Attention R. Lobel

Control Components Inc.
An IMI valve company

11-E-22

FAX: IN ☐ OUT ☑
JUN 21 1989
TIME 11:00

June 21, 1989

Mr. Joe Salvo
Sr. Mechanical Engineer
Yankee Atomic Electric Co.
580 Main Street
Bolton, Mass. 01740

Subject: Atmospheric Dump Valves
at Seabrook (NHP&L)
S/N 21274-6 & 10
Potential Significant Deficiency Under 10CFR-21

Dear Mr. Salvo:

We are hereby notifying you of a potential significant deficiency that may be reportable under the requirements of 10CFR-21. We are not reporting this directly to the Nuclear Regulatory Commission (NRC). We at CCI do not have the systems expertise that would permit us to decide if this is a significant deficiency. However, because of the NRC's interest and their prior contact for information regarding plants with a similar design, we have sent a copy to Rich Lobel of the Events Assessments group in Washington D.C.

CCI has completed it's analysis of the Atmospheric Dump Valves for your site. This analysis was prompted per your telecon with H.L. Miller on 5/26/89.

The analysis has been aimed at calculating a worst case bonnet pressure after the pilot valve has been opened. If the leakage by the piston ring is larger than the ability of the pilot plug to drain the bonnet, excessive pressure remains in the bonnet. If the pressure is too high, the actuator cannot overcome the forces holding the main plug on the seat.

Our calculation indicates that the atmospheric dump valves at your site may fail to open. The cause of the failure is speculative. But high bonnet pressure results, which does not permit the actuator to open the valve. That is; the actuator force with the current air pressure supply available is not large enough to overcome the pressure force holding the plug closed.

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As noted above, the cause of failure is not known. The condition cannot be made to occur on demand and in fact appears randomly. Our speculation is that pipe scale and other dirt particles get into the piston ring cavity and prevent the ring from sealing. Until the recent testing in March 1989, we have been unable to verify that an excessive bonnet pressure existed.

The resolution to this problem is to increase the pilot valve capacity. This requires rework of the plug to enlarge the pilot flow area and a new stem to seal the pilot valve when closed.

A second change is to use a two (2) piece wedge style piston ring to assure a good seal. This change is not as significant as increasing the pilot capacity but adds extra margin.

In addition to the changes of valve trim, the actuator spring load should be reduced. Currently the actuators spring is 2800 lb load with the valve plug on the seat. The spring has a 190#/inch rate. We would change the spring load to 1520 lb load on the seat with a approximate 160#/inch rate. The actuator spring change is also to gain extra margin on actuator differential pressure required to open the valve.

The analysis indicates that the valve as is, will open with 66 psi actuator differential pressure: if the piston ring is sealing within design. If the piston ring leaks significantly as in the worst case scenario, the actuator differential would be 149 psi to open the valve.

Please contact myself, Ron Adams, Larry Stratton or Herbert Miller at CCI if you should have any questions or need any additional information.

Sincerely,

CONTROL COMPONENTS INC.

Curtis G. Sterud

Curtis G. Sterud
Principal Engineer

/jf

cc: RDCBel
REAdams
HLMiller
LRStratton
EJVillalva