

BellBendCOLPEm Resource

From: Bhatia, Bhupendra
Sent: Tuesday, March 16, 2010 12:34 PM
To: BellBendCOL Resource
Cc: Johnson, Robert; Kang, Peter
Subject: FW: NUMARK Documents for the NRC Hearing File for TO#49, Bell Bend, Chapter #8- NON PUBLIC
Attachments: BBNPP_ 8.4_ Final w no Open Items[1].doc

From: Hearing File [<mailto:HearingFile@numarkassoc.com>]
Sent: Monday, March 15, 2010 10:17 AM
To: Bhatia, Bhupendra
Subject: NUMARK Documents for the NRC Hearing File for TO#49, Bell Bend, Chapter #8

The attached information is being provided to you from Numark Associates, Inc pursuant to 10 CFR 2.1203(b) for inclusion in the NRC Hearing File.

Please contact Ms Karen Hall if you have any questions.

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From: George Morris
Sent: Thursday, November 19, 2009 12:20 PM
To: Hearing File
Cc: Marty Bowling; Stan Kobylarz
Subject: Task 4149, Subtask 005, Section 8.4

Marty,

Attached is the copy of 8.4 for the Hearing File. There is no change from the copy I sent you earlier this week. This incorporates the required Applicants responses to the RAIs on this section and is consistent with the Areva responses on the EPR DC RAIs for this section.

George

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Subject: FW: NUMARK Documents for the NRC Hearing File for TO#49, Bell Bend, Chapter #8- NON PUBLIC
Sent Date: 3/16/2010 12:33:49 PM
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From: Bhatia, Bhupendra

Created By: bhfysp.bhfysp@nrc.gov

Recipients:

"Johnson, Robert" <Robert.Johnson@nrc.gov>
Tracking Status: None
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Tracking Status: None
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Tracking Status: None

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Files	Size	Date & Time
MESSAGE	2253	3/16/2010 12:33:51 PM
BBNPP_ 8.4_ Final w no Open Items[1].doc		50754

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8.4 Station Blackout

8.4.1 Introduction

The term station blackout (SBO) refers to a complete loss of alternating current (ac) electric power to the non-safety-related and safety-related switchgear buses. An SBO involves a loss of the offsite electric power system (preferred power system) occurring at the same time the emergency diesel generators (EDG) are unavailable. An SBO does not include loss of available ac power to buses fed by station batteries through inverters or by alternate alternating current (AAC) sources specifically provided for SBO mitigation.

8.4.2 Summary of Application

Section 8.4 of the BBNPP FSAR incorporates by reference Section 8.4 of the U.S. EPR FSAR. (See Section 1.1 of this SER.)

In addition, in BBNPP FSAR Sections 8.4.1.3, 8.4.2.6.1, and 8.4.2.6.4, the applicant provided the following:

Combined License Information Items:

The applicant provided additional information in Section 8.4.1.3 to address COL Information Item 8.4-1, resupplying the power plant following a loss of offsite power (LOOP), as follows:

The applicant stated that there are no special local sources of power that can be made available to resupply power to the BBNPP following loss of a grid or an SBO.

However, the applicant noted the normal connections to BBNPP will include one 500 kV connection to the existing Susquehanna 500 kV switchyard and one connection to the new Susquehanna 500 kV Yard 2. The BBNPP switchyard is located less than 1.6 km (1 mi) from the existing Susquehanna 500 kV switchyard.

The applicant provided additional information in Section 8.4.2.6.4 to address COL Information Item 8.4-2, that procedures and training will identify the operator actions which need to be performed to cope with a station blackout for at least as long as is determined in accordance with Regulatory Guide 1.155 Regulatory Position C.3.1, and shall include the operator actions necessary to restore normal decay heat removal, once ac power is restored.

Procedures shall be integrated with the plant-specific technical guidelines and emergency operating procedure program, consistent with Supplement 1 to NUREG-0737 (NRC 1982). The task analysis portion of the emergency operating procedure program will include an analysis of the instrumentation adequacy needed during a station blackout.

Supplementary Information:

The applicant provided information in FSAR Section 8.4.2.6.1, based on the option in U.S. EPR FSAR Section 8.4.2.6.1 that a COL applicant based on site-specific coping durations may propose coping durations less than eight hours. The applicant stated in FSAR Section 8.4.2.6.1 that PPL Bell Bend, LLC utilizes the coping analysis described in Section 8.4.2.6 of the U.S. EPR FSAR.

Technical Specifications:

Site-specific technical specifications are addressed in Part 04 of the application. Refer to Chapter 16 subsection 3.8 where the TS for the offsite power system and the EDGs are addressed.

ITAAC:

None of the site-specific inspections, tests, analyses, and acceptance criteria (ITAACs) addressed in Part 10 of the application are applicable to SBO. Refer to the U. S. EPR Tier 1 application, Table 2.5.3-2, Station Blackout Alternate AC Source Inspections, Tests, Analyses, and Acceptance Criteria, which is incorporated by reference.

8.4.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed in the NRC staff safety evaluation related to the U.S. EPR FSAR (see Section 1.1 of this SER). The relevant requirements of the Commission's regulations for the additional information provided for this area of review, and the associated acceptance criteria, are given in Section 8.4 of NUREG-0800 and are summarized below. Review interfaces with other NUREG-0800 sections also can be found in Section 8.4 of NUREG-0800.

1. 10 CFR 50.63, as it relates to the capability to withstand and recover from an SBO.

Acceptance criteria adequate to meet the above requirements include:

1. The guidelines of RG 1.155, as they relate to compliance to 10 CFR 50.63. NUMARC-8700, Revision 0, also provides guidance acceptable to the staff for meeting these requirements. Table 1 of RG 1.155 provides a cross-reference to NUMARC-8700, Revision 0, and notes when the RG takes precedence.
2. The guidelines of RGs 1.9 (Ref. 6) and 1.155, as they relate to the reliability program implemented to ensure that the target reliability goals for onsite EDG power sources are adequately maintained.

8.4.4 Technical Evaluation

The NRC staff reviewed Section 8.4 of the BBNPP FSAR and considered the referenced U.S. EPR FSAR sections. The NRC staff's review confirmed that the information contained in the application and incorporated by reference addresses the relevant information related to this section. The staff reviewed the information contained in Sections 8.4.1.3, 8.4.2.6.1, and 8.4.2.6.4, of the BBNPP FSAR:

Combined License Information Items:

The applicant stated that they took no departure from the coping analysis in the EPR FSAR Section 8.4.2.6.1. That section of the EPR FSAR stated that a COL applicant could utilize a coping duration less than eight hours based on a site-specific coping analysis. It was not clear from the BBNPP FSAR Section 8.4.2.6 if they would use a coping analysis of eight hours or use a shorter duration based on site-specific factors such as EDG reliability or enhanced restoration procedures. In RAI 41, Question 08.04-1, the staff asked the applicant to describe the site specific coping duration. On September 3, 2009, the applicant responded that the BBNPP coping duration follow the guidance of the EPR FSAR SBO capability analysis and would use an 8 hour coping duration. Accordingly, the staff finds that the applicant adequately addressed the issue. The staff considers this issue resolved.

The applicant stated in FSAR Section 8.4.1.3 there are no special local sources that can be made available to resupply power to the plant following a loss of a grid or an SBO.

However, the BBNPP is located adjacent to the existing Susquehanna Steam Electric Station and the BBNPP switchyard is located less than 1 mi (1.6 km) from the existing Susquehanna 500 kV switchyard. The normal connections to BBNPP will include one 500 kV connection to the existing Susquehanna 500 kV switchyard and one connection to the new Susquehanna 500 kV Yard 2.

The applicant adequately described the proposed use of procedures and training that will include the operator actions necessary to cope with a station blackout including the operator actions necessary to restore normal decay heat removal once ac power is restored. The applicant stated that these procedures will be integrated with the plant-specific technical guidelines and emergency operating procedure program. The task analysis portion of the emergency operating procedure program will include an analysis of instrumentation adequacy required during a station blackout.

Supplementary Information:

The applicant stated in FSAR Section 8.4.2.6.1 that BBNPP will utilize the coping analysis described in Section 8.4.2.6 of the U.S. EPR FSAR. Review of this area will remain part of the staff review of Section 8.4 of the U.S. EPR FSAR. (See Section 1.1 of this SER.)

8.4.5 Post Combined License Activities

There are no post COL activities related to this section.

8.4.6 Conclusions

The staff is reviewing the information for the U.S. EPR on Docket No. 52-020. The results of the NRC staff's technical evaluation of the information related to this section to be incorporated by reference in the BBNPP FSAR will be documented in the staff's safety evaluation report on the design certification application for the U.S. EPR. The SER for the U.S. EPR is not yet complete, and is being tracked as part of Open Item 1-1. The staff will update Section 8.4 of this SER to reflect the final disposition of the design certification application for the U.S. EPR.

The applicant has provided sufficient information for satisfying the guidelines of RG 1.155, as they relate to compliance to 10 CFR 50.63 with respect to available alternate power to resupply BBNPP following a LOOP. In FSAR Section 8.3.1.1.5, the applicant committed to maintain the EDG reliability to a minimum of 0.95.

The applicant has provided sufficient information for satisfying the guidelines of RG 1.155, as they relate to compliance to 10 CFR 50.63 with respect to proposed operator procedures and training to recover from an SBO.

As a result of RAI 8.4-1 and RAI 8.4-2, the staff is unable to finalize its conclusions on the conformance to 10 CFR 50.63 and RG 1.155.