

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1			Date:	8/1/2023														
2			Run description:	FRC/RMFO														
3			Base pressures: SEC IG (T)															
4			CC IG (T)															
5			FEC IG (T)	3e-7														
6			SEC Slow Baratron (T)	1.0001														
7			CC Slow Baratron (T)	5002														
8			RMF frequency & phase	1.8 MHz														
9			Magnet configuration & PS	4x8 + 8x4 coils; BB PS & 2 Magna powers inside 8; eight BN-covered FCs														
10			RMF system	SRS -> duty factor limiters -> AR100LM9 -> 8KD -> 200 kW home made														
11			Time	1:47	2:00	2:18	2:22	2:28	2:37	2:40	2:43	2:44	2:50					
12	Magnapower	L-2 Coils I (A)	PROBLEM!															
13	Big Blue	L-2 Coils I (A)	220	220														
14		Nozzle coils I (A)	101	101														
15		SEC IG (T)																
16		SEC Slow Baratron (T)	1.0021	1.0019														
17		CC IG (T)																
18		CC slow Baratron (T)	1.651	1.583														
19		FEC IG (T)	1.1	1.1														
20		FEC FB (T)	1.5	1.5														
21		Ta paddle voltage																
22		Main valve	C															
23		Navigator valve																
24		End turbo valve																
25		Gases/feed location/sccm	H2/SEC															
26		PV-10 (V)																
27		Pulse	A to/Δt															
28			B to/Δt															
29		CC Pressure (mT)																
30		(Fast Baratron)																
31		170 GHz	dia (mV)/IM freq															
32		Glassman	High Voltage (kV)	17	17													
33		RMFO system	main SRS	1.7928	1.7928													
34			Pulse width (ms)	3	3													
35			Time between pulses (s)	1	1													
36			Frequency: Center(MHz)/Span(KHz)															
37			Phase °	BRDF	99													
38			Pa	20	20													
39			Pr (kW)	75	80													
40			PM or % reflected															
41		Vf		1.4	2.01													
42		Vr		0.16	0.136													
43			Helicon Pf/Pr		300W													
44			Helicon (SRS/mod)	1.4	120													
45			Comments/changes:	for Δφ = π/2, ne = 2.1e12 cm-3 for 16-cm dia plasma														

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1			Date:	Aug 1, 2023													
2			Run description:	FRC/RMFO													
3	Base pressures: SEC IG (T)																
4	CC IG (T)																
5	FEC IG (T)																
6	SEC Slow Baratron (T)																
7	CC Slow Baratron (T)																
8	RMF frequency & phase																
9	Magnet configuration & PS			4x8 + 8x4 coils; BB PS & 2 Magna powers inside 8; eight BN-covered FCs										Recentered 4-turn MC coil			
10	RMF system			SRS -> duty factor limiters -> AR100LM9 -> 8KD -> 200 kW home made antennas: 2-turn; cable: RG-226, 60" long													
11	Time			NO PLASMA; NO B, NO G													
12	Magnapower	L-2 Coils I (A)															
13	Big Blue	L-2 Coils I (A)															
14	Nozzle coils I (A)		1.7980	15:30:30													
15	SEC IG (T)							1.790	15:38:00								
16	SEC Slow Baratron (T)		1.7975	15:31:00													
17	CC IG (T)							1.789	15:38:30								
18	CC slow Baratron (T)		1.7970	15:41:30													
19	FEC IG (T)							1.788	15:39:30								
20	FEC FB (T)		1.7963	15:34:00													
21	Ta paddle voltage							1.787	15:40:00								
22	Main valve		1.7960	15:32:30													
23	Navigator valve																
24	End turbo valve		1.7955	15:33:00													
25	Gases/feed location/sccm																
26	PV-10 (V)		1.7950	15:33:30													
27	Pulse	A to/Δt															
28		B to/Δt	1.7945	15:34:00													
29	CC Pressure (mT)																
30	(Fast Baratron)		1.7940	15:34:30													
31	170 GHz	dia (mV)/IM freq															
32	Glassman	High Voltage (kV)	1.7935	15:35:00													
33	RMFO system																
34	Pulse width (ms)		1.7930	15:35:30													
35	Time between pulses (s)																
36	Frequency: Center(MHz)/Span(KHz)		1.7925	15:36:00													
37	Phase °																
38	Pa		1.7920	15:36:30													
39	Pf (kW)																
40	OM or % reflected		1.7915	15:37:00	MISSING DATA												
41	Vr																
42	Vr		1.7910	15:37:30													
43	Helicon Pf/Pr																
44	Helicon (SRS/mod)																
45	Comments/changes: for Δφ = π/2, ne = 2.1e12 cm-3 for 16-cm dia plasma																

$f = 1/\sqrt{LC}$

NO PLASMA

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$$f = \frac{1}{\sqrt{LC}}$$

NO PLASMA

5

N/S T/S

1.7852 1.7855

f @ PLASMA

~ 1.7978

$$SO \frac{f_r \text{ NO PLASMA}}{f_r \text{ opt. det.}} = \frac{1.7953}{1.7978}$$

= 99.86

! Higher f @ plasma

! Low L @ plasma

⇒ consistent @ some experiments

MISSING DATA

$$\frac{\Delta L}{L} = .0014 \Rightarrow \Delta L \text{ same}$$