CCNPP3COLA NPEmails

From: Arora, Surinder
Sent: Wednesday, February 10, 2010 11:05 AM
To: 'Poche, Robert'
Cc: Colaccino, Joseph; Steckel, James; CCNPP3COL Resource; Kang, Peter
Subject: Draft ACRS Presentation Slides - Chapter 8
Attachments: Calvert Chap 8 Draft ACRS Presentation 2-4-2010.ppt

Rob,

As you know, our office is closed due to bad weather. I am forwarding you the ACRS Presentation slides which are being prepared by the staff. Let me know if there are any questions. I will be checking my emails periodically. Jim is working on finalizing the dry run. We will let you know when it is set up.

Thanks.

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From: Arora, Surinder

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Recipients:
"Colaccino, Joseph" <Joseph.Colaccino@nrc.gov>
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Presentation to the ACRS Subcommittee

UniStar Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3
COL Application Review

Safety Evaluation Report

CHAPTER 8: ELECTRIC POWER

February 18, 2010

DRAFT 02/04/2010

Staff Review Team

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- **Technical Staff**
  - **Peter Kang**
    Electrical Engineering Branch

- **Project Managers**
  - **Surinder Arora**
  - **James Steckel**

Overview of Staff's Review

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SRP Section/Application Section		Number of RAI Questions	Number of SE Open Questions
8.1	Introduction	1	0
8.2	Offsite Power System	10	0
8.3.1	Alternating Current (AC) Power Systems (Onsite)	14	0
8.3.2	Direct Current (DC) Power Systems (Onsite)	0	0
8.4	Station Blackout	2	0
Totals		27	0

COL Topics of Interest
Chapter 8.0–Electrical Power

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CCNPP Unit 3 COL Application Review

- COL application contains:
  - Interface Items
  - COL Information Items
  - Supplemental Information

- COL application includes site-specific information on the following:
  - Electrical load increases
  - Offsite power system - grid, switchyard, auxiliary transformers
  - Onsite power system - UHS, cooling system, and additional power supply
  - SBO coping duration - offsite and onsite configurations, and EDG target reliability

- COL application review included:
  - Evaluating all COL information items identified in US EPR FSAR
  - Checking whether the COL information is consistent with the referenced U.S. EPR FSAR
  - Determining whether the COL FSAR information provided a sufficient level of detail for interconnection with the plant, onsite power system, and SBO coping duration

COL Topics of Interest
Section 8.1–Site-Specific Information

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Site-Specific Electrical Loads

- Addition of site-specific UHS makeup water intake structure and UHS Electrical Building
  - Additional 22.3 kW for each EDG load for UHS makeup water structure
  - Additional .04 kW for each EUPS for circuit breaker control power
- Evaluation
  - No change to EDG size (9500 kW) from U.S. EPR FSAR, as the increase is far below 10 % margin (950 kW) provided
  - No change to EUPS size, as the dc control power requirement demand is within 10% of the design margin
- Result
  - Staff has no open items regarding COL site-specific information on electrical load increases due to the UHS makeup water structure and UHS Electrical Building

COL Topics of Interest
Section 8.2 - Offsite Power System

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COL Items Incorporated by Reference

- Interface Requirements
  - Switchyard layout design - grid connection to the switchyard and connection to the plant power distribution system
  - GL 2007-01 for inaccessible power cables installed in duct banks or underground

- COL Information Items
  - Offsite lines: Two 500 kV overhead extensions and two new 500 kV overhead extensions from existing CCNPP Units 1 and 2
  - GL 2006-02: Coordinates with PJM on operation, grid reliability, planning, and maintenance based on established communication and protocol. Performs transmission system analyses and equipment maintenance agreement with BG&E. Follows NERC reliability standards and PJM practices

- Supplemental Information
  - Compliance with monitoring requirements in 10 CFR 50.65(a)(4) for inaccessible power cables installed in duct banks or underground

- Result
  - Staff finds that COL items for the offsite power system are incorporated by reference with no departures from the U.S. EPR FSAR

COL Topics of Interest
Section 8.3 - Onsite Power System

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Information Items Incorporated by Reference

- Interface Requirements
  - Onsite ac power connections between the switchyard and the plant
  - Lightning protection and grounding system grid
- COL Information Items
  - Monitor and maintain EDG reliability to meet reliability level target per RG 1.155
  - Cable management program prior to fuel load that will describe inspection, testing, and monitoring programs to detect the degradation of inaccessible or underground power cables within scope of 10 CFR 50.65
- Supplemental Information
  - EPSS - added site-specific UHS makeup water system structure and Seismic Category 1 UHS Electrical Building
  - Four divisions of EPSS are located in an UHS Electrical Building and each division consists of an MCC and a distribution transformer
  - Each division is independent and physically separated, and the power system analysis verified the adequacy of voltage regulation and short circuit capability

COL Topics of Interest
Section 8.3 - Onsite Power System (cont.)

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Information Items Incorporated by Reference

- Supplemental information - continued
  - NPSS - decreased the number of cooling tower wet fans from 56 to 48, but increased each fan size to 350 hp at 6.9 kV, from 300 hp at 480 Vac
  - NPSS provides a backup power supply to the desalination plant, demineralization plant, and waste water treatment facility
  - Provided electric heat tracing for freeze protection and cathodic protection for buried carbon steel pipes for corrosion prevention
  - Establishes a cable management program prior to fuel load that will identify the inaccessible or underground power cables and describe the inspection, testing, and monitoring programs that will be implemented to detect cable degradation
- Result
  - Staff finds that COL items for the onsite power (EPSS and NPSS) system are incorporated by reference with no departures from the U.S. EPR FSAR

COL Topics of Interest
Section 8.4 Station Blackout (SBO)

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Information Incorporated by Reference

- COL information items
  - Indicate that there is no special local power source available to resupply power to the CCNPP Unit 3 following loss of the grid or during an SBO
  - Follow the RG 1.155 guidance related to procedures and training for operator actions in coping with SBO

- Supplemental Information
  - The COL applicant conducted the same SBO coping duration evaluation prescribed by U.S. EPR FSAR, and determined the coping duration to be eight hours

- Result

  Staff finds that COL items for station blackout are incorporated by reference with no departures from U.S. EPR FSAR

Staff Findings

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The COL FSAR for Calvert Cliffs Unit 3 Provides:

- Sufficient details about site-specific safety-related load increases to EDG and EUPS loads, due to addition of the UHS makeup water intake structure and UHS Electrical Building
- Sufficient information about offsite power system interrelationships among the nuclear units, switchyards, and interconnection entities (PJM and NERC) to maintain grid reliability and stability and minimize a loss of offsite power
- Sufficient supplemental information to address onsite power system changes to accommodate the site-specific UHS system additions to EPSS, and the site-specific cooling tower wet fans and addition of a backup power supply in NPSS
- Necessary analyses to determine site-specific capability to withstand and recover from an SBO event of specified 8 hour duration

Acronyms

- AAC – alternate ac source
- ac – alternating current
- BG&E – Baltimore Gas and Electric
- COL – combined license
- dc – direct current
- EDG – emergency diesel generators
- EPSS – Emergency Power Supply System
- EUPS – Emergency uninterruptable power source
- FSAR – Final Safety Analysis Report
- GL – Generic Letter
- HP-Horsepower
- MCC – Motor Control Center
- NERC – North American Electric Reliability Cooperation
- NPSS – Normal Power Supply System
- PJM – Pennsylvania, New Jersey, and Maryland Interconnection
- RAI – request for additional information
- RG – Regulatory Guide
- SBO – station blackout
- UHS – Ultimate Heat Sink