



October 16, 1973

Mr. John F. O'Leary, Director
Directorate of Licensing
Office of Regulation
U.S. Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. O'Leary:

TURKEY POINT UNIT NO. 4
DOCKET NUMBER 50-251
ABNORMAL OCCURRENCE NO. 4-73-12
LOW PRESSURE LETDOWN RELIEF VALVE
BELLOWS ASSEMBLY FAILURE

I. Introduction

This report is submitted in accordance with Technical Specification 6.6.2a Operating License No. DPR-41. This abnormal occurrence was identified on October 7, 1973 and the Directorate of Regulatory Operation, Region II, was notified on October 8, 1973.

II. Description of Occurrence

At approximately 11:40 A.M. on October 7, 1973 approximately 50 to 75 gallons of reactor coolant was released to the charging pump room in the auxiliary building via a failed bellows in relief valve 4-209 (low pressure letdown relief valve). The reactor was in a hot shutdown condition with maximum boron dilution of the reactor coolant underway.

Radiological surveys indicated average surface contamination in the area of valve 4-209 to be $50-60 \times 10^3$ dpm/100 cm². Air samples showed no significant airborne radioactivity present.

III. Analysis of the Occurrence

The low pressure letdown relief valve discharges to the volume control tank (VCT) and the bellows is thus subjected to VCT pressures normally in the range of 20 to 30 psi. However, during this occurrence the VCT pressure was inadvertently increased to 75 psig, the VCT relief valve setting, thus causing a significant increase in the pressure differential across the low pressure letdown relief valve bellows. The failure of the bellows is believed to have been caused by this increased pressure even though the resulting pressure was within the specified design maximum allowable.

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The release of reactor coolant into the charging pump room was through an opening in the relief valve bonnet utilized for installation of the gagging device.

The plug that would normally block this opening was found on the floor in the vicinity of the valve.

IV. Corrective Action

The immediate corrective action consisted of depressurizing the volume control tank and installing the bonnet plug in the valve bonnet.

Barriers were installed to control access to the area and a radiological survey was conducted. The charging pump room was subsequently decontaminated. Continued surveillance for airborne activity showed no significant activity and the plant vent radiation monitor showed no increase in radioactivity.

Replacement of the relief valve bellows will be accomplished during the shutdown scheduled for the end of this month. In addition "tell tale" piping will be installed on the bonnets of valve 4-209 and similar valves so that early detection of leaking bellows can be achieved. The "tell tale" piping will vent the valve bonnet to atmosphere and direct any leakage to an appropriate location to facilitate leakage detection as well as leaking fluid disposal.

V. Safety Implications of the Occurrence

Release of radioactivity beyond the charging pump room was of an insignificant amount. Plant personnel were not contaminated nor did any receive significant radiation exposure as a result of this occurrence.

The relief valve with the failed bellows can be expected to relieve at a higher pressure because of the effect of back-pressure which now is permitted to act on the top of the valve disk. The relief valve functions to prevent over-pressure of the piping and demineralizers between the low pressure control valve and the letdown divert valve at the inlet of the volume control tank. Pressure could only be significantly built up in this system as the result of an improper valve lineup which significantly increased the resistance of the flow path or completely isolated it. Such a lineup is improbable during normal operation and for additional insurance, operators have been further instructed in this matter and supervisors will exercise strict control over critical valves in this system. Such controls are considered adequate protection for the short time during which the plant will be operated with the relief valve without back pressure compensation.

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VI. Conclusions

- a. The release of reactor coolant was caused by a failure in the relief valve bellows assembly.
- b. The abnormal occurrence did not result in any danger to the public health and safety nor was the safe operation of the reactor jeopardized.

Very truly yours,

J.R. Benson
for A. D. Schmidt
Director of Power Resources

cc: Mr. Norman C. Moseley, Director
Region II
Directorate of Regulatory Operation
Suite 818
230 Peachtree Street, N.W.
Atlanta, Georgia 30303