NRR-PMDAPEm Resource

From:	Galvin, Dennis
Sent:	Friday, October 20, 2017 3:54 PM
To:	Pilo, Tony
Cc:	Singh, Gursharan
Subject:	Robinson RAIs – Change Technical Specification Surveillance Requirement Frequencies to Support 24-Month Fuel Cycles (CAC No. MF9544; EPID: L-2017-LLA-0206)
Attachments:	Robinson LAR - 24-Month Fuel Cycle - Draft RAI Letter 2 2017-10-20 MF9544 L-2017-LLA-0206.pdf

Mr. Pilo,

By letter dated April 3, 2017, as supplemented by letters dated April 3, 2017; May 2, 2017; and September 28, 2017 (Agencywide Documents Access and Management System Accession Nos. ML17093A787, ML17093A796, ML17122A223, and ML17272A015); Duke Energy Progress, LLC (the licensee) submitted a license amendment request (LAR) for H. B. Robinson Steam Electric Plant Unit No. 2. The proposed amendment would revise certain Technical Specifications (TS) Surveillance Requirements (SRs) and administrative controls program frequencies from 18 months to 24 months to support 24-month fuel cycle operations.

To complete its review, the NRC staff has prepared the attached requests for additional information (RAIs) in DRAFT form. The LAR divided the proposed TS changes into the following two categories: (1) changes to surveillance frequencies not involving channel calibrations, identified as “Non-Calibration Changes,” and (2) changes to surveillance frequencies involving channel calibrations, identified as “Channel Calibration Changes.” The NRC staff issued RAIs addressing TS changes for the first category; i.e., non-calibration changes, on August 31, 2017. The licensee submitted its responses to the first set of RAIs on September 28, 2017 (ADAMS Accession Nos. ML17248A018 and ML17272A015, respectively). These draft RAIs address TS changes for the second category; i.e., channel calibration changes. The staff notes that the licensee did not request an implementation timeframe in the LAR. It is recommended that the licensee identify its preferred implementation timeframe as one will be included in the amendment.

Please submit your response to these RAIs within 30 days of this email. If you need a clarification call for the attached draft RAIs, or if you need to change the due date for the RAI responses, please contact me at (301) 415-6256.

Respectfully,

Dennis Galvin
Project Manager
U.S Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Division of Operating Reactor Licensing
Licensing Project Branch 2-2
301-415-6256

Docket No. 50-261

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REQUEST FOR ADDITIONAL INFORMATION

LICENSE AMENDMENT REQUEST REGARDING TECHNICAL SPECIFICATION

SURVEILLANCE REQUIREMENT FREQUENCIES

TO SUPPORT 24-MONTH FUEL CYCLES

DUKE ENERGY PROGRESS, LLC

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

DOCKET NO. 50-261

CAC NO. MF9544; EPID L-2017-LLA-0206

By letter dated April 3, 2017, as supplemented by letters dated April 3, 2017, May 2, 2017, and September 28, 2017 (Agencywide Documents Access and Management System Accession Nos. ML17093A787, ML17093A796, ML17122A223, and ML17272A015), Duke Energy Progress, LLC (the licensee) submitted a license amendment request (LAR) for H. B. Robinson Steam Electric Plant Unit No. 2 (RNP). The proposed amendment would revise certain Technical Specification (TS) Surveillance Requirements (SRs) and administrative controls program frequencies from 18 months to 24 months to support 24-month fuel cycle operations. The questions below are based on the guidance in Generic Letter (GL) 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991 (ADAMS Accession No. ML031140501) and 10 CFR 50.36 (c)(3).

Requests EICB-1 to EICB-5 involve material in Section 4.2, “Channel Calibration Changes,” of the LAR. Requests EICB-6 to EICB-16 involve material in LAR Attachment 6, “Review of Historical Surveillance Records for Instrumentation.” Requests EICB-17 to EICB-18 involve material in LAR Attachment 8, “Non-Calibration Surveillance Failure Analysis.” Request EICB-19 involves the supplement dated April 3, 2017.

EICB-1:

Step 1 of GL 91-04 states that the licensee should confirm that instrument drift as determined by as-found and as-left calibration data from surveillance and maintenance records has not, except on rare occasions, exceeded acceptable limits for a calibration interval.

In the evaluation of Step 1 of GL 91-04, the licensee defined how the terms “except on rare occasions” and “exceeded acceptable limits” are used in the LAR. The licensee states, “equipment associated with uncertainty/setpoint calculations will use the calculated as-found tolerances as the acceptable limits,” in the LAR. If the as-found value is found to exceed the as-found tolerance, it is likely due to excessive drift. The licensee added the proviso “as-found values, which are found to be out-of-tolerance in a conservative direction with respect to Allowable Values, will not be considered to exceed acceptable limits.” The term “except on rare occasions” is applicable if instruments were found to exceed acceptable limits on two consecutive occurrences. If as a result of failures on more than rare occasions the instrument was fixed or replaced, and the acceptable limits are no longer exceeded, then the issue was no longer considered to be a factor

in the determination of an extended calibration interval. The licensee is requested to respond to the following clarification questions:

a. Acceptance of two consecutive failures is dependent on the number of readings being evaluated for the subject instrument. Please state the minimum number of acceptable readings for using this criteria as well as the basis. Also please explain how the stated criteria will meet the 95/95 criteria (i.e., 95% probability with 95% confidence) of Regulatory Guide (RG) 1.105, "Setpoints for Safety-Related Instrumentation." What additional measures will be taken to track the performance of instruments with two consecutive failures if the number of readings is insufficient?

b. The LAR states that if the problem was fixed after repair or replacement of the instrument and acceptable limits were no longer exceeded, the issue was no longer considered to be a factor in the determination to extend the calibration interval. If the instrument is repaired or replaced successfully how many good successive readings are required before the instrument is considered acceptable? A single good or bad reading after repair/replacement does not determine the trend or the reliability of data to meet the guidance of GL 91-04. For example, SR 3.3.4.3 Item 3.a – RCS Hot Leg Temperature indicator TI-413B was found to have a significant drift after replacement, which was attributed to the settling of the indicator.

   What is the licensee's plan to ensure a successful trend for acceptance of repaired and/or replaced instruments? Please state the basis for your response.

c. Conservative out-of-tolerance readings may not impair the equipment functionality; however, if the out-of-tolerance value is excessive then it indicates the instrument may not be functioning per its specified limits, and its functionality should be confirmed. In addition, two consecutive failures in either direction may indicate potential problems with the instrument reliability. How will such out-of-tolerance readings be evaluated to confirm that the instrument is functioning within its specified limits?

EICB-2:

Step 2 of GL 91-04 states that the licensee should confirm that the values of drift for each instrument type (make, model and range) and application have been determined with a high probability and a high degree of confidence. Step 2 of GL 91-04 further states that the licensee should provide a summary of the methodology and assumptions used to determine the rate of instrument drift with time based upon historical plant calibration data.

In the evaluation of Step 2 of GL 91-04, the LAR states that instruments that are calibrated every 18 months, but are also subject to a SR Channel Operability Test (COT) and SR Channel Check, were not included in the drift analysis. The NRC staff notes that the COT does not determine the instrument drift because the transmitter calibration is not included in the COT. In addition, if the COT tolerances are greater than the calibration tolerances then the loop drift could be excessive. Why haven't instruments that require periodic calibration testing been included in the drift evaluation to assure that they are not drifting excessively? Are the COT tolerances greater than or less than the calibration tolerances?

EICB-3:

Step 3 of GL 91-04 states that the licensee should confirm that the magnitude of instrument drift has been determined with a high probability and a high degree of confidence for a bounding

calibration interval of 30 months for each instrument type (make, model and range) and [each instrument] application [for instruments] that perform a safety function.

In order to evaluate the high probability and high confidence in the determination of the bounding calibration interval, the licensee is requested to provide or make available for audit the results of the evaluation of data for all loops. The data should include but not be limited to the number of data points, drift for each data point, mean value, standard deviation, and permitted as-found drift.

EICB-4:

Step 5 of GL 91-04 states that the licensee should, "confirm that the projected instrument errors caused by drift are acceptable for control of plant parameters to affect a safe shutdown with the associated instrumentation." The NRC staff has several questions regarding the licensee's evaluation of Step 5.

a. It is not clear what subset of the safe shutdown instrumentation is addressed by the licensee in the Step 5 evaluation. Please confirm that the TS functions listed from items 1.a through 4.c are the only functions required to achieve safe shutdown and have SRs whose surveillance frequencies are being changed. If there are any missing functions identify them and explain how they conform to the Step 5 evaluation.

b. The licensee states that a separate drift analysis is not performed for the Remote Shutdown instruments based upon the design of the Remote Shutdown instruments and equipment history. Please explain why a separate drift analysis has not been conducted for the Remote Shutdown instruments or clarify if the Remote Shutdown instruments have been addressed under a separate drift analysis.

c. The licensee states that only calculations RNP-I/INST-1064 and RNP-I/INST-1063 for Functions 3.a and 3.b have been updated. Have the calculations pertaining to the remaining safe shutdown functions been updated? If not, justify why the other calculations related to the same extension have not been updated.

d. The licensee states that no accuracy requirements exist for the functions listed for Remote Shutdown. Please justify why no accuracy requirements apply to remote shutdown instruments. The licensee has further stated that existing calibration tolerances will be used. Please explain the basis for accepting the existing tolerances.

EICB-5:

Step 6 of GL 91-04 states that the licensee should, "confirm that all conditions and assumptions of the setpoint and safety analyses have been checked and are appropriately reflected in the acceptance criteria of plant surveillance procedures for channel checks, channel functional tests and channel calibrations."

As described in the subsection, "EST-047/WCAP-11889/SR 3.4.1.3," of the licensee's evaluation of Step 6, WCAP-11889, "RTD [Resistance Temperature Detector] Bypass Elimination Licensing Report for H. B. Robinson Unit 2," supported the installation of a then new reactor coolant temperature measurement system. WCAP-11889 also included the licensee's determination of the reactor coolant system (RCS) flow uncertainty; i.e., 2.6%, with the new reactor coolant temperature measurement system. The discussion in the LAR under

Step 6 provides the licensee's justification for retaining the RCS flow uncertainty of 2.6% while extending the fuel cycle from 18 to 24-months. The licensee in part states that neither the methodology nor the basis for the uncertainty values were provided to RNP as part of the WCAP [WCAP-11889]; therefore, RNP typically evaluates the impact to the WCAP by qualitative assessment. Please briefly describe the qualitative assessment of the impact to the WCAP that was performed.

In another paragraph the licensee states that "The values used to calculate TLUIND are obtained from RNP-I/INST-1128 which means they will include drift considering a 30-month calibration interval." Please explain the rationale for this statement. Has this calculation been revised to reflect the 24-month fuel cycle (i.e., 30-month drift)? If not, please justify the statement. In addition, please state if the drift numbers used in the calculation (1) included the drift of all flow, temperature, and other instruments in the loop and (2) were recalculated based on 24-month fuel cycle.

EICB-6:

SR 3.3.1.10 Item 9.a and 9.b – Reactor Coolant Flow, Low

The licensee states that differential pressure transmitters in 2007, FT-436, and in 2010, FT-416, were found out-of-tolerance but were determined to be functional for performing their safety function. The statement, "found out-of-tolerance but determined to be functional" is not clear because it does not state if the out-of-tolerance exceeded the allowed tolerance limits (as-found tolerance) or not. Please clarify why these out-of-tolerance instances are acceptable. The licensee states that FT-415 was replaced in 2012 and the replaced transmitter was found out-of-tolerance (high) after that. How many good successive data points are available after the transmitter was replaced given that the very first calibration was out-of-tolerance. Please explain why the SR extension for FT-415 is justified given the very first surveillance was out-of-tolerance.

EICB-7:

SR 3.3.1.10 Item 12 – RCP Underfrequency

The licensee states that there were two failures of relay 811/1 after replacement and one failure of relay 811/2 after it was replaced in 2007. Please explain if failure means exceeded the "as-found tolerance" per the licensee acceptance criteria or something else. If some other acceptance criteria is used then please describe and justify the use of the alternate acceptance criteria. In addition, please describe what steps are taken by plant operating procedures to ensure that the relay failures are adequately evaluated and necessary steps are taken to ensure that the relays continue to operate in an acceptable manner without jeopardizing future safe operation of these relays.

EICB-8:

SR 3.3.8.4 Item 3 – Auxiliary Feedwater Start - E1/E2 Loss of Voltage

The licensee states that, "In 2010, both relays of the E2 bus were found out-of-tolerance high (time setting); however, they are found at approximately 0.81 seconds which is below the Surveillance Requirement specified time of ≤ 1 second. Since the SR specified value was met there was no loss of safety function." Please state the basis for and the value of the tolerance that was exceeded.

EICB-9:

SR 3.4.15.5 – Containment Fan Cooler Condensate Flow Rate Monitor

The licensee states that in 2005 LT-702 and LT-703 were found out-of-tolerance and all four level transmitters were found out-of-tolerance in 2010. More failures were noted in 2008, 2012, 2013, and 2015. In each case, the licensee states that the transmitters were still capable of responding to an increase in level. The licensee is requested to clarify why the capability of transmitters to respond to a change in level is acceptable when the out-of-tolerance readings do not meet the guidance of GL 91-04 and the licensee acceptance criteria for surveillance extension? Further, the licensee states that there is no TS setpoint but mentions that the transmitters were out of setpoint tolerance. What is the allowed out-of-tolerance and what is the basis. Please state the actions that have been taken to correct these out-of-tolerances and to justify why this SR extension should be allowed.

EICB-10:

SR 3.3.3.2 Item 3 – RCS Hot Leg Temperature
SR 3.3.4.3 Item 3.a – RCS Hot Leg Temperature

The licensee lists instruments for Post Accident Monitoring (SR 3.3.3.2) and Remote Shutdown (SR 3.3.4.3) for monitoring RCS Hot Leg Temperature. A comparison of the lists show one shared RTD (TE-413-1) and two shared associated rack equipment (TM-413, TY-413). However, the licensee discusses an out-of-tolerance instrument (i.e., TI-413A) that is not included on either list. Please correct the lists of applicable instruments and update the discussion of out-of-tolerances accordingly.

EICB-11:

SR 3.3.3.2 Item 7 – Containment Sump Level, Wide Range
SR 3.4.15.3 Containment Sump Monitor

Two level transmitters (LT-801, LT-802) and the associated indication (LI-801, LI-802) provide this function.

The licensee states that the level transmitters are not calibrated based on the design of the components. Since the components are not calibrated, explain the basis for the calibration extension. The stated explanation should be consistent with GL-91-04, step 3.

EICB-12:

SR 3.3.3.2 Item 14 – Condensate Storage Level

The licensee states that two transmitters, LT-1454A and LT-1454B, and associated indicators provide this function. The licensee states that both transmitters were replaced based on work orders issued after a December 2012 failure. The licensee states that there is no data or history of operation since the transmitters were replaced. The request for SR extension to 24 months does not meet the guidance of GL 91-04 due to a lack of successful data. Please provide a justification for the requested extension.

EICB-13:

SR 3.3.3.2 Item 19 – Aux Feedwater Flow

The LAR identifies four occasions where pressure transmitters for this SR were found out-of-tolerance but then states that, "all of the calibration points were found within the calculated tolerance; therefore, this is not considered an issue for this evaluation."

Please define what is considered as "out-of-tolerance" in this case. Is it as-found tolerance or some other tolerance? The licensee's stated acceptance criteria is "not exceeding the as-found tolerance". Please justify the out-of-tolerance values if they exceeded the allowed out-of-tolerance values.

EICB-14:

SR 3.3.4.3 Item 2.a – Pressurizer Pressure

The LAR identifies only one instrument with two indicators for this SR. Therefore, the number of readings will be limited. Since the LAR identifies that there were two readings that exceeded the tolerances at all points it is not clear how the extension is justified. Provide a justification of the extension with pertinent data; i.e., total number of indicator readings, all failures during the review period, and how the data meets the high probability and high confidence criteria per Step 3 of GL 91-04.

EICB-15:

SR 3.3.4.3 Item 3.d – SG Pressure

This section discusses three pressure indicator/controllers (PICs) associated with SR 3.3.4.3 Item 3.d. The last sentence in the first paragraph talks about "steam line pressure pointers". This seems to be typographical error. Please correct it as appropriate, or explain what is meant by pressure points.

The second and third paragraphs describe the failure(s) in 2005 of the PICs. These paragraphs are unclear as they can be read that there were three PIC failures based on the work order notes or there was one PIC failure based on the calibration data sheets. Clarify the actual failure(s) and explain how the failure(s) in 2005 meet(s) the guidance of rare occurrence? Also provide the calibration span of PIC-477.

EICB-16:

SR 3.3.4.3 Item 3.e – SG Level, Wide Range

The LAR indicates that a work order was completed in 2015 for calibration of indication components but calibration data was not provided. The licensee then states that the calibrations meet acceptable limits.

The licensee is requested to explain how a satisfactory completion conclusion was determined without documentation. Please explain the rationale for the determination. The rationale should include positive data and or information.

EICB-17:

Table 3.3.1-1, Function 16: Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)
SR 3.3.1.14 Perform TADOT. Note: Verification of setpoint is not required.

Table 3.3.2-1, Function 1.b: Safety Injection – Automatic Actuation Logic and Actuation Relays
Table 3.3.2-1, Function 3.a.2: Containment Isolation - Phase A Isolation - Automatic Actuation Logic and Actuation Relays
Table 3.3.2-1, Function 5.a: Feedwater Isolation - Automatic Actuation Logic and Actuation Relays
SR 3.3.2.3 Perform MASTER RELAY TEST.
SR 3.3.2.5 Perform SLAVE RELAY TEST.

Table 3.3.2-1, Function 2.b: Containment Spray – Automatic Actuation Logic and Actuation Relays
Table 3.3.2-1, Function 3.b.2: Containment Isolation - Phase B Isolation - Automatic Actuation Logic and Actuation Relays
Table 3.3.2-1, Function 4.b: Steam Line Isolation - Automatic Actuation Logic and Actuation Relays
SR 3.3.2.3 Perform MASTER RELAY TEST.
SR 3.3.2.5 Perform SLAVE RELAY TEST.

Table 3.3.2-1, Function 1.a: Safety Injection – Manual Initiation
Table 3.3.2-1, Function 3.a.1: Containment Isolation – Phase A Isolation - Manual Initiation
SR 3.3.2.6 Perform TADOT. Note: Verification of setpoint is not required.

TS 3.3.3 Post Accident Monitoring (PAM) Instrumentation

Table 3.3.3-1, Function 9: Containment Isolation Valve Position

SR 3.3.3.3 Perform TADOT. Note: Verification of setpoint is not required.

In LAR Attachment 8, the licensee provides an evaluation that is applicable to a large number of SRs, several of which are listed above. These SRs were the subject of “General RAI-1” issued by the NRC staff on August 31, 2017 and responded to the licensee on September 28, 2017 (ADAMS Accession Nos. ML17248A018 and ML17272A015, respectively).

In its evaluation of the SRs in LAR Attachment 8, the licensee identified three unique failures, two of which were related to failure of K-6 relays in battery chargers. These two failures were resolved by replacing the battery chargers A-1 and B-1 in 2013. However, the LAR does not state whether or not K-6 relays are used in the replacement battery chargers. Confirm the absence of K-6 relays in the replacement battery chargers. If the relays are used in the new battery chargers, explain why failure of a K-6 relay will not result in failures similar to those previously experienced.

EICB-18:

Bases Table B 3.3.4-1, Function 3.c: Decay Heat Removal via Steam Generators (SGs) - Motor Driven AFW Pump Controls

Bases Table B 3.3.4-1, Function 5.a: Support Functions - Component Cooling Water Pump Controls
Bases Table B 3.3.4-1, Function 5.b: Support Functions - Service Water Pump Controls

SR 3.3.4.2 Verify each required control circuit and transfer switch is capable of performing the intended function.

In LAR Attachment 8, the licensee identifies five failure in the surveillance history for these functions and the SR. Of the five failures one failure was event driven. The licensee states that the event driven failure was addressed by replacement of relay 24-1-DBS prior to the refueling outage and by subsequently fixing the incorrect wiring of the relay. Therefore, this failure will have no impact on an extension to a 24 month surveillance interval. The licensee states that the other four (4) failures would not have impacted the safety function. Please describe the type of failures and the reason why they would not have impacted the safety function.

EICB-19:

By letter dated September 16, 2016 (ADAMS Accession No. ML16260A246), the licensee submitted its original request to revise certain TS SRs to support a 24-month fuel cycle. By letter dated November 10, 2016 (ADAMS Accession No. ML16315A242), the licensee requested to withdraw the application from NRC review. By letter dated November 21, 2016 (ADAMS Accession No. ML16295A060), the NRC staff acknowledged the request to withdraw the application and identified three topics to be addressed should the licensee resubmit the application. The third request involved the submittal of a representative instrument calculation to support the NRC staff review identified in Branch Technical Position (BTP) 7-12, Revision 6, "Guidance on Establishing and Maintaining Instrument Setpoints" of the Standard Review Plan of "NUREG-0800 "Review of Safety Analysis Reports for Nuclear Power Plants," dated August 2016 (ADAMS Accession No. ML16019A200). BTP 7-12 describes that the setpoint analysis methodology and assumptions should be reviewed by the NRC staff to confirm that an acceptable analysis method is used and that the analysis parameters and assumptions are consistent with the safety analysis, system design basis, technical specifications, plant design, and expected maintenance practices. The NRC staff requires this information as a basis to confirm with reasonable assurance that the TS setpoints, as a result of the SR changing from 18 to 24 months, continue to meet the guidance of RG 1.105 and are in compliance with 10 CFR 50.36(c). The NRC staff stated that as an alternate, a summary of the calculation, which documents the methodology, key assumptions, instrumentation data, and results in the calculation package, may be acceptable if the full calculation is available for subsequent audit.

In response to the above the request, the licensee on April 3, 2017 submitted (ADAMS Accession No. ML17093A796) a representative calculation. The NRC staff has reviewed the calculation and determined that it does not fully document the setpoint methodology but references Robinson procedure ECR-NGGC-0153, “Engineering Instrument Setpoints,” Revision 12. Since the setpoint methodology was not provided, the NRC staff is unable to determine compliance to GL 91-04, Step 4 with regard to ISA- A67-04, "Setpoints for Nuclear Safety-Related Instrumentation Used in Nuclear Power Plants," and RG 1.105. Please submit the setpoint methodology used to evaluate setpoints associated with the proposed 24-month fuel cycle.