

ATTACHMENT
PROPOSED TECHNICAL SPECIFICATION
AND
RESPECTIVE SAFETY ANALYSES
IN THE MATTER OF AMENDING
LICENSE NO. DPR-51
ENTERGY OPERATIONS, INC.
ARKANSAS NUCLEAR ONE, UNIT ONE
DOCKET NO. 50-313

Description of Proposed Change

The proposed amendment would change ANO-1 Technical Specification 5.3.1.1 to accommodate limited fuel reconstitution.

Background

Supplement 1 to Generic Letter 90-02, "Alternative Requirements for Fuel Assemblies in the Design Features Section of Technical Specifications," allowed licensees to propose a line item Technical Specification improvement to accommodate a limited fuel reconstitution based on NRC approved generic topical reports. The reconstitution of a fuel assembly to replace damaged and/or leaking fuel rods is not considered to be an unreviewed safety question if the repaired fuel assembly constitutes a previously approved design. A previously approved design is one which is within the limitations assumed in the vendor's approved methodology. Such reconstitutions may be performed under the provisions of 10CFR50.59 without prior approval of the Staff if an unreviewed safety question does not exist. The Staff considers an NRC-approved methodology to be any methodology that the Staff has explicitly approved in a written safety evaluation, or a plant-specific technical specification basis.

Discussion of Change

In December of 1991, the Babcock and Wilcox (B&W) Owners Group submitted Topical Report BAW-2149, "Evaluation of Replacement Rods in BWFC Fuel Assemblies." The topical report describes the determination of the effects of solid stainless steel replacement rods on the nuclear, thermal hydraulic, and mechanical analysis of the fuel. The conclusion of the Topical Report shows that when performing repairs on fuel assemblies, the replacement of as many as ten fuel rods located anywhere within a single fuel assembly is an acceptable repair condition. The topical report supports current fuel reconstitution designs and repair methods that have been developed to facilitate the discharge of leaking fuel rods. The topical report provides the basis for the acceptance of stainless steel replacement rods as a viable option for B&W supplied fuel assemblies. The B&W Owners Group responded to NRC questions on Topical Report BAW-2149 in November of 1992 and January of 1993. Topical Report BAW-2149 is currently pending Staff approval and it is anticipated that the Staff will complete the review of the topical in the near future.

Beginning with fuel Batch 11 (inserted during 1R8 for Cycle 9 operation), a reconstitutible fuel assembly design was implemented for ANO-1 as indicated in our current Technical Specification 5.3.1.1. With the proposed change to Technical Specification 5.3.1.1 and following Topical Report BAW-2149 approval by the Staff, Entergy Operations at ANO-1 will be able to reconstitute fuel assemblies without applying for a cycle-specific Technical Specification change request.

Determination of No Significant Hazards Consideration

Criterion 1 - Does Not Involve a Significant Increase in the Probability or Consequences of an Accident Previously Evaluated

The probability of the accidents previously evaluated in the Safety Analysis Report are independent of any change in fuel assembly configuration which would result from reconstitution. Fuel reconstitution involves removal and replacement of suspect or leaking fuel rods from a fuel assembly. No accident initiators or assumptions are affected. The core performance and accident response will be bounded by cycle-specific reload analyses and the methodology as described in BAW-2149 Topical Report, which assure that there are no adverse effects on the radiological dose consequences of previously evaluated accidents. Therefore, this proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Criterion 2 - Does Not Create the Possibility of a New or Different Kind of Accident From Any Previously Evaluated

The modified fuel assemblies will meet fuel assembly design specifications. This proposed change would allow modifications to fuel assemblies that have been explicitly evaluated by Topical Report BAW-2149; consequently, the effects of such modifications will not lead to the initiation of a new or different kind of accident from any accident previously evaluated.

Criterion 3 - Does Not Involve a Significant Reduction in a Margin of Safety

The replacement of defective fuel rods will be analyzed on a case-by-case basis through cycle-specific analysis. The number and configuration of filler rod substitutions will be limited to those configurations for which applicable NRC approved codes and methods are valid. This will verify that acceptable safety margins are maintained. Conformance to existing design criteria and safety analysis limits will be confirmed prior to operation of the core for the next fuel cycle. Therefore, this proposed change does not involve a significant reduction in a margin of safety.

Based upon the reasoning presented above and the previous discussion of this amendment request, Entergy Operations at ANO-1 has determined that the requested change does not involve a significant hazards consideration.

PROPOSED TECHNICAL SPECIFICATION CHANGES

5.3 REACTOR

Specification

5.3.1 Reactor Core

- 5.3.1.1 The reactor shall contain 177 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy clad fuel rods with an initial composition of natural or slightly enriched uranium dioxide pellets. Limited substitutions of 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 non-limiting core regions.
- 5.3.1.2 The reactor core approximates a right circular cylinder with an equivalent diameter of 128.9 inches and an active height of 144 inches. The active fuel length is approximately 142 inches.⁽²⁾
- 5.3.1.3 The average enrichment of the initial core is a nominal 2.62 weight percent of 235U. Three fuel enrichments are used in the initial core. The highest enrichment is less than 3.5 weight percent 235U.
- 5.3.1.4 There are 60 full-length control rod assemblies (CRA) and 8 axial power shaping rod assemblies (APSRA) distributed in the reactor core as shown in FSAR Figure 3-60. The full-length CRA contain a 134-inch length of silver-indium-cadmium alloy clad with stainless steel. Each APSRA contains a 63-inch length of Inconel-600 alloy.⁽³⁾
- 5.3.1.5 The initial core has 68 burnable poison spider assemblies with similar dimensions as the full-length control rods. The cladding is Zircaloy-4 filled with alumina-boron and placed in the core as shown in FSAR Figure 3-2.
- 5.3.1.6 Reload fuel assemblies and rods shall conform to the design and evaluation described in FSAR and shall not exceed an enrichment of 3.5 percent of 235U.

5.3.2 Reactor Coolant System

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