ATTACHMENT 2

PROPOSED TECHNICAL SPECIFICATION PAGES

E. The requirements of Specifications 3.2.B.1 and 3.2.B.6, concerning the opposite unit's charging pumps and associated piping, valves and control board indications, may be modified to allow the following components to be unavailable.

1. The opposite unit's charging pumps may be unavailable for a period not to exceed 7 days provided immediate attention is directed to making repairs. If not available within 7 days, be in at least hot shutdown within the next 6 hours and in cold shutdown within the next 30 hours.

2. The cross tie piping, associated valves and control board instrumentation and controls may be unavailable for a period not to exceed 7 days provided immediate attention is directed to making repairs. If not available within 7 days, be in at least hot shutdown within the next 6 hours and in cold shutdown within the next 30 hours.

F. During refueling and cold shutdown conditions, the following valves in the affected unit shall be locked, sealed, or otherwise secured in the closed position except during planned boron dilution or makeup activities:

For Unit 1:

a. 1-CH-223 or

b. 1-CH-212, 1-CH-215, and 1-CH-218

For Unit 2:

a. 2-CH-223 or

b. 2-CH-212, 2-CH-215, and 2-CH-218

Following a planned dilution or makeup activities, the valves listed above shall be locked, sealed, or otherwise secured in the closed position within 15 minutes.

Basis

The Chemical and Volume Control System provides control of the Reactor Coolant System Boron inventory. This is normally accomplished by using boric acid transfer pumps which discharge to the suction of each unit's charging pumps. The Chemical and Volume Control System contains four boric acid transfer pumps. Two of these pumps are normally assigned to each unit but, valving and piping arrangements allow pumps to be shared such that three out of four pumps can service either unit. An alternate (not normally used) method of boration is to use the charging pumps taking suction directly from the refueling water storage tank. There are two sources of borated water available to the suction of the charging pumps through two different paths; one from the refueling water storage tank and one from the discharge of the boric acid transfer pumps.

A. The boric acid transfer pumps can deliver the boric acid tank contents (7.0% solution of boric acid) to the charging pumps.

B. The charging pumps can take suction from the volume control tank, the boric acid transfer pumps and the refueling water storage tank. Reference is made to Technical Specification 3.3.

The quantity of boric acid in storage from either the boric acid tanks or the refueling water storage tank is sufficient to borate the reactor coolant in order to reach cold shutdown at any time during core life.

Approximately 6000 gallons of the 7.0% solution of boric acid are required to meet cold shutdown conditions. Thus, a minimum of 6000 gallons in the boric acid tank is specified. An upper concentration limit of 8.5% boric acid in the tank is specified to maintain solution solubility at the specified low temperature limit of 112°F. For redundancy, two channels of heat tracing are installed on lines normally containing concentrated boric acid solution.

The Boric Acid Tank(s), which are located above the Boron Injection Tank(s), are supplied with level alarms which would annunciate if a leak in the system occurred.

For one-unit operation, it is required to maintain available one charging pump with a source of borated water on the opposite unit, the associated piping and valving, and the associated instrumentation and controls in order to maintain the capability to cross-connect the two unit's charging pump discharge headers. In the event the operating unit's charging pumps become inoperable, this permits the opposite unit's charging pump to be used to bring the disabled unit to cold shutdown conditions. Initially, the need for the charging pump cross-connect was identified during fire protection reviews.

The requirement that certain valves remain closed during refueling and cold shutdown conditions, except for planned boron dilution or makeup activities, provides assurance that an inadvertent boron dilution will not occur. This specification is not applicable at intermediate shutdown, hot shutdown, reactor critical, or power operations.

3.3 SAFETY INJECTION SYSTEM

Applicability

Applies to the operating status of the Safety Injection System.

Objective

To define those limiting conditions for operation that are necessary to provide sufficient borated cooling water to remove decay heat from the core in emergency situations.

Specifications

A. A reactor shall not be made critical unless the following conditions are met:

   1. The refueling water storage tank contains not less than 387,100 gallons of borated water. The boron concentration shall be at least 2300* ppm and not greater than 2500* ppm.

   2. Each accumulator system is pressurized to at least 600 psia and contains a minimum of 975 ft^3 and a maximum of 1025 ft^3 of borated water with a boron concentration of at least 2250** ppm.

* These limits apply to Cycle 12 and subsequent cycles for Unit 1 and to Cycle 11 and subsequent cycles for Unit 2. For prior operating cycles, boron concentration shall be at least 2000 ppm and not greater than 2500 ppm.

** This limit applies to Cycle 12 and subsequent cycles for Unit 1 and to Cycle 11 and subsequent cycles for Unit 2. For prior operating cycles, boron concentration shall be at least 1950 ppm.

2300* ppm and not greater than 2500* ppm which will assure that the reactor is in the refueling shutdown condition when all control rod assemblies are inserted.

4. The refueling water chemical addition tank shall contain not less than 4,200 gal of solution with a sodium hydroxide concentration of not less than 17 percent by weight and not greater than 18 percent by weight.

5. All valves, piping, and interlocks associated with the above components which are required to operate under accident conditions shall be operable.

6. The total uncollected system leakage from valves, flanges, and pumps located outside containment shall not exceed the limit shown in Table 4.5-1 as verified by inspection during system testing. Individual component leakage may exceed the design value given in Table 4.5-1 provided that the total allowed system uncollected leakage is not exceeded.

B. During power operation the requirements of Specification 3.4-A may be modified to allow the following components to be inoperable. If the components are not restored to meet the requirements of Specification 3.4-A within the time period specified below, the reactor shall be placed in the hot shutdown condition. If the requirements of Specification 3.4-A are not satisfied within an additional 48 hours the reactor shall be placed in the cold shutdown condition using normal operating procedures.

* These limits apply to Cycle 12 and subsequent cycles per Unit 1, and to Cycle 11 and subsequent cycles for Unit 2. For prior operating cycles, boron concentration shall be at least 2000 ppm and not greater than 2500 ppm.

Each Recirculation Spray Subsystem draws water from the common containment pump. In each subsystem the water flows through a recirculation spray pump and recirculation spray cooler, and is sprayed into the containment atmosphere through a separate set of spray nozzles. Two of the recirculation spray pumps are located inside the containment and two outside the containment in the containment auxiliary structure.

With one Containment Spray Subsystem and two Recirculation Spray Subsystems operating together, the Spray Systems are capable of cooling and depressurizing the containment to subatmospheric pressure in less than 60 minutes following the Design Basis Accident. The Recirculation Spray Subsystems are capable of maintaining subatmospheric pressure in the containment indefinitely following the Design Basis Accident when used in conjunction with the Containment Vacuum System to remove any long term air in leakage.

In addition to supplying water to the Containment Spray System, the refueling water storage tank is also a source of water for safety injection following an accident. This water is borated to a concentration which assures reactor shutdown by approximately 5 percent $\Delta k/k$ when all control rod assemblies are inserted and when the reactor is cooled down for refueling.

The shutdown margins are selected based on the type of activities that are being carried out. The 5 percent Δk/k shutdown margin during refueling precludes criticality under any circumstances, even though fuel and control rod assemblies are being moved.

The allowable value for the containment air partial pressure is presented in TS Figure 3.8-1 for service water temperatures from 25 to 92°F. The allowable value varies as shown in TS Figure 3.8-1 for a given containment average temperature. The RWST water shall have a maximum temperature of 45°F.

The horizontal limit lines in TS Figure 3.8-1 are based on LOCA peak calculated pressure criteria, and the sloped line is based on LOCA subatmospheric peak pressure criteria.

The curve shall be interpreted as follows:

> The horizontal limit line designates the allowable air partial pressure value for the given average containment temperature. The horizontal limit line applies for service water temperatures from 25°F to the sloped line intersection value (maximum service water temperature).

From TS Figure 3.8-1, if the containment average temperature is 112°F and the service water temperature is less than or equal to 83°F, the allowable air partial pressure value shall be less than or equal to 9.65 psia. If the average containment temperature is 116°F and the service water temperature is less than or equal to 88°F, the allowable air partial pressure value shall be less than or equal to 9.35 psia. These horizontal limit lines are a result of the higher allowable initial containment average temperatures and the analysis of the pump suction break.

6. At least one residual heat removal pump and heat exchanger shall be operable to circulate reactor coolant. The residual heat removal loop may be removed from operation for up to 1 hour per 8-hour period during the performance of core alterations or reactor vessel surveillance inspections.

7. Two residual heat removal pumps and heat exchangers shall be operable to circulate reactor coolant when the water level above the top of the reactor pressure vessel flange is less than 23 feet.

8. At least 23 feet of water shall be maintained over the top of the reactor pressure vessel flange during movement of fuel assemblies.

9. With the reactor vessel head unbolted or removed, any filled portions of the Reactor Coolant System and the refueling canal shall be maintained at a boron concentration which is:

   a. Sufficient to maintain K-effective equal to 0.95 or less, and

   b. Greater than or equal to 2300 ppm and shall be checked by sampling at least once every 72 hours.

10. Direct communication between the Main Control Room and the refueling cavity manipulator crane shall be available whenever changes in core geometry are taking place.

11. No movement of irradiated fuel in the reactor core shall be accomplished until the reactor has been subcritical for a period of at least 100 hours.

Basis

Detailed instructions, the above specified precautions and the design of the fuel handling equipment, which incorporates built-in interlocks and safety features, provide assurance that an accident, which would result in a hazard to public health and safety, will not occur during refueling operations. When no change is being made in core geometry, one neutron detector is sufficient to monitor the core and permits maintenance of the out-of-function instrumentation. Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition. Containment high radiation levels and high airborne activity levels automatically stop and isolate the Containment Purge System. The fuel building ventilation exhaust is diverted through charcoal filters whenever refueling is in progress. At least one flow path is required for cooling and mixing the coolant contained in the reactor vessel so as to maintain a uniform boron concentration and to remove residual heat.

During refueling, the reactor refueling water cavity is filled with approximately 220,000 gal of water borated to at least 2300 ppm boron. The boron concentration of this water, established by Specification 3.10.A.9, is sufficient to maintain the reactor subcritical by at least 5% $\Delta k/k$ in the cold shutdown condition with all control rod assemblies inserted. This includes a 1% $\Delta k/k$ and a 50 ppm boron concentration allowance for uncertainty. This concentration is also sufficient to maintain the core subcritical with no control rod assemblies inserted into the reactor. Checks are performed during the reload design and safety analysis process to ensure the K-effective is equal to or less than 0.95 for each core. Periodic checks of refueling water boron concentration assure the proper shutdown margin. Specification 3.10.A.10 allows the Control Room Operator to inform the manipulator operator of any impending unsafe condition detected from the main control board indicators during fuel movement.

assemblies to assure k_{eff} 0.95, even if unborated water were used to fill the spent fuel storage pit. The spent fuel pool is divided into a two-region storage pool. Region 1 comprises the first three rows of fuel racks (324 storage locations) adjacent to the Fuel Building Trolley Load Block. Region 2 comprises the remainder of the fuel racks in the fuel pool. During spent fuel cask handling, Region 1 is limited to storage of spent fuel assemblies which have decayed at least 150 days after discharge and shall be restricted to those assemblies in the "acceptable" domain of Figure 5.4-1. Administrative controls with written procedures will be employed in the selection and placement of these assemblies. The enrichment of the fuel stored in the spent fuel racks shall not exceed 4.1% weight percent of U-235.

C. Whenever there is spent fuel in the spent fuel pit, the pit shall be filled with borated water at a boron concentration not less than 2300* ppm to match that used in the reactor cavity and refueling canal during refueling operations.

D. The only drain which can be connected to the spent fuel storage area is that in the reactor cavity. The strict step-by-step procedures used during refueling ensure that the gate valve on the fuel transfer tube which connects the spent fuel storage area with the reactor cavity is closed before draining of the cavity commences. In addition, the procedures require placing the bolted blank flange on the fuel transfer tube as soon as the reactor cavity is drained.

* This limit takes effect at the time the Unit 2 reactor cavity is flooded following the end of Operating Cycle 10.

<u>References</u>

FSAR Section 9.5 Fuel Pit Cooling System
FSAR Section 9.12 Fuel Handling System

ATTACHMENT 3

DISCUSSION AND
SIGNIFICANT HAZARDS
CONSIDERATION EVALUATION

BASIS FOR NO SIGNIFICANT HAZARDS DETERMINATION

The proposed change does not involve a significant hazards consideration because operation of Surry Units 1 and 2 in accordance with this change would not:

1. involve a significant increase in the probability or consequence of an accident previously evaluated because appropriate design constraints were analyzed for changes to T.S. 3.2.F, 3.2 (Basis), 3.3.A, 3.4.A, 3.10.A, 3.10 (Basis), and 5.4.C; none were found to be more limiting than those currently documented in the UFSAR. Subcriticality is maintained following a LOCA by a combination of void formation, control rod insertion and soluble boron. The cold zero power boron critical concentration is determined such that General Design Criterion (GDC) 26 is also met. A boron dilution event at refueling and cold shutdown conditions is precluded by lockout of the primary grade water flow path. A boron dilution event leading to a complete loss of shutdown margin at intermediate or hot shutdown is precluded by the establishment of an administrative shutdown margin requirement providing a minimum available time for corrective operator action. The analysis of the boron dilution event at reactor critical and at power meets the criteria of the the Standard Review Plan (SRP). Boron precipitation does not occur for low concentration solutions. The electrical equipment subject to chemical spray qualification are not adversely affected by the higher boron concentration. Finally, the results of containment spray and sump pH analyses were found to be acceptable.

2. create the possibility of a new or different kind of accident from any accident previously identified because the proposed changes to T.S. 3.2.F, 3.2 (Basis), 3.3.A, 3.4.A, 3.10.A, 3.10 (Basis), and 5.4.C, do not involve any alterations to the physical plant which would introduce any new or unique operational modes or accident precursors. Procedural changes are limited to setpoint values, timing requirements, or lockout of valves.

3. involve a significant reduction in a margin of safety. A boron dilution event at refueling and cold shutdown conditions is precluded by lockout of the primary grade water flow path. This represents an increase in the margin of safety relative to current practice. A minimum of 15 minutes from initiation of dilution to loss of shutdown margin are available for operator response to terminate an unplanned boron dilution during operating conditions other than refueling and cold shutdown. This maintains the margin of safety relative to current practice. The requirements of GDC 26 are met with the higher boron concentration. The reactivity and boron concentration uncertainties are unchanged. Finally, the refueling K-eff remains unchanged at 0.95. Therefore the margin of safety is unchanged, or is increased, by the proposed increase in the boron concentration.

Therefore, pursuant to 10 CFR 50.92, based on the above considerations, it has been determined that these changes do not involve a significant safety hazards consideration.