ENCLOSURE

Auxiliary Systems Branch
Supplement to Safety Evaluation Report
Babcock & Wilcox Standard Nuclear Steam System (BSAR-205) PSAR
Docket No. STN 50-561

9.1.1 New Fuel Storage Racks

The new fuel storage racks will consist of an array of rectangular storage tubes (structurally reinforced) having a nominal center-to-center spacing of 21 inches. This center-to-center spacing is sufficient to maintain K_{eff} of 0.95 or less including the higher anticipated enrichment and assuming flooded with unborated water. Furthermore, the design of the new fuel storage racks is such that the K_{eff} will not exceed 0.98 assuming optimum moderation.

B&W has included interface requirements so that the application referencing BSAR-205 has sufficient information available to install the storage racks so that their function will be assued for all design conditions.

We have reviewed the proposed design bases and interface requirements of the new fuel storage racks and have determined that they meet the applicable positions set forth in Regulatory Guide 1.13, "Fuel Storage Facility Design Basis," and the requirements of Criterion 62 of the General Design Criteria. Therefore, we conclude that the proposed design of the new fuel racks is acceptable.

The new fuel storage facilities will be evaluated in applications referencing BSAR-205.

9.1.2 Spent Fuel Storage Racks

B&W is responsible for the spent fuel racks for BSAR-205 and the necessary interface requirements imposed on the designer of the spent fuel storage facilities. The spent fuel storage racks have a storage capacity of one and one-third cores (288 fuel assemblies). The spent fuel storage racks will be designed to seismic Category I requirements.

The spent fuel storage racks will consist of an array of rectangular storage tubes (structurally reinforced) having a nominal center-to-center spacing of 13.0 inches. This center-to-center spacing is sufficient to maintain K_{eff} of 0.95 or less including the highest anticipated enrichment, and assuming unborated water.

B&W has included interface requirements for the spent fuel storage racks so that the application referencing BSAR-205 has sufficient information available to install the storage racks so that their function will be assured for all design conditions.

We have reviewed the proposed design bases and interface requirements of the spent fuel storage racks and have determined that they meet the applicable positions set forth in Regulatory Guide 1.13, "Fuel Storage Facility Design Basis," and the requirements of Criterion 62 of the General Design Criteria. Therefore, we conclude that the proposed design of the spent fuel racks is acceptable.

9.1.2 The spent fuel storage pool facilities will be evaluated in applications referencing BSAR-205.

9.1.4 Fuel Handling System (Continued)

The fuel handling system will be designed such that in the event of a safe shutdown earthquake the equipment will not fail in a manner which would affect safety related equipment.

In Amendment 8, B&W has imposed an interface requirement on the utility/applicant referencing BSAR-205 that will either prevent the head drop accident from occurring by providing a single failure proof crane in accordance with Branch Technical Position APCSB 9-1, "Overhead Handling Systems for Nuclear Power Plants," or provide a design that prevents the reactor vessel head from being carried over safety related equipment and from being lifted more than 5 feet above the reactor vessel. The specific interface requirement is as follows:

"Redundant features and a conservative lifting design shall be provided for the crane used to lift the reactor vessel head assembly during refueling operations to preclude dropping the lifted load on the reactor vessel or other RCS components; or the following shall be met:

a. The load path of the crane, when handling the reactor vessel head, shall preclude its carrying the head over critical portions of the RCPB other than the vessel itself.

9.1.4

b. Means shall be provided to preclude lifting the reactor vessel head more than 5 feet above the reactor vessel.

c. The applicant shall show that support structures that mate with the integral reactor vessel nozzle supports are capable of accommodating the forces and reactions resulting from a postulated load drop accident as described in Section 15.1.40 (of the Safety Analysis Report)."

At our request, in Amendment 8, Babcock and Wilcox has provided the results of their analyses of the consequences of dropping the reactor vessel head assembly 5 feet to show that core cooling capability will be maintained and unacceptable cor damage will be precluded. Our review of their analysis has not been completed. However, if the consequences of this 5 foot head drop accident are not acceptable we will impose an additional requirement that utility/applicants referencing BSAR-205 provide an overhead reactor vessel head assembly handling system that is designed so that the connected load would not fall in the event of a single failure or malfunction. The handling system, or single failure proof crane will be designed, fabricated, installed, inspected, tested, and operated in accordance with Branch Technical Position APCSB 9-1, "Overhead Handling Systems for Nuclear Power Plants."

9.1.4 We have reviewed the fuel handling system design and interface requirements and on the basis that the head drop analysis will be acceptable or a single failure proof crane will be required; we conclude that the proposed fuel handling system in BSAR-205 scope meets our design criteria, and therefore, is acceptable. The portion of the fuel handling system supplied by utility/applicants will be evaluated in applications referencing BSAR-205.

9.2 Water Systems

9.2.1 Service Water System and Ultimate Heat Sink
9.2.5

Babcock and Wilcox has provided, as interface requirements, the nuclear steam supply system heat loads that must be transferred from the component cooling water system to the service water system and then to the ultimate heat sink. We have reviewed these heat loads for completeness and conclude they are acceptable and that they enable applicants which reference BSAR-205 to design an acceptable service water system and ultimate heat sink. These system designs will be evaluated in applications which reference BSAR-205.

9.5.1 Fire Protection System

The fire protection system will be designed and provided by the utility/applicant as part of the balance-of-plant design.

B&W has provided a re-evaluation of the fire protection system's interface requirements and criteria and has identified BSAR-205 equipment containing combustible material in conformance with Branch Technical Position APCSB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants." In Amendment 12, B&W has identified the com-

9.5.1 bustible material contained in the BSAR-205 supplied equipment so that the utility applicant referencing BSAR-205 can provide the results of the detailed Fire Hazards Analysis for the specific areas involved.

Based on our review, we conclude that the interface requirement and the design criteria meet the guidelines of General Design Criterion 3 and the Branch Technical Position APCSB 9.5-1 Appendix A including proposed revisions to Regulatory Guide 1.120 which are to be incorporated in Appendix A, and are, therefore, acceptable. The fire protection system will be evaluated in applications referencing B-SAR-205.

10.0 Steam and Power Conversion System

B&W has provided two once through steam generators for steam conversion which removes the heat from four reactor coolant loops. The B-SAR-205 scope ends at the steam generator feedwater inlet and steam outlet nozzles.

We have reviewed B-SAR-205 interface requirements and information provided for the steam and power conversion systems and conclude that sufficient information has been provided to permit a Utility/ Applicant to design satisfactory systems for the balance-of-plant design and, therefore, is acceptable. The steam and power conversion system will be evaluated in applications referencing B-SAR-205.