

Westinghouse

MASTER

TMI-823

FROM W. K. Brunot

DATE October 2, 1963

SUBJECT Test Cell "A" Turbo-pump
Temperature

ASTRONUCLEAR LABORATORY

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INFORMATION CATEGORY

Unclassified
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Authorized Classifier Date

In the NRX-A2 Cycle Schematic (TME-292, TME-381, and others) and in other performance analysis reports, the liquid hydrogen temperature in the dewars is assumed to be 44°R. Experimental results from numerous runs at Test Cell "A" indicate that the pump inlet temperature rarely rises above 41°R during a run. The following data is taken from the Sanborn recordings from Experimental Plans I and II for the mixing chamber tests and is typical data for the turbo-pump.

at w = 30 lbs/sec (FE-4)

Pump Outlet Temperature = 43°R (T-18)
Pump Outlet Pressure = 200 psig (P-57)
Pump Inlet Temperature = 41.0°R (T-20)
Pump Inlet Pressure = 58 psig (P-44)

at 60 lbs/sec (FE-4)

Pump Outlet Temperature = 48.0°R (T-18)
Pump Outlet Pressure = 750 to 800 psig (P-57)
Pump Inlet Temperature = 39°R (T-43)
Pump Inlet Pressure = 50 psig (P-44)

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Since the dewars are generally opened to the atmosphere before being pressurized for a run, the temperature of the Li_2 in the dewars should not be expected to be far from saturation temperature (at atmospheric pressure) during most of the run.

It is suggested that this information be taken into account in future calculations and issues of cycle schematics and other reports.

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Test Engineering

/alb