JUL 6 1973

Richard C. DeYoung, Assistant Director
for Pressurized Water Reactors
Directorate of Licensing

TOLEDO EDISON, DAVIS-BESSE NUCLEAR POWER STATION (OL), DOCKET NO. 50-346

Plant Name: Davis-Besse
Licensing Stage: OL
Docket Number: 50-346
Responsible Branch and Project Manager: PWR-4; I. Peltier
Requested Completion Date: July 6, 1973
Description of Response: Questions - First Round (Q1)
Review Status: Information Requested

Information submitted by the applicant in the FSAR has been reviewed by the Materials Engineering Branch, Directorate of Licensing. Adequate responses to the enclosed request for additional information are required before we can complete our evaluation. In order to maintain the current schedule, the applicant should respond to this request by November 7, 1973.

Original signed by
R. R. Maccary

R. R. Maccary, Assistant Director
for Engineering
Directorate of Licensing

Enclosure:
Materials Engineering Branch Request
for Additional Information (Q1)

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DAVIS-BESSE NUCLEAR POWER STATION
DOCKET NO. 50-346
REQUEST FOR ADDITIONAL INFORMATION (Q1)

MATERIALS ENGINEERING BRANCH, L

REACTOR

Reactor Vessel Internals

1. Provide a list of the materials, and their specifications, used for each component of the reactor internals described in this section and Table 4-4a.

2. Provide the maximum allowable .2% offset yield strength at room temperature of the cold worked Type 304 stainless steels listed in Tables 4-4c and 4-4d.

REACTOR

Reactivity Control Systems

Provide a list of the materials and their specifications used for safety related components of the control rod drive system.

REACTOR COOLANT SYSTEM AND CONNECTED SYSTEMS

General Material Considerations

Sections 5.2.3.5 through 5.2.3.8 and Figure 5-1 appear to us to be internally inconsistent, and may not be in compliance with current AEC fracture toughness regulations. Although the heatup and cooldown limits, given in Figures 3.1-7 and 3.1-8 of the Technical Specifications, appear to be satisfactory, the bases for them and the criticality limits are not clear. An indication should be provided of the degree of compliance with Appendix G of 10 CFR 50 and Appendix G of Section III of the ASME Boiler and Pressure Vessel Code, Summer, 1972, Addenda.

REACTOR COOLANT SYSTEM AND CONNECTED SYSTEMS

Austenitic Stainless Steel

For all austenitic stainless steel used for components that are part of

(1) the reactor coolant pressure boundary,

(2) systems required for reactor shutdown,

(3) systems required for emergency core cooling,

(4) reactor vessel internals required for emergency core cooling, and

(5) reactor vessel internals relied on to permit adequate core cooling for any mode of normal operation or under postulated accident conditions,

the following information should be provided, including the degree of compliance with Regulatory Guides 1.31, Control of Austenitic Stainless Steel Welding, and 1.44, Control of the Use of Sensitized Stainless Steel.

1. Cleaning and Contamination Protection Procedures

   Describe the procedures that were used and will be used to ensure that the material was and will be suitably cleaned and protected against contaminants capable of causing stress corrosion cracking throughout the fabrication, shipment, storage, construction, testing, and operation of components and systems.

2. Avoidance of Sensitization

   Provide a description of materials, processes, inspections, and tests that were used to ensure freedom from the increased susceptibility to intergranular stress corrosion caused by sensitization. This should include the following:

a. If special processing or fabrication methods were used that subjected the material to temperatures between 800 and 1500°F, or that involved slow cooling from temperatures over 1500°F, provide justification that such treatments did not cause increased susceptibility to intergranular stress corrosion.

b. If the presence of delta ferrite was relied on to prevent sensitization of welds or castings, describe the methods that were used to ensure the presence of at least 5% delta ferrite.

3. Welding of Austenitic Stainless Steel

Describe the procedures and requirements that were employed to avoid hot cracking of austenitic stainless steel welds, especially pertaining to filler metal compositions, welding procedure qualifications, and methods for ensuring adequate delta ferrite content of production welds.

REACTOR COOLANT SYSTEM AND CONNECTED SYSTEMS

Reactor Vessel and Appurtenances

Provide an explanation of the difference between the maximum allowable emergency cooldown rate of 100F/hr. and the reactor coolant cooldown rate limit of 235 F/hr.

COMPONENT AND SUBSYSTEM DESIGN

Steam Generators

1. Provide information that steam generator tube fouling, as described in BAW 10027, pgs. A-20-3 or B-26-9 will not lead to deterioration of the steam generator tubing by intergranular stress corrosion or wastage. Provide information that the cleaning procedures (described in Section B-6 of BAW 10027) will not cause attack at the tube - tube sheet crevices, and the precautions taken after cleaning that assure complete rinsing of the cleaning solution from these crevice areas.

2. Table 5-20: Indicate whether these feedwater quality specifications are for the reactor coolant make-up water or for the steam generator coolant or both.

ENGINEERED SAFETY FEATURES

Inservice Inspection Program

Provide sufficient information about your proposed ESF inservice inspection program to indicate that the program will be at least as conservative as the program outlined in Regulatory Guide 1.51, "Inservice Inspection of ASME Code Class 2 and 3 Nuclear Power Plant Components," issued May 1973.

ENGINEERED SAFETY FEATURES

Emergency Core Cooling System

Provide clarification of 6.3.2.4 and Table 6-11 on the ECCS materials, indicating which stainless steels and the grades of carbon steel that were used. The term CS clad SS is misleading.

STEAM AND POWER CONVERSION SYSTEM

Circulating Water System

1. Provide typical analysis of the lake water and the cooling tower - condenser system. Provide information that water of this quality will not lead to stress corrosion cracking of the Type 304 stainless steel condenser tubing.

2. Identify the demineralizer effluent impurity limits above which the demineralizer will be removed from service and regenerated. Include (under 10-4-6-4) the hot well instrumentation that gives warning of condenser inleakage of cooling tower water. Identify the pH of the steam generator feedwater.

TECHNICAL SPECIFICATIONS

Reactor Coolant Chemistry

For the Technical Specifications regarding reactor coolant chemistry, provide information that demonstrates that the impurity levels and maximum time allowed before action is taken (items 3.15-1, 2, 3, 4, and 5) can be satisfactorily met by sampling three times weekly, as specified in Table 4.1-3 of the Technical Specifications. Reference (4), page 3.1-15 of the Technical Specifications is not an acceptable basis for the assumption that "the oxygen and halogen limits specified are at least an order of magnitude below concentrations which could result in damage to materials ... if maintained for an extended period of time," since the data referenced were obtained at 500°F with pH 10.6 water containing 50 ppm phosphate, and are therefore not applicable to neutral or pH 4-8.5, phosphate-free water containing H_3BO_3.

Table 4.1-3, Item 5: We recommend that the secondary also be sampled weekly for pH and conductivity measurements.