

ANSALDO SUPERCONDUTTORI

LHC - Cold masses: HELIUM MASS SPECTROMETER LEAK TEST REPORT

ITP Nr. 23-24

2012

Cold Mass Nr.

casella predefinita / pre-setting
compiare le caselle / fill in box
risultati nelle caselle / result

Step Nr.

1

2

3

4

Volume / Volume to be tested

CM -> Vacuum

CM -> cold bore tubes

CM -> Heat Exch.

Heat Exch -> Vacuum

conc. He nelle linee di test (100%) / Volum. fraction of tracer gas in the injection envelope

C

C

C

C

Fuga calibrata / Calibrated leak parameter

Calibrated leak N°

4011007195

4011007225

4011007225

4011007195

Data calibr. / calibration date

08/10/02

08/10/02

08/10/02

08/10/02

Temp. calibrazione fuga / Calibration Temp.

23.0 °C

23.0 °C

23.0 °C

23.0 °C

Valore fuga nom. / Calibrated leak nom. value

3.00E-08 mbar l s-1

3.30E-08 mbar l s-1

3.30E-08 mbar l s-1

3.00E-08 mbar l s-1

Calibrazione del sistema / System calibration

T ambiente / Test temp.

21.8 °C

21.8 °C

21.8 °C

22.5 °C

Fuga calibrata con correz. T ed età / Size of calib. leak after corr. for ageing and T)

2.87E-08 mbar l s-1

3.16E-08 mbar l s-1

3.16E-08 mbar l s-1

2.95E-08 mbar l s-1

Segnale residuo prima delle misure di SFR / Residual signal prior SFR meas.

1.15E-08 mbar l s-1

5.52E-10 mbar l s-1

2.46E-10 mbar l s-1

1.15E-08 mbar l s-1

Segnale del LD / Signal given by the calibrated leak

4.12E-08 mbar l s-1

3.35E-08 mbar l s-1

3.86E-08 mbar l s-1

4.12E-08 mbar l s-1

Min. dev. segnale (=2x amp. segn. residuo) / Smallest read. signal dev. (= 2 x ampl. of RFR noise)

2.00E-10 mbar l s-1

2.00E-12 mbar l s-1

2.00E-12 mbar l s-1

2.00E-10 mbar l s-1

Tempo di attesa stabiliz. segnale / Time to achieve stabilised leak signal

180 sec

180 sec

180 sec

180 sec

SENSIBILITA' DEL TEST / Sensitivity of the leak test

$$= S_m \frac{q_{FR}}{S_{FR} - R_{FR}} \frac{1}{C}$$

1.94E-10 mbar l s-1

1.92E-12 mbar l s-1

1.65E-12 mbar l s-1

1.98E-10 mbar l s-1

Condizioni del test / Leak test conditions

Pressione del sistema / System pressure

6.50E-05 mbar

mbar

mbar

7.00E-05 mbar

Conc. He nelle linee di test (100%) / Volumetric fraction of tracer gas in the injection envelope

1

1

1

1

Segnale residuo del cercalughe ad inizio test / Residual signal prior to SF measurement

1.15E-08 mbar l s-1

5.88E-10 mbar l s-1

2.44E-10 mbar l s-1

8.30E-09 mbar l s-1

Segnale del LD a fine test / Signal given by the leak after 30 min. (>3l)

1.25E-08 mbar l s-1

5.98E-10 mbar l s-1

2.45E-10 mbar l s-1

8.19E-09 mbar l s-1

$$= \frac{q_{FR}}{S_{FR} - R_{FR}} \frac{(S_{FR} - R_{FR})}{C} \frac{1}{C}$$

9.68E-10 mbar l s-1

7.68E-12 mbar l s-1

8.24E-13 mbar l s-1

< 1.0E-09 mbar l s-1

VALORE DI RIFERIMENTO / REF. VALUE (MAX)

1.00E-09

1.00E-10

1.00E-05

1.00E-09

CONFORMANCE

YES

YES

YES

YES

Doc. di riferimento / Ref. documents

CERN contract number: F302/LHC/LHC

CERN technical spec.: LHC MMS-98-198 rev.2

Leak test procedure (Ref. N°, Revision): 780RM09442 rev.0

Strumentazione / Test equipment

Helium Mass Spectrometer type: PFEIFFER HLT 260

Pressure gauge type: PFEIFFER PKR 251

Turbo pump type: LEYBOLD PT 360

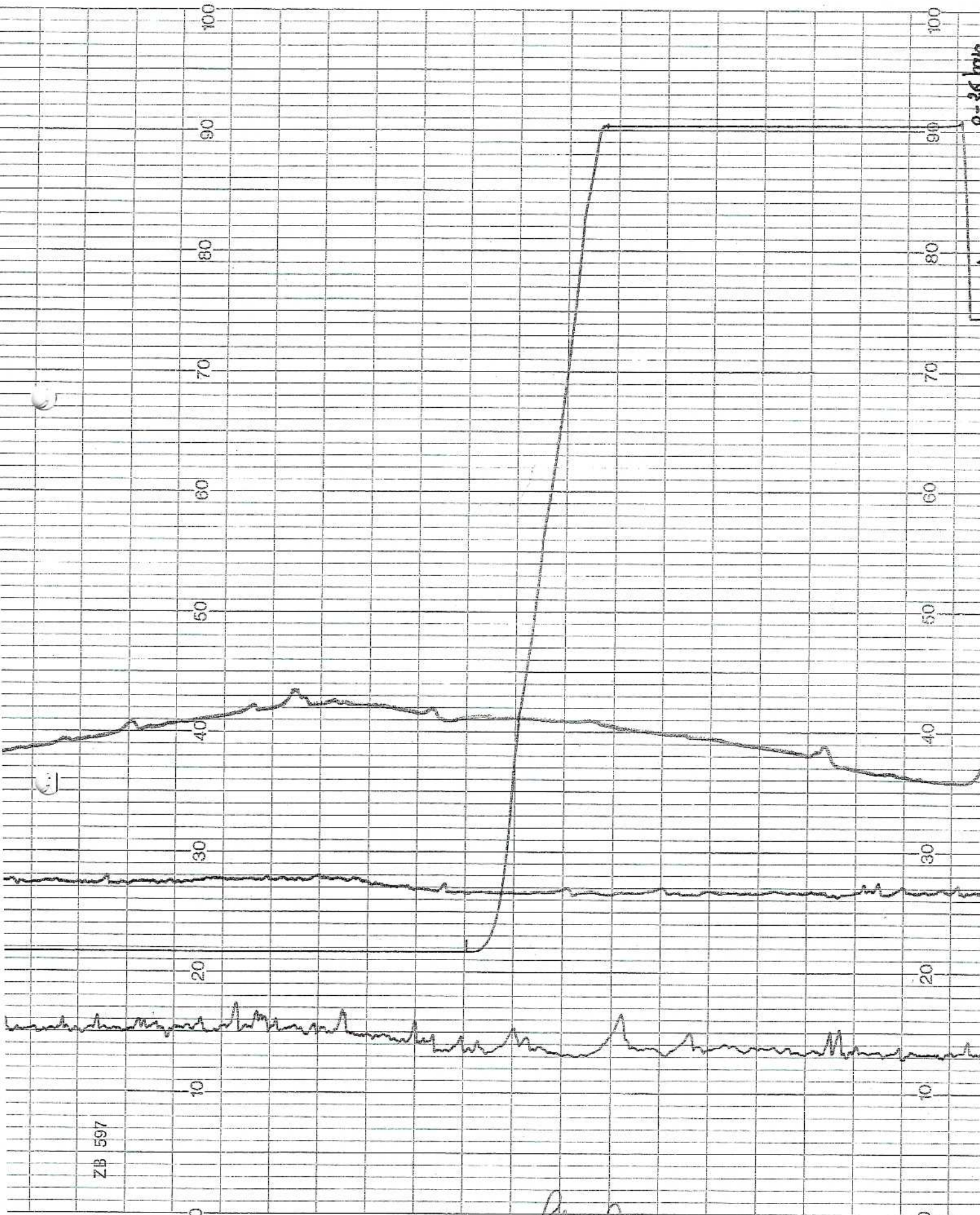
Remarks

01-04-03
Dell

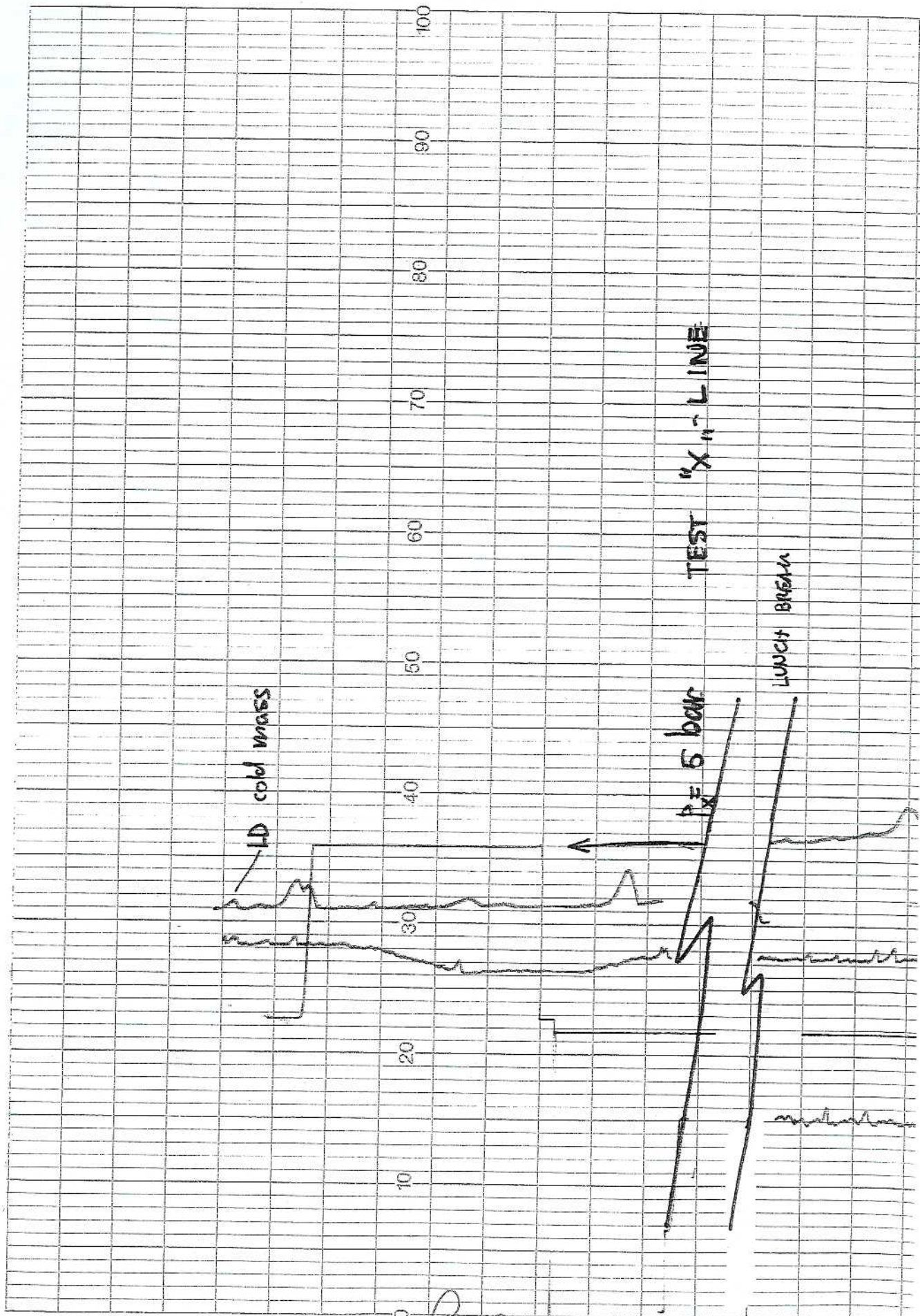


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