March 29, 2001

MEMORANDUM TO: File

FROM: Jack N. Donohew, Senior Project Manager, Section 2 ***/RA/***
Project Directorate IV& Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: ADDITIONAL INFORMATION PROVIDED ABOUT SLOW FLOW BORON DILUTION EVENTS FOR BORON DILUTION MITIGATION SYSTEM ELIMINATION LICENSE AMENDMENT REQUEST (TAC NO. MA9065)

Attached are three e-mails received from the licensee for the Callaway Plant. The first e-mail dated March 16, 2001, is to clarify information submitted on page 3 of of the licensee's supplemental letter dated March 2, 2001. This letter supplemented the licensee's application dated May 25, 2000, to eliminate the boron dilution mitigation system (BDMS). This information was discussed during a teleconference on March 13, 2001, between the NRC staff and the licensee for Callaway.

The second e-mail dated March 19, 2001, provided additional information on the slow flow boron dilution events. These events are handled by operator action as described in Section 15.4.6.1 of the Final Safety Analysis Report and not by the BDMS. In the application dated May 25, 2000, the licensee proposed to eliminate the BDMS from the technical specifications (TS). The e-mail discusses Procedure OTO-ZZ-00003, Revision 8, dated January 20, 2000. The procedure was not included with the e-mail. The procedure is on file at the plant. A conference call was held on March 20, 2001, to discuss the procedure.

The third e-mail dated March 21, 2001, clarifies the basis for Surveillance Requirements 3.3.9.2 and 3.3.9.5 not being reinstated in the licensee's letter of March 2, 2001, which revised its application of May 25, 2000, to delete TS 3.3.9 for the BDMS.

Docket No. 50-483

Attachments:
1. E-mail dated March 16, 2001
2. E-mail dated March 19, 2001
3. E-mail dated March 21, 2001

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NAME	JDonohew	EPeyton	SDembek
DATE	3/29/01	3/28/01	3/29/01

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E-MAIL DATED MARCH 16, 2001

Attachment 1

From: <dshafer@ameren.com>
To: <jnd@nrc.gov>
Date: 3/16/01 9:23AM
Subject: FW: NRC BDMS LAR Clarification (forward to NRC)

Jack:

The purpose of this e-mail is to clarify information submitted on page 3 of ULNRC-04400 dated 3/2/01, as discussed during a teleconference on 3/13/01 between NRC and utility staff. We are clarifying the following sentence: "Based on the experience of licensed SROs at Callaway, this step in the response procedure would be reached in approximately 5-10 minutes."

1. Simulator training was conducted on boron dilution events by training in Cycle 9705. The operator action times were provided to the safety analysis group in AMEREN Licensing and Fuels to allow for the unrestricted operation of the new normal charging pump (NCP) in Modes 4 and 5. This was done for slow dilution rates that would potentially not activate the automatic Boron Dilution Mitigation System (BDMS). This training consisted of each operating crew responding to scenarios simulating dilution events during Modes 3, or 4, or 5 with dilution flow rates of 25, 60 or 90 GPM. Operator action times for diagnosing an inadvertent dilution varied depending on the dilution flow rate. However, in all cases, action was taken prior to any alarms which would have required a BDMS actuation. These scenarios were run without prior discussion with, or knowledge by, the operating crews.

The above simulator exercises were performed in response to a corrective action document initiated in 1997 (Callaway SOS 97-0459). Addendum 1 to Calculation Number BG-74 summarizes the results of the simulator exercises performed during August-December 1997 to evaluate operator response to dilution events with dilution flow rates ranging from 25 gpm to 90 gpm, as opposed to the maximum dilution flow rate cases (150 gpm) presented in the BDMS LAR per the guidance in SRP 15.4.6. In all 18 of the valid exercises involving approximately 60 different operators (a majority of the present Operations Department staff), the operating crew initiated corrective action long before the loss of shutdown margin would have occurred. The Operations Department staff affirm that they have a very high degree of confidence that operators would be able to mitigate any plausible inadvertent boron dilution accident in the required time used in the reanalysis.

2. The actions that each crew took were in accordance with the operations department off-normal response procedure for loss of shutdown margin, OTO-ZZ-00003, which is entered when SDM is in question and no automatic BDMS actuation has rectified the situation. This procedure results in the isolation of the dilution source and the commencement of RCS reboration. The off-normal procedure has 3 options to choose from, i.e., boration with the RWST, alternate immediate boration through manual valve BGV0177, or boration via safety injection initiation. The preferred method, boration with the RWST, involves operator actions from the control room to effect a manual CCP suction swapover from the VCT to the RWST that are identical to the actions discussed in the BDMS submittal. These operator actions perform the same valve swapovers that would nominally be initiated by the automatic BDMS if it were available.

3. The simulator scenarios are considered bounding since they addressed the loss of shutdown margin prior to an alarm indicating that a boron dilution event was in progress. The times established by these scenarios were utilized by the Licensing and Fuels safety analysis group to supplement FSAR Section 15.4.6 to discuss slow dilution events in Revision OL-11 (5/00) based on FSAR CN 98-062. However, quantified analysis results discussed in the FSAR represent the more limiting, rapid dilution events consistent with the SRP guidance.

CC: <chfuhlage@cal.ameren.com>, <kamills@cal.ameren.com>, <APasswater@ameren.com>, <dshafer@ameren.com>, <GYates@ameren.com>

E-MAIL DATED MARCH 19, 2001

From: "Yates, G Bert" <GYates@ameren.com>
To: "Jack Donohew (E-mail)" <jnd@nrc.gov>
Date: 3/19/01 2:29PM
Subject: BDMS LAR

Jack:

Attached is a copy of OTO-ZZ-00003, Rev. 8. The procedure is rather straightforward on the symptoms and probable causes (sections 2 and 3) that would lead an operator to enter this off-normal procedure. In the specific simulator runs included in licensed operator requalification cycle 97-5 (discussed in our e-mail last Friday, 3/16), the operating crews identified an unexpected/uncontrolled increase in source range counts which led them to enter OTO-ZZ-00003 based on symptom 2.1 and probable cause 3.5. Use of the source range NIS instrumentation for a slow dilution event was discussed on pages 24 and 25 of Appendix A to our BDMS LAR.

We can discuss this more tomorrow if the reviewer(s) require further discussion. We'd rather not have that discussion today based on staff availability. Then again, the above and the attached procedure may address the reviewer questions. Note the attached copy of OTO-ZZ-00003 does not include TCN 00-0574, posted against the procedure (steps 6.1.1, 6.1.2, 6.2, 6.7, and a clarification added to Attachment 1 if excess letdown happens to be in service) for reasons unrelated to the BDMS LAR.

<<ol1207 OTO-ZZ-00003-R008.doc>>

Bert Yates

CC: "Passwater, Alan C" <APasswater@ameren.com>, "Shafer, David E" <DShafer@ameren.com>, "Herrmann, Timothy E." <teherrmann@cal.ameren.com>, "Mills, Keith A." <kamills@cal.ameren.com>, "Fuhlage, Clark H." <chfuhlage@cal.ameren.com>, "Shannon, Patrick C." <pcshannon@cal.ameren.com>

E-MAIL DATED MARCH 21, 2001

From: "Shafer, David E" <DShafer@ameren.com>
To: "'jnd@nrc.gov'" <jnd@nrc.gov>
Date: 3/21/01 9:21AM
Subject: FW: BDMS LAR

Jack, I'll call you in a few minutes...dave

> -----Original Message-----
> From: Yates, G Bert
> Sent: Tuesday, March 20, 2001 11:22 AM
> To: Jack Donohew (E-mail)
> Cc: Passwater, Alan C; Shafer, David E; Mills, Keith A.; Fuhlage, Clark
> H.; Shannon, Patrick C.; Herrmann, Timothy E.
> Subject: BDMS LAR
> Importance: High
>
> Jack:
>
> Dave Shafer relayed a couple more items to me that need answering
> regarding the "Not Used" SRs in LCO 3.3.9 (mark-ups in ULNRC-04400 dated
> 3/2/01).
>
> The basis for SR 3.3.9.2 not being used is discussed on page 2 of the
> transmittal letter with ULNRC-04400 (middle of second page, 2nd full
> paragraph, last sentence). That SR was an artifact of the old boron
> dilution analysis which is being replaced by this LAR; there are no unique
> requirements in the new analysis that must be met only in MODE 5.
>
> SR 3.3.9.5 is not used since the automatic swapover circuitry is being
> disabled. The valves themselves (BGLCV0112B/C and BNLCV0112D/E) are
> stroked-time tested on a quarterly frequency under the Inservice Testing
> Program (IST). As such, there is no need to include another stroke-time
> test in LCO 3.3.9.
>
> Bert Yates
>
>

CC: "Yates, G Bert" <GYates@ameren.com>