

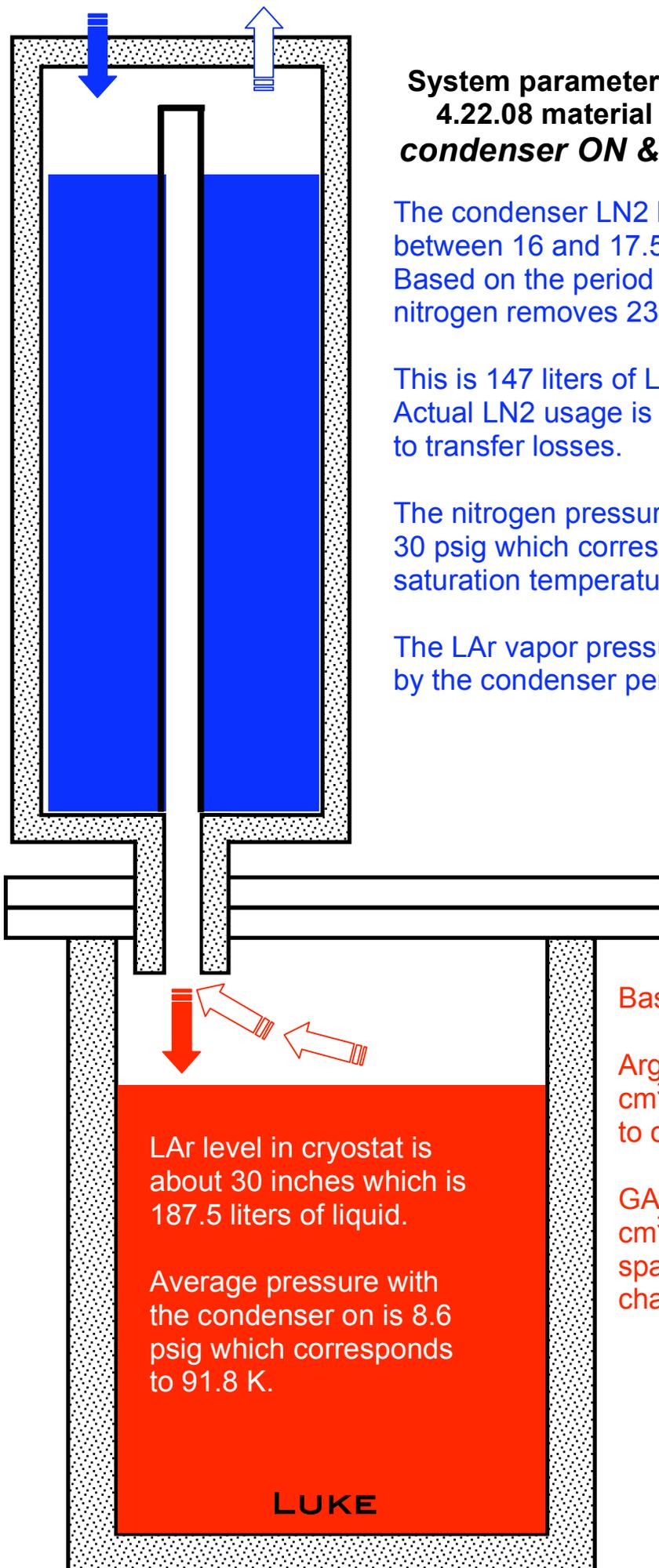
System parameters relevant to the 4.16.08 to 4.22.08 material test station run – for the condenser ON & vapor pump OFF period

The condenser LN2 level cycles between 16 and 17.5 inches of depth. Based on the period of this cycling, the nitrogen removes 234 W from the LAr.

This is 147 liters of LN2 per day. Actual LN2 usage is much higher due to transfer losses.

The nitrogen pressure is maintained at 30 psig which corresponds to a LN2 saturation temperature of 88.1 K.

The LAr vapor pressure in Luke is set by the condenser performance.



Based on condenser LN2 consumption:

Argon condenses and falls at 1.1 cm³/sec. At this rate it takes 46.9 hours to condense the 187.5 liter inventory.

GAr enters the condenser at 175 cm³/sec or 0.37 ft³/min. The vapor space above the liquid sees a volume change every 6 minutes.

LAr level in cryostat is about 30 inches which is 187.5 liters of liquid.

Average pressure with the condenser on is 8.6 psig which corresponds to 91.8 K.

LUKE

System parameters relevant to the 4.16.08 to 4.22.08 material test station run – for the condenser ON & vapor pump ON period

The condenser LN2 level cycles between 16 and 17.5 inches of depth. Based on the period of this cycling, the nitrogen removes 485 W from the LAr.

This is 302 liters of LN2 per day. Actual LN2 usage is much higher due to transfer losses.

The nitrogen pressure is maintained at 30 psig which corresponds to a LN2 saturation temperature of 88.1 K.

The LAr vapor pressure is set by the condenser performance.

Based on condenser LN2 consumption:

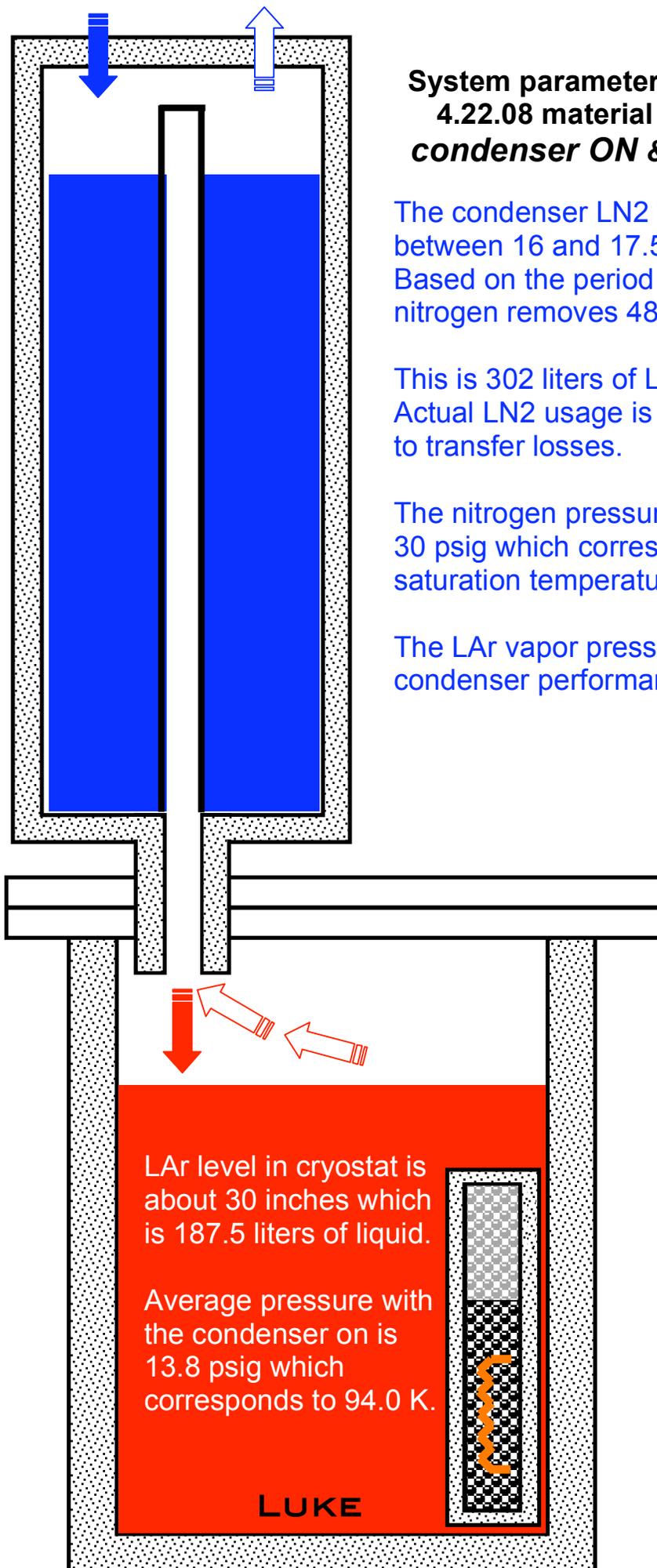
Argon condenses and falls at 2.31 cm³/sec. At this rate it takes 22.5 hours to condense the 187.5 liter inventory.

GAr enters the condenser at 298 cm³/sec or 0.63 ft³/min. The vapor space sees a volume change every 3.5 minutes.

Filter parameters:

The filter processed 0.85 inches of liquid per cycle such that 30 / 0.85 = 35 cycles to filter entire cryostat. At 3.75 minutes per cycle it takes 131 minutes to filter the entire cryostat.

Filter on time was 1.75 minutes and heater set point -40 C. Heater off time was 2 minutes.



LAr level in cryostat is about 30 inches which is 187.5 liters of liquid.

Average pressure with the condenser on is 13.8 psig which corresponds to 94.0 K.

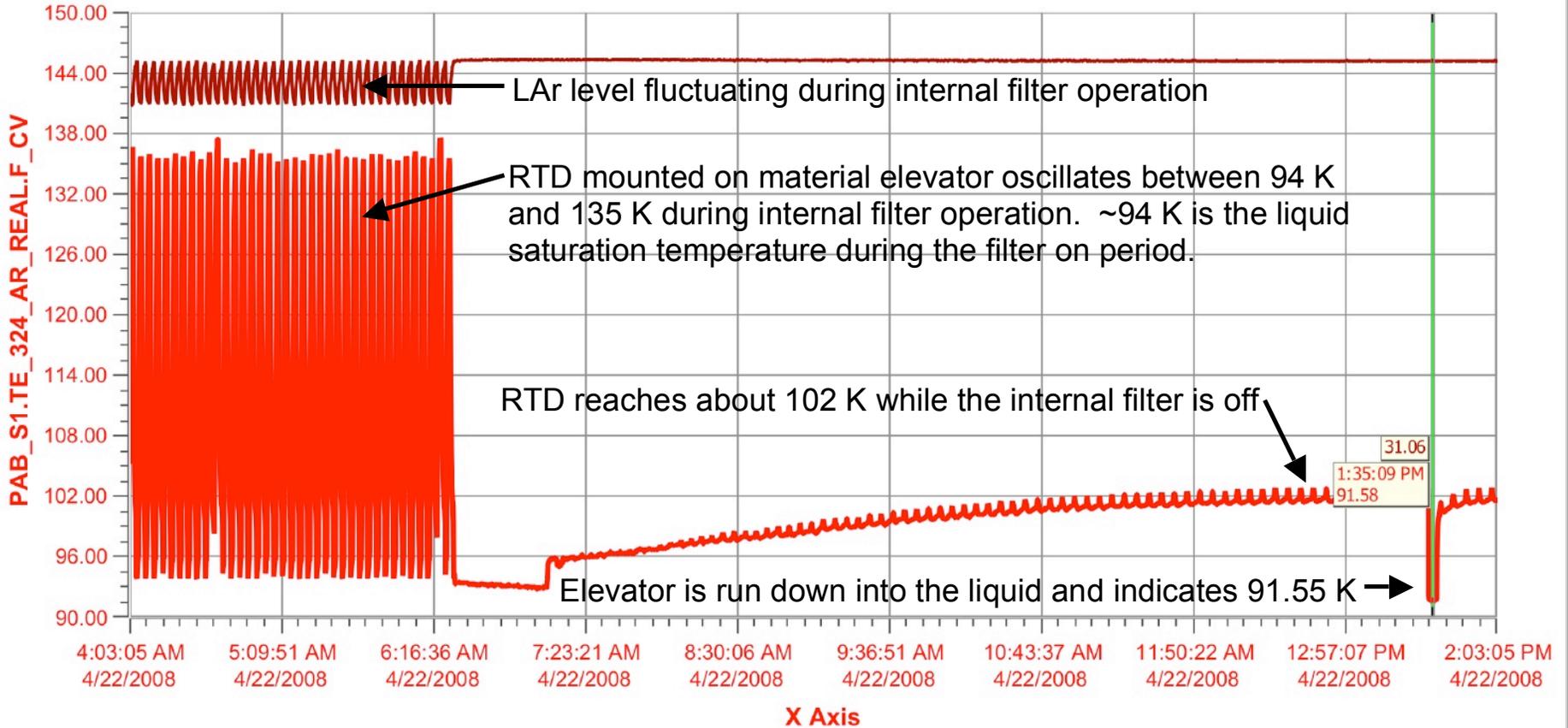
LUKE

Comparison of measured vapor temperature during the 4.16.08 to 4.22.08 material test station run

CRYO SYSTEM

FLARE HISTORICAL DATA - Elevator RTD

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Pen Name	Description	Value	Eng Units	High Over ...	Low Over ...	Avg Over ...
— PAB_S1.TE_324_AR_REAL...	Luke material elevator RTD (F...	91.58	K	137.55	91.55	102.10
— PAB_S1.LT_13_AR_REAL...	Luke Argon Level Probe	31.06	inches	31.08	30.15	30.94

4/22/2008 4:03:05 AM 12 Hours Ago



2 Hours Ago 4/22/2008 2:03:05 PM