ENCLOSURE 3

Changed Technical Specification Pages

3.6 CONTAINMENT SYSTEM

Applicability

Applies to the integrity of reactor containment.

Objective

To define the operating status of the reactor containment for plant operation.

Specification

3.6.1 Containment Integrity

a. The containment integrity (as defined in 1.7) shall not be violated unless the reactor is in the cold shutdown condition.

b. The containment integrity shall not be violated when the reactor vessel head is removed unless a shutdown margin ~~greater than~~ of at least 10% $\Delta k/k$ is constantly maintained.

c. Positive reactivity changes shall not be made by rod drive motion when the containment integrity is not intact except during any one of the following evolutions:

1. rod drop timing test

2. rod drive mechanism timing test

3. control rod exercise test

4. shutdown banks fully withdrawn and control banks withdrawn to $\leq$ 5 steps.

3.6.4 Containment Purge and Vent Valves

3.6.4.1 During periods when Containment integrity is required, the Containment Purge Supply and Exhaust Isolation Valves (42") or the Pressure and Vacuum Relief Valves (6") may be opened only for safety related reasons including operational testing and surveillances.

3.6.4.2 When the RCS is greater than 200°F, the 42" and 6" valves may not be open simultaneously.

3.6.4.3 The 6" and 42" valves will be tested in accordance with the frequency and operability requirements specified in the Robinson plant IST program except that the 42" valves will be tested prior to use if not tested within the previous quarter. Otherwise the 42" valves will not be cycled quarterly only for testing purposes.

Basis

The Reactor Coolant System conditions of cold shutdown assure that no steam will be found and hence there would be no pressure buildup in the containment if the Reactor Coolant System ruptures.

The shutdown margins are selected based on the type of activities that are being carried out. The ~~≥10%~~ 6% Δk/k shutdown margin during refueling precludes criticality, even though fuel is being moved. When the reactor head is not to be removed, the specified cold shutdown margin of 1% Δk/k precludes criticality. and provides sufficient time for the reactor operator to recognize an inadvertent boron dilution event and take corrective actions to mitigate the effects.(3)

Regarding internal pressure limitations, the containment design pressure of 42 psig would not be exceeded if the internal pressure before a major loss-of-coolant accident were as much as 2 psig.(1) The containment is designed to withstand an internal vacuum of 2.0 psig.(2)

The Containment Purge Supply and Exhaust Isolation Valves may be opened during plant operation when needed for safety related considerations (equipment or personnel) to support plant operations and maintenance activities within the containment vessel. Examples of this need may include the reducing of airborne activity to increase stay-time or eliminate the need for respiratory protective equipment, or reduce ambient temperature during hot months to increase effectiveness of workers and to minimize occupational effects of necessary, non-routine activities in the containment. Although the valves are fully qualified to close under design basis accident conditions, it is intended that the time the valves remain open will be limited.

The Containment Purge Valves must be operable and must close within the time limit specified in the IST program in order to limit post LOCA thyroid dose and to limit the increase in peak clad temperature due to reduction in containment internal pressure.

The Inboard Purge Supply and Exhaust Isolation Valves are installed so the seal replacement can be performed without removing the valves. This orientation requires that the inboard valves be restricted from exceeding 70° open. This restriction is an anti-rotation measure to assure proper valve closure under dynamic conditions, as well as to limit offsite dose consequences under postulated LOCA conditions.

References

(1) FSAR Section 6.2.1
(2) FSAR Section 3.8.1.3
(3) UFSAR Section 15.4.6

Basis

The equipment and general procedures to be utilized during refueling are discussed in the Final Facility Description and Safety Analysis Report. Detailed instructions, the above specified precautions, and the design of the fuel handling equipment incorporating built-in interlocks and safety features, provide assurance that no incident could occur during the refueling operations that would result in a hazard to public health and safety.[1] Whenever changes are not being made in core geometry one flux monitor is sufficient. This permits maintenance of the instrumentation. Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition.

One residual heat removal loop will normally be in operation during refueling operations to remove decay heat, maintain Tave $\leq$ 140°F, minimize the effect of a boron dilution event, and maintain a uniform boron concentration. The requirement to have one loop operable will allow the loop to be secured for brief periods of time to facilitate fuel movement. The refueling cavity water level specified ensures that there will be at least 23 feet of water above the reactor pressure vessel flange whenever fuel assemblies are being moved within the reactor pressure vessel. This prevents a fuel assembly from becoming partially uncovered while being transported over the vessel flange. This cavity level requirement also provides a large heat sink to ensure adequate time is available to initiate emergency methods to cool the core should the operable RHR loop fail.

The boron concentration of 1950 ppm ~~will~~ is more than enough to keep the core subcritical even if all control rods were withdrawn from the core (as required by the Post-LOCA subcriticality event analysis)[2]. During refueling, the reactor refueling cavity is filled with approximately 285,000 gallons of borated water.

The boron concentration of this water at 1950 ppm boron is sufficient to maintain the reactor subcritical by at least 10% $\Delta k/k$ in the refueling condition with all rods inserted, and will also maintain the core subcritical even if no control rods were inserted into the reactor.[2] Weekly checks of refueling water storage tank boron concentration ensure the proper shutdown margin.[3] Direct communications allow the control room operator to inform the manipulator operator of any impending unsafe condition detected from the control board indicators during fuel movement.

In addition to the above safety features, interlocks are utilized during refueling to ensure safe handling. An excess weight interlock is provided on the lifting hoist to prevent movement of more than one fuel assembly at a time. The spent fuel transfer mechanism can accommodate only one fuel assembly at a time.

The relative humidity (R.H.) of the air processed by the refueling filter systems should be less than the R.H. used during the testing of the charcoal adsorbers in order to assure that the adsorbers will perform under accident conditions as predicted by the test results. Heaters have been installed upstream of the Spent Fuel Building filters to assure of an R.H. of less than 70 percent for the air processed by the Spent Fuel Building filter system. If an R.H. in the containment atmosphere exceeds 70 percent, operation of the containment purge system will be terminated until this specification can be met. If the Spent Fuel Building filter system is found to be inoperable, all fuel handling and fuel movement operations in the Spent Fuel Building will be terminated until the system is made operable.

The temperature limit specified for the fuel cask handling crane is based on the recorded ambient temperature at the time of the 125% load test. The limit is imposed to assure adequate toughness properties of the crane structural materials.

References

(1) FSAR Section 9.4.1
(2) ~~FSAR Section 4.3~~ Westinghouse letter CPL-86-552 (dated 8-21-86) and Westinghouse Technical Bulletin NSID-TB-86-08 (dated 10-31-86) "Post-LOCA Long-Term Cooling: Boron Requirements.
(3) FSAR Section 9.4.1
(4) H. B. Robinson Unit 2 Radiological Assessment of Postulated Accidents, XN-NF-84-68(P), July 1984.

3.10.8.2 When the reactor is in the cold shutdown condition, the shutdown margin shall be at least 1 percent $\Delta k/k$.

3.10.8.3 When the reactor is in the refueling operation mode, the shutdown margin shall be at least ~~10~~ 6 percent $\Delta k/k$.

Basis

The reactivity control concept is that reactivity changes accompanying changes in reactor power are compensated by control rod motion. Reactivity changes associated with xenon, samarium, fuel depletion, and large changes in reactor coolant temperature (operating temperature to cold shutdown) are compensated by changes in the soluble boron concentration. During power operation, the shutdown groups are fully withdrawn and control of reactor power is by the control groups. A reactor trip occurring during power operation will put the reactor into the hot shutdown condition.

The control rod insertion limits provide for achieving hot shutdown by reactor trip at any time assuming the highest worth control rod remains fully withdrawn with sufficient margins to meet the assumptions used in the accident analysis. In addition, they provide a limit on the maximum inserted rod worth in the unlikely event of hypothetical rod ejection and provide for acceptable nuclear peaking factors. The solid lines shown in Figure 3.10-1 meet the shutdown requirement for the first 50 percent of the cycle. The end-of-cycle life limit is represented by the dotted lines. The end-of-cycle life limit may be determined on the basis of plant startup and operating data to provide a more realistic limit which will allow for more flexibility in plant operation and still assure compliance with the shutdown requirement. The maximum shutdown margin requirement occurs at end of core life and is based on the value used in analysis of the hypothetical steam break accident. Early in core life, less shutdown margin is required, and Figure 3.10-2 shows the shutdown margin required at end of life with respect to an uncontrolled cooldown. All other accident analyses are based on 1 percent reactivity

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