Accelerator Status

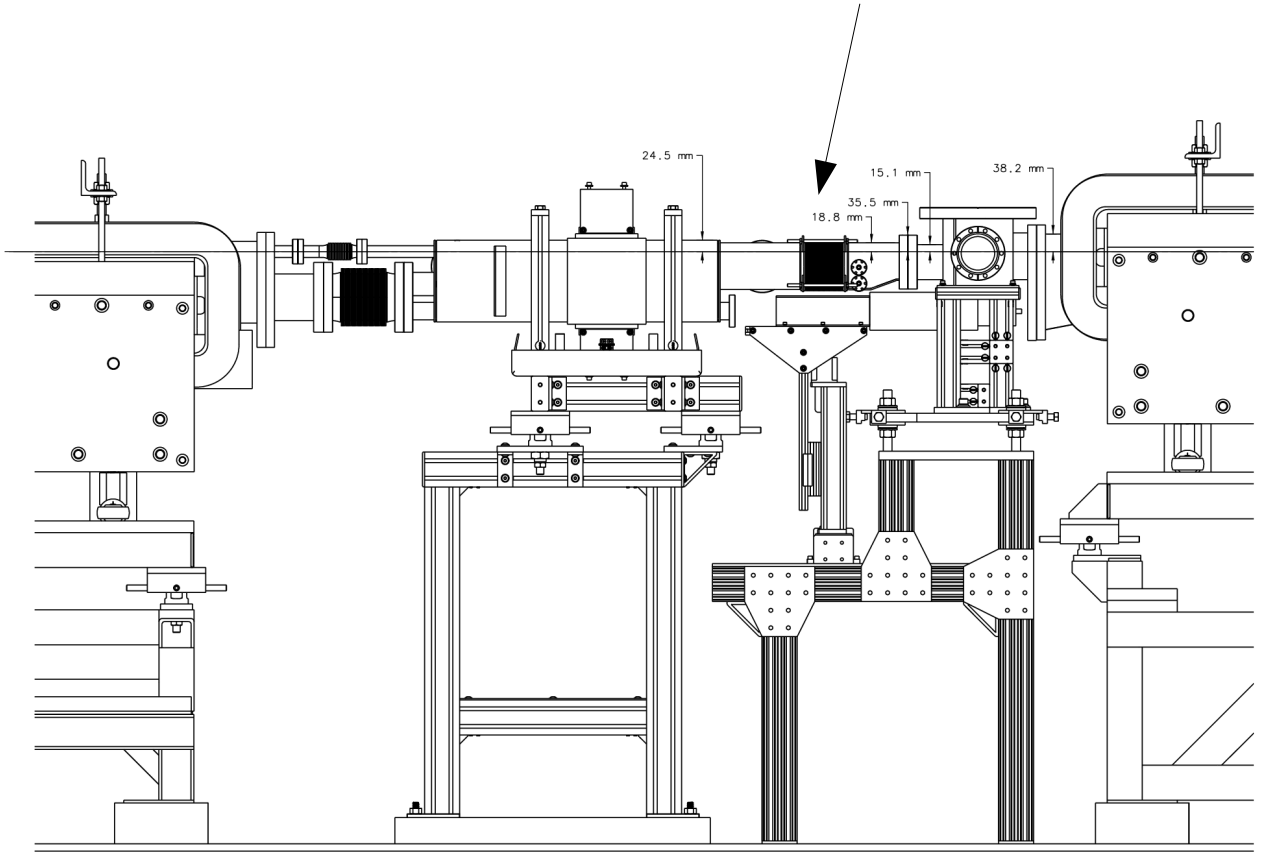
Jay Benesch
for himself, not the Ops Department

Preliminaries

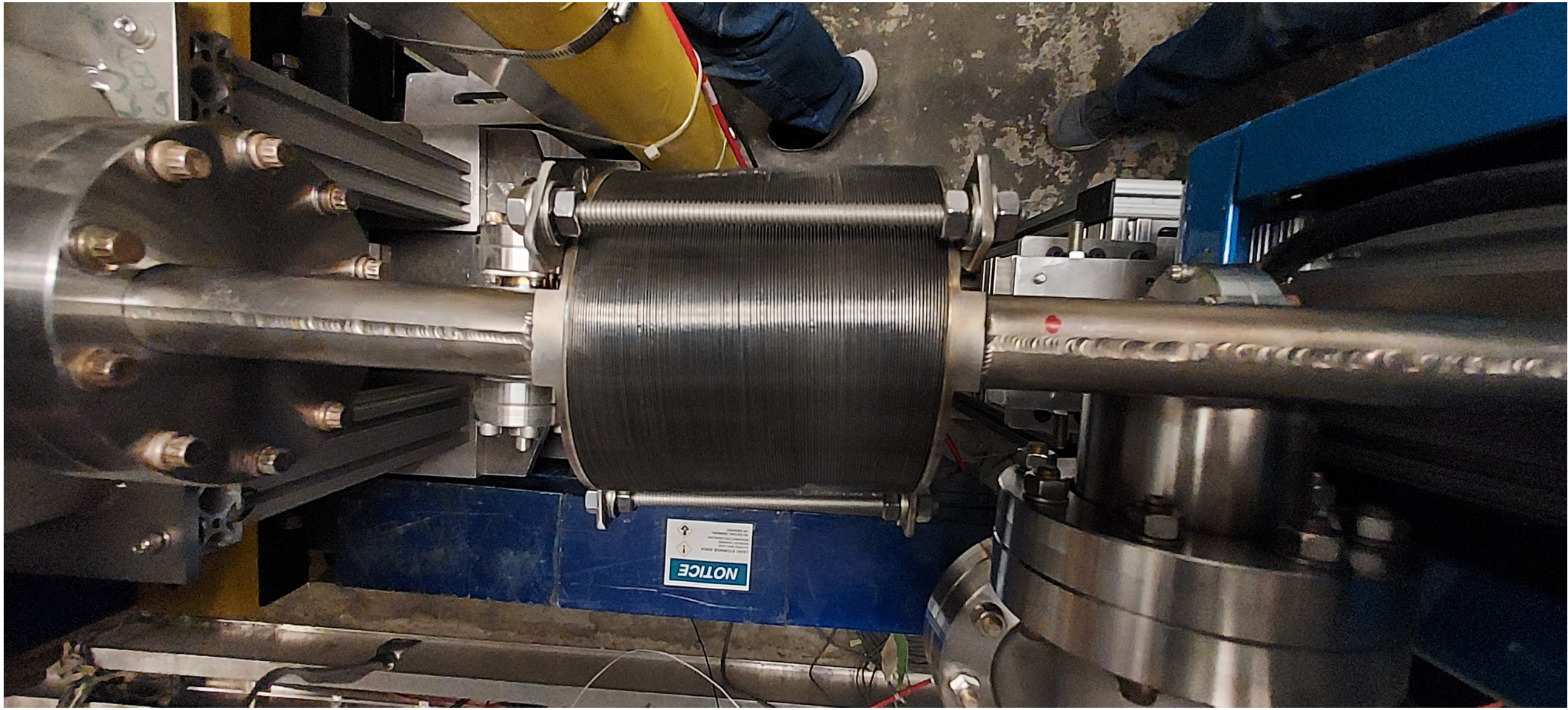
- With three exceptions, all slides are all text. Feel free to sleep.
- I am speaking for myself, not the Ops Department

Activation during energy measurement

Issue was vertical droop at upstream end of this bellows. Survey has worked on it. Now there's a smaller horizontal issue due to flanges not perpendicular to tubes they're welded to. Should suffice as flange issue has always been present.



Bellows



Constraint

Images provided by
Chris Gould via ATLis
108223

Items 1-3

6/1/2022 through 12/19/2022 Hall C was scheduled for 4173 hours of beam. It was up for 1981 hours and received 1693 hours ABU (41%).

CEBAF has delivered reasonably stable beam at the 800 kW level. BLM and RF trips are the limiting factors.

6/1/2022 through 12/19/2022 there were 4608 physics program hours for CEBAF. There were 60935 FSD trips during this period. Of these, 30916 were RF, 51%. There were 18873 BLM trips, 31%. Hours without beam due to trips as logged by Ops systems: 420. Another 300 hours was recorded as beam tuning.

Item 4

It is believed by some in Ops, Jay Benesch among them, that almost all of the BLM trips were inappropriate: the BLM system is reacting to small dp/p changes which cause halo to scrape the wall in a dispersive region but pose no danger to the machine. Given pre- and post-trip data cuts and current ramps, ABU would have increased at least 10% if the BLM trips were eliminated. Much of the beam tuning time would also have vanished. There have been discussions since September with Engineering and when a new Ops Director is on board a system review will likely take place. See TNs 22-042 and 23-002 for BLM sensitivity test results.

Item 5

The linacs are set at 1047 MeV as this provides good polarization to Halls A and B (and C, for 23-24.) This is problematic in the North Linac as one C100 module is missing. During the 2023 SAD this empty slot will be filled with a refurbished module, gain ~90 MeV. SL26 (79 MeV now) will be exchanged for a refurbished module. Plasma processing (300K) will occur on SL 22, 24 and 25 with the goal of gaining 10 MeV each, for a net SL gain ~ 50 MeV including the swap. 1047 MeV/linac will continue through March 2024. Availability should improve but helium leak into 2L07 insulating vacuum space may preclude its use, nulling the SL improvement. See TN-23-004 for details.

Item 6

Phase II of the injector upgrade will take place during the 2023 SAD. The copper capture cavity and the quarter cryomodule will be replaced with the "booster." This incorporates a two-cell β-graded SRF capture cavity and one seven-cell β=1 cavity. The photogun will be replaced and voltage will increase to 200 kV. Three of the six remaining solenoids with large dB_Z/dr will be replaced with new units like those installed during Phase I. The solenoid before the first chopper cavity and the two solenoids which are in the reentrant portions of the chopper vacuum vessel will not be replaced at this time but new units are on the shelf if problems arise at 200 kV KE with the old ones. A significant section of the West Arc must be removed to effect the swap of the Booster for the quarter cryomodule, limiting other Installation work.

Item 7

Attempts will be made through March to increase stable beam power in CEBAF. The FSAD was revised in October to allow 1100 kW beam delivery with 1300 kW the DOE limit. The intermediate heat exchanger in the beam dump water circuit has a plate rating of 1100 kW. It is hoped that RF and SRF work during the SAD will allow the full 1100 kW to be delivered.

Item 8

Operations Group morale has been impacted by HR's reclassification of most crew chiefs as non-exempt. Elimination of the AC category put Ops folk into the Technician category with inappropriate years of experience needed for promotion from operator to crew chief. Inability to staff shifts could have a significant impact on CEBAF operations in 2023. Randy Michaud has been working with HR on both interim and long term solutions and progress is being made.

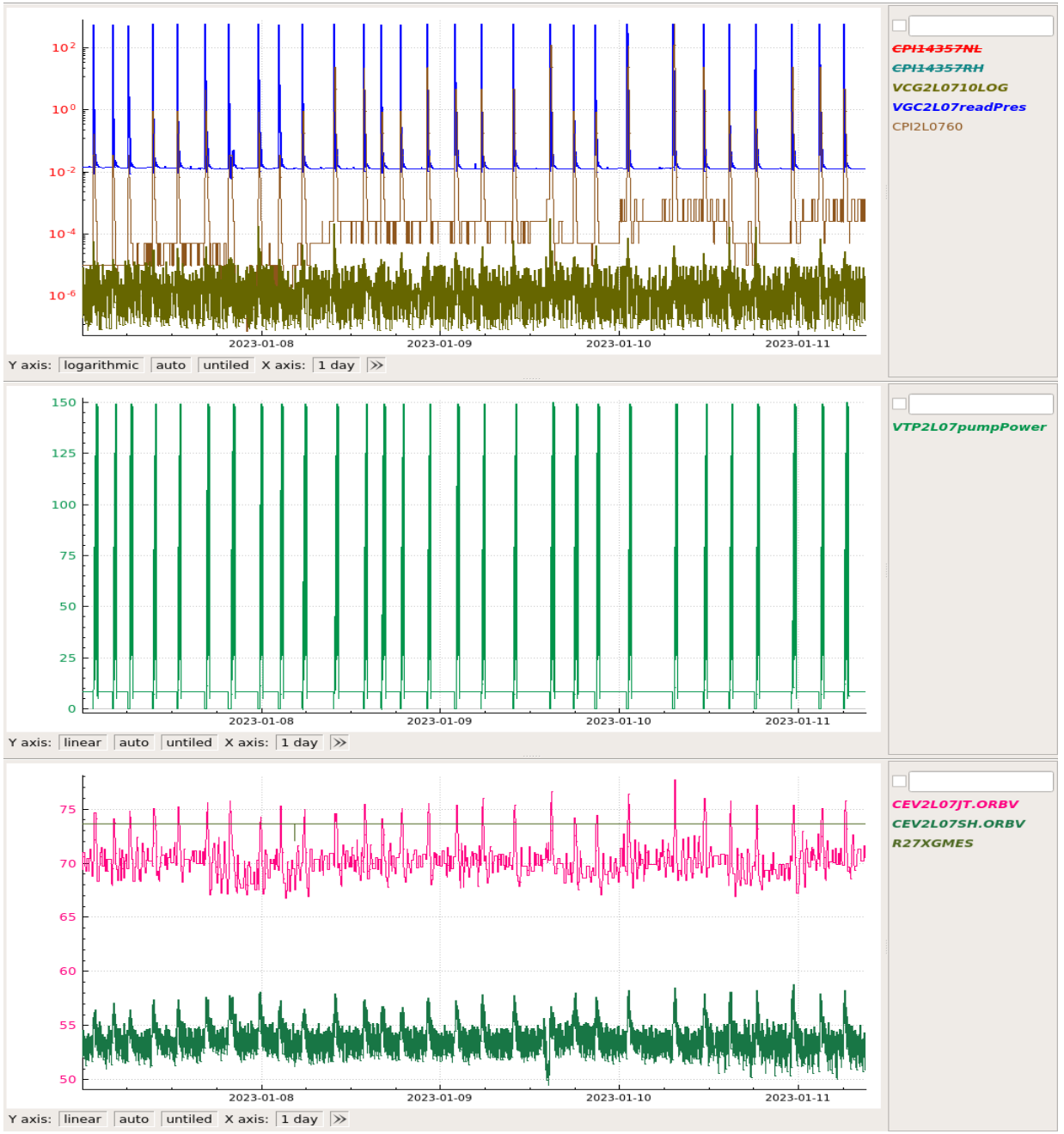
Items 9 and 10

Positron working group expects to complete a pre-CDR in FY23. If funding permits, a polarized positron beam within LERF about three years later. No connection to CEBAF until after MOLLER.

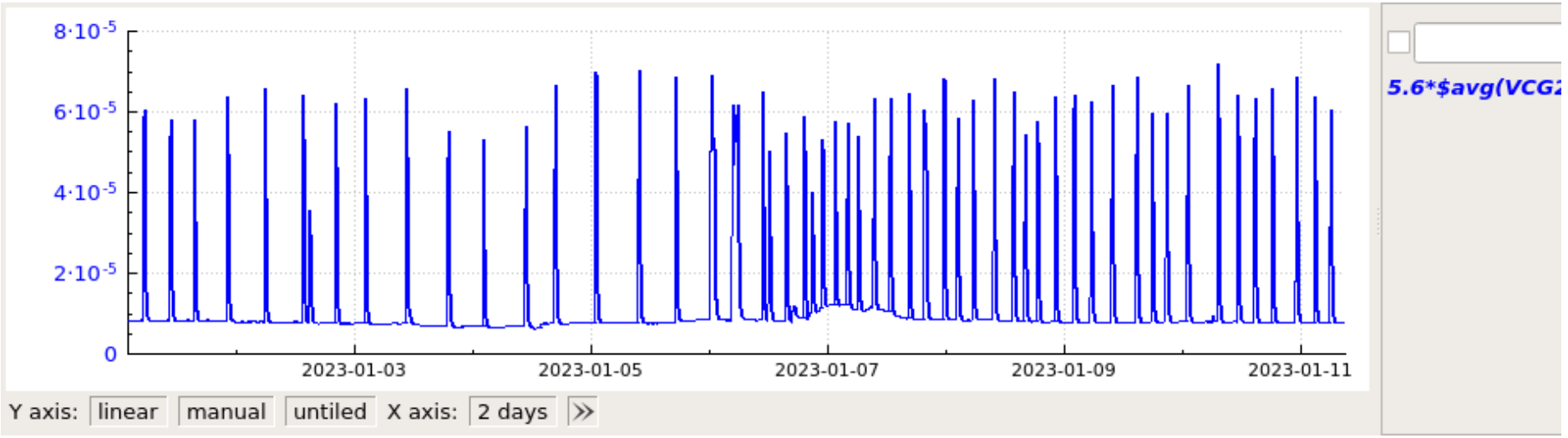
FFA working group expects to complete a pre-CDR in FY24.

Questions?

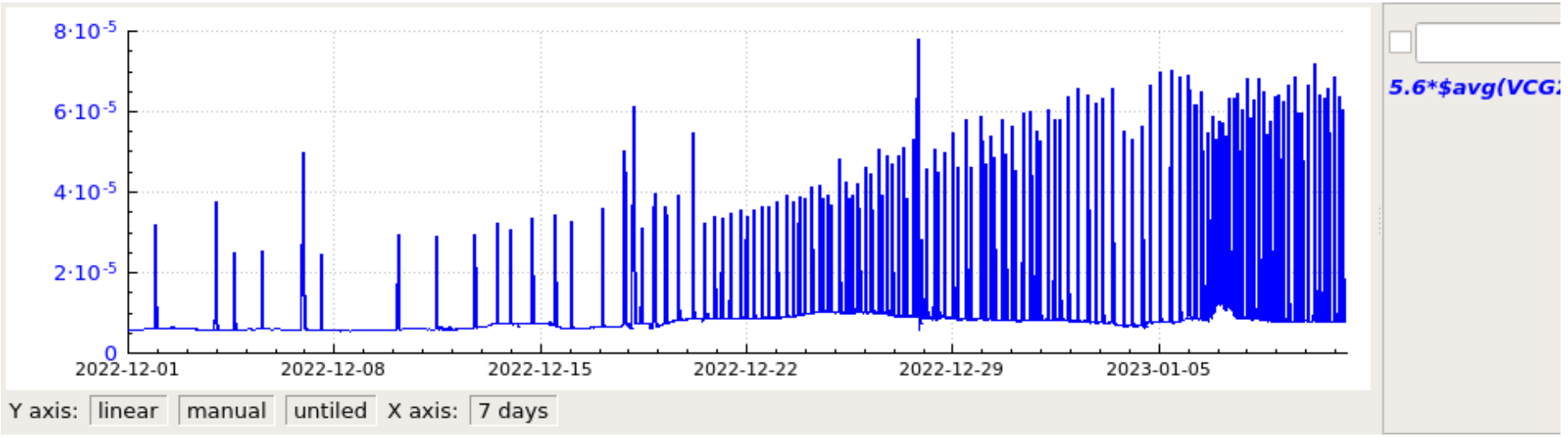
2L07 Vacuum issue



Cold cathode gauge corrected for He



since 1 January



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