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

October 1, 1985

IE INFORMATION NOTICE NO. 85-17, SUPPLEMENT 1: POSSIBLE STICKING OF ASCO SOLENOID VALVES

Addressees:

All nuclear power reactor facilities holding an operating license (OL) or a construction permit (CP).

Purpose:

This notice is to inform recipients of the results of followup investigations regarding the reasons for sticking of Automatic Switch Company (ASCO) solenoid valves used to shut main steam isolation valves (MSIVs) under accident conditions. 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:

Information Notice No. 85-17, "Possible Sticking of ASCO Solenoid Valves," described the problem that occurred with ASCO Model HTX 832320V solenoid valves at Grand Gulf Unit 1.

General Electric (GE) and ASCO conducted tests to determine the cause and any further corrective actions. The following is a summary of the GE and ASCO tests and analyses:

Two of the three solenoid valves which failed at the Grand Gulf Nuclear Station also sporadically failed to transfer during testing at elevated temperatures. These two valves were the only valves that failed during these tests. However, these failures were not predictable. Subsequently, five valves from Grand Gulf service were disassembled and inspected. This inspection identified a microscopic foreign substance on the lower core/plug nut interfaces on all five valves.

Further evaluations of this microscopic substance were inconclusive because of the small foreign substance sample size. After cleaning and reassembly of these valves, tests were conducted on four of these five valves at elevated temperatures. These four valves functioned normally. ASCO felt certain that the valve failures resulted from high-temperature sticking of the lower core-to-plug nut faces resulting from a foreign substance or combination of substances collected at this interface.

A detailed dimensional analysis and comparison among the valves returned from Grand Gulf indicated that all parts were within allowable limits and differences were not enough to cause a failure to shift. Therefore, this examination tended to relieve concerns related to a generic design defect.

GE has attempted to locate additional foreign substance from other valves of the same type in use at Grand Gulf to determine how the foreign substance got in the valve, or where it originated. GE was able to scrape some small amounts of foreign substance from the lower core-to-plug nut interface. However, there was not enough residue to make a definitive identification of the nature of the foreign substance.

GE has recommended that the licensee replace the potentially contaminated MSIV solenoid valves and institute a periodic examination and cleaning of the MSIV solenoid valves. Grand Gulf has replaced the eight MSIV HTX832220V dual solenoid valves with fully environmentally qualified ASCO Model NP 8323A20E dual solenoid valves. The environmentally qualified valve Model NP 8323A20E was included in a control sample placed in the test ovens with the solenoid valves that stuck at Grand Gulf. The environmentally qualified model did not stick under the test conditions that cause sticking in the other solenoid valves.

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

Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

Technical Contact: Eric Weiss, IE
(301) 492-9005

Attachment: List of Recently Issued IE Information Notices

Further evaluations of this microscopic substance were inconclusive because of the small foreign substance sample size. After cleaning and reassembly of these valves, tests were conducted on four of these five valves at elevated temperatures. These four valves functioned normally. ASCO felt certain that the valve failures resulted from high-temperature sticking of the lower core-to-plug nut faces resulting from a foreign substance or combination of substances collected at this interface.

A detailed dimensional analysis and comparison among the valves returned from Grand Gulf indicated that all parts were within allowable limits and differences were not enough to cause a failure to shift. Therefore, this examination tended to relieve concerns related to a generic design defect.

GE has attempted to locate additional foreign substance from other valves of the same type in use at Grand Gulf to determine how the foreign substance got in the valve, or where it originated. GE was able to scrape some small amounts of foreign substance from the lower core-to-plug nut interface. However, there was not enough residue to make a definitive identification of the nature of the foreign substance.

GE has recommended that the licensee replace the potentially contaminated MSIV solenoid valves and institute a periodic examination and cleaning of the MSIV solenoid valves. Grand Gulf has replaced the eight MSIV HTX832320V dual solenoid valves with fully environmentally qualified ASCO Model NP 8323A20E dual solenoid valves. The environmentally qualified valve Model NP 8323A20E was included in a control sample placed in the test ovens with the solenoid valves that stuck at Grand Gulf. The environmentally qualified model did not stick under the test conditions that cause sticking in the other solenoid valves.

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

Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

Technical Contact: Eric Weiss, IE
(301) 492-9005

Attachment: List of Recently Issued IE Information Notices

*SEE PREVIOUS CONCURRENCE

DEPER:IE
WLFisher
9/ /85

*EAB:DEPER:IE	*IE	EABDEPER:IE	EGCB:DEPER:IE	DD:DEPER:IE	D:DEPER:IE
EWWeiss:ew	DGable	CERossi	RLBaer	SASchwartz	ELJordan
9/12/85	9/16/85	9/18/85	9/20/85	9/23/85	9/24/85

Further evaluations of this microscopic substance were inconclusive because of the small foreign substance sample size. After cleaning and reassembly of these valves, tests were conducted on four of these five valves at elevated temperatures. These four valves functioned normally. ASCO felt certain that the valve failures resulted from high-temperature sticking of the lower core-to-plug nut faces due to a foreign substance or combination of substances collected at this interface.

A detailed dimensional analysis and comparison among the valves returned from Grand Gulf indicated that all parts were within allowable limits and differences were not enough to cause a failure-to-shift. Therefore, this examination tended to relieve concerns related to a generic design defect.

GE has attempted to locate additional foreign substance from other valves of the same type in use at Grand Gulf to determine how the foreign substance got in the valve, or where it originated. GE was able to scrape some small amounts of foreign substance from the lower core-to-plug nut interface. However, there was not enough residue to make a definitive identification of the nature of the foreign substance.

GE has recommended that the licensee replace the potentially contaminated MSIV solenoid valves and institute a periodic examination and cleaning of the MSIV solenoid valves. Grand Gulf has replaced the eight MSIV HTX832320V dual solenoid valves with fully environmentally qualified ASCO Model NP 8323A20E dual solenoid valves. The environmentally qualified valve Model NP 8323A20E was included in a control sample placed in the test ovens with the solenoid valves that stuck at Grand Gulf. The environmentally qualified model did not stick under the test conditions that cause sticking in the other solenoid valves.

A review of the licensee's safety-related documentation has identified another area of concern where a dual solenoid valve of the same type that stuck, i.e., HTX832320V is utilized. These solenoid valves are located in the CRD system at Grand Gulf and are scheduled to be replaced. These solenoid valves are used to control the scram vent and drain valves. However, GE purchase specifications may make a difference in the valves' design and manufacture even though they are also designated by the model number HTX832320V.

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

Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

Technical Contact: Eric Weiss, IE
(301) 492-9005

Attachment: List of Recently Issued IE Information Notices

*SEE PREVIOUS CONCURRENCE

DEPER:IE
WLFisher
9/ /85

EAB:DEPER:IE	IE	EAB:DEPER:IE	EGCB:DEPER:IE	DD:DEPER:IE	D:DEPER:IE
EWWeiss:ew	DGable	CERossi	RLBaer	SASchwartz	ELJordan
9/2/85	9/6/85	9/ /85	9/ /85	9/ /85	9/ /85

LIST OF RECENTLY ISSUED
IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
85-79	Inadequate Communications Between Maintenance, Operations, And Security Personnel	9/30/85	All power reactor facilities holding an OL or CP; research and nonpower reactor facilities; fuel fabrication and processing facilities
85-78	Event Notification	9/23/85	All power reactor facilities holding an OL or CP
85-77	Possible Loss Of Emergency Notification System Due To Loss Of AC Power	9/20/85	All power reactor facilities holding an OL or CP
85-76	Recent Water Hammer Events	9/19/85	All power reactor facilities holding an OL or CP
85-75	Improperly Installed Instrumentation, Inadequate Quality Control And Inadequate Post-modification Testing	8/30/85	All power reactor facilities holding an OL or CP
85-74	Station Battery Problems	8/29/85	All power reactor facilities holding an OL or CP
84-70 Sup. 1	Reliance On Water Level Instrumentation With A Common Reference Leg	8/26/85	All power reactor facilities holding an OL or CP
85-73	Emergency Diesel Generator Control Circuit Logic Design Error	8/23/85	All power reactor facilities holding an OL or CP
85-72	Uncontrolled Leakage Of Reactor Coolant Outside Containment	8/22/85	All power reactor facilities holding an OL or CP

OL = Operating License
CP = Construction Permit