

LER #83-013/03L-0
MN-83-96

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

During steady state, full power operation, the diesel fire pump failed to develop sufficient discharge pressure while performing surveillance testing of the fire suppression water system, and was declared inoperable. Upon sensing low discharge header pressure, the electric fire pump started automatically, thus maintaining fire suppression water system operability.

Since both the diesel and electric fire pumps are required to be operable by Technical Specification 3.23.B, the failed diesel fire pump forced operation in a degraded mode permitted by the remedial action of that section. The remedial action allows one fire pump to be inoperable for up to seven days. The local fire department was notified and placed in standby.

The diesel fire pump was returned to service within 4 1/2 hours at which point the fire suppression water system was fully restored. There was no effect on the health or safety of the public.

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

Upon starting, the diesel fire pump became bound with air and failed to develop sufficient discharge pressure. This was caused by the combined failures of the level float switch on the hydropneumatic tank (TK-52) and a check valve on the discharge side of pressure maintenance pump (P-78).

Corrosion buildup on the level switch prevented proper switch motion. When water drained from the tank, the level switch failed to move properly and therefore did not initiate makeup from the pressure maintenance pump.

The tank drained enough to uncover the feed inlet from the pressure maintenance pump. Normally, the pressure maintenance pump transfers water from the fire pump suction lines, through a check valve, into the hydropneumatic tank to maintain level. Corrosion prevented proper seating of the check valve, which allowed pressurized air to expand through the valve and into the suction header of the diesel fire pump. When the diesel pump started, the resulting partial voiding of the suction piping caused the pump to become air bound. The diesel pump swept the suction piping of voids and thereby allowed the electric fire pump to operate properly.

The leaking check valve was replaced. The level control switch was cleaned and lubricated to ensure proper operation. Surveillance tests were subsequently performed and were satisfactory.

1. Preventive maintenance schedules will be revised to require inspecting the check valve and performing preventive maintenance on the level control system at three-year intervals.