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HW-3-2593

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May 29, 1945

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TO: HOOD WORTHINGTON

100-F UNIT PURGE
MAY 20, 1945

THIS DOCUMENT CONSISTS OF 5 PAGES NO. 1
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INTRODUCTION

The 100-F unit was purged with 100 ppm. Super-Cel for about one and one-half hours on May 20, 1945.

CONCLUSIONS

1. Satisfactory pressure drop film removal was realized on tubes in all orifice zones. Film removal in the 0.140" zone was much better than previously obtained.
2. The 50 mesh header screens started to plug shortly after start of purge. Screens inspected showed considerable quantities of tar and some wood slivers.
3. The 30 mesh header screens did not plug sufficiently to affect Panellit pressures.

DETAILS

This purge was conducted similar to the previous solids purge made at 100-F Area except that the Super-Cel concentration in the process water was maintained at about 100 ppm. rather than at 50 ppm. The solids feed was started at 12:58 P.M. and stopped at approximately 2:30 P.M.

Header Screens

The flow rates on the individual risers started to change with respect to each other very shortly after the purge started, indicating that some of the header screens were becoming plugged. However, inasmuch as it was obvious that some of the screens would have to be replaced and the desirability of removing as much pressure drop film as possible, it was decided to continue the purge as long as the total flow rate to the unit did not decrease too much. The individual riser and total flow rates during the purge are shown in Figure 1.

Following the purge, screens from more than twenty headers which showed abnormally high decreases in Panellit pressures were replaced with clean screens. The riser flow rates returned to ap-

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proximately their pre-purge values after these screen replacements. The header screens removed contained more foreign material than those which had been inspected previously at any of the areas. This foreign material consisted principally of tar and wood slivers with varying amounts of Super-Cel. One of the 30 mesh screens installed in the unit prior to the previous purge was also removed and inspected. It also was found to contain tar but none of the 30 mesh screens plugged sufficiently to affect the Panellit pressures while the 50 mesh screens installed at the same time did plug sufficiently to decrease the Panellit pressures during the latter part of the purge. It is anticipated that header screens will continue to plug during purges until the tar has been eliminated from the system.

Pressure Drop

The pressure drop data for Sample Room B and Panellit tubes are given in Tables I and II. These tables show the pressure drop increases before and after the purge on the basis of 0 and 250 MW power. The 250 MW data after the purge, May 22nd data, were the lowest pressure drops reached after the purge. The pressure drop recoveries are given in Table III.

The pressure drop recovery was quite satisfactory in all of the orifice zones. The recovery in the 0.140" zone was to a lower residual pressure drop than had been realized in this zone by any previous purge. It is believed that this improvement was due to the purge being continued for one and one-half hours instead of the usual one hour duration.

The average pressure drop decrease during the purge for four of the pressure drop tubes is shown in Figure 2.

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TABLE I

B SAMPLE ROOM DATA

PRESSURE DROP - PSI ABOVE BASE

	Before Purge		After Purge	
	May 19th	May 20th	May 20th	May 22nd
Power Level - MW	<u>250</u>	<u>0</u>	<u>0</u>	<u>250</u>
2465	20.5	10.1	2.5	2.2
2469	23.1	12.5	3.9	2.9
2473	23.2	13.6	2.7	0.2
2475	23.0	10.1	-1.9	-1.1
2479	21.5	9.4	1.2	0.1
2483	24.2	10.6	2.8	0
2375	20.2	8.4	1.5	-1.4
2575	<u>19.8</u>	<u>10.4</u>	<u>---</u>	<u>-0.2</u>
Average	21.9	10.6	1.8	0.3

TABLE II

PANELLIT DATA

PRESSURE DROP - PSI ABOVE MARCH 12TH BASES

	Orifice Zones		
	0.240"	0.175"	0.140"
Before Purge (May 18th)	24	23	17
After Purge (May 22nd)	7	3	5

TABLE III

PRESSURE DROP RECOVERIES

	<u>Percent</u>
0.240" Orifice Zone	71
0.175" Orifice Zone	87
0.140" Orifice Zone	71
Pressure Drop Tubes	91*

* Calculated using the low point of March 11th, -1.7 psi above base, as the zero point.

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FIGURE 2

CHANGE IN TUBE PRESSURE DROP
(COLD DATA DURING PURGE)

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