

6/25/24

9:25 4h 3K + 50mK RuOx are at 3K!
Looking good so I will start the regen.

12:05 Tried to start TES but series arrays were messed up.

Solution: Turn off crate + Tower power supplies.
Stop regulate
Close heat switch
Turn off compressor
Wait until 10 K
Cool back down, reset

6/26/24

Trying to make new projectors using GUI

run 0000 → Test
run 0001 → Noise
run 0002 → Calibration Source

run 0003

7/2/24

Added MKS gauge to calibration source,
pressure range of 1mTorr to 760Torr (ATM)

Controller is MKS Type 116A Baratron

7/3/2024

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Pumped out dead volume region with pfioffer vac.

-MKS reads 680 torr before and 679 torr after.

-Going to lunch ☺ 12:48

-Back from lunch ☺ 2:08, Moment of truth: Pressure ~~was~~ maintained ~~at~~ at 679 torr, window not broken

~~3~~ 3:00 Pumped out dead volume, turned on calibration source pump. Slowly cranked open valve keeping stickmaster closed.

Pressure slowly dropped to ~ 620 mTorr on external gauge while pump read $\sim 1e-8$ (Torr?).

Turned on TES + calibration source and lower energies (Mg K α , Al K α) are now visible as expected.

We are going to close the gate valve to the dead volume so it does not vent if the turbo pump fails.

Happy 4th!

7/8/24

Testing gauge + testing for possible break in calibration source/dead volume window.

Turned off cal source pump, waited 10 minutes.

7/9/24
4pm

Vented calibration source back to atmosphere. Now testing pressure gauge (which read 700 torr while connected) to test its validity.

7/11 Tested leak with leak detector and Helium gas, slight flicker but no decrease. ~~Test~~ Window may be intact ~~!!~~

7/17 Training X-Ray source lines

Pwr → connected

Light → connected

Other Interlock → connected to TES Pirani Gauge

7/18/24 State A: roughly 4 hours of calibration w/ 10keV, 0.05 mA

Calibration holder 1 (see page)
Mg, Al, Si, Cl, K, Ti, Fe, Cu

State B: Took data at → 12keV 0.1mA
6:20 18keV 0.4mA
6:35 18keV 0.6mA

With calibration holder 2 (see page)
Mg, Al, Si, Cl, K, ~~Fe~~ Cu, Zn, Ge

7/19/24 State Start: 4 hours of calibration source 2
18 keV 0.6mA

7/22/24 Run start! Wrote noise to 20240722/0000

run 0001 + run 0002 are garbage

~~run 0003~~
run 0003: start Calibration, 18keV 0.6mA
A ↓

run 0004: Noise with EBIT conditions


run 0005: ~~start~~ start: Cal. 18 ~~keV~~ KV 0.6mA
A: W, 4KV 80mA

7/22/24

run 0006: Start: Calibration 18 keV 0.025 mA
cps ≈ 130

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Cal on for 1 min
off for 4 at an
energy of 18 keV
current 0.025 mA



A: W	4.0 keV 3.96	80 mA	≈ 40 minutes
B: Bkg	4.0 keV	80 mA	
C: Re	4.16 keV 4.16 keV	80 mA	
D: Re	4.40 keV	81 mA	
E: Re	4.62 keV	89 mA	
F: Re	5.00 keV	90 mA	
G: Re	5.30 keV	90 mA	
H: Re	5.70 keV	90 mA	
I: Re	6.00 keV	90 mA	
J: Re	6.30 keV	90 mA	
K: Re	6.6 keV	90 mA	

Note: I forgot to start a new state for
Re 6.9 keV 90 mA; Will work with Galen
to recover/Make a new state.

7/23/24

run 0000

Start: Calibration holder 3 (Zn, Ge, Fe, Sc, V, Mn, Co)
20 keV 0.04 mA

A: ~~W~~ Garbage

B: W 15.6 keV 65. mA } counts very
varied Energy slightly ≈ 50 meV } bad

C: W 4 keV + W 15.6 keV

D: W 15.6 keV 70.5 mA \rightarrow 75.0 mA

Cal 1 min on 4 min off

~~20~~ keV 0.04 mA

15



E Re 16.00 keV 75 mA 7-10 cps/array
 Cal on/off continued.

✓
 19:12 pm → towards the end of E beam was @ 19 keV, 80 mA

F Re 19.00 keV 90 mA 12-18 cps/array

20:39 pm G Os 20 keV 90 mA 20-29 cps/array
 (40 cps) max

22:30 stop collection, turn system off.

7/24/24

Fun0000

10:12 AM

~~START~~ START

15 kV, 0.025 mA calibration holder 3

Note: Temporarily changed 20240723 Experiment state file to workwd
 massgui

11:40 A { calibration 1 min on 4 min off
 20 keV 0.025 mA
 Os 4.3 keV 63 mA ~40 cps
 → 90 mA

3:49 B Ir 4.3 keV 816 mA ~70 cps

~ 5:00 C Calibration Holder 4
 0.04 mA 15 kV cps 400

6:16 D Fe 19.1 keV 100 mA
 cps initially 60, then dropped to 10

End of state D (last 30 seconds)
 contaminated with state E

6:46 E Re at 19.1 keV 90 mA

F

8:09

G Calibration with sample holder 3
 15 kV 0.04 mA

8:42

H Re 19 kV 111 mA

9:30 I Ir 19.1 keV 112.6 mA (20 cps)

↓
Data started earlier;
could alter state
file to compensate.

Slightly contaminated with ~10 s of calibration
at 9:35 P.M.

Afterwards normal calibration of 20 keV 0.04 mA
for 1 min on, 4 min off

11:00 Shutting down EBIT, state stopped.

7/25/24

2:12 State START 15 keV 0.04 mA 270 cps
EBIT Voltages being bled

2:30 State A Os 4.37 keV 20 cps } ~~GATE VALUE~~
85 mA } Gate value
was closed

B Os 4.37 keV 180 cps
85 mA

Note 2:45 Baking coil + E gun tripped, lost
signal for a few minutes.

2:48 started calibration on 1 min off for 4
20 keV 0.025 mA
stopped at 3:27

3:34 C Ir 4.54 keV 85.5 mA 40-50 cps
(~30 later)

4:54 D Re 4.21 keV 85.2 mA ~40 cps

6:08 E W 4.06 keV 85.4 mA ~60-80 cps

8:08 E W 20.06 keV 101.1 mA ~25-30 cps

8:37 G Os 20.06 keV 125.1 mA

Note: 8:50 ish

10:17 I 20 ~~keV~~ keV 0.025 mA
Calibration Holder 3

10:15 H Garbage

07/26

Start ~~was~~ was garbano

Calibration 1:20
 1 min on 4 min off
 20 keV 0.025 mA 1:40



3:15

3:50

4:45

4:55

5:15

5:30

5:44

6:26

7:00

A Calibration 20 keV 0.025 mA

B Os 4.38 keV 90 mA (180 cps)

C Os 4.38 keV 85 mA (160 cps)
(fluctuated 40-160)

D Ir 4.38 keV 85 mA 50 cps

E Ir 4.38 keV 85 mA 50 cps

F Fe 20 keV 100 mA 8 cps

G Fe 4.37 keV 85 mA ^{30x} ~40 cps

H

I

J Fe 9.22 keV 110 mA

K Sample Holder 4
Calibration 20 keV 0.025 mA

L Fe 9.22 keV 91 mA

7:40 MeV/Va Firing rate

N 7:35 ~~Fe~~ calibration changed to
 20 keV 0.05 mA to help
 with drift correction
 time