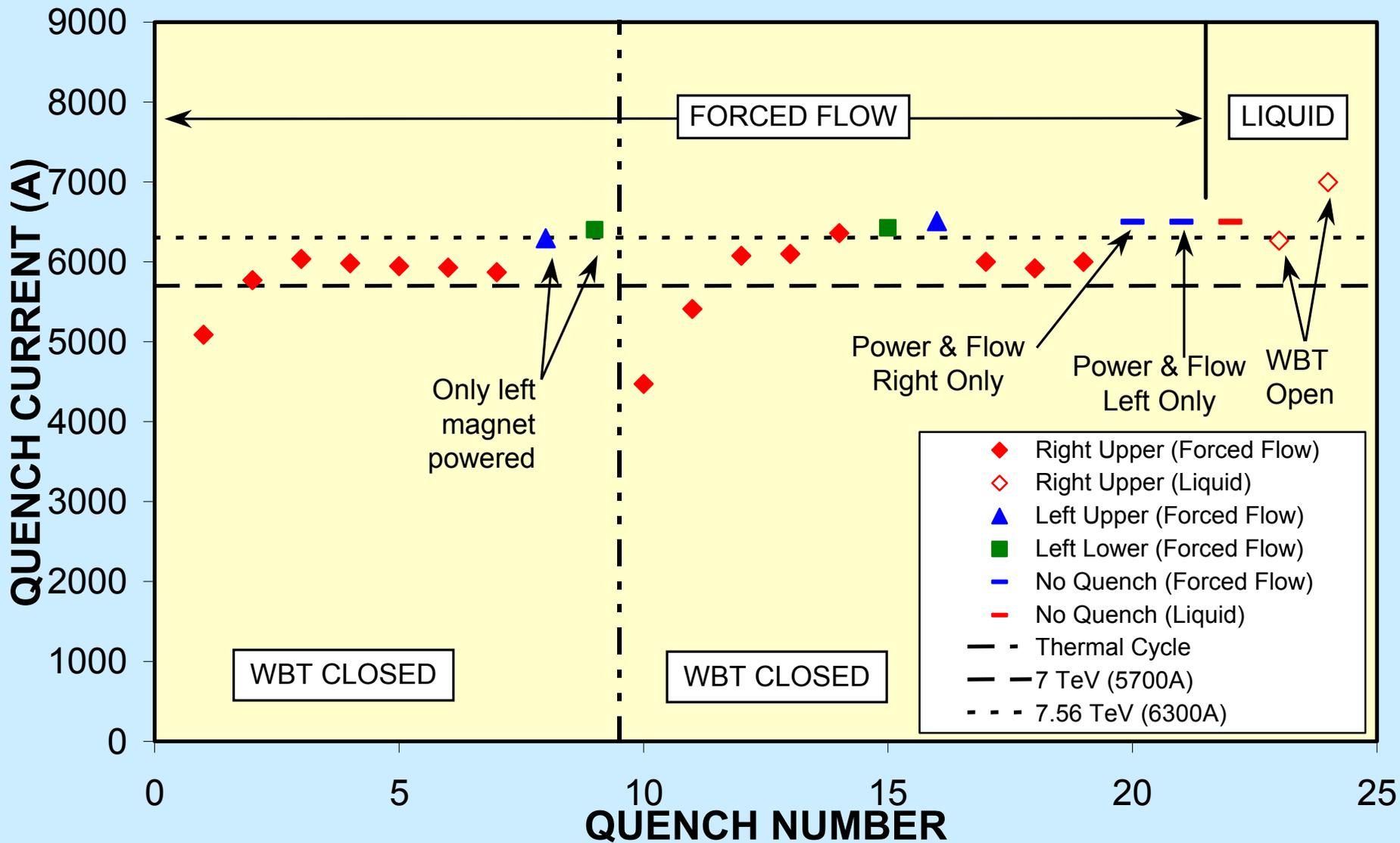


# D3L102 QUENCH TESTS



18-Feb-2005  
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D3L102 QUENCH SUMMARY

Magcool Bay C

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QUENCH #	RUN #	CURRENT (A)	T2 (K)	T3 (K)	START (ms)	MIITS	COIL	COMMENTS
T = 4.5K (nom)								
Warm bore tubes installed, sealed, and under vacuum								
Forced flow cooling @ 12atm								
1	21	5088	4.468	4.643	-60	6.8	upper right	
2	22	5771	4.351	4.561	-36	7.0	upper right	
3	25	6035	4.364	4.579	-27	6.8	upper right	
4	26	5981	4.337	4.553	-23	6.7	upper right	(h)
5	27	5947	4.336	4.543	-24	6.7	upper right	
6	28	5928	4.407	4.632	-22	6.6	upper right	
7	29	5869	4.347	4.580	-20	6.5	upper right	(h)
The right magnet was disconnected and only the left magnet is now being powered.								
8	32	6294	4.424	4.584	-24	6.4	upper left	
9	33	6401	4.397	4.569	-23	6.5	lower left	(i)

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Thermal Cycle (To open cryostat and check for heat load problems such as thermal Shorts and inadequate insulation; a number of changes were made to eliminate possible discrepancies.)

T = 4.5K (nom)  
Warm bore tubes installed, sealed, and under vacuum  
Forced flow cooling @ 12atm

10	36	4473	4.409	4.615	-203	8.8	upper right	(j)
11	37	5410	4.433	4.626	-29	6.4	upper right	
12	38	6074	4.367	4.543	-18	6.6	upper right	
13	39	6099	4.432	4.646	-19	6.6	upper right	
14	40	6357	4.401	4.615	-14	6.6	upper right	
15	41	6426	4.404	4.612	-31	7.3	lower left	

16	42	6509	4.365	4.571	-21	6.9	upper left
17	43	6001	4.431	4.630	-18	6.5	upper right
18	44	5918	4.394	4.596	-20	6.6	upper right
19	46	6001	4.426	4.632	-18	6.5	upper right

All flow and current now directed only through right magnet

48	6500					1 hour at 6500A; No quench
49	6500					4 cycles to 6500A; No quench

All flow and current now directed only through left magnet

50	6500					16 min at 6500A; No quench
51	6500					1 cycle to 6500A; No quench

Switched to liquid helium bath cooling @ 1.4atm

Switched back to two magnet operation

Warm bore tubes sealed and under vacuum

53	6500					1 hour at 6500A; No quench
54	6500					5 cycles to 6500A; No quench

Warm bore tubes open

liquid helium bath cooling @ 1.4atm

Magnetic field measurements to 5900A

20	56	6265	4.524	4.599	-10	5.5	upper right
21	100	6997	4.509	4.579	-7	5.7	upper right (o)

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Notes:

- a) Ramp rate for quenches #1 and #2 was 20A/s with a stop at 5000A
- b) Energy extraction used: 35mohms for all quenches.
- c) The temperature T2 is a diode sensor located in the helium return line tube which contains the superconducting bus; T3 is in the lower lead interconnect pot. Both have associated redundant sensors. T2 was used here instead of T1 as in previous LHC magnet tests because T1 was showing some unusual fluctuation not seen in the other three sensors.
- d) There were no auxiliary voltage taps in the magnet coils.
- e) Data acquisition sampling rate was 1kHz for all quenches.
- f) Strip heaters were fired at 475V (nom) and 96A (nom), with 1ms delay.
- g) For all quenches, the voltage difference quench detector threshold voltage was set at 1.6V.
- h) Small spike at quench start for quenches #4 and #7.
- i) For quench #9, there is a negative spike previous to the quench but not at quench start.
- j) For quench #10 in the right upper, quench was also seen in the right positive

SC lead at about -102ms.

- k) For quenches 14-16, in addition to the stop at 5000A, there was a stop at 6000A, then ramp to 6500A in 100A steps. Ramp rate was always 20A/s.
- l) For quench #16, the magnet was at 6500A for about 20min when the quench occurred.
- m) For quench #17, lead flow was increased to 10% above initial tare flow.
- n) For quench #18, lead flow was increased to 35% above initial tare flow.
- o) For quench #21, there is a negative spike previous to the quench but not at quench start. Other spikes previous are also present, but signal is very noisy.