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U. S. Nuclear Regulatory Commission
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Dresden Nuclear Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249

Quad Cities Nuclear Power Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Subject: Response to Second NRC Request for Additional Information Concerning Request for License Amendment to Revise Turbine Condenser Vacuum - Low Scram Instrumentation Function

References:

1. Letter from P. R. Simpson (Exelon Generation Company, LLC) to U. S. NRC, "Request for License Amendment to Revise Turbine Condenser Vacuum - Low Scram Instrumentation Function," dated August 1, 2007

2. Letter from J. S. Wiebe (U. S. NRC) to C. G. Pardee (Exelon Generation Company, LLC), "Dresden Nuclear Power Station, Units 2 and 3, and Quad Cities Nuclear Power Station, Units 1 and 2 - Request for Additional Information Related to Turbine Condenser Vacuum - Low Scram Setpoint Change (TAC Nos. MD6250, MD6251, MD6252 and MD6253)," dated January 30, 2008

3. Letter from J. L. Hansen (Exelon Generation Company, LLC) to U. S. NRC, "Response to Request for Additional Information Concerning Request for License Amendment to Revise Turbine Condenser Vacuum - Low Scram Instrumentation Function," dated February 26, 2008

4. Letter from J. S. Wiebe (U. S. NRC) to C. G. Pardee (Exelon Generation Company, LLC), "Dresden Nuclear Power Station, Units 2 and 3, and Quad Cities Nuclear Power Station, Units 1 and 2 - Second Request for Additional Information Related to Turbine Condenser Vacuum - Low Scram Setpoint Change (TAC Nos. MD6250, MD6251, MD6252 and MD6253)," dated April 18, 2008

In Reference 1, Exelon Generation Company, LLC (EGC) submitted a request to amend Appendix A, "Technical Specifications," of Facility Operating License Nos. DPR-19, DPR-25, DPR-29, and DPR-30 for Dresden Nuclear Power Station (DNPS), Units 2 and 3, and Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2, respectively.

In Reference 2, the NRC provided a request for additional information (RAI) related to the proposed license amendment. This RAI referenced draft questions that were provided to EGC in an e-mail from J. S. Wiebe to J. L. Schrage on December 4, 2007. EGC provided a response to the RAI in Reference 3.

Subsequent to EGC's submittal of the Reference 3 RAI Response, the NRC requested additional clarification in an e-mail from J. S. Wiebe to J. L. Schrage on March 17, 2008. The additional clarification request was also discussed in a teleconference between the NRC and EGC on March 18, 2008, and formally transmitted to EGC in Reference 4. In response to this additional request, EGC is providing the information in the Attachment to this letter.

There are no regulatory commitments contained within this letter.

If you have any questions concerning this letter, please contact Mr. John L. Schrage at (630) 657-2821.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 1st day of May 2008.

Respectfully,

Jeffrey L. Hansen
Manager - Licensing

Attachment: EGC Response to Second Request for Additional Information, License Amendment Request, Revise the Turbine Condenser Vacuum - Low Scram Instrumentation Function Allowable Value and Surveillance Test Intervals

Attachment
EGC Response to Second Request for Additional Information, License Amendment Request, Revise the Turbine Condenser Vacuum - Low Scram Instrumentation Function Allowable Value and Surveillance Test Intervals

NRC RAI Question 1

In response to NRC RAI Question 1.d, Exelon responded as follows for the As-Found setpoint:

> "ER-AA-520 also establishes the required actions when an As-Found instrument setpoint exceeds the AV, as well as when an As-Found setpoint is within the AV, but exceeds the Expanded Tolerance (ET):
>
> > If an As-Found instrument setpoint exceeds the AV, the instrument technician will enter the condition into the CAP by initiating a Condition Report (CR), and will notify the operating Shift Manager that the instrument is potentially inoperable. The operating Shift Manager (SM) will utilize LS-AA-120 to initially screen the condition, including the determination of operability. The SM will also initiate a Work Request (WR) to evaluate and repair/replace the instrument, prior to resetting the instrument to within a setting tolerance (ST).
> >
> > If an As-Found instrument setpoint is within the AV, but exceeds the ET, the instrument technician will reset the instrument to within the ST, and enter the condition into the corrective action program by initiating a CR and notify the operating SM that the instrument is out-of-tolerance (OOT).
> >
> > If an instrument cannot be reset to within the ST during calibration, then the instrument technician will initiate a CR to document the information and the instrument will be repaired/replaced."

The response is not consistent with the approach presented in Regulatory Issue Summary (RIS) 2006-17. RIS 2006-17 states the following:

> "If the as-found TSP exceeds the AV in TSs the channel is inoperable and the associated action requirements are followed. If the change in the measured TSP exceeds the predefined limits but the measured TSP is conservative with respect to the AV, and the licensee determines during the surveillance that the instrument channel is functioning as expected and can reset the channel to within the setting tolerance (amount by which as-left setting value is permitted to differ from NSP) of the NSP, then the licensee may restore the channel to service and the condition is entered into the licensee's corrective action program for further evaluation. However, if during the surveillance the change in the measured TSP exceeds the predefined limits and the licensee cannot determine that the instrument channel is functioning as required, then the instrument is declared inoperable and the associated TS actions are followed. It is NRC staff's position that verifying that the as-found TSP is within the acceptance band limits during test or calibration is part of the determination that an instrument is functioning as required."

Per RIS 2006-17, if the TSP exceeds the allowable value AV then the channel is to be declared inoperable and the associated action requirements are to be followed. EGC calls it potentially inoperable with the Shift Manager to screen the condition for inoperability. Justify this deviation from RIS 2006-17.

EGC has further stated that "If an instrument cannot be reset to within the ST during calibration, then the instrument technician will initiate a CR to document the information and the instrument will be repaired/replaced." Please confirm that the instrument is declared inoperable at this stage and corrective action is initiated per the guidance of RIS 2006-17.

CLARIFICATION

Describe the Exelon procedural requirements to ensure the licensed Senior Reactor Operator will declare an instrument channel inoperable if the TSP exceeds the AV.

Exelon Generation Company, LLC (EGC) Response

The requirements of ER-AA-520, "Instrument Performance Trending," do not represent a deviation from the guidance of RIS 2006-17. The "potential operability" status in the procedure refers to, and is established by the Instrumentation and Control (I&C) technician and the technician's supervisor as a "temporary hold" on the calibration procedure, pending an operability determination by the Shift Manager. Neither the I&C Technician, nor his supervisor can determine operability of the instrument. Operations Shift Management (i.e., a Senior Reactor Operator) has sole responsibility for operability determinations.

From a practical, in-field perspective, this "temporary hold" is typically implemented in the "Limitations and Actions" section of instrument surveillance procedures:

> "During performance of surveillance, immediately notify IM Supervisor **AND** Operations Shift Supervisor of any instrument/equipment found to exceed Technical Specifications Allowable Value **OR** found to be inoperable/intermittent. Request Operations Shift Supervisor determine **IF** Limiting Condition for Operation has been entered."

The requirement to notify Operations Shift Management is also typically included in the "Procedure" section of instrument functional test and calibration procedures (e.g., DIS 0500-06, "Condenser Low Vacuum Pressure Switches Channel Calibration and Channel Functional Test Requirements"). This procedural step provides specific direction to the I&C technician at the point in time that the degraded condition (i.e., a Trip Setpoint (TSP) outside the Allowable Value (AV)) is discovered:

> "**IF** the PSL 2(3)-503A As Found Trip setpoint exceeded Technical Specifications Allowable Value **OR** Relay 590-101A did **NOT** function as specified, **THEN** immediately notify IMD Supervisor **AND** Operations Shift Supervisor."

Once the I&C technician identifies the degraded condition, LS-AA-120, "Issue Identification and Screening Process," also requires the technician or his supervisor to enter the condition into the corrective action program (CAP) as a Condition Report (CR). LS-AA-120 also requires the technician or his supervisor to notify the control room and Operations Shift Management of the degraded condition. In addition to this notification, the CR that was initiated by the I&C technician is electronically routed to Operations Shift Management for review.

Once the CR is routed, LS-AA-120 then requires Operations Shift Management to implement a series of actions, including documentation of the impact upon a Technical Specification (TS) function, and determination of operability of any system, structure, or component (SSC) that is affected by the condition described in the CR.

The operability determination process is delineated in operating procedure OP-AA-108-115, "Operability Determinations," Step 4.1, "Operability Determination Process." Once notified of the condition (i.e., a TSP outside the AV), this procedure requires Operations Shift Management to review and act upon the condition.

Specific guidance on the operability determination declaration with respect to surveillance requirements is provided in Step 2.1.12, of OP-AA-108-115, which is the definition for "Operable/Operability." In part, this definition states (emphasis added):

> "In order to be considered operable, an SSC must be capable of performing the safety functions specified by its design, within the required range of design physical conditions, initiation times, and mission times. In addition, TS operability considerations require that an SSC meet all surveillance requirements. **An SSC that does not meet a Surveillance Requirement must be declared inoperable.**"

Step 2.1.13 provides additional guidance in the definition for "Operability Determination (OD)," which in part states:

> "The decision made by a senior licensed operator (i.e., senior reactor operator (SRO)) on the operating shift crew of whether or not an identified or postulated condition has an impact on the operability of an SSC (i.e., operable or inoperable)."

These definitions in the EGC Operability Determination procedure are also consistent with the guidance in NRC Inspection Manual Part 9900, "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality," Step 3.7, "Operability Declaration," and Step 3.8, "Operable/Operability."

NRC RAI Question 2

Dresden Nuclear Power Station monthly drift data (20 points) has been provided. Some of the drift data indicates monthly drift of greater than 0.6" Hg. The maximum drift for switch number 3-0503A is 0.95" Hg. The calculation assumes a quarterly drift tolerance of 0.6" Hg.

Please provide the methodology by which the monthly drift data is extended to quarterly drift estimate. In addition, the drift extension methodology should include the 25% allowed extension in the calculation.

EGC document NES-EIC-20.04, Rev. 2, Appendix J to Analysis of Instrument Channel Setpoint Error and Instrument Loop Accuracy, in section 2.1.2.2. states, *"ComEd has specified that the minimum targeted number of valid data points that are required to make a drift study significant shall be 30 data points."* If drift data is available for 30 points then it should be used in the quarterly drift data.

CLARIFICATION

Describe the methodology for the Exelon analysis that was used to extend the Dresden Nuclear Power Station surveillance test interval (STI) from monthly to quarterly with respect to NES-EIC-20.04, Revision 2, as well as the original licensing topical report. Provide the basis for concluding that the results of the analysis are reasonable, with adequate margin, given the drift data provided in the February 26, 2008, letter from Exelon to the NRC.

EGC Response

EGC did not perform, nor was it required to perform a drift study as described in NES-EIC-20.04, Revision 2, "Analysis of Instrument Channel Setpoint Error and Instrument Loop Accuracy," Appendix J, "Guideline for the Analysis and use of As-Found/As-Left Data," to justify the proposed STI extensions. This appendix of NES-EIC-20.04 defines the process that was used by EGC, for DNPS and QCNPS, to ensure consistency and compliance with the requirements of Generic Letter 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle."

The justification for the proposed extension of the Channel Functional Test (CFT) and Channel Calibration (CC) STIs for DNPS TS Table 3.3.1.1-1, "Reactor Protection System Instrumentation [RPS]," Function 10, "Turbine Condenser Vacuum-Low," is established in General Electric Company (GE) licensing topical report (LTR) NEDC-30851P-A, "Technical Specification Improvement Analyses for BWR Reactor Protection Systems."

The NRC approved the use of this LTR by licensees to justify plant-specific STI extensions in Reference 1. Additional NRC guidance on the use of the LTR to justify STI extensions was provided to licensees in Reference 2.

EGC has reviewed the LTR, the NRC approval of the LTR, and the subsequent NRC guidance to confirm that the generic LTR results and conclusions apply to DNPS TS RPS Function 10 for both the CFT and the CC. This plant-specific evaluation and confirmation of applicability are described in the Reference 3 license amendment request.

In addition to the confirmation of LTR applicability, EGC evaluated the proposed STI by performing a loop uncertainty calculation in accordance with NES-EIC-20.04 and ISA-RP67.04.02-2000, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation." This calculation, which assumed the extended STI intervals, resulted in an uncertainty of ±1.1 inches Hg between the AV and the nominal trip setpoint, at a 95%/95% confidence level (i.e., as specified in Table 1 of Reference 3). The separation between the design limit and the nominal trip setpoint is ±1.6 inches Hg.

All 200 as-found data points that were provided in Reference 4 (i.e., in the Enclosure, "Historical Channel Calibration Results, Turbine Condenser Vacuum - Low Vacuum Switches, Dresden Nuclear Power Station, Units 2 and 3"), are within the calculated uncertainty of ±1.1 inches Hg. In that this uncertainty tolerance calculation includes the extended STI interval, the collective data indicate that the proposed STI extensions are reasonable, with adequate margin. In practice, EGC has established an administrative uncertainty limit (i.e., the Expanded Tolerance) of 0.6 as an entry condition for trending of instrument performance.

With respect to the instances where a drift value was greater than the ET, although the individual monthly data points indicate a large shift in a positive direction, the following monthly data points indicate a shift in the opposite direction. This also provides additional assurance that instrument performance for this TS RPS function supports the proposed STI extensions, with adequate margin.

NRC RAI Question 3

No drift data has been provided for the Quad Cities Nuclear Power Station. Please provide the historical or vendor provided drift data to support the drift, as left, and as found tolerance assumptions.

CLARIFICATION

EGC did not provide drift data for Quad Cities Nuclear Power Station because the requested STI extension is only applicable to the DNPS instrument. Current TS for QCNPS already specify a quarterly STI. Therefore, no additional response is required.

EGC Response

No additional response required.

References

1. Letter from USNRC to T. A. Pickens (BWROG), "General Electric Company (GE) Topical Reports NEDC-30844, 'BWR Owners Group Response to NRC Generic Letter 83-28,' and NEDC-30851P, 'Technical Specification Improvement Analysis for BWR RPS'," dated July 15, 1987

2. Letter from USNRC to R. Janacek (BWROG), "Staff Guidance for Licensee Determination that Drift Characteristics for Instrumentation Used in RPS Channels are Bounded by NEDC-30851P Assumptions when the Functional Test Interval is Extended from Monthly to Quarterly," dated April 17, 1988

3. Letter from P. R. Simpson (Exelon Generation Company, LLC) to U. S. NRC, " Request for License Amendment to Revise Turbine Condenser Vacuum - Low Scram Instrumentation Function," dated August 1, 2007

4. Letter from J. L. Hansen (Exelon Generation Company, LLC) to U. S. NRC, " Response to Request for Additional Information Concerning Request for License Amendment to Revise Turbine Condenser Vacuum - Low Scram Instrumentation Function," dated February 26, 2008