

5.3 REACTOR

Applicability

Applies to the design features of the reactor core and reactor coolant system.

Objective

To define the significant design features of the reactor core and reactor coolant system.

Specification

5.3.1 REACTOR CORE

5.3.1.1 The reactor core is composed of slightly enriched uranium dioxide pellets contained in fuel rods. A fuel assembly contains 208 fuel rods arranged in a 15 by 15 lattice, except that substitution of Zircaloy - 4 or stainless steel filler rods for fuel rods may be made in fuel assemblies if justified by cycle-specific reload analyses using an NRC-approved methodology consistent with Technical Specification Section 6.9.5.2. The details of the fuel assembly design are described in TMI-1 FSAR Chapter 3.⁽¹⁾

5.3.1.2 The reactor core shall approximate a right circular cylinder with an equivalent diameter of 128.9 inches. The active fuel height is defined in TMI-1 FSAR Chapter 3.⁽³⁾

5.3.1.3 The core average and individual batch enrichments for the present cycle are described in TMI-1 FSAR Chapter 3.⁽²⁾

5.3.1.4 The control rod assemblies (CRA) and axial power shaping rod assemblies (APSRA) are distributed in the reactor core as shown in TMI-1 FSAR Chapter 3.⁽²⁾ The CRA and APSRA design data are also described in the FSAR.

5.3.1.5 The TMI-1 core may contain burnable poison rod assemblies (BPRA) as described in TMI-1 FSAR Chapter 3.⁽⁴⁾

5.3.1.6 Reload fuel assemblies and rods shall conform to design and evaluation data described in the FSAR and shall not exceed an enrichment of 4.3 weight percent of U^{235} .

5.3.2 REACTOR COOLANT SYSTEM

5.3.2.1 The reactor coolant system shall be designed and constructed in accordance with code requirements.⁽⁴⁾

5.3.2.2 The reactor coolant system and any connected auxiliary systems exposed to the reactor coolant conditions of temperature and pressure, shall be designed for a pressure of 2,500 psig and a temperature of 650 F. The pressurizer and pressurizer surge line shall be designed for a temperature of 670 F.⁽⁵⁾

6.9 REPORTING REQUIREMENTS

In addition to the applicable reporting requirements of Title 10, Code of Federal Regulations, the following identified reports shall be submitted to the Administrator of the NRC Region 1 Office unless otherwise noted.

6.9.1 Routine Reports

- A. Startup Report. A summary report of plant startup and power escalation testing shall be submitted following (1) receipt of an operating license, (2) amendment to the license involving a planned increase in power level, (3) installation of fuel that has a different design or has been manufactured by a different fuel supplier, and (4) modifications that may have significantly altered the nuclear, thermal, or hydraulic performance of the plant. The report shall address each of the tests identified in the FSAR and shall in general include a description of the measured values of the operating conditions or characteristics obtained during the test program and a comparison of these values with design predictions and specifications. Any corrective actions that were required to obtain satisfactory operation shall also be described.

Any additional specific details required in license conditions based on other commitments shall be included in this report.

Startup reports shall be submitted within (1) 90 days following completion of the startup test program, (2) 90 days following resumption or commencement of commercial power operation, or (3) 9 months following initial criticality, whichever is earliest. If the Startup Report does not cover all three events (i.e., initial criticality, completion of startup test program, and resumption or commencement of commercial power operation), supplementary reports shall be submitted at least every three months until all three events have been completed.

A special report shall be submitted to the Commission within 30 days after cycle startup describing the number of fuel rods replaced with filler rods, should more than 30 rods in the core, or 10 rods in any assembly, be replaced per refueling. This special report shall be submitted to the Regional Administrator of the Regional Office of the NRC.

- B. Annual Reports. Annual reports covering the activities of the unit as described below during the previous calendar year shall be submitted prior to March 1 of each year. (A single submittal may be made for the station. The submittal should combine those sections that are common to both units at the station.)

1. A tabulation on an annual basis of the number of station, utility, and other personnel (including contractors) receiving exposures greater than 100 mrem/yr and their associated man rem exposure according to work and job functions, (e.g., reactor operations and surveillance, inservice inspection, routine maintenance, special maintenance (describe maintenance), waste processing, and refueling). The dose assignment to various duty functions may be estimates based on pocket dosimeter, TLD, or film badge measurements. Small exposures totaling less than 20% of the individual total dose need not be accounted for. In the aggregate, at least 80% of the total whole body dose received from external sources shall be assigned to specific major work functions. (This tabulation supplements the requirements of Section 20.407 of 10 CFR Part 20.)