ENCLOSURE 1

INSERTS TO TECHNICAL SPECIFICATION REVISION

INSERT 1

The drywell and suppression chamber purge system, including the 6-inch nitrogen supply line, may be in operation for up to 120 hours each 365 days with the supply and exhaust isolation valves in one supply line and one exhaust line open for containment prepurge cleanup, inerting, deinerting, or pressure control.*

INSERT 2

With a drywell or suppression chamber purge supply and/or exhaust isolation valve and/or the nitrogen supply valve open, except as permitted above, close the valve(s) or otherwise isolate the penetration(s) within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

INSERT 3

Before being opened, the drywell and suppression chamber purge supply and exhaust, and nitrogen supply butterfly isolation valves shall be verified not to have been open for more than 120 hours in the previous 365 days.*

INSERT 4

At least once per 6 months**, but no more than once per 92 days***, the 26-inch drywell purge supply and exhaust isolation valves and the 24-inch suppression chamber purge supply and exhaust isolation valves and the 6-inch nitrogen supply valve with resilient material seals shall be demonstrated OPERABLE by verifying that the measured leakage rate is less than or equal to 0.05 L_a per penetration when pressurized to P_a 48.1 psig.

INSERT 5

~~# Prior to blow-out panel installation, cumulative operation is subject to a 40-hour nonrenewable limit.~~

* Valves open for pressure control are not subject to the 120 hours per 365 days limit, provided the 2-inch bypass lines are being utilized.

** Provided that the valve has not been operated since the previous test.

*** Applies only to a valve which has been operated since the previous test.

ENCLOSURE 1

INSERT TO TECHNICAL SPECIFICATION REVISION

INSERT 6

The 120 hours/365 days limit on purge operation is intended to reduce the probability that a LOCA will occur when the purge valves are open.

Blow-out panels are ~~being~~ installed in the CPCS ductwork to provide additional assurance that the FRVS will be capable of performing its safety function subsequent to a LOCA. ~~These blow-out panels will be installed within 120 days of the effective date of this Technical Specification. The 40-hour limit is the annual proration of purge operation until the blow-out panels are installed.~~

ENCLOSURE 2

VENT/PURGE VALVE QUALIFICATION AND OPERABILITY

The enclosures to this submittal include the Hope Creek FSAR and Technical Specification revisions that reflect the qualification and operability of the drywell and suppression chamber vent/purge valves within the Containment Atmosphere Control System (CACS) during plant operational conditions 1, 2, and 3. These changes are a result of our analysis and evaluation of the effects of a LOCA during containment purging on the safety-related equipment outboard of the 24-inch and 26-inch containment vent/purge pipe connections from the drywell and pressure suppression chamber (torus). In addition, our analysis evaluates the radiological dose impact at the site boundary and in the control room resulting from a LOCA during containment purging.

The containment vent/purge isolation valves were analyzed based on the short-term containment pressure response following the DBA recirculation line break LOCA, Hope Creek FSAR Figure 6.2-3; maximum drywell peak pressure 48.1 psig (62.8 psia) with a blowdown mixture of steam-water-gas. The maximum time for valve closure was limited to five seconds to assure that the purge valves would be closed before the onset of fuel failures following a LOCA and to limit the pressurization in the reactor building.

Our initial analysis indicated that the rapid pressurization of the drywell and torus due to the DBA recirculation line break LOCA would have caused the rupture pressure limit of the Containment Prepurge Cleanup System (CPCS) ductwork to be exceeded and may cause pressurization of the Filtration, Recirculation and Ventilation System (FRVS) dampers, HD-9372A&C, and/or ductwork. To provide additional assurance that the FRVS ductwork will remain functional, blow-out panels, set to open at a ductwork to room pressure differential of 1 psi, ~~are being~~ added in the CPCS ductwork upstream of the supply purge valves and downstream of the exhaust valves. These panels will lower the pressure rise across the FRVS dampers, HD-9372A&C, and/or ductwork to within acceptable limits and maintain the integrity of the FRVS ductwork. Based on structural analysis of the CPCS ductwork with blow-out panels, rated at 1.00 $\pm$ 0.25 PSID (using 1.25 PSID), an evaluated peak pressure of 0.2 PSID is expected in the FRVS ductwork. The CPCS ductwork without blow-out panels is expected to rupture at 3-4 PSID. Extrapolating the evaluated peak pressure (0.2 PSID) in the FRVS ductwork with blow-out panels, with the expected rupture pressure (3-4 PSID) of the CPCS ductwork, the estimated peak pressure in the FRVS ductwork without blow-out panels (<1 PSID) is not expected to affect the recirculation function of the FRVS significantly; the designed flow balances may be affected minimally. The filtration, as well as the exhaust and drawdown functions of the FRVS, are not expected to be affected. (See attached Reactor Building air flow diagram for CPCS and FRVS ductwork sizes).

HAVE BEEN INSTALLED

INSERT A

INSERT A

In addition, the FRVS is not normally in operation during CPCS, purging or inerting, and thus all of the FRVS fan/filter units are protected from the pressure surge by closed inlet and oulet dampers on each unit.

~~These blow-out panels will be installed within 120 days of approval of this Technical Specification change. Operation with the purge valves open during this 120 day period prior to blow-out panel installation, subject to the limitations of the revised Technical Specification, does not involve a significant hazard for the following reasons:~~

~~1. The CPCS ductwork is expected to rupture before the FRVS ductwork experiences significant damage.~~

~~2. The FRVS is not in operation during CPCS, purging, or inerting and thus all of the FRVS fan/filter units are protected from the pressure surge by closed inlet and outlet dampers on each unit.~~

~~3. The probability that the plant will experience a large break LOCA during this very limited time period is acceptably small.~~

The blowdown of the drywell/torus fluid through these blow-out panels will pressurize the room in which the blowdown takes place and any connecting compartments. (See Attachment 1) The analysis showed that during the purging and CPCS operations, the flow paths from the torus and drywell areas must be limited to a total of one supply line and one exhaust line from both areas to avoid overpressurization.

To prevent isolation of the FRVS ducts to the torus (and connected compartments) following a LOCA, the FRVS isolation dampers (See PD-9438H on sheet 1 of Attachment 1 for typical example) that are currently activated by a 2-inch water gauge differential pressure between the torus compartment and the adjacent compartments, are being retitted with similar model pressure differential switches with a set point slightly greater than 1 psid. The analysis showed that if a LOCA occurred and vented for 5 seconds, the maximum differential pressures in the torus compartment and connecting rooms, and in the FRVS rooms would reach 0.97 psi and 0.64 psi, respectively. Therefore, FRVS performance is unaffected because these pressures will not close the isolation dampers. Also, secondary containment is maintained because these pressures are below the 1.5 psi differential set pressure of the main torus compartment blow-out panels.

Hope Creek has evaluated the effects of the room pressurization discussed above on other ducts and equipment in the subject rooms subsequent to overpressurization, and concludes that there will be no unacceptable effects on the integrity of these ducts or operability of equipment.

The effect on the FRVS filter units by the steam and nitrogen blowdown from the CPCS ducts during the 5 seconds of purge valve closure was evaluated. At the time that the FRVS filter units start, the rooms where blowdown takes place are conservatively considered to reach 100% RH due to the steam release. Because of

mixing in the FRVS inlet ductwork, this will result in relative humidity at the FRVS filters of less than the design conditions.

Our evaluation also included the radiological dose assessment due to the LOCA mass blowdown through the CPCS duct blow-out panels. Assuming that the releases are unfiltered from the drywell to the environment during the 5 second purge valve closure time, with the coolant concentrations based on data in FSAR Chapter 15 and using a calculated pre-existing iodine spiking factor, it is estimated that the resultant thyroid dose at the site boundary is 0.015 Rem. The control room thyroid dose is estimated to be 1.7×10^{-5} Rem. These doses are well below the 10CFR100 and GDC19 dose criteria. Attachment 5 summarizes this calculation. Furthermore, this assessment recognizes that the top of active fuel is not uncovered until approximately 25 seconds after the DBA LOCA (See HCGS FSAR Figure 6.3-20).

In order to minimize the probability that a LOCA could occur while the purge valves are open, a limit of 120 hours/365 days for combined purging, inerting, and CPCS operation is included in the proposed Technical Specification revision. Pressure control using the 2-inch bypass flowpath is not included in the 120 hours/365 days limit.

Because HCGS utilizes a unique atmosphere recirculating Containment Prepurge Cleanup System (CPCS) to maintain offsite doses ALARA in lieu of purging through charcoal filters, an operational limit of 120 hours/365 days for the vent/purge valves is necessary to allow HCGS operational flexibility similar to plants with 90-100 hours/365 days limitations. Analyses based on CPCS flow rate, CPCS filter efficiency and drywell volume have determined that the CPCS will reduce the initial drywell equilibrium radioiodine concentration to a new, lower equilibrium concentration in approximately four hours. Any additional CPCS operation will not significantly lower the containment atmosphere radioiodine concentrations while in operational conditions 1, 2, and 3. These analyses also show that operation of the CPCS in through the torus and out through the drywell does not reduce the time required for CPCS operation. In addition, PSE&G's discussions with the NRC regarding consideration of CPCS operation in this mode indicated that PSE&G had discovered only one Mark I BWR plant that operated this way (because it was their plant specific preference), and that the Hope Creek Operations staff prefers not to operate the CPCS in this mode for reasons which include equipment considerations. PSE&G concludes that operation of the Hope Creek CPCS will be in compliance with BTP CSB 6-4 as presented in this submittal. Had Hope Creek been designed without the benefit of a CPCS system, a 90-100 hour limit would permit about six inert/deinert cycles per year. The additional four hours per deinert cycle for CPCS operation requires an additional 24 hours with the purge valves open. This results in a limit of 120 hours.

Prior to blow-out panel installation, which will be within 120 days of approval of this Technical Specification change, this limit shall be 40 hours as indicated in the limiting condition for operation in the technical specification. This interim limit is in accordance with the NRC position regarding the reduction in probability of occurrence of a large break LOCA during purge valve operation. That is; 120 days divided by 365 days times 120 hours (yearly operational limit) equals approximately 40 hours. In addition, no significant affect on the function of the FRVS is expected during this interim period as evaluated above.

The containment vent/purge isolation valves (See Attachment 2 previously submitted June 4, 1986) were procured from the BIF Valve Company with Matryx air-actuators. Even though these valves differ in size, they have been manufactured using similar materials, valve body styles and air-actuator models (See Vendor Drawings previously submitted June 4, 1986). To assure that the 26-inch and 24-inch valves close in less than 5 seconds, the tubing size was increased from 1/2-inch to 3/4-inch between the solenoid and the actuators' hydraulic cylinder, and tubing was rerouted to decrease the number of fittings. Based on the closure time documented in the Wyle Laboratories Test Report No. 47962-1 (Attachment 3 previously submitted June 4, 1986) and Hope Creek's surveillance testing, all the containment vent/purge valves close in less than 5 seconds.

These safety-related, ASME Section III, Class 2, NON-NSSS active containment vent/purge valves (See FSAR Figure 6.2-29), meet the design criteria indicated in FSAR Section 3.9.3.2.7.2 which includes seismic qualification. These vent/purge valves were included within the NRC PVORT and SQRT audits performed at Hope Creek. To demonstrate valve operablity, the 26-inch valve was tested to the postulated recirculation line break LOCA condition at Wyle Laboratories as documented in Test Report No. 47962-1. The 26-inch test specimen included a 26-inch BIF butterfly valve with a Green Rotary Actuator, Model No. 45122-SR-80 and a 3/4-inch ASCO solenoid valve to control the actuator. This test setup resembled the components used at Hope Creek. (See the attached piping/valve configuration isometric drawing associated with the HCGS vent/purge valves along with a table to identify valve orientation within the piping). The tubing design between the hydraulic actuator cylinder and solenoid was revised to resemble the Hope Creek plant modifications stated above. Note that Matrix sold their product line of air-actuators to Greer Company.

As documented in Table I of the Wyle Report, the 26-inch valve assembly, subjected to saturated steam against the curved side of the valve disk, closed against a differential pressure ranging from 57.7 psia to 131.7 psia in 3.92 seconds. Attachment 4 (previously submitted June 4, 1986) is a graphical diagram comparing the recirculation line break LOCA pressure curve with the pressure output data obtained from the Wyle test.

Upon completion of each test run, the 26-inch BIF butterfly valve assembly was cycled from the closed position to the open position to relieve steam trapped between it and the 10-inch steam flow control valve within the test assembly. The 26-inch valve and actuator assembly was physically examined subsequent to all testing as follows:

a) Resilient rubber seat for cuts or tears
b) The exposed shaft for cracks and deformation
c) Both sides of the disk for cracks or failure
d) The internal surface of the body of the valve for cracks
e) The external air-actuator surface for cracks and deformation

No physical damage or failure was noted.

In conclusion, the referenced test has demonstrated the conservatism in the design of the containment vent/purge valve assemblies at Hope Creek and thus demonstrates valve operability.