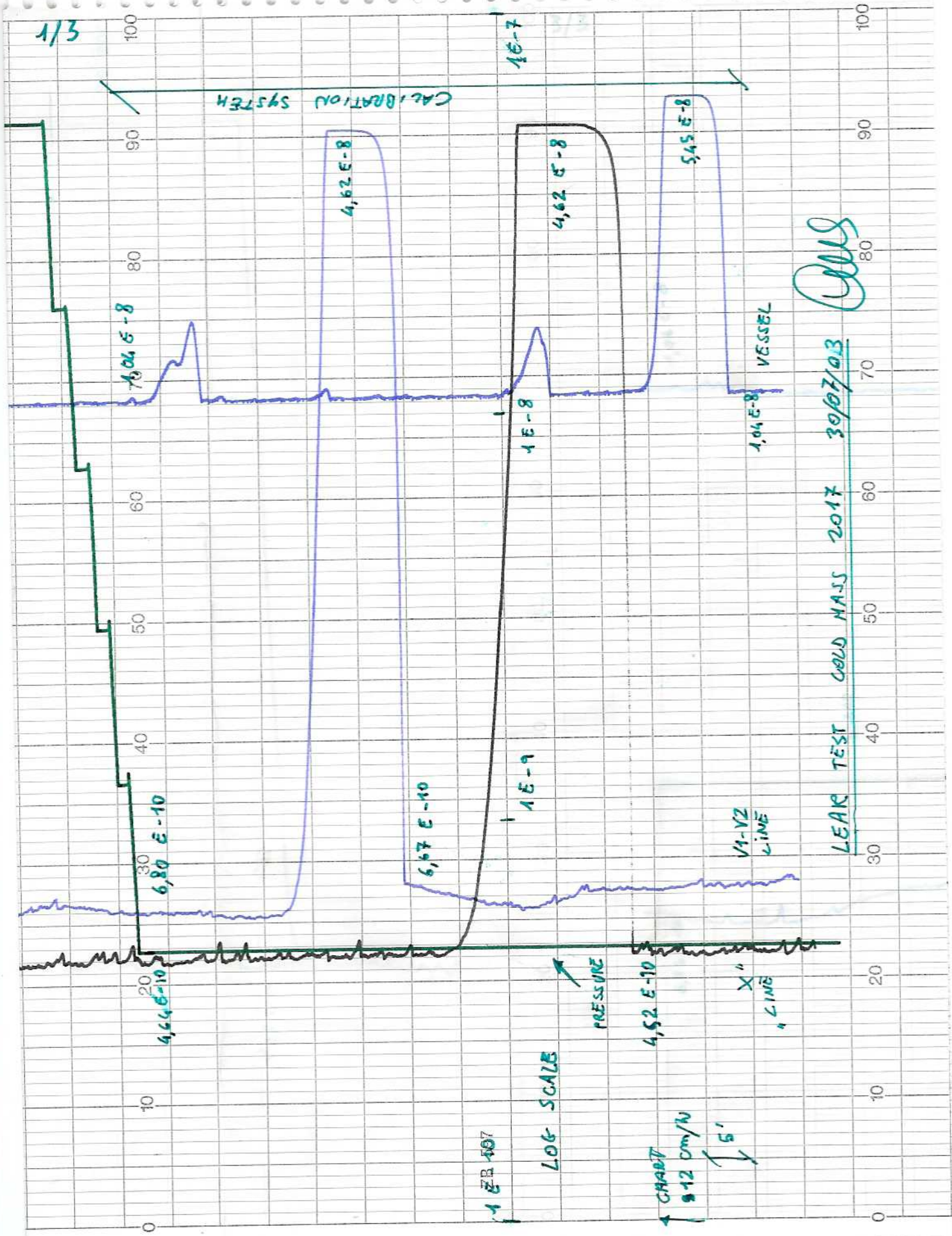


<b>Cold Mass Nr.</b> 2017		<b>Step Nr.</b> 1	<b>Heat Exch -&gt; Vacuum</b> 4
<b>Volume / Volume to be tested</b> CM -> Vacuum		<b>CM -&gt; Heat Exch.</b> 3	<b>Heat Exch -&gt; Vacuum</b> 4
<b>Fuga calibrata / Calibrated leak parameter</b>			
Calibrated leak N°:	4011007195	4011007225	4011007195
Data calibr. / calibration date	08/10/02	08/10/02	08/10/02
Temp. calibrazione fuga / Calibration Temp.	23,0 °C	23,0 °C	23,0 °C
Valore nom. fuga calibrata / Calibrated leak nom. value	3,00E-08 mbar l s-1	3,30E-08 mbar l s-1	3,00E-08 mbar l s-1
<b>Calibrazione del sistema / System calibration</b>			
Conc. He nelle linee di test (100%) / Volumetric fraction of tracer gas in the injection envelope			
T ambiente / Test temp.	31,0 °C	31,0 °C	34,0 °C
Fuga calibrata con correz. T ed età / Size of calib. leak after corr. for ageing and T)	3,84E-08 mbar l s-1	4,22E-08 mbar l s-1	4,16E-08 mbar l s-1
Segnale residuo prima delle misure di SFR / Residual signal prior SFR meas.	1,04E-08 mbar l s-1	6,67E-10 mbar l s-1	1,04E-08 mbar l s-1
Segnale del LD / Signal given by the calibrated leak	5,45E-08 mbar l s-1	4,62E-08 mbar l s-1	5,45E-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-10 mbar l s-1
Tempo di attesa stabiliz. segnale / Time to achieve stabilised leak signal	180 sec	180 sec	180 sec
<b>SENSIBILITA' DEL TEST / Sensitivity of the leak test</b>	$= \frac{q_{FR}}{S_m - R_{FR}} \cdot \frac{1}{C}$	<b>1,86E-12</b> mbar l s-1	<b>1,88E-10</b> mbar l s-1
<b>Condizioni del test / Leak test conditions</b>			
Pressione del sistema / System pressure	P	9,90E-05 mbar	9,90E-05 mbar
Segnale residuo dei cercatughe ad inizio test / Residual signal prior to SF measurement	R <sub>F</sub>	1,04E-08 mbar l s-1	1,05E-08 mbar l s-1
Segnale del LD a fine test / Signal given by the leak after 30 min. (>3)	S <sub>F</sub>	1,05E-08 mbar l s-1	1,06E-08 mbar l s-1
<b>CALCOLO DELLA FUGA / Leak evaluation</b>	$= \frac{q_{FR} (S_F - R_{FR})}{S_{FR} - R_{FR}} \cdot \frac{1}{C}$	<b>8,71E-11</b> mbar l s-1	<b>9,42E-11</b> mbar l s-1
<b>VALORE DI RIFERIMENTO / REF. VALUE (MAX)</b>		1,0E-09 mbar l s-1 at 26 bar	1,0E-09 mbar l s-1 at 5 bar
CONFORMANCE		YES	YES
<b>Doc. di riferimento / Ref. documents</b>			
CERN contract number: F302/LHC/LHC			
CERN technical spec.: LHC MMS-98-198 rev.2			
Leak test procedure (Ref. N°: Revision): 780R/08442 rev.0			
<b>Strumentazione / Test equipment</b>			
Helium Mass Spectrometer type:			
Pressure gauge type:			
Pumping group:			
<b>Prepared by: Name / Date</b>	Casazza - 30/07/03	<b>on vessel</b>	PFEIFFER HLT 260 full range compact PFEIFFER PKR 251 turbo pump LEYBOLD PT 360 l/s rotary vane pump PFEIFFER DUO 65 m3/h
<b>Approved by: Name / Date</b>	Terzi - 30/07/03	<b>on c.b.t. lines</b>	PFEIFFER HLT 260 rotary vane pump PFEIFFER DUO 20 m3/h
<b>Checked by: Name / Date</b>	P. Gagliardi - 30/07/2003	<b>on heat exchanger line</b>	PFEIFFER HLT 260 rotary vane pump PFEIFFER DUO 20 m3/h
<b>Checked at CERN by / Signature / Date</b>			
<b>Note / Remarks</b>			
Test performed after welding of flange (Ø100) about the capillary tube cold head, installed on the top of the cold mass			



QMS

LEAK TEST COLD MASS 2017 30/07/03

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