HW--29802

DE93 003438

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HW-2[redacted]

This document consists of 3 pages. No. 1 of 23 copies, Series [redacted]

1. JT Baker-RD Clough-EJ Filip
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14. JE Robb-FW Richardson
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16. FAR Stainken
17. P Thompson
18. PC Walkup
19. JL Warren Technical
20. [redacted]
21. 700 Files
22. 300 Files
23. Yellow Files

November 4, 1953

To: Files

PROCESS TEST MR-105-16 ZINC SHIELDING SLUGS

Ref. Letter, AK Hardin to CW Botsford, "Stuck Front Nozzle Inserts," October 5, 19[illegible]

OBJECT

It is the purpose of this test to demonstrate that solid zinc front nozzle shielding inserts will eliminate the problems associated with the corrosion and sticking of the present aluminum inserts in the inlet nozzles.

BASIS AND JUSTIFICATION

A survey of the rate of insert sticking is reported in the reference letter. This survey shows that C, DR, and H Reactors, which have zinc present at the insert location either as a galvanized nozzle or as a galvanized insert, have a sticking rate three to 40 times lower than B, D, or F Reactors which have aluminum inserts and aluminum nozzles.

[redacted]

[redacted]

The present condition of the nozzle inserts at B and F Reactors is such that 30 per cent of the inserts must be removed with a pipe wrench, and another 20 per cent require more than average time for removal. In at least four cases during the last four months, nozzles had to be removed in order to proceed with charging operations.

Elimination of the insert corrosion problem will result in an approximate savings of thirty minutes of shutdown time per 200 tube discharge at B and F Reactors, a savings of $15 per insert to replace damage inserts, elimination of the man-hours required to remove the stuck inserts, and elimination of corrosion damage to the nozzles. The rapid loss of protective zinc from the nozzles in DR and H and from the inserts in C indicates that a similar justification exists at these reactors.

PROCEDURE

During the first shutdown of B Reactor after November 9, 40 solid zinc inserts will be installed in selected nozzles. The inserts and nozzles will be examined periodically to determine their corrosion characteristics. The test inserts will be fabricated from high purity zinc, and will duplicate the B, D, and F type insert design with the exception that the nozzle cap will be fastened to the insert with a steel pin rather than by a weld. This type of connector is in current use on the C Reactor front inserts.

SCHEDULE

The test will start at the first B Reactor shutdown after November 9, 1953. The test will be terminated by any one of the following conditions:

1. Test has run nine months.
2. Conclusive evidence has been obtained to indicate the value of the solid zinc inserts.
3. At the discretion of the Reactor Operations Sub-Section Superintendent, and/or Reactor Process Sub-Section personnel, due to unexpected adverse corrosion of the zinc inserts.

EFFECTS ON PRODUCTION AND COST

Shutdown Time Required

One hour to install inserts.
Two hours for three-month inspection.
Two hours for six-month inspection.

This test authorizes the above outage time. However, it is expected that elevator time will be available during unscheduled outages when the necessary inspections can be made without requiring additional reactor shutdown time.

[redacted]

[redacted]

Cost:

Zinc cost - $160
Fabrication cost - $200

RESPONSIBILITIES

Process Sub-Section

A. K. Hardin, Process Sub-Section, will be responsible for supplying zinc inserts, selecting nozzles for installation, frequent examination of the test inserts, and reporting of test results.

Operations Sub-Section

Supply 40 front face caps. [redacted]
Install inserts on selected nozzles.

A. K. Hardin
A. K. Hardin, Process Engineer
Reactor Operation Engineering
Process Sub-Section
REACTOR SECTION

AKH:lac

APPROVALS:

[redacted], Superintendent, Process Sub-Section, Reactor Section.

[redacted], Production Superintendent, Operations Sub-Section Reactor Section.

Issue Date November 16, 1953

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