

Sykes, Marvin

From: Hamman, Jeffrey
Sent: Wednesday, October 07, 2009 12:59 PM
To: Sykes, Marvin
Subject: CR RB Summary Points.doc
Attachments: CR RB Summary Points.doc

Most of the FSAR info is not as easy for the average person to understand, so I picked stuff from the system course.

A-12

- The Reactor Building is a concrete structure consisting of a foundation mat, a right circular cylinder, and a shallow dome roof. Specific features include:
 - It consists of reinforced concrete with a wall thickness of 3.5 feet.
 - Mild steel reinforcing bars are imbedded in a lattice network in the concrete for crack control only. The additional strength that they provide is not credited toward the design analysis.
 - The entire building is held in compression by a post tensioning system.
 - Watertight galvanized steel conduits are imbedded in the cylinder to contain the tendons, and to provide an electrical current barrier during an accident.
 - The tendons and conduit in the cylinder run horizontally and vertically.
 - There are 144 vertical tendons that are anchored at the top to the ring girder and at the bottom to the foundation.
 - There are 282 hoop tendons anchored at the six vertical concrete buttresses located every 60 degrees around the cylinder. Each hoop tendon is anchored to a buttress at one end, extends 1/3 the way around the cylinder, and is anchored at the other end to its second buttress.
 - Each tendon consists of 163 carbon steel wires, each with a diameter of 7-mm (slightly over 1/4"). Each wire has a minimum design tensile strength of 240,000 lbf. Prior to tendon assembly, each wire is prestressed to 70% of its ultimate design tension.
 - A free air volume of 2×10^6 cubic feet.
 - The inner surface of the Reactor Building is lined with a carbon steel liner. Nominal liner thickness is 3/8 inch for the cylinder wall and dome, and 1/4 inch for the base.
- Pressurized water nuclear plants have three boundaries that protect the general public from exposure to radioactive fission fragments in the fuel. The function of the Reactor Building is to serve as the final boundary for protecting the general public from radiation exposure in the event both the first and second boundaries are breached.
- The steel liner is the primary barrier to a release. The concrete shell ensures the proper response to any internal or external loads such that integrity of the liner is maintained.
- Following construction, the Reactor Building was subjected to a one-time structural integrity test of 63.3 psig. This is 115% of the FSAR original design pressure of 55 psig.
- Technical Specifications require a visual inspection of the exterior surface of the cylinder every 30 to 50 months. The concrete must show no apparent changes in appearance or other abnormal degradation.