

UNITED STATES GOVERNMENT

Memorandum

*file V-7 re N.C. Moseley
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TO : Peter A. Morris, Director
Division of Reactor Licensing
(THRU) *RW* Roger S. Boyd, AD/RP, DRL
FROM : Robert L. Tedesco, Chief, RPB-2 *R*
Division of Reactor Licensing

DATE: Dec. 20, 1967

SUBJECT: OYSTER CREEK - OUTSTANDING REVIEW MATTERS - DOCKET NO. 50-219

There are a number of outstanding matters that need to be resolved in order to complete our review of the Jersey Central (JC) application for a provisional operating license for the Oyster Creek reactor plant. These matters were discussed with representatives of Jersey Central and the General Electric Company at meetings held on December 8, 12, and 14, 1967. In particular, we discussed each matter in detail with George Ritter during the December 12 and 14, 1967 meetings. The attendees were Roger Boyd, Jim Graham (GE), George Ritter (JC) Dudley Thompson (part time [DRL]), and I. These matters were also discussed at the December 1967 meeting of the Advisory Committee on Reactor Safeguards.

Many of these items were previously noted in our letter to Jersey Central dated November 20, 1967. As stated in this letter, some of these items would involve plant modifications prior to issuance of a license, while implementation of other changes could be delayed until initial plant operation has commenced. These items, and other aspects of our review that remain to be completed, are listed below:

1. The information provided in JC's application indicated that the position of Technical Engineer would be included in the on-site organization. We understand that this post is presently vacant. As discussed with JC, we believe that the position should be filled prior to licensing.
2. During the startup and power test programs, all non-routine procedures in the test sequence should be performed under the supervision of shift supervisors with previous BWR experience. In our opinion, the plant staff should be augmented by resident consultation service from GE personnel on a shift-by-shift basis for operational support beyond the proposed power test program.
3. Information describing the GE technical and test evaluation support should be provided for our evaluation. This should include a statement concerning the time period over which the technical and test evaluation groups will be required to remain on-site. As a minimum, we believe that this time period should be one month of routine full power operation.



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- allowable leakage of water from the primary coolant system,
- off-site power is assumed lost whenever the reactor receives a trip signal and
- consideration of a spectrum of leakage from the reactor building closed loop cooling system (include an evaluation of any make-up capability).

In addition, we understand that modifications of the loads on the emergency diesel generators will be necessary to provide adequate cooling to the engineered safety features as well as normal running equipment which could be required in the event off-site power is lost. Further, we understand that removal of one of the containment spray pumps from the loading sequence on the diesel generator is contemplated in order to provide sufficient capacity to power this additional equipment. A safety evaluation to support such a change has not been provided for our review. Consequently, if the final list of loads on the diesels includes such modifications, it should be accompanied by a thorough evaluation to demonstrate that the safety of the plant is not diminished by the change.

8. Control rod stub tube cracks are stated to have been caused by "stress assisted corrosion," however, the corrosive medium has not yet been identified. In view of this, we believe that a comprehensive non-destructive testing program should be conducted to ascertain that similar effects did or did not occur in other locations in the pressure vessel and other parts of the primary system. In particular, ultrasonic inspection and radiographic re-inspection of the transition joints between the pressure vessel and connected piping should be considered. Further, a thorough evaluation of the safety implications of the cracks in the control rod stub tubes and quality of the field welds should be conducted and submitted for our review. This evaluation should include estimates of leakage from the cracks as well as the effects of crack propagation in the control rod stub tubes and of failure of the field welds between the control rod guide tubes and control rod stub tubes. Particular attention should be directed toward establishing whether or not the probability of a particular event caused by a failure in either the control rod stub tubes or adjoined housing is changed. Because of the recent problems associated with the control rod stub tubes, we believe that increased leakage detection capability should be incorporated into the design (item B-2 of our November 20, 1967 letter).

UNITED STATES GOVERNMENT

Memorandum

Carlson

*OC-1
V-2*

TO : L. Kornblith, Jr., Assistant Director
for Technical Programs
Division of Compliance

FROM : G. W. Reinmuth, Reactor Inspector
(Programs Standards) Technical Support Branch
Division of Compliance *G. W. Reinmuth*

SUBJECT: STATUS OF OYSTER CREEK VESSEL PROBLEM

DATE: December 22, 1967

Since numerous parties are concerned with the Oyster Creek vessel problem, I feel a reduction in communication time may be possible by preparing a short periodic summary of the status. This is the first.

L. Porse of DRL and myself visited Combustion Engineering (CE) in Chattanooga, Tennessee, on Monday, December 18, to investigate reported cracks in the stub tube of a mockup which was built to simulate the design of a high side stub tube in the bottom head area of the JC vessel. Two cracks were involved, one in the area of the shop stub tube weld similar to those observed at the site and a second in a vertical direction unrelated to the problem. We were informed the cracking was improperly reported in that the crack of interest resulted from the use of deliberate poor welding technique (lack of fusion on last weld bead and under cutting) and was present in the stub tube prior to the welding of the rod guide tube into the mockup. We observed metallurgical samples under a microscope to demonstrate that the crack was not "stress corrosion" caused.

We also found that CE was performing stress analysis work covering the planned "fix" of the stub tubes at Oyster Creek. The analysis is covering eight (8) geometrical considerations with respect to decay and interaction of moments induced by fabrication procedure and operational modes. G-E (W. Smith) indicated the repair would not begin until the results of this analysis are complete. These analyses may influence whether the proposed fix is suitable. The stress report will be ready in early January and the results made available to the AEC.

I also made a site visit on December 20-21, completing my "fifth mission" up the pipe into the vessel. Crawling the pipe will probably be unnecessary from now on since G-E has decided to cut open one of the recirculation system loops to ease access for the repair. Cutting of the loop is scheduled to be performed Saturday, December 23.

Work in the vessel is minimal and has been for the past couple of weeks. Grinding of the field welds has been stopped as an electric

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arc milling device is being developed to perform this work on a more precise and controllable basis. I was told this type of tool is used in cutting turbine blade holes into turbine spindles and that it is very effective when properly adapted. A mechanical milling tool is also being developed as a backup should the first device not prove out. One or both should be ready for use by the second week in January. G-E has definitely made the decision to remove all existing stub tube field welds in accordance with their proposed fix.

While at the site on December 21, a high level meeting between G-E, JC and CE took place. I assume it concerned the vessel but was not informed as to the decisions, if any, that were made. I obtained the feeling from site personnel that replacement of all the stub tubes was not outside their thinking.

From these observations, I conclude that actual repair will not start until mid-January at the earliest. L. Koke, G-E Site Manager, estimated repairs would take approximately five to six weeks. In my view, that is optimistic, however, may be used as a scheduling basis for our effort at this time.

cc: L. D. Low, CO
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