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J. B. Henderson, Chief, Reactor Construction Branch, CO

VENDOR INSPECTION REPORT - BABCOCK & WILCOX FUEL FABRICATION (B&W FUEL 71/1)

The enclosed report of an inspection of the Babcock & Wilcox Company's (B&W) fuel fabrication facility in Lynchburg, Virginia, on January 25-26, 1971 is forwarded for information. The purpose of the inspection was to examine fuel for the Ocone 1 reactor and B&W's quality assurance program for fuel manufacture.

Compliance found that B&W was utilizing a systematic quality assurance program which was based upon experience in manufacturing fuel for the U. S. Navy. In general, the program appeared to meet the requirements of 10 CFR Part 50, Appendix B, although we found several items where upgrading and clarification was needed. B&W indicated that our comments would be considered in continuing efforts to improve their system.

Our greatest concern was the finding that B&W accepts all tubing from its supplier, the Sandvik Company in Kennewick, Washington, without further nondestructive testing. Other than visual examinations and a very low frequency of destructive testing, no B&W verification of tube quality is performed. We believe this practice represents an unusually high risk. Since the Sandvik Company also supplies tubing for other fuel fabricators, we are planning an inspection of the Sandvik plant later in the year to determine their capabilities.

In comparing manufacturing practices between B&W and General Electric (see CO Report GE 70/1, dated December 15, 1970) it is interesting to note the relative attention given to tube testing and end welding between the two companies. GE thoroughly tested the tubing (two ultrasonic and one eddy current test) but only sample tested the end welds. B&W performs essentially no tube testing but examines welds on a 100% basis. It will be interesting to observe fuel performance to determine which approach appears to be the better one.

Surface scratching during final bundle assembly was observed at both companies. Neither considered the scratching to be significant as measurements by both companies have shown them to be on the order of

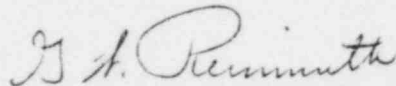
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0.001" in depth. Scratching appears to be unavoidable because of the inherent design of the bundle. To prevent tube vibration, supporting spacer grids must be provided. These spacers provide a spring loaded fit which in turn causes a rubbing action between the tube and grid as each tube is inserted into the assembly.

A problem with "shoulder cracking" of the fuel pellets was reported by a member of the Division of Reactor Licensing during a visit to B&W in December, 1970 (see memorandum, L.P. Crocker to J. P. O'Reilly, dated December 11, 1970). According to B&W, the problem had been resolved. This position was supported by a low reject rate and an acceptable completion schedule since that time.



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Enclosure:
Report of B&W Fuel 71/1

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