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10 CFR 50.90

RS-02-151

August 16, 2002

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

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

Subject: Request for Technical Specifications Changes Related to Reactor Protection System Instrumentation (Scram Discharge Volume Water Level – High)

References:
1) 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

2) Letter from U. S. NRC to O. D. Kingsley (Exelon Generation Company, LLC), "Quad Cities Nuclear Power Station, Units 1 and 2 – Issuance of Amendments Re: Reactor Pressure Vessel Level Instrumentation Surveillance Frequencies and Allowable Values," dated February 12, 2002

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company (EGC), LLC, requests changes to Appendix A, Technical Specifications (TS), of Facility License Nos. DPR-19 and DPR-25, for Dresden Nuclear Power Station (DNPS), Units 2 and 3. Specifically, the proposed changes modify both Units' scram discharge volume water level – high Surveillance Requirements and the Unit 3 Allowable Value specified in TS Table 3.3.1.1-1, "Reactor Protection System Instrumentation."

The proposed changes support a planned upgrade to the Unit 3 Reactor Protection System (RPS) scram discharge volume water level – high instrumentation. The Unit 3 upgrade replaces the existing scram discharge volume water level float switches with more reliable electronic analog trip units and modifies the configuration of the scram discharge volume water level instrumentation sensing line reference legs to minimize crud accumulation. The associated TS Allowable Value and Surveillance Requirements for Unit 3 require revision due to the new analog trip unit devices and modified instrument reference leg configuration.

Similar requested TS changes involving safety-related instrumentation switch replacements with analog trip units were previously approved by the NRC for Quad Cities Nuclear Power Station as documented in References 1 and 2.

A001

In addition, the proposed changes add a Surveillance Requirement for existing Unit 2 and 3 scram discharge volume water level – high differential pressure switches that is currently not included in the TS.

EGC requests approval of the proposed TS changes by March 31, 2003, with a 90-day implementation period.

This request is subdivided as follows.

1. Attachment A gives a description and safety analysis of the proposed changes.

2. Attachment B provides the marked-up TS page indicating the proposed changes.

3. Attachment C provides the revised TS pages incorporating the proposed changes. Revised pages of the affected TS Bases are also included for informational purposes.

4. Attachment D describes our evaluation performed using the criteria in 10 CFR 50.91(a), "Notice for public comment," paragraph (1), which provides information supporting a finding of no significant hazards consideration using the standards in 10 CFR 50.92, "Issuance of amendment," paragraph (c).

5. Attachment E provides information supporting an Environmental Assessment.

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

EGC is notifying the State of Illinois of this request for changes to the TS by transmitting a copy of this letter and its attachments to the designated State Official.

Should you have any questions concerning his letter, please contact Mr. Allan R. Haeger at (630) 657-2807.

Respectfully,

Patrick R. Simpson
Manager - Licensing
Mid-West Regional Operating Group

Attachments: Affidavit
Attachment A, Description and Safety Analysis for Proposed Changes
Attachment B, Marked-Up Technical Specifications Page for Proposed Changes
Attachment C, Typed Pages for Technical Specifications and Bases Changes
Attachment D, Information Supporting a Finding of No Significant Hazards Consideration
Attachment E, Information Supporting an Environmental Assessment

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Dresden Nuclear Power Station
Office of Nuclear Facility Safety – Illinois Department of Nuclear Safety

STATE OF ILLINOIS	)	
COUNTY OF DUPAGE	)	
IN THE MATTER OF	)	
EXELON GENERATION COMPANY, LLC	)	**Docket Numbers**
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3	)	**50-237 and 50-249**

SUBJECT: Request for Technical Specifications Changes Related to Reactor Protection System Instrumentation (Scram Discharge Volume Water Level – High)

AFFIDAVIT

I affirm that the content of this transmittal is true and correct to the best of my knowledge, information, and belief.

Patrick R. Simpson

Patrick R. Simpson
Manager – Licensing
Mid-West Regional Operating Group

Subscribed and sworn to before me, a Notary Public in and for the State above named, this 16th day of August, 2002

Maryellen D Long

Notary Public

OFFICIAL SEAL
MARYELLEN D LONG
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES:04/20/06

Attachment A

DESCRIPTION AND SAFETY ANALYSIS FOR PROPOSED CHANGES

A. SUMMARY OF THE PROPOSED CHANGES

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company (EGC), LLC, requests changes to Appendix A, Technical Specifications (TS), of Facility License Nos. DPR-19 and DPR-25 for the Dresden Nuclear Power Station (DNPS), Units 2 and 3. Specifically, EGC proposes to revise the specified function description, Surveillance Requirements (SRs) and Allowable Value (AV) that apply to Unit 3 in Table 3.3.1.1-1, "Reactor Protection System Instrumentation," Function 7, "Scram Discharge Volume Water Level – High." These proposed changes support a planned upgrade to the Unit 3 Reactor Protection System (RPS) scram discharge volume water level – high instrumentation. The Unit 3 upgrade replaces the existing scram discharge volume water level float switches with more reliable electronic analog trip units and modifies the configuration of the scram discharge volume water level instrumentation sensing line reference legs to minimize crud accumulation. The associated TS AV and SRs for Unit 3 require revision to be consistent with the new analog trip unit devices and modified instrument reference leg configuration. The new scram discharge volume water level sensing instrumentation for Unit 3 also provides level indication whereas the existing float switches do not. Similar requested TS changes involving safety-related instrumentation switch replacements with electronic analog trip units were approved by the NRC for Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2, as documented in References I.1 and I.2.

In addition, EGC proposes to add an additional SR to the existing Unit 2 and 3 scram discharge volume water level differential pressure switches specified in Function 7.b of Table 3.3.1.1-1. The added SR is a quarterly calibration of the trip units associated with the differential pressure type level transmitters. This SR is currently performed at DNPS for the subject equipment and should be specified in the TS.

A complete description of the proposed changes is given in Section E, "Description of the Proposed Changes," of this Attachment. Attachment B provides the marked-up TS page indicating the proposed changes. Attachment C provides typed TS and Bases pages incorporating the proposed changes.

B. DESCRIPTION OF THE CURRENT REQUIREMENTS

TS Section 3.3.1.1 provides the requirements for RPS instrumentation. The various functions of the RPS instrumentation are specified on TS Table 3.3.1.1-1, along with their applicable operational modes, SRs and AVs. RPS Instrumentation Function 7 of Table 3.3.1-1 specifies an applicable scram discharge volume water level – high AV of ≤ 39.1 gallons for Unit 3, and the following applicable SRs for the existing level switches (i.e., Function 7.a thermal or float switches, and Function 7.b differential pressure switches).

Surveillance Requirement	Frequency
SR 3.3.1.1.5, Functional Test of RPS Scram Contactor	7 days
SR 3.3.1.1.11, Channel Functional Test	92 days
SR 3.3.1.1.17, Channel Calibration	24 months
SR 3.3.1.1.18, Logic System Functional Test	24 months

Note that a Channel Check SR (i.e., SR 3.3.1.1.1) is not specified because the existing level switch instrumentation (i.e., thermal, float, and differential pressure switches) is non-indicating and does not allow for a Channel Check.

C. BASES FOR THE CURRENT REQUIREMENTS

The protection and monitoring functions of the RPS have been designed to ensure safe operation of the reactor. The RPS initiates a reactor scram that utilizes a "one-out-of-two-taken-twice" logic, when one or more monitored parameters exceed their specified limits.

The scram discharge volume receives the water displaced by the motion of the control rod drive pistons during a reactor scram. Should this volume fill to a point where there is insufficient volume to accept the displaced water, control rod insertion would be hindered. Therefore, a reactor scram is initiated while the remaining free volume is sufficient to accommodate the water from a full core scram. The unit-specific AV volume specified in Table 3.3.1.1-1 Function 7 ensures that there is sufficient free volume in the applicable unit's scram discharge volumes to accommodate the water from a full scram. No credit is taken for a scram initiated from the Scram Discharge Volume Water Level – High Function for any of the design basis accidents or transients analyzed in the Updated Final Safety Analysis Report (UFSAR). However, the Scram Discharge Volume Water Level – High Function is retained to ensure the RPS remains operable.

Scram discharge volume water level is measured by two diverse methods. The level in each of the two scram discharge volumes is measured by two differential pressure type level transmitters with non-indicating electronic trip units. In addition, Unit 2 utilizes two non-indicating thermal probes and Unit 3 utilizes two non-indicating float-type level switches for a total of four level signals per scram discharge volume. The outputs of these devices are arranged so that there is a signal from a differential pressure level transmitter and either a thermal probe (for Unit 2) or a float switch (for Unit 3) to each RPS logic channel.

The TS require instrumentation important to safety, including the RPS, to be tested at a specified interval to ensure a high degree of safety system reliability. The SRs specified in TS Table 3.3.1.1-1, Function 7 provide assurance that the scram discharge volume water level – high function of RPS instrumentation will perform as required to shutdown the reactor should an excessively high scram discharge volume water level occur during reactor power operations (i.e., Modes 1 and 2). These SRs are based on non-indicating type level switches.

D. NEED FOR REVISION OF THE REQUIREMENTS

The existing Unit 3 scram discharge volume water level – high trip function float switches are Magnetrol switches that were replaced in 2000. However, shortly after installation, these float-type switches started to experience failures in which the floats would stick and operate unreliably. Magnetrol was contacted to determine the cause of the failures but at this time, the cause is still unknown. In addition, the existing float switches do not provide the necessary level indication output required to observe channel behavior during operation. For this reason, the existing TS do not require a Channel Check SR (i.e., SR 3.1.1.1.1) for this RPS instrumentation function.

Based on the above, EGC decided to upgrade the Unit 3 scram discharge volume water level – high trip switches by replacing the existing Magnetrol float switches with level sensing equipment of a different design. The existing Magnetrol float switches will be replaced with Rosemount level transmitters, electronic analog trip units, and master trip relays to interface with the RPS logic. The analog trip units replace the trip function at the sensor level with no change to the actuation logic. This will result in increased plant safety system reliability and accuracy due to elimination of failures associated with existing float switches. The new Unit 3 scram discharge volume water level instrumentation also provides for level indication whereas the existing float switches do not. In addition, as part of this Unit 3 scram discharge volume water level instrumentation upgrade, the reference legs to all Unit 3 scram discharge volume water level transmitters (i.e., new level transmitters described above and existing differential pressure type level transmitters for switches specified in TS Table 3.3.1.1-1 Function 7.b) will be modified to reduce crud accumulation in the instrument sensing lines.

To reflect the new analog trip unit design features and performance, as well as to reflect the level transmitter reference leg modification, a TS change is required to revise the Unit 3 instrumentation AV, as well as to add further SRs appropriate for an analog trip unit-type instrument. Since the scram discharge volume water level instrumentation upgrade only affects Unit 3 plant equipment, the Unit 2 specific instrumentation AV specified in TS Table 3.3.1.1-1 Function 7 remains unchanged.

Currently, the SRs listed for the existing differential pressure switch specified in TS Table 3.3.1.1-1 Function 7.b for Units 2 and 3 require performance of a level Channel Calibration at least once every 24 months. However, in order to perform a level Channel Calibration as infrequently as once every 24 months, the setpoint analysis assumes that the trip unit associated with the existing differential pressure level transmitter is calibrated at least once every 92 days. The SR to calibrate the trip unit (i.e., SR 3.3.1.1.12) at least once every 92 days should be specified for the existing differential pressure switch in Table 3.3.1.1-1. DNPS is performing the trip unit calibration every 92 days, but this requirement is not specified in TS.

This activity will maintain compliance with the commitments identified in the UFSAR for RPS and analog trip system instrumentation. The change will provide increased reliability and better overall performance of the trip function and maintain the identical RPS function.

E. DESCRIPTION OF THE PROPOSED CHANGES

The proposed changes to TS Table 3.3.1.1-1, Function 7 are as follows:

1. In Function 7.a, change the term "Float Switch" to "Level Indicating Switch."

2. In Function 7.a, add SR 3.3.1.1.1 and SR 3.3.1.1.12 to each SR listing (i.e., listing for Modes 1, 2 and the specified condition in Mode 5) followed by new table footnote designator "d" as such:

   SR 3.3.1.1.1[(d)]
   SR 3.3.1.1.5
   SR 3.3.1.1.11
   SR 3.3.1.1.12[(d)]
   SR 3.3.1.1.17
   SR 3.3.1.1.18

3. Add new table footnote "(d)" which states "Specified SR performance only required for Unit 3."

4. In Function 7.b, add "SR 3.3.1.1.12" to each SR listing (i.e., listing for Modes 1, 2, and the specified condition in Mode 5).

5. In Functions 7.a and 7.b, revise the AV for Unit 3 from "≤ 39.1" to "≤ 38.7" gallons in the four printed locations.

The proposed TS changes are reflected on a marked-up copy of the affected TS page in Attachment B. Revised TS and Bases pages affected by the proposed changes are also provided as information in Attachment C. Following NRC approval of this request, EGC will revise the TS Bases, in accordance with the TS Bases Control Program of TS Section 5.5.10, "Technical Specifications (TS) Bases Control Program," to incorporate the changes identified in Attachment B.

F. SAFETY ANALYSIS OF THE PROPOSED CHANGES

Currently, four locally mounted, non-indicating Magnetrol level float switches monitor scram discharge volume high water level on Unit 3. The switches are arranged so that each pair per instrument volume provides an input to RPS trip systems A and B. These existing Unit 3 Scram Discharge Volume Water Level - High scram switches will be replaced with Rosemount level transmitters, electronic analog trip units, and master trip relays to interface with the existing RPS logic. The new level transmitters and trip units utilize proven technology, are highly reliable, and are currently used in a number of applications at DNPS (e.g., RPS reactor vessel water level – low).

To maintain diversity between scram discharge volume water level channels, the new Unit 3 level channel will use a Rosemount analog trip unit (Model 710DU) whereas the analog level channel for the differential pressure switch specified in TS Table 3.3.1.1-1 Function 7.b uses

a Rochester Instrument trip unit (Model ET-1214-H). The Rosemount Model 710DU analog trip unit has been used for RPS level instrumentation at DNPS for many years. It is functionally equivalent to the Rochester Instrument trip unit (Model ET-1214-H). The new Unit 3 Scram Discharge Instrument Volume level transmitters are Rosemount 1154DP4RG transmitters and the existing level transmitters for the differential pressure switch specified in TS Table 3.3.1.1-1 Function 7.b are Rosemount 1153DB4PG transmitters. The use of different Rosemount transmitter models has been accepted as diverse sensors in similar applications (e.g., ATWS and RPS level channels at DNPS and QCNPS, and RPS pressure channels at QCNPS). Also, the method of providing power to the Rosemount transmitters differs in that the existing Model 1153DB4PG is powered directly from the RPS instrument loop power supply whereas the new Model 1154DP4RG is powered off of its associated Model 710DU analog trip unit. In addition, the RPS Scram Discharge Volume water level instrumentation is environmentally qualified, quality controlled as Class I equipment and verified operable by periodic surveillance test procedure. Based on these considerations, EGC concludes that the design of the new Unit 3 level channel precludes a common-cause failure with the existing TS Table 3.3.1.1-1 Function 7.b level sensing instrumentation.

The numbered text specified below corresponds to the numbered TS changes proposed in Section E, "Description of the Proposed Changes," of this Attachment.

1. The change in the Function 7.a description for the Unit 3 RPS instrumentation specified in TS Table 3.3.1.1-1 is necessary to properly reflect the new scram discharge volume water level monitoring instrumentation. This instrument description change is considered administrative in nature. Therefore, plant safety is unaffected by this proposed change.

2. The addition of a Channel Check (i.e., SR 3.3.1.1.1) and trip unit calibration (i.e., SR 3.3.1.1.12) in the listed SRs for TS Table 3.3.1.1-1 Function 7.a provides for appropriate SRs for the new Unit 3 RPS scram discharge volume water level instrumentation. The existing TS Table 3.3.1.1-1 Function 7.a RPS instrumentation channels (Thermal Switches for Unit 2 and Float Switches for Unit 3), as well as the differential pressure instrumentation channels used for Table 3.3.1.1-1 Function 7.b, do not provide scram discharge volume water level indication. However, the new Unit 3 RPS instrumentation channels utilized for Table 3.3.1.1-1 Function 7.a provide scram discharge volume water level indication, as well as the scram discharge volume water level – high scram function. Thus, the new Unit 3 RPS scram discharge volume water level instrumentation channels allow for performance of Channel Checks. Since the addition of SR 3.3.1.1.1 to the listed SRs for TS Table 3.3.1.1-1 Function 7.a makes for more comprehensive TS, the proposed change is deemed acceptable and plant safety is enhanced.

   The new Unit 3 RPS scram discharge volume water level instrumentation channels contain analog trip units, which require calibration at least once every 92 days (i.e., quarterly) to ensure proper operation. The TS Table 3.3.1.1-1 Function 7.a RPS instrumentation channels for Unit 2 (Thermal Switches) do not contain trip units and therefore calibration of such units does not apply. The frequency of 92 days is consistent with the frequency for existing trip units on other RPS level channels. Review of historical surveillance data for the Rosemount Model 710DU analog trip unit found that it has provided acceptable performance at DNPS. The 92-day SR frequency also conforms to the recommendations resulting from evaluations performed by General

Electric Company and the Boiling Water Reactor Owners' Group (BWROG) that were subsequently approved by the NRC (i.e., improvements in instrumentation allowed outage times/surveillance test intervals - AOT/STI). DNPS applied for AOT/STI TS enhancements in a License Amendment Request (LAR) (Reference I.4), which was subsequently approved by the NRC (Reference I.5). The LAR references a number of BWROG topical reports that support the AOT/STI TS enhancements. Referenced topical report NEDC-30851P-A (Reference I.6) evaluated the impact of extending functional testing requirements from monthly to quarterly for RPS instrumentation. Section 5.7.3 of NEDC-30851P-A includes a general discussion on the acceptability of extending testing requirements for analog trip unit devices. Note that the base model for these evaluations included sensor channels with transmitter/analog trip unit devices.

The use of differential pressure level transmitters, analog trip units and relays, in lieu of the existing level float switches, continues to allow for a 24-month surveillance frequency for the level Channel Calibration (i.e., SR 3.3.1.1.17), provided that the analog trip units are calibrated every 92 days. The NRC previously approved the use of a 24-month channel calibration surveillance frequency for many instruments, including similar differential pressure level transmitters, analog trip units, and relay designs, in Reference I.3. The rationale used for that approval also applies in this case. Also, since the new Unit 3 RPS scram discharge volume water level instrumentation channel analog trip units are functionally tested and calibrated at least once every 92 days, the 24-month Channel Calibration surveillance interval does not affect the analog trip units with respect to drift.

The Rosemount transmitter drift is determined by Rosemount using quantitative analysis. DNPS utilized the drift value determined by Rosemount to develop the proposed plant setpoint and TS AV using its approved setpoint methodology (NES-EIC-20.04). The setpoint methodology was approved by the NRC in Reference I.3. Use of the vendor drift analysis, combined with drift data from similar instruments at DNPS and QCNPS and the approved setpoint methodology, confirms that the proposed 24-month surveillance frequency is appropriate for the 1154DP4RG transmitter. Since the Model 1154DP4RG has not been installed at DNPS, no historical quantitative evaluation of DNPS data is possible. Review of historical surveillance data of similar pressure transmitters found no failures that would invalidate this conclusion. Similar pressure transmitters are the Rosemount 1153DB7PA, which is used for Reactor Vessel Water Level – Low, and the Rosemount 1153GB7PA , which is used for Reactor Vessel Pressure – Low. These transmitters differ from the 1154DP4RG primarily in the pressure range. Twelve surveillance tests at an eighteen-month frequency were reviewed on each of eight instruments of these similar models, for a total of 96 surveillance tests. In the 96 surveillance tests, no failures were observed that related to the safety function of the pressure transmitter. In addition, the 24-month SR, if performed at the maximum interval allowed (i.e., 30 months in accordance with SR 3.0.2), does not invalidate any assumptions in the plant licensing basis.

Since the addition of SR 3.3.1.1.12 to the listed SRs for TS Table 3.3.1.1-1 Function 7.a makes for more comprehensive TS, the proposed change is deemed acceptable and plant safety is enhanced.

3. SRs SR 3.3.1.1.1 and SR 3.3.1.1.12 added to the SRs listing in TS Table 3.3.1.1-1 Function 7.a have footnote (d) designator assigned to them. New footnote (d) is added to Table 3.3.1.1-1 specifying that these additional SRs are only required for Unit 3 equipment. The addition of the new footnote to Table 3.3.1.1-1 is considered administrative in nature. Therefore, plant safety is unaffected by this proposed change.

4. The addition of a trip unit calibration (i.e., SR 3.3.1.1.12) to the listed SRs for TS Table 3.3.1.1-1 Function 7.b provides for appropriate SRs for the existing RPS scram discharge volume water level instrumentation. This instrumentation consists of a differential pressure type level transmitter with a non-indicating electronic trip unit. The use of level transmitters and trip units allow utilization of a 24-month surveillance frequency for the level Channel Calibration (SR 3.3.1.1.17), provided that the trip units are calibrated every 92 days. Since SR 3.3.1.1.17 is currently specified for the RPS scram discharge volume water level instrumentation specified in TS Table 3.3.1.1-1 Function 7.b, performance of SR 3.3.1.1.12 must also be specified for this Function. Although SR 3.3.1.1.12 is not currently specified for Table 3.3.1.1-1 Function 7.b, DNPS does calibrate the trip units for the subject RPS scram discharge volume water level instrumentation every 92 days. Since the addition of SR 3.3.1.1.12 to the listed SRs for TS Table 3.3.1.1-1 Function 7.b makes for a more comprehensive TS, the proposed change is deemed acceptable and plant safety is enhanced.

5. The revised Unit 3 AV in TS Table 3.3.1.1-1 Function 7 of $\leq$ 38.7 gallons is based on calculations performed using methodology previously approved by the NRC (Reference I.3). No analytical limit is altered by any of the proposed changes. For this reason, the proposed change is acceptable and does not involve a reduction in plant safety.

In addition, as noted in Section C, "Bases for the Current Requirements," of this Attachment, no credit is taken for a scram initiated from the Scram Discharge Volume Water Level – High Function for any of the design basis accidents or transients analyzed in the UFSAR. The Scram Discharge Volume Water Level – High Function is retained however, to ensure the RPS remains operable.

G. IMPACT ON PREVIOUS SUBMITTALS

EGC has reviewed the proposed changes for impact on any previous submittals, and has determined that there is no impact on any license amendment requests being reviewed by the NRC.

H. SCHEDULE REQUIREMENTS

We request approval of these proposed changes by March 31, 2003 with a 90-day implementation period.

Attachment A

DESCRIPTION AND SAFETY ANALYSIS FOR PROPOSED CHANGES

I. REFERENCES

I.1 NRC Letter to O. D. Kingsley (Commonwealth Edison Company), "Quad Cities – Issuance of Amendments on Replacement of Pressure Switches," dated January 28, 2000

I.2 NRC Letter to O. D. Kingsley (Exelon Generation Company, LLC), "Quad Cities Nuclear Power Station, Units 1 and 2 – Issuance of Amendments Re: Reactor Pressure Vessel Level Instrumentation Surveillance Frequencies and Allowable Values," dated February 12, 2002

I.3 NRC Letter to O. D. Kingsley (EGC), "Issuance of Amendments," dated March 30, 2001

I.4 Letter from J. M. Heffley (Commonwealth Edison Company) "Proposed Technical Specifications Change – Surveillance Test Intervals and Allowable Outage Times for Protective Instrumentation," dated January 11, 2000

I.5 NRC Letter to O. D. Kingsley (Commonwealth Edison Company), "Dresden - Issuance of Amendments Changing Allowable Out-of-Service Times and Surveillance Test Intervals," dated August 2, 2000

I.6 General Electric Licensing Topical Report NEDC-30851-A, "Technical Specification Improvement Analysis for BWR Reactor Protection System," March 1988

Attachment B

MARKED-UP

TECHNICAL SPECIFICATIONS PAGE

FOR

PROPOSED CHANGES

REVISED TS PAGE

3.3.1.1-10

Table 3.3.1.1-1 (page 3 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
7. Scram Discharge Volume Water Level–High				SR 3.3.1.1.1 (d)	SR 3.3.1.1.12 (d)
a. Thermal Switch (Unit 2) ~~Float~~ Switch (Unit 3)	1,2	2	G	SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 37.9 gallons (Unit 2) ≤ ~~39.1~~ 38.7 gallons (Unit 3)
Level Indicating	5(a)	2	H	SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 37.9 gallons (Unit 2) ≤ ~~39.1~~ 38.7 gallons (Unit 3)
b. Differential Pressure Switch	1,2	2	G	SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 37.9 gallons (Unit 2) ≤ ~~39.1~~ 38.7 gallons (Unit 3)
SR 3.3.1.1.12	5(a)	2	H	SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 37.9 gallons (Unit 2) ≤ ~~39.1~~ 38.7 gallons (Unit 3)
8. Turbine Stop Valve-Closure	≥ 38.5% RTP	4	E	SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.14 SR 3.3.1.1.17 SR 3.3.1.1.18 SR 3.3.1.1.19	≤ 9.5% closed
9. Turbine Control Valve Fast Closure, Trip Oil Pressure–Low	≥ 38.5% RTP	2	E	SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.14 SR 3.3.1.1.17 SR 3.3.1.1.18 SR 3.3.1.1.19	≥ 466 psig
10. Turbine Condenser Vacuum–Low	1, 2(c)	2	F	SR 3.3.1.1.5 SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.18 SR 3.3.1.1.19	≥ 21.4 inches Hg vacuum
11. Reactor Mode Switch–Shutdown Position	1,2	1	G	SR 3.3.1.1.16 SR 3.3.1.1.18	NA
	5(a)	1	H	SR 3.3.1.1.16 SR 3.3.1.1.18	NA
12. Manual Scram	1,2	1	G	SR 3.3.1.1.8 SR 3.3.1.1.18	NA
	5(a)	1	H	SR 3.3.1.1.8 SR 3.3.1.1.18	NA

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

~~(c) With reactor pressure ≥ 600 psig.~~

(d) Specified SR performance only required for Unit 3.

Attachment C

TYPED PAGES

FOR

TECHNICAL SPECIFICATIONS AND BASES CHANGES

REVISED TS PAGE

3.3.1.1-10

REVISED BASES PAGE
(PROVIDED FOR INFORMATION ONLY)

B 3.3.1.1-17

Table 3.3.1.1-1 (page 3 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
7. Scram Discharge Volume Water Level–High					
a. Thermal Switch (Unit 2) Level Indicating Switch (Unit 3)	1,2	2	G	SR 3.3.1.1.1[d] SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.12[d] SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 37.9 gallons (Unit 2) ≤ 38.7 gallons (Unit 3)
	5[a]	2	H	SR 3.3.1.1.1[d] SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.12[d] SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 37.9 gallons (Unit 2) ≤ 38.7 gallons (Unit 3)
b. Differential Pressure Switch	1,2	2	G	SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.12 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 37.9 gallons (Unit 2) ≤ 38.7 gallons (Unit 3)
	5[a]	2	H	SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.12 SR 3.3.1.1.17 SR 3.3.1.1.18	≤ 37.9 gallons (Unit 2) ≤ 38.7 gallons (Unit 3)
8. Turbine Stop Valve-Closure	≥ 38.5% RTP	4	E	SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.14 SR 3.3.1.1.17 SR 3.3.1.1.18 SR 3.3.1.1.19	≤ 9.5% closed
9. Turbine Control Valve Fast Closure, Trip Oil Pressure–Low	≥ 38.5% RTP	2	E	SR 3.3.1.1.5 SR 3.3.1.1.11 SR 3.3.1.1.14 SR 3.3.1.1.17 SR 3.3.1.1.18 SR 3.3.1.1.19	≥ 466 psig
10. Turbine Condenser Vacuum–Low	1, 2[c]	2	F	SR 3.3.1.1.5 SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.18 SR 3.3.1.1.19	≥ 21.4 inches Hg vacuum
11. Reactor Mode Switch–Shutdown Position	1,2	1	G	SR 3.3.1.1.16 SR 3.3.1.1.18	NA
	5[a]	1	H	SR 3.3.1.1.16 SR 3.3.1.1.18	NA
12. Manual Scram	1,2	1	G	SR 3.3.1.1.8 SR 3.3.1.1.18	NA
	5[a]	1	H	SR 3.3.1.1.8 SR 3.3.1.1.18	NA

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.
(c) With reactor pressure ≥ 600 psig.
(d) Specified SR performance only required for Unit 3.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

7.a, 7.b. Scram Discharge Volume Water Level—High

The SDV receives the water displaced by the motion of the CRD pistons during a reactor scram. Should this volume fill to a point where there is insufficient volume to accept the displaced water, control rod insertion would be hindered. Therefore, a reactor scram is initiated while the remaining free volume is still sufficient to accommodate the water from a full core scram. The types of Scram Discharge Volume Water Level—High Functions are an input to the RPS logic. No credit is taken for a scram initiated from these Functions for any of the design basis accidents or transients analyzed in the UFSAR. However, they are retained to ensure the RPS remains OPERABLE.

SDV water level is measured by two diverse methods. The level in each of the two SDVs is measured by two differential pressure type level transmitters with non-indicating electronic trip units. In addition, Unit 2 uses two thermal probes and Unit 3 uses two differential pressure type level transmitters with level indicating analog trip units for a total of eight level signals. The outputs of these devices are arranged so that there is a signal from a non-indicating differential pressure level transmitter and either a thermal probe or a level indicating differential pressure transmitter to each RPS logic channel. The level measurement instrumentation satisfies the recommendations of Reference 10.

The Allowable Value is chosen low enough to ensure that there is sufficient volume in the SDV to accommodate the water from a full scram.

Four channels of each type of Scram Discharge Volume Water Level—High Function, with two channels of each type in each trip system, are required to be OPERABLE to ensure that no single instrument failure will preclude a scram from these Functions on a valid signal. These Functions are required in MODES 1 and 2, and in MODE 5 with any control rod withdrawn from a core cell containing one or more fuel assemblies, since these are the MODES and other specified conditions when control rods are withdrawn. At all other times, this Function may be bypassed.

(continued)

Attachment D

INFORMATION SUPPORTING A FINDING OF NO SIGNIFICANT HAZARDS CONSIDERATION

According to 10 CFR 50.92, "Issuance of amendment," paragraph (c) a proposed amendment to an operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or

(2) Create the possibility of a new or different kind of accident from any accident previously evaluated; 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

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company (EGC), LLC, is requesting a change to Appendix A, Technical Specifications (TS), of Facility Operating License Nos. DPR-19 and DPR-25, for Dresden Nuclear Power Station, Units 2 and 3. The proposed TS changes modify the Unit 3 Allowable Value, and Unit 2 and 3 Surveillance Requirements for Reactor Protection System (RPS) Instrumentation Function 7, "Scram Discharge Volume Water Level – High." Surveillance Requirement changes for Unit 3 include the addition of a Channel Check and a quarterly trip unit calibration to support a planned upgrade to the Scram Discharge Volume Water Level – High instrumentation from float-type level switches to electronic analog trip units. A further Surveillance Requirement change, common to both Units 2 and 3, is the addition of a quarterly trip unit calibration for the existing differential pressure switches for the subject RPS instrumentation function. No Analytical Limit is changed for any TS function.

The proposed TS changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

Dresden Nuclear Power Station (DNPS), Unit 3 plans to implement a design change that upgrades the Scram Discharge Volume Water Level - High instrumentation from existing float-type level switches to electronic analog trip units. Analog trip units are a proven technology that is more reliable than existing equipment. The proposed design is consistent with a generic design that has been previously reviewed and approved by the NRC. Analog trip units are used in various applications at DNPS, including the Reactor Protection System (RPS) Low Water Level Trip Function.

The proposed Technical Specifications (TS) changes add new Unit 3 Channel Check and trip unit calibration Surveillance Requirements (SRs) for the new analog trip units associated with the Scram Discharge Volume Water Level – High RPS Trip Function. These new Unit 3 SRs are not applicable to the existing instrumentation because the existing float-type level switches are non-indicating and do not employ trip units. In addition, the proposed TS changes add a

new trip unit calibration SR for existing Unit 2 and 3 instrumentation that is composed of differential pressure type level transmitter switches.

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 proposed changes will not involve an increase in the probability of an accident previously evaluated. Additionally, these proposed changes will not increase the consequences of an accident previously evaluated because the proposed changes do not adversely impact structures, systems, or components. The planned Unit 3 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.

In summary, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed TS changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed changes support a planned instrumentation upgrade on Unit 3 by incorporating SRs required to ensure operability. There is no change being made to the parameters within which DNPS is operated. The proposed changes do not adversely impact the manner in which the Scram Discharge Volume Water Level – High RPS instrumentation will operate under normal and abnormal operating conditions. The proposed changes will not alter the function demands on credited equipment. No alteration in the procedures, which ensure DNPS remains within analyzed limits, is proposed, and no change is being made to procedures relied upon to respond to an off-normal event. Therefore, these proposed 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. Therefore, these proposed changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed TS changes do not involve a significant reduction in a margin of safety.

Margins of safety are established in the design of components, the configuration of components to meet certain performance parameters, and in the establishment of setpoints to initiate alarms and actions. The proposed changes support a planned instrumentation upgrade to enhance the reliability of RPS instrumentation. The proposed changes do not affect the probability of failure or availability of the affected instrumentation. The revised Allowable Value, addition of a Channel Check and trip unit calibration, and revision of other SRs for RPS Instrumentation Function 7 (Scram Discharge Volume Water Level – High) are conservative changes that align the SRs for proper determination of operability with that of similar instrumentation. Therefore, it is concluded that the proposed changes do not result in a reduction in the margin of safety.

Attachment D

INFORMATION SUPPORTING A FINDING OF NO SIGNIFICANT HAZARDS CONSIDERATION

Conclusion

Based upon the above evaluation, EGC has concluded that the criteria of 10 CFR 50.92(c) are satisfied and that the proposed TS changes involve no significant hazards consideration.

Attachment E

INFORMATION SUPPORTING AN ENVIRONMENTAL ASSESSMENT

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company (EGC), LLC, is requesting a change to Appendix A, Technical Specifications (TS), of Facility Operating License Nos. DPR-19 and DPR-25, for Dresden Nuclear Power Station, Units 2 and 3. The proposed changes modify the Unit 3 Allowable Value, and Unit 2 and 3 Surveillance Requirements for Reactor Protection System (RPS) Function 7, "Scram Discharge Volume Water Level – High." Surveillance Requirement changes for Unit 3 include the addition of a Channel Check and a quarterly trip unit calibration to support a planned upgrade to the Scram Discharge Volume Water Level – High instrumentation from float-type level switches to electronic analog trip units. The Unit 3 instrumentation upgrade also modifies the configuration of the scram discharge volume water level instrumentation sensing line reference legs to minimize crud accumulation. A further Surveillance Requirement change, common to both Units 2 and 3, is the addition of a quarterly trip unit calibration for the existing differential pressure switches of the subject RPS instrumentation function. No Analytical Limit is changed by any of the above changes.

EGC has evaluated this proposed change 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 this proposed change meets 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 this change is 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, and the amendment meets the following specific criteria:

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

As demonstrated in Attachment D, 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, which revise the Allowable Value and SRs for the Scram Discharge Volume Water Level – High Function of the RPS Instrumentation specified in the TS, is consistent with the plant design basis. There will be no significant increase in the amounts of any effluents released offsite. 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 changes in the configuration of the facility. The proposed changes only affect the Scram Discharge Volume Water Level – High Function of the RPS Instrumentation specified in the TS. 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.