

Commitments made in this letter:

1. EEEB-07-0052: The results will be available by March 31, 2008.

Attachment

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ATTACHMENT

LICENSE AMENDMENT REQUEST

STRETCH POWER UPRATE LICENSE AMENDMENT REQUEST

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

RESPONSE TO QUESTIONS EEEB-07-0049 THROUGH EEEB-07-0057

**MILLSTONE POWER STATION UNIT 3
DOMINION NUCLEAR CONNECTICUT, INC.**

Electrical Engineering Branch

EEEEB-07-0049

The license amendment request indicates that MPS3 will provide, as required, additional reactive power based on the generator capabilities by reducing output power. For the current SPU of 7 percent, please identify the nature and quantity of megavolt amperes relative (MVAR) support necessary to maintain post-trip loads and minimum voltage levels. Also, address how the power uprate affects MVAR support.

DNC Response

The reactive power output based on a power factor of 0.957 is a maximum of 445 MVAR (summer) and 395 MVARs (winter) and no leading MVARs. This results in a decrease of 42 MVARs (summer) and 102 MVARs (winter). The system reliability impact study (SRIS) performed for the MPS3 SPU has evaluated these revised MVAR values and the analysis concluded that they will support the necessary grid stability. (Reference LAR Section 2.3.2.2.3.1)

At the SPU MW(e) and MVAR values the SRIS showed the grid to remain stable over all analyzed contingencies. The studies demonstrated that the steady state and dynamic performance of MPS3 at the SPU conditions remains acceptable. The SRIS shows that the reduced MVAR output due to the increase in MW(e) at SPU conditions will continue to meet minimum off-site voltage requirements. The offsite power system will continue to meet the requirements of GDC-17 for MPS3 at SPU conditions and provide the necessary power including reactive power to support the unit's onsite system.

The statement that MPS3 will provide, as required, additional reactive power is associated with abnormal grid conditions and will only be necessary at the request of the transmission system operator, ISO New England. This is not a new requirement as a result of the SPU. This is an existing requirement of the MPS3 interconnect agreement to meet ISO New England guidelines.

EEEEB-07-0050

Provide details on the changes to the 6.9 kV and 4.16 kV systems. Specifically, for the 6.9 kV system, indicate the increase in loading (in kW) due to the condensate pump and the feedwater pump motors. For the 4.16 kV system, provide the increase in loading (in kW) due to the heater drain pump and moisture separator drain pump motors.

DNC Response

The existing MPS3 6.9 kV and 4.16 kV electrical load analysis utilizes the maximum brake horsepower (BHP) values for the condensate, feedpump, heater drain, and moisture separator drain pumps. These pumps and motors are not being modified for the MPS3 SPU. Therefore, the increases in BHP for the new operating points of these pump motors remain within their nameplate ratings and are within the brake horsepower loads used in the existing electrical system load flow and voltage profile analysis.

EEEB-07-0051

In the Main Steam Valve Building, the total integrated dose increased from 1.1E4 to 4.0E4 Rads. If there are any electronics containing complementary metal-oxide semiconductor or p-type metal-oxide semiconductors circuits or any other components affected by the increase in radiation dose in the Main Steam Valve Building, then provide the complete environmental qualification (EQ) evaluation for the affected components.

DNC Response

As stated in LAR Section 2.3.1.2.3.2, the accident radiation in the MSVB has been updated to reflect the SPU conditions. The Total Integrated Dose (TID) increased from 1.1E4 to 4.0E4 Rads. However, the equipment has been determined to remain qualified for SPU conditions.

To reach that conclusion, all EQ equipment in the affected MSVB EQ zones was reviewed. It was determined that there are no metal-oxide semiconductors used in the affected EQ equipment and that all safety related electrical equipment in those zones is already qualified to radiation values that exceed the new SPU radiation levels.

EEEB-07-0052

For the Main Steam Valve Building, Engineered Safety Features Building, and Auxiliary Building, the license amendment request, in Section 2.3.1, indicates that SPU conditions may affect the EQ of electrical equipment. Provide the complete evaluations of the affected equipment, including an in-depth discussion of the assumptions and methodology.

DNC Response

The evaluations for the continued acceptability of the EQ equipment with increased accident temperature in the Main Steam Valve Building (MSVB) and the increased radiation TID in selected Engineered Safety Features and Auxiliary

Building zones are ongoing. The results will be available by March 31, 2008.

EEEEB-07-0053

The license amendment request states in Section 2.3.1.2.3.1, that the total integrated dose (forty year normal plus accident, gamma, and beta) inside containment is 2.4 E8 Rads. Specify each of the individual doses separately (i.e. the forty year normal dose, the gamma dose and the beta dose).

DNC Response

The 2.4E8 rads is comprised of the following:

40 year normal dose (beta) -	9.10E+06 rad
40 year normal dose (gamma) -	7.80E+06 rad
Accident dose (beta) -	1.82E+08 rad
Accident dose (gamma) -	3.78E+07 rad
Total -	2.37E+08 rad
Total (rounded) -	2.4E+08 rad

With life extension to 60 years, the total becomes:

60 year normal dose (beta) -	1.40E+07 rad
60 year normal dose (gamma) -	1.30E+07 rad
Accident dose (beta) -	1.82E+08 rad
Accident dose (gamma) -	3.78E+07 rad
Total -	2.47E+08 rad
Total (rounded) -	2.5E+08 rad

EEEEB-07-0054

In the SPULR (Attachment 5 of the license amendment request), on page 2.3-6 under the license renewal heading, it is stated that the "SPU has no impact on the EQ program." Describe why the SPU has no impact on the EQ program in regards to license renewal.

(See response to EEEB-07-0055)

EEEEB-07-0055

In Attachment 5 of the license amendment request, the licensee has repeatedly referenced EQ documentation for the 40 year qualification. Since MPS3 has

been licensed for 60 years, the EQ documentation should indicate a 60 year qualification. Explain this discrepancy.

DNC Response to Questions EEEB-07-0054 and EEEB-07-0055

The MPS3 EQ Program ensures that equipment remains within the bounds of its qualified life such that after maximum normal service conditions, the equipment retains sufficient capacity to perform its required safety function during design basis accident conditions. The SER for the MPS3 License Renewal concluded that the MPS3 EQ program can adequately manage the effects of aging on the intended function(s) of safety related EQ electrical components that meet the definition for a Time-Limiting Aging Analysis (TLAA) support program, as defined in 10 CFR 54.3, during the period of extended operation. EQ components with a qualified life of 40 years or more are considered time-limited aging analyses (TLAA) components for license renewal. The EQ Program will re-evaluate these EQ components to ensure that the current qualification remains valid for the period of extended operation. The program ensures that any necessary refurbishment, requalification, or replacements of equipment are performed prior to the end of qualified life. Performance of preventive maintenance and surveillance activities, and monitoring of normal ambient conditions ensure that components remain within the bounds of their original qualification and may provide a basis for extending qualified life.

The post accident SPU environments and the associated aging effects were reviewed for conformance to the acceptance criteria of the NRC SER for the License Renewal of MPS3, NUREG-1838. The effect of the SPU changes on the commitment that MPS3 will manage the qualification of EQ equipment during the period of extended operation was evaluated. That evaluation concluded that the SPU will not have any impact on the MPS3 EQ program's ability to adequately manage the effects of aging on the intended function(s) of EQ components.

EEEB-07-0056

Attachment 5 of the license amendment request (page 2.3-10) states that only two components were removed from the EQ program. Table 3.6-5 of MPS3 FSAR identifies that isolation valves 3ASS-AOV102A and 3ASS-AOV102B were removed, yet Sections 5.10 and 6.1.10 of Attachment 1 indicate that pressure transmitters PT 505 and 506, which measure first stage pressure, as well as position switches MSS ZS59, 60, 61, and 62, which measure main steam turbine stop valve positions, will be removed from the EQ Master List. Clarify which components are to be removed from the EQ Program, describe their functions, and provide a detailed explanation on why they are no longer required to be in the EQ program.

(See response to EEEB-07-0057)

EEEB-07-0057

Attachment 1, Section 5.10, Turbine Building Temperature Monitoring, addresses two sets of equipment in the Turbine Building that have been environmentally qualified and are maintained on the Master Equipment List (MEL) for environmentally qualified equipment. One of which is the Pressure transmitters PT 505 and 506 that measure first stage pressure. The evaluation states that they are currently on the MEL because they provide input into the rod control system and modifications to the rod control system being made to eliminate the capability for automatic rod withdrawal by the rod control system. Hence, the licensee wants to remove these transmitters from the MEL. However, these transmitters also provide inputs to other safety features, e.g., AMSAC - arm/disarm circuit permissive C-20 at first stage pressure equivalent to 40 percent reactor power, P-7 Permissive- in conjunction with P-10, bypasses low pressurizer pressure, high pressurizer water level, low reactor coolant system (RCS) flow, and RCP low shaft speed reactor trips, Rod Control power mismatch and non-linear gain controls, SG level control, Load reject steam dump control, Reactor control Tref, Block auto rod withdrawal C-5 permissive. Evaluate all the functions provided by these pressure transmitters to ensure it is appropriate to remove from the MEL.

DNC Response to Questions EEEB-07-0056 and EEEB-07-0057

Table 3.6-5 of the present MPS3 FSAR identifies that isolation valves 3ASS-AOV102A and B are essential components to isolate an Auxiliary Steam System high energy line break in the Auxiliary Building. MPS3 FSAR Section 3.6.1.3.1 identifies that these valves are not Category I because, for maximum isolation capability, they are located outside the area for which isolation is intended, which places them in a non-Category I piping system in a non-Category I structure. The MPS3 SPU does not affect, nor is it making any changes to these valves.

Attachment 5 of the license amendment request (page 2.3-10) states that there are two component types listed in the Equipment Qualification Master List (EQML) that are in the turbine building. It further states that the EQML will be revised to remove these components as they do not require environmental qualification. Sections 5.10 and 6.1.10 of the license amendment request identifies these two component types as:

- Turbine first stage pressure transmitters; 3MSS*PT505, 506
- Main steam turbine stop valve position switches; 3MSS-ZS59, 60, 61, 62

Turbine First Stage Pressure Transmitters

The Turbine First Stage pressure transmitters provide an input to the following (Ref. MPS3 SPU LAR Section 2.4.1.2.3.6):

- AMSAC - arm/disarm circuit interlock C-20,
- P-7 permissive, P-13 in conjunction with P-10, bypasses low pressurizer pressure, high pressurizer water level, low RCS flow, and RCP low shaft speed reactor trips at low power levels (below 10% Rated Thermal Power)
- Rod Control power mismatch and non-linear gain controls
- Steam Generator level control
- Load reject steam dump control
- Rod control Tref
- Block auto rod withdrawal C-5 interlock
- Plant process computer and Control Room indication.

The Turbine First Stage pressure transmitters are Nuclear Safety Related, Category I, and are included within the EQ program to ensure that they will be qualified for a harsh environment within the Turbine Building. They are not credited in any accident analysis for MPS3. They are environmentally qualified so that they will not fail in a manner that could result in a negative impact on the plant's response to a design bases event.

The primary concern is with respect to the transmitters' input to rod control whereby a transmitter failure could initiate a rod withdrawal demand signal coincident with a steam line break in the Turbine Building. The MPS3 SPU proposes to eliminate the capability of the rod control system to automatically withdraw the control rods.

The proposed automatic rod withdrawal modification will eliminate the need for the transmitters to initiate the rod withdrawal block, C-5, interlock. Additionally, a failure of the transmitters could only result in a rod insertion signal, a conservative action.

AMSAC, Rod Control, Steam Generator level control, and the load reject steam dump control are non-safety related and are not credited in the accident analysis for MPS3. Failures of these control systems are already modeled in the plant analysis, and a failure of the Turbine First Stage pressure transmitters during a harsh environment condition in the Turbine Building will be bounded by the presently evaluated control system failures.

The remaining function, P-7 permissive, receives input from both of the Turbine First Stage pressure transmitters as well as the Power Range Neutron Detectors. Whenever one of the two Turbine First Stage pressure transmitters is above the permissive setpoint, or two-out-of-four Power Range Neutron Detectors is above the permissive setpoint, the plant load high P-7 permissive, is generated. This permissive enables the low pressurizer pressure, high pressurizer water level, low RCS flow, and RCP low shaft speed reactor trips at power. Should both of the Turbine First Stage pressure transmitters fail low as a result of a harsh environment in the Turbine Building such that they no longer indicate first stage

pressure above the permissive setpoint, the Power Range Neutron Detectors will continue to provide the P-7 permissive, thereby, enabling these trips.

Based upon the above, the First Stage Pressure transmitters will be maintained as Nuclear Safety Related, Category I, but no longer need to remain qualified under the MPS3 EQ program.

Main Steam Turbine Stop Valve Position Switches

The Main Steam Turbine Stop Valve position switches provide a reactor trip, a plant process computer input, position indication lights, and a position alarm in the control room. The closure of the valves results in a turbine trip and the reactor trip resulting from valve position change is an anticipatory non-safety related trip that is not credited in any accident analysis. The indications and alarms are non-safety related.

The qualification of the Main Steam Turbine Stop Valve position switches had been based on being associated with the safety related reactor trip circuits. The switches are electrically isolated from the reactor trip circuits and do not perform any safety related functions. Because the SPU amendment proposes to eliminate EQ temperature monitoring from the MPS3 Turbine Building it is necessary to downgrade these limit switches to non-EQ.