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**From:** <mriggs1@txu.com>
**To:** <MCT@nrc.gov>, <SNS1@nrc.gov>
**Date:** 2/6/04 11:56AM
**Subject:** CPSES Preliminary Response to LAR 02-06 RAIs

To: Mohan C. Thadani, NRR Project Manager for CPSES

cc: Saba Saba

RE: Conference Call with NRC regarding LAR 02-06 (DC Electrical Rewrite) on 2/5/04

RE: PRELIMINARY REQUEST FOR ADDITIONAL INFORMATION FOR COMANCHE PEAK STEAM ELECTRIC STATION UNITS 1 AND 2, TAC MB9532 AND MB9533:

Sirs,

As requested during our Conference Call with Messrs. Dave Jaffe and Saba Saba on Thursday 2/5/05,
we are providing you with a copy of our preliminary responses. Please see the attached WORD document.

If I can be of further assistance, please contact me at:

Mike Riggs
CPSES Regulatory Affairs
(254) 897-5218

(See attached file: Preliminary Response to LAR 02-06 RAIs.doc)

**CC:** <dbuschb1@txu.com>, <fred.madden@txu.com>, <rwalker5@txu.com>, <dwoodla1@txu.com>, <jhicks1@txu.com>, <jlamarc1@txu.com>, <sward1@txu.com>, <iahmad1@txu.com>, <bsmith7@txu.com>, <tdaskam1@txu.com>

*CPSES PRELIMINARY RESPONSE* *February 6, 2004*

RE: Conference Call with NRC regarding LAR 02-06 (DC Electrical Rewrite) on 2/5/04

RE: PRELIMINARY REQUEST FOR ADDITIONAL INFORMATION FOR COMANCHE PEAK STEAM ELECTRIC STATION UNITS 1 AND 2, TAC MB9532 AND MB9533:

1: It was stated in the submittal that there are two 100% capacity battery chargers per battery. For a plant in Modes 1, 2, 3, and 4, one charger for each battery is required to be operating and the other is kept as a spare.

(A) Please explain the administrative control, if any, under which the plant operator would know which one of the two battery chargers is the "required" charger to maintain the DC subsystem operable.

Response:

The CPSES design provides for two battery chargers per battery. Either charger may be placed in-service to fully satisfy the applicable TS requirements. Both Battery Chargers are normally maintained capable of being aligned to supply the required power to the bus, and under this condition, both Battery Chargers are considered OPERABLE. If a degraded condition renders either Battery Charger incapable of supplying power to the bus/battery, the Battery Charger status is administratively tracked until corrective maintenance is completed and the Battery Charger is restored to an OPERABLE status.

If the degraded condition affects the Battery Charger currently in service (the "required". charger), the "standby" Battery Charger is aligned to power the associated bus/battery. Once placed in-service, the substituted charger satisfies the LCO "required" Battery Charger of Condition A and the associated Required Actions no longer apply. This then allows the degraded and out-of-service Battery Charger to be repaired.

Based on the Work Priority identified in station procedure WCI-203, a designation of "Important" - Priority 3 would most likely be assigned to the condition of the "standby" Battery Charger being inoperable. Priority 3 work identifies activities required for meeting plant milestones and for specific work that Management determines should be completed as scheduled due to plant goals and to ensure timely corrective action. The next level criteria is Priority 4, which is "non-urgent" work and is completed within the normal scheduled work week.

If both Battery Chargers for either Battery in the same DC electrical power subsystem become inoperable, then the new LCO Condition A for DC Sources - Operating would be entered and the associated Required Actions would be taken within the specified Completion Times. This would include, based on engineering evaluation of pursuable options to supply power to the bus, utilizing the newly added provisions described in the Bases section for Required Action A.3. These would allow reestablishing and maintaining the affected battery(ies) terminal voltage and float current requirements by the use of temporary battery chargers, including partially degraded normal battery charger(s), until a fully OPERABLE battery charger is restored and returned to service.

Administrative controls are defined by station procedure ODA-308, LCO Tracking Program, to ensure the DC subsystem is maintained operable and to track the restoration of the degraded equipment. Under this program, a "Tracking LCOAR (Limiting Condition of Operation Action Requirements)" would be issued to track the restoration of the out-of-service but inoperable Battery Charger. This program requires a LCOAR Book to be maintained on each Unit, which contains the tracking forms to identify a degraded DC Source condition. The LCOAR Book is reviewed by each Control Room Operator position (Shift Manager, Unit Supervisor, and Reactor Operator) during the on-coming shift turnover process. Following completion of the corrective maintenance to repair the degraded Battery Charger and the necessary testing to confirm Battery Charger OPERABILITY, the affected Unit Control Room will close the Tracking LCOAR. In the absence of a Tracking LCOAR on a Battery Charger, the Control Room knows that either Battery Charger is capable of maintaining the associated DC battery bus OPERABLE.

Other administrative controls are also used to provide a status check of the Battery Chargers. Procedure OWI-104 establishes General Area and Equipment Inspection Logs to record parameters associated with the required "in-service" Battery Chargers. The monitored parameters are not applicable to the "standby" charger since it is not connected to the DC bus; however, the status of the charger is confirmed as consistent with its current condition of "Standby" or "Out-Of-Service". Procedure OWI-107 provides Plant Equipment Operator turnover sheets which status each Battery Charger as "In-Service", "Standby" or "Out-Of-Service."

Administrative equipment status controls further include a rotation schedule, designed to provide consistent run times for the Battery Chargers as well as coordinating maintenance work activities for the associated "work week windows" (OWI-409). Also, Operator walkdowns confirm that Battery Charger alignment is as required to satisfy DC Distribution System OPERABILITY, and a corresponding Surveillance Requirement (SR 3.8.9.1) is regularly performed confirming that one Battery Charger is properly aligned at least every seven days (OPT-215). When a Battery Charger is aligned to power the bus, parameter monitoring is also aligned to initiate a Control Room alarm should a degraded condition occur (ALM-0102A/B).

These controls, in addition to checks performed during maintenance activities, provide the necessary assurance that Battery Charger status and in-service operation is clearly communicated and understood.

1. (A continued) Please provide information regarding AC power supply sources to the battery chargers during normal plant operation and during loss of offsite power sources.

Response:

Both battery chargers are connected to the associated DC battery bus via incoming breakers. The required battery charger has its breaker closed to charge the battery and the spare battery charger breaker is open.

The power supply to each Battery Charger is from a 480V Safeguard MCC of the same train as the battery. The two Battery Chargers (one normal and one standby) associated with the same battery are fed from different MCCs for improved flexibility and reliability. Under normal conditions, the MCC is supplied by the offsite power source. On a loss of offsite power, the 480V Safeguards MCC feeder breaker is NOT tripped on the undervoltage condition and after the Diesel Generator is started and connects to the associated Safeguards bus train, the power supply to each of the Battery Chargers will be restored.

The following table is included in the Bases section.

| DC Bus | Battery | Battery Charger | Unit 1 MCC | Unit 2 MCC |
|---|---|---|---|---|
| UED1 | BTUED1 | BCUED1-1 | MCC 1EB1-1 | MCC 2EB1-1 |
| | | BCUED1-2 | MCC 1EB3-1 | MCC 2EB3-1 |
| UED2 | BTUED2 | BCUED2-1 | MCC 1EB2-1 | MCC 2EB2-1 |
| | | BCUED2-2 | MCC 1EB4-1 | MCC 2EB4-1 |
| UED3 | BTUED3 | BCUED3-1 | MCC 1EB1-1 | MCC 2EB1-1 |
| | | BCUED3-2 | MCC 1EB3-1 | MCC 2EB3-1 |
| UED4 | BTUED4 | BCUED4-1 | MCC 1EB2-1 | MCC 2EB2-1 |
| | | BCUED4-2 | MCC 1EB4-1 | MCC 2EB4-1 |

Legend:
- U – Denotes Unit number. Inserting "1" represents component number for Unit 1 (e.g., BT1ED1 is Train A Safeguards Battery for Unit 1). Inserting "2" represents component number for Unit 2 (e.g., BT2ED1 is Train B Safeguards Battery for Unit 2).
- UED1 and UED3 are Safeguards Train A components. UED2 and UED4 are Safeguards Train B components.

1. (B) Please explain steps taken, if any, to meet either required action for CONDITION 3.8.4.A.1 and/or CONDITION 3.8.4.A.2 when either the "required" charger and/or the "spare" charger are not yet restored to operable status. (Op Supt)

Response:

LCO 3.8.4 The Train A and Train B DC electrical power subsystems shall be OPERABLE.

Condition A. One or two required battery chargers on one train inoperable.

Req Action A.1 Restore affected battery(ies) terminal voltage to greater than or equal to the minimum established float voltage.

AND

Req Action A.2 Verify affected battery(ies) float current ≤ 2 amps.

AND

Req Action A.3 Restore required battery charger(s) to OPERABLE status.

When neither the "required" battery charger nor the "spare" battery charger for either Battery in the same DC electrical power subsystem is OPERABLE, then LCO 3.8.4 Condition A for DC Sources - Operating would be entered. Upon entry into LCO 3.8.4 Condition A for an inoperable required Battery Charger (i.e., both Battery Chargers inoperable), actions would be initiated to restore the affected battery terminal voltage to greater than or equal to the minimum established float voltage within two hours per Required Action A.1, and to verify that the discharge rate of the affected battery is not excessive (float current ≤ 2 amps) once every twelve hours in accordance with Required Action A.2. Concurrent with performing the LCO required actions, a Priority 1 - Critical assignment of necessary work would be issued to restore at least one Battery Charger to an OPERABLE status. While satisfying the limitations of Required Actions A.1 and A.2, Required Action A.3 would allow a Completion Time of 7 days to restore at least one Battery Charger to an OPERABLE status.

While the Battery is supplying power to the DC loads on the affected bus without a Battery Charger, the Battery voltage will decrease as its reserved charge capacity is reduced. If a charger can be aligned to supply power to the bus/battery, the DC loads can be supplied AND the Battery's charge can be maintained. It is possible that even when one or both chargers are not OPERABLE, a charger may still function to some degree and could be used to maintain the Battery fully charged. In this case, the Battery Charger would not be considered OPERABLE, but would be available to perform the function of maintaining the required charge of the associated Battery. CPSES administrative procedures define the condition of the Battery Charger when "available" but not OPERABLE. Per ODA-308, AVAILABLE is defined as "A Structure, System or Component (SSC) that is capable of performing its specified function(s) to support operation of plant systems or plant evolutions. "Available" implies the equipment is functional, but does not satisfy OPERABILITY requirements.

If the condition of the Battery Chargers causing entry into LCO 3.8.4 (i.e., both Battery Chargers inoperable), is that neither battery charger can function to maintain the required charge of the associated Battery, then a temporary charger can be connected to supply power to the DC bus loads AND charge the battery. At CPSES, the capability exists to connect a non-qualified, spare charger to the safeguards DC busses. Electrical Maintenance procedure MSE-C0-5909 has been developed to connect an installed "spare" charger using pre-run and temporary cables to supply power to a safeguards DC battery. Thus, a spare charger could be used to maintain adequate DC bus voltage and battery current while maintenance activities are performed to restore at least one Battery Charger to OPERABLE status.

1. (C) When the so-called "required" charger is declared "inoperable" and the "spare" charger is switched in to substitute for the inoperable charger, what maintenance actions, if any, will be initiated for the inoperable charger, while the completion time for CONDITION 3.8.4.A.1 AND CONDITION 3.8.4.A.2 is in effect?

Response:

Both Battery Chargers are normally maintained capable of being aligned to supply the required power to the bus, and under this condition, both Battery Chargers are considered OPERABLE.

If a degraded condition renders either Battery Charger incapable of supplying power to the bus/battery, the Battery Charger status is administratively tracked until corrective maintenance is completed and the Battery Charger is restored to an OPERABLE status.

If the degraded condition affects the Battery Charger currently in service (the "required" charger), the "standby" Battery Charger is aligned to power the associated bus/battery. Once placed in-service, the substituted charger satisfies the LCO "required" Battery Charger of Condition A and the associated Required Actions no longer apply. This then allows the degraded and out-of-service Battery Charger to be repaired. As previously described, a "Tracking LCOAR (Limiting Condition of Operation Action Requirements)" would be issued to track the restoration of the out-of-service but inoperable Battery Charger.

Based on the Work Priority identified in WCI-203, a designation of "Important" - Priority 3 would most likely be assigned to the condition of the "standby" Battery Charger being inoperable. Pri 3 work identifies activities required for meeting plant milestones and for specific work that Management determines should be completed as scheduled due to plant goals or timely corrective action. The next criteria is Pri 4, which is "non-urgent" work and is completed within the normal scheduled work week.

2: It was stated in the submittal that CPSES is presently committed to IEEE Standard 450-1995 (Ref. 4), which states that battery degradation is indicated when the battery capacity drops more than 10% from its capacity of the previous performance test. However, CPSES states in the submittal that degradation is indicated when the battery capacity drops by more than 10% relative to its average capacity on the previous performance test.

Please explain and provide justification for the use of the average capacity and clarify the difference between the IEEE definition and CPSES definition as stated in the submittal.

Response:

CPSES is committed to IEEE Standard 450-1995 (Ref. 4), as such the submittal Bases for SR 3.8.6.6 will be corrected to read "Degradation is indicated, according to IEEE-450 (Ref. 4), when the battery capacity drops by more than 10% from its capacity of the previous performance test, or is below 90% of the manufacturers rating."

3: It was stated in the submittal that there are two 100% capacity battery chargers per battery. For plant in Mode 1, 2, 3, and 4, one charger for each battery is required to be operating and the other is kept as a spare.

Please define "100% capacity battery charger" and state if each of the chargers was designed to be capable of handling transient loading demand requirements for all initiating events if the associated battery is out of service for any reason. This includes

the adequacy of the battery charger to handle transient loading requirements caused by the re-alignment of the AC sources following a reactor trip.

Response:

The 100% capacity of each Class 1E battery charger is based on the largest combined demand of the continuous steady state loads and the charging capacity to restore the battery from the design minimum charged state to the fully charged state within 24 hours regardless of the status of the plant during which these demands occur. The chargers are designed for handling transient loading demand requirements for all initiating events if the associated battery is out of service for any reason.