NRR-PMDAPEm Resource

From: Barillas, Martha
Sent: Wednesday, March 11, 2015 1:22 PM
To: Caves, John
Cc: Helton, Shana
Subject: Harris LOOP UV Primary Sepoints LAR draft RAI (MF4294)
Attachments: SECOND DRAFT RAI HARRIS LOOP UV LAR MF4294.docx

John,

Attached are draft follow up RAIs regarding your responses to the RAIs for the Shearon Harris Technical Specifications Loss of Offsite Power 6.9kV Emergency Undervoltage Primary Setpoints License Amendment Request, dated January 30, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15030A358).

Please let me know by Friday 03/13/2015, if you need a clarification call with the NRC staff to discuss these draft RAIs.

The staff has conducted a Sensitive Unclassified Non-Safeguards Information (SUNSI) review and determined that the questions do not contain SUNSI.
Please let me know if you do not agree with the staff determination. If so, please identify the sensitive information in the attached document within 5 working days.

We request an RAI response within 30 days. If you do not believe you can meet this date, please be prepared to propose a response date during our clarification call.

Respectfully,

Martha Barillas
Project Manager
Shearon Harris & H. B. Robinson
NRR/DORL/Licensing Branch II-2
US Nuclear Regulatory Commission
301-415-2760

Hearing Identifier: NRR_PMDA
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Mail Envelope Properties (Martha.Barillas@nrc.gov20150311132200)

Subject: Harris LOOP UV Primary Sepoints LAR draft RAI (MF4294)
Sent Date: 3/11/2015 1:22:26 PM
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From: Barillas, Martha

Created By: Martha.Barillas@nrc.gov

Recipients:
"Helton, Shana" <Shana.Helton@nrc.gov>
Tracking Status: None
"Caves, John" <John.Caves@duke-energy.com>
Tracking Status: None

Post Office:

Files	**Size**	**Date & Time**
MESSAGE	1162	3/11/2015 1:22:00 PM
SECOND DRAFT RAI HARRIS LOOP UV LAR MF4294.docx	28434	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

SECOND DRAFT REQUEST FOR ADDITIONAL INFORMATION
DUKE ENERGY PROGRESS, INC.
SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-400

EICB DRAFT RAI 2

10 CFR 50.36(c)(1)(ii)(A) states, "Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded. If, during operation, it is determined that the automatic safety system does not function as required, the licensee shall take appropriate action, which may include shutting down the reactor."

Additionally, 10 CFR 50.36(c)(3) states, "Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

General Design Criterion 13, "Instrumentation and Control," of Appendix A to 10 CFR Part 50 requires that instrumentation be provided to monitor variables and systems and that controls be provided to maintain these variables and systems within prescribed operating ranges.

General Design Criteria 20, "Protection System Functions," of Appendix A to 10 CFR Part 50 requires that the protection system be designed to initiate the operation of appropriate systems to ensure that specified acceptable fuel design limits are not exceeded.

The licensee calculated the maximum pickup of the Primary Undervoltage relay. As per the vendor's manual, the pickup voltage of the Primary Undervoltage relay is 110% or less of the dropout setpoint. With this condition, the licensee stated the maximum pickup of the Primary Undervoltage relay can be as high as 105.23V. This was calculated by multiplying the Maximum As Left Tolerance (ALT) by a factor of 1.1 (110%) and adding the Total Loop Uncertainty (TLU).

The NRC staff notes that including drift by using the As Found Tolerance (AFT) value to calculate the maximum dropout for the primary relay would result in a dropout occurring at 106.519V, which is also less than the minimum secondary level Degraded Voltage actuation level of 106.73V. The NRC staff noted using the AFT value for calculating the maximum dropout value yields a higher voltage than using the ALT value. Please explain the reason for using the ALT instead of the AFT for determining the maximum reset voltage for the Primary Undervoltage Relay. Please confirm adequate separation between the settings of the undervoltage and degraded voltage relays.

DRAFT

EEEB DRAFT RAI 2

General Design Criterion 17 states that provisions shall be included to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies.

1. The staff finds that the methodology considered by the licensee to calculate Analytical Voltage Values of Loss of Voltage (LOV) relay has resulted in Lower Analytical Voltage value of 5279V (76.5%@6900V) and Upper Analytical Voltage value of 5773V (83.7%@6900V), with a nominal voltage setpoint of 5526V (80.0%@6900V). The staff finds that these voltage values are high which can result in unnecessary separation of safety-related buses from offsite power on transient transmission faults. Please confirm that:

   (a) The lower analytical voltage limit for LOV relay is such that none of the safety-related, normally running motors would stall when subjected to this voltage.

   (b) The upper analytical voltage limit for LOV relay is such that the minimum expected voltage during LOCA start of all safety related loads remains above this voltage.

2. Please confirm that a momentary voltage dip lasting to clear a fault, lightning strike, or switching transient in the grid does not cause spurious separation of safety buses from offsite power. In addition, please confirm that the proposed LOV settings do not increase loss of offsite power frequency.

3. In the calculation No. 0054-JRG attached to LAR, the licensee calculated a maximum pickup/reset value of LOV as high as 105.23V. The licensee stated that a pickup value of 105.23V is acceptable because it is less than the minimum Degraded Voltage Relay (DVR) dropout setting of 106.73V.

   The staff finds the pickup (reset) voltage value as 105.23V@120V = 87.7% very high which does not provide an adequate margin from the degraded voltage relay dropout setting of 106.73V@120V = 88.9%. The staff considers that the Analytical and Reset Voltage Values of LOV relay should be lower than the minimum voltage calculated at the 6.9 kV safety-related buses during starting of Loss of Coolant Accident (LOCA) sequencing loads any time after the safety injection signal based on the minimum switchyard voltage (after the unit trip). Please provide a curve showing the minimum voltages at the 6.9 kV safety-related buses during 55 seconds of starting of LOCA loads after the safety injection signal based on the minimum switchyard voltage. Super-impose on this curve, the analytical and reset voltage values of LOV relay settings to confirm that adequate margin exists so that the motors would not trip out by the LOV relay during LOCA loads sequencing.

DRAFT