MASTER

DUQUESNE LIGHT COMPANY
SHIPPINGPORT ATOMIC POWER STATION

TEST RESULTS

DLCS 2130301
T-641124-A

MODIFIED PURIFICATION SYSTEM PERFORMANCE TEST
(Resin Sampling)

CORE I SEED 2

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Purpose

To establish an operating procedure for obtaining a sample of resin from a Purification System demineralizer.

Conclusion

The procedure established was found to be unsatisfactory for obtaining a representative resin sample from the LAC purification demineralizer.

Description of Test Equipment and Test Procedure

The LAC Boiler Chamber hatch cover and concrete plug above the demineralizer were removed. Protective shielding was constructed around the demineralizer cap, and a platform was constructed around the top of the demineralizer. The three inch resin fill line was cut (See Figure 2) and the line was rotated to allow access to the inlet fill nozzle. A special cask (See Figure 4) was placed over the inlet fill nozzle and a probe (See Figure 3), marked to establish the depth of penetration, was inserted through the cask into the resin bed. The height of resin in the probe was determined by use of a weighted tape suspended in the probe.

The test was limited to one attempt at obtaining a sample since it was felt that after one attempt the resin bed would be disturbed. However, the probe was unintentionally inserted into the resin bed before all of the test preparations were complete. Consequently, the test procedure was revised to allow for more than one attempt to secure a resin sample. Also, the procedure was revised to allow the probe to come in contact with the outlet filter rather than coming within only three inches of the outlet filter. Two further attempts were made with the revised procedure.

Results

DLCS 2130301, Modified Purification System Performance Test, was started on June 16, 1960, and completed on June 17, 1960. A total of three attempts were made to obtain resin samples, however, none of these samples were considered adequate.

The first sample was obtained when the probe was unintentionally inserted into the resin bed, however, no data was obtained during the insertion. This required

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changing the procedure to allow further sampling. In the second attempt, no resin was obtained, consequently, another attempt had to be made.

The data taken during the third attempt is shown in Table I and plotted in Figure 1. The figure shows that the resin sample obtained was unsatisfactory in providing a representative sample of the resin throughout the demineralizer. For every three inches of probe travel at least two inches of resin were expected to be collected. This was based on data obtained by Westinghouse at the Bettis Plant using a resin bed of smaller diameter than the demineralizer. However, as can be seen from Figure 1, this expectation was not accomplished. Only one inch of resin was collected for each eight inches of probe travel.

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Figure 2
PWR Demineralizer

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Figure 3
Resin Sample Probe
and Extension
Handle - For
PWR Resin Vessel.

CASE BRACING

FIGURE 4

RESIN
SAMPLING SET-UP
(Not to Scale)

All dimensions
approximate

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TABLE I

Length of Insertion of Probe into Resin (Inches)	Height of Resin Inside Probe (Inches)
0	0
3	2
6	2 3/8
9	2 1/2
12	2 1/2
15	2 1/2
18	2 1/2
21	2 1/2
24	2 5/8
27	2 3/4
30	2 3/4
33	3 1/4
36	4
39	5
39 7/16	5

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