TOLEDO EDISON

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License No. NPF-3
Docket No. 50-346
Serial No. 942
May 17, 1983

Mr. John F. Stolz, Chief
Operating Reactors Branch No. 4
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Stolz:

This is in response to your letter dated April 11, 1983 (Log No. 1263) concerning your request for additional information on the deletion of surveillance requirements for auxiliary feedwater (AFW) pump turbine speed switches at Davis-Besse Nuclear Power Station No. 1.

This speed switch is installed at Davis-Besse to automatically prevent the AFW system from overfilling the steam generators under very low steam pressure conditions. Since the AFW system is not expected to operate during low steam generator pressure conditions, this automatic control is not needed. See our letter Serial No. 731, dated July 10, 1981 for further details.

Davis-Besse is normally cooled down using either the main or the start-up feed water system. The AFW system is not expected to be used to cool the plant down. If a loss of offsite power were to occur, the AFW system would be required to maintain the plant in the hot standby condition. However, it is not expected that the plant would be cooled down before offsite power would be restored.

Under any cooldown condition the plant operators would have to take many manual actions. If the plant had to be cooled down using AFW, the motor operated valves in the discharge of each auxiliary feedwater pump would have to be manually closed when the steam generator pressure is manually reduced below 90 psig. This manual valve closure would probably occur just before the reactor coolant system is connected to the decay heat removal system.

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The attachment provides Toledo Edison's response to your request for additional information relating to AFW turbine speed switches.

Very truly yours,

RPC:KKS

cc:
DB-1 NRC Resident Inspector

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Attachment

Response to NRC Request for Information
on AFW Turbine Speed Switches

Question 1: Define what is meant by "low steam pressure" in terms of psig.

Response: "Low steam pressure" would occur when the steam generator secondary pressure is manually reduced below the auxiliary feed pump shut-off-head pressure, which is approximately 90 psig at the minimum auxiliary feed pump turbine speed of 1100 RPM.

Question 2: What is the minimum time the operator would have from the initiation of the AFW system until the steam generator low pressure would exist.

Response: The minimum time that the operator could reduce the steam generator pressure below 90 psig assuming natural circulation and no reactor vessel head bubble formation would be as follows:

1. Approximately 125 hrs. without a reactor vessel head vent.

2. Approximately 12 hrs. with a reactor vessel head to hot leg vent line as proposed to the NRC in our letter Serial No. 935, dated April 15, 1983.

Cooling down using auxiliary feedwater pumps with reactor coolant pumps in service would not be done unless both the main and start up feed water systems were not available. However, if this unusual condition occurred, the primary system could be cooled down in approximately 2½ hours. This estimate assumes that the AFW system would have the excess capacity to cool the primary system down at this rate.

Question 3: When the low pressure initially exists specify the water level in the steam generator with respect to the bottom of the steam nozzle.

Response: The water level in the steam generator is controlled at 35 inches. The difference in level between 35 inches and the bottom of steam line nozzle is 380 inches.

Question 4: Verify that in situation in which automatic level control is not available that operator action is sufficient to prevent overcooling or overfilling.

Response: Any time the AFW system is delivering more water than is being boiled off, an overfilling condition will develop. If AFW fill rate stops steam generator boiling, the overcooling will exist. These conditions cannot occur with the auxiliary feed pump at minimum speed until the steam generator pressure is manually reduced below 90 psig.

Thus, assuming a 400 gpm overfill rate, which is conservatively high, it would take approximately 24 minutes to raise the water level 380 inches to the bottom of the steam line nozzle. If the auxiliary feed pump is running at its minimum speed and the steam generator level is rising or the primary system is overcooling, the operator can observe this condition on the steam generator level indicator or primary system temperature indicators. He can then manually close the valve on the discharge side of the pump to reduce the flow to the steam generator to lower its level or stop primary system overcooling.

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