



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

July 18, 2012

LICENSEE: Luminant Generation Company LLC

FACILITY: Comanche Peak Nuclear Power Plant, Units 1 and 2

SUBJECT: SUMMARY OF JUNE 26, 2012, PRE-LICENSING PUBLIC MEETING WITH LUMINANT GENERATION COMPANY LLC TO DISCUSS THE PROPOSED LICENSE AMENDMENT REQUEST IN SUPPORT OF A PLANT MODIFICATION TO INSTALL A BACKUP TRANSFORMER FOR OFFSITE AC POWER SOURCE (TAC NOS. ME8615 AND ME8616)

On June 26, 2012, a public meeting was held between the U.S. Nuclear Regulatory Commission (NRC), and representatives of Luminant Generation Company LLC (Luminant, the licensee), at NRC Headquarters, Rockville, Maryland. The meeting notice and agenda, dated June 11, 2012, is located in the Agencywide Documents Access and Management System (ADAMS) under Accession No. ML12171A184. The purpose of the meeting was to discuss the proposed license amendment request by the licensee for extended completion time for Technical Specification (TS) 3.8.1, "AC [Alternating Current] Sources – Operating," in support of a plant modification to install a backup transformer for offsite power sources at Comanche Peak Nuclear Power Plant (CPNPP), Units 1 and 2.

A list of meeting attendees is provided in Enclosure 1 to this meeting summary.

### **Meeting Summary**

The discussion was based on the following meeting materials/handouts:

- Addition of New Transformer XST1A (ADAMS Accession No. ML12156A205)

The licensee provided a revised copy of the handout on the day of the meeting and a copy of the revised handout is provided in Enclosure 2 to this meeting summary.

### **Results of Discussions**

1. The NRC staff requested several clarifications in the area of probabilistic risk assessment (PRA) concerning the proposed extended completion time for Limiting Condition for Operation (LCO) 3.8.1, Required Action A.3. The results of the discussions are described below:
  - a. Internal Events and Internal Flooding

In response to the NRC staff question about timing of the peer review per NRC Regulatory Guide (RG) 1.200, Revision 2, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed

Activities," March 2009 (ADAMS Accession No. ML090410014), the licensee confirmed that it performed a peer review in early 2011. This peer review was performed after the previous application dated October 26, 2009, for installation of a backup transformer to XST2. The licensee agreed to document the Peer Review Facts and Observations (F&Os), the plant disposition, and the achieved capability category in its formal submittal.

b. Internal Fire

The licensee agreed to provide an assessment which demonstrates the significance of an internal fire with respect to the acceptance guidelines of RG 1.174, Revision 2, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," May 2011 (ADAMS Accession No. ML100910006), and RG 1.177, Revision 1, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," May 2011 (ADAMS Accession No. ML100910008). The licensee, however, indicated that this assessment would be qualitative, supported by quantitative assessments and considerations. Insights would be derived from this assessment. The NRC staff recommended that Section 1.2.4, "Internal Fire Technical Elements," of RG 1.200 be discussed, in order to put the CPNPP, Units 1 and 2 fire insights and basis into perspective. The NRC staff suggested that the discussion related to Section 1.2.4 of RG 1.200 address the CPNPP baseline fire analysis and the fire analysis incorporating the extended completion time.

c. Other Hazards

Should a qualitative argument for other hazards (e.g., seismic, high winds, external floods) be important with respect to RGs 1.174 and 1.177 guidelines, the licensee should address the corresponding section in RG 1.200, Revision 2, on technical characteristics and attributes to place their insights into perspective. For example, such discussion may be needed for high winds, which corresponds to Section 1.2.7 of RG 1.200.

Consistent with RG 1.174, all hazards should be addressed in the submittal.

2. The NRC staff emphasized that to conclude the PRA assessment of hazards meets the guidelines provided by RGs 1.174 and 1.177, the assessment of hazards beyond internal events/flooding, needs to be rigorous.
3. The NRC staff indicated that the licensee's Individual Plant Examination External Events (IPEEE) assessment or any other previous assessment may or may not have fully addressed the failure modes incorporated into the American Society of Mechanical Engineers/American Nuclear Society (ASME/ANS) PRA Standard, RA-Sa-2009. However, the NRC staff expects the licensee to incorporate all failure modes in its assessments and insights for the proposed submittal. For example for fire, hot shorts, and high-energy arcing faults should be assessed for their impact on the extended completion time.

4. The licensee indicated that fixed ignition sources are important to the fire insights. As a result, the NRC staff suggested that additional compensatory measures, such as infrared thermography, may be considered on the fixed ignition sources prior to entering the extended completion time. The licensee agreed to evaluate this option.
5. Based on the discussions during the meeting, the NRC staff understands that the licensee plans to implement the proposed plant modifications with both units operating at power. The NRC staff felt that a request to extend the completion time for TS 3.8.1 from 72 hours to 14 days (twice) (a total of 28 days) is unprecedented. The NRC staff believed that the proposed amendment request will need to provide a strong safety justification, with sufficient detail, to establish a position that the proposed offsite power system modifications can be conducted safely and without incident. The NRC staff questioned whether the plant will be safer if the proposed plant modifications are performed with at least one unit in refueling outage.
6. The NRC staff also suggested that the licensee discuss the following in the proposed amendment request:
  - Condition of all major components relied upon to serve as the single offsite source during the extended completion time including a discussion of any systems, structures, and components covered by Title 10 of the *Code of Federal Regulations* (10 CFR), paragraph 50.65(a)(1) relied upon during this period.
  - Historic loss-of-offsite power events at CPNPP, including corrective actions resulting from these events.
  - Contingency plans for potential “what if” scenarios such as adverse weather, transmission system operator warnings or alerts of actual or predicted transmission system capacity or capability issue(s) affecting CPNPP, APDG inoperability occurring after the extended completion time is entered, loss of offsite power, etc.
  - Justification for implementing the proposed plant modifications at power versus with one or both units in a shutdown condition.

No Public Meeting Feedback Forms were received for this meeting.

- 4 -

Please direct any inquiries to me at (301) 415-3016, or [balwant.singal@nrc.gov](mailto:balwant.singal@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Balwant K. Singal". The signature is fluid and cursive, with the first name "Balwant" being more prominent than the last name "Singal".

Balwant K. Singal, Senior Project Manager  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-445 and 50-446

Enclosures:

1. List of Attendees
2. Revised Handout

cc w/encl: Distribution via Listserv

LIST OF ATTENDEES

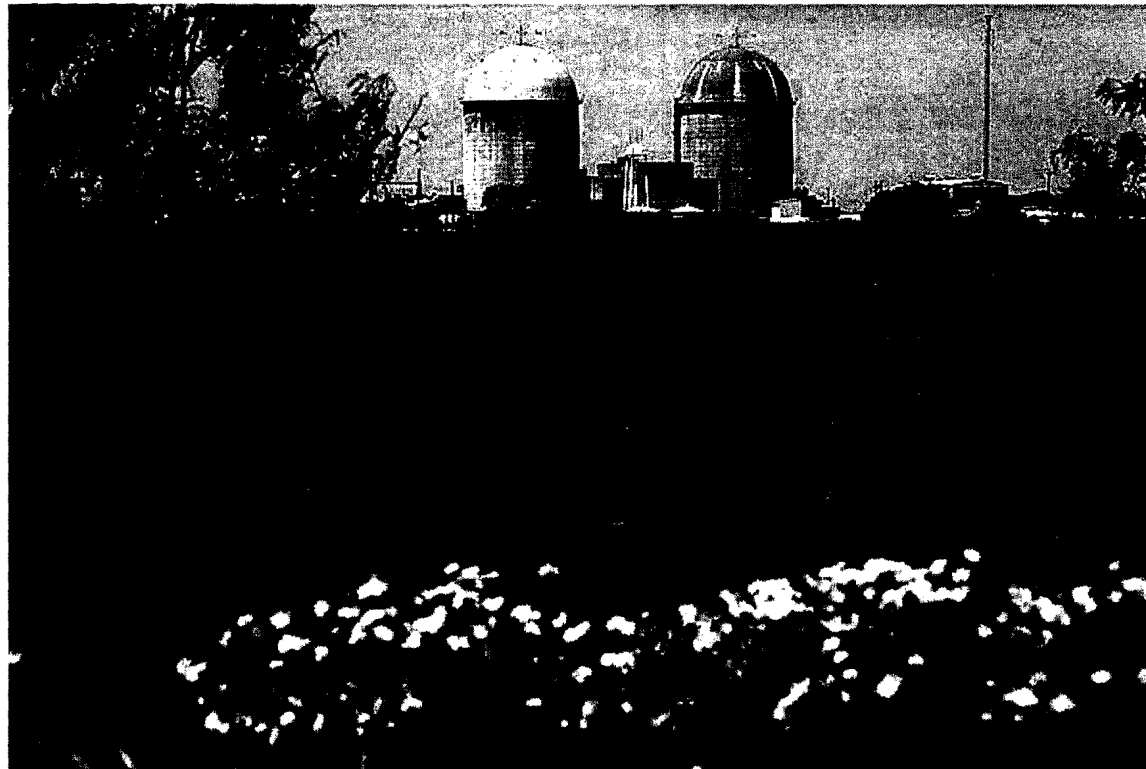
JUNE 26, 2012, MEETING WITH LUMINANT GENERATION COMPANY LLC  
REGARDING TECHNICAL SPECIFICATION 3.8.1 EXTENSION OF COMPLETION TIME  
COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 1 AND 2  
DOCKET NOS. 50-445 AND 50-446

NAME	TITLE	ORGANIZATION
Matthew Hamm	Reactor Systems Engineer	U.S. Nuclear Regulatory Commission (NRC)
Gerry Waig*	Senior Reactor Systems Engineer	NRC
Khadijah Hemphill	General Engineer	NRC
James Anderson	Branch Chief	NRC
Rui Li	Electrical Engineer	NRC
Roy Matthew	Team Leader	NRC
JS Hyslop	Senior Risk and Reliability Engineer	NRC
Jigar Patel	Risk and Reliability Engineer	NRC
Mike Snodderly	Acting Branch Chief	NRC
Balwant K. Singal	Senior Project Manager	NRC
Michael Markley**	Branch Chief	NRC
Fred Madden	Director, Oversight and Regulatory Affairs	Luminant Generation Company LLC (Luminant)
Nathan Larson	Senior Engineer, PRA	Luminant
Robert Lichtenstein	Project Manager	Luminant
Tamera J. Ervin-Walker	Principal Engineer, Nuclear	Luminant

\* Participated via phone

\*\* Attended the meeting part time

# Modification of Offsite Power Supplies to Improve Reliability at Comanche Peak Nuclear Power Plant



June 26, 2012

# **Luminant Pre-Application Meeting**

## **Agenda**

Introductions

Purpose

Current Plant Design, TS 3.8.1, and Offsite Power  
Switchyard Upgrades

Proposed Plant Mod, TS 3.8.1, and Offsite Power  
TS 3.8.1 Extended Completion Time

Alternate Power Diesel Generators

NUREG-0800

Limited Work Area

Risk Analysis

Proposed Schedule

Closing Remarks

# Introductions

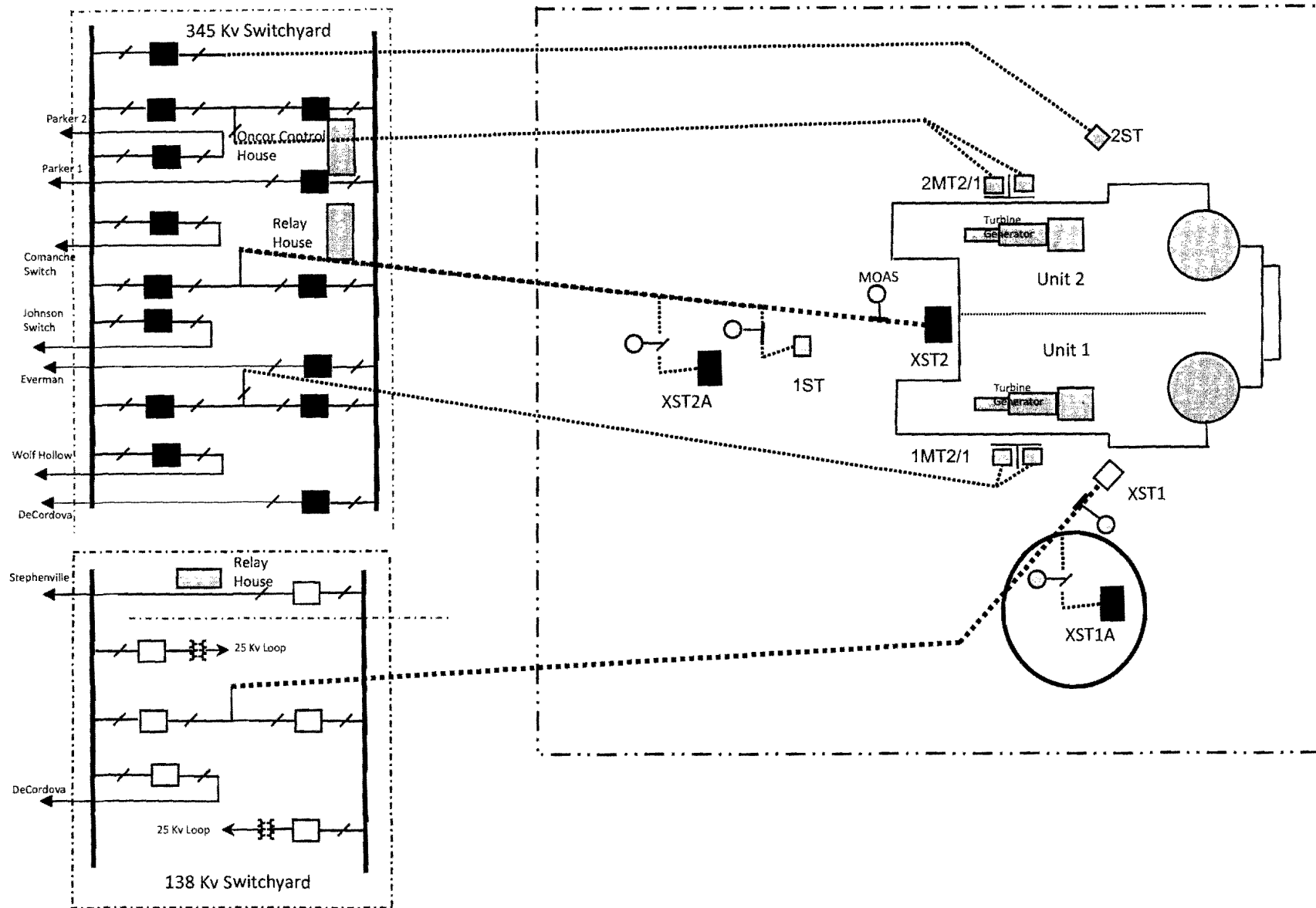
Fred Madden	Director Oversight & Reg Affairs
Jeff Lamarca	Project Manager
Robert Slough	Consult. Licensing Analyst
Tamera Ervin-Walker	Principal Engineer Nuc.
Nathan Larson	Risk & Reliability Engineer
Bob Lichtenstein	Risk & Reliability Engineer



# Purpose

The proposed plant modification will facilitate connection of Startup Transformer (ST) XST1 or an alternate ST XST1A to the 1E buses within the current Technical Specification (TS) Completion Time (CT) of 72 hours. This is an improvement in plant design which eliminates the necessity to shutdown both Units if XST1 fails or requires maintenance that goes beyond the current Technical Specification (TS) Completion Time (CT) of 72 hours. This change will improve the long-term reliability of the 138kV offsite circuit by providing connection to the ESF buses through XST1 or the new spare startup transformer.

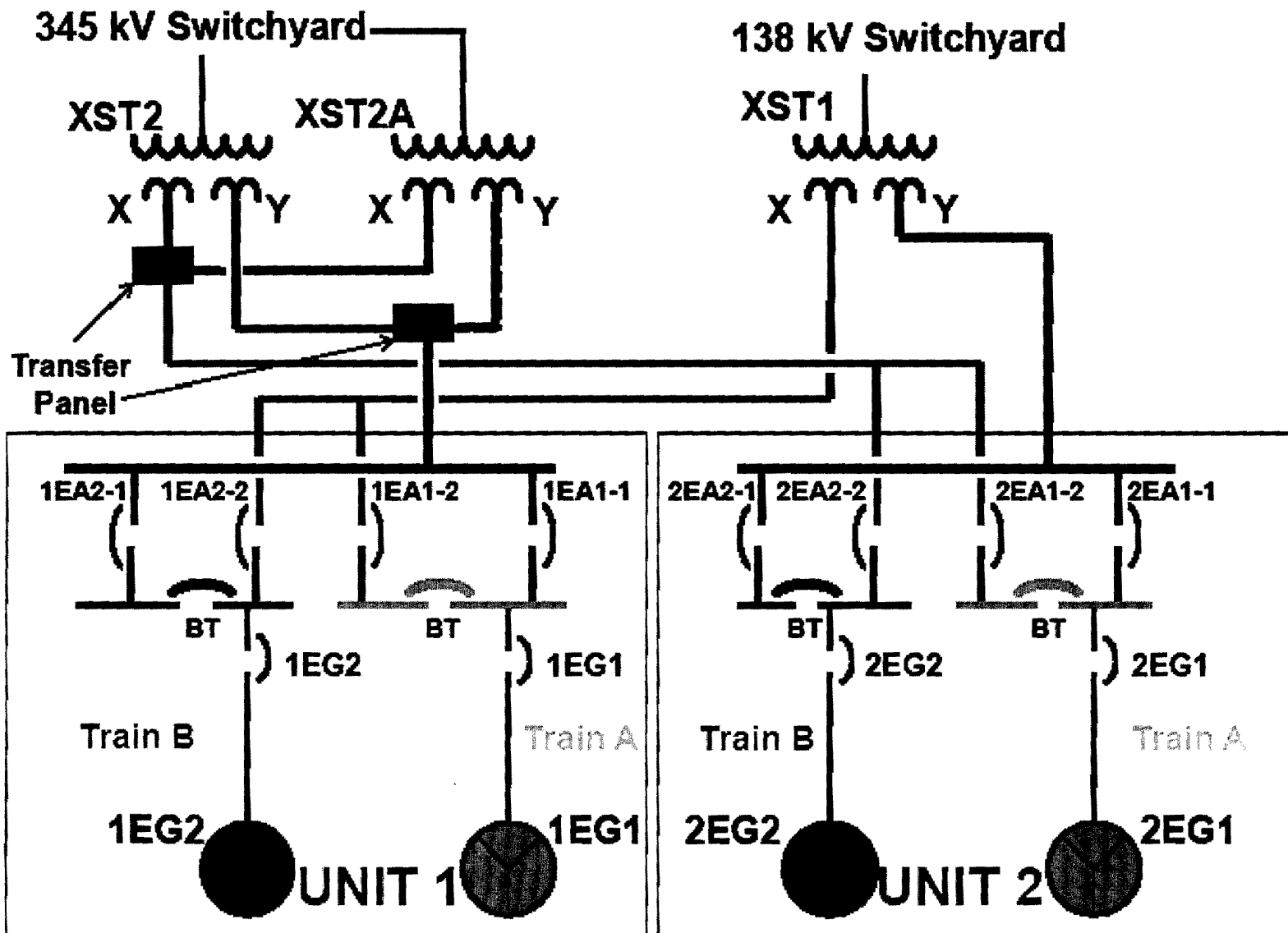
## Proposed CPNPP Offsite AC Power Sources



## **345kV Switchyard Reliability Upgrades**

- All 345kV breakers have been replaced except for three breakers (8020, 8030, and 8080) which will be replaced this fall.
- Installation of new bus tie 345kV breaker 8075 to 8080 feeds transformer 2ST.
- Addition of two-345kV lines Everman and Parker 2.
- Future plans are to replace all the electro-mechanical relays with digital relays.

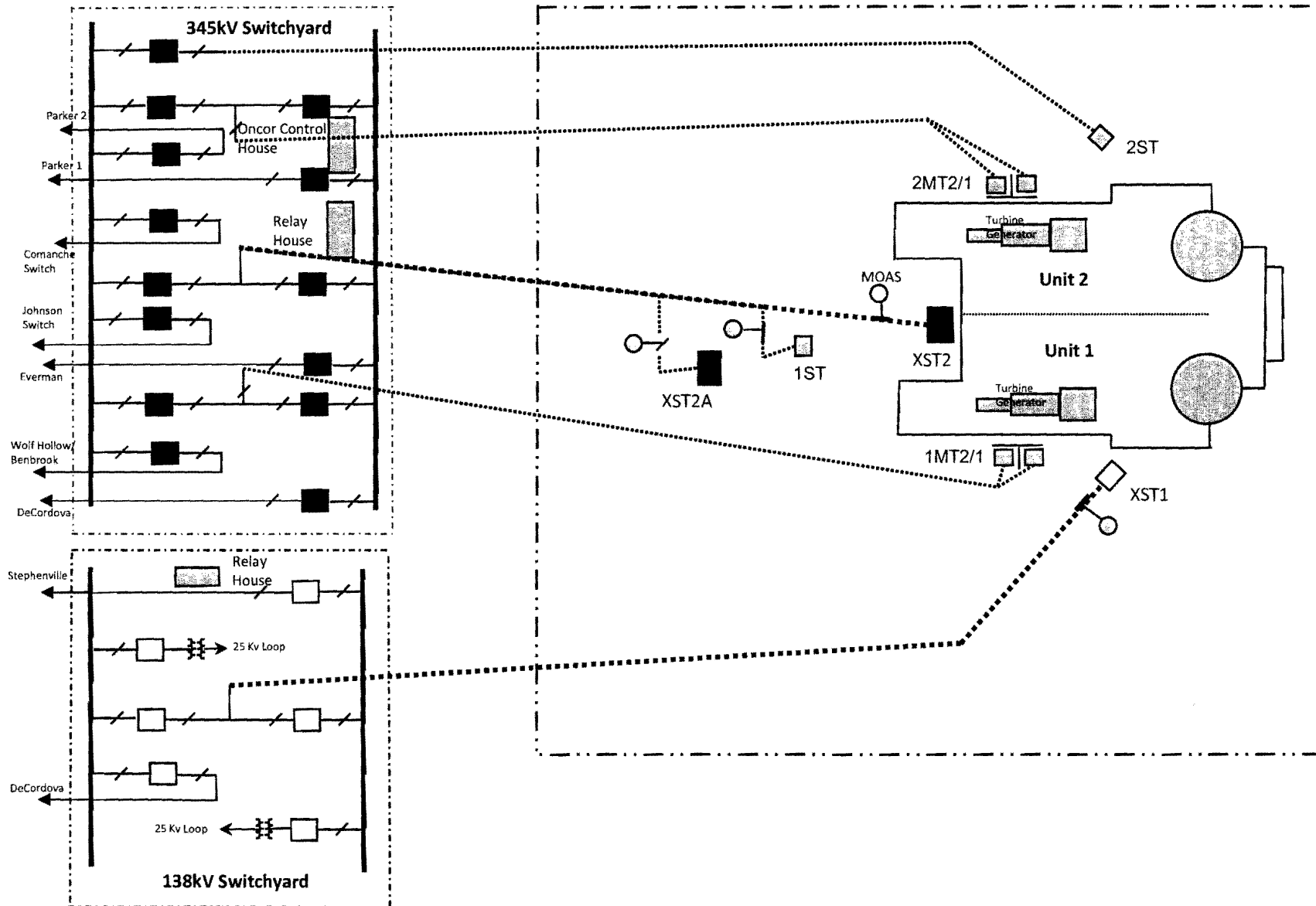
# Current AC Distribution to CPNPP 1E Busses



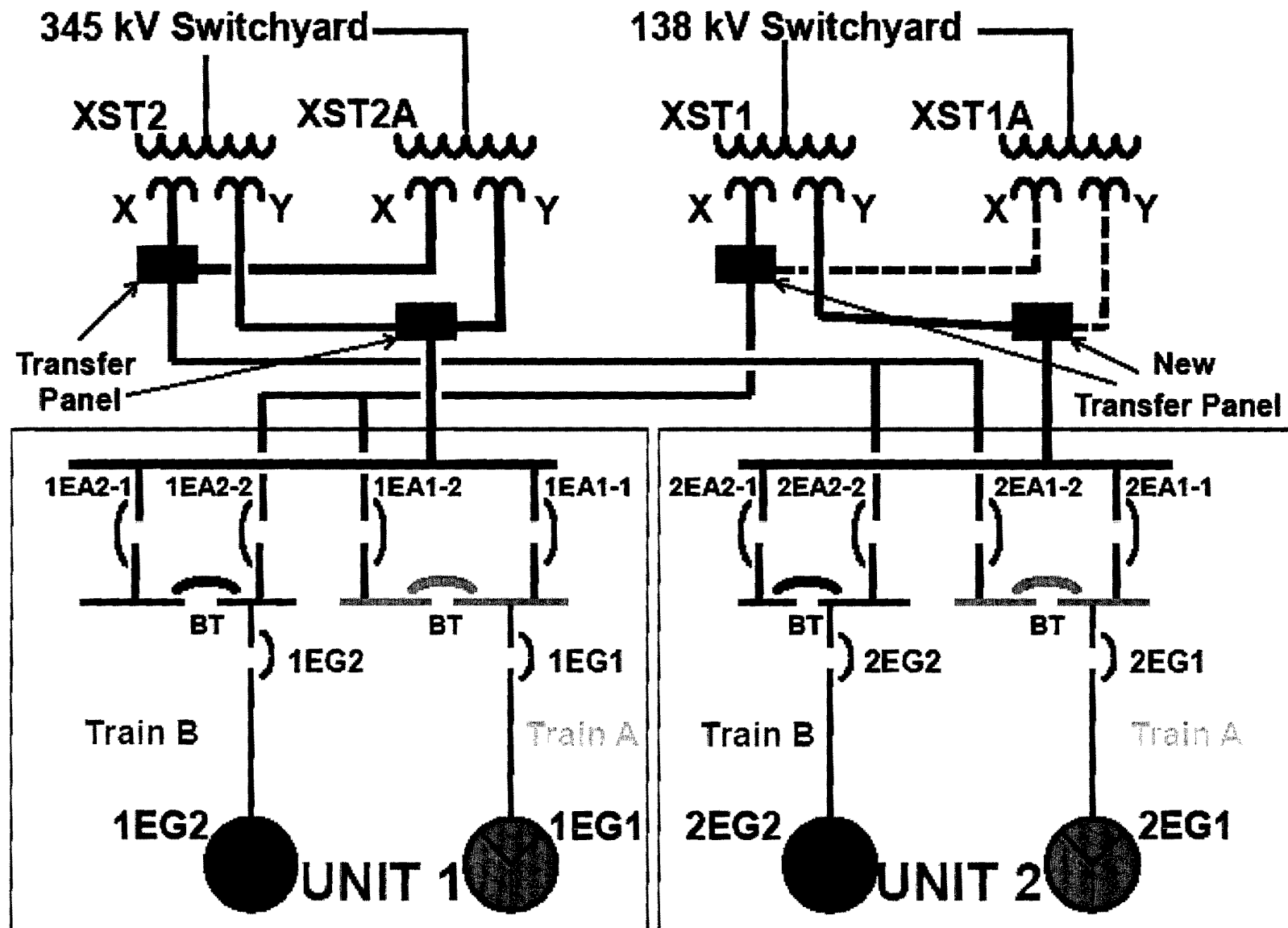
## Current Technical Specification 3.8.1

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for required OPERABLE offsite circuit.	1 hour  <u>AND</u>  Once per 8 hours thereafter
	<u>AND</u>	
	A.2 <u>NOTE</u> In MODES 1, 2 and 3, the TDAFW pump is considered a required redundant feature.	
	Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.	24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)
	<u>AND</u>	
	A.3 Restore required offsite circuit to OPERABLE status.	72 hours  <u>OR</u>  14 days for a one-time outage on XST2 to complete a plant modification to be completed by March 1, 2011.

## Current CPNPP Offsite AC Power Sources



# Proposed Plant Modification Overview



## Proposed Technical Specification 3.8.1

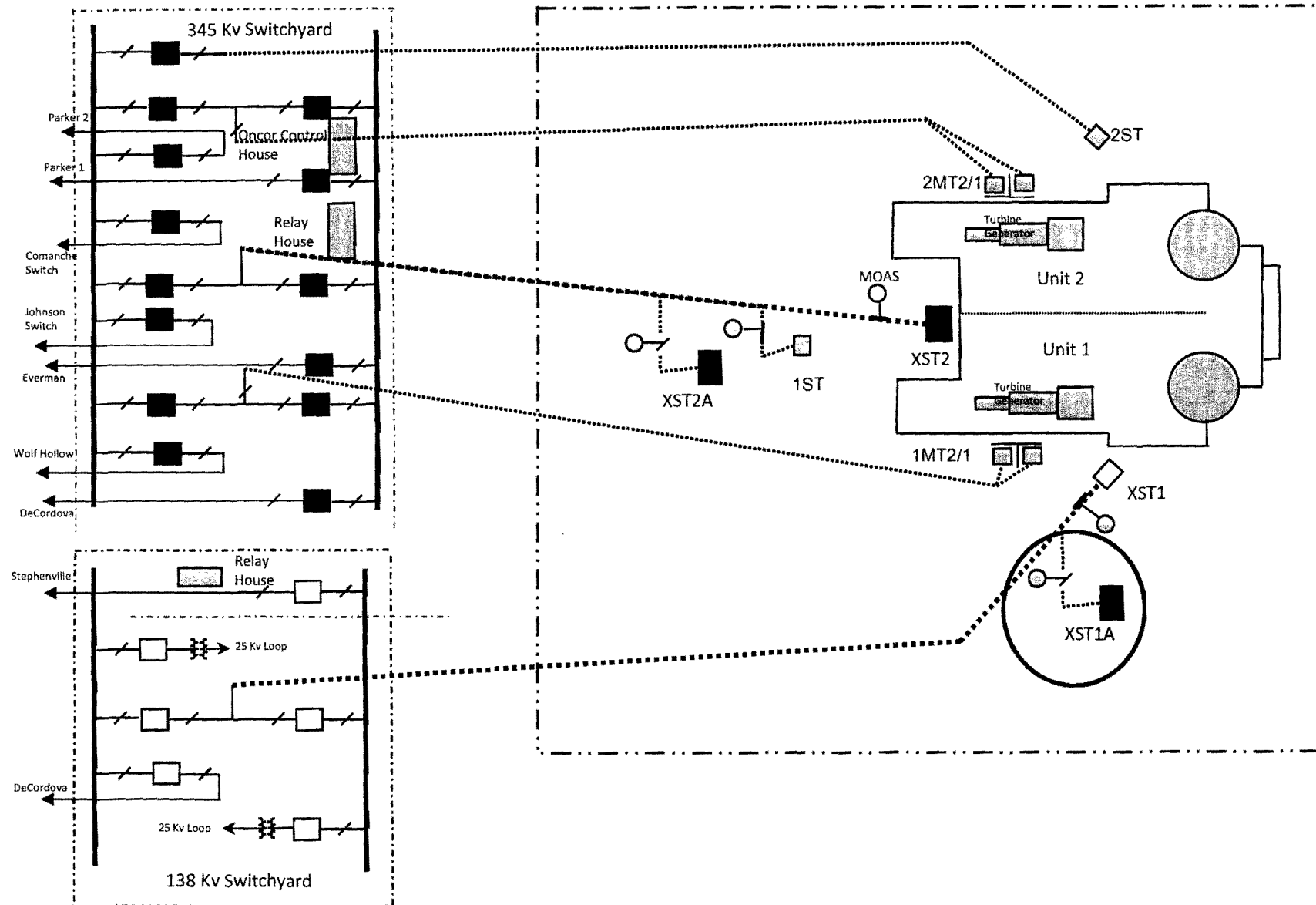
CONDITION	REQUIRED ACTION	COMPLETION TIME
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	<u>AND</u>	
	<p>A.2 <u>NOTE</u></p> <p>In MODES 1, 2 and 3, the TDAFW pump is considered a required redundant feature.</p> <p>Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.</p> <p><u>AND</u></p> <p>A.3 Restore required offsite circuit to OPERABLE status.</p>	<p>24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)</p> <p>72 hours</p> <p><u>OR</u></p> <p>14 days for a one-time outages on XST1Q to complete a plant modification to be completed by March 31, 2014.</p>

TWO,





## Proposed CPNPP Offsite AC Power Sources



# Alternate Power Diesel Generators (APDGs)

As a defense-in-depth feature concerning XST2 modification, a set of APDGs were installed for each Unit.

APDGs maintains the capability to provide power for one train of ESF equipment needed for safe shutdown and long term cooling of each Unit during the two extended CT to respond to a beyond design basis event if loss of XST2 occurs and both EDGs of a Unit fail. The installed APDGs are rated higher than the ones described in LAR 09-003 and in CPNPP's response to NRC RAIs.

## NUREG-0800

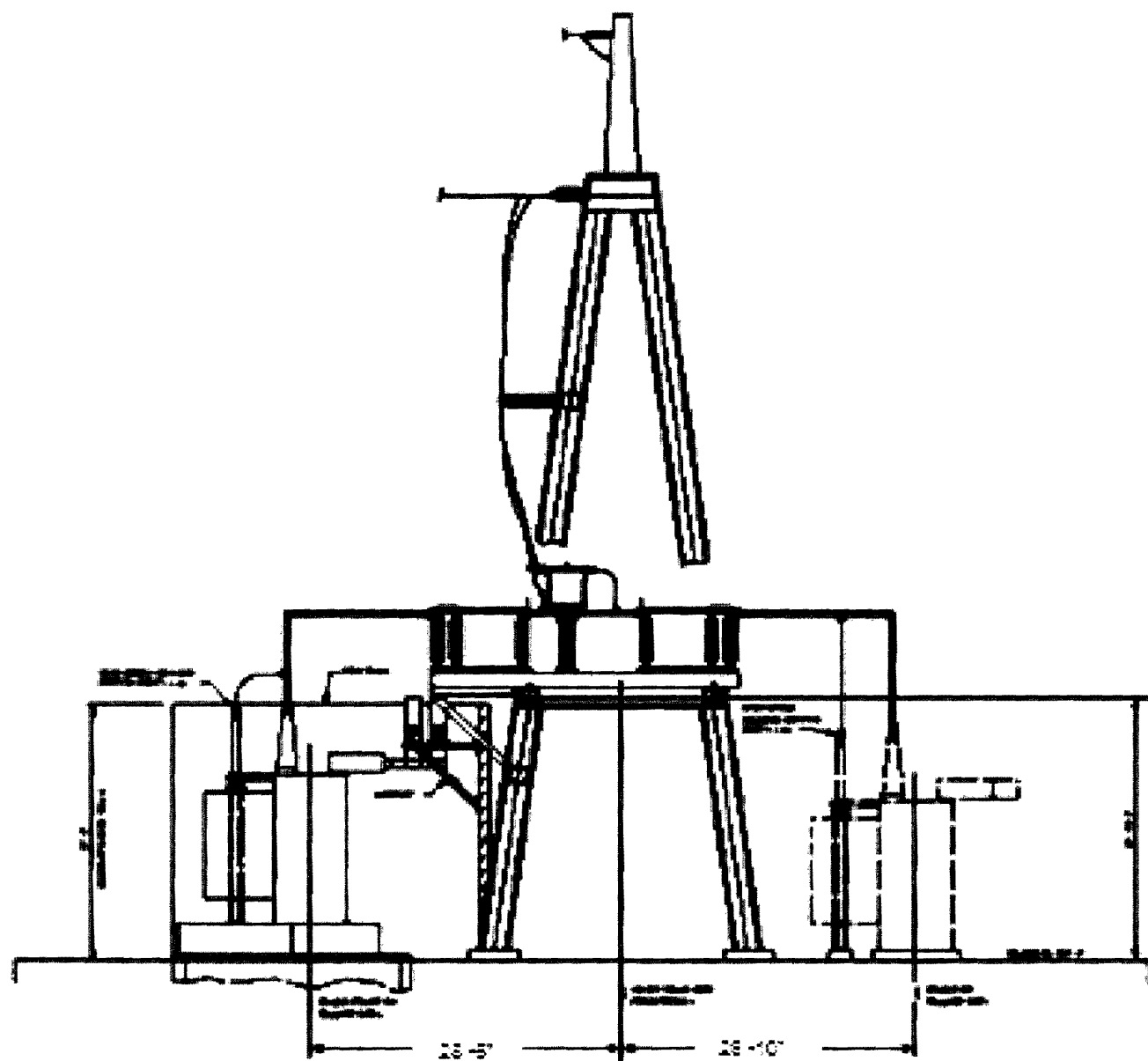
The NRC Standard Review Plan NUREG-0800, BTP 8-8, dated Initial – February 2012 states, “An EDG or offsite power AOT license amendment of more than 14 days should not be considered by the staff for review.”

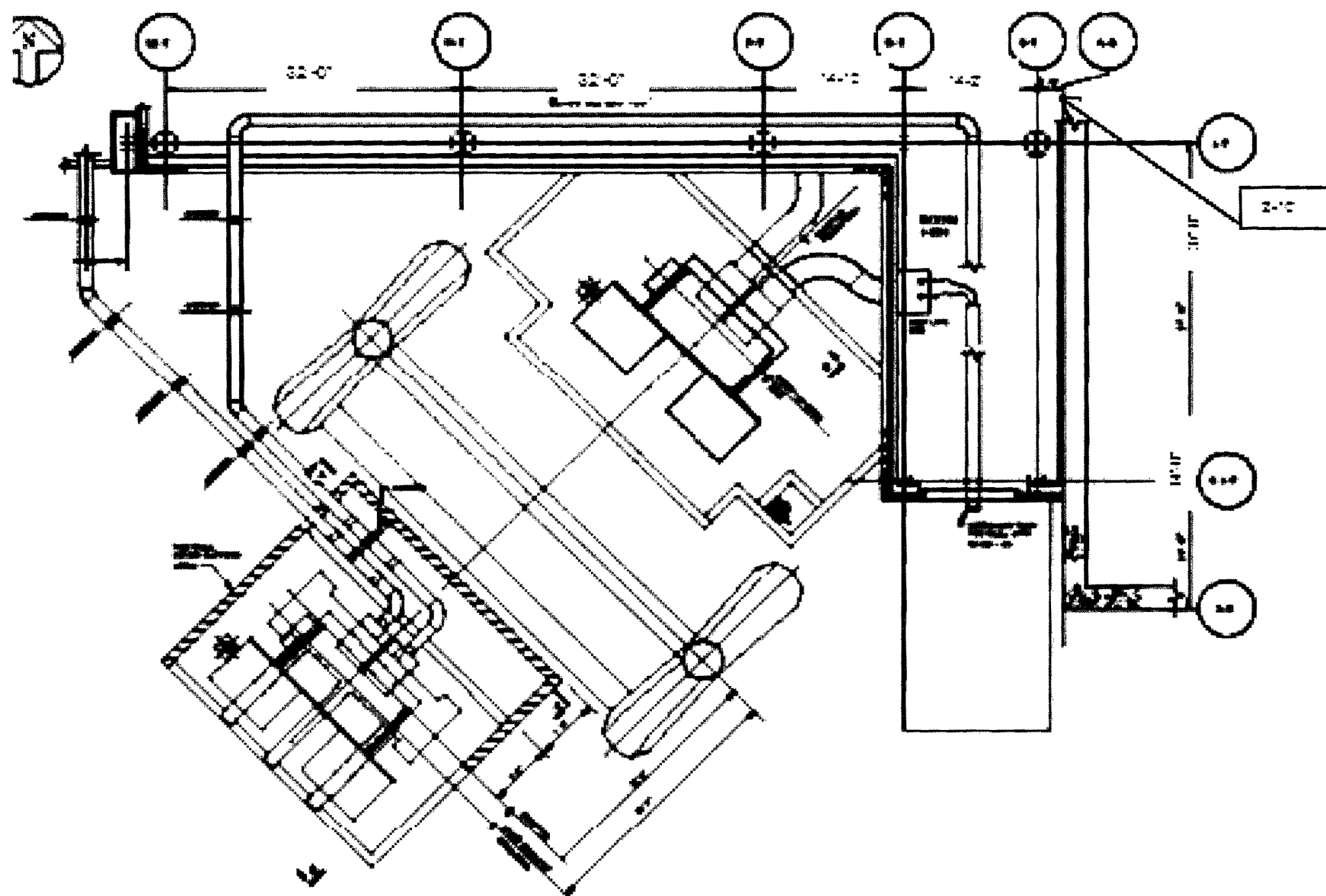


XST1A Pad

Disconnect Tower Leg

XST1





# Risk Analysis

- Summarize PRA Model Scope and Quality
- Describe the Risk Assessment
- Discuss the Sensitivity Analyses
- Discuss the Configuration Risk Management Program (CRMP) and Risk Reduction Measures

# PRA Model Scope and Quality

- Internal Events and Internal Flooding models were developed per RG 1.200 Rev 2 requirements and have been Peer Reviewed

Per the Peer Review Team

*“Overall, the CPNPP PRA was found to substantially meet the ASME PRA Standard at Capability Category II and can be used to support risk-informed applications”*



# PRA Model Scope and Quality

- Subsequent to the Peer Review, Findings and Observations were addressed and incorporated into the current Revision 4A model
  - All “Not Met”... now Cat II or better
  - 4 of 7 previous Cat I ... now Cat II or better
    - Remaining 3 with no application impact
  - All Findings were resolved and incorporated
  - All but one suggestion incorporated
    - One was deferred with no application impact
  - All remaining Support Requirements (SR) meet Cat II or better
- External Events based on IPEEE and will be used for insights

# PRA Model

## Scope and Quality

- Adequately addresses as-built, as-operated plant
- Plant specific data and plant specific best estimate Thermal-Hydraulic address success criteria
- Switchyard and electrical power system modeling is detailed
- Alternate Power Diesel Generator (APDG) is installed and modeled in the PRA to improve onsite power capabilities
- RCP Seal LOCA modeling uses the WOG 2000 model for high temperature seals
- Convolution method used for LOOP recovery analyses

# Description of Risk Assessment

- Applicable Guidance and Criteria
  - Rev 2 of RG 1.174, Rev 1 of RG 1.177, and Rev 2 of RG 1.200
- Quantitative Analyses for Internal Events and Flood, Level I and II
- Qualitative Analyses for External Events
  - Qualitative discussion combined with IPEEE risk insights for the Fire, High Winds (Tornado), and Seismic (Margins)
  - Supported by detailed walk-down of plant

# Discussion of Sensitivity Analyses

- Sensitivity studies are used to address uncertainties. These studies will include but are not limited to:
  - Reliability of components important to the risk contributions of the CT extension
  - No Credit for the APDG
  - LOOP Recovery Probabilities
  - Increased duration of XST1 CT
  - Conservation of maintenance
- Uncertainty analysis will be performed per NUREG-1855.
  - Common Cause Failure discussion

# Configuration Risk Management Program

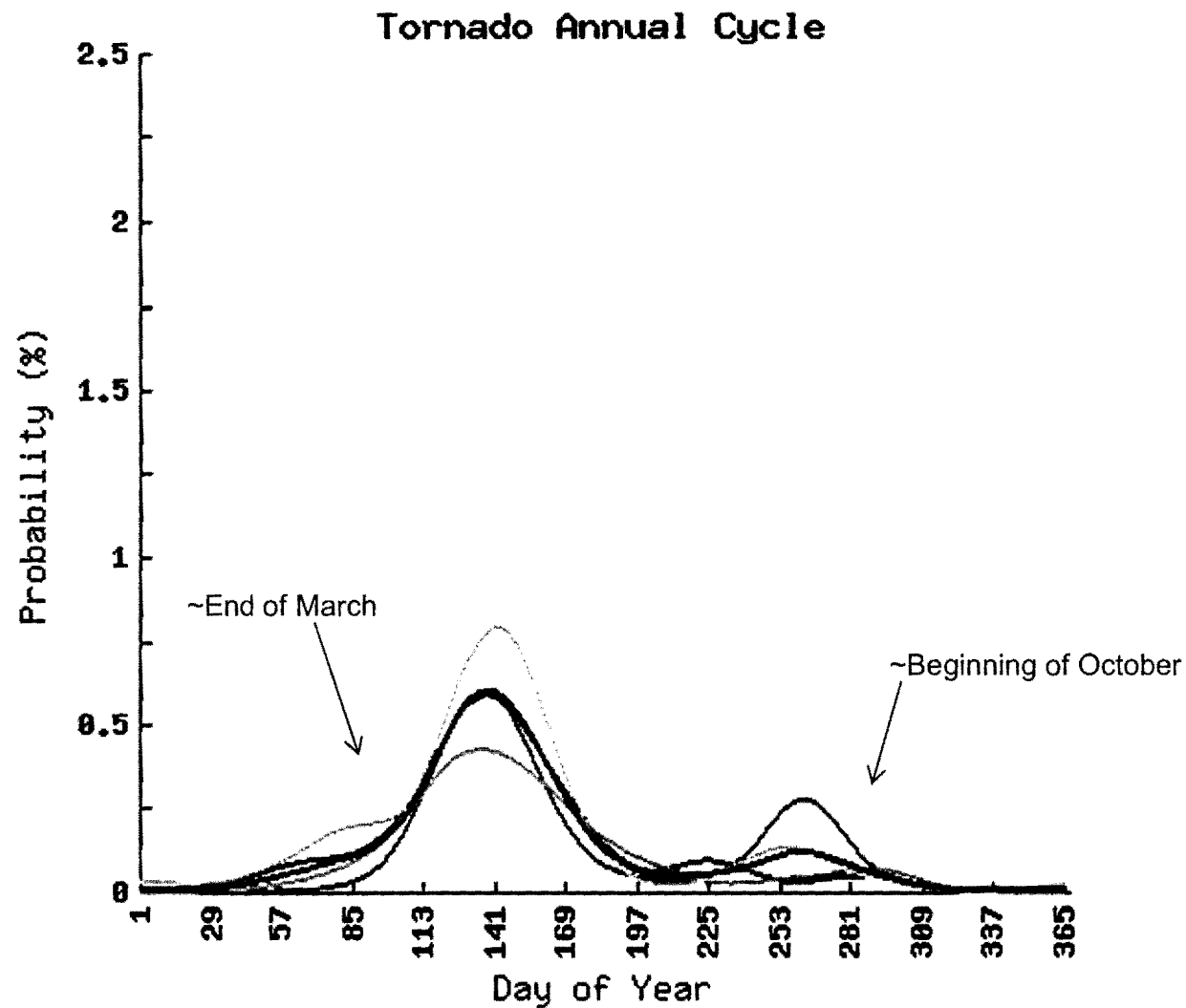
- CPNPP has a Configuration Risk Management Program
  - Incorporates the characteristics of the model Configuration Risk Management Program described in RG 1.177
  - CRMP description has been incorporated into plant Technical Specifications – 5.5.18
  - Previously approved for one time 14-day change to Technical Specifications for AC Sources – Operating – B 3.8.1 Required Action A.3 (XST2A transformer installation)
- CRMP is a requirement of the Maintenance Rule Program. CPNPP endorses the guidance in NUMARC 93-01, “Industry Guideline For Monitoring the Effectiveness Of Maintenance At Nuclear Power Plants”
- CPNPP will meet the fire (a)(4) requirement by December 1, 2013

# Configuration Risk Management Program – Risk Mitigation Actions

[Implemented during the extended CTs]

1. Restricted Access to and Suspension of Maintenance in the Switchyard.
2. Testing of Diesel Generators (EDG and APG) and Turbine Driven Auxiliary Feedwater Pumps within the Two (2) Weeks Prior to the Start of the XST1 extended CT.
3. Rescheduling of Testing and Maintenance on the EDGs, APGs, TDAFWPs, XST2, CCWPs and SSWPs to occur outside the extended CT window.
4. Suspension of Hot Work Activities Near XST2 Power and Control Cabling.
5. Roving Hourly Fire Watch Along Paths of XST2 Power and Control Cabling.
6. Operations preparations and grid monitoring during the CT.
7. Selection of Time of Year Due to Weather Considerations.

# Severe Weather Considerations



# Preliminary Conclusions of Risk Assessment

- The preliminary PRA results show that the extension of the total XST1 CT will have minimal impact on plant risk



# Proposed Schedule for LAR Submittal and Staff Review

- ★ Luminant Power will Submit the LAR by September 2012.
- ★ Luminant Power requests approval of the proposed License Amendment by September 30, 2013, to be implemented within 120 days of the issuance of the license amendment.

# **Closing Remarks**

Please direct any inquiries to me at (301) 415-3016, or [balwant.singal@nrc.gov](mailto:balwant.singal@nrc.gov).

Sincerely,

/RA/

Balwant K. Singal, Senior Project Manager  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-445 and 50-446

Enclosures:

1. List of Attendees
2. Revised Handout

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RidsNrrPMComanchePeak Resource

RidsOgcRp Resource

RidsRgn4MailCenter Resource

TWertz, NRR

SKennedy, EDO RIV

JHyslop, NRR/DRA/APLA

MSnodderly, NRR/DRA/APLA

JPatel, NRR/DRA/APLA

RMathew, NRR/DE/EEEB

MHamm, NRR/DSS/STSB

RLi, NRR/DE/EEEB

KHemphill, NRR/DSS/STSB

GWaig, NRR/DSS/STSB

**ADAMS Accession No. ML12188A697**

**\*Via e-mail**

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DATE	7/16/12	7/9/12	7/16/12	7/16/12
OFFICE	NRR/DE/EEEB/BC	NRR/LPL4/BC	NRR/LPL4/PM	
NAME	JAndersen*	MMarkley JSebrosky for	BSingal	
DATE	7/9/12	7/17/2012	7/18/12	

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