



January 13, 1975

Mr. Edson G. Case, Acting Director
Office of Regulation
Directorate of Licensing
U.S. Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Case:

Abnormal Occurrence No. 251-75-1
January 13, 1975
Occurrence Date: January 3, 1975

Pressurizer Pressure Protection
Channel II - Lead/Lag Controller Failure

A. Conditions Prior to Occurrence

The reactor was in steady-state power operation at 99.8% reactor power. Pressurizer Pressure Protection Channel II was in the tripped mode to perform a functional test on this channel.

B. Description of Occurrence

During the performance of a functional test on Channel II of the Pressurizer Pressure and Level Protection System, it was noted that the output signal from the pressurizer low pressure lead/lag controller (PM-456A) was higher than the signal from the pressure transmitter simulator. Under these test conditions the output of the lead/lag controller should have been equal to the input test signal.

When the test signal was decreased to a value equivalent to a pressurizer pressure of 1701 psig, the output of the lead/lag controller corresponded to a pressurizer pressure of 1715 psig.

C. Cause of Occurrence

A zero-shift in the pressurizer low pressure lead/lag controller on Protection Channel II was the cause of this occurrence.

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When the pressurizer pressure signal is steady, the lead/lag controller output is equal to the input signal. However, when the signal falls rapidly, the lead/lag controller output signal becomes lower than the input signal. This will cause the low pressurizer pressure reactor trip to occur at a higher pressure because the pressurizer pressure is falling rapidly.

D. Analysis of Occurrence

The incidents analyzed and presented in the Turkey Point Unit Nos. 3 and 4 Final Safety Analysis Report assume conservative values for instrument error in measuring pressure, time delays associated with tripping functions, and maximum trip points assumed for analysis. A value of 30 psi was assumed for steady state fluctuations in primary pressure and measuring error. A maximum trip point value of 1685 psig was assumed for the low pressurizer pressure reactor trip. A low pressurizer pressure reactor trip is assumed to be actuated from any two out of three pressurizer low pressure channels.

Functional tests of low pressurizer pressure protection Channel Nos. I and III demonstrated that both of these protection channels were operable.

If pressurizer pressure had dropped to a value of 1701 psig, low pressurizer pressure protection Channel II would have operated. A rapid drop in pressurizer pressure would have caused these protection channels to operate at a higher pressure than shown by the functional test.

Review, analysis, and evaluation of the reactor operating conditions during this occurrence concludes that the reactor would have been protected by the two operable channels. The error caused by the zero-drift in the Channel II lead/lag controller (PM-456A) was equal to 14 psi allowance used in the safety analysis. The maximum trip point pressure of 1701 psig determined by the functional test is higher than the value of 1685 psig assumed in the safety analysis. Therefore, neither reactor safety nor the health and safety of the public were jeopardized by this occurrence.

E. Corrective Action

Pressurizer low pressure lead/lag controller (PM-456A) was adjusted to correct for zero-shift. Functional test performed after the controller was calibrated demonstrated that the lead/lag controller performed satisfactorily.

There was no evidence of generic failure.

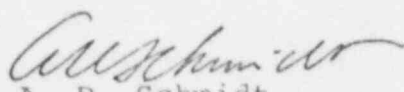
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F. Failure Data

Review of the operating and failure reports show this is the first abnormal occurrence due to malfunction of a low pressurizer pressure lead/lag controller.

This lead/lag controller (PM-456A) was manufactured by Hagan Controls Corporation. Model No. 198125-2200 Optimac Lead/Lag Controller. Serial No. 80150.

Very truly yours,



A. D. Schmidt
Vice President
Power Resources

VTC/mld

cc: Norman C. Moseley
Jack C. Newman, Esquire