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July 15, 1980
TLL 342

TMI Program Office
Attn: Mr. Bernard J. Snyder, Program Director
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit II (TMI-2)
Operating License No. DPR-73
Docket No. 50-320
Recovery Operations Plan Change Request No. 4

Recovery Operations Plan Change Request No. 4 is enclosed. This change request permits operation of the Standby Pressure Control System with a Nitrogen bank pressure of 225 psig to 400 psig instead of the presently required operating pressure of 1500 psig to 2400 psig. It is desired that this change be issued prior to opening DH-V-1 and/or DH-V-171 in order that an additional precaution can be exercised to avoid overpressurization of the exposed Decay Heat System piping.

In order that timely progress can be made for the TMI-II recovery, your prompt approval of this change request is requested.

Sincerely,

G. K. Hovey
Director, TMI-II

GKH:LJL:dad

Enclosure

cc: J. T. Collins
D. Brinkman
D. DiIanni
H. Silver
R. Reid

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Three Mile Island Nuclear Station, Unit II (TMI-2)
Operating License No. DPR-73
Docket No. 50-320

Recovery Operations Plan Change Request

The licensee requests that the attached changed page replace page 4.1-2 of the TMI-II Recovery Operations Plan.

Reason for the Change Request

The Nitrogen supply for the Standby Pressure Control System is presently required to be pressurized to maintain a pressure of 1500 psig to 2400 psig. In order to accommodate the design pressure difference interface safely, it is necessary to reduce the Nitrogen supply pressure to the Standby Pressure Control System to the range of 225 psig to 400 psig to preclude overpressurization of the DHR System. Moreover, prior to opening DH-V1 and/or DH-V171, it is considered prudent to initiate precautions that will ensure that the risk of overpressurization of the Decay Heat Removal System piping is minimized.

Justification for the Change Request

The Reactor Coolant Standby Pressure Control System was designed in April, 1979. One of the design criteria imposed was that the system must be capable of a makeup rate that is sufficient to offset the volume decrease (caused by an increase in coolant density) that may occur during a maximum credible cooling transient. The calculated maximum makeup rate required (to compensate for the maximum "shrink") was 500 gpm and dictated that the SPC $N_2$ System operating pressure was specified to be no less than 1500 psig.

Based on current (June, 1980) RCS conditions and conservative criteria to establish a maximum RCS liquid volume reduction a makeup rate of 65 gpm to 80 gpm via the SPC will compensate for "shrink" and will provide a substantial margin in injection rate above that actually required as a result of the maximum credible cooling transient, (June, 1980). "Shrink" transients in the RCS have been analyzed as a result of system "burps", operation of the Long Term OTSG "B" Cooldown System (LTB), operation of the installed Decay Heat Removal System, and operation of the Main and Emergency Feedwater Systems. An injection rate of 65 gpm to 80 gpm can be achieved by having six (6) $N_2$ cylinders in service, pressurized to a pressure range of 225 psig to 400 psig.

In recognition of the possibility (though remote) of a multiple failure in the SPC $N_2$ control system, it is possible to overpressurize the piping downstream of DH-V1 and DH-V171 with a $N_2$ supply pressure of 1500 psig to 2400 psig. The multiple failure scenario involves an active failure of the nitrogen gas regulators (SPC-PRV-2A or SPC-PRV-2B) to OPEN position and a failure of the relief valve (SPC-PCV-14) to not OPEN. Should this improbable scenario actually occur, the lower design pressure interconnected piping systems (Decay Heat Removal System, Alternate Decay Heat Removal System, and eventually, the Mini Decay Heat Removal System) could be overpressurized and/or the thermal expansion relief valve (DH-R1) could be actuated.

Recovery Operations Plan Change Request (cont'd.)

On the basis of the conservative approach used in establishing the maximum injection rate required as a result of volumetric "shrink" in the RCS, it has been determined that the maximum "shrink" will result in a required injection rate of approximately 56 gpm. Operation of the SPC System at a pressure of 225 psig to 400 psig will provide a makeup injection rate greater than the required injection rate. The reduced $N_2$ operating pressure range would preclude the remote possibility of overpressurization of piping downstream of DH-V1 and DH-V171.

Relief valve DH-R1 is connected to the lower design pressure piping and has a setpoint actuation of 370 psig. This relief valve is set to insure that the Decay Heat Removal System is not subjected to system pressure that is in excess of its design pressure. To preclude the possibility of actuating DH-R1, in the unlikely event that the postulated failure (mentioned above) occurs, valve SPC-R-14 will actuate at 125 psig. Therefore, it is highly unlikely that valve DH-R1 will actuate when:

1. The postulated failure occurs, and

2. The in-service nitrogen bank is pressurized to 225 psig to 400 psig.

BORON INJECTION (Continued)

f. At least once per 7 days by:

1. Verifying the boron concentration in the concentrated boric acid storage system is between 7875 and 13,125 ppm.

2. Verifying the boron concentration in the BWST is between 3000 and 4500 ppm.

3. Verifying the contained borated water volume of the concentrated boric acid storage system is in accordance with Figure 3.1-1.

4. Verifying the contained borated water volume of the BWST is at least 100,000 gallons.

5. Verifying the concentrated boric acid storage system solution temperature is at least 105°F.

g. At least once per 24 hours by verifying the BWST temperature is at least 50°F when the outside air temperature is less than 50°F.

h. At least once per 12 hours (when system is in operation) by verifying that the standby reactor coolant system pressure control system:

1. Surge tank water volume is filled to between 55% and 80% of tank capacity and the tank is pressurized to the operating RCS pressure ± 25 psig but not higher than 600 psig.

2. Isolation valves on the discharge side of the water filled tank nearest the reactor coolant system are open.

3. The in-service Nitrogen supply bank is pressurized to 225 psig to 400 psig.

i. At least once per 7 days by verifying that the standby reactor coolant system pressure control system water filled tanks, the surge tank, and the degassed water supply tank contain borated water with:

1. A boron concentration of between 3000 and 4500 ppm.

2. A dissolved gas concentration of less than 15 scc/kg of water.

j. At least once per 31 days by verifying that the standby reactor coolant system pressure control system isolation valve on the discharge side of the water filled tank nearest the reactor coolant system closes automatically on a tank low level test signal.