Burkhardt, Janet

From: Wang, Alan
Sent: Thursday, June 20, 2013 12:34 PM
To: SEITER, JEFFERY ALAN; Robinson, Christopher
Cc: Burkhardt, Janet
Subject: Grand Gulf Nuclear Station Audit Plan for 18 to 24 Month License Amendment Request (ME9764)
Attachments: Audit PlanFor 6-24.doc

Jeff and Chris,

By letter dated October 2, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No ML12277A080), Entergy Operations, Inc. (the licensee) submitted a license amendment request (LAR) to amend the technical specifications (TS) of Grand Gulf Nuclear Station, Unit 1. The LAR proposes to extend certain 18-month TS surveillance requirement (SR) frequency to 24-months SR frequency to accommodate a 24-month fuel cycle. The NRC staff will perform an audit of the instrumentation and controls aspects of the LAR on June 24, 2013, at the Excel Offices in Bethesda, Maryland. Attached is the propose agenda. We will issue an audit summary and, if necessary, any further request for additional information within 30 days following the audit exit. Attached is the propose agenda. Also as discussed with Jeff Seiter, a call maybe necessary to discuss other aspects of the LAR with other review branches.

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AUDIT PLAN
CHANGES RELATED TO SUPPORT 24-MONTH FUEL CYCLES
ENTERGY OPERATIONS, INC.
GRAND GULF NUCLEAR STATION, UNIT 1
DOCKET NO. 50-416

A) Background

By letter dated October 2, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12277A080), Entergy Operations, Inc. (the licensee) submitted a license amendment request (LAR) to amend the technical specifications (TS) of Grand Gulf Nuclear Station (GNNS), Unit 1. The LAR proposes to extend certain 18-month TS surveillance requirement (SR) frequency to 24-months SR frequency to accommodate a 24-month fuel cycle.

The audit will held on June 24, 2013, at the Excel Office, 11921 Rockville Pike, Suite 100, Bethesda, Maryland.

B) Purpose

The purpose of the audit is to review and evaluate calculations in support of the LAR.

C) Audit Agenda

The NRC staff has reviewed the instrumentation and controls aspects of the licensee's LAR and proposes to audit following information to complete its review:

1. **Regulatory Basis:** LAR Att. 1 (Page 10 of 18) Section 3.1.1, "Non Calibration Changes,"

   LAR Attachment 1 (Page 10 of 18) Section 3.1.1, "Non Calibration Changes," states that the evaluation of the affect on safety (of the proposed change in surveillance frequency) included consideration that some items were tested on a more frequent basis during the operating cycle. In addition, Attachment No. 5 (page 6 of 50) identifies six failures that would have been detected solely periodic performance of the surveillances listed below:

SR 3.3.1.1.11	**Perform CHANNEL FUNCTIONAL TEST.**
SR 3.3.1.1.13	Perform LOGIC SYSTEM FUNCTIONAL TEST.
SR 3.3.2.1.8	Perform CHANNEL FUNCTIONAL TEST.
SR 3.3.3.2.2	Verify each required control circuit and transfer switch is capable of performing the intended functions.
SR 3.3.4.1.4	**Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation.**
SR 3.3.4.2.5	Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation.
SR 3.3.5.1.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.
SR 3.3.5.2.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.
SR 3.3.6.1.7	Perform LOGIC SYSTEM FUNCTIONAL TEST (except for Function 3.3.6.1-1.2.g.
SR 3.3.6.2.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.
SR 3.3.6.3.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.

Enclosure

SR 3.3.6.4.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.
SR 3.3.6.5.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.
SR 3.3.7.1.1	Perform LOGIC SYSTEM FUNCTIONAL TEST.
SR 3.3.8.1.3	Perform LOGIC SYSTEM FUNCTIONAL TEST.
SR 3.3.8.2.3	**Perform a system functional test.**

Scope: For each of the surveillances **bolded** above, please identity all equipment (and the associated equipment function) whose proper operation is confirmed solely by periodic performance of the surveillances listed above.

2. **Regulatory Basis:** LAR Attachment No. 5 (page 8 of 50)

   Attachment No. 5 (page 8 of 50) states that it is acceptable to extent the surveillance test interval because the functions are verified to be operating properly throughout the operating cycle by the performance of the channel checks and channel functional test (as applicable) for each of the surveillances listed below:

SR 3.3.1.1.15	**Verify the RPS RESPONSE TIME is within limits.**
SR 3.3.4.1.6	Verify the EOC-RPT SYSTEM RESPONSE TIME is within limits.
SR 3.3.6.1.8	Verify the ISOLATION SYSTEM RESPONSE TIME for the Main Steam
SR 3.3.6.2.7	**Verify the ISOLATION SYSTEM RESPONSE TIME for air operated Secondary Containment isolation dampers is within limits.**

   Scope: For each of the surveillances **bolded** above, please describe how the channel checks and channel functional test (as applicable) confirm proper response time performance.

3. **Regulatory Basis:** LAR Att. 1 (Page 11 of 18) Section 3.1.1, “Non Calibration Changes,”

   LAR Attachment 1 (Page 11 of 18) Section 3.1.1, “Non Calibration Changes,” essentially states that the evaluation did not impact any assumptions in the licensing basis.

   Scope: For each of the surveillances **bolded** in Questions Nos. 1 & 2 above, please describe the assumptions in the plant licensing basis that were considered.

4. **Regulatory Basis:** LAR Attachment 5 (Page 6 of 50)

   LAR Attachment 5 (Page 6 of 50) references a conclusion reached by the NRC in 1993 for Peach Bottom Atomic Power Station Unit Numbers 2 and 3 surveillance interval extension. Given: (1) that the logic system is implemented in electronic components, (2) that electronic components typically display a “bath tub” shaped mortality rate, and (3) the electronic components are now 20 years older than they were in 1993,

   Scope: please describe the applicability of the underlying reliability study (NEDC-30963P) and associated conclusions to GGNS.

5. **Regulatory Basis:** LAR Attachment 5 (Page 6 of 50)

   LAR Attachment 5 (Page 6 of 50) references a conclusion reached by the NRC in 1993 for Peach Bottom Atomic Power Station Unit Numbers 2 and 3 surveillance interval extension. The underlying reliability study (NEDC-30963P) concluded that plant system reliabilities were dominated by mechanical components. In addition, LAR Attachment 5 (Page 6 of 50) subsequently identified six failures that could only be detected by the associated periodic surveillances and that these failures included mechanical components.

   Scope: Please identify all mechanical components whose failure is only detectable by the functional tests whose surveillance interval is being extended.

6. **Regulatory Basis:** LAR Attachment 5 (Page 32 of 50)

   LAR Attachment 5 (Page 32 of 50) contains the following paragraph:

   > "For the September 26, 2005 issue, there are a total of six failures identified relative to Rosemount Model 1153 transmitters over the review period. All 6 transmitters are in the Reactor Vessel Water Level system. In each case, the transmitters were found outside the procedure acceptance tolerance and were recalibrated to within procedure acceptance tolerance and returned to service. Each identified failure is a random out of tolerance condition and was not repeated during the review period. There were no failures that resulted in the replacement of a transmitter. Recalibration to within procedure acceptance tolerance was the only corrective action required. Of the six identified failures, each involved a different transmitter and there was one failure each in year's 2002 and 2007 and two failures each in years 2005 and 2010. When considering that a total of 44 Rosemount 1153D transmitters in the scope of review were tested over the 5 performance review period for a total of 220 transmitters tested, a total of 6 failures does not represent a significant percentage « 3%) of the total transmitters tested. No time based mechanisms are apparent. Therefore, this failure is unique and any subsequent failure would not result in a significant impact on system/component availability."

   This paragraph is quantitative in that six failures out of 220 trials seems to indicate that the as-found-tolerance (AFT) seems to be set at least at the 95/95 level; however, the quantitative analysis does state how many of the 44 Rosemount 1153D transmitters are in the Reactor Vessel Water Level system. It is statistically unlikely that all six failures identified would be from the same system, unless that system constituted the vast majority of the 44 Rosemount 1153D transmitters.

   Scope: Please state the following:

   (a) The number of the 44 Rosemount 1153D transmitters in the Reactor Vessel Water Level system.
   (b) The number of the 220 transmitter tests that were in the Reactor Vessel Water Level system.
   (c) The quantitative probability that this situation would occur.

(d) Please describe the statistical methods used to arrive at the answer to Question (c) above.

7. **Regulatory Basis:** LAR Attachment 5 (Page 32 of 50)

LAR Attachment 5 (Page 32 of 50) contains the following paragraph:

> "For the May 31, 2007 and November 18, 2005 issues, there are a total of three failures identified relative to Gould/Statham (2 Model PD3218 and 1 Model PG3200) over the review period. Of the three identified failures, each involved a different transmitter and each failure occurred during a different refueling cycle (i.e., one failure in 2005, one in 2007 and one in 2009). In each case, the transmitters were found outside the procedure acceptance tolerance and were recalibrated to within procedure acceptance tolerance and returned to service. No timed-based mechanisms are apparent. Therefore, this failure is unique and any subsequent failure would not result in a significant impact on system/component availability."

This paragraph is qualitative in that raw data similar to that in the preceding paragraph is not included.

Scope: Please state the following:

(a) The failure described on the previous page for the May 31, 2007 and November 18, 2005 issues seems to describe only two failures as opposed to three. Please explain.
(b) The number of the transmitter tests for each Gould/Statham model.
(c) The quantitative probability that the three failures from this probability would occur in the time period, for each model & combined (assuming 95/95 confidence).
(d) Please describe the statistical methods used to arrive at the answer to (c) above.

8. **Regulatory Basis:** LAR Attachment 6 (Engineering Report ECH-NE-08-00015 Rev. 1)

LAR Attachment 6 is Engineering Report ECH-NE-08-00015 Rev. 1. The table of contents of this report identifies an appendix: "Appendix A, Evaluation of the NRC Status Report on the Staff Review of EPRI Technical Report-103335…" This appendix is not in the docketed material.

Scope: Please make the appendix available for the audit.

9. **Regulatory Basis:** LAR Attachment 6 (Engineering Report ECH-NE-08-00015 Rev. 1)

EPRI Technical Report-103335 Revision 1, "Statistical Analysis of Instrumentation Calibration Data," Section 7.2, "Outlier Detection by the Critical Values for T-Test," is said to be based on ANSI/ASTM E178-1989, "Standard Practice for Dealing With Outlying Observations," and describes outlier rejection procedure; however, this methodology is not consistent with the calculation methodology in NUREG-1475 Rev. 1 Section 26.5 (on page 508) and Table T-20 (on page 575) or the ASTM procedure referenced.

Table 2, “Critical Values for t-Test,” and Section 3.6, “Outlier Analysis,” of LAR Attachment 6 (Engineering Report ECH-NE-08-00015 Rev. 1.) are consistent with EPRI Technical Report-103335 Revision 1, Section 7.2. Therefore the procedure is inconsistent with the calculation methodology in NUREG-1475 Rev. 1 Section 26.5 (on page 508) and Table T-20 (on page 575) or the ASTM procedure referenced. In addition JS09 Revision 1 directs the user to EPRI TR-103335 Rev. 1, and therefore must also be addressed.

Scope: Please make the following documents available for the audit:

(1) ANSI/ASTM E178-1989, “Standard Practice for Dealing with Outlying Observations,”
(2) EPRI Technical Report-103335 Revision 1, "Statistical Analysis of Instrumentation Calibration Data," and
(3) NUREG-1475 Rev. 1, “Applying Statistics.”

10. **Regulatory Basis:** LAR Attachment 1, Section 3.1

LAR Attachment 1, Section 3 states, “The revised setpoint calculations were developed in accordance with JS-09, Methodology for the generation of instrument Loop Uncertainty & Setpoint calculations.” This methodology includes the specification for the calculation of as-found tolerance and as-left tolerance; however, Calculation JC-Q1P81-90024 Revision 3 (provided by letter dated June 4, 2013), does not include these calculations.

Scope: Please be prepared to explain why these calculations were not included..

11. **Regulatory Basis:** LAR Supplement Dated June 4, 2013

LAR Supplement dated June 4, 2013 Attachment 1, response to RAI Question No. 1 states that the calibration procedures use “Allowable Minimum and Maximum values.”

Scope: Please be prepared to show how the “Allowable Minimum and Maximum values,” are calculated and used.

12. **Regulatory Basis:** LAR Supplement Dated June 4, 2013

LAR Supplement dated June 4, 2013, docketed two calculations (1) a Drift Study - JC-Q1111-09002 Rev. 0, and (2) a Setpoint Calculation – JC-Q1P81-90027 Rev. 2. The drift study determined that there was a significant bias in the drift.

Scope: Please be prepared to show how the bias is incorporated into the setpoint calculation.

D) Necessary Material:

The NRC staff requests that copies of all referenced material (i.e., data, calculations and topical reports) to support the audit be made available in paper or electronic format.

E) Team Assignments:

Norbert Carte and Subinoy Mazumdar to jointly perform all audit activities.

F) Logistics:

The NRC staff proposes that the audit start with an entrance briefing, which will include introductions, general orientation, and agenda review. We expect that the entrance briefing can start at approximately 9 AM. The audit is scheduled to end with an exit briefing at approximately 4:00 PM on June 24, 2013.

G) Deliverables:

The licensee will provide a schedule for any additional information needed as result of the audit. An audit report will be issued 60 days after the completion of the audit, documenting the findings of the audit.

H) Reference:

Letter dated October 2, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12277A080), Entergy Operations, Inc.