9.2 Seismic Events

Description:
A seismic event of sufficient magnitude causing ground motion of sufficient intensity could exceed the design bases of the containment for such events.
Data to be collected and Analyzed: 1. Search historical data base for past seismic events in the Crystal River area. (USGS internet data base) 2. Review the ground motion design criteria in the FSAR for comparison to historical data. (FSAR Chapter 5 paragraph 5.2.1.2.9)

Verified Refuting Evidence:	Verified Supporting Evidence:
a. A comparison of the data reviewed above reveals that there are no recorded earthquakes to date in Florida since the 1967 Seismic Analysis was conducted that could have approached the ground motion design bases for containment. Conclusion: Seismic events were not a contributor to the delamination.	None

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May identify additional perspective on this issue as RCA related efforts proceeds

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In the reactor building, the personnel access, equipment access doors, and all penetrations are located inside Class I structures, which are designed for tornado generated missiles.

All access openings in auxiliary, intermediate, diesel generator, and control buildings are located or protected by a missile shield so no damage will be done to safety related equipment from tornado generated missiles.

5.2.1.2.7 EXTERNAL PRESSURE

The reactor building has been designed for an external atmospheric pressure of 2.5 psi greater than that of the internal pressure that could be caused by an accidental discharge from the Reactor Building Spray System. Additionally, a total negative pressure of 6 psig has been evaluated to address the suction on containment liner, which may result from accidental actuation of building spray throughout the range of normal operating pressures.

5.2.1.2.8 OPERATING TEMPERATURE

The normal operating temperature profile is shown in Figure 5-11. This profile was obtained from Reference 28, for a nuclear generating station located in the northern United States, which has a more severe winter climate than Crystal River Unit 3. Thus, the use of these profiles for Crystal River is considered to be conservative.

5.2.1.2.9 EARTHQUAKE LOAD

The site seismology and response spectra are described in Chapter 2.

The seismic design of the reactor building is based on the response to a ground acceleration as described below:

a. Primary steady state stresses, when combined with the seismic stress resulting from the response to a ground acceleration of 0.05g acting horizontally and 0.033g acting vertically and occurring simultaneously, have been maintained within the allowable working stress limits accepted as good practice and, where applicable, set forth in the appropriate design standards, e.g.: ASME Boiler and Pressure Vessel Code (Ref 3), ACI 318-63 (Ref 4), AISC Specification for the Design and Erection of Structural Steel for Buildings (Ref 5), and USAS (ANSI) B31.1 (Ref 6).
b. Primary steady state stress, when combined with the seismic stress resulting from the response to a ground acceleration of 0.10g acting horizontally and 0.067g acting vertically and occurring simultaneously, has been limited so that the function of the structure is not impaired so as to prevent a safe and orderly shutdown of the plant.

The respective vertical and horizontal seismic components at any point on the shell have been added by summing the absolute values of the response (i.e., stress, shear, moment, or deflection) of each contributing frequency due to vertical motion to the corresponding absolute values of the response of each contributing frequency due to horizontal motion.

5.2.1.2.10 GROUNDWATER AND FLOODS

The foundation slab design took into consideration groundwater pressure. Fluctuations in the groundwater due to flood and normal variation have been given due consideration in designing the foundation mat (see Sections 2.4 and 2.5).