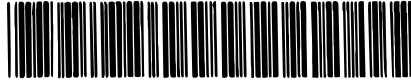


Miss L. Scarffe

ISR-RF/WS/mh

CERN LIBRARIES, GENEVA

August 23, 1971



CM-P00072639

ISR RUNNING-IN

Run 102.

Stacking at 1.6 s cycle time to high currents.

22 GeV, 20 bunches, Ring 1.

Working line 22 FA

VG 349.7 with 1.5×10^{-6} torr f.s- recorded with PIDC (this was not the location of highest pressure, though).

At first there were difficulties with normal (longit. phase plane) saturation, at least partly due to lowish PS intensity. This was removed after stack 4 (incl.) by going to

13 Hz increments

1.2 k V final voltg

-11 mm scragger position (plus inflector correspondingly inwards)

+ 40,5 mm nominal top of stack.

No filter output was seen for a while, but strong hariz. filter output did appear during the last two or three stacks (why?).

Stack 2 Normal saturation at 6.2A plateau at 6,1A for 1,6 min (Fig.1). During this, pressure at VG 349.7 continued to rise almost linearly in log, scale, with

$$p/p = 2 \text{ min}^{-1}$$

This indicates that at 6.1A we are near the critical current I_c for $p \rightarrow \infty$, in that location. Figs 2, 3, 4: pressures $\geq 10^{-8}$ torr during plateau. plateau ends with clearing off in A3.

Stack 3 shows $\sim 2 \times 10^{-3}$ min for about 10 min at $\sim 5,5A$. Fig 5: pressure $\geq 10^{-8}$ torr during that time.

Stack 4 (Fig. 6) reached 6.9A, then clearing in A3 off, stacking-down.

Stack 5 0,8 min plateau at 6,0A, p/p decreasing slowly, confirming $I_c > 6.0A$.

Stacks 7 and 8 stacking-downs suddenly starts at 6.7 resp. 6,5A although clearing stays on (I believe obtained by paralleling 2 supplies in A3).

./..

Stack 9 (Fig.7) very short plateau (20s) at 6.1A, although clearing stays on, ± 20 mm. beam height measured with beam probes after decay to 5,4A. Fig. 8: pressures $\geq 10^{-8}$ torr around max. current.

Conclusions :

6.9A can be reached

Stable plateau at 6.0 to 6.1A can be obtained until the pressure rise catches up with intensity, but only near the beginning of the run.

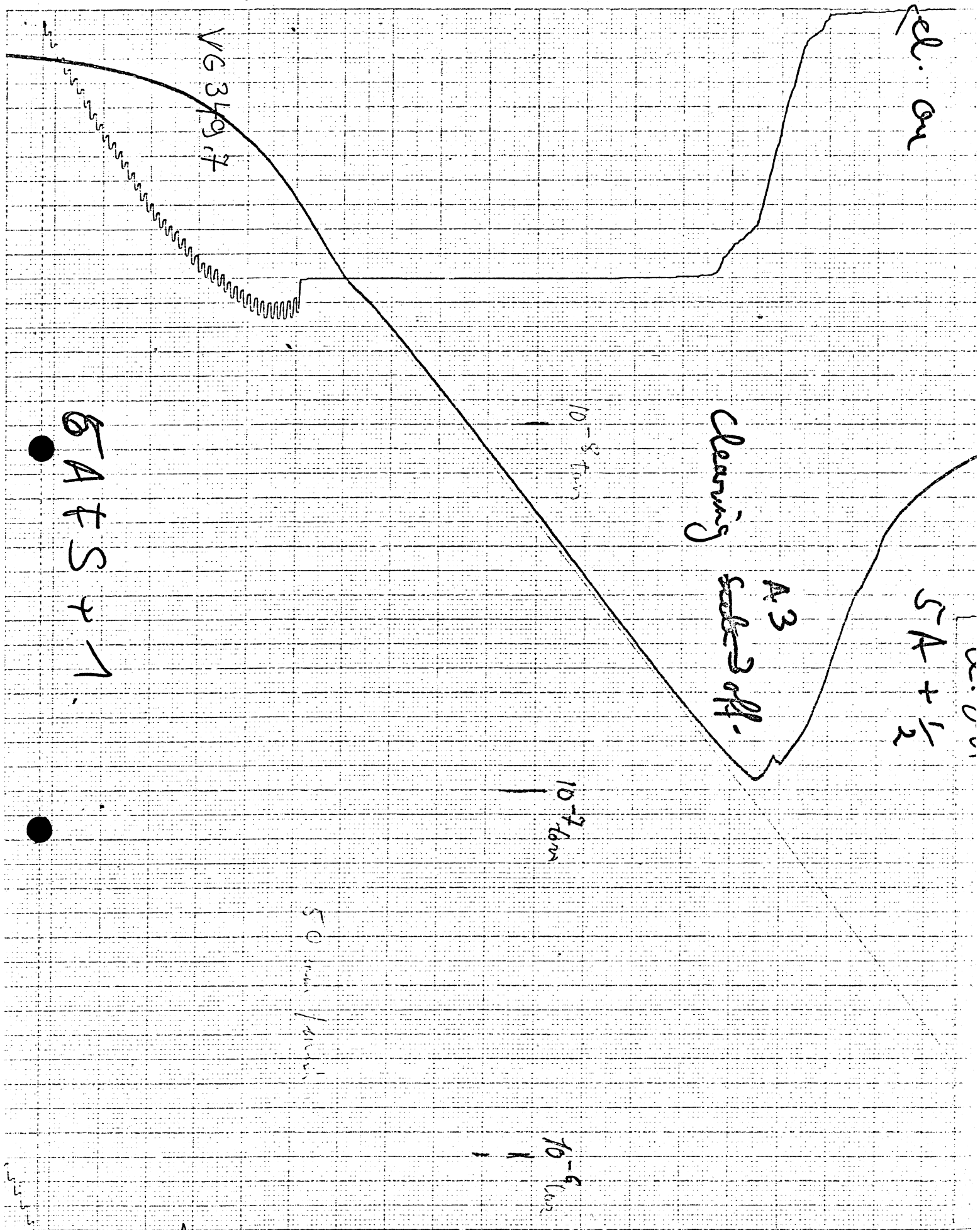
The critical current at which the pressure riser towards infinity now seems to be at 6.1A in ss 349.

W. Schnell

Distribution:

Prof. K. Johnsen
ISR Group Leaders
Running-in Committee
Engineers-in-Charge

el. ou



LSVG(ISR,1.0E+4)

--- PRESSURE AND STATUS OF ULTRA-HIGH VACUUM GAUGES ---
-- IN TORR --

--- BEAM CURRENT: I1 = 6.070 A I2 = 0.007 A ---

TIME: 13H 42M 54S DATE: 1971-08-19

LSVG(ISR,1.0E+4)

--- PRESSURE AND STATUS OF ULTRA-HIGH VACUUM GAUGES ---
-- IN TORR --

--- BEAM CURRENT: I1 = 6.245 A I2 = 0.005 A ---

TIME: 13H 43M 14S DATE: 1971-08-19

LSVG(ISR,1.0E+4)

--- PRESSURE AND STATUS OF ULTRA-HIGH VACUUM GAUGES ---
-- IN TORR --

.. SECTOR 11
VG149.1 VG149.6
4.56E-08 5.14E-08

.. SECTOR 30
VG317.1
2.86E-08

.. SECTOR 31
VG317.6 VG349.1 VG349.7
2.42E-08 1.09E-08 1.18E-08

--- BEAM CURRENT: I1 = 6.100 A I2 = 0.000 A ---

TIME: 13H 43M 52S DATE: 1971-08-19

LSVG(ISR,1.0E+4)

--- PRESSURE AND STATUS OF ULTRA-HIGH VACUUM GAUGES ---
-- IN TORR --

.. SECTOR 11
VG149.1 VG149.6
1.83E-07 1.52E-07

.. SECTOR 30
VG317.1 VG317.1
1.45E-08 1.03E-07

.. SECTOR 31
VG317.6 VG349.1 VG349.7
7.95E-08 2.15E-08 2.51E-08

.. SECTOR 81

Fig 3

SECTOR 11
VG149.1 VG149.6

4.55E-08 5.14E-08

SECTOR 30

VG317.1
2.86E-08

SECTOR 31

VG317.6 VG349.1 VG349.7
2.42E-08 1.09E-08 1.18E-08

--- BEAM CURRENT: I1 = 6.100 A I2 = 0.000 A ---

TIME: 13H 43M 52S DATE: 1971-08-19

LSVG(ISR,1.0E+4)

--- PRESSURE AND STATUS OF ULTRA-HIGH VACUUM GAUGES ---
-- IN TORR --

SECTOR 11

VG149.1 VG149.6
1.83E-07 1.62E-07

SECTOR 30

VG313 VG317.1
1.48E-08 1.03E-07

SECTOR 31

VG317.6 VG349.1 VG349.7
7.95E-08 2.15E-08 2.51E-08

SECTOR 81

VG817
1.44E-08

--- BEAM CURRENT: I1 = 6.100 A I2 = 0.011 A ---

TIME: 13H 44M 13S DATE: 1971-08-19

LSVG(ISR,1.0E+4)

--- PRESSURE AND STATUS OF ULTRA-HIGH VACUUM GAUGES ---
-- IN TORR --

SECTOR 11

VG141 VG149.1 VG149.6
1.28E-08 5.79E-07 4.75E-07

SECTOR 30

VG309 VG313 VG317.1
2.03E-08 4.94E-08 3.99E-07

SECTOR 31

VG317.6 VG325 VG349.1 VG349.7
2.95E-07 2.83E-08 3.89E-08 4.75E-08

SECTOR 81

VG817
2.03E-08

--- BEAM CURRENT: I1 = 6.095 A I2 = 0.007 A ---

TIME: 13H 44M 33S DATE: 1971-08-19

Fig 7

VG317.6 VG349.1 VG349.7
7.95E-08 2.15E-08 2.51E-08

.. SECTOR 81
VG817
1.44E-08

--- BEAM CURRENT: I1 = 6.100 A I2 = 0.011 A ---

TIME: 13H 44M 13S DATE: 1971-08-19

LSVG(ISR,1.0E+4)

--- PRESSURE AND STATUS OF ULTRA-HIGH VACUUM GAUGES ---
-- IN TORR --

.. SECTOR 11
VG141 VG149.1 VG149.6
1.28E-08 5.79E-07 4.75E-07

.. SECTOR 30
VG309 VG313 VG317.1
2.03E-08 4.94E-08 3.99E-07

.. SECTOR 31
VG317.6 VG325 VG349.1 VG349.7
2.95E-07 2.83E-08 3.89E-08 4.75E-08

.. SECTOR 81
VG817
2.03E-08

--- BEAM CURRENT: I1 = 6.095 A I2 = 0.007 A ---

TIME: 13H 44M 33S DATE: 1971-08-19

LSVG(ISR,1.0E+4)

--- PRESSURE AND STATUS OF ULTRA-HIGH VACUUM GAUGES ---
-- IN TORR --

.. SECTOR 11
VG141 VG149.1 VG149.6
3.40E-08 1.62E-06 1.26E-06

.. SECTOR 20
VG161
1.48E-08

.. SECTOR 30
VG305 VG309 VG313 VG317.1
2.03E-08 6.95E-08 2.58E-07 2.35E-06

.. SECTOR 31
VG317.6 VG325 VG349.1 VG349.7
2.04E-08 1.56E-07 6.68E-08 8.83E-08

.. SECTOR 51
VG549.1
2.27E-08
.. SECTOR 81
VG817
2.68E-08

--- BEAM CURRENT: I1 = 6.090 A I2 = 0.004 A ---

TIME: 13H 44M 53S DATE: 1971-08-19

Fig 5

LSVG(ISR,1.0E+4)

--- PRESSURE AND STATUS OF ULTRA-HIGH VACUUM GAUGES ---
-- IN TORR --

.... SECTOR 11
VG149.1 VG149.6
4.75E-08 5.06E-08
.... SECTOR 30
VG313
1.45E-08
.... SECTOR 31
VG317.6
4.75E-08

--- BEAM CURRENT: I1 = 5.495 A I2 = 0.000 A ---

TIME: 14H 19M 10S DATE: 1971-08-19

LSVG(ISR,1.0E+4)

--- PRESSURE AND STATUS OF ULTRA-HIGH VACUUM GAUGES ---
-- IN TORR --

.... SECTOR 11
VG149.1 VG149.6
5.14E-08 4.87E-08
.... SECTOR 30
VG313
1.37E-08
.... SECTOR 31
VG317.6
4.56E-08

--- BEAM CURRENT: I1 = 5.490 A I2 = 0.005 A ---

TIME: 14H 19M 34S DATE: 1971-08-19

LSVG(ISR,1.0E+4)

--- PRESSURE AND STATUS OF ULTRA-HIGH VACUUM GAUGES ---
-- IN TORR --

.... SECTOR 11
VG149.1 VG149.6
4.94E-08 5.27E-08
.... SECTOR 30
VG313
1.31E-08
.... SECTOR 31
VG317.6
4.38E-08

--- BEAM CURRENT: I1 = 5.490 A I2 = 0.011 A ---

TIME: 14H 19M 53S DATE: 1971-08-19

Fig 6

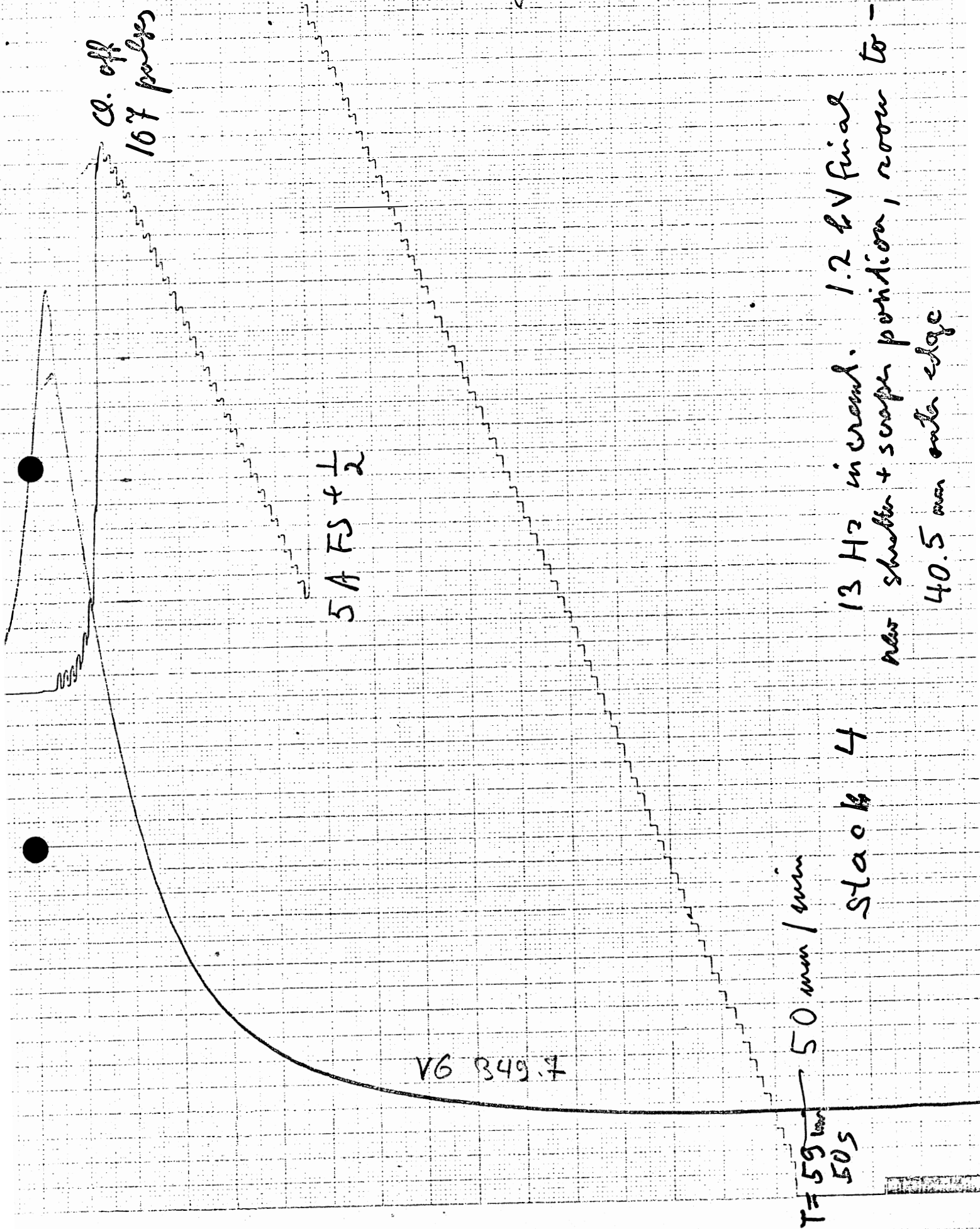


Fig 7

Fig 7

10-8 to m

10-7

ce

stack 9

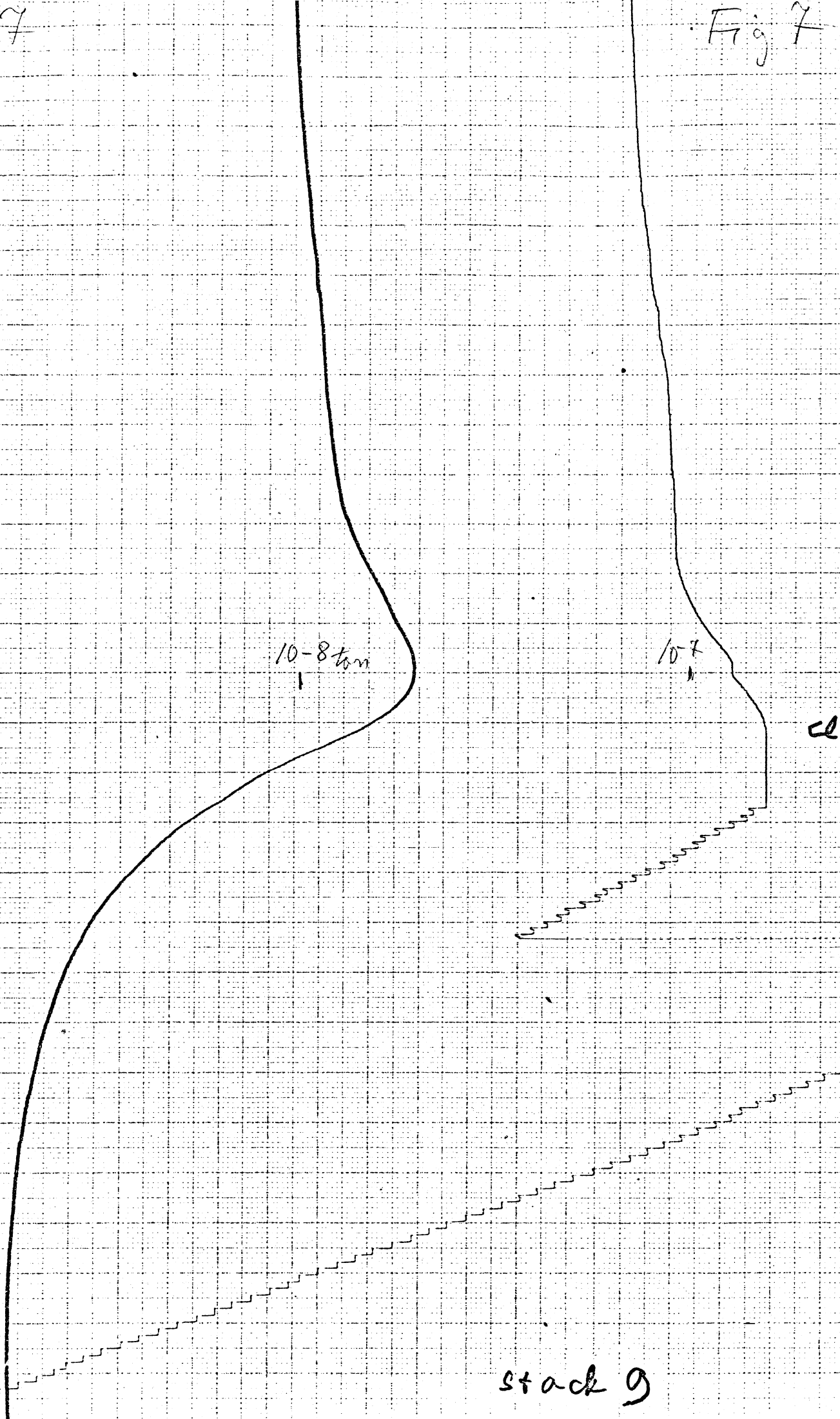


Fig. 8

CTOR 30
VG309 VG313
1.54E-08 3.54E-08

CTOR 31
VG317.6 VG325 VG349.1 VG349.7
1.69E-07 2.42E-08 1.44E-08 1.60E-08
CTOR 71
VG729 VG733.1 VG733.6
1.62E-08 6.59E-08 1.06E-07

--- BEAM CURRENT: I1 = 6.070 A I2 = 0.082 A ---

TIME: 16H 1M 3S DATE: 1971-08-19

*max
6.1A needed*

LSVG(ISR,1.0E+4)

--- PRESSURE AND STATUS OF ULTRA-HIGH-VACUUM GAUGES ---
-- IN TORR --

CTOR 30
VG309 VG313
2.11E-08 5.93E-08

CTOR 31
VG317.6 VG325 VG349.1 VG349.7
2.51E-07 3.45E-08 1.67E-08 1.67E-08

CTOR 51
VG549.1
1.14E-08 *--- Sector 51 !*

CTOR 71
VG729 VG733.1 VG733.6
2.23E-08 5.93E-08 1.35E-07

--- BEAM CURRENT: I1 = 5.990 A I2 = 0.080 A ---

TIME: 16H 1M 23S DATE: 1971-08-19

LSVG(ISR,1.0E+4)

--- PRESSURE AND STATUS OF ULTRA-HIGH VACUUM GAUGES ---
-- IN TORR --

CTOR 30
VG309 VG313
1.80E-08 4.49E-08

CTOR 31
VG317.6 VG325 VG349.1 VG349.7
1.72E-07 2.83E-08 1.28E-08 1.23E-08

CTOR 71
VG729 VG733.1 VG733.6
1.26E-08 2.90E-08 6.59E-08

--- BEAM CURRENT: I1 = 5.780 A I2 = 0.080 A ---

TIME: 16H 1M 43S DATE: 1971-08-19

LSVG(ISR,1.0E+4)

--- PRESSURE AND STATUS OF ULTRA-HIGH VACUUM GAUGES ---