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Log # TXX-12040

Ref. # 10CFR50.73(a)(2)(ii)(B)

April 30, 2012

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

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT
DOCKET NOS. 50-445 AND 50-446
UNANALYZED CONDITION DISCOVERED FOR THE NORMALLY OPEN BATTERY
ROOM FIRE AND CABLE SPREAD ROOM DOORS CLOSE ON MOMENTARY LOSS
OF POWER
LICENSEE EVENT REPORT 445/12-001-00

Dear Sir or Madam:

Pursuant to 10CFR50.73(a)(2)(ii)(B), Luminant Generation Company LLC (Luminant Power) hereby submits enclosed Licensee Event Report (LER) 445/12-001-00, "Unanalyzed Condition Discovered for the Normally Open Battery Room Fire and Cable Spread Room Doors Close on Momentary Loss of Power" for Comanche Peak Nuclear Power Plant (CPNPP) Units 1 and 2. This event did not affect the health and safety of the public or plant personnel.

This communication contains no licensing basis commitments regarding Comanche Peak Units 1 and 2.

Should you have any questions, please contact Ms. Tamera J. Ervin-Walker at (254)897-6902.

Sincerely,

Luminant Generation Company LLC

Rafael Flores

By: 

Fred W. Madden

Director, Oversight & Regulatory Affairs

TJEW

Enclosure - LER 1-12-001-00 Unanalyzed Condition Discovered for the Normally Open Battery Room Fire and Cable Spread Room Doors Close on Momentary Loss of Power

c - E. E. Collins, Region IV
Balwant Singal, NRR
Resident Inspectors, Comanche Peak

A member of the STARS (Strategic Teaming and Resource Sharing) Alliance

Callaway · Comanche Peak · Diablo Canyon · Palo Verde · San Onofre · South Texas Project · Wolf Creek

*IEA
NRR*

NRC FORM 366
(10-2010)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)

APPROVED BY OMB NO. 3150-0104

EXPIRES:10/31/2013

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME

Comanche Peak Nuclear Power Plant (CPNPP) Unit 1

2. DOCKET NUMBER

05000 445

3. PAGE

1 OF 6

4. TITLE

UNANALYZED CONDITION DISCOVERED FOR THE NORMALLY OPEN BATTERY ROOM FIRE AND CABLE SPREAD ROOM DOORS CLOSE ON MOMENTARY LOSS OF POWER

5. EVENT DATE

MONTH	DAY	YEAR
03	01	2012

6. LER NUMBER

YEAR	SEQUENTIAL NUMBER	REV NO.
2012	001	00

7. REPORT DATE

MONTH	DAY	YEAR
04	30	2012

8. OTHER FACILITIES INVOLVED

FACILITY NAME	DOCUMENT NUMBER
CPNPP Unit 2	05000 446
FACILITY NAME	DOCUMENT NUMBER

9. OPERATING MODE

1

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)

10. POWER LEVEL

100

<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> VOLUNTARY LER

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

Timothy A. Hope, Manager Nuclear Licensing

TELEPHONE NUMBER (Include Area Code)

254-897-6370

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On 3/1/2012, at 1353 hours, an issue was identified with the doors for the safety related battery rooms and their normal position. Several doors to the battery rooms are held open via electromagnetic door devices. At the time, it was thought that there was no uninterruptible power to the door mechanisms, and that all the doors are expected to close in the event of a loss of offsite power (LOOP). Inadvertent closure of the doors following a momentary loss of power prevents their design function of venting hydrogen from the battery rooms and providing tornado venting pathways in the building. Compensatory measures were taken to secure the doors open to maintain the hydrogen purging and tornado venting functions. A roving fire watch was implemented to comply with the fire protection function of the doors. As an extent of condition on 3/12/12, the cable spread room (CSR) doors were also identified to utilize the same design and electrical supply configuration as the battery room doors. The CSR is located above the battery rooms in the Electric and Control (E&C) Building. Contingency actions were put in place to secure the CSR doors open and implement a fire impairment in the event of a tornado risk. On 4/11/12, it was discovered that the battery room and CSR doors have small battery backup units which could sustain the doors with adequate power to maintain their position for 45 seconds sufficient to allow AC power to be restored through the Emergency Diesel Generators (EDGs) during a tornado. However, the backup units were found to be in a state of degradation, challenging the ability of the backup batteries to maintain their power supply to the door hold-open devices during a tornado event. No recent preventive maintenance work orders exist for the inspection or replacement of these units. There were no actual safety consequences impacting the plant or public safety as a result of these events. The cause was a design process legacy issue, and current design processes are significantly different from those in place during early operation of CPNPP. The specific conditions have been addressed in the corrective action program and, along with current programs and practices, are adequate to prevent future occurrences. All times in this report are approximate and Central Time unless noted otherwise.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

1. FACILITY NAME Comanche Peak Nuclear Power Plant Unit 1	2. DOCKET 05000 - 445	6. LER NUMBER			3. PAGE 2 OF 6
		YEAR 2012	SEQUENTIAL NUMBER 001	REV NO. 00	

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

I. DESCRIPTION OF THE REPORTABLE EVENT

A. REPORTABLE EVENT CLASSIFICATION:

This event is reportable per 10CFR50.73(a)(2)(ii)(B) as any event or condition that resulted in an unanalyzed condition that significantly degraded plant safety.

B. PLANT CONDITION PRIOR TO EVENT:

On March 1, 2012, Units 1 and 2 were both in Mode 1 operating at 100% power prior to the battery door event.

C. STATUS OF STRUCTURES, SYSTEMS, OR COMPONENTS THAT WERE INOPERABLE AT THE START OF THE EVENT AND THAT CONTRIBUTED TO THE EVENT

There were no inoperable structures, systems, or components that contributed to these events.

D. NARRATIVE SUMMARY OF THE EVENT, INCLUDING DATES AND APPROXIMATE TIMES:

On March 1, 2012, at 1353 hours, an issue was identified by engineering (Utility, Non-licensed) with the doors [EIS: (DR)] for the safety related battery rooms and their normal position. Several doors to the battery rooms were found to be held open via electromagnetic door devices. These hold-open devices utilize an electromagnetic lock, which requires a continuous supply of low voltage direct current (DC) power to generate the magnetic forces restraining the doors in the open position. Inadvertent closure of the doors following a momentary loss of power could prevent their design function fulfillment. Door closure is required in response to a fire detection and protection system actuation to protect the battery rooms from fire damage. Conversely, the doors are maintained open for the dual purposes of 1) allowing airflow into the room to support the room exhaust heating, ventilating, and air conditioning (HVAC) within the room (and credited for the removal of hydrogen accumulation), and 2) reduce differential pressures across the rooms structural surfaces during tornado events. Further research determined the hold-open devices are powered from only non-vital AC power sources [EIS: (JX)] (which is converted into DC power within the fire panel) and thought not to include battery backup protection.

Compensatory measures were implemented later that day (March 1, 2012) to secure the doors open to maintain the hydrogen purging function. A fire watch was implemented to comply with the fire protection function of the doors.

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As an extent of condition on 3/12/12, the cable spread room (CSR) doors were also identified to utilize the same design and electrical supply configuration as the battery room doors. The CSR is located above the battery rooms in the Electric and Control (E&C) Building. Contingency actions were put in place to secure the CSR doors open and a fire impairment in the event of a tornado risk.

On 4/11/12, it was discovered that the battery room and CSR doors have small battery backup units [EIS: (UJX)] which could sustain the doors with adequate power to maintain their position for 45 seconds, sufficient to allow AC power to be restored through the EDGs [EIS: (EK) (DG)] during a tornado. However, the backup units were found to be in a state of degradation, challenging the ability of the backup batteries to maintain their power supply to the door hold-open devices during a tornado event. No recent preventive maintenance work orders exist for the inspection or replacement of these units.

With respect to hydrogen generation; components which are designated as non-safety non-seismic category I, cannot be credited by design to maintain their function during a design basis accident (such as a Loss of Coolant Accident concurrent with a LOOP or a seismic event), and as such the battery room doors could not be ensured to maintain their position. This would result in a 10 second loss of power to the hold-open devices assuming loss of the non-safety batteries and a diesel generator load, allowing the doors to close and challenge the hydrogen generation analysis of the room during hydrogen generating conditions.

E. THE METHOD OF DISCOVERY OF EACH COMPONENT OR SYSTEM FAILURE, OR PROCEDURAL PERSONNEL ERROR

The battery room condition was identified by engineering on 3/1/2012 to determine if the Unit 1 and 2 fire doors for the Train A, B, and C battery rooms are equipped with electromagnetic hold-open mechanisms.

The CSR door condition was identified as an extent of condition of the battery room door closure mechanisms issue on 3/12/12 in that the cable spread room doors were also identified to utilize the same closure mechanism as the battery rooms.

II. COMPONENT OR SYSTEM FAILURES

A. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE

Not applicable – No component failures were identified during this event.

B. FAILURE MODE, MECHANISM, AND EFFECTS OF EACH FAILED COMPONENT

Not applicable – No component failures were identified during this event.

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C. SYSTEMS OR SECONDARY FUNCTIONS THAT WERE AFFECTED BY FAILURE OF COMPONENTS WITH MULTIPLE FUNCTIONS

Not applicable – No component failures were identified during this event.

D. FAILED COMPONENT INFORMATION

Not applicable – No component failures were identified during this events.

III. ANALYSIS OF THE EVENT

A. SAFETY SYSTEM RESPONSES THAT OCCURRED

Not applicable – No safety systems responses occurred as a result of this event.

B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY

Not applicable – No safety systems were rendered inoperable as a result of this event.

C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

There were no inoperable structures, systems, or components at the time that contributed to this event. In the past three years, CPNPP has never experienced a LOOP that caused the battery doors or the CSR doors to close coincident with a tornado. Compensatory measures were taken to secure the battery room doors open to maintain the hydrogen purging and tornado venting functions including a roving fire watch to comply with the fire protection function of the battery room doors.

With respect to battery room hydrogen generation, computations performed show that in the most limiting safety related battery room (Unit 1, Train B) the Lower Flammability Limit (LFL) would not be reached until 113 hours at 120 degree F after closure of the doors. The adjacent non-safety rooms (Train C Battery Rooms) may reach the LFL limits earlier than the safety related counterparts on the order of 35 hours into the closure of the doors. If left uncorrected, hydrogen ignition in the adjacent rooms may potentially compromise the function of the safety related counterparts.

Existing plant procedures require performance of local Shiftly Surveillances between the hours of 0630 – 0930 and 1830 – 2130. These Surveillances include Train A battery room and Train B battery room for each Unit. This Surveillance is applicable for any Mode of plant operation. Furthermore, normal Operator rounds which occur twice a Shift, two Shifts per day include a General Area Inspection of Trains A, B, and C battery room ventilation and equipment status. Specifically, any abnormal conditions or out-of-specification readings shall be immediately reported to the Field Support Supervisor, Radiation Waste Supervisor, or Unit Supervisor per procedure. Plant procedures also require checking battery room exhaust fans following severe weather damage from acts of nature. Additionally, guidelines require inspection of the battery room for proper room ventilation for a variety of events

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including loss of AC power. Nuclear Equipment Operators are also trained on battery room ventilation and the flowpath from the battery room corridor, through the battery rooms to the exhaust fans.

Based on the above, there is a reasonable expectation that normal battery room ventilation, which includes flow through the doors, would be restored prior to conditions being reached that would cause the battery rooms to become inoperable based on hydrogen or temperature concerns.

Tornado venting capabilities are only required during the event of a tornado being present in the immediate vicinity of the plant. Actions were taken to provide for the temporary restraint of the CSR doors open during periods of elevated tornado risks to ensure tornado venting position is maintained and measures for the assurance of fire protection function.

With respect to battery room and CSR tornado venting, the E&C Building structure is sufficiently robust such that there is reasonable expectation that the equipment inside would fulfill the specified safety functions in the event of a tornado coincident with a LOOP.

Based on the above, it is concluded that the health and safety of the public were unaffected by these conditions and these events has been evaluated to not meet the definition of a safety system functional failure per 10CFR50.73(a)(2)(v).

IV. CAUSE OF THE EVENT

The electromagnetics were installed in August of 1983 to ensure the battery rooms were adequately protected from the propagation of fire in the adjacent rooms and still satisfying the HVAC requirements.

The condition leading to loss of power to the hold-open devices during loss of offsite power was identified in 1989 as non-compliant with the tornado venting analysis requirements. Corrective actions were implemented in the form of a new controller unit to the fire protection panels which utilize small battery backup unit which could sustain the doors with adequate power to maintain their position for 45 seconds, sufficient to allow AC power to be restored through the EDGs during a tornado.

However, the battery room door controller batteries were inspected on 4/11/2012, and found to be in a state of degradation, challenging the ability of the batteries to maintain their power supply to the door hold-open devices during a tornado event. Research into the preventative maintenance (PM) jobs performed on the batteries indicates that no PM exists for the inspection or replacement of the units. Without PMs, the batteries could not be ensured to perform their function under operating conditions, resulting in a challenge to the ability of the doors to maintain their venting position.

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The cause analysis for the existing design without supporting PMs are:

- the failure of the responsible engineer for the device installation to involve the cognizant individuals in the design phase as well as failure to institute changes to the design documents utilized by later tornado venting engineers which may have identified the error in LOOP protection, and
- the failure of an interdisciplinary group involved in the original installation to identify the required LOOP protection for the system.

V. CORRECTIVE ACTIONS

On 3/1/2012 at 1913 hours, the battery rooms were restrained and on 3/2/2012 at 1532, the fire impairments were implemented including a roving fire watch to ensure fire protection requirements are maintained.

After the cable spread room doors were also identified to utilize the same closure mechanism as the battery room doors on 3/12/12 at 1714 hours, actions were implemented to provide contingencies to secure the CSR doors open and implement a fire impairment during periods of heightened tornado risk.

The cause was a design process legacy issue, and current design processes are significantly different from those in place during early operation of CPNPP. The specific conditions have been addressed in the corrective action program and, along with current programs and practices, are adequate to prevent future occurrences.

Existing batteries will be replaced as required and PMs will be created to inspect and replace controller panel batteries for fulfillment of tornado venting function.

VI. PREVIOUS SIMILAR EVENTS

There have been no previous similar reportable events at CPNPP in the last three years.