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December 21, 1967

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MEETING WITH GENERAL ELECTRIC AND COMBUSTION ENGINEERING -- OYSTER CREEK
PLANT - DOCKET NO. 50-219

DEL:G&CTB:LP RT-293

A meeting was held on December 18, 1967 at Combustion Engineering, Inc. in Chattanooga, Tennessee to discuss details of the reactor vessel repair program. Attending were:

AEC - DEL

L. Forse

AEC - CO

G. W. Reimuth

General Electric Company

W. R. Smith, Sr.

S. G. Hall

C. T. Ward

W. L. Walker

Combustion Engineering, Inc.

- R. C. Chapman
- R. Lorents
- E. L. Lumpkin, Jr.
- J. W. Harper
- D. Randolph
- J. J. Barger

The essential parts of the discussion were:

1. CE has made two (2) mock-ups of the bottom head penetration stub tubes. Both stub tubes were of sensitized material, which had been ultrasonically tested, but not MP or DP tested, prior to welding into the vessel head. A DP test was performed after completion of the welds.

One mock-up had a deliberate notch put in by providing lack of fusion between the stub tube and the last weld bead. The result was a local hot condition making the stub tube material sensitive to tearing, this being observed:

a. One of the mock-ups will be fitted with a box to permit testing the effect of low temperature chloride sensitizing for the stub tube with the head base metal temperature controllable through heat application.

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- b. The details of the mock-up will be reported by G. W. Reinmuth.
- 2. GE and CE were asked about work being done to analyze the stub tubes for geometry, steady state stress and cyclical stress. CE informed that the cyclical loading is being analyzed now, that eight (8) geometric considerations were considered with respect to decay and interaction of moments induced by fabrication procedure and operational modes, etc.

Referring to Sketch B-1, "Amendment 29, Status Report on Reactor Vessel Repair Program," the distance from the shop weld to the site weld is only 3/4 inch. This dimension will be increased as dictated by the analytical evaluation; the "improved" distance will probably result in a stub tube 3 - 4 inches longer at the critical locations on the vessel bottom head.

Distortion due to the field weld resulted in a stub tube taper of at least 1/16 inch in 1 inch, and the upper tube end rapidly distorted approximately 3/16 inch radially. The resultant compressive stress did not create any cracks. Inside CRDM housing diameter increase of smaller magnitude was observed at the field weld location.

GE was asked if there would be a significant difference if the stub tubes were of non-sensitized type 304 material. The answer was vague but confirmative. Note that non-sensitized material could be applied if a local cladding step was introduced prior to the stress relief operation. The subsequent stub tube shop weld would not require stress relief and not suffer subsequent sensitizing of the stub tube material. However, such an additional step would cost money.

Summary

- a. The mock-up report is ready for delivery to GE, and through channels to the AEC.
- b. The stress report will be ready early in January.
- c. The short stub tube will be discontinued in favor of a longer one for vessels not yet progressed through this phase of the fabrication. G. W. Reinmuth will delineate the applicants involved.
- d. It appears unlikely that Criterion 9 can be fulfilled with respect to the lifetime leakage requirement for vessels (2) with the short stub tube. Whether lifetime leaktightness can be obtained for the subsequent reactor vessels can better be judged when the results of test program and stress analysis are available.

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