Control Components Inc.
An IMI valve company

April 4, 1989

Subject: Atmospheric Dump Valves
Potential Significant Deficiency Under 10CFR-21

Dear:

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 by the failure of the APS-Palo Verde valves to open. The Palo Verde valves are similar in design and rely upon the same principle of operation.

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 the result is a piston ring that fails to seal. The high bonnet pressure resulting 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.

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 Palo Verde testing in March 1989, we have been unable to verify that an excessive bonnet pressure existed.

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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 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.

Plants for which there is a concern that a random failure may occur and to whom this letter was sent are:

1) Arizona Public Service - Palo Verde 1, 2 & 3 - 4 Valves Each
2) Louisiana Power & Light - Waterford 3 - 2 Valves Each
3) Duke Power - Catawba 1 & 2 - 4 Valves Each
4) Southern California Edison - San Onofre 2 & 3 - 2 Valves Each

Plants for which there is no concern are:

1) Florida Power & Light - St. Lucie 2 - 4 Valves Each
2) Houston Power & Light - South Texas Project 1 & 2 - 4 Valves Each
3) Georgia Power - Vogtle 1 & 2 - 4 Valves Each
4) Carolina Power & Light - Shearon Harris 1 - 3 Valves Each

This list of eight plants are the only ones that have designs similar to the Palo Verde valves. Other atmospheric dump valves exist at other plants but their design is not the same as for the plants noted above.

The plants for which there is no concern have also been analyzed. Our findings are that the valves have sufficient actuator force and plug pilot flow capacity to assure opening of the valves. An information copy of this letter has been sent to these plants.

Please contact myself, Ron Adams, or Curtis Sterud at CCI if you have any questions or for additional information.

Sincerely,

CONTROL COMPONENTS INC.

H.L. Miller
Vice President, Engineering

/jf

cc: CGSterud
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