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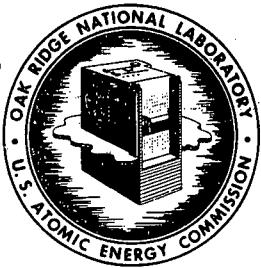
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DATE: October 16, 1957
SUBJECT: Test of Koby Oil Filter on HRT Shield Vacuum Pumps
HRT Test X.C. 5.c.
TO: S. E. Beall
FROM: S. I. Kaplan

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On August 29, 1957, the HRT shield vacuum pump was operated to check the behavior of the Koby oil filter on the discharge line. The pump was operated with the inlet line open to atmospheric pressure, to simulate conditions during the initial exhausting of the shield volume. The discharge side of the oil filter was left open to the atmosphere, to permit observation of any oil fog or droplets which might pass through the filter. Shortly after starting the pump, leakage of air and oil was observed from the entrance flange of the filter; after tightening of the tie-rods on the filter however, the leakage stopped.

The pressure drop across the filter was measured with a bourdon gauge at the filter drain line, and found to be 5 psi. After approximately 30 min of operation, the filter apparently became oil-saturated, since droplets of oil were blown from the exit line. The filter was drained after 10 min of steady operation, and 95 cc of oil were recovered.

Conclusions

1. The present Koby filter is inadequate to handle the exhaust flow from one HRT shield vacuum pump (Kinney DVD-8810, rated at 110 cfm free air) under the existing pumping conditions.
2. Since there are two such pumps piped to discharge simultaneously through the single filter, the use of a pair of these filters in parallel would still be inadequate.
3. The present shield evacuation pumps are required to function in a marginal portion of their operating range. Pump wear and oil usage will be high, even if adequate filters are found.

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3.

Recommendation

I believe the cost of a sufficiently large oil separator would be comparable to that of a pump designed for the service required; hence, it is recommended that the present HRT shield evacuation pumps be replaced with more suitable units, such as cycloidal (Roots) blowers or rotary vane pumps.


S. I. Kaplan

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