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License No.: NPF-3
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Mr. James G. Keppler
Regional Director, Region III
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Dear Mr. Keppler:

This letter is a follow-up to Toledo Edison's letter dated June 6, 1980 (Serial No. 1-135) which stated that our response to IE Bulletin 80-05 would be provided by June 27, 1980. Enclosed is our response to IE Bulletin 80-05 for the Davis-Besse Nuclear Power Station Unit 1.

Yours very truly,

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RESPONSE TO IE BULLETIN NO. 80-05

We have reviewed the design of all systems that contain low pressure tanks that can be valved to contain primary system water as required per IE Bulletin No. 80-05, "Vacuum Condition Resulting in Damage to Chemical Volume Control System (CVCS) Holdup Tanks". A discussion of the results of our review for the affected tanks at the Davis-Besse Nuclear Power Station Unit 1 is presented below. Our review has shown that no corrective actions are required.

1. MAKEUP TANK (T4)

The makeup tank is shown in FSAR Figure 9-21. Design parameters are given in FSAR Table 9-11.

The makeup tank is operated as a pressurized tank in order to maintain adequate NPSH for the makeup pumps. Plant operating procedures call for the makeup tank pressure to be maintained at or above 15 psig for all modes of operation. A low pressure switch (PS MU21-1) actuates an alarm in the main control room when makeup tank pressure falls to 18 psig. The nitrogen cover gas pressure is controlled manually from the main control room.

The makeup tank is prevented from reaching vacuum conditions by the protective measures that have been installed to assure adequate NPSH for the makeup pumps. If the system is being operated in a "bleed and feed" mode (refer to FSAR Section 9.3.4.2.2) with letdown flow diverted to the clean liquid radwaste system, a low level switch (LSL MU16) set at 18 inches will automatically reposition three-way valve HV MU11 to route the letdown flow to the makeup tank. An additional modification being installed during the current refueling outage will automatically switch the suction of the makeup pumps from the makeup tank to the borated water storage tank (BWST) at a makeup tank level of 10 inches.

The makeup tank is designed for 100 psig internal pressure. Although vacuum conditions were not included in the original design specifications, the as-built wall and head thickness exceed the thickness that would be required to withstand full vacuum conditions without exceeding code allowable stresses.

The makeup tank is thus determined to be adequately protected from loss of pressure boundary due to vacuum conditions.

2. REACTOR COOLANT DRAIN TANK (T14)

The reactor coolant drain tank is shown in FSAR Figure 7-7. Design parameters are given in FSAR Table 11-12.

An automatic pressure control valve (PCV 1776) maintains a nitrogen cover gas pressure of 1.5 psig in the tank. A low level switch (LSL 1774) will trip the reactor coolant drain tank pumps when the level in the tank falls to approximately 13-1/4 inches.

The tank is designed for 50 psig internal pressure. Although vacuum conditions were not included in the original design specifications, the as-built wall and head thickness exceed the thickness that would be required to withstand full vacuum conditions without exceeding code allowable stresses.

The reactor coolant drain tank is thus determined to be adequately protected against loss of pressure boundary due to vacuum conditions.

3. CLEAN WASTE RECEIVER TANKS (T15-1, 2)

The clean waste receiver tanks are shown in FSAR Figure 11-1A. Design parameters are given in FSAR Table 11-12.

An automatic pressure control valve (PCV 1851) maintains a nitrogen cover gas pressure of 1.5 psig in the tanks. A low pressure switch (PSL 1744 and PSL 1750) on each tank will trip both clean waste receiver tank transfer pumps (P49-1, 2) should tank pressure fall to 1 psig.

The design of the clean liquid radwaste system has been reviewed and it has been determined that the automatic pressure control valve on each clean waste receiver tank is adequately sized to admit cover gas at a rate of flow that will exceed the maximum gravity drainage capabilities of these tanks.

In addition, a low level switch (LSL 1746, LSL 1748) on each tank will trip the pumps should the level in either tank fall to 2 feet of liquid.

The provisions of an automatic pressure control and a low pressure pump trip are considered to be adequate protection against vacuum conditions in the clean waste receiver tanks.

4. CONCENTRATES STORAGE TANK (T16)

The concentrates storage tank is shown in FSAR FIGURE 11-1B. Design parameters are given in FSAR Table 11-12.

An automatic pressure control valve (PCV 1907) maintains a nitrogen cover gas pressure of 5 psig in the tank. A low pressure switch (PSL 1906) will trip the concentrates transfer pumps (P47-1, 2) should the pressure in the tank fall to 5 inches Hg vacuum. The tank can withstand this partial vacuum condition witout exceeding code allowable stresses.

The tank is designed for 15 psig internal pressure. Although vacuum conditions were not included in the original design specification, the as-built wall and head thickness exceed the thickness that would be required to withstand full vacuum conditions without exceeding code allowable stresses.

In addition, a low level switch will trip the pumps should the level in the tank fall to 13-1/8 inches of liquid.

The provisions of an automatic pressure control valve and a low pressure pump trip are considered to be adequate protection against excessive vacuum conditions in the concentrates storage tank.

5. SPENT RESIN STORAGE TANK (T22)

The spent resin storage tank is shown in FSAR Figure 11-1B. Design parameters are given in FSAR Table 11-12.

An automatic pressure control valve (PCV 2702A) maintains a nitrogen cover gas pressure of 3 psig in the tank. A low pressure switch (PSL 1996) set at 2 psig will automatically trip the spent resin transfer pump (P121) and the spent resin tank overflow pump (P140) on low pressure in the tank.

The design of the spent resin transfer system has been reviewed and it has been determined that the automatic pressure control valve is adequately sized to admit cover gas at a rate of flow that will exceed the maximum gravity drainage capability of the tank.

In addition, a low level switch (LSL 1928) will trip these pumps on low level in the tank.

The provisions of an automatic pressure control valve and a low pressure trip of the pumps taking suction from the tank are considered to be adequate protection against vacuum conditions in the spent resin storage tank.

6. CLEAN WASTE MONITOR TANK (T23-1, 2)

The clean waste monitor tanks are shown in FSAR Figure 11-1B. Design parameters are given in FSAR Table 11-12.

A pressure control valve (PCV 1779, PCV 1780) on each tank automatically admits nitrogen to maintain a cover gas pressure of 5 psig in the tanks. A low pressure switch (PSL 1706, PSL 1707) on each tank trips the clean waste monitor tank transfer pumps (P50-1, 2) should the pressure in either tank fall to 2 psig.

The design of the clean liquid radwaste system has been reviewed and it has been determined that the automatic pressure control valve on each clean waste monitor tank is adequately sized to admit cover gas at a rate of flow that will exceed the maximum gravity drainage capabilities of these tanks.

In addition, a low level switch (LSL 1795, LSL 1796) will trip both pumps when the level in either tank reaches 1 foot of liquid.

The provisions of an automatic pressure control valve and the low pressure pump trip are considered adequate protection against vacuum conditions in the clean waste monitor tanks.

7. MISCELLANEOUS WASTE DRAIN TANK (T26)

The miscellaneous waste drain tank is shown in FSAR Figure 11-2. Design parameters are given in FSAR Table 11-13.

An automatic pressure control valve (PCV 1569) maintains a nitrogen cover gas pressure of 1 psig in the tank. A low pressure switch (PSL 1860) will trip the miscellaneous waste drain tank pump (P51) should the pressure in the tank fall to 1.5 inches Hg of vacuum. The tank can withstand this partial vacuum condition without exceeding code allowable stresses.

The design of the miscellaneous waste drain system has been reviewed and it has been determined that the automatic pressure control valve is adequately sized to admit cover gas at a rate of flow that will exceed the maximum gravity drainage capability of the tank.

In addition, a low level switch (LSL 1880) will trip the pump should the tank level fall to 16 inches.

The provisions of an automatic pressure control valve and the low pressure pump trip are considered adequate protection against excessive vacuum conditions in the miscellaneous waste drain tank.

8. MISCELLANEOUS WASTE EVAPORATOR STORAGE TANK (T28)

The miscellaneous waste evaporator storage tank is shown on FSAR Figure 11-2. Design parmeters are given in FSAR Table 11-13.

An automatic pressure control valve (PSV 1156) maintains a nitrogen cover gas pressure of 2 psig in the tank. A low pressure switch (PSL 1885) will trip the evaporator storage tank pumps (P53-1, 2) should the pressure in the tank fall to 5 inches Hg vacuum.

The tank is designed for 15 psig internal pressure. Although vacuum conditions were not included in the original design specifications, the as-built wall and head thickness exceed the thickness that would be required to withstand full vacuum conditions without exceeding code allowable stresses.

In addition, a low level switch (LSL 1882) will trip the pumps should level in the tank fall to 13-1/8 inches of liquid.

The provisions of an automatic pressure control valve and the low pressure pump trip described above are considered adequate protection against excessive vacuum conditions in the miscellaneous waste evaporator storage tank.

9. MISCELLANEOUS LIQUID WASTE MONITOR TANK (T29)

The miscellaneous liquid waste monitor tank is shown in FSAR Figure 11-2. Design parameters are given in FSAR Table 11-13.

This tank is automatically maintained at 2 psig by a nitrogen pressure control valve (PCV 1891). A low pressure switch (PSL 1886) will trip the miscellaneous waste monitor tank pump (P54) and close the tank outlet valve (HV-1854) when the tank pressure reaches a vacuum of 2.5 inches Hg. The tank can withstand this partial vacuum condition without exceeding code allowable stresses.

The design of the miscellaneous liquid waste system has been reviewed and it has been determined that the automatic pressure control valve is adequately sized to admit cover gas at a rate of flow that will exceed the maximum gravity drainage capability of the tank.

In addition, a low level switch (LSL 1883) will trip the pump when the level in the tank reaches 20 inches of liquid.

The provisions of an automatic pressure control valve in conjunction with an automatic trip of the miscellaneous waste monitor tank pumps, and closure of the tank outlet valve on low pressure, are considered adequate protection measures against excessive vacuum conditions.

10. PURIFICATION DEMINERALIZERS (T5-1,2), PRIMARY DEMINERALIZERS (T19-1,2) DEBORATING DEMINERALIZERS (T20-1,2), CLEAN WASTE POLISHING DEMINERALIZERS (T21-1,2), CONCENTRATES DEMINERALIZER (T55) AND WASTE POLISHING DEMINERALIZERS (T125).

The above vessels are normally operated in either an "on-line" or "out-of-service" mode and are thus not subject to fluctuating levels and vacuum conditions. The design of these vessels has been reviewed, however, and it has been verified that the vessels can withstand full vacuum conditions without exceeding code allowable stresses.

These demineralizers are thus determined to be adequately protected against loss of pressure boundary due to vacuum conditions.

11. BORIC ACID EVAPORATOR (S1-1,S1-2), WASTE EVAPORATOR (S2) AND DEGASIFIER (S3)

Although not designed as storage tanks, the above vessels can contain varying volumes of primary system water. The design of these vessels was therefore reviewed and it has been verified that the vessels have been designed to withstand full vacuum conditions without exceeding code allowable stresses.

These components are thus determined to be adequately protected against loss of pressure boundary due to vacuum conditions.