Callaway2COLPEm Resource

From: Arora, Surinder
Sent: Tuesday, June 16, 2009 8:40 AM
To: Shafer, David E
Cc: Callaway2COL Resource; Colaccino, Joseph; Hodgdon, Ann; Jenkins, Ronaldo; Som, Swagata; Steckel, James; NPUnit2-EPR@ameren.com
Subject: FW: Callaway SCOLA - Draft RAI No. 28 (eRAI No. 2499) - Public
Attachments: RAI 2499.doc

Dave,

Attached is DRAFT RAI No. 28 (eRAI No. 2499). You have until June 30, 2009 to review it and decide whether you need a conference call to discuss it. After the call or after June 30, 2009, the RAI will be finalized and sent to you for a response. You will then have 30 days to respond. In reviewing the draft RAI, please also review and confirm that the RAI does not contain any proprietary information.

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From: Arora, Surinder

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6/16/2009

Callaway Unit 2
AmerenUE
Docket No. 52-037
SRP Section: 08.02 - Offsite Power System
Application Section: 8.2

QUESTIONS for Electrical Engineering Branch (EEB)

08.02-2

Section 8.2.2.4 states that a system impact study analyzed load flow, transient stability and fault analysis for the addition of Callaway Unit 2 as part of the MISO queue. Please address the staff's questions as follows:

1) System Impact Study, page 8-13: Provide a summary of the grid stability steady-state and transient analysis results and the system voltage study results that demonstrate compliance with GDC 17, along with the assumptions made, and the acceptance criteria used for the case(s) analyzed.

2) Page 8-13: It is stated that "for the load flow analysis, the peak loading is utilized with a large variety of scenarios." Provide a summary of these scenarios for load flow, short circuit and the stability analyses for the worst conditions.

3) Page 8-14: It is stated that "The design of the on-load tap changers for each Emergency Auxiliary Transformer ensures that the EPSS 6.9 kV buses have sufficient voltage to preclude the degraded voltage protection." Please confirm that a site specific degraded voltage protection analysis will be performed per guidance provided in BTP 8-6 and the results will be provided as degraded grid voltage (10.a) and LOOP (10.b) setpoints in Table 3.3.1-2 of Technical Specifications.

4) Page 8-14: It is stated that the MISO grid is maintained at 60 Hz. Please confirm and provide details whether the MISO grid utilizes an automatic load shedding scheme during a system underfrequency condition. The next paragraph states the "maximum theoretical frequency decay rate to be 2.231 Hz/sec so that the reactor coolant pumps are not expected to be subject to a sustained frequency decay rate greater than 3.5 Hz/sec." Explain the term "theoretical frequency decay rate" and how the 2.231 Hz/sec value was determined.

5) Describe whether the real and reactive power support to the grid from the nuclear unit is adequate so as not to result in grid instability and subsequent loss of offsite power. Describe any plans to use equipment (such as capacitor banks, static VAR compensators) that may be necessary to offset loss of MVAR support on loss of the main generator.

6) Page 8-15: The US EPR transmission system operating voltage range is quoted as +10%. Please determine if this should correctly read ±10%.

08.02-3

In section 8.2.2.4, under Failure Mode and Effects Analysis, the staff noted that there are two offsite sources, one connected to Callaway existing Unit 1 switchyard and the other connected to Callaway new Unit 2 switchyard, as defined in this section. Callaway 1 and 2 are connected by a 1-mile long transmission line, connecting the switchyard 1 and 2. Since the two switchyards represent the sharing of the three offsite transmission lines, the staff has the following questions:

a) Identify two offsite circuits as required by GDC-17 for Callaway Unit 2 and elaborate the capacity and capability of each offsite power circuit to perform the intended safety functions.

b) Confirm whether each offsite circuit (i.e., Loose Creek line) can perform the safety functions in the event of a postulated accident on one unit (e.g., Callaway Unit 1) and an orderly safe shutdown of the other unit (e.g.,Callaway Unit 2), conforming to GDC-5.

c) If one offsite source becomes inoperable, please provide a description of the operation of the two units that would share the remaining offsite source for the normal operation of Callaway Unit 2.

d) Provide the control scheme of the new Unit 2 switchyard, when operated as one integrated switchyard from its switchyard control house, and remotely from the main control room of Callaway Unit 2.

08.02-4

Section 8.2.2.4, page 8-17, under Switchyard Failure Mode Evaluation: The third bullet indicates “short time rating” of the equipment. Please specify the “momentary withstand current rating” (Close & Latch rating), as the equipment must withstand the maximum rms asymmetrical current.

08.02-5

Section 8.2.2.5, page 8-19 of Callaway FSAR; This section provides site-specific station switchyard equipment inspection and testing plan that must ensure that any modifications to the offsite power system circuits necessary to meet GDC 17 and GDC 18 are performed by offsite transmission system operating authorities with a proper evaluation. It is noted that an existing interface agreement is established to define the interfaces and working relationships between various Callaway site organizations and AmerenUE, where both are responsible for maintaining these facilities. Elaborate per the subject agreement who is responsible for overseeing maintenance, modification, and operation of the offsite transmission lines, switchyards, and equipment related to Callaway Unit 2. Describe if there is a split responsibility among various Callaway site organizations and how these activities are implemented.

08.02-6

Section 8.2.2.5, page 8-19: This section needs to address compliance with General Design Criterion 18 for testing and inspection of the offsite system for switchyard grounding and lightning protection systems. Site-specific design aspects of the switchyard grounding, lightning protection and surge protection devices need to be addressed, as discussed in RG 1.204 to safeguard the SSCs from lightning strikes and the resulting secondary effects.

08.02-7

Section 8.2: Describe the site-specific wetting conditions or submergence, if any, as a result of water intrusion, for underground power cables connecting offsite sources to safety buses or power and control cables to equipment with accident mitigation functions. Also address how the proposed design for cable routing/layout/monitoring is to be implemented to prevent gradual degradation as addressed in GL-2007-01.