not met, TS 3.8.6 Condition F will be entered to declare the associated battery inoperable immediately. With one battery inoperable, the plant has two hours to restore the battery to operable status, or a shutdown of the unit is required.

PG&E requests this amendment be processed on a one-time exigent basis to support timely corrective action for the degraded condition affecting a single cell that impacts the long term reliability of Vital Battery 1-1. This amendment will avoid the risk of a TS-required shutdown with a degraded battery.

5.0 TECHNICAL ANALYSIS

5.1 Changes to Required Action

The Required Action is revised to require either determination that the operable batteries are not inoperable due to common cause failure or performance of surveillance requirement (SR) 3.8.4.1 and SR 3.8.6.1 for the operable batteries. Taking steps to determine whether the battery condition is the result of a common cause failure will provide assurance that a similar failure will not occur to other operable batteries. Performing SR 3.8.4.1 and SR 3.8.6.1 will serve the same purpose, to ensure the batteries remain in operable condition. The 2-hour completion times for Required Actions B.2.1.1, and B.2.1.2 are consistent with the CT to restore a battery to operable status in Required Action B.1. When Required Actions B.2.1.1, or B.2.1.2 are met, the inoperable battery can be restored to operable status in 12 hours. The bases for the 12-hour Required Action B.2.2 CT is based on the risk analysis as described below.

5.2 Risk-Informed Analysis

This license amendment request (LAR) represents a risk-informed licensing change.

The proposed change to the CT for TS 3.8.4 Condition B is addressed in NUREG-1431, Revision 3, "Standard Technical Specifications Westinghouse Plants." In NUREG-1431 Bases 3.8.4, Subsection B.1, the reviewer's note states:

> *The 2 hour Completion Times of Required Actions B.1 and C.1 are in brackets. Any licensee wishing to request a longer Completion Time will need to demonstrate that the longer Completion Time is appropriate for the plant in accordance with the guidance in Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications."*

The proposed change meets the criteria of Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and RG 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," for risk-informed changes.

RG 1.177 discusses the acceptable reasons for requesting TS changes. The category applicable to this LAR is:

Reduce unnecessary burdens: The change may be requested to reduce unnecessary burdens in complying with current TS requirements, based on operating history of the plant or the industry in general. This includes extending CTs (1) that are too short to complete repairs when components fail with the plant at-power, (2) to complete additional maintenance activities at-power to reduce plant down time, and (3) provide increased flexibility to plant operators.

5.3 Impact on Defense-In-Depth and Safety Margins

Impact on Defense-In-Depth

This request adds provisions to TS 3.8.4 Condition B to extend the CT from 2 hours to 12 hours with additional Required Actions when one battery is inoperable. The purpose is to allow sufficient time to complete emergent corrective maintenance and to avoid an unnecessary plant shutdown. The extension of the CT has no impact on the current safety analysis because the remaining operable batteries are still available to perform their safety functions while in this TS action. There is no difference in the deterministic safety significance of a 2-hour CT and a 12-hour CT. The difference in the current TS versus the proposed extension lies in the added risk due to the extension of the CT, which is evaluated in the Probabilistic Risk Assessment (PRA) section of this LAR.

The proposed change needs to meet the defense-in-depth principle, which consists of a number of elements. These elements and the impact of the proposed change on each follow:

- A reasonable balance among the prevention of core damage, prevention of containment failure and consequence mitigation is preserved.

  The DC electrical power sources are required to be operable to ensure safe unit operation and to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of anticipated operational occurrences or abnormal transients; and
b. Adequate core cooling is provided, and containment integrity and other vital functions are maintained in the event of a postulated DBA.

Each DC electrical power subsystem consists of one battery and one dedicated battery charger for each battery and the corresponding control equipment and the interconnecting cabling supplying power to the associated bus. The subsystems are required to be operable to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an AOO or a postulated DBA. Loss of any one DC electrical power subsystem does not prevent the minimum safety function from being performed. Because of this design feature, there is no loss in the core damage prevention, containment failure prevention or consequence mitigation. The remainder of the DC electrical power system is still able to perform its safety function as designed.

- Over-reliance on programmatic activities to compensate for weakness in plant design.

  The plant design will not be modified with the proposed extension of the CT. All safety systems will still perform their design functions, and there will be no reliance on additional systems, procedures, or operator actions. The calculated risk increase for the CT change is very small and additional control processes are not required to compensate for any risk increase.

- System redundancy, independence, and diversity are maintained commensurate with the expected frequency and consequences of challenges to the system.

  There is no impact on the redundancy, independence, or diversity of the Class 1E DC battery system or on the ability of the plant to respond to an accident condition with diverse systems. The redundant operable batteries continue to be capable of performing the necessary safety functions consistent with the assumptions in the accident analysis. As a result, the redundant and diverse designs of the Class 1E DC system are not affected by this proposed change.

- Defenses against potential common cause failures are maintained and the potential for introduction of new common cause failure mechanisms is assessed.

Defenses against common cause failures are maintained. There is no change to the physical design of the electrical power systems nor is there any new operational change introduced. As a result, there is no new potential common cause failure introduced. In addition, the operating environment for these components remains the same. This means that new common cause failure modes are not expected.

- Independence of barriers is not degraded.

  The proposed CT extension does not implement any physical change to the DC system, and so the barriers protecting the public and the independence of these barriers remain as before. With the implementation of 10 CFR 50.65, "Maintenance Rule," risk associated with online maintenance activities is assessed and managed. This ensures that multiple safety systems will not be taken out-of-service (OOS) simultaneously during the extended CT, which could lead to degradation of these barriers and an increase in risk to the public.

- Defenses against human errors are maintained.

  No new operator actions related to the CT extensions are introduced and no changes to current operating, maintenance, or test practices are required due to the proposed change. Some new activities may be performed while the unit is on line, but these are not expected to introduce additional human errors or increase the frequency of human errors. Therefore, defense against human errors are maintained.

- The intent of the General Design Criteria (GDC) in Appendix A to 10 CFR 50 is maintained.

  The proposed change to extend the CT of one inoperable battery does not modify the plant design bases or the plant design criteria. All the safety analyses associated with the electrical power systems remain valid. Consequently, the plant design with respect to the GDC is not affected by the proposed changes.

Impact on Safety Margins

The proposed CT extension is not in conflict with approved Codes and Standards relevant to the subject system. It also does not adversely affect any assumptions or input to the safety analysis or result in failure to meet the intended safety function because the redundant operable Class 1E DC batteries will be capable of performing the necessary safety functions associated the accident analysis. Therefore, the safety margins of the plant are not affected.

5.4 Assessment of Impact on Risk

The effect on risk of the proposed increase in CT for restoration of an inoperable Class 1E battery has been evaluated using NRC's three-tier approach suggested in RG 1.177:

Tier 1 - PRA Capability and Insights,
Tier 2 - Avoidance of Risk-Significant Plant Configurations, and
Tier 3 - Risk-Informed Configuration Risk Management

Although RG 1.177 requires evaluation of the proposed changes on the total risk (i.e., on-line and shutdown risk), this evaluation only quantifies the on-line risk. This is conservative since shutdown risk will be reduced because the proposed changes result in maintenance on the batteries while online.

5.4.1 Tier 1: PRA Capability and Insights

Risk-informed support for the proposed changes is based on an evaluation of PRA calculations to quantify the change in core damage frequency (CDF) and large early release frequency (LERF) resulting from the increased CT for one Class IE battery.

PRA Capability

The scope, level of detail, and quality of the Diablo Canyon PRA (DCPRA) are sufficient to support a technically defensible and realistic evaluation of the risk change from this proposed CT extension. The DCPRA used in this evaluation is a full scope Level 1 and Level 2 PRA model that addresses internal, seismic and fire events at full power. For the CDF calculations, the internal, seismic and fire hazards were included. For the LERF calculations, only internal and seismic hazards were included. The contribution from internal fire hazard is considered negligible since no containment bypass vulnerabilities were identified during the Individual Plant Examination for External Events (IPEEE) study. The DCPRA is performed for Unit 1, but it is equally applicable to DCPP Unit 2 because the two units are essentially identical.

The DCPRA is based on the original 1988 Diablo Canyon PRA that was performed as part of the Long Term Seismic Program (LTSP). The DCPRA-1988 was a full scope Level 1 PRA that evaluated internal and external events. The DCPRA was subsequently updated to support the Individual Plant Examination (IPE) (1991) and the IPEEE (1993). Since 1993, several other updates have been made to incorporate plant and procedure changes, update plant specific reliability and unavailability data, improve the fidelity of the model, incorporate Westinghouse Owners Group (WOG) Peer Review comments, and support other applications, such as on-line maintenance, risk-informed in-service inspection, emergency diesel generator (EDG) CT extension, and mitigating system performance index (MSPI).

The enhancements to the DCPRA-1988 model include:

- Included the probability of a loss-of-offsite power (LOOP) subsequent to non-LOOP initiating events
- Incorporation of sixth EDG
- Upgraded auxiliary saltwater system modeling to make it more consistent with the Station Blackout submittal
- Allowed credit for cross-tie of vital 4 kV buses (i.e., one EDG feeds loads on two vital buses)
- Added 500 kV switchyard model, to supplement 230 kV switchyard
- Updated initiating event frequencies to reflect data from NUREG-5750
- Used the Rhodes Model to characterize the reactor coolant pump seal performance on loss of cooling and seal injection

The LERF figures of merit are calculated using the full Level 2 model.

The DCPRA is a living PRA, which is maintained through a periodic review and update process.

Peer Review Certification of the DCPRA, using the WOG Peer Review Certification Guidelines, was performed in May 2000. On the basis of its evaluation, the Certification Team determined that, with certain findings and observations addressed, the quality of all elements of the PRA would be sufficient to support risk significant evaluations with defense-in-depth input relative to the requested CT extension. The two A findings and all B findings and observations from this assessment, which involved risk elements that are needed to evaluate the proposed CT extension, have been appropriately dispositioned. As a result, a number of modifications are made to the PRA model prior to its use to support these proposed changes. A major enhancement was the reanalysis and updating of the pre- and post-initiating event human reliability assessments.

In addition to the Peer Certification, two limited scope, independent assessments of the DCPRA were performed by an industry PRA expert prior to completing the extended EDG CT analysis and the MSPI calculations. The assessments focused on the elements required to support the stated applications. Additionally, during the MSPI industry cross comparison, DCPP PRA model was not identified as an outlier.

The latest update, the DC01 model, which was completed in January of 2006, uses as its base the model created to address the EDG CT extension license amendment request (Reference: PRA Calculation File PRA02-06). This model contains the following:

- The most recent data represented in PRA model DCC0DATA
- The split of 480 Vac from 4 kV
- The split of DC power into "early" and "late" DC power requirement.
- AC power system revision
- Divided the loss of offsite power initiating event into three separate initiators to allow appropriate use of recovery factors.
- Merge of the Seismic Support Event Trees into the General Transient Event Trees
- Modification of various top events and event trees to support the MSPI and the Safety Monitor projects.
- Inclusion of the fire water storage tank as a supplemental water source to the condensate storage tank as required.

- Level 2 update.

DC01 Core Damage Frequency

- Internal 1.08E-5
- Seismic 3.77E-5
- Fire 1.70E-5
- Total 6.56E-5

WC01A is the no-maintenance version of this updated model and has a combined (Internal, Seismic, Fire) CDF of 5.88E-05/year.

The DCPRA is a living PRA, which is maintained through a periodic review and update process.

Fire and Other External Events

A fire analysis was conducted as part of the DCPRA-1988. The NRC reviewed the LTSP and issued Supplemental Safety Evaluation Report No. 34 accepting DCPRA-1988. The Fire PRA was updated to support the 1993 IPEEE. Other than control room (CR) and cable spreading room (CSR) fire scenarios, the Fire PRA quantifies the CDF associated with most internal fire initiating events using the same linked event tree models as the internal and seismic events analyses. Separate event trees using conservative assumptions were developed for evaluating CR and CSR fire scenarios.

The evaluation of high winds, external floods, and other external events, which was done as part of the IPEEE, revealed no potential vulnerabilities. The proposed extension to the battery CT has negligible effect on the risk profile at DCPP from other external events.

Methodology

The general methodology of evaluating the proposed change involves identifying the areas of concern relating to one battery being out of service for 12 hours and quantifying its impact on risk.

The areas of concern are the potential to create a new initiating event (IE), increase in the frequency of an existing IE, and affect the consequence of an existing IE.

New IE

Based on an engineering judgment, it is determined that an increase of out-of-service time from current 2 hours to 12 hours would not introduce a new IE.

Impact on the Frequency of an Existing IE

The existing IE that could be impacted by taking a battery out-of-service is loss of single DC bus. However the impact on the IE frequency should be minimal as a DC bus has redundant power sources and the proposed outage time is small. Therefore, this impact was not considered in the analysis.

Impact on Consequences

The risk impact was evaluated using the following steps.

(1) Calculate the base CDF and LERF using the baseline no-maintenance PRA model.
(2) Modify the baseline no-maintenance model to reflect one battery being OOS and recalculate the CDF and LERF.
(3) Calculate the risk impact of the proposed change using the RG 1.177 risk metrics described below and compare them to the acceptance criteria.

Risk Metrics

ΔCDF_{AVE} = change in the annual average CDF due to an expected unavailability of one battery resulting from the increased CTs. This risk metric is compared against the criteria of RG 1.174 to determine whether a change in CDF is regarded as risk significant. These criteria are a function of the baseline annual average CDF, CDF_{BASE}.

$\Delta LERF_{AVE}$ = change in the annual average LERF due to an expected unavailability of one battery that could result from the increased CT. Similar to ΔCDF_{AVE}, RG 1.174 criteria were also applied to judge the significance of changes in this risk metric.

ICCDP = incremental conditional core damage probability with one battery OOS for an interval of time equal to the proposed CT (i.e., 12 hours). This risk metric is used as suggested in RG 1.177 to determine whether a proposed CT has an acceptable risk impact.

ICLERP = incremental conditional large early release probability with one battery OOS for an interval of time equal to the proposed CT. Similar to *ICCDP,* RG 1.177 criteria were also applied to judge the significance of changes in this risk metric.

The above risk metrics were quantified using the equations provided below.

Change in CDF/LERF

The change in the annual average CDF, ΔCDF_{AVE}, was evaluated by computing the following equation.

$$\Delta CDF_{AVE} = \left(\frac{T_{OOS}}{T_{YEAR}}\right) \times (CDF_{OOS} - CDF_{BASE}) \quad \text{(Equation 1)}$$

where the following definitions apply:

T_{OOS} = time that one battery is expected to be unavailable per year as a result of the increased CT.

CDF_{OOS} = Annual average CDF with one battery OOS.

CDF_{BASE} = Baseline annual average CDF with average unavailability of the batteries with the current TS CT. This is the CDF result of the current baseline DCPRA.

(CDF_{OOS} - CDF_{BASE}) = Change (i.e., increase) in CDF due to one battery being unavailable for a whole year.

A similar approach was used to evaluate the change in the average LERF ($\Delta LERF_{AVE}$).

$$\Delta LERF_{AVE} = \left(\frac{T_{OOS}}{T_{YEAR}}\right) \times (LERF_{OOS} - LERF_{BASE}) \qquad \text{(Equation 2)}$$

where the following definitions were applied:

$LERF_{OOS}$ = LERF evaluated from the PRA model for with one battery unavailable.

$LERF_{BASE}$ = Baseline annual average LERF with average unavailability of the batteries consistent with the current TS CT. This is the LERF result of the current baseline DCPRA.

($LERF_{OOS}$ - $LERF_{BASE}$) = Change (i.e., increase) in LERF due to one battery being out-of-service for a whole year.

Incremental Conditional Probabilities

The ICCDP and ICLERP are computed using their definitions in RG 1.177. The ICCDP values are dimensionless probabilities used to evaluate the incremental probability of a core damage event over a period of time equal to the extended CT. This should not be confused with the evaluation of ΔCDF_{AVE}, in which the CDF is based on expected unavailability. However, the endstate frequencies used to calculate ICCDP/ICLERP are the same as those used to calculate the change in CDF/LERF as described in the previous section.

The ICCDP is calculated by multiplying the change in CDF by the proposed TS CT (T_{CT}). Therefore,

$$ICCDP = (CDF_{OOS} - CDF_{BASE}) \times T_{CT} \quad \text{(Equation 3)}$$

Similarly, ICLERP is defined as follows:

$$ICLERP = (LERF_{OOS} - LERF_{BASE}) \times T_{CT} \quad \text{(Equation 4)}$$

where T_{CT} is the proposed TS completion time (i.e., 12 hours).

Assumptions/Assertions

1. The calculations for change in CDF conservatively neglect the decrease in the CDF contribution that would result from avoiding a TS-driven shutdown required by the current TS CT.
2. The impact of one battery being OOS at lower operating Modes (i.e., Modes 2, 3, and 4) is bounded by the power operations impact. Therefore no separate risk evaluation at the lower modes is necessary.
3. Common cause failures of the battery trains are not included. This was assumed since the proposed changes to the TS will require inspecting the unaffected trains prior to taking an affected train OOS.

Input

The expected mean outage time of eight hours per year, T_{OOS} for one battery is based on the input from the plant maintenance and engineering organizations.

Acceptance Criteria

The acceptance guidelines for TS changes are provided in Sections 2.2.4 and 2.2.5 of RG 1.174 and for CT changes in Section 2.4 of RG 1.177.

The impact of the proposed change is considered very small and low risk if the estimated risk metric values are less than those listed below.

Risk Metric	Acceptance Criteria
ΔCDF_{AVE}	1.0 E-06 per reactor year
$\Delta LERF_{AVE}$	1.0 E-07 per reactor year
$ICCDP$	5.0 E-07
$ICLERP$	5.0 E-08

PRA Model Setup and Results

The total base CDF and LERF values are from the current no-maintenance model, which is the baseline model without contributions from testing or maintenance activities. The no-maintenance model is used since this assessment is for a one-time CT extension and the work will be conducted with no other risk-significant components OOS. The total base LERF includes contributions from internal and seismic events, while the base CDF also includes contributions from internal fire events.

Model WC01A was modified to estimate the impact of one battery being unavailable for the calculation of ΔCDF_{AVG} and $\Delta LERF_{AVG}$. One case was created; WC01BFC for bus F battery unavailable. The modifications involved the following model changes.

Risk Metric Calculation

1) Calculate the base CDF and LERF using the baseline PRA model (i.e., WC01A).

   The results of the baseline model are:

   CDF_{BASE} = 5.88E-05 per year

$LERF_{BASE}$ = 3.25E-06 per year

2) Modify the baseline model (i.e, create WC01BFC) to reflect the battery on bus F unavailable and recalculate the CDF and LERF.

Bus F Calculations

The recalculated CDF and LERF values are:

CDF_{OOS} = 3.76E-004

$LERF_{OOS}$ = 9.78E-06

The change (increase) in the CDF and LERF values are given by:

$\Delta CDF = (CDF_{OOS} - CDF_{BASE})$ = 3.76E-04 – 5.88E-05

= 3.17E-04 /year

$\Delta LERF = (LERF_{OOS} - LERF_{BASE})$ = 9.78E-06 – 3.25E-06

= 6.53E-06 /year

Risk Metric	CDF – No-Maintenance Base Case	CDF - Bus F Battery Unavailable
CDF	5.88E-05	3.76E-04
LERF	3.25E-06	9.78E-06
Delta CDF	NA	3.17E-04
Delta LERF	NA	6.53E-06

3) Calculate the RG 1.174 and RG 1.177 Risk Metrics

Change in CDF/LERF

Using the Equations 1 and 2, the changes in the annual average CDF and LERF for the bus F case are calculated as follows:

$$\begin{aligned}\Delta CDF_{AVEF} &= \left(\frac{T_{OOS}}{T_{YEAR}}\right) \times \Delta CDF \\ &= \left(\frac{8hr}{8760hr}\right) \times 3.17E-04 \\ &= 2.89E-07\end{aligned}$$

Similarly,

$$\begin{aligned}\Delta LERF_{AVEF} &= \left(\frac{T_{OOS}}{T_{YEAR}}\right) \times \Delta LERF \\ &= \left(\frac{8hr}{8760hr}\right) \times 6.53E-06 \\ &= 5.96E-09\end{aligned}$$

Incremental Conditional Probabilities (ICP)

The ICPs for core damage and large early release for the bus F case are calculated based on Equations 3 and 4. The DCPP no-maintenance model WC01A is used as a basis for the models used to calculate ICCDP and ICLERP.

$$\begin{aligned}ICCDP_F &= (CDF_{OOS} - CDF_{BASE}) \times T_{CT} \\ &= \Delta CDF \times T_{CT} \\ &= (3.17E-04/yr) \times (12hrs) \times \left(\frac{1yr}{8760hr}\right) \\ &= 4.34E-07\end{aligned}$$

Similarly,

$$\begin{aligned}ICLERP_F &= (LERF_{OOS} - LERF_{BASE}) \times T_{CT} \\ &= \Delta LERF \times T_{CT} \\ &= (6.53E-06/yr) \times (12hrs) \times \left(\frac{1yr}{8760hrs}\right) \\ &= 8.95E-09\end{aligned}$$

The table below summarizes the results of the risk metrics with their RG 1.177 acceptance criteria.

Risk Metric	Calculated Risk (Bus F)	Acceptance Criteria
ΔCDF_{AVG}	2.89E-07	1.0 E-06
$\Delta LERF_{AVG}$	5.96E-09	1.0 E-07
ICCDP	4.34E-07	5.0 E-07
ICLERP	8.95E-09	5.0 E-08

Note that, although the ICCDP value is close to the RG 1.177 acceptance criteria, it is judged that the incremental risk associated with this request is about a factor of 1.5 lower since the expected time OOS is 8 hours.

Conclusion

The calculated risk metric values are all within acceptable limits and therefore from the risk informed perspective, the proposed change to the CT for one battery inoperable to 12 hours has a negligible impact on overall plant risk.

5.4.2 Tier 2: Avoidance of Risk-Significant Plant Configurations

There is reasonable assurance that risk-significant plant equipment configurations will not occur when a vital DC battery is OOS using the proposed TS changes.

TS and Safety Function Determination Program

Adhering to the current TS requirements will prevent many of the more risk significant configurations from being entered into. Specifically, there are requirements concerning the operability of battery chargers as specified in LCO 3.8.4 (Condition A). Potential configurations that should be avoided while a battery is OOS are (1) unavailability of primary and/or backup battery chargers and (2) any activities that could increase the frequency of the LOOP.

The Safety Function Determination Program (SFDP) requires provisions for cross-division checks to ensure a loss of the capability to perform a safety function assumed in the accident analysis does not go undetected. TS LCO 3.0.6 establishes requirements regarding supported systems when support systems are found inoperable. Upon entry into TS LCO 3.0.6 an evaluation is required to determine whether there has been a loss of safety function. Additionally, other limitations, remedial actions, or compensatory actions may be identified as a result of the support system inoperability and corresponding exception to entering supported system Conditions and Required Actions. The SFDP implements the requirements of TS LCO 3.0.6. Procedure OP1.DC38 implements the SFDP as required by TS 5.5.15.

Risk Management and Compensatory Actions

The risk associated with having a vital battery OOS will be managed by adhering to the requirements for online risk assessment and management as described in DCPP procedure AD7.DC6. In addition to the risk directly associated with the battery unavailability, the procedure requires that potentially risk significant configurations during the period of its unavailability are assessed and managed. Other risk management actions and restrictions used in the past at DCPP include:

- Risk awareness briefings for maintenance, operations, engineering and other support personnel prior to the work.
- Maintenance performed around-the-clock to minimize the time spent with equipment unavailable.
- Establishment of back-out criteria and procedures in the event of unexpected conditions or configurations.
- Verification of redundant equipment operability and posting of signs.
- Walkdown of redundant or other important mitigation equipment (e.g., the other batteries) to ensure that equipment is in good material condition, with no work being performed that could jeopardize operation.
- Disallow work that may cause a trip hazard or elective maintenance on redundant equipment.
- Disallow work that may result in a loss of the 230 kV startup bus.
- No additional elective maintenance on risk-significant equipment if the request for extending the allowed outage time is approved.
- Senior management on-shift support, in the event conditions jeopardize plant operation.
- Plan for no more than 50 percent of the CT for the maintenance without additional management approval.

5.4.3 Tier 3: Risk-Informed Configuration Risk Management Program

DCPP has developed a process for online risk assessment and management. Following the process and procedures ensures that the risk impact of equipment OOS while the plant is on-line is appropriately evaluated prior to performing any maintenance activity or following an equipment failure or other internal or external event that impacts risk. DCPP procedure AD7.DC6 provides guidance for managing safety function, probabilistic, and plant trip risks as required by 10 CFR 50.65(a)(4) of the Maintenance Rule. The procedure addresses risk management practices in the maintenance planning phase and maintenance execution (real time) phase for Modes 1 through 4. Appropriate consideration is given to equipment unavailability, operational activities such as testing, and weather conditions.

In general, risk from performing maintenance on-line is minimized by:

- Performing only those preventative and corrective maintenance items on-line required to maintain the reliability of structures, systems or components (SSC).
- Minimizing cumulative unavailability of safety-related and risk significant SSCs by limiting the number of at-power maintenance outage windows per cycle per train/component.
- Minimizing the total number of SSCs OOS at the same time.
- Minimizing the risk of initiating plant transients (trips) that could challenge safety systems by implementing compensatory measures.
- Avoiding higher risk combinations of OOS SSCs using PRA insights.
- Maintaining defense-in-depth by avoiding combinations of OOS SSCs that are related to similar safety functions or that affect multiple safety functions.
- Scheduling in Train/Bus windows to avoid removing equipment from different trains simultaneously.

In general, risk is managed by:

- Evaluating plant trip risk activities or conditions and mitigating them by taking appropriate compensatory measures and/or

ensuring defense-in-depth of safety systems that are challenged by a plant trip.
- Evaluating and controlling risk based on probabilistic and key safety function defense-in-depth evaluations.
- Implementing compensatory measures and requirements for management authorization or notification for certain "high-risk" configurations.

Actions are taken and appropriate attention is given to configurations and situations commensurate with the level of risk as evaluated using AD7.DC6. This occurs both during planning and real time (execution) phases.

For planned maintenance activities, an assessment of the overall risk of the activity on plant safety, including benefits to system reliability and performance, is currently performed and documented per AD7.DC6 prior to scheduled work. Consideration is given to plant and external conditions, the number of activities being performed concurrently, the potential for plant trips, and the availability and "health" of redundant trains.

Risk is evaluated, managed and documented for all activities or conditions based on the current plant state:

- Before any planned or emergent maintenance is to be performed.
- As soon as possible when an emergent plant condition is discovered.
- As soon as possible when an external or internal event or condition is recognized.

Compensatory measures are implemented as necessary and if the risk assessment reveals unacceptable risk, a course of action is determined to restore degraded or failed safety functions and reduce the probabilistic risk.

5.5 Integrated Risk-Informed Assessment

The proposed changes to extend the allowable CTs for the Required Actions associated with restoration of an inoperable vital battery, have been evaluated with a risk-informed approach. This approach demonstrates that the principles of risk-informed regulation are met for these proposed changes:

- The applicable regulatory requirements will continue to be met

- Adequate defense-in-depth will be maintained
- Sufficient safety margins will be maintained, and
- Any increases in CDF and LERF are small and consistent with the NRC Safety Goal Policy Statement and Regulatory Guides 1.174 and 1.177.

Constraints on concurrent maintenance of other equipment while batteries are unavailable are needed to ensure that the risk increase due to the proposed change is small. These constraints are factored into the CDF, LERF, ICCDP, and ICLERP calculations by using the no-maintenance model. In addition, this assessment is only for the Unit 1 Bus F battery and does not apply to any other class 1E vital battery.

6.0 REGULATORY ANALYSIS

6.1 No Significant Hazards Consideration

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

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

Response: No.

The proposed changes add provisions to increase the completion time (CT) from two hours to twelve hours, on a one-time basis for Diablo Canyon Power Plant Unit 1 Vital Battery 1-1. Additional Required Actions are specified when this battery, associated with the plant Class 1E Direct Current (DC) electrical power subsystem, is inoperable. The proposed changes do not physically alter any plant structures, systems, or components, and are not accident initiators: therefore, there is no effect on the probability of accidents previously evaluated. As part of the single failure design feature, loss of any one DC electrical power subsystem does not prevent the minimum safety function from being performed. Also, the proposed changes do not affect the type or amounts of radionuclides release following an accident, or affect the initiation and duration of their release. Therefore, the consequences of accidents previously evaluated, which rely on the Class 1E battery to mitigate, are not significantly increased.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

The proposed changes do not involve a change in design, configuration, or method of operation of the plant. The proposed changes will not alter the manner in which equipment is initiated, nor will the functional demands on credit equipment be changed. The proposed changes do not impact the interaction of any systems whose failure or malfunction can initiate an accident. There are no identified redundant components affected by these changes and thus there are no new common cause failures or any existing common cause failures that are affected by extending the CT. The proposed changes do not create any new failure modes.

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

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

Response: No.

The proposed changes are based upon both a deterministic evaluation and a risk-informed assessment.

The deterministic evaluation concluded that though one battery associated with the Class 1E DC electrical power subsystem is inoperable, the redundant operable Class 1E DC electrical power subsystems will be able to perform the safety function as described in the accident analysis.

The risk assessment performed to support this license amendment request concluded that with additional Required Actions the increase in plant risk is small and consistent with the NRC's Safety Goal Policy Statement, "Use of Probabilistic Risk Assessment Methods in Nuclear Activities: Final Policy Statement," and guidance contained in Regulatory Guides (RG) 1.174, "An Approach for using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and RG 1.177, "An Approach for Plant-Specific Risk-Informed Decisionmaking: Technical Specifications."

Together, the deterministic evaluation and the risk-informed assessment provide assurance that the plant Class 1E DC electrical power subsystem will be able to perform its design function with a longer CT for an inoperable Unit 1 Vital Battery 1-1 and risk is not significantly impacted by the change.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

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

6.2 Applicable Regulatory Requirements/Criteria

The proposed changes were based on the criteria of RG 1.174 and 1.177 for risk-informed changes. The proposed changes satisfy the requirements in these RGs.

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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

7.0 ENVIRONMENTAL CONSIDERATION

PG&E has evaluated the proposed amendments and has determined that they do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendments meet the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

8.0 PRECEDENT

PG&E is not setting a new precedent to change the CT for TS 3.8.4 Condition B. As stated in Section 5.2 above, NUREG-1431, Revision 3, "Standard Technical Specifications Westinghouse Plants," Bases Action Subsection B.1 contains a reviewer's note that states:

The 2-hour Completion Times of Required Actions B.1 and C.1 are in brackets. Any licensee wishing to request a longer Completion Time will need to demonstrate that the longer Completion Time is appropriate for *the plant in accordance with the guidance in Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications."*

Several nuclear plants (e.g., FitzPatrick, Arkansas Nuclear One, and Duane Arnold) have an inoperable battery CT of 8 hours instead of 2 hours.

9.0 REFERENCES

9.1 Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," dated July, 1998.

9.2 Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," dated August, 1998.

9.3 NUREG-1431, Revision 3, "Standard Technical Specifications Westinghouse Plants"

Proposed Technical Specification Changes (marked-up)

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 Three Class 1E DC electrical power subsystems shall be OPERABLE.

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

ACTIONS

Insert 1

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One battery charger inoperable.	A.1	Restore battery terminal voltage to greater than or equal to the minimum established float voltage.	2 hours
	AND		
	A.2	Verify battery float current ≤ 2 amps.	12 hours
	AND		
	A.3	Restore battery charger to OPERABLE status.	14 days
B. One battery inoperable.	B.1	Restore battery to OPERABLE status.	2 hours
C. One DC electrical power subsystem inoperable for reasons other than Condition A or B.	C.1	Restore DC electrical power subsystem to OPERABLE status.	2 hours
D. More than one full capacity charger receiving power simultaneously from a single 480 V vital bus.	D.1	Restore the DC electrical power subsystem to a configuration wherein each charger is powered from its associated 480 volt vital bus.	14 days
E. Required Action and Associated Completion Time not met.	E.1	Be in MODE 3.	6 hours
	AND		
	E.2	Be in MODE 5.	36 hours

Insert 1

Note: Proposed changes are in bold.

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One battery inoperable.	B.1 Restore battery to OPERABLE status. **OR** **B.2.1.1 ----------Note--------** **Required Actions B.2.1.1, B.2.1.2, and B.2.2 are applicable, on a one time basis, for Unit 1 cycle 14.** **-------------------------** **Determine OPERABLE batteries are not inoperable due to common cause failure.** **OR** **B.2.1.2 Perform SR 3.8.4.1 and SR 3.8.6.1 for OPERABLE batteries.** **AND** **B.2.2 Restore battery to OPERABLE status.**	2 hours **2 hours** **2 hours** **12 hours**

Proposed Technical Specification Changes (retyped)

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3.8-18	3.8-18 3.8-18a

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 Three Class 1E DC electrical power subsystems shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One battery charger inoperable.	A.1	Restore battery terminal voltage to greater than or equal to the minimum established float voltage.	2 hours
	AND		
	A.2	Verify battery float current $\leq$ 2 amps.	12 hours
	AND		
	A.3	Restore battery charger to OPERABLE status.	14 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One battery inoperable.	B.1	Restore battery to OPERABLE status.	2 hours
	<u>OR</u>		
	B.2.1.1	----------NOTE-------------- Required Actions B.2.1.1, B.2.1.2, and B.2.2 are applicable, on a one time basis, for Unit 1 cycle 14. -------------------------------	
		Determine OPERABLE batteries are not inoperable due to common cause failure.	2 hours
		<u>OR</u>	
	B.2.1.2	Perform SR 3.8.4.1 and SR 3.8.6.1 for OPERABLE batteries.	2 hours
	<u>AND</u>		
	B.2.2	Restore battery to OPERABLE status.	12 hours
C. One DC electrical power subsystem inoperable for reasons other than Condition A or B.	C.1	Restore DC electrical power subsystem to OPERABLE status.	2 hours
D. More than one full capacity charger receiving power simultaneously from a single 480 V vital bus.	D.1	Restore the DC electrical power subsystem to a configuration wherein each charger is powered from its associated 480 volt vital bus.	14 days
E. Required Action and Associated Completion Time not met.	E.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	E.2	Be in MODE 5.	36 hours

Changes to Technical Specification Bases Pages
(For information only)

BASES

ACTIONS (continued)

B.1

Condition B represents one DC electrical power subsystem with one battery inoperable. With one battery inoperable, the DC bus is being supplied by the associated OPERABLE battery charger. Any event that results in a loss of the associated 480 Vac vital bus supporting the normal battery charger will also result in loss of or degraded DC to the associated DC electrical power subsystem. Recovery of the 480 Vac vital bus, especially if it is due to a loss of offsite power, will be hampered by the fact that many of the components necessary for the recovery (e.g., diesel generator control and field flash, AC load shed and diesel generator output circuit breakers, etc.) likely rely upon the battery. In addition, the energization transients of any DC loads that are beyond the capability of the battery charger and normally require the assistance of the battery will not be able to be brought online. 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 Specifications 3.8.4, 3.8.5, and 3.8.6 together with additional specific completion times.

B.2.1.1, B.2.1.2, B.2.2

The completion time for restoring the inoperable battery to OPERABLE status can be extended to 12 hours, on a one-time basis for Unit 1 Vital Battery 1-1 for Unit 1 cycle 14, if additional Required Actions are taken. The 12 hour completion time is based upon Probabilistic Risk Assessment (PRA) calculation of risk given one battery is inoperable. This PRA assessment makes the assumptions that actions are taken to either determine that the OPERABLE batteries are not inoperable due to common cause failure or SR 3.8.4.1 and SR 3.8.6.1 are performed for the OPERABLE batteries. Taking steps to determine whether the battery condition is a result of a common cause failure will provide assurance that a similar failure will not occur to other OPERABLE batteries. Performing SR 3.8.4.1 and SR 3.8.6.1 will serve the same purpose of ensuring the OPERABLE batteries remain in OPERABLE condition. The 2 hour completion times for Required Actions B.2.1.1, and B.2.1.2 are consistent with completion time to restore a battery to OPERABLE status in Required Action B.1. When Required Actions B.2.1.1 or B.2.1.2 are met, then the inoperable battery can be restored to OPERABLE status in 12 hours.