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Dalwyn R. Davidson
VICE PRESIDENT
SYSTEM ENGINEERING AND CONSTRUCTION

October 25, 1982

Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Perry Nuclear Power Plant
Docket No. 50-440; 50-441
Confirmatory Issue - No. 27
SDV Level Monitoring System

Dear Mr. Schwencer:

This letter and its attachments are provided in response to the Perry SER confirmatory issue number 27. The attached pages address the staff's concern that the Perry FSAR be revised to provide a complete description of the modified design of the scram discharge volume level monitoring system.

We believe that the attached revised FSAR pages will resolve the confirmatory issue for the next Perry Supplementary Safety Evaluation Report (SSER No. 2).

Very truly yours,

W P Masters

for Dalwyn R. Davidson
Vice President
System Engineering and Construction

DRD:kh

cc: Jay Silberg, Esq.
John Stefano
Max Gildner
Carolyn R. Wright (GE)

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Drawings To: PM

flow is diverted to the drives by closing the appropriate stabilizing valves, at the same time opening the drive directional control and exhaust solenoid valves. Thus, flow through the drive pressure control valve is always constant.

Flow indicators in the drive water header and in the line downstream from the stabilizing valves allow the flow rate through the stabilizing valves to be adjusted when necessary. Differential pressure between the reactor vessel and the drive pressure stage is indicated in the control room.

4.6.1.1.2.4.2.4 Cooling Water Header

The cooling water header is located downstream from the drive/cooling pressure valve. The drive/cooling pressure control valve is manually adjusted f om the control room to produce the required drive/cooling water pressure balance.

The flow through the flow control valve is virtually constant. Therefore, once adjusted, the drive/cooling pressure control valve will maintain the correct drive pressure and cooling water pressure, independent of reactor vessel pressure. Changes in setting of the pressure control valves are required only to adjust for changes in the cooling requirements of the drives, as the drive seal characteristics change with time. A flow indicator in the control room monitors cooling water flow. A differential pressure indicator in the control room indicates the difference between reactor vessel pressure and drive cooling water pressure. Although the drives can function without cooling water, seal life is shortened by long term exposure to reactor temperatures. The temperature of each drive is indicated and recorded, and excessive temperatures are annunciated in the control room.

4.6.1.1.2.4.2.5 Scram Discharge Volume

The scram discharge volume consists of header piping which connects to each HCU and drains into an instrument volume. The header piping is sized to receive and contain all the water discharged by the drives during a scram, independent of the instrument volume. Each of the two sets of headers has its own directly controlled Scram Discharge Instrument Volume (SDIV) attached to the low point of the header piping. The large diameter pipe of the instrument volume thus serves as a vertical extension of the SDV (though no credit is taken for it in determining SDV requirements.

During normal plant operation the scram discharge volume is empty, and vented to atmosphere through its open vent and drain valve. When a scram occurs, upon a signal from the safety circuit, these vent and drain valves are closed to conserve reactor water. Redundant vent and drain valves are provided to assure against loss of reactor coolant from the SDV following a scram. Lights in the control room indicate the position of these valves.

During a scram, the scram discharge volume partly fills with water discharged from above the drive pistons. After scram is completed, the control rod drive seal leakage from the reactor continues to flow into the scram discharge volume until the discharge volume pressure equals the reactor vessel pressure. A check valve in each HCU prevents reverse flow from the scram discharge header volume to the drive. When the initial scram signal is cleared from the reactor protection system, the scram discharge volume high water level scram signal is overridden with a keylock override switch, and the scram discharge volume is drained and returned to atmospheric pressure.

Remote manual switches in the pilot valve solenoid circuits allow the discharge volume vent and drain valves to be tested without disturbing the reactor protection system. Closing the scram discharge volume valves allows the outlet scram valve seats to be leak-tested by timing the accumulation of leakage inside the scram discharge volume.

Six liquid level switches connected to each instrument volume monitor the volume for abnormal water level. Four of these switches are electronic trip units activated by the output of three ANALOG level transmitters. (See Fig. 4.6-5). The other two are float-type level switches. They are set at three different levels. At the lowest level, a transmitter-activated switch producing an indication that the volume is not completely empty during post-scram draining or that the volume is starting to fill through leakage accumulation at other times during reactor operation. At the second level, another transmitter-activated switch produces a rod withdrawal block to prevent further withdrawal of any control rod when leakage accumulates to half the capacity of the instrument volume. The remaining four switches, two of which are transmitter activated, are interconnected with the trip channels of the Reactor Protection System and provide redundant and diverse inputs to initiate a reactor scram should water accumulation fill the instrument volume.

FIGURE 4.6-5

REPLACED WITH GENERAL ELECTRIC P & ID NO. 767E673CA