CENTERIOR ENERGY

PERRY NUCLEAR POWER PLANT
10 CENTER ROAD
PERRY, OHIO 44081
(216) 259-3737

Mail Address:
P.O. BOX 97
PERRY, OHIO 44081

Michael D. Lyster
Vice President - Nuclear

December 14, 1990
PY-CEI/NRR-1281 L

Director, Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Perry Nuclear Power Plant
Docket No. 50-440
10 CFR Part 21 Notification -
ASCO Scram Solenoid Pilot Valves

Gentlemen:

Pursuant to the requirements of 10CFR21.21(b)(2), the NRC was notified on December 11, 1990 of a 10CFR21 reportable condition identified at the Perry Nuclear Power Plant (PNPP). The condition involved the failure of several ASCO scram solenoid pilot valves from a single production run of these valves.

Enclosed are three copies of the written report which is being submitted in accordance with 10CFR21.21(b)(2) and (b)(3).

If you have any questions, please feel free to call.

Sincerely,

Robert J. Stutman for
Michael D. Lyster

MDL:GS:njc

Attachment

cc: A. B. Davis, Region III
USNRC Project Manager
USNRC Resident Office
USNRC Document Control Desk

IE19

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10CFR21 Report - ASCO Scram Solenoid Pilot Valves

10CFR21.21(b)(3)

i. Name of Person Notifying the Commission

E. Riley - Director, Perry Nuclear Assurance Department / V. Concel - Acting Mgr., System Engineering Section

ii. Identification of Facility and Basic Component

Perry Nuclear Power Plant - Unit #1
3-way Dual Scram Solenoid Pilot Valve (SSPV)
Model EP-139
GE Part #922D138P001
ASCO Part #nV 176-816-1
PNPP Stock Code 1579947
Application 1C11D0001 - Control Rod Drive
Hydraulic Control Unit

iii. Identification of Firm Supplying the Basic Component

Valves were furnished by GE Nuclear Energy under PNPP P.O. #S-121462, Material Receipt #MR-96472. Production Run #F61191A. Valves were manufactured by Automatic Switch Company (ASCO).

iv. Nature of the Defect and the Safety Hazard Created

The SSPV's are used in the Control Rod Drive System to cause the insertion of control rods into the reactor core. By design, the SSPV changes position upon deenergization permitting the venting of all air pressure from the Scram Valve Actuators. This in turn opens the Scram Valves. This opening results in a differential pressure across the Control Rod Drive mechanism causing rod insertion.

Contrary to the Design Criteria, 6 of the 41 installed SSPV's from this production run failed to operate properly. No SPPV's from other production runs experienced failures during this period. The types of failure were as follows:

SSPV Number	Type of Failure
F61191A-82	Slow valve shift
F61191A-87	Premature exhaust
F61191A-33	Premature exhaust
F61191A-20	Valve failed to shift
F61191A-41	Valve failed to shift
F61191A-67	Possible valve failure to shift

In addition to these 6 failures, several unused valves from this production run were returned to ASCO for testing. One of these returned valves failed to meet the basic ASCO production test standards by displaying premature exhaust.

These deficiencies could cause a delay in control rod insertion resulting in higher peak reactor power levels being attained during certain transient/accident sequences.

v. Date Information was Obtained

The failures occurred during the period July 27, 1990 through October 28, 1990. An evaluation of the failures was conducted and the decision that the defects were reportable under 10CFR21 was made on December 10, 1990.

vi. The Number and Location of Basic Components

GE Nuclear Energy informed us that production run F61191A consisted of 100 valves. PNPP purchased 70 of these valves on P.O. S-121462. Of these 70, only 41 were ever installed. All 41 have been replaced with valves from other production runs. Controls are in place to prevent the use of F61191A valves in the future.

The remaining 30 SSPV's from F61191A were purchased for use at the Hope Creek Plant. It is believed that these valves are currently located at Hope Creek.

vii. Corrective Action

All 41 installed valves from the identified production run have been removed and replaced with valves from other production runs. Controls are in place to prevent the future use of these valves. Efforts to determine the cause of the failures included the return of four of the six failed valves to GE/ASCO for analysis. Independent of this action, three of the six failed valves were also evaluated by a laboratory contracted by PNPP. In addition to evaluating the failed valves, several unused valves were returned to ASCO for standard production testing. Although one of these unused valves exhibited premature exhaust, no conclusive evidence could be found to explain the difference between this production run of valves and other production runs. No root cause for the individual or the collective failures could be conclusively determined.

An evaluation of the receipt, storage, handling and installation conditions at PNPP was also performed. The SSPV's from all production runs purchased by PNPP were essentially treated the same. There was nothing identified at Perry concerning pre-installation, installation or operation that was unique to production run F61191A. The same receipt, storage, handling and installation conditions and personnel were utilized for the valves from all production runs. Local ambient conditions during operation would not adversely affect only the valves from one production run because the valves are installed in a staggered pattern with valves from other production runs.

Because no conclusive root cause could be determined for the individual or the collective failures and because the valves from several other production runs installed and in operation during this period did not experience any failures, it was concluded that the faulty valves were limited to this single production run. The corrective action therefore was to replace all of the installed valves from this production run and to prevent their future use. These actions have been completed.

viii. Advice Related to the Defect

Concurrent with our investigation, it was determined that the Hope Creek Station received 30 valves from production run P61191A. We have notified them of our decision to replace the vales installed at Perry.

NJC/CODED/4267