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CP-201000588
TXX-10062

Ref: 10 CFR 50.90

May 4, 2010

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT (CPNPP)
DOCKET NOS. 50-445 AND 50-446,
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION RELATED TO LICENSE AMENDMENT REQUEST, (LAR) 09-003, REVISION TO TECHNICAL SPECIFICATION 3.8.1, "AC SOURCES - OPERATING," FOR A ONE-TIME, 14-DAY COMPLETION TIME FOR OFFSITE CIRCUITS

REFERENCES:
1. Luminant Generation Company LLC letter, logged TXX-09026, from Rafael Flores to the NRC dated October 26, 2009.
2. Request for Additional information from Balwant K. Singal, NRR to Rafael Flores, dated April 12, 2010.

Dear Sir or Madam:

In reference 1 above, Luminant Generation Company LLC (Luminant Power) transmitted an application for an amendment to Facility Operating License Nos. NFP-87 and NPF-89 for Comanche Peak Nuclear Power Plant (CPNPP) Unit 1 and Unit 2. The proposed amendment will revise TS 3.8.1 entitled "AC Sources - Operating" to extend, on a one-time basis, the allowable Completion Time (CT) of Required Action A.3 for one inoperable offsite circuit, from 72 hours to 14 days. This change is only applicable to startup transformer XST2 and will expire on March 1, 2011. Reference 2 provided a request from the Nuclear Regulatory Commission (NRC) for additional information needed to review the amendment request. This letter provides the additional information requested in reference 2.

As part of Luminant Power's response to these RAIs, this communication contains the following new commitment which will be completed prior to the use of the proposed TS CT as noted. The Commitment number is used by Luminant Power for the internal tracking of CPNPP commitments.

A001
NRR

Number	Commitment	Due Date/Event
3932461	Procedures will be revised to facilitate the Temporary Power DGs to power the loads necessary for safe shutdown and long term cooling of the Unit, that has lost all onsite and offsite power, prior to the one-time, 14-day Technical Specifications Completion Time for Startup Transformer XST2.	03/01/11

In accordance with 10CFR50.91(b), a copy of this application, with attachments, is being provided to the designated State of Texas Official.

If you should you have any questions regarding this submittal, please contact Ms. Tamera J. Ervin-Walker at (254) 897-6902.

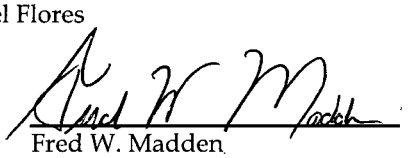
I state under penalty of perjury that the foregoing is true and correct.

Executed on May 4, 2010.

Sincerely,

Luminant Generation Company, LLC

Rafael Flores

By: 
Fred W. Madden

TJEW

Attachment

c - E. E. Collins, Region IV
G. D. Replogle, Region IV
Lauren Gibson, NRR
Resident Inspectors, CPNPP

Alice Hamilton Rogers, P.E.
Inspection Unit Manager
Texas Department of State Health Services
Mail Code 1986
P. O. Box 149347
Austin TX 78714-9347

ATTACHMENT to TXX-10062

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION RELATED TO LICENSE AMENDMENT REQUEST, (LAR) 09-003, REVISION TO TECHNICAL SPECIFICATION 3.8.1, "AC SOURCES - OPERATING," FOR A ONE-TIME, 14-DAY COMPLETION TIME FOR OFFSITE CIRCUITS

Please provide detailed descriptions for the following:

Item 1:

The criteria used for sizing of the Temporary Power Diesel Generators (TPDGs) to provide adequate capacity and capability to supply necessary equipment for safe shutdown and long term cooling for each unit.

CPNPP Response:

The following scenario was used to evaluate the sizing for the Temporary Power Diesel Generators (TPDGs):

- Both Units are operating normally at 100% power,
- One set of TPDGs will be provided (pre-staged) for each Unit as a defense-in-depth feature during startup transformer XST2 proposed 14-day, Technical Specifications (TS) Completion Time (CT),
- XST2 is taken out-of-service for up to 14 days to allow sufficient time to make final terminations as part of a plant modification to facilitate connection of startup transformer (ST) XST2 or the spare ST to the 1E buses within the current TS CT of 72 hours, and
- A beyond design basis event occurs during the 14-day CT which involves:
  1. The loss of XST1,
  2. The failure of both emergency diesel generators (EDGs) of a Unit (the "affected" Unit) to start and load as designed, and
  3. At least one EDG starts and loads as designed on the "other" Unit.

The loss of XST1 results in the loss of all offsite AC (alternating current) power sources to both Units. Failure of both EDGs to start and load on one Unit results in a loss of all onsite AC power sources for that Unit. Since the Unit that will be affected cannot be predicted, one set of TPDGs will be pre-staged for each Unit as a defense-in-depth measure. In this scenario, the other Unit will have at least one EDG that will start and load to supply one train of the required onsite Class 1E AC electrical power. The common loads for both Units will be loaded onto that Unit's operating EDG.

This scenario is consistent with that evaluated in the Station Blackout Coping study wherein it was demonstrated that adequate loads for the affected Unit could be restored within 4 hours to maintain the plant in a safe shutdown condition. Thus, within 4 hours, it is required that the minimum set of components required to maintain the affected Unit in a safe shutdown condition are loaded onto the TPDG. The components required to be loaded onto a 1E bus to support maintenance of the plant in a safe shutdown condition are described functionally in a plant design basis document (see DBD-ME-026) and emergency response guidelines. The loads identified below represent the Unit-specific (i.e., non-common) loads. These components are the minimum set required to be loaded onto a TPDG set to maintain the affected Unit in a safe shutdown condition and provide long term cooling.

6.9KV LOAD DESCRIPTION	LOAD (KW)
Centrifugal Charging Pump (CCP)	526.03
Component Cooling Water (CCW) Pump	789.42
Station Service Water (SSW) Pump	643.10
480V LOAD DESCRIPTION	**LOAD (KW)**
Containment Recirculating Fan	93.25
Safety Chillers	99.90
Safety Chiller Recirculation Pump	18.24
Emergency Lighting	132.69
Control Rod Drive Mechanism Ventilation (CDRM) Fan	92.44
Instrument Air	183.28
Pressurizer Heater Control Group A	141.40
Battery Chargers and Inverters	110.94
Reactor Makeup Water Pump	4.54
Miscellaneous 480V Loads (fans, pumps, transformers, and heaters)	116.03
SUBTOTAL	**2951.26**
Plus 2% Losses	59.03
TOTAL	**3010.29**

Each TPDG set has adequate capacity and capability to supply power to the necessary equipment for safe shutdown and long term cooling for a Unit.

Item 2:

The initial testing and availability verification (once per shift) to be completed to ensure the TPDGs are adequate to perform their design function throughout the extended Completion Time.

CPNPP Response:

The vendor provides formal shop testing of the TPDG set prior to delivery. The vendor uses test instruments that are calibration certified to measure voltage, current, and frequency, and they report the test results to CPNPP along with the instrument calibration certifications. At the beginning of the test, the TPDG set is allowed to reach normal voltage and frequency prior to switching to the first load. The following load step tests are performed to show load acceptance and removal when all three generators are paralleled:

- 1000kW block load at .8 power factor and let stand for a minute.
- Removal of 1000kW block load at .8 power factor.
- 2000kW block load at .8 power factor and let stand for a minute.
- Removal of 2000kW block load at .8 power factor.
- 2500kW block load at .8 power factor and let stand for a minute.
- Removal of 2500kW block load at .8 power factor.
- 2400kW block load at .8 power factor and add 600kW at 1.0 power factor and let stand for a minute.
- Removal of 3000kW of load.

The test results have shown that:

- TPDG set is capable of supplying power within 60 seconds of starting.
- The recorded TPDG set voltage remains within 480V +/- 20% and frequency remains within 60 Hz +/- 5% during load sequencing, load rejection, or load restart.
- The maximum time to recover voltage to 90% and frequency to 98% of rated values is less than or equal to two seconds.
- While the load on the TPDG set is at 3000kW, the TPDG set is capable of rejecting a load of 1000 HP (horse power) without generating over-voltages that would damage safety related equipment or tripping on overspeed.
- The TPDG set is capable of restarting a 1000 HP motor while maintaining the system load of 3000kW, after the start of the 1000 HP motor.

Subsequent to plant delivery and staging, current plant procedure SOP-614 "Alternative Power Generator Operations" directs plant personnel to verify proper phase rotation of the TPDG set before it can be used to supply temporary power to the 1E bus. Additionally, SOP-614 Attachment 1 "Operating Parameters" directs the Operator to monitor the TPDG set parameters (e.g., lube oil, engine coolant, fuel levels, transformer temperature and liquid levels, etc.) on a shiftly basis to ensure the TPDG set is ready to start.

Item 3:

Procedures and administrative controls established to synchronize the TPDGs and connect to the safe shutdown busses.

CPNPP Response:

Currently, the instructions for connecting the TPDGs to the 1E bus loads in Modes 5 and 6 are contained in plant procedure SOP-614. This procedure will be revised to address operation of the TPDGs in Modes 3 and 4. Additionally, current emergency operating procedures exist that direct Operators to respond to a loss of all AC power, recovery of power without a safety injection signal, and natural circulation cooldown of a Unit. Operators are routinely trained on and have experience in using these procedures.

An evaluation was completed that concluded that the TPDG set associated with the affected Unit can be used to energize the required bus, and that the identified components can be loaded onto the energized bus, within 4 hours (See the CPNPP response to Item 1). The evaluation also determined that existing plant procedures, including SOP-614 and the emergency operating procedures, could be modified on a temporary basis to facilitate the connection of the TPDGs to the 1E distribution system if needed. Therefore, in the event the scenario above occurred, the Operations Shift Manager would declare the affected Unit 1E buses inoperable, direct the connection of the TPDG set to a 1E bus after verifying proper phase rotation, and then sequence the appropriate loads onto that bus as directed by the emergency operating procedures. Thus, the affected Unit will be safely shutdown and long term cooling will be provided by the TPDG.

In this scenario, the TPDGs will be connected to the 1E bus only when that Unit has no other source of power. The synchronization of the TPDGs to the 1E bus is not applicable in this case; only the phase rotation needs to be confirmed before the TPDG set can be connected to the 1E bus of the affected Unit.

Item 4:

Timeline established to power the safe shutdown busses from the TPDGs in the event of loss of preferred power sources and consequences (if any) on safety limits.

CPNPP Response:

The TPDG set associated with the affected Unit will be able to energize the appropriate buses and the required components can be loaded onto the energized buses well within 4 hours. No consequences on safety limits are expected. The following Table shows the loading sequence of the loads that will be powered by the TPDGs.

Table 1 Safe Shutdown Bus Loading Sequence

LOAD	LOAD SEQUENCING NOTES
Station Service Water Pump	These loads will remain aligned to the affected Unit 1E bus in order to energize/start them immediately upon power restoration by the TPDG set.
480V Buses (Note 1)	
Battery Chargers	
Instrument and Control Inverters	
Reactor Protection Inverters	
Emergency Lighting	
Direct Current (DC) Loads Shed during DC Load Shedding of Non-essential Loads	Following Power restoration to the 1E bus by the TPDG set, these DC loads will be restored to the DC bus (e.g., loading AC Battery Chargers).
Component Cooling Water (CCP) Pump	These loads will be started following power source restoration as directed by the emergency operating procedures (e.g., TPDGs start and energize the 1E bus) to support the plant response and recovery actions (e.g., reduce Reactor Coolant System (RCS) Temperature and Pressure).
Instrument Air Compressor	
Centrifugal Charging Pump (CCP)	
Containment Fan Coolers (Note 2)	
Safety Chiller	
Safety Chiller Recirculation Pump	
Pressurizer (PRZR) Heaters (Note 3)	
Reactor Makeup Water Pump	
Control Rod Drive Mechanism Vent Fans	This load will be started next to assist in Reactor Vessel Head cooling.
Positive Displacement Pump (Note 4)	Finally, these loads will be started to place the RCS in Shutdown Cooling after RCS temperature has been reduced.
Residual Heat Removal (RHR) Pump	

NOTES:

1. Some Unit specific load shedding (e.g., unavailable EDGs) will be performed to reduce loading assumed by the TPDGs.
2. One Containment Fan Cooler will be aligned for Containment cooling.
3. Only a specified number of breakers will be closed to allow PRZR Heater capability for control of RCS pressure.
4. To support RHR Pump load, the CCP will be stopped and the Positive Displacement Pump will be started prior to starting the RHR Pump.

Item 5:

Capability of the TPDGs to start the largest motors.

CPNPP Response:

The largest motor to be loaded on the TPDG is 1000 HP CCW Pump Motor. The vendor test results have shown that the TPDG set is capable of starting a 1000 HP motor while maintaining the system load of 3000kW, after the start of the 1000 HP motor.

Item 6:

Rating of each unit in the TPDG set.

CPNPP Response:

Each TPDG set consists of three diesel generators each rated at 1015kW, 480V, and at 60 Hz with the outputs connected in parallel for a total capacity of 3045kW.

Item 7:

Temporary changes to permanent plant equipment (protective relay settings, breaker line up etc.) to integrate the TPDGs.

CPNPP Response:

Each Unit has its Class 1E 6.9kV buses connected to the permanently installed non-Class 1E transfer switch specifically to facilitate the temporary connection of a TPDGs set to the selected Class 1E bus. Each TPDG set will have temporary cables that will be run in temporary cable trays to the associated transfer switch via a plant owned 480V/6.9kV transformer. With the exception of a brief phase rotation check, the cables will remain de-energized unless such an event as described in response to Item 1 above occurs.

Class 1E 6.9kV switchgear breakers connected to the transfer switch are normally locked in the disconnect position to assure isolation from non-class 1E transfer switch circuit. These breakers will be manually closed, if required, to provide connection to TPDG. The over-current protection on these breakers is disabled. The protection of the 6.9kV system and TPDG circuits when TPDG set is feeding the bus is accomplished as defined below.

- The 480V/6.9kV TPDG output transformer is high resistance grounded on the 6.9kV side to assure that the safety related 6.9kV system is not exposed to transient over-voltages and the damage at the point of fault is limited by limiting ground fault current to less than 2A. The transformer grounding system has sensitive ground fault detection with a local ground fault indication and no tripping action.
- The associated cables that feed the Class 1E 6.9kV busses from the TPDG transfer switch have sufficient capacity, without being over loaded, to carry the TPDG set limiting load of 3500kW at 0.8 PF.
- The protection provided with the TPDG set, or the inherent current limiting feature of the TPDG set is reviewed to assure that the duration and magnitude of TPDG fault contribution is within the continuous rating of 6.9kV bus.
- The 6.9kV cables from the transformer to the transfer switch provided by CPNPP are sized to carry greater than or equal to 383A and can carry the TPDG set loads continuously without being over loaded.

- Postulated electrical faults that could occur at the 6.9kV bus while being fed from the TPDG set are assumed to be cleared by protection provided with the TPDG set. However, if this protection fails, the magnitude of the fault current could not damage the bus because the maximum available fault current capability of the TPDG set is less than or equal to the 1200A rating of the bus.

The vendor provides the required protective relaying and controls for the TPDG set to meet the following requirements:

- The TPDG set shall be load limited to 3500kW at 0.8 power factor (4375kVA).
- The TPDG set fault current capability shall be within the limit of the 6.9kV safeguard bus rating of 1200A. (At the 480V output voltage of the TPDG set, this capability translates to 17250A.)
- Each of the three diesel generators in a TPDG set shall have instantaneous protection providing activation in approximately one-half cycle with each generator breaker set at 5550A.

The 480V cables, from the TPDG set to the transformer, are sized to carry the 3000kW load continuously without being overloaded. The ampacity of the cables shall be equal to or greater than 4710A.

Other than the TPDG set connections to the transfer switch via the 480V/6.9kV transformer, there will be no other temporary changes to permanent plant equipment such as protective relay settings, breaker line-up, etc.