

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE--PNO-I-84-83

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by the Region I staff on this date.

Facility: Pennsylvania Power and Light Co.	Licensee Emergency Classification:
Susquehanna Steam Electric Station	<input type="checkbox"/> Notification of Unusual Event
Units 1 and 2	<input type="checkbox"/> Alert
Berwick, PA	<input type="checkbox"/> Site Area Emergency
	<input type="checkbox"/> General Emergency
	<input checked="" type="checkbox"/> Not Applicable

Subject: Scram Pilot Solenoid Valve Failures

During quarterly control rod scram time testing for Unit 1 on October 6, 1984, four rods failed to scram upon demand; these rods did eventually scram when their pilot solenoid valves were gently tapped. Eleven other rods hesitated during the testing, but did not exceed the maximum allowable scram time of 7.0 seconds. The licensee replaced the four defective scram pilot solenoid valves, and sent one to General Electric for failure analysis. This event was reported to the NRC Senior Resident Inspector but did not require 10 CFR 50.72 notification. On October 12, 1984, GE informed PP&L that a material used in the scram pilot valve sub-assemblies could cause sticking, and either prevent or delay scram operation of control rods. Following evaluation of this information, PP&L commenced a shutdown of Unit 1 at 9:10 p.m. on October 12; shutdown of Unit 2 followed at 9:50 p.m. Both units were in a Hot Shutdown condition by 5:15 a.m. on October 13, 1984.

Units 1 and 2 use a single Automatic Switch Co. (ASCO) three-way, diaphragm-type, piloted solenoid valve (Part No. T-ASCO HV-176-816-1, GE Part No. 922D138) for each control rod. Each pilot valve assembly is composed of two normally-energized solenoids, both of which must de-energize to initiate a scram of its associated control rod. There are 185 scram pilot solenoid valves installed (1 per control rod) on each reactor. Among operating plants, this design is unique to Susquehanna and Grand Gulf. The defective component was a polyurethane disc holder subassembly which develops an adhesive quality at elevated temperatures (above 160°F), causing it to adhere to the seat of the scram pilot valve vent port, and thereby preventing proper rod scrambling.

All Unit 1 disc holder subassemblies have been replaced with an acceptable, environmentally-qualified Viton-A material - a product improvement made subsequent to initial valve purchase. Only 93 valves were found to require repair on Unit 2, and work is in progress to complete those replacements. The other 92 valves were previously rebuilt for other reasons with repair kits believed to have the Viton-A material. These valves are being inspected to verify that the Viton-A material was used. Startup of Unit 1 could occur as early as the afternoon of October 15, and Unit 2 as early as October 16. The licensee is reviewing other similar valve applications, working with GE to determine the failure mechanism of this problem, and evaluating Part 21 reportability. The resident inspectors are following the event.

A press release was made by PP&L on October 13, 1984. The Senior Resident Inspector received notification of this occurrence by telephone, from the licensee at 8:30 p.m. on October 12, 1984. ENS notifications were made prior to both unit shutdowns. The Commonwealth of Pennsylvania has been informed.

CONTACT: R. Jacobs J. Strosnider
 717-542-2134 488-1128

8410190100 841015
PDR I&E
PNO-I-84-083 PDR

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