ATTACHMENT 2

TO

Letter from C. R. Steinhardt (WPSC)

to

Document Control Desk (NRC)

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PROPOSED TS AMENDMENT NO. 122

Affected TS Pages

Section TS 5

5.0 DESIGN FEATURES

5.1 SITE

APPLICABILITY

Applies to the location and extent of the reactor site.

OBJECTIVE

To define those aspects of the site which affect the overall safety of the installation.

SPECIFICATION

The Kewaunee Nuclear Power Plant is located on property owned by Wisconsin Public Service Corporation, Wisconsin Power and Light Company, and Madison Gas and Electric Company at a site on the west shore of Lake Michigan, approximately 30 miles east-southeast of the city of Green Bay, Wisconsin.

The minimum distance from the center line of the reactor containment to the site exclusion radius as defined in 10 CFR 100.3 is 1200 meters.

5.2 CONTAINMENT

APPLICABILITY

Applies to those design features of the Containment System relating to operational and public safety.

OBJECTIVE

To define the significant design features of the Containment System.

SPECIFICATION

a. Containment System

1. The Containment System completely encloses the entire reactor and the Reactor Coolant System and ensures that leakage of activity is limited, filtered and delayed such that off-site doses resulting from the Design Basis Accident are within the guidelines of 10 CFR Part 100. The Containment System provides biological shielding for both normal operating conditions and accident situations.

2. The Containment System consists of:

   A. A free-standing steel Reactor Containment Vessel designed for the peak pressure of the Design Basis Accident.

   B. A concrete Shield Building which surrounds the Containment Vessel, providing a Shield Building annulus between the two structures.

   C. A Shield Building Ventilation System which causes leakage from the Reactor Containment Vessel to be delayed and filtered before its release to the environment.

   D. An Auxiliary Building Special Ventilation System which serves the Special Ventilation Zone and supplements the Shield Building Ventilation System during an accident condition by causing any leakage from the RHRS and certain small amounts of leakage which might be postulated to bypass the Shield Building Ventilation System to be filtered before their release.

b. Reactor Containment Vessel

1. The Reactor Containment Vessel is designed for the peak internal pressure of the Design Basis Accident plus the loads resulting from an earthquake producing 0.06g horizontally and 0.04g vertically. It is also designed to withstand an external pressure 0.8 psi greater than the internal pressure.

2. Penetrations of the Containment Vessel for piping, electrical conductors, ducts and access hatches are provided with double barriers against leakage.

3. The automatically actuated containment valves are designed to close upon high containment pressure and on a safety injection signal. The actuation system is designed so that no single component failure will prevent containment isolation, if required.

c. Shield Building

The Shield Building is a reinforced concrete structure with a wall thickness of 2.5 feet and a dome thickness of 2 feet. It is designed for the same seismic conditions as the Reactor Containment Vessel and is designed to resist a 3 psi internal pressure due to tornadoes.

d. Shield Building Ventilation System

In the event of a loss-of-coolant accident, the Shield Building Ventilation System will relieve the initial thermal expansion of air through particulate and charcoal filters and will then cause a vacuum to be produced throughout the Shield Building annulus. A momentary positive pressure no greater than 0.5 psi will result during the thermal expansion. Once vacuum is achieved, the system causes the air within the annulus to be recirculated through the filters while vacuum is maintained. The filtered mixture of annulus air plus leakage is vented through the Containment System Vent by the discharge fan that maintains vacuum at a vent rate determined by inleakage to the Shield Building.[1]

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[1] USAR Section 5.5

e. Auxiliary Building Special Ventilation Zone & Special Ventilation System

A limited amount of containment leakage could potentially escape through certain penetrations in the event of leakage in the isolation valves, as described in the Basis of TS 3.6. The leakage escaping into that portion of the Auxiliary Building which is designed for medium leakage and controlled access would be processed by the Auxiliary Building Special Ventilation System. When actuated, the system will draw all in-leakage air from this Special Ventilation Zone and exhaust it through particulate and charcoal filters to the Auxiliary Building Vent.[2]

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[2] USAR Section 9.6

5.3 REACTOR

APPLICABILITY

Applies to the reactor core and the Reactor Coolant System.

OBJECTIVE

To define those design features which are essential in providing for safe system operations.

SPECIFICATIONS

a. Reactor Core

1. The reactor core contains approximately 48 metric tons of uranium in the form of slightly enriched uranium dioxide pellets. The pellets are encapsulated in Zircaloy-4 tubing to form fuel rods. The reactor core is made up of 121 fuel assemblies. Each fuel assembly contains 179 fuel rods.[1]

   Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with NRC-approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff-approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

2. The average enrichment of the initial core is a nominal 2.90 weight percent of U-235. Three fuel enrichments are used in the initial core. The highest enrichment is a nominal 3.40 weight percent of U-235.[2]

3. Reload fuel will be similar in physical design to the initial core loading and shall have a maximum enrichment of 49.2 grams of uranium-235 per axial centimeter of fuel assembly.

4. Burnable poison rods are incorporated in reload cores as dictated by core loading patterns and fuel enrichments. The initial core contained 704 poison rods in the form of 8, 12 and 16 rod clusters which were located in vacant rod cluster control tubes. The burnable poison rods consist of borosilicate glass clad with stainless steel.

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[1] USAR Section 3.2.3

[2] USAR Section 3.2.1

5. There are 29 full-length Rod Cluster Control (RCC) assemblies in the reactor core. The full-length RCC assemblies contain a 142-inch length of silver-indium-cadmium alloy clad with stainless steel.

b. Reactor Coolant System

1. The design of the Reactor Coolant System complies with code requirements.[3]

2. All high-pressure piping, components of the Reactor Coolant System and their supporting structures are designed to Class I[4] requirements and have been designed to withstand:

   A. The operational basis seismic ground acceleration, 0.06g, acting in the horizontal and 0.04g acting in the vertical planes simultaneously, with stress maintained within code allowable working stresses.

   B. The design basis seismic ground acceleration, 0.12g, acting in the horizontal and 0.08g acting in the vertical planes simultaneously with no loss of function.

3. The normal liquid volume of the Reactor Coolant System, at rated operating conditions, is 6,191 cubic feet.

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(3) USAR Table 4.1-9

(4) USAR Appendix B

5.4 FUEL STORAGE

APPLICABILITY

Applies to the capacity and storage arrays of new and spent fuel.

OBJECTIVE

To define those aspects of fuel storage relating to prevention of criticality in fuel storage areas.

SPECIFICATION

a. The new fuel pit and spent fuel pool structures including storage racks are designed to withstand anticipated earthquake loadings as Class I[1] structures. The spent fuel pool has a stainless steel liner to ensure against loss of water.

b. The new and spent fuel storage racks are designed to prevent inserting of assemblies in other than the prescribed locations. The fuel is stored vertically in an array with sufficient center-to-center distance between assemblies to assure $k_{eff} \leq 0.95$ even if unborated water were used to fill the pool.

c. The spent fuel pool is filled with borated water at a concentration to match that used in the reactor refueling cavity and refueling canal during refueling operations or whenever there is fuel in the pool.

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[1] USAR Appendix B