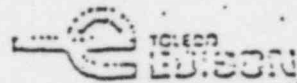


File: 0017,0486, X-36

October 11, 1977

Serial No. 391

Docket No. 50-346



LOWELL E. ROE
Vice President
Federal Government
14151 258-5242

Mr. James G. Kuppler
Regional Director, Region III
Office of Inspection & Enforcement
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Dear Mr. Kuppler:

This letter supersedes my letter to you on this subject dated October 5, 1977.

In accordance with 10 CFR Part 21.21(b), this is a report of a defect in a component installed in the Davis-Besse Nuclear Power Station Unit No. 1. The component involved is the governor on the auxiliary feed pumps.

The auxiliary feed pumps were supplied by Byron Jackson Pump Division. The steam driven pump turbine was supplied by Terry Corporation to Byron Jackson. In turn, the turbine governor was supplied to Terry Corporation by Woodward Governor Company. The turbine governor is identified as a type PG-PL, which has a servomotor control employing a Bodine Electric Company motor.

The defect involves a potential for the governor to bind under certain conditions and preventing the turbine from coming up to design speed. The operating procedures for this equipment called for the governor to be placed in the high speed stop position prior to shutting down the turbine. Investigation has shown that with the Bodine servomotor driving against the high speed stop, a misalignment force is applied to the T-bar of the governor linkage. This misalignment force creates a potential for the governor to bind at a speed position less than design speed upon a turbine startup. This misalignment force does not always cause the governor to bind and this misalignment force can be removed by driving the Bodine servomotor away from the high speed stop.

The safety hazard which could be created is the potential for both auxiliary feed pumps to fail to come up to design speed upon startup. This could result in a substantial loss of auxiliary feedwater flow to the steam generators when such flow was required. This in turn could cause significant reactor coolant system pressure/temperature transients, and significant boiling in the reactor coolant system if substantial decay heat were present in the reactor core.

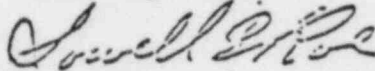
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The evaluation and identification of this defect was provided to me on September 30, 1977, and was discussed with Mr. T. Harpster of your office on September 30, 1977.

There are two identical auxiliary feed pumps with the turbine governors, described above, installed in the Davis-Besse Nuclear Power Station Unit No. 1.

The corrective action taken was to modify the governor including the removal of portions of the pneumatic speed-setting mechanism to assure that the governor will properly respond to speed demand signals. The pneumatic speed-setting mechanism was never an integral part of the functioning of the governor, because the governor employed servomotor control. This modification was accomplished at the Woodward Governor Company facilities. Subsequent testing at these facilities has proved the proper functioning of the governor. The modifications were completed prior to the current unit startup. The governors have been tested for proper functioning on auxiliary steam, and the surveillance test will be completed during Mode 3 of the current startup.

Yours very truly,



Lowell E. Roe
Vice President
Facilities Development

db b/9-10

cc:

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E. Historical Log of Station Operations (September 24 - October 12)

- Sept. 24 Reactor critical at 15% power, generator on the line at 110-140 MW, performing controls tuning
- 1700 - Discovered steam leak on steam lead between No. 2 Turbine Control Valve and high pressure turbine
- 1830 - Turbine-generator taken off the line to repair steam leak. Reactor critical at about 9% power.
- 2135 - Received Steam and Feedwater Rupture Control System Actuation, resulting in Reactor Trip, and Safety Features Actuation
- 2345 - Plant stable at 1600 psig, $T_{gve} + 525^{\circ}F$
- Sept. 25 0415 - Started Plant Cooldown
- 0645 - Completed initial survey of Containment
- Sept. 26 Cleanup and repairs begin
- Sept. 30 Completed repair and replacement of mirror insulation on No. 2 Steam Generator
- Oct. 3 Auxiliary Feedpump Governors removed and sent to Woodward Governor Factory
- Quench Tank Rupture Disc replaced
- Oct. 5 Vented Reactor Coolant System and run Reactor Coolant Pumps to get data to evaluate status of pumps and seals.
- Oct. 6 Started Feedwater Cleanup in preparation for Reactor Coolant System heatup
- Oct. 7 1630 - Received NRC approval to proceed with plant startup
- Oct. 8 1530 - Checkout of Auxiliary Feedpumps (using Auxiliary Steam) completed
- Oct. 11 Attempted to test pressurizer power relief valve. Unsuccessful due to electrical circuit problems.
- Oct. 12 Pressurizer power relief valve control circuit working, stroked valve and it stuck open again

- Oct. 13 Crews on site again working on Power Relief Valve. Increased RCS pressure to complete testing of Reactor Coolant Pumps.
- Oct. 15 Completed repairs to Power Relief Valve and tested it successfully
- Oct. 16 Completed testing of Auxiliary Feedpumps. Governors had been modified by Woodward to prevent sticking.
1306 - Reactor critical
2316 - Rolled the turbine
- Oct. 17 0307 - Generator synchronized
1135 - Generator off the line for overspeed tests
1805 - Commenced Reactor Shutdown for Unit Power Shutdown Test. We are now back in Power Escalation Sequence
- Oct. 18 0200 - Completed Unit Power Shutdown Test
0300 - Commenced Reactor Startup
1035 - Generator Synchronized
- Oct. 19 1124 - Generator off line to repair steam leak between No. 1 Control Valve and HP Turbine
- Oct. 20 2241 - Generator synchronized
- Oct. 23 1009 - A half trip of STPCS caused low steam generator level, resulting in full STPCS trip, Reactor trip and STAS
- Oct. 27 2330 - Reactor Critical
- Oct. 28 1151 - Generator Synchronized