

RS-06-018

January 31, 2006

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

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: Additional Information Supporting Request for License Amendment Regarding  
Transition to Westinghouse Fuel

- References:
1. Letter from P. R. Simpson (Exelon Generation Company, LLC) to U. S. NRC, "Request for License Amendment Regarding Transition to Westinghouse Fuel," dated June 15, 2005
  2. Letter from G. F. Dick (U. S. NRC) to C. M. Crane (Exelon Generation Company, LLC), "Dresden Nuclear Power Station, Units 2 and 3; Quad Cities Nuclear Power Station, Units 1 and 2 – Request for additional Information Regarding Transition to Westinghouse SVEA-96 Optima2 Fuel (TAC Nos. MC7323, MC7324, MC7325, and MC7326)," dated December 8, 2005
  3. Letter from P. R. Simpson (Exelon Generation Company, LLC) to U. S. NRC, "Additional Information Supporting Request for License Amendment Regarding Transition to Westinghouse Fuel," dated January 26, 2006

In Reference 1, Exelon Generation Company, LLC (EGC) requested an amendment to Renewed Facility Operating License Nos. DPR-19 and DPR-25 for Dresden Nuclear Power Station (DNPS) Units 2 and 3, and Renewed Facility Operating License Nos. DPR-29 and DPR-30 for Quad Cities Nuclear Power Station (QCNP) Units 1 and 2. The proposed amendment supports the transition to Westinghouse SVEA-96 Optima2 fuel at DNPS and QCNP.

In Reference 2, the NRC requested additional information to complete its review. EGC provided a partial response to this request in Reference 3, and indicated that the response to NRC Request 6 was to be submitted to the NRC in a separate letter. Attached, in response to NRC Request 6 of Reference 2, is the requested information.

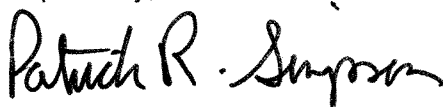
As discussed in the response to NRC Request 6 in Attachment 1, EGC is proposing to add an additional Technical Specification (TS) Surveillance Requirement that requires that the enrichment of sodium pentaborate be verified prior to addition to the Standby Liquid Control tank. The proposed use of enriched sodium pentaborate was previously provided to the NRC in Attachment 7 of Reference 1. This proposed TS change has been reviewed by the Plant Operations Review Committee and approved by the Nuclear Safety Review Board for the respective facilities in accordance with the requirements of the EGC Quality Assurance Program.

In Reference 1, EGC requested an implementation period of 60 days following issuance of the amendments, to allow adequate time for the affected station documents to be revised using the appropriate change control mechanisms. As a result of the additional TS Surveillance Requirement related to the enrichment of sodium pentaborate, EGC requests that the implementation period be revised as follows. Once approved, the amendments shall be implemented prior to unit startup with a reactor core containing Westinghouse SVEA-96 Optima2 fuel. This change is needed since implementation of the modification to transition to enriched sodium pentaborate will be completed during scheduled refueling outages for the respective DNPS and QCNPS units.

There are no regulatory commitments contained in this letter. Should you have any questions related to this letter, please contact Mr. Kenneth M. Nicely at (630) 657-2803.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 31st day of January 2006.

Respectfully,



Patrick R. Simpson  
Manager – Licensing

Attachments:

- Attachment 1: Response to Request for Additional Information
- Attachment 2: Markup of Proposed Technical Specifications Page for DNPS
- Attachment 3: Markup of Proposed Technical Specifications Page for QCNPS
- Attachment 4: Retyped Technical Specifications Page for Proposed Change for DNPS
- Attachment 5: Retyped Technical Specifications Page for Proposed Change for QCNPS
- Attachment 6: Markup of Technical Specifications Bases Page for DNPS
- Attachment 7: Markup of Technical Specifications Bases Page for QCNPS

**ATTACHMENT 1**  
**Response to Request for Additional Information**

**NRC Request 6**

Section 2.5.5 of the license amendment request identifies a physical change to the standby liquid control (SLC) system being credited in the anticipated transient without scram (ATWS) analysis. Specifically, the sodium pentaborate in the SLC tank has been upgraded from natural boron (19.8 a/o B10) to enriched boron (30 a/o B10). This enhancement is directly responsible for the mitigation of the accident analysis and therefore must be surveilled in accordance with the ATWS rule, Title 10 of the *Code of Federal Regulations* (10 CFR) Part 62. The Exelon license amendment request does not include a change to technical specification (TS) 3.1.7 and thus, is deficient in that it does not capture this important physical change to the plants nor any surveillance requirements (SRs). Standard TS SR 3.1.7.10 defines the SR for verifying enriched sodium pentaborate. The licensee should address this deficiency to their amendment request.

**Response**

One of the important physical changes being made at Dresden Nuclear Power Station (DNPS) and Quad Cities Nuclear Power Station (QCNPS) as part of the transition to Westinghouse SVEA-96 Optima2 fuel is the upgrade of the liquid within the SLC tank from natural to 30 atom percent enriched sodium pentaborate. The chemical concentration and all other SLC liquid properties will remain unchanged. The other important physical change being made as part of the transition is the use of Westinghouse SVEA-96 Optima2 fuel. As previously described within Section 2.5 of the license amendment request, the physical change to the plant is an increase in SLC boron 10 enrichment, which is being done to ensure satisfying the acceptance criteria for the ATWS analysis of Updated Final Safety Analysis Report (UFSAR) Section 15.8. Enriched boron is not being utilized for compliance with 10 CFR 50.62. The existing method of compliance for DNPS and QCNPS with respect to the requirements of 10 CFR 50.62 is not being altered as part of the transition to SVEA-96 Optima2 fuel.

A change to TS 3.1.7 was not included with the initial license amendment request due to the similar administrative controls being applied at DNPS and QCNPS that are utilized at LaSalle County Station (LSCS). LSCS uses enriched boron for the SLC system. As part of the conversion of the LSCS TS to improved Standard TS, the appropriate administrative controls exist and were used as the basis for not including Standard TS SR 3.1.7.10, which requires that the enrichment of sodium pentaborate be verified prior to addition to the SLC tank. EGC used the NRC's disposition (i.e., approval) treatment of LSCS's use of administrative controls as a precedent with respect to not including TS SR 3.1.7.10 for DNPS and QCNPS. However, due to the straightforward nature of the request to comply with the Standard TS, EGC will add this SR to the TS for DNPS and QCNPS. Attachments 2 and 3 provide the marked-up TS page for DNPS and QCNPS, respectively. Attachments 4 and 5 provide the retyped TS page for DNPS and QCNPS, respectively, with the proposed change incorporated. A markup of the TS Bases page for SR 3.1.7.10 is provided in Attachments 6 and 7 for DNPS and QCNPS, respectively. The TS Bases pages are provided for information only and do not require NRC approval.

**ATTACHMENT 2**  
**Markup of Proposed Technical Specifications Page**

**DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3**  
**RENEWED FACILITY OPERATING LICENSE NOS. DPR-19 AND DPR-25**

**REVISED TECHNICAL SPECIFICATIONS PAGE**

3.1.7-3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.6	Verify each SLC subsystem manual valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position, or can be aligned to the correct position.	31 days
SR 3.1.7.7	Verify each pump develops a flow rate $\geq 40$ gpm at a discharge pressure $\geq 1275$ psig.	In accordance with the Inservice Testing Program
SR 3.1.7.8	Verify flow through one SLC subsystem from pump into reactor pressure vessel.	24 months on a STAGGERED TEST BASIS
SR 3.1.7.9	Verify all heat traced piping between storage tank and pump suction is unblocked.	24 months <u>AND</u> Once within 24 hours after piping temperature is restored within the limits of Figure 3.1.7-2

**INSERT**

SR 3.1.7.10	Verify sodium pentaborate enrichment is $\geq 30.0$ atom percent B-10.	Prior to addition to SLC tank
-------------	--	-------------------------------

**ATTACHMENT 3**  
**Markup of Proposed Technical Specifications Page**

**QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2**  
**RENEWED FACILITY OPERATING LICENSE NOS. DPR-29 AND DPR-30**

**REVISED TECHNICAL SPECIFICATIONS PAGE**

3.1.7-3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.6	Verify each SLC subsystem manual valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position, or can be aligned to the correct position.	31 days
SR 3.1.7.7	Verify each pump develops a flow rate $\geq 40$ gpm at a discharge pressure $\geq 1275$ psig.	In accordance with the Inservice Testing Program
SR 3.1.7.8	Verify flow through one SLC subsystem from pump into reactor pressure vessel.	24 months on a STAGGERED TEST BASIS
SR 3.1.7.9	Verify all heat traced piping between storage tank and pump suction is unblocked.	24 months <u>AND</u> Once within 24 hours after piping temperature is restored within the limits of Figure 3.1.7-2

**INSERT**

SR 3.1.7.10	Verify sodium pentaborate enrichment is $\geq 30.0$ atom percent B-10.	Prior to addition to SLC tank
-------------	--	-------------------------------

**ATTACHMENT 4**  
**Retyped Technical Specifications Page for Proposed Change**

**DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3**  
**RENEWED FACILITY OPERATING LICENSE NOS. DPR-19 AND DPR-25**

**REVISED TECHNICAL SPECIFICATIONS PAGE**

3.1.7-3



SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.6	Verify each SLC subsystem manual valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position, or can be aligned to the correct position.	31 days
SR 3.1.7.7	Verify each pump develops a flow rate $\geq 40$ gpm at a discharge pressure $\geq 1275$ psig.	In accordance with the Inservice Testing Program
SR 3.1.7.8	Verify flow through one SLC subsystem from pump into reactor pressure vessel.	24 months on a STAGGERED TEST BASIS
SR 3.1.7.9	Verify all heat traced piping between storage tank and pump suction is unblocked.	24 months <u>AND</u> Once within 24 hours after piping temperature is restored within the limits of Figure 3.1.7-2
SR 3.1.7.10	Verify sodium pentaborate enrichment is $\geq 30.0$ atom percent B-10.	Prior to addition to SLC tank

**ATTACHMENT 5**  
**Retyped Technical Specifications Page for Proposed Change**

**QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2**  
**RENEWED FACILITY OPERATING LICENSE NOS. DPR-29 AND DPR-30**

**REVISED TECHNICAL SPECIFICATIONS PAGE**

3.1.7-3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.6	Verify each SLC subsystem manual valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position, or can be aligned to the correct position.	31 days
SR 3.1.7.7	Verify each pump develops a flow rate $\geq 40$ gpm at a discharge pressure $\geq 1275$ psig.	In accordance with the Inservice Testing Program
SR 3.1.7.8	Verify flow through one SLC subsystem from pump into reactor pressure vessel.	24 months on a STAGGERED TEST BASIS
SR 3.1.7.9	Verify all heat traced piping between storage tank and pump suction is unblocked.	24 months <u>AND</u> Once within 24 hours after piping temperature is restored within the limits of Figure 3.1.7-2
SR 3.1.7.10	Verify sodium pentaborate enrichment is $\geq 30.0$ atom percent B-10.	Prior to addition to SLC tank

**ATTACHMENT 6**  
**Markup of Technical Specifications Bases Page**

**DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3**  
**RENEWED FACILITY OPERATING LICENSE NOS. DPR-19 AND DPR-25**

**REVISED TECHNICAL SPECIFICATIONS PAGE**

B 3.1.7-6

BASES

SURVEILLANCE  
REQUIREMENTS

SR 3.1.7.8 and SR 3.1.7.9 (continued)

should be alternated such that both complete flow paths are tested every 48 months at alternating 24 month intervals. The Surveillance may be performed in separate steps to prevent injecting boron into the RPV. An acceptable method for verifying flow from the pump to the RPV is to pump demineralized water from a test tank through one SLC subsystem and into the RPV. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency; therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

Demonstrating that all heat traced piping between the boron solution storage tank and the suction inlet to the injection pumps is unblocked ensures that there is a functioning flow path for injecting the sodium pentaborate solution. An acceptable method for verifying that the suction piping is unblocked is to pump from the storage tank to the storage tank.

The 24 month Frequency is acceptable since there is a low probability that the subject piping will be blocked due to precipitation of the boron from solution in the heat traced piping. This is especially true in light of the temperature verification of this piping required by SR 3.1.7.3. However, if, in performing SR 3.1.7.3, it is determined that the temperature of this piping has fallen below the specified minimum, SR 3.1.7.9 must be performed once within 24 hours after the piping temperature is restored to within the limits of Figure 3.1.7-2.

REFERENCES

1. 10 CFR 50.62.
2. UFSAR, Section 9.3.5.3.

INSERT SR 3.1.7.10

### **INSERT SR 3.1.7.10**

#### **SR 3.1.7.10**

Enriched sodium pentaborate solution is made by mixing granular, enriched sodium pentaborate with water. Action to verify the actual B-10 enrichment must be performed prior to addition to the SLC tank in order to ensure that the proper B-10 atom percentage is being used. The proper enrichment (i.e., B-10 atom percentage) of the sodium pentaborate is verified, prior to the addition to the SLC tank, by use of a certificate of compliance provided by the supplier for each batch of enriched sodium pentaborate. The certificate of compliance will include certification that the enrichment of the sodium pentaborate satisfies the acceptance criterion.

**ATTACHMENT 7**  
**Markup of Technical Specifications Bases Page**

**QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2**  
**RENEWED FACILITY OPERATING LICENSE NOS. DPR-29 AND DPR-30**

**REVISED TECHNICAL SPECIFICATIONS PAGE**

B 3.1.7-6

BASES

---

SURVEILLANCE  
REQUIREMENTS

SR 3.1.7.8 and SR 3.1.7.9 (continued)

should be alternated such that both complete flow paths are tested every 48 months at alternating 24 month intervals. The Surveillance may be performed in separate steps to prevent injecting boron into the RPV. An acceptable method for verifying flow from the pump to the RPV is to pump demineralized water from a test tank through one SLC subsystem and into the RPV. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency; therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

Demonstrating that all heat traced piping between the boron solution storage tank and the suction inlet to the injection pumps is unblocked ensures that there is a functioning flow path for injecting the sodium pentaborate solution. An acceptable method for verifying that the suction piping is unblocked is to pump from the storage tank to the storage tank.

The 24 month Frequency is acceptable since there is a low probability that the subject piping will be blocked due to precipitation of the boron from solution in the heat traced piping. This is especially true in light of the temperature verification of this piping required by SR 3.1.7.3. However, if, in performing SR 3.1.7.3, it is determined that the temperature of this piping has fallen below the specified minimum, SR 3.1.7.9 must be performed once within 24 hours after the piping temperature is restored to within the limits of Figure 3.1.7-2.

---

REFERENCES

1. 10 CFR 50.62.
  2. UFSAR, Section 9.3.5.3.
- 

INSERT SR 3.1.7.10



**INSERT SR 3.1.7.10**

**SR 3.1.7.10**

Enriched sodium pentaborate solution is made by mixing granular, enriched sodium pentaborate with water. Action to verify the actual B-10 enrichment must be performed prior to addition to the SLC tank in order to ensure that the proper B-10 atom percentage is being used. The proper enrichment (i.e., B-10 atom percentage) of the sodium pentaborate is verified, prior to the addition to the SLC tank, by use of a certificate of compliance provided by the supplier for each batch of enriched sodium pentaborate. The certificate of compliance will include certification that the enrichment of the sodium pentaborate satisfies the acceptance criterion.