



**8cm DIPOLE
COLD TESTING
TRAVELER**

MDC No. 097 Rev. C

Sheet 1 of 7

Issued: 4/13/95

Reference Documents:

- RHIC-MAG-Q-1004 Rev. C
- RHIC-MAG-R-7534 Rev. A
- RHIC-MAG-R-7535 Rev. A
- RHIC-MAG-R-7601 Rev. -
- RHIC-MAG-R-7228 Rev. C
- RHIC-MAG-R-7242 Rev. B
- RHIC-MAG-R-7243 Rev. B
- RHIC-MAG-R-7320 Rev. C
- RHIC-MAG-R-7750 Rev. A
- RHIC-MAG-R-7751 Rev. A
- RHIC-MAG-R-7735 Rev. A

Cognizant Engineer: _____

Electrical Engineering _____

Magnetic Measurements: _____

Quality Assurance: _____

Part Name: DIPOLE MAGNET ASSEMBLY						Part No: 12065000			Rev. Y	P/L Rev. AC
Serial No. DRG	QTY	1 ECN No.	Rev	P/L Rev	2 ECN No.	Rev	P/L Rev	3 ECN No.	Rev	P/L Rev

Comments: _____

OP No.	AREA	OPERATION DESCRIPTION	REFERENCE PROCEDURE	NAME	LIFE No.	DATE	DR No.
10	35	Identify Cold Mass I.D. DRG _____					
20	35	Remove bellows restraints from ends of magnet.	RHIC-MAG-R-7534-				
30	4	Portable end can electrical connections.	RHIC-MAG-R-7534-				
40	4	Lead end electrical preparations.	RHIC-MAG-R-7534-				
50	4 / 5	Perform electrical tests:	RHIC-MAG-R-7534-				
		OpCode DESCRIPTION CHECK (✓)					
		610 HYPOT MAIN LEADS/DIPOLE @ 3kV		-7228; -7242;			
		611 HYPOT S/C TRIM BUS LEADS @ 3kV		-7243; -7320;			
		612 HYPOT WARM-UP HTR STRING @ 2kV					
		613 R, L, Q FORWARD BIAS @ 1.0A					
		614 R, L, Q REVERSE BIAS @ 120Hz/1.0A					
		615 R, L, Q WARM UP HTR STRING @ 1.0 A					
		616 DC CONT. MAIN/QUAD BUS 200Ω					
		617 DC CONT. S/C TRIM BUS 200Ω					
618 V-TAP MAIN BUS V DROP @ 1.0A							
619 V-TAP S/C TRIM BUS V DROP @ 1.0A							



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OP No.	AREA	OPERATION DESCRIPTION	REFERENCE PROCEDURE	NAME	LIFE No.	DATE	DR No.
60	4	Portable end can mechanical connections. Complete indium seal procedure. Verify torqued to 35 ft lbs.	RHIC-MAG-R-7534-				
70	4	Seal cryogenic lines. Complete portable end can & spool piece installation.	RHIC-MAG-R-7534-				
80	5	Complete lead can electrical connections.	RHIC-MAG-R-7534-				
90	5	Electrical Lead man notifies control room operator of start of warm electrical checks.					
100	5	Perform electrical tests:	RHIC-MAG-R-7534- -7228; -7242; -7243; -7320;				
		OpCode DESCRIPTION CHECK (✓)					
		620 HYPOT MAIN LEADS/DIPOLE @ 3kV					
		622 HYPOT S/C TRIM BUS LEADS @ 3kV					
		624 HYPOT WARM-UP HTR STRING @ 2kV					
		630 R, L, Q DIODE FORWARD BIAS @ 1.0A					
		631 R, L, Q DIP. REVERSE BIAS @ 120Hz/1.0A					
		632 R, L, Q WARM UP HTR STRING @ 1.0 A					
		634 R, L & Q INDIV. BLUE WIRE @ 1.0					
		642 DC CONT. MAIN/QUAD BUS (15) 200Ω RES.					
		644 DC CONT. S/C TRIM BUS (9) 200Ω RES					
650 V-TAP MAIN BUS (14) TAPS @ 1.0A							
652 V-TAP S/C TRIM BUS (9) TAPS @ 1.0A							
659 CGR/DIODE TEMP SENSOR							
110	5	Electrical Lead man notifies control room operator of completion of warm electrical checks.					
120	5	Complete lead can internal mechanical connections.	RHIC-MAG-R-7535-				
130	5	Install warm bore tube.	RHIC-MAG-R-7535-				
140	5	Cold mass pressure leak check.	RHIC-MAG-R-7535-				
150	5	Insulate and close lead end vacuum vessel.	RHIC-MAG-R-7535-				
160	5	Torque magnet holdown plates to 35 ft lbs.	RHIC-MAG-R-7535-				



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OP No.	AREA	OPERATION DESCRIPTION	REFERENCE PROCEDURE	NAME	LIFE No.	DATE	DR No.
170	5	Pump down vacuum vessel. External vacuum leak check.	RHIC-MAG-R-7535-				
180	5	DC level shift test if required: (✓) YES ____ NO ____ File Name: _____	RHIC-MAG-R-7535-				
190	5	Complete warm magnetic measurements.	RHIC-MAG-R-7751-				
200	5	Pump and purge procedure. Cold mass to vacuum vessel leak check.	RHIC-MAG-R-7751-				
210	5	Install quench antenna as available*. Seal and evacuate warm bore tube. Install antenna: (✓) YES ____ NO ____ Warm bore tube heaters OFF: (✓) _____	RHIC-MAG-R-7751-				
220	5	Activate lead heaters. Check water flow.	RHIC-MAG-R-7751-				
230	5	Verification of OP Nos 200 - 220 by Lead Man. Notify Cryogenics Lead Man to start cool-down.	RHIC-MAG-R-7751-				
240	5	Start Cool-Down.	RHIC-MAG-R-7751-				
250	5	Verify operation of lead heaters & water flow by cryogenics operator.	RHIC-MAG-R-7751-				
260	5	Cryogenics operator to notify control room and vacuum goup when magnet is $\leq 6^\circ$ K..	RHIC-MAG-R-7751-				
270	5	Cold leak check complete. CHECK (✓) PASS ____ FAIL ____	RHIC-MAG-R-7751-				
280	5	When $T \leq 6^\circ$ K, Pressure > 5 Atmosphere: Complete cold electrical tests:	RHIC-MAG-R-7751- -7228; -7242; -7243; -7320;				
		OpCode DESCRIPTION CHECK (✓)					
		660 HYPOT MAIN LEADS/DIPOLE @1kV					
		662 HYPOT S/C TRIM BUS LEADS @ 1kV					
		664 HYPOT WARM-UP HTR STRNG @ 250V					
CONTINUED ON SHEET 4							



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OP No.	AREA	OPERATION DESCRIPTION	REFERENCE PROCEDURE	NAME	LIFE No.	DATE	DR No.
280 CONT.	5	Complete cold electrical tests: continued,	RHIC-MAG-R-7751- -7228; -7242; -7243; -7320;				
		666 R, L, Q WARM UP HTR STRING @ 1.0 A					
		672 DC CONT. MAIN/QUAD BUS (15) 200Ω					
		674 DC CONT. S/C TRIM BUS (9) 200Ω					
		676 CGR/DIODE TEMP SENSOR					
290	5	Complete cold ratiometer test:	RHIC-MAG-R-7751-				
300	5	Verification by Cryogenic Lead Man: Magnet prepared, cold, and ready for test.	RHIC-MAG-R-7751-				
310	5	Balance out Quench detectors when required. CHECK (✓) YES _____ NO _____	RHIC-MAG-R-7751-				
320	5	Completion of 1000 amp Shutoff Test. Run No. _____	RHIC-MAG-R-7751-				
330	5	Verification of OP No 320 by Lead Man.					
340	5	Complete Quench tests (83A/s, one hour minimum recovery).	RHIC-MAG-R-7751-				
350	5	Verification of OP No 340 by Lead Man.					
360	5	Warm up warm bore tube.	RHIC-MAG-R-7751-				
370	5	When the warm bore tube is warm, remove antenna.	RHIC-MAG-R-7751-				
380	5	Verification of OP Nos 360 & 370 by Lead Man.					
390	5	Install integral coil and complete non-rotating coil measurements. Record: Run No. _____	RHIC-MAG-R-7751-				
400	5	Install mole and perform Z-Scan at Injection (660A). Attach check-run summaries & transfer data. AC CYCLE TO 5000A: _____ Z-SCAN AT 660A: _____	RHIC-MAG-R-7751-				



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OP No.	AREA	OPERATION DESCRIPTION	REFERENCE PROCEDURE	NAME	LIFE No.	DATE	DR No.
410	5	Perform Z-Scan at transition (1450A). Attach check-run summaries & transfer data. AC CYCLE if necessary, To 5000A: _____ Z-SCAN AT 1450A: _____	RHIC-MAG-R-7751-				
420	5	Perform Z-Scan at storage (5000A). Attach check-run summaries & transfer data. AC CYCLE if necessary, To 5000A: _____ Z-SCAN AT 5000A: _____	RHIC-MAG-R-7751-				
430	5	Verification of OP Nos 400 - 420 by lead man.					
440	5	DC Loop Test (6000 amps). Attach check-run summary, and transfer data. Record: AC Cycle to 5000A: _____ DC Loop UP: _____ DC Loop Down: _____	RHIC-MAG-R-7751-				
450	5	AC Loop Measurement to 6000 A. Attach check-run summary, and transfer data. Record: If required (✓) YES ___ NO ___ AC CYCLE to 5000A: _____ AC LOOP to 6000A: _____	RHIC-MAG-R-7751-				
460	5	Quench magnet with warm bore tube at room temp. If required (✓) YES ___ NO ___ Run No. _____	RHIC-MAG-R-7751-				
470	5	Sextupole vs Time @ Injection (660A). Attach check-run summary, transfer data. If required (✓) YES ___ NO ___ AC CYCLE to 5000A: _____ SEXT VS TIME @ 660A: _____	RHIC-MAG-R-7751-				
480	5	Quench magnet with warm bore tube at room temp. If required (✓) YES ___ NO ___ Run No. _____	RHIC-MAG-R-7751-				



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OP No.	AREA	OPERATION DESCRIPTION	REFERENCE PROCEDURE	NAME	LIFE No.	DATE	DR No.
490	5	Sextupole vs Time @ Storage (5000A). Attach check-run summary, transfer data. If required (✓) YES ____ NO ____ AC CYCLE to 5000A: _____ SEXT VS TIME @ 5000A: _____	RHIC-MAG-R-7751-				
500	5	Verification of OP Nos 440 - 490 by Lead Man.					
510	5	NMR & Hall measurement @ 2400 A. Transfer data. If required (✓) YES ____ NO ____ AC CYCLE to 5000A: _____ NMR & HALL @ 2400A: _____	RHIC-MAG-R-7751-				
520	5	Hall probe measurement completed. To be performed & signed by Short Sample Group. Check (✓) If required YES ____ NO ____					
530	5	Verification of OP Nos 510 - 520 by Lead Man.					
540	5	Notify Cryogenics Lead Man to start warm-up.	RHIC-MAG-R-7751-				
550	5	Magnet warm-up complete. Vent vacuum system with N2.	RHIC-MAG-R-7751-				
560	5	Remove warm bore tube.	RHIC-MAG-R-7535-				
570	5	Disconnect and inspect lead can mechanical connections.	RHIC-MAG-R-7535-				
580	5	Disconnect and inspect lead can electrical connections.	RHIC-MAG-R-7535-				
590	5	Disconnect and inspect end can mechanical connections.	RHIC-MAG-R-7535-				
600	5	Disconnect and inspect end can electrical connections.	RHIC-MAG-R-7535-				

