DATA SHEET 1

PORV COLD SHUTDOWN INSERVICE TEST

TEST PURPOSE:

☐ Surveillance

☐ Maintenance Retest

☐ Other ____________

VALVE DESCRIPTION	DATE OF VALVE TEST	SAFETY POS	EXER TEST	FAIL SAFE TEST	POS IND TEST	REF STROKE TIME (SEC)	MAX STROKE TIME (SEC)	ACTUAL STROKE TIME (SEC)	STROKE TIME TEST
1-PV-455A PORV		O/C	Sat Unsat	Sat Unsat	Sat Unsat	O_____ C	2.0 2.0	O______ C	Sat Unsat
1-PV-0456A PORV		O/C	Sat Unsat	Sat Unsat	Sat Unsat	O_____ C	2.0 2.5	O______ C	Sat Unsat

Results obtained through performance of this procedure meet ACCEPTANCE CRITERIA of Section 6.0
☐ YES ☐ NO

a. IF NO was checked, **Refer To** Section 7.0 EVALUATION AND REVIEW.
b. Comments (include any abnormal conditions and corrective actions taken):

____

____

Test Completed and SS Notified: ______________________ ______/______

Supervisory Review: ______________________ ______/______

IST Review: ______________________ ______/______

Signature Date/Time

Sheet 1 of 1

DATA SHEET 3.1 - REACTOR COOLANT SYSTEM TRAIN A
TECHNICAL SPECIFICATIONS APPLICABILITY - MODES 1, 2, 3, 4, 5
(TEST SECTION 5.3.3)

TEST PURPOSE:

PLANT MODE _______

☐ Surveillance
☐ Maintenance Retest-MWO#__________
☐ Other _______________

TEST STARTED _______ _______
TIME DATE

VALVE(TRAIN) DESCRIPTION	VALVE TYPE	VALVE TEST DATE	INIT POST	SAFETY POS	EXER TEST	FAIL SAFE TEST	POS IND TEST	REF STROKE TIME	LOW LIMIT	HIGH LIMIT	MAX STROKE TIME	ACTUAL STROKE TIME	STROKE TIME TEST	VALVE RESTORED TO INITIAL POSITION (INITIALS)
*1-HV-8000A(A) PORV BLOCK	MOV		O C	O/C	Sat Unsat	N/A	Sat Unsat	O_____ C	O_____ C	O_____ C	20	O_____ C	Sat Unsat	_____/_____ IV
1-HV-8047(A) PRT N2 SPLY ISO	AOV		O C	C	Sat Unsat	Sat Unsat	Sat + Unsat		N/A	N/A	2		Sat Unsat	_____/_____ IV

*See Test Section 5.3.3 prior to testing.
+ Meets Requirement of T.S. SR 3.3.3.2 (Table 3.3.3-1 Function 21).

Results obtained through performance of this procedure meet ACCEPTANCE CRITERIA of Section 6.0. ☐ YES ☐ NO

If NO was checked, refer to Section 7.0, EVALUATION AND REVIEW.

Comments (include any abnormal conditions and corrective actions taken):

____

Completed By: ______________________________
Signature Date/Time

Supervisory Review: ______________________________
Signature Date/Time

IST Review: ______________________________
Signature Date/Time

Sheet 1 of 1

DATA SHEET 3.2 - REACTOR COOLANT SYSTEM TRAIN B
TECHNICAL SPECIFICATIONS APPLICABILITY - MODES 1, 2, 3, 4, 5
(TEST SECTION 5.3.3)

TEST PURPOSE:

PLANT MODE _______

☐ Surveillance
☐ Maintenance Retest-MWO#__________
☐ Other ______________

TEST STARTED _______ _______
TIME DATE

VALVE(TRAIN) DESCRIPTION	VALVE TYPE	VALVE TEST DATE	INIT POST	SAFETY POS	EXER TEST	FAIL SAFE TEST	POS IND TEST	REF STROKE TIME	LOW LIMIT	HIGH LIMIT	MAX STROKE TIME	ACTUAL STROKE TIME	STROKE TIME TEST	VALVE RESTORED TO INITIAL POSITION (INITIALS)
1-HV-8033(B) PRT VENT	AOV		O C	C	Sat Unsat	Sat Unsat	Sat + Unsat		N/A	N/A	2		Sat Unsat	____/____ IV
*1-HV-8028(B) PRT RMW	AOV		O C	C	Sat Unsat	Sat Unsat	Sat + Unsat				15		Sat Unsat	____/____ IV
*1-HV-8000B(B) PORV BLOCK	MOV		O C	O/C	Sat Unsat	N/A	Sat Unsat	O____ C	O____ C	O____ C	23	O____ C	Sat Unsat	____/____ IV

*See Test Section 5.3.3 prior to testing.
+ Meets Requirement of T.S. SR 3.3.3.2 (Table 3.3.3-1 Function 21).

Results obtained through performance of this procedure meet ACCEPTANCE CRITERIA of Section 6.0. ☐ YES ☐ NO

If NO was checked, refer to Section 7.0, EVALUATION AND REVIEW.

Comments (include any abnormal conditions and corrective actions taken):

____

Completed By: ______________________________
Signature Date/Time

Supervisory Review: ______________________________
Signature Date/Time

IST Review: ______________________________
Signature Date/Time

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

BASES

BACKGROUND

The pressurizer is equipped with two types of devices for pressure relief pressurizer safety valves and PORVs. The PORVs are safety-related DC solenoid operated valves that are controlled to open at a specific set pressure when the pressurizer pressure increases and close when the pressurizer pressure decreases. The PORVs may also be manually operated from the control room.

Block valves, which are normally open, are located between the pressurizer and the PORVs. The block valves are used to isolate the PORVs in case of excessive leakage or a stuck open PORV. Block valve closure is accomplished manually using controls in the control room. A stuck open PORV is, in effect, a small break loss of coolant accident (LOCA). As such, block valve closure terminates the RCS depressurization and coolant inventory loss.

The PORVs and their associated block valves may be used by plant operators to depressurize the RCS to recover from certain transients if normal pressurizer spray is not available. Additionally, the series arrangement of the PORVs and their block valves permit performance of surveillances on the block valves during power operation.

The PORVs may also be used for feed and bleed core cooling in the case of multiple equipment failure events that are not within the design basis, such as a total loss of feedwater.

The power supplies to the PORVs, their block valves, and their controls are Class 1E. Two PORVs and their associated block valves are powered from two separate safety trains (Ref. 1).

The plant has two PORVs, each having a relief capacity of 210,000 lb/hr at 2385 psig. The functional design of the PORVs is based on maintaining pressure below the Pressurizer Pressure — High reactor trip setpoint up to and including the design step-load decreases with steam dump. In addition, the PORVs minimize challenges to the pressurizer

(continued)

BASES

BACKGROUND (continued)	safety valves and also may be used for cold overpressure protection. See LCO 3.4.12, "Cold Overpressure Protection System (COPS)."
APPLICABLE SAFETY ANALYSES	Plant operators may employ the PORVs to depressurize the RCS in response to certain plant transients if normal pressurizer spray is not available. For the Steam Generator Tube Rupture (SGTR) event, the safety analysis assumes that manual operator actions are required to mitigate the event. A loss of offsite power is assumed to accompany the event, and thus, normal pressurizer spray is unavailable to reduce RCS pressure. The PORVs or auxiliary pressurizer spray may be used for RCS depressurization, which is one of the steps performed to equalize the primary and secondary pressures in order to terminate the primary to secondary break flow and the radioactive releases from the affected steam generator. In addition, in the event of an inadvertent safety injection actuation at power, the potential for pressurizer filling and subsequent water relief via the pressurizer safeties (PSVs) is evaluated (FSAR section 15.5.1). Operator action to make one PORV available is credited in the analysis to mitigate this event. If the PORV is available for automatic actuation, the event consequences would be mitigated directly by preventing water relief through the PSVs. However, automatic actuation is not required to mitigate this event. The analysis includes an acceptable delay for the operator to open a block valve and to manually control the PORV if necessary. The PORVs also provide the safety-related means for reactor coolant system depressurization to achieve safety-grade cold shutdown and to mitigate the effects of a loss of heat sink or an SGTR. They are modeled in safety analyses for events that result in increasing RCS pressure for which departure from nucleate boiling ratio (DNBR) criteria, pressurizer filling, or reactor coolant saturation are critical (Ref. 2). By assuming PORV actuation, the primary pressure remains below the high pressurizer pressure trip setpoint, thus the DNBR calculation is more conservative. As such, automatic actuation is not required to mitigate these events, and PORV automatic operation is, therefore, not an assumed safety function. Events that assume this condition include a turbine trip, loss of normal feedwater, and feedwater line break (Ref. 2). Pressurizer PORVs satisfy Criterion 3 of 10 CFR 50.36 (c)(2)(ii).

(continued)

- Water Chemistry Control Program (see subsection 19.2.28).
- Fatigue Monitoring Program (see subsection 19.3.2).

5.4.11 PRESSURIZER RELIEF DISCHARGE SYSTEM

5.4.11.1 Design Bases

The pressurizer relief discharge system collects, cools, and directs the steam and water discharged from various safety and relief valves in the containment for processing. The system consists of the pressurizer relief tank (PRT), the pressurizer safety and relief valve discharge piping, the relief tank internal spray header and associated piping, the tank nitrogen supply, and the drain to the liquid waste processing system.

The system design, including the PRT design volume, is based on the requirement to condense and cool a discharge of steam equivalent to 110% of the full-power pressurizer steam volume, without exceeding a pressure/temperature condition of 50 psig/200°F in the PRT. These values are well below the PRT design conditions of 100 psig and 340°F. Additional design data for the tanks are given in table 5.4.11-1.

The minimum volume of water in the PRT is determined by the energy content of the steam to be condensed and cooled, by the assumed initial temperature of the water, and by the desired final temperature of the water volume. The initial water temperature is assumed to be 120°F, which corresponds to the design maximum expected containment temperature for normal conditions. Provision is made to permit cooling of the water in the tank should the water temperature rise above 120°F during plant operation. The design final temperature, following a design discharge to the tank, is 200°F, which allows the contents of the tank to be drained directly to the liquid waste processing system without cooling.

The PRT saddle supports and anchor bolt arrangement are designed to withstand the loadings resulting from the vessel seismic, static, and nozzle loadings.

The pressurizer safety and relief valve piping and support arrangement is designed such that the effect of thrust forces on the piping system from valve operations is minimized. The piping analysis is discussed in section 3.9.N.

The design and location of the PRT rupture disks are such that they do not pose a missile threat to any safety-related equipment.

5.4.11.2 System Description

The piping and instrumentation diagram for the pressurizer relief discharge system is given in drawing 1X4DB112.

The steam and reactor grade water discharged from the various safety and relief valves inside the containment is routed to the PRT. Table 5.4.11-2 provides an itemized list of the discharges to the tank, together with references to the corresponding piping and instrumentation diagrams.

The pressurizer safety and relief valve piping and support arrangement in figure 5.4.11-2 shows the valve discharge piping, as well as the piping upstream of the safety and relief valves. The piping upstream of the valves, which is not considered part of the pressurizer relief discharge system, includes the following:

A. Three lines with loop seal arrangements connecting the pressurizer nozzles to the three safety valves.

B. A line from the pressurizer relief nozzle branching to the two power-operated relief valves (PORVs), which have individual water seals and motor-operated isolation valves.

The pressurizer safety and relief valve discharge piping consists of:

A. A common piping manifold (supported over the top of the pressurizer) into which the safety and relief valves discharge.

B. Safety valve discharge lines to the manifold.

C. Relief valve discharge lines to the manifold.

D. A manifold downcomer discharge pipe.

E. Piping to the PRT.

The main support structure for the safety and relief valve piping consists of four column members equally spaced around the common manifold coupled to the valve support brackets on the pressurizer. No welding to the pressurizer is required. To increase the natural frequency of the system, auxiliary crossmembers are provided from the common manifold to the main support columns. The safety valves are provided with a bottom saddle type support coupled to the auxiliary crossmembers. The relief valves are positioned above the manifold, and the relief valve lines are supported at various points along the manifold.

The pressurizer safety and relief valve piping is constructed of austenitic stainless steel. Design data for the pressurizer safety and relief valve piping are given in table 5.4.3-1.

The piping upstream of the safety and relief valves is part of the reactor coolant system (RCS) and is designed and fabricated in accordance with American Society of Mechanical Engineers (ASME) Code, Section III, Class 1 requirements. The piping between these valves and the downcomer tee connection is nonnuclear safety related but is designed and fabricated to ASME Code, Section III, Class 2, to the extent practical. The support structure for the piping from the pressurizer to the downcomer tee connection is designed and fabricated to ASME Code, Section III, Subsection NF.

The piping from the pressurizer to the PRT is designed to Seismic Category 1 requirements. The principal design codes are indicated in table 3.2.2-1.

The general configuration of the PRT is shown in figure 5.4.11-1. The tank is a horizontal, cylindrical vessel with elliptical dished heads. The vessel is constructed of austenitic stainless steel and is overpressure protected by means of two safety heads with stainless steel rupture discs. Also shown in figure 5.4.11-1 are the flanged connection for the pressurizer safety and relief valve discharge line, the spray water inlet, the bottom drain connection, the gas vent connection, and the vessel supports. Although the tank is classified as nonnuclear safety related, it is designed and fabricated to Section III, Division 1, Class 3 of the ASME Code.

The tank normally contains water and a predominantly nitrogen atmosphere. In order to obtain effective condensing and cooling of the discharged steam, the tank is installed horizontally so that the steam can be discharged through a sparger pipe located near the bottom, under the water level. The sparger holes are designed to ensure good mixing of the discharged steam with the water initially in the tank.

A nitrogen gas blanket is used to control the atmosphere in the tank and to allow room for the expansion of the original water, plus the condensed steam discharge. The tank gas volume is sized such that the pressure following a design basis steam discharge does not exceed 50 psig, assuming an initial pressure of 3 psig. This pressure is low enough to prevent opening of the rupture discs. Provisions are made to permit the gas in the tank to be periodically analyzed to determine the concentration of hydrogen and/or oxygen.

The internal spray and bottom drain on the PRT function to cool the water when the temperature exceeds 120°F, as in the case following a steam discharge. The contents are cooled by a feed-and-bleed process, with cold reactor makeup water entering the tank through the spray water inlet and the warm mixture draining to the reactor coolant drain tank (RCDT). The contents may also be cooled by recirculation through the RCDT heat exchanger of the liquid waste processing system.

5.4.11.3 Safety Evaluation

The pressurizer relief discharge system does not constitute part of the reactor coolant pressure boundary in accordance with 10 CFR 50.2, since all of its components are downstream of the RCS safety and relief valves; thus, General Design Criteria 14 and 15 are not applicable. Furthermore, complete failure of the auxiliary systems serving the PRT will not impair the capability for safe plant shutdown.

The design of the system piping layout and piping restraints is consistent with the hazards protection requirements discussed in section 3.6 and appendix 3F. The safety and relief valve discharge piping is restrained so that the integrity and operability of the valves are maintained in the event of a rupture. Regulatory Guide 1.67 is not applicable since the system is not an open discharge system.

The pressurizer relief discharge system is capable of handling the design discharge of steam without exceeding the design pressure and temperature. The volume of nitrogen in the PRT is that required to limit the maximum pressure accompanying the design basis discharge to 50 psig, half the design pressure of the tank. The volume of water in the PRT is capable of absorbing the heat from the assumed discharge while maintaining the water temperature below 200°F.

If a discharge results in a pressure that exceeds the design, the rupture discs on the tank would pass the discharge through the tank to the containment. The rupture discs on the relief tank have a relief capacity equal to or greater than the combined capacity of the pressurizer safety valves. The tank and rupture discs holders are also designed for full vacuum to prevent tank collapse, if the contents cool following a discharge without nitrogen being added.

The discharge piping from the pressurizer safety and relief valves to the PRT is sufficiently large to prevent backpressure at the safety valves from exceeding 20% of the setpoint pressure at full flow.

The recommendations of NUREG-0737, Action Items II.G.1 and II.K.3.1, are met as discussed below. The pressurizer is equipped with two Class 1E PORVs (solenoid operated) and two Class 1E PORV block valves (motor operated). The PORV and associated block valve on one line are supplied with control and motive power from train A, while the other PORV and associated block valve on the other line are powered from train B (drawings 1X4DB111, 2X4DB111, 1X4DB112, 2X4DB112, and 1X4DB113).

The PORV block valves 1HV-8000A and 1HV-8000B are powered from Class 1E 480-V buses. These buses are normally supplied from offsite power. In the event of a loss of offsite power, these buses are automatically loaded onto the diesels (drawings 1X3D-AA-A01A and 2X3D-AA-A01A). PORVs 455A and 456A are Class 1E dc solenoid valves and are powered from redundant Class 1E 125-V dc trains A and B, respectively. The train assignment for power to the PORVs and block valves is based on:

A. The ability to open one of the parallel pressurizer vent paths in conjunction with a single failure.

B. The ability to close both parallel paths in conjunction with a single failure. (Capability to isolate both parallel paths in conjunction with a single failure is based upon the fact that the solenoid-operated PORVs are qualified, dc powered, and designed to fail closed.)

Pressurizer pressure is interlocked with the PORV block valves, which provides automatic closure of the block valves upon low pressurizer pressure.

5.4.11.4 Instrumentation Requirements

The following instrumentation is provided on the main control board:

A. The PRT pressure transmitter provides a signal to an indicator. An alarm is provided to indicate high tank pressure.

B. The PRT level transmitter supplies a signal to an indicator. High- and low-level alarms are also provided.

C. The temperature of the water in the PRT is displayed by an indicator. An alarm actuated by high temperature informs the operator that cooling of the tank contents is required.

D. The temperature of the safety and relief valve discharge lines is displayed by indicators. Alarms actuated by high temperature notify the operator of steam discharge due to either leakage or valve actuation.

5.4.11.5 Inspection and Testing Requirements

The nondestructive examinations performed during fabrication of the forged piping from the pressurizer to the downcomer tee connection are identified in table 5.4.11-3.

The PRT is subject to nondestructive and hydrostatic testing during construction and after installation in accordance with Section III, Division 1, Class 3 of the ASME Code.

The downcomer piping to the PRT is subject to nondestructive and hydrostatic testing during construction.

Periodic visual inspections and preventive maintenance are conducted on the system components according to normal industrial practice.

RCS BARRIER Threshold Values:

The RCS Barrier includes the RCS primary side and its connections up to and including the pressurizer safety and relief valves, and other connections up to and including the primary isolation valves.

1. Critical Safety Function Status

There is no "Loss" Threshold Value associated with this item.

This Threshold Value uses the Critical Safety Function Status Tree (CSFST) monitoring and functional restoration procedures. An RCS Integrity RED path or Heat Sink RED path indicates an extreme challenge to the safety function derived from appropriate instrument readings, and these CSFs indicate a potential loss of RCS barrier.

2. RCS Leak Rate

The "Loss" Threshold Value addresses conditions where leakage from the RCS is greater than available inventory control capacity such that a loss of subcooling has occurred. The loss of subcooling is the fundamental indication that the inventory control systems are inadequate in maintaining RCS pressure and inventory against the mass loss through the leak.

The "Potential Loss" Threshold Value is based on the inability to maintain normal liquid inventory within the Reactor Coolant System (RCS) by normal operation of the Chemical and Volume Control System which is considered as one centrifugal charging pump discharging to the charging header. A second charging pump being required is indicative of a substantial RCS leak providing the 120 GPM value.

3. SG Tube Rupture

This Threshold Value is intended to address the full spectrum of Steam Generator (SG) tube rupture events in conjunction with Containment Barrier "Loss" Threshold Value #4 and Fuel Clad Barrier Threshold Values. The "Loss" Threshold Value addresses RUPTURED SG(s) for which the leakage is large enough to cause actuation of ECCS (SI). This is consistent to the RCS Barrier "Potential Loss" Threshold Value #2. This condition is described by a SGTR resulting in an SI actuation. By itself, this Threshold Value will result in the declaration of an Alert. However, if the SG is also FAULTED (i.e., two barriers failed), the declaration escalates to a Site Area Emergency per Containment Barrier "Loss" Threshold Value #4.

There is no "Potential Loss" Threshold Value.

4. Containment Radiation Monitoring

The RE-005 OR 006 greater than threshold is a value which indicates the release of reactor coolant to the containment. The reading is calculated assuming the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with normal operating concentrations (i.e., within T/S) into the containment atmosphere. This value is less than that specified for Fuel Clad Barrier Threshold Value #5. Thus, this Threshold Value would be indicative of a RCS leak only. If the radiation monitor reading rise to that specified by Fuel Clad Barrier Threshold Value #5, fuel damage would also be indicated.

There is no "Potential Loss" Threshold Value associated with this item.

5. Other Indications

There is no "Loss" Threshold Value associated with this item.

An unexplained level rise in the containment sump, Reactor Coolant Drain Tank or the Waste Holdup Tank could indicate a RCS leak and is therefore included as a Potential Loss of the RCS Barrier. Sump and tank level rises should be evaluated against known or controlled processes which are under way, i.e. draining, filling, venting, etc.

6. Emergency Director Judgment

This Threshold Value addresses any other factors that are to be used by the Emergency Director in determining whether the RCS barrier is lost or potentially lost. In addition, the inability to monitor the barrier should also be incorporated in this Threshold Value as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost. (See also IC SG1, "Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power", for additional information.)

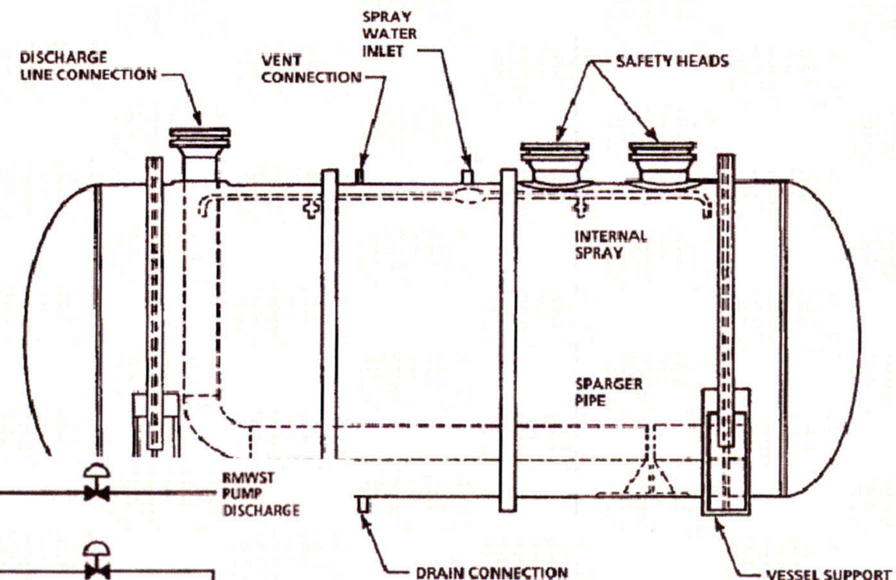
prevent operation of the pressurizer safety valves. A normally open motor operated isolation valve called "block valves" are located upstream of each relief valve. It is closed when necessary to isolate a PORV because of leakage. Isolation of the relief valves is allowed because the pressurizer safety valves provide the RCS with sufficient protection in the event of an accident. The PORVs were not taken credit for in the accident analysis.

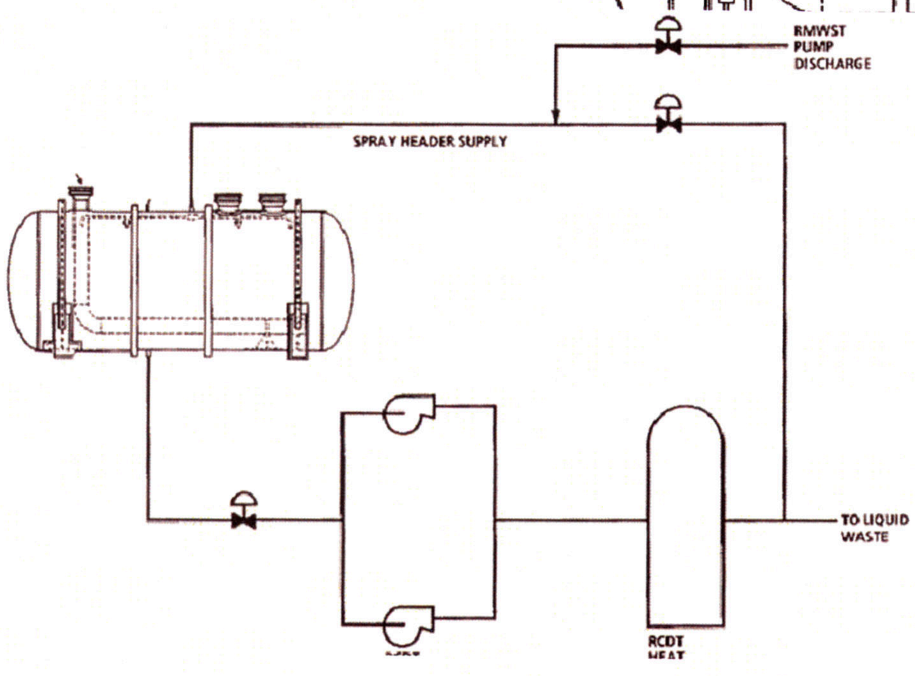
Downstream of the power-operated relief valves, the two 3-inch lines combine into a common discharge line from the safety valves and dumps to the pressurizer relief tank.

In addition to the function of providing overpressure protection for the pressurizer and RCS when operating, the PORVs also protect the RCS when the plant is shut down and water solid. This is accomplished by varying the relief opening set point of the PORVs to open. Based on certain conditions, the set point will change. This is accomplished by the Cold Overpressure Protection System.

16-33 <u>Pressurizer Relief Tank</u>

The pressurizer relief tank (PRT) is located on the base slab (level C) of in the containment building. The tank is approximately 27 feet long, 10 feet in diameter, and has an internal volume of 1800 cubic feet. A water volume of 1350 cubic feet is maintained in the tank. The water is used to cool any discharge from the PORVs and safety valves, the Reactor Head Vent System, RHR and CVCS relief valves, and valve stem packing leak offs from the PORV block valves. Any discharged steam enters the tank through a sparger line under water. The steam exiting the many holes in the sparger under water cools and condenses the steam.





The PRT water can be cooled less than 120°F by re-circulating the water in the PRT through the Reactor Coolant Drain Tank (RCDT) pumps and heat exchanger. A drain line from the PRT is piped to the suction header of the RCDT pumps. The pumps direct the water through the heat exchanger where it is cooled by ACCW which is circulated through the shell side of the heat exchanger. The cooled water is then returned to the PRT through a spray header in the vapor space of the PRT. The spraying action condenses and cools the steam in the PRT. The contents in the PRT can also be cooled by the "feed and bleed" method. The spray header is provided with water from the Reactor Makeup Water System (RMWST) via the RMWST pumps. A drain line from the PRT is aligned to the suction of the RCDT pump. The RCDT pump would discharge PRT contents to the liquid waste system.

Two 100 psig rupture discs protect the pressurizer relief tank from over pressurization. The discs relieve directly to containment atmosphere. The tanks are not designed to receive continuous discharges.

The tank's gas volume of 450 cubic feet is filled with inert nitrogen gas. Nitrogen gas is used to prevent the intrusion of oxygen into the tank. This is to prevent explosive mixtures of hydrogen from the pressurizer and oxygen from forming in the tank.

SYSTEM INTERFACES

The Pressurizer System has physical connections with the following plant systems:

<u>Chemical and Volume Control System (CVCS)</u>

The Chemical and Volume Control System connects to the pressurizer spray header between the spray line loop seal and the spray valves. The CVCS supplies auxiliary spray to the pressurizer when the normal spray line sources are not available.

<u>Reactor Makeup Water System</u>

The pressurizer relief tank is supplied water from the Reactor Makeup Water System to maintain a cool volume of water for condensing steam relieved to the tank.

<u>Nitrogen Supply System</u>

The pressurizer relief tank is pressurized to 3-5 psig with N_2 gas supplied by the Nitrogen Supply System to prevent the buildup of an explosive mixture of oxygen and hydrogen in the tank.

<u>Waste Gas System (WPSG)</u>

The Waste Gas System connects to the pressurizer relief tank and is used when venting the PRT of gases.

<u>Reactor Coolant Drain Tank (RCDT)</u>

The RCDT is used as a drain collection point when draining the RCS. The RCDT also collects valve steam packing leak off for most RCS-related valves. The RCDT is also used to cool the PRT by circulating its contents through the RCDT heat exchanger.

<u>Design Summary</u>

The Pressurizer System is designed to maintain the pressure of the RCS high enough to ensure that no boiling in the core occurs that would affect the heat transfer from the fuel rods to the coolant. The Pressurizer System also ensures that over pressurization of the RCS does not occur, so the RCS remains intact as a barrier to prevent radionuclides from reaching the atmosphere.