

10/21/2020

13:25 * turn on Ax Seal

13:30 set LN GI regulator to ~5psig w/o Ne flowing

Fill/flush panel while purging the BW traps w/ heat gun
(stop current run & debris HV detector first!!)

→ Run 636

13:35 ~~Run 635A~~:

13:35 open V10, V4, V9, V11, V12, & V13 toggle V2/V10 to fill/flush

13:35 Fill/flush: III

14:10 After connecting the Rgt, Isolator scroll pump & turn off
Turn on 12V DC power supply & HiCube turbo

14:15 HiCube is almost up to speed;

Connect RGA & turn on Filiment

14:20 Close V4, ~~V9, V10, V11, V12, V13~~

14:50 HiCube @ Speed

15:00 open V14

15:05 turn off turbo & RGA > turn on Scroll pump *
Close V10

15:10 disconnect RGA kF20 & blank

Fill/flush Detector Chambers : III

15:35 fill DC to ~100 bar; close all panel valves & turn off pump *

Run 637 Bkg

Beg: 15:45 10/21/2020

Start: 15:55

Stop:

10/28/2020 NC

7:10 LN₂ cyl gas line connected to evacuation panel plumbing; regulator set to ~5 psig
w/o gas flowing

7:15 Turn on Aux Seal pump

7:27 Dot counter moved to chamber CR (on top of LEC), open V2 to control
gas w/ V5 in CR

7:30 gear up & enter CR w/ new sample

7:40 Open V5 to bring SEC up to atmosphere, then close V5

7:45 Break SEC CF seal

8:25 Begin closing SEC

8:40 leave CR, close V4, open V10, V9 & V7 (Begin pumping down SEC)

8:45 Enter CR (w/o CR grab) to do another round of tightening

9:30 $P_{sec} = 6.25 \text{ torr}$ Close V2 open V4 & V5 to help pump
----- down a little faster.

9:45 $P_{sec} = 1.43 \text{ torr}$; Isolate Aux pump &
switch to the leak chamber → switch back

10:10 Close V4 + V5; then open V2

$P_{sec} \sim 1 \text{ torr}$

Switch from Aux pump to leak chamber

10:15 P_{sec} has gone up slightly, but leak Rate $\leq 3.8 \times 10^{-12} \text{ Torr l/s}$
open V5 ↴ most likely due to the plastic out
gassing.

10:17 Switch back to Aux pump to fill/flush SEC w/ V2 & V10

Regulator increased to 20 psig w/o gas flowing

Fill/flush between

Fill/flush: III

1000 torr ± 10%

10:56 * $P_{sec} = 98.3 \text{ torr}$; Close all chamber/pad

env. start time

values

→ Turn off Aux Pump *

11/5/2020 NC SEC transfer - Cathode HV tubing #1

8:20 Begin CT purge; regulator set to ~5 psig w/o gas flowing

* Turn on two small pump

12:10 Cool CT

12:12 Stop Blg run, Debias HV detector

12:30 CT is now cold; Fill/flush panel + (Detection Chamber Closed)
Purge sm trap
w/ heat gun : 1MM

12:45 Fill/flush Detection Chamber : 1MM

13:05 $P_2 < 1\text{ torr}$, isolate DC, Close all panel valves

$$P_{\text{sec}} = 121$$

13:08 Open V9 + V10 and then cool by trap w/ LN

13:15 by BW trap cold

Time	P_1 (torr)	P_2 (torr)	P_{sec} (torr)	Operation
13:15	0.180	0.924	121 ^①	Open V7 + V5
13:20	26.5	0.991	30.0	Close V1; open V3 + V11 + V1
13:21	220	0.999	217	Close V3, open V9
13:26	44.5	1.05	46.5 ^②	Close V9, open V3
13:27	205	1.06	202 ^③	Close V3, open V9
13:31	48.3	1.09	49.0	Close V9, open V3
13:33	206	1.11	203 ^④	Close V3, open V9
13:36	47.6	1.13	49.4	Close V9 + V7
13:37	48.8	1.14	49.1	open V9, pump down by trap
13:45	1.53	1.18	49.2	Close V9, warm by trap

13:45 open V3 & fill SEC to ~2000 torr

13:55 open V13 + V12, pump on sm. BW trap while cooling w/ LN
($P_2 = 1.25\text{ torr} \rightarrow P_2 < 1\text{ torr}$ then cool)

- 14:00 $P_i = 7.41 \text{ torr}$, $P_{sec} = 200 \text{ torr}$
- 14:05 open V11, then open V7 to begin 20 min transfer *
- 14:25 close V11, pump down small trap.
- ~~14:25~~ open V3 & fill SEC to $\sim 500 \text{ torr}$
- 14:32 Close VS, $P_{sec} = 503 \text{ torr}$
- ~~14:32~~ small trap $P_{sec} =$
- Close V12 + V13, warm small trap, $P_e = 440 \mu\text{torr}$
- 14:37 open V14 + V12, open/close V11 to bring D_c up to 100 torr
- 14:45 $P_e = 101 \text{ torr}$, close V13 + V14
- 14:48 reset SEC to $\sim 100 \text{ torr}$ ($P_{sec} = 99.0 \text{ torr}$) * now can start time
close V5 + V7
- 14:50 Close all panel valves, Bias HV detector
- | | | |
|--------------------------------|-------|-------|
| Run 638 - Cathode HV tubing #1 | | |
| Bias: | 14:55 | 11/5 |
| Start: | 15:05 | 11/5 |
| Stop: | 13:35 | 11/11 |
- 14:55 turn off Aux pump

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11/11/2020

Start Big run

13:30 Turn on Arx pump, set regulator L \approx 6psig

13:35 Stop Run 638, bias the HV detector (The ΔE , by eye, doesn't look that great)

13:40 Fill/flush BW traps while purging

the small trap w/ heat gun

* factor of two says $1000 - 10$, roughly
tau

Fill/flush: 1XX

13:50 Pump down detection chamber, fill/flush w/ LN boil off
fill/flush: 1XX (no CT)

14:40 $P_2 = 1000$ tau, isolate DC, Bias the HV detector

14:50 Turn off Arx pump; close all panel valves

Big Run 639

Bias: 14:50 11/11/2020

Start: 15:00 11/11/2020

Stop:

11/20/2020 NC

Small Chamber transfer

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- 10:15 turn on Aux Temp
 10:30 Start CT purge (regulator set L ~5psi w/o He flowing)
 12:40 Stop CT purge, close V₁, N_{V1}, V₃, V₄ + V₁₀
 12:45 Stop run 639, Detectors
 Fill/flush panel (not DC) & purge Sm trap w/ heat gun
 Fill/flush: HTT ~~22 min~~ (open V₁₀, V₉, V₁₁, V₁₂ + V₁₃)
~~12:55 cool off~~ ~~close all panel valves~~
 12:55 Close all panel valves & then cool CT
 13:10 CT now cold, Fill/flush panel &
 + Detector Chambers
 Open V₁₀, V₄, V₃ + N_{V1}
 Open V₉, V₁₁, V₁₂, V₁₃ + V₁₄ Fill/flush w/ V₁ & V₁₀
 Fill/flush: HTT
 13:35 P₂ = 500 mTorr; Close all panel valves
 13:40 Open V₁₀ + V₉, then cool by trap w/LN

Time	P ₁ (torr)	P ₂ (torr)	P _{sec} (torr)	operation
13:45	270 mtorr	0.676	93.8]①	open V ₂ + V ₆ (* Transfer start)
13:48	43.1	0.745	45.0]①	close V ₉ , open V ₁ , N _{V1} , + V ₃
13:52	212	0.763	212]②	close V ₁ + V ₃ , open V ₉
13:55	48.6	0.788	49.3]③	close V ₉ , open V ₁ + V ₃
13:57	199	0.793	200]③	close V ₁ + V ₃ , open V ₉
14:00	48.0	0.808	49.0]③	close V ₉ , open V ₁ + V ₃
14:03	403	0.814	401]④	close V ₁ + V ₃ , open V ₉
14:08	48.6	0.827	49.9]④	close V ₇ , pump down by trap
14:13	2.50	0.834	49.9	close V ₉ + V ₁₀ , warm trap
14:18	5.83	0.846	49.9	open V ₁ + V ₃ ; fill SEC to ~ 400 torr
14:20	5.67	0.849	404	close V ₁ + V ₃ , open V ₁₂ + V ₁₃ + V ₁₀ & cool Sm trap

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14:25 Sm. trap cold, open V_{11} , then open V_7 to begin 200 min flow

$P_{\text{sc}} = 412 \text{ torr}$ b4 opening V_7

14:45 Close V_{11} & pump down sm. trap

14:52 Close $V_{12} + V_{13}$; warm sm. trap $P_2 = 0.520 \text{ torr}$

14:55 $P_{\text{sc}} = 118 \text{ torr}$, open $V_1 + V_3$ & fill to $\sim 400 \text{ torr}$

14:56 $P_{\text{sc}} = 427 \text{ torr}$

15:00 Sm. trap warm; open $V_{14} + V_{12}$ then open/close V_{11}
 $P_2 = 7.60 \text{ torr}$ to bring DC up to $\sim 100 \text{ torr}$

~~open
V₁₁~~
~~V₁₂~~
~~V₁₄~~

15:10 $P_2 = 101 \text{ torr}$, Close $V_{12} + V_{14}$

Open V_9 to pump SEC down to $\sim 100 \text{ torr}$

15:15 $P_{\text{sc}} = 102$; close all panel valves + $V_5 + V_7$, then turn off Aux Scroll pump.
* New run start time

Run 640 - LZ tubing

Bias: 15:20 11/20/2020

Start: 15:30 11/20/2020

Stop: 16:10 11/25/2020

11/25/2020 F:11/flush panel and chamber 1111

16:15

DT

Fill chamber to 100 Torr to start background

Run 641 - Background

bias: 16:40 11/25/2020

start: 16:50 11/25/2020

stop:

* How long was scroll pump on?