SSINS No.: 6835
IN 86-89

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

October 16, 1986

IE INFORMATION NOTICE NO. 86-89: UNCONTROLLED ROD WITHDRAWAL BECAUSE OF A SINGLE FAILURE

Addressees:

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

Purpose:

This notice is to alert recipients of a potentially generic problem with a single failure that can cause both a single control rod drift to the full-out position and then failure to insert on demand. 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 July 30, 1986, the Grand Gulf nuclear station experienced an uncontrolled single control rod withdrawal to the full-out position while at 69 percent power. When attempting to notch rod 20-45 from position 08 to position 10, the operator noticed "rod drift" and "rod block" alarms and observed indications that the rod was at position 12 and continuing to withdraw. The operator pressed the insert pushbutton several times and observed the illumination of the "in" light and the "settle" light. The repeated notch insertion attempts slowed the rod outward movement, but the rod continued to withdraw to full-out position 48. The control rod took about 3 minutes and 10 seconds to travel from position 08 to position 48 (which is about normal settle speed).

The operator carried out the actions required by the Alarm Response Instructions. As a conservative measure, reactor power was reduced to 60 percent for thermal limit concerns, and a coupling check was performed. Once control of rod insertion was regained, the rod was placed at position 44 and back to position 48 to test the rod withdrawal limiter. The rod was declared inoperable, fully inserted, and hydraulically disarmed.

To determine the cause of the event, inspections and bench checks were performed on withdraw control valve, C11-F422. (This valve is designated 122 at some older BWRs.) The valve demonstrated no sign of abnormal operation, and no fouling of the valve seat was evident. The licensee concluded that temporary particulate

accumulation on the valve seating surface caused an incomplete closure of the valve when the withdraw command was terminated, allowing drive water pressure to leak past the valve and force the drive piston downward.

Subsequently, the withdraw control valve was replaced with a new valve and the control rod restored to service. During the upcoming refueling outage, the licensee plans to check the drive water filters and sample low stagnant points in the system for particulates. The licensee has provided additional operator instructions for control rod/drive malfunctions based on General Electric Service Information Letter (SIL) 292 that was issued in July 1979. The procedure revisions include the following actions to be taken when control rods drive out with no "withdraw command" present:

1. Application of continuous control rod insert signal until the rod reaches zero. If the control rod continues to withdraw from zero, reinsert the continuous control rod insert signal and hold until either the control rod drive pressure can be reduced or someone can isolate the affected hydraulic control unit (HCU) by closing the 103 drive water riser isolation and 105 exhaust water riser isolation valves on the HCU.

2. If the control rod drive does not respond to the insert signal, have someone manually scram the rod from the HCU.

3. If the drive continues to demonstrate occurrences of inadvertent withdrawal, the control rod should be inserted to position zero and the drive should be valved out of service until the fault is located and corrected. After the drive is valved out of service, the associated valve no. 122 and control circuity should be checked and repaired if necessary.

Discussion:

There have been other instances when the withdrawal directional control valve caused uncontrolled rod withdrawal:

Plant name	Date	Cause
Pilgrim	4/8/78	122 Valve Corrosion Products
Browns Ferry 2	6/24/80	85-40C Valve Failed (85-40C is TVA designation for 122 Valve)

In addition, there have been events when uncontrolled withdrawal has been caused by unknown reasons or a collet finger problem.

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.

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

Attachment 1
IN 86-89
October 16, 1986

LIST OF RECENTLY ISSUED
IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
86-05 Sup. 1	Main Steam Safety Valve Test Failures And Ring Setting Adjustments	10/16/86	All power reactor facilities holding an OL or CP
86-25 Sup 1	Traceability And Material Control of Material And Equipment, Particularly Fasteners	10/15/86	All power reactor facilities holding an OL or CP
86-88	Compensatory Measures For Prolonged Periods Of Security System Failures	10/15/86	All power reactor facilities holding an OL or CP; fuel fabrication and processing facilities
86-87	Loss Of Offsite Power Upon An Automatic Bus Transfer	10/10/86	All power reactor facilities holding an OL or CP
86-86	Clarification Of Requirements For Fabrication And Export Of Certain Previously Approved Type B Packages	10/10/86	All registered users of NRC certified packages
86-85	Enforcement Actions Against Medical Licensees For Willfull Failure To Report Misadministrations	10/3/86	All NRC medical licensees
86-84	Rupture Of A Nominal 40-Millicurie Iodine-125 Brachytherapy Seed Causing Significant Spread Of Radioactive Contamination	9/30/86	All NRC medical institution licensees
86-83	Underground Pathways Into Protected Areas, Vital Areas, Material Access Areas, And Controlled Access Areas	9/19/86	All power reactor facilities holding an OL or CP; fuel fabrication and processing facilities

OL = Operating License
CP = Construction Permit

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