

Dominion Nuclear Connecticut, Inc.  
Millstone Power Station  
Rope Ferry Road  
Waterford, CT 06385



**Dominion™**

JAN 15 2003

Docket No. 50-336  
B18819

RE: 10 CFR 50.90

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

Millstone Power Station, Unit No. 2  
Response to a Request for Additional Information  
License Basis Document Change Request 2-13-02  
Electrical Power Systems - D.C. Distribution

In a letter dated August 12, 2002,<sup>(1)</sup> Dominion Nuclear Connecticut, Inc. (DNC) requested changes to the Millstone Unit No. 2 Technical Specifications. The primary purpose of the proposed changes was to provide additional criteria for determining Electrical Power System direct current (D.C.) battery operability upon restoration from a recharge, or equalizing charge. On October 29, 2002,<sup>(2)</sup> a request for additional information (RAI) was received via fax from the Nuclear Regulatory Commission (NRC).

The October 29, 2002, RAI contains five (5) questions relating to the August 12, 2002, license amendment request. On December 16, 2002, a teleconference between DNC and the NRC was held to discuss the DNC response to these five (5) questions. This response is provided as Attachment 1.

The additional information provided in this letter will not affect the conclusions of the Safety Summary and Significant Hazards Consideration discussions provided in the DNC August 12, 2002, submittal.

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<sup>(1)</sup> J. Alan Price to U.S. NRC, "Millstone Nuclear Power Station, Unit No. 2, License Basis Document Change Request (LBDCR) 2-13-02, Electrical Power Systems - D.C. Distribution," dated August 12, 2002.

<sup>(2)</sup> Rick Ennis, U.S. NRC to R. Joshi, "Issues For Discussion in Upcoming Telephone Conference Regarding Proposed Amendment to Technical Specifications, Electrical Power Systems - D.C. Distribution, Millstone Power Station Unit No. 2, Docket No. 50-336," dated October 29, 2002.


A001

There are no regulatory commitments contained within this letter.

If you should have any questions on this submittal, please contact Mr. Ravi Joshi at (860) 440-2080.

Very truly yours,

DOMINION NUCLEAR CONNECTICUT, INC.

  
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J. Alan Price  
Site Vice President - Millstone

Sworn to and subscribed before me

this 15<sup>TH</sup> day of JANUARY, 2003

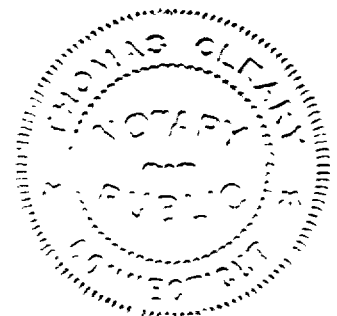
  
\_\_\_\_\_  
Notary Public

My Commission expires FEBRUARY 28, 2006

Attachment: (1)

cc: H. J. Miller, Region I Administrator  
R. B. Ennis, NRC Senior Project Manager, Millstone Unit No. 2  
Millstone Senior Resident Inspector

Director  
Bureau of Air Management  
Monitoring and Radiation Division  
Department of Environmental Protection  
79 Elm Street  
Hartford, CT 06106-5127



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Attachment 1

Millstone Power Station, Unit No. 2  
Response to a Request for Additional Information  
License Basis Document Change Request 2-13-02  
Electrical Power Systems - D.C. Distribution

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Response to a Request for Additional Information  
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Response to Request for Additional Information

*Question 1) The proposed amendment adds new TS Tables 4.8-1 and 4.8-2 to reformat the existing battery cell parameter limits currently shown in TSs 4.8.2.3.2 and 4.8.2.5.2. Proposed Tables 4.8-1 and 4.8-2 indicate that verifying the electrolyte level in each connected cell is "not required." The current TSs also do not contain a surveillance requirement (SR) for verifying electrolyte level in the connected cells (although the current TSs do not explicitly state that the tests are not required). Section 8.5.4.2 of the MP2 Final Safety Analysis Report (FSAR) states that electrolyte level of each cell is checked periodically. For some of the other proposed changes, the submittal states that the changes are consistent with IEEE Standard 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations." IEEE-450-1980, Section 4.3.1, recommends that electrolyte levels be checked at least once per month. The standard technical specifications (NUREG-1432, SR 3.8.6.3) include a requirement to verify electrolyte level in the connected cells every 31 days consistent with IEEE-450. The NUREG-1432 Bases for TS 3.8.6 state that the battery parameters satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii). Based on the MP2 FSAR, it appears that electrolyte level is checked, however, this parameter is not included as a TS requirement. Please discuss what provisions are currently provided in plant procedures to check electrolyte level in connected cells (i.e., consistent with FSAR) and discuss why an SR to verify electrolyte level in each connected cell is not required.*

**Response:** The electrolyte levels for the connected cells of the batteries addressed by Technical Specifications 4.8.2.3.2 and 4.8.2.5.2 are verified on a periodic basis. Plant procedures specify a weekly surveillance be performed that verifies the electrolyte levels for each connected cell (as well as the pilot cell) of the D.C. bus train batteries (201A and 201B) and the Turbine Battery (201D) are within their high and low limits. Consistent with paragraph 4.4.1(1) of IEEE 450-1980, plant procedures also require as part of the weekly surveillance that the battery electrolyte levels for all 60 cells be adjusted to within their normal (midrange) level limits if any one cell is found outside the required range. These requirements are also consistent with the manufacturer's recommendations. For safety considerations, water is added at the low level mark to prevent electrolyte level from reaching the bottom of the funnel stem. Levels above the high level mark do not affect either capacity or safety unless an overflow

condition exists. In either case, significant margin exists between the level marks and the point at which electrolyte level could affect battery capacity.

The only purpose of the proposed changes to Surveillance Requirements 4.8.2.3.2.a and 4.8.2.3.2.b is to improve readability by reformatting the existing acceptance criteria into a tabular format. These acceptance criteria were not changed, only additional criteria for determining battery OPERABILITY following a battery recharge, or equalizing charge, were provided. The existing acceptance criteria for these two surveillances are still required to be met within the specified timeframe, the proposed changes only provide alternative criteria for determining battery OPERABILITY until such time as the battery has stabilized and valid measurements can be taken to verify compliance with the existing acceptance criteria for Surveillance Requirements 4.8.2.3.2.a and 4.8.2.3.2.b.

In summary, current practices and procedural requirements fully comply with the guidance of IEEE 450-1980 for verifying battery (pilot and connected cell) electrolyte level and are consistent with the current licensing basis for Millstone Unit No. 2. As discussed in our December 16, 2002, phone call with the NRC, the Millstone Unit No. 2 FSAR will be revised to show how current practices and procedural requirements for the 201A, 201B, and 201D batteries comply with the guidance of IEEE 450-1980 for verifying battery (pilot and connected cell) electrolyte level. This FSAR revision will be completed as part of the implementation of this proposed license amendment, thereby becoming a part of the facility licensing basis.

*Question 2) Notes (b) and (c) in proposed TS Tables 4.8-1 and 4.8-2 indicate that the float battery charging current is < 5 amps. Is this value consistent with the value of actual readings when the battery is on float? What are the battery capacities in ampere-hours?*

**Response:** The proposed criteria for the float battery charging current is consistent with actual readings taken for the affected batteries. The meter used to verify acceptance criteria is met has a range of 0-500 amps, with divisions marked every 10 amps. As such, actual readings can only be taken to an accuracy of 5 to 10 amps, consistent with ISA guidance which states that metering is not more accurate than half of the smallest scaled division. A review of historical data shows that battery charging current on float is recorded as either 0, 5, or 10 amps. In general, personnel who perform the meter readings default to the closest division (0 or 10 amps) when

verifying charging current, with only some personnel attempting to make a recording to an accuracy of a half division (5 amps).

The capacities of the 201A and 201B (C&D Type LCR-33) batteries are each 2320 ampere-hours (8 hour discharge) at a nominal 1.75 volts per cell ( $V_{pc}$ ). The capacity of the 201D (C&D Type LCR-21) battery is 1500 ampere-hours (8 hour discharge) or 1048 ampere-hours (2 hour discharge) at a nominal 1.75 volts per cell ( $V_{pc}$ ).

*Question 3) Note (c) in proposed TS Tables 4.8-1 and 4.8-2 states that:*

*A battery charging current of < 5 amps when on float charge is acceptable for meeting specific gravity limits following a battery recharge, for a maximum of 7 days. When charging current is used to satisfy specific gravity requirements, specific gravity of each connected cell shall be measured prior to expiration of the 7 day allowance.*

*Attachment 1, page 6 of the submittal dated August 12, 2002, states that the 7 day frequency is consistent with IEEE-450-1980, as well as vendor recommendations. Please advise what section of IEEE-450-1980 is referenced when discussing the 7 day frequency.*

Response: IEEE 450-1980, Appendix A3 states (in part), "When specific gravity readings are being taken, the electrolyte levels should also be measured and recorded." As indicated in proposed footnote (c), specific gravity of each connected cell shall be measured prior to the expiration of the 7 day allowance. Thus, if the specific gravity readings are allowed to be taken up to seven days following the completion of the charge, the electrolyte levels should be taken at the same time.

In addition, Appendix A3 also states that "the apparent electrolyte level depends on the charging rate because gas generated during charging causes an apparent expansion of the electrolyte. If the electrolyte is at or near the high-level mark at float voltage, it may rise above that mark on charge. This condition is not objectionable. It does dictate, however, that electrolyte level readings should be made only after the battery has been at float voltage for at least 72 h [hours]."

Therefore, a proposed frequency of 7 days is consistent with IEEE 450-1980 which states that electrolyte level readings should be taken more than 72 hours following the establishment of stable float voltage and at the same time the specific gravity readings are taken.

Question 4) *With respect to the battery service test and performance test, please provide profiles that show the load in amps versus time for each step in the tests.*

Response: The profile for the 201A and 201B battery service test is as follows:

Step	Current	Duration (Minutes)
1	311	1
2	224	28
3	242	1
4	221	90
5	197	359
6	243	1

The 201A and 201B battery performance test is performed at a temperature-corrected current of 290 amps for 8 hours (480 minutes).

The profile for the 201D battery service test is as follows:

Step	Current	Duration (Minutes)
1	460	1
2	558	1
3	436	58

The 201D battery performance test is performed at a temperature-corrected current of 550 amps for 2 hours (120 minutes).

Question 5) *Please provide the expected sequence of battery loading for the first minute following a loss of AC power (i.e. loads versus time in seconds).*

Response: Per our teleconference on December 16, 2002, DNC is providing battery loading data for the 201A and 201B batteries for the first minute following a loss of AC power. The profiles are as follows:

**BATTERY 201A**

Step	Time Range (Seconds)	201A Battery Current (Amperes)	201A Battery Ampere Hours
1	0 to 2	238	0.13
2	2 to 3	215	0.06
3	3 to 10	295	0.57 *(+0.010)
4	10 to 14	285	0.32

Step	Time Range (Seconds)	201A Battery Current (Amperes)	201A Battery Ampere Hours
5	14 to 15	232	0.06
6	15 to 16	234	0.07
7	16 to 17	230	0.06
8	17 to 60	292	3.49 *(+0.024)

\* Additional ampere-hours imposed by amperage in excess of 290 amps

**BATTERY 201B**

Step	Time Range (Seconds)	201B Battery Current (Amperes)	201B Battery Ampere Hours
1	0 to 2	213	0.12
2	2 to 3	219	0.06
3	3 to 10	299	0.58 *(+0.018)
4	10 to 14	288	0.32
5	14 to 15	236	0.07
6	15 to 16	239	0.07
7	16 to 17	234	0.07
8	17 to 60	299	3.57 *(0.108)

\* Additional ampere-hours imposed by amperage in excess of 290 amps

As noted in the table above, the required battery loading for the 201A and 201B battery service tests is slightly above the performance test value of 290 amps for time steps 3 and 8.

The amount by which the service test loading exceeds the performance test loading of 290 amperes in time steps 3 and 8 is minimal (approximately 3% of the battery performance test value of 290 amps for either battery) and the period of time above 290 amps is a small percentage of the overall test period (less than 0.2% of the total service test period of 480 minutes). Specifically, for each profile the aggregate impact on the total ampere-hour discharge is less than 0.5 ampere-hours. This constitutes less than 0.05% of the total ampere-hour capacity of the respective batteries and is significantly less than the accuracy of the instrumentation used in the performance of either battery capacity test (i.e. the performance and service tests). Therefore, the net impact on the service test of this deviation from the performance test loading is negligible.