SSINS No.: 6835
IN 86-78

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

September 2, 1986

IE INFORMATION NOTICE NO. 86-78: SCRAM SOLENOID PILOT VALVE (SSPV) REBUILD KIT PROBLEMS

Addressees:

All boiling water reactor facilities holding an operating license or a construction permit.

Purpose:

This notice is to alert recipients of a potential problem with kits used to refurbish the scram solenoid pilot valves. Recipients are expected to review the information for applicability to their facilities and consider actions, if appropriate, to preclude similar problems occurring at their facilities. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

On June 14, 1986, Vermont Yankee nuclear power plant reported that one control rod failed to scram and five others hesitated a few seconds before scramming during a single-rod scram time test. During the outage that preceded the scram time test, all of the scram solenoid pilot valves had been rebuilt with replacement kits supplied by General Electric Company (GE). The reactor had been taken critical to perform shutdown margin tests using the in-sequence critical method before the testing that identified the problem with the scram solenoid pilot valves.

Three types of problems were identified in the scram solenoid valves (SSPVs) which operated six control rods. In the one SSPV associated with the failure to scram, the core spring of the SSPV was separated from the core assembly. On another SSPV, the diaphragm was installed backwards on the exhaust side of the solenoid valve. On the remaining four SSPVs, an incorrect core assembly, provided with the kits, was installed in the valve. The latter two types of problems were associated with delayed scram initiation. Subsequent inspection of the remaining SSPVs revealed two other types of discrepancies. These were (1) out-of-round inside diameter of the solenoid base subassembly and (2) a deformed spring. Although these two discrepancies did not cause abnormal scram performance in this case, they could have had an adverse effect on scram performance.

Discussion:

These problems would likely delay but not prevent rod insertion during normal operation because backup scram valves would depressurize the air header and cause the control rods to insert.

The defective rebuild kits are used at BWR-2s, 3s, and most 4s and 5s. Vermont Yankee used replacement kits (ASCO type 204-139) to refurbish the scram solenoids in the Hydraulic Control Units (HCU). GE purchased 3000 of these replacement kits from Automatic Switch Company (ASCO), the manufacturer of the solenoid valves. GE purchased these kits as non-safety-related items and sold them as nuclear grade. Each kit contains 11 components, of which two are assemblies. The two assemblies are the core assembly (ASCO part 65-716-2A) and the solenoid base sub-assembly (ASCO part 44-869-23).

On June 26, 1986, subsequent to the event at Vermont Yankee, GE returned to ASCO 200 replacement kits (ASCO type 204-139) from their stock and requested ASCO to perform critical inspections. ASCO inspected the two assemblies in each kit and rejected 127 core assemblies and two solenoid base assemblies for out of tolerance conditions. The rejected parts were replaced with acceptable assemblies.

Although the extent of the distribution of the parts kits used to rebuild the scram solenoid valves is not known at this time, preliminary information suggests that these kits may be in wide distribution. GE issued Rapid Information Communication Services Information Letter (RICSIL) No. 008 on June 27, 1986 and SIL No. 441 on July 17, 1986 regarding these problems with the rebuild kits. GE has advised all affected utilities to return spare rebuild kits for reinspection.

No specific action or written response is required by this information notice. If you have questions about this matter, please contact the Regional Administrator of the appropriate NRC regional office or this office.

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Attachment: List of Recently Issued IE Information Notices

LIST OF RECENTLY ISSUED IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
86-77	Computer Program Error Report Handling	8/28/86	All power reactor facilities holding an OL or CP and nuclear fuel manufacturing facilities
86-76	Problems Noted In Control Room Emergency Ventilation Systems	8/28/86	All power reactor facilities holding an OL or CP
86-75	Incorrect Maintenance Procedure On Traversing Incore Probe Lines	8/21/86	All power reactor facilities holding an OL or CP
86-74	Reduction Of Reactor Coolant Inventory Because Of Misalignment Of RHR Valves	8/20/86	All BWR facilities holding an OL or CP
86-73	Recent Emergency Diesel Generator Problems	8/20/86	All power reactor facilities holding an OL or CP
86-72	Failure 17-7 PH Stainless Steel Springs In Valcor Valves Due to Hydrogen Embrittlement	8/19/86	All power reactor facilities holding an OL or CP
86-71	Recent Identified Problems With Limitorque Motor Operators	8/19/86	All power reactor facilities holding an OL or CP
86-70	Spurious System Isolation Caused By The Panalarm Model 86 Thermocouple Monitor	8/18/86	All GE BWR facilities holding an OL or CP
86-69	Scram Solenoid Pilot Valve (SSPV) Rebuild Kit Problems	8/18/86	All BWR facilities holding an OL or CP
86-68	Stuck Control Rod	8/15/86	All BWR facilities holding an OL or CP

OL = Operating License
CP = Construction Permit