

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TEXAS 76011

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November 7, 1980

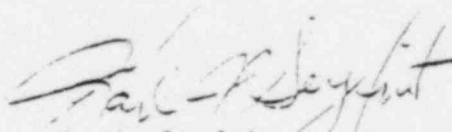
Docket No. 50-267

Public Service Company of Colorado
ATTN: Mr. C. K. Millen
Senior Vice President
P. O. Box 840
Denver, Colorado 80201

Gentlemen:

This IE Information Notice is provided as an early notification of a possibly significant matter. It is expected that recipients will review the information for possible applicability to their facility. No specific action or response is requested at this time. If further NRC evaluations so indicate, an IE Circular or Bulletin will be issued to recommend or request specific licensee actions. If you have questions regarding this matter, please contact the Director of the appropriate NRC Regional Office.

Sincerely,


K. V. Seyfrit
Director

Enclosures:

1. IE Information Notice
No. 80-40
2. List of Recently Issued
IE Information Notices

cc: D. W. Warembourg, Nuclear Production
Manager
Fort St. Vrain Nuclear Station
P. O. Box 368
Platteville, Colorado 80651

L. Brey, Manager, Quality Assurance

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

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Date: November 7, 1980
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EXCESSIVE NITROGEN SUPPLY PRESSURE ACTUATES SAFETY-RELIEF VALVE OPERATION TO
CAUSE REACTOR DEPRESSURIZATION

Description of Circumstances:

On October 7 and 31, 1980, the reactor coolant system was spuriously depressurized at Boston Edison Company's Pilgrim Nuclear Power Station Unit No. 1. The Pilgrim Station Unit No. 1 uses a GE BWR. The depressurizations resulted when excessive pressure in the nitrogen supply system caused the "A" Target Rock (TR) safety-relief valve to open and remain open until the excessive supply pressure could be isolated, pneumatic operator pressure vented and the main steam system depressurized sufficiently to allow the main disk to reseat. These two events involved a failure in the pressure regulation of the supply nitrogen and not a failure of the TR safety-relief valve to function as designed.

The safety-relief valves at Pilgrim are designed to be supplied, with other drywell instrumentation, from either the compressed air system or containment atmosphere control system (CACS). The CACS uses nitrogen for containment inerting. The supply for the safety-relief valves is provided from the CACS through an ambient air vaporizer and then through one of two parallel pressure regulators or a parallel bypass line. Shortly before the time of each event a new supply of liquid nitrogen had been added to the storage tanks. At the time of the events the two pressure regulators were in service with the bypass closed. Nitrogen pressure supplying the valves increased to 160-165 psi. This may have been caused by liquid nitrogen reaching the pressure regulators or by a failure in a pressure regulator. The result was excessive pressure which was sufficient to leak through the solenoid actuator and initiate the pneumatic operator of the safety-relief valve.

The design normal operating pressure of the compressed air or nitrogen systems supplying the safety-relief valves is 90-110 psi. At a pressure of 145 psi the solenoid valve may begin to leak since excessive pressure acts to unseat the disk. The supply pressure must then decrease to 135 psi or less for the solenoid disk to reseat. In addition, the design of the safety-relief valve is such that as the main steam pressure increases, less instrument pressure is necessary to initiate the pneumatic operator. Approximately 3 to 5 psi at the pneumatic operator is sufficient to initiate the safety-relief valve opening.

Such a pressure begins to build with leakage through the solenoid actuator and was reached in the "A" valve at 160 psi supply pressure. According to information from GE and TRC, approximately 180 psi pressure is necessary for all of the safety-relief valves to open as result of supply overpressure. It would appear that under such conditions of overpressure that safety-relief valve openings would be sequential rather than simultaneous.

The particular solenoid actuator valves used with these two-stage safety-relief valves are manufactured by TRC. Their design is such that excessive control pressure tends to unseat the solenoid valve disk. The three-stage TR safety-relief valves use either AVCO (Automatic Valve Company) or ASCO (Automatic Switch Company) solenoid valves according to information from GE. The AVCO solenoid valve has been tested to 300 psi and found not to leak and the ASCO solenoid valve tends to seat with increasing supply pressure. Therefore, the NRC believes that the tendency for solenoid leakage and hence safety-relief valve opening is confined to the two-stage safety-relief valve installations.

This information is provided as a notification of a possibly significant matter which is still under review by the NRC staff. It is anticipated that the results of continuing NRC review will culminate in issuance of an IE Bulletin which will recommend or require specific licensee action. In the interim, we expect that recipients will review the information for possible applicability to their facilities, particularly those with installations of the TR two-stage safety-relief valves. If you have questions regarding this matter, please contact the Director of the appropriate NRC Regional Office.

IE Information Notice No. 80-40
November 7, 1980

LISTING OF RECENTLY ISSUED
IE INFORMATION NOTICES

Information Notice No.	Subject	Date Issued	Issued To
80-33	Determination of Teletherapy Timer Accuracy	9/15/80	All teletherapy (G3) licensees
80-34	Boron Dilution of Reactor Coolant During Steam Generator Decontamination	9/26/80	All Pressurized Water Reactor Facilities holding power reactor Operating Licenses (OLs)
80-35	Leaking and Dislodged Iodine-124 Implant Seeds	10/10/80	All categories G and G1 medical licensees
80-36	Failure of Steam Generator Support Bolting	10/10/80	All nuclear power reactor facilities holding Operating Licenses (OLs) or Construction Permits (CPs)
80-37	Containment Cooler Leaks and Reactor Cavity Flooding at Indian Point Unit 2	10/24/80	All nuclear power facilities holding power reactor Operating Licenses (OLs) or Construction Permits (CPs)
80-38	Cracking in Charging	10/30/80	All Pressurized Water Reactor Facilities holding power reactor Operating Licenses (OLs) and Construction Permits (CPs)
80-39	Malfunctions Of Solenoid Valves Manufactured By Valcor Engineering Corporation	10/31/80	All light water reactor facilities holding power reactor OLs or CPs

Enclosure