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10 CFR 50.90

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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

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

Subject: Technical Specifications Changes Related to Main Steam Line Flow-High Isolation Instrumentation

References:

(1) Letter from J. P. Dimmette Jr. (Commonwealth Edison Company) to U. S. NRC, "Request for Technical Specifications Change Reactor Protection System Instrumentation Reactor Vessel Steam Dome Pressure - High," dated November 16, 1999

(2) Letter from K. R. Jury to (Exelon Generation Company) to U. S. NRC, "Request for Technical Specifications Changes Related to Reactor Pressure Protection System Instrumentation (Reactor Vessel Steam Dome Pressure – High)," dated April 15, 2002.

(3) Letter from U. S. NRC to O. D. Kingsley (Commonwealth Edison Company), "Quad Cities - Issuance of Amendments on Replacement of Pressure Switches," dated January 28, 2000

(4) Letter from U. S. NRC to J. L. Skolds (Exelon Generation Company), "Dresden Nuclear Power Station, Units 2 and 3 – Issuance of Amendments for Replacement of Pressure Switches," dated October 2, 2002

In accordance with 10 CFR 50.90, "Application for amendment to license or construction permit," Exelon Generation Company, LLC (EGC) requests a change to the Technical Specifications (TS) of Facility License Nos. DPR-29 and DPR-30 for Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2. EGC is replacing the Main Steam Line (MSL) Flow-High differential pressure indicating switches that initiate Group 1 Primary Containment Isolation System (PCIS), and Control Room Emergency Ventilation (CREV) System isolation, with differential pressure transmitters, trip units, and interposing relays. The proposed TS change revises the MSL Flow-High surveillance requirements (SRs) and allowable value (AV) specified in TS Table 3.3.6.1-1, "Primary Containment Isolation Instrumentation," and Table 3.3.7.1-1, "Control Room Emergency Ventilation (CREV) System Isolation Instrumentation," to reflect the changes in instrumentation. QCNPS and Dresden Nuclear Power Station submitted

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similar TS change requests in References 1 and 2, which were approved by the NRC in References 3 and 4, respectively.

The plant design changes are scheduled for implementation on Unit 1 during the refueling outage currently scheduled for March 2005. Therefore, EGC requests approval of this amendment by January 20, 2005. Once approved, the changes will be implemented within 90 days on QNCPS Unit 1. A similar design change will be implemented on Unit 2 during the refueling outage currently scheduled for March 2006. Unit 2 will implement the approved changes as supported by the March 2006 outage schedule.

This request is subdivided as follows.

- Attachment 1 gives a description and technical analysis of the proposed changes, information supporting a finding of no significant hazards, and information supporting an environmental assessment.

- Attachment 2 includes the marked-up TS pages. Bases are also provided for information only.

- Attachment 3 provides retyped TS pages with the proposed change incorporated.

The proposed changes have been reviewed by the QCNPS Plant Operations Review Committee and approved by the Nuclear Safety Review Board in accordance with the requirements of the EGC Quality Assurance Program.

We are notifying the State of Illinois of this request for a change to the TS by transmitting a copy of this letter and its attachments to the designated State Official.

Should you have any questions concerning this letter, please contact Mr. Thomas G. Roddey at (630) 657-2811.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 10th day of June 2004.

Respectfully,

Patrick R. Simpson

Patrick R. Simpson
Manager – Licensing

Attachments:
1. Description of Proposed Changes, Technical Analysis, and Regulatory Analysis
2. Markup of Technical Specifications and Bases Pages
3. Re-typed Technical Specifications Pages

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station
Illinois Emergency Management Agency – Division of Nuclear Safety

ATTACHMENT 1

Description of Proposed Changes, Technical Analysis, and Regulatory Analysis

Subject: Technical Specifications Changes Related to Main Steam Line Flow-High Instrumentation

1.0 DESCRIPTION

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3.0 BACKGROUND

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ATTACHMENT 1

Description of Proposed Changes, Technical Analysis, and Regulatory Analysis

1.0 DESCRIPTION

In accordance with 10 CFR 50.90, "Application for amendment to license or construction permit," Exelon Generation Company, LLC (EGC) requests a change to the Technical Specifications (TS) of Facility License Nos. DPR-29 and DPR-30 for Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2. EGC is replacing the Main Steam Line (MSL) Flow-High differential pressure indicating switches (DPISs) that initiate Group 1 Primary Containment Isolation System (PCIS), and Control Room Emergency Ventilation (CREV) System isolation, with differential pressure transmitters, trip units, and interposing relays. The proposed TS change revises MSL Flow-High surveillance requirements (SRs) and allowable values (AVs) specified in TS Table 3.3.6.1-1, "Primary Containment Isolation Instrumentation," and Table 3.3.7.1-1, "Control Room Emergency Ventilation (CREV) System Isolation Instrumentation," to reflect the changes in instrumentation. The proposed change will add SR 3.3.6.1.3 for Function 1.d of Table 3.3.6.1-1, and SR 3.3.7.1.3 for Function 3 of Table 3.3.7.1-1. In addition, the proposed change revises the AV from "≤ 254.3 psid" to "≤ 248.1 psid." QCNPS and Dresden Nuclear Power Station submitted similar TS change requests in References 1 and 2, which were approved by the NRC in References 3 and 4, respectively. The approved amendment supported the replacement of pressure switches with analog trip units (ATUs) for Reactor Vessel Steam Dome Pressure-High Function in TS Section 3.3.1.1, "RPS Instrumentation."

2.0 PROPOSED CHANGE

EGC plans to upgrade the MSL Flow-High instrumentation from pressure switches to pressure transmitters. Each pressure transmitter utilizes an analog trip unit (ATU) consisting of a master trip unit and an auxiliary relay. ATUs are a proven technology that is more reliable than the existing pressure switches. TS Section 3.3.6.1, "Primary Containment Isolation Instrumentation," provides the requirements for the PCIS instrumentation, and TS Section 3.3.7.1, "Control Room Emergency Ventilations (CREV) System Isolation Instrumentation," provides the requirements for CREV isolation instrumentation. The various functions of PCIS and CREV instrumentation are specified in Tables 3.3.6.1-1 and 3.3.7.1-1, along with their applicable operational modes, SRs, and AVs.

Specifically, in Function 1.d of TS Table 3.3.6.1-1, and Function 3 of TS Table 3.3.7.1-1, respectively, the proposed changes are:

- Addition of SR 3.3.6.1.3 for trip unit calibration every 92 days.
- Addition of SR 3.3.7.1.3 for trip unit calibration every 92 days.
- Revise the AV from "≤ 254.3 psid" to "≤ 248.1 psid."

3.0 BACKGROUND

3.1 PCIS Instrumentation: MSL Flow-High

The primary containment isolation instrumentation automatically initiates closure of appropriate primary containment isolation valves (PCIVs). The isolation instrumentation includes the sensors, relays, and switches that are necessary to cause initiation of primary containment and reactor coolant pressure boundary isolation. Instrument channels include electronic equipment (e.g., trip units) that compares measured input

signals with pre-established setpoints. When the setpoint is exceeded, the channel output relay actuates, which then outputs a primary containment isolation signal to the isolation logic. Monitoring a wide range of independent parameters provides functional diversity. MSL flow is one of several input parameters to the isolation logics. Redundant sensor input signals from each parameter are provided for initiation of the isolation signal.

MSL Flow-High is provided to detect a break of the MSL and to initiate closure of the Group 1 PCIVs (i.e., Main Steam Isolation Valves (MSIVs), MSIV drains, and reactor water sample line isolation valves). If the steam were allowed to continue flowing out of the break, the reactor would depressurize and the core could become uncovered. Fuel damage could result if reactor pressure vessel water inventory decreases to a level where adequate core cooling cannot be maintained. Therefore, the isolation is initiated on MSL high flow to prevent or minimize core damage. The MSL Flow-High Function is directly assumed in the analysis of the main steam line break accident. The isolation action, along with the scram function of the reactor protection system, ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear reactors," and ensures that offsite doses do not exceed the limits of 10 CFR 100, "Reactor Site Criteria."

The MSL flow signals are initiated from 16 differential pressure switches that are connected to the four MSLs (the switches sense differential pressure across a flow restrictor). The differential pressure switches are arranged such that, although physically separated, any of the four switches in a MSL would be able to detect the high flow condition. Four channels of MSL Flow-High Function for each MSL (two channels per trip system) are available in a one-out-of-two taken twice logic arrangement in each steam line, and are required to be operable so that no single instrument failure will preclude detecting a break in any individual MSL.

3.2 CREV Instrumentation: MSL Flow-High

The CREV System is designed to provide a radiologically controlled environment to ensure the habitability of the control room for the safety of control room operators under all plant conditions. The instrumentation and controls for the CREV System automatically isolate the control room emergency zone to minimize the consequences of radioactive material in the control room environment. In the event of a MSL Flow-High signal, the control room is automatically isolated. The MSL Flow-High Function uses 16 channels, four for each MSL. One channel from each MSL provides input to one of the four trip strings. Two trip strings make up each trip system and both trip systems must trip to isolate the control room. The channels include electronic equipment (e.g., trip units) that compares measured input signals with pre-established setpoints. When the setpoint is exceeded, the channel output relay actuates, which then outputs a CREV System isolation signal to the initiation logic.

The ability of the CREV System to isolate and maintain the habitability of the control room emergency zone is explicitly assumed for the "Decrease in Reactor Coolant Inventory" and the "Radioactive Release from a Subsystem or Component" accident

analyses as discussed in Sections 15.6 and 15.7, respectively, of the Updated Final Safety Analysis Report (UFSAR). High MSL flow could indicate a break in the MSL and will automatically initiate the isolation of the control room emergency zone, since this could be a precursor to a potential radiation release and subsequent radiation exposure to control room personnel. Therefore, the AV was chosen to be the same as that for the Primary Containment Isolation MSL Flow-High (i.e., Limiting Condition for Operation (LCO) 3.3.6.1, "Primary Containment Isolation Instrumentation").

4.0 TECHNICAL ANALYSIS

The proposed changes support replacement of the MSL high flow DPISs with ATUs. In each unit, each of the 16 DPISs will be replaced with a differential pressure transmitter, a master trip unit (MTU), and an auxiliary relay. The design function of the MSL DPISs is to initiate the main steam high flow logic if the MSL flow (as measured by differential pressure) increases to the high flow setpoint. A main steam high flow condition initiates Group 1 PCIS and CREV isolations. These instruments also provide an indication of MSL differential pressure that is used to fulfill the 12-hour channel check for SRs 3.3.6.1.1 and 3.3.7.1.1.

The current instrumentation used for the MSL Flow-High Functions in TS Section 3.3.6.1 and 3.3.7.1 utilizes pressure switches, which are extremely sensitive to vibration, difficult to calibrate, and tend to have more drift than other types of currently available instrumentation. Since the pressure switches provide the logic actuation contacts for PCIS and CREV isolation actuations, a false indication may initiate a spurious half Group 1 and CREV isolation signal. The existing Barton pressure switches will be replaced with Rosemount Model 1153 Series B Alphaline pressure transmitters. The Rosemount units have a higher reliability and, thus, will serve to mitigate spurious isolations and produce better overall performance relative to the existing instrumentation.

The new transmitters, MTUs, and auxiliary relays that replace the existing MSL DPISs are qualified as Class 1E and seismically qualified in accordance with References 5 and 6, respectively. The new transmitters will be seismically installed on the same instrument racks that hold the existing MSL differential pressure switches. The change in weight on these racks, from the replacement of 16 DPISs with 16 transmitters on each rack section, has been analyzed and found not to degrade the seismic qualification of these racks. All required separation is maintained between Divisions I and II of the electrical distribution system. Further separation is provided between Division I and Division II logic channels by installing the MTUs and their auxiliary relays for each logic channel in separate panels.

The design will maintain compliance with the design functions identified in the UFSAR for PCIS, CREV, and analog trip system instrumentation. To accommodate the design change, the TS are being revised to add a trip unit calibration requirement in Tables 3.3.6.1-1 and 3.3.7.1-1. These proposed changes align the SRs for Function 1.d of TS Table 3.3.6.1-1, and Function 3 of Table 3.3.7.1-1. Rosemount units are being used in a number of applications at QCNPS, including the Reactor Vessel Steam Dome Pressure-High Function.

The PCIS Group 1 isolation due to high main steam flow will continue to perform its function as currently designed, but it will receive its input from analog trip instrument loops instead of the existing DPISs. The analog trip strings experience less drift than the existing DPISs, so the

reliability of maintaining the trip setpoint will improve. The transmitters will require a 24-month surveillance for calibration.

The proposed change also revises the AV for the MSL Flow-High function in TS Sections 3.3.6.1 and 3.3.7.1. The revised TS AV is "≤ 248.1 psid." The Analytical Limit (AL) remains unchanged at 140% flow, or 292.45 psid. These proposed TS setpoint changes are based on NRC-approved Topical Reports and/or calculation methodologies. Reference 7 describes the EGC setpoint methodology used for determining the revised AV. The NRC reviewed this methodology in Reference 8, and approved its use in the Safety Evaluation in Reference 9.

The operability of PCIS and CREV isolation instrumentation is dependent upon the operability of the individual instrumentation channel Functions specified in Tables 3.3.6.1-1 and 3.3.7.1-1, respectively. Each Function must have a required number of operable channels, with their setpoints within the specified AVs, where appropriate. The actual setpoint is calibrated consistent with applicable setpoint methodology assumptions. AVs are specified for each PCIS and CREV isolation Function specified in the above listed tables. Nominal trip setpoints and AVs are determined in the setpoint calculations. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its AV, is acceptable. A channel is inoperable if its actual trip setpoint is not within its required AV. Trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., MSL flow), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., trip unit) changes state. The time response of the transmitter, trip unit and interposing relay was evaluated. This response time, although greater than the response time for the current pressure switch instrumentation, is within the 0.5 seconds specified in UFSAR Section 15.6.4, "Steam System Line Break Outside Containment."

The ALs are derived from the limiting values of the process parameters obtained from the safety analysis. The trip setpoints are determined from the ALs, corrected for defined process, calibration, and instrument errors. The AVs are then determined, based on the trip setpoint values, by accounting for the calibration based errors. These calibration based errors are limited to reference accuracy, instrument drift, errors associated with measurement and test equipment, and calibration tolerance of loop components. The trip setpoints and AVs determined in this manner provide adequate protection because instrument uncertainties, process effects, calibration tolerances, and instrument drift are taken into account and appropriately applied for the instrumentation.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

Exelon Generation Company, LLC (EGC) has evaluated this proposed amendment and determined that it involves no significant hazards consideration. According to 10 CFR 50.92, "Issuance of amendment," paragraph (c), a proposed amendment to an operating license involves a no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not:

Description of Proposed Changes, Technical Analysis, and Regulatory Analysis

(1) Involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated;
(2) Create the possibility of a new or different kind of accident from any previously analyzed; or
(3) Involve a significant reduction in a margin of safety.

In support of this determination, an evaluation of each of the three criteria set forth in 10 CFR 50.92 is provided below regarding the proposed license amendment.

Overview

Exelon Generation Company, LLC (EGC) requests a change to the Technical Specifications (TS) of Facility License Nos. DPR-29 and DPR-30 for Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2. EGC is replacing the Main Steam Line (MSL) Flow-High differential pressure indicating switches (DPISs) that initiate Group 1 Primary Containment Isolation System (PCIS), and Control Room Emergency Ventilation (CREV) System isolation, with differential pressure transmitters, trip units, and interposing relays. The proposed TS change revises the Main Steam Line (MSL) Flow-High surveillance requirements (SRs) and allowable value (AV) specified in TS Table 3.3.6.1-1, "Primary Containment Isolation Instrumentation," and Table 3.3.7.1-1, "Control Room Emergency Ventilation (CREV) System Isolation Instrumentation," to reflect the changes in instrumentation.

Does the change involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated?

For QCNPS, Units 1 and 2, the proposed amendment will implement a design change that upgrades the existing MSL Flow-High instrumentation from pressure switches to analog trip unit devices. Analog trip units (ATUs) have proven to be a more reliable technology than the currently installed equipment. Analog trip units are used in various applications at QCNPS, including the Reactor Protection System (RPS) low water level trip function. Because the trip units are more reliable, the likelihood of spurious isolations is reduced. Further, ATUs experience less instrument drift during the operating cycle. The proposed change adds a 92-day trip unit calibration requirement for the MSL-High isolation function. The NRC has previously found that a 92-day calibration is appropriate for individual ATUs.

Procedure revisions required by this modification are limited to those associated with the calibration, maintenance, and operation of the replacement transmitter and trip unit analog loops. All required design functions of the MSL high flow loop are maintained. No system, structure, or component will be used in a manner that is not already bounded by the reference design, or is inconsistent with analyses or descriptions in the QCNPS Updated Final Safety Analysis Report (UFSAR). There is no adverse effect on the performance or control of any design function described in the UFSAR.

TS requirements that govern operability or routine testing of plant instruments are not assumed to be initiators of any analyzed event because these instruments are intended to prevent, detect, or mitigate accidents. Therefore, these changes will not involve an

increase in the probability of occurrence of an accident previously evaluated. In addition, these changes will not increase the consequences of an accident previously evaluated because the proposed change does not adversely impact structures, systems, or components. The planned instrument upgrade is a more reliable design than existing equipment. The proposed changes establish requirements that ensure components are operable when necessary for the prevention or mitigation of accidents or transients. Furthermore, there will be no change in the types or significant increase in the amounts of any effluents released offsite. For these reasons, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed changes support a planned instrumentation upgrade by incorporating SRs required to ensure operability. The change does not adversely impact the manner in which the instrument will operate under normal and abnormal operating conditions. Therefore, these changes provide an equivalent level of safety and will not create the possibility of a new or different kind of accident from any accident previously evaluated. The changes in methods governing normal plant operation are consistent with the current safety analysis assumptions.

All required design functions are maintained, and the new setpoint is analyzed in accordance an NRC-approved methodology for determination of setpoints and TS AVs in accordance with the QCNPS UFSAR, Section 7.3.2.4, "Design Evaluation." Therefore, replacing the existing MSL high flow DPISs with analog trip instrumentation does not alter any UFSAR described evaluation methodologies, or introduce any new methodologies. These changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

Does the change involve a significant reduction in a margin of safety?

The proposed changes support a planned instrumentation upgrade from differential pressure switches to ATUs. The proposed changes do not adversely affect the probability of failure or availability of the affected instrumentation. The addition of a 92-day trip unit calibration for MSL Flow-High is a conservative change that aligns the SRs for a planned instrumentation upgrade with that of similar instrumentation. The NRC has previously found that a 92-day calibration is appropriate for individual ATUs. The setpoint was determined using an NRC-approved methodology. The proposed changes do not affect the analytical limit assumed in the safety analyses for the actuation of the instrumentation. Therefore, it is concluded that the proposed changes will not result in a reduction in a margin of safety.

Therefore, based upon the above evaluation, EGC has concluded that these changes involve no significant hazards consideration.

5.2 Applicable Regulatory Requirements/Criteria

The primary containment isolation instrumentation automatically initiates closure of appropriate primary containment isolation valves (PCIVs). The function of the PCIVs, in combination with other accident mitigation systems, is to limit fission product release during and following postulated design basis accidents (DBAs). Primary containment isolation within the time limits specified for isolation valves ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a DBA.

The MSL Flow-High isolation setpoint is required by TS to detect a break of the MSL and to initiate closure of the Main Steam Isolation Valves (MSIVs). If the steam were allowed to continue flowing out of the break, the reactor would depressurize and the core could uncover. If reactor water level were to decrease far enough, fuel damage could occur. Therefore, the isolation is initiated on high flow to prevent or minimize core damage. The MSL Flow-High Function is directly assumed in the MSL break (MSLB) analysis in Section 15.6.4, "Steam Line Break Outside Containment," of the UFSAR. The isolation action, along with the scram function of the Reactor Protection System (RPS), ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors," and to ensure that offsite doses do not exceed the limits of 10 CFR 100, "Reactor Site Criteria."

The CREV System is designed to provide a radiologically controlled environment to ensure the habitability of the control room for the safety of control room operators under all plant conditions. In the event of a Reactor Vessel Water Level-Low, Drywell Pressure-High, MSL Flow-High, Refueling Floor Radiation-High, or Reactor Building Exhaust Radiation-High signal, the control room is automatically isolated. The instrumentation and controls for the CREV System automatically isolate the control room emergency zone to minimize the consequences of radioactive material in the control room environment. The ability of the CREV System to isolate and maintain the habitability of the control room emergency zone is explicitly assumed for certain accidents as discussed in the safety analyses in UFSAR, Sections 15.6.4 and 15.6.5, "Loss of Coolant Accidents Resulting from Piping Breaks Inside Containment." CREV System isolation instrumentation satisfies Criterion 3 of 10 CFR 50.36, "Technical Specifications," paragraph (c)(2)(ii)(C).

High MSL flow could indicate a break in the MSL and will automatically initiate the isolation of the control room emergency zone, since this could be a precursor to a potential radiation release and subsequent radiation exposure to control room personnel. The MSL Flow-High Function is required to be operable in Modes 1, 2, and 3 to ensure that control room personnel are protected during a MSLB accident. In Modes 4 and 5, the reactor is depressurized; thus, MSLB protection is not required.

6.0 ENVIRONMENTAL CONSIDERATIONS

Exelon Generation Company, LLC (EGC) has evaluated these proposed changes against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21, "Criteria for and

identification of licensing and regulatory actions requiring environmental assessments." EGC has determined that these proposed changes meet the criteria for a categorical exclusion set forth in 10 CFR 51.22, "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review," paragraph (c)(9), and as such, has determined that no irreversible consequences exist in accordance with 10 CFR 50.92, "Issuance of amendment," paragraph (b). This determination is based on the fact that these changes are being proposed as an amendment to a license issued pursuant to 10 CFR 50, "Domestic Licensing of Production and Utilization Facilities," which changes a surveillance requirement (SR), and the amendment meets the following specific criteria:

(i) The proposed changes involve no significant hazards consideration.

As demonstrated in Section 5, the proposed changes do not involve a significant hazards consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite.

The proposed changes replace the Main Steam Line (MSL) Flow-High differential pressure indicating switches (DPISs) that initiate Group 1 Primary Containment Isolation System (PCIS), and Control Room Emergency Ventilation (CREV) System isolation, with differential pressure transmitters, trip units, and interposing relays. The proposed TS change revises the Main Steam Line (MSL) Flow-High surveillance requirements (SRs) and allowable value (AV) specified in TS Table 3.3.6.1-1, "Primary Containment Isolation Instrumentation," and Table 3.3.7.1-1, "Control Room Emergency Ventilation (CREV) System Isolation Instrumentation," to reflect the changes in instrumentation. The proposed changes will add SR 3.3.6.1.3 for item 1.d of Table 3.3.6.1-1, and SR 3.3.7.1.3 for item 3 of Table 3.3.7.1-1. In addition, the proposed change revises the AV from, "≤ 254.3 psid" to "≤ 248.1 psid." There will be no significant increase in the amounts of any effluents released offsite as a result of the proposed changes. The proposed changes do not result in an increase in power level, do not increase the production, nor alter the flow path or method of disposal of radioactive waste or byproducts. Therefore, the proposed change will not affect the types or increase the amounts of any effluents released offsite.

(iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed changes will not result in functional changes in the configuration of the facility. There will be no change in the level of controls or methodology used for processing of radioactive effluents or handling of solid radioactive waste, nor will the proposal result in any change in the normal radiation levels within the plant. Therefore, there will be no increase in individual or cumulative occupational radiation exposure resulting from this change.

7.0 REFERENCES

1. Letter from J. P. Dimmette Jr. (Commonwealth Edison Company) to U. S. NRC, "Request for Technical Specifications Change Reactor Protection System Instrumentation Reactor Vessel Steam Dome Pressure - High," dated November 16, 1999

2. Letter from K. R. Jury to (Exelon Generation Company) to U. S. NRC, "Request for Technical Specifications Changes Related to Reactor Pressure Protection System Instrumentation (Reactor Vessel Steam Dome Pressure – High)," dated April 15, 2002.

3. Letter from U. S. NRC to O. D. Kingsley (Commonwealth Edison Company), "Quad Cities - Issuance of Amendments on Replacement of Pressure Switches," dated January 28, 2000

4. Letter from U. S. NRC to J. L. Skolds (Exelon Generation Company), "Dresden Nuclear Power Station, Units 2 and 3 – Issuance of Amendments for Replacement of Pressure Switches," dated October 2, 2002

5. IEEE 323-1974, "Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations"

6. IEEE 344-1975, "Recommended Practices for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations"

7. NES-EIC-20.04, "Analysis of Instrument Channel Setpoint Error and Instrument Loop Accuracy"

8. Letter from R. M. Krich (Commonwealth Edison Company) to U. S. NRC, "Request for Technical Specifications Changes for Dresden Nuclear Power Station, Units 2 and 3, LaSalle County Station, Units 1 and 2, and Quad Cities Nuclear Power Station, Units 1 and 2, to Implement Improved Standard Technical Specifications," dated March 3, 2000

9. Letter from U. S. NRC to O. D. Kinsley (Exelon Generation Company), "Issuance of Amendments," dated March 30, 2001

ATTACHMENT 2

Markup of Technical Specifications and Bases Pages

Revised TS Pages

3.3.6.1-5
3.3.7.1-4

Revised Bases Pages

B 3.3.6.1-10
B 3.3.7.1-5

Table 3.3.6.1-1 (page 1 of 3)
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Main Steam Line Isolation					
a. Reactor Vessel Water Level–Low Low	1,2,3	2	D	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ -55.2 inches
b. Main Steam Line Pressure–Low	1	2	E	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.7	≥ 831 psig
c. Main Steam Line Pressure–Timer	1	2	E	SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 0.331 seconds
d. Main Steam Line Flow-High	1,2,3	2 per MSL	D	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ ~~254.3~~ 248.1 psid
e. Main Steam Line Tunnel Temperature–High	1,2,3	2 per trip string	D	SR 3.3.6.1.5 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 198°F
2. Primary Containment Isolation					
a. Reactor Vessel Water Level–Low	1,2,3	2	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ 3.8 inches
b. Drywell Pressure–High	1,2,3	2	G	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.7	≤ 2.43 psig
c. Drywell Radiation–High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 70 R/hr

(continued)

Table 3.3.7.1-1 (page 1 of 1)
Control Room Emergency Ventilation (CREV) System Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level–Low	1,2,3, (a)	2	C	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3 SR 3.3.7.1.5 SR 3.3.7.1.6	≥ 3.8 inches
2. Drywell Pressure–High	1,2,3	2	C	SR 3.3.7.1.2 SR 3.3.7.1.4 SR 3.3.7.1.6	≤ 2.43 psig
3. Main Steam Line Flow-High	1,2,3	2 per MSL	B	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.5 SR 3.3.7.1.6	≤ ~~254.3~~ 248.1 psid 3.3.7.1.3
4. Refueling Floor Radiation–High	1,2,3, (a),(b)	2	B	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.4 SR 3.3.7.1.6	≤ 100 mR/hr
5. Reactor Building Ventilation Exhaust Radiation–High	1,2,3, (a),(b)	2	B	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.4 SR 3.3.7.1.6	≤ 9 mR/hr

(a) During operations with a potential for draining the reactor vessel.

(b) During CORE ALTERATIONS and during movement of irradiated fuel assemblies in the secondary containment.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.c Main Steam Line Pressure-Timer (continued)

of Main Steam Line Pressure-Timer Function are available and are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation function.

The Allowable Value is chosen to be long enough to prevent false isolations due to pressure transients but short enough as to prevent excessive RPV depressurization.

This Function isolates the Group 1 valves.

1.d. Main Steam Line Flow-High

Main Steam Line Flow-High is provided to detect a break of the MSL and to initiate closure of the MSIVs. If the steam were allowed to continue flowing out of the break, the reactor would depressurize and the core could uncover. If the RPV water level decreases too far, fuel damage could occur. Therefore, the isolation is initiated on high flow to prevent or minimize core damage. The Main Steam Line Flow-High Function is directly assumed in the analysis of the main steam line break (MSLB) (Ref. 7). The isolation action, along with the scram function of the Reactor Protection System (RPS), ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46 and offsite doses do not exceed the 10 CFR 100 limits.

transmitters, trip units and interposing relays

Transmitters and trip units

The MSL flow signals are initiated from 16 differential pressure ~~switches~~ that are connected to the four MSLs (the differential pressure ~~switches~~ sense differential pressure across a flow restrictor). The differential pressure ~~switches~~ are arranged such that, even though physically separated from each other, all four connected to one MSL would be able to detect the high flow. Four channels of Main Steam Line Flow-High Function for each MSL (two channels per trip system) are available and are required to be OPERABLE so that no single instrument failure will preclude detecting a break in any individual MSL.

The Allowable Value is chosen to ensure that offsite dose limits are not exceeded due to the break.

This Function isolates the Group 1 valves.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

2. Drywell Pressure-High (continued)

preclude control room emergency zone isolation. The Drywell Pressure-High Allowable Value was chosen to be the same as the RPS Drywell Pressure-High Allowable Value (LCO 3.3.1.1).

The Drywell Pressure-High Function is required to be OPERABLE in MODES 1, 2, and 3 to ensure that control room personnel are protected in the event of a LOCA. In MODES 4 and 5, the Drywell Pressure-High Function is not required since there is insufficient energy in the reactor to pressurize the drywell to the Drywell Pressure-High setpoint.

3. Main Steam Line Flow-High

High main steam line (MSL) flow could indicate a break in the MSL and will automatically initiate the isolation of the control room emergency zone, since this could be a precursor to a potential radiation release and subsequent radiation exposure to control room personnel.

transmitters, trip units and interposing relays

Transmitters and trip units

The Main Steam Line Flow-High signals are initiated from 16 differential pressure ~~switches~~ that are connected to the four MSLs (the differential pressure ~~switches~~ sense differential pressure across a flow restrictor). Four channels of Main Steam Line Flow-High Function for each MSL (two channels per trip system) are available and required to be OPERABLE so that no single instrument failure will preclude control room emergency zone isolation.

The Allowable Value was chosen to be the same as the Primary Containment Isolation Main Steam Line Flow-High Allowable Value (LCO 3.3.6.1, "Primary Containment Isolation Instrumentation").

The Main Steam Line Flow-High Function is required to be OPERABLE in MODES 1, 2, and 3 to ensure that control room personnel are protected during a main steam line break (MSLB) accident. In MODES 4 and 5, the reactor is depressurized; thus, MSLB protection is not required.

(continued)

ATTACHMENT 3

Re-typed Technical Specifications Pages

Revised TS Pages

3.3.6.1-5
3.3.7.1-4

Table 3.3.6.1-1 (page 1 of 3)
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Main Steam Line Isolation					
a. Reactor Vessel Water Level–Low Low	1,2,3	2	D	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ -55.2 inches
b. Main Steam Line Pressure–Low	1	2	E	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.7	≥ 831 psig
c. Main Steam Line Pressure–Timer	1	2	E	SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 0.331 seconds
d. Main Steam Line Flow-High	1,2,3	2 per MSL	D	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 248.1 psid
e. Main Steam Line Tunnel Temperature–High	1,2,3	2 per trip string	D	SR 3.3.6.1.5 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 198°F
2. Primary Containment Isolation					
a. Reactor Vessel Water Level–Low	1,2,3	2	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ 3.8 inches
b. Drywell Pressure–High	1,2,3	2	G	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.7	≤ 2.43 psig
c. Drywell Radiation–High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 70 R/hr

(continued)

Table 3.3.7.1-1 (page 1 of 1)
Control Room Emergency Ventilation (CREV) System Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level—Low	1,2,3, (a)	2	C	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3 SR 3.3.7.1.5 SR 3.3.7.1.6	≥ 3.8 inches
2. Drywell Pressure—High	1,2,3	2	C	SR 3.3.7.1.2 SR 3.3.7.1.4 SR 3.3.7.1.6	≤ 2.43 psig
3. Main Steam Line Flow-High	1,2,3	2 per MSL	B	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3 SR 3.3.7.1.5 SR 3.3.7.1.6	≤ 248.1 psid
4. Refueling Floor Radiation—High	1,2,3, (a),(b)	2	B	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.4 SR 3.3.7.1.6	≤ 100 mR/hr
5. Reactor Building Ventilation Exhaust Radiation—High	1,2,3, (a),(b)	2	B	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.4 SR 3.3.7.1.6	≤ 9 mR/hr

(a) During operations with a potential for draining the reactor vessel.

(b) During CORE ALTERATIONS and during movement of irradiated fuel assemblies in the secondary containment.