Nsrl5 Schedule and Parameters

C.J. Gardner

April 6, 2005

Caution! The following schedule is subject to change. Please note release date above.

NSRL is to begin taking beam on 28 March 2005.

Beam Order:

1. Protons. 1000 MeV. March 28 (Mon).
2. Iron. 1000 MeV per nucleon. March 28–29 (Mon–Tues).
3. Oxygen. 1000 MeV per nucleon. March 29–31 (Tues–Thur).
4. Oxygen. 600 MeV per nucleon. April 1–2 (Fri–Sat).
5. Iron. 600 MeV per nucleon. April 4–8 (Mon–Fri).
6. Iron. 1000 MeV per nucleon. April 11–22 (Mon–Fri).
7. Protons and Iron. 1000 MeV. April 16–17 (Sat–Sun).
8. Iron. 1000 MeV per nucleon. April 25 (Mon).
9. Protons. 1000 MeV per nucleon. April 26–28 (Tue–Thur).
10. Carbon. 300 MeV per nucleon. April 29 (Fri).
11. Carbon. 300 MeV per nucleon. May 2–3 (Mon–Tues).
12. Silicon. 600 MeV per nucleon. May 4–5 (Wed–Thur).

The weekend of April 16–17 we will deliver Iron and Proton beams to Nsrl in rapid succession mode.

Booster User 4 is to be used for RHIC operations with Protons (from Linac). Protons (from Linac) for NSRL will be set up on User2. All other ions for NSRL will be set up on User3 or on User1.

Table 1: Iron, Proton, and Oxygen Parameters at Booster Injection

Parameter	Fe^{20+}	Proton	O^{7+}	Unit
mc^2	52.0928437	0.938271998	14.8955902166	GeV
Date	5 Nov 03	28 Mar 05	25 Mar 05	
11DH1 NMR Probe	4364.1	Linac	4364.1	Gauss
hf	341.131	843.100	416.9434	kHz
h	3	1	3	
$T = 1/f$	8.79427	1.18609892	7.195221	μs
Kinetic Energy W	153.2415	201.237574	65.6018	MeV
$B\rho$	0.6669	2.156918716	0.6669	Tm
$B\rho/\rho$	480.974	1555.589889	480.974	Gauss
Booster Hall Probe	451.4	453.3	453.6	Gauss
Booster Gauss Clock	25.5	1101.7	21.5	Gauss
Injection Field H	476.9	1555.0	475.1	Gauss
Inflector Setpoint V_S	29.534	Linac	36.285	kV
Inflector Predicted V_I	29.759	Linac	36.372	kV

Table 2: Iron and Oxygen Parameters at Booster Injection

Parameter	Fe^{20+}	O^{6+}	O^{7+}	Unit
mc^2	52.0928437	14.8961012155	14.8955902166	GeV
Date	6 Apr 05	–	25 Mar 05	
11DH1 NMR Probe	4364.1	4364.1	4364.1	Gauss
hf	341.131	357.7834	416.9434	kHz
h	3	3	3	
$T = 1/f$	8.79427	8.384961	7.195221	μs
Kinetic Energy W	153.2415	48.2237	65.6018	MeV
$B\rho$	0.6669	0.6669	0.6669	Tm
$B\rho/\rho$	480.974	480.974	480.974	Gauss
Booster Hall Probe	453.4	–	453.6	Gauss
Booster Gauss Clock	23.5	–	21.5	Gauss
Injection Field H	476.9	476.9	475.1	Gauss
Inflector Setpoint V_S	29.781	–	36.285	kV
Inflector Predicted V_I	29.759	31.211	36.372	kV

Table 3: Carbon and Silicon Parameters at Booster Injection

Parameter	C^{5+}	Si^{13+}	Unit
mc^2	11.17537316	26.05369658	GeV
Date	–	–	
11DH1 NMR Probe	4364.1	4364.1	Gauss
hf	397.121	442.455	kHz
h	3	3	
$T = 1/f$	7.5544	6.7804	μs
Kinetic Energy W	44.6215	129.322	MeV
$B\rho$	0.6669	0.6669	Tm
$B\rho/\rho$	480.974	480.974	Gauss
Booster Hall Probe	–	–	Counts
Booster Gauss Clock	–	–	Counts
Injection Field H	476.9	476.9	Gauss
Inflector Setpoint V_S	–	–	kV
Inflector Predicted V_I	34.643	38.598	kV

Table 4: Iron and Proton Parameters at Extraction

Parameter	Fe^{20+}	Fe^{20+}	Proton	Unit
mc^2	52.0928437	52.0928437	0.938271998	GeV
Date	28 Mar 04	12 Apr 04	–	
hf	3.907680	3.55888	1.300060	MHz
h	3	3	1	
$T = 1/f$	0.76772	0.84296	0.769195	μs
Kinetic E per Nucleon	1003.6298	614.8564	1000.0000	MeV
$B\rho$	15.83497291	11.52230630	5.65737292	Tm
$B\rho/\rho$	11420.33	8309.99	4080.15	Gauss
Magnetic Field Setpoint	11600	8471	4159	Gauss
Calculated MM Current	4700	3420	1679	Amps
MM Current Setpoint	4934	3495	1710	Amps

Table 5: Iron and Proton Parameters at Extraction

Parameter	Fe^{20+}	Fe^{20+}	Proton	Unit
mc^2	52.0928437	52.0928437	0.938271998	GeV
Date	28 Mar 04	4 Apr 05	–	
hf	3.907680	3.5554	1.300060	MHz
h	3	3	1	
$T = 1/f$	0.76772	0.843787	0.769195	μs
Kinetic E per Nucleon	1003.6298	612.2072	1000.0000	MeV
$B\rho$	15.83497291	11.4913027	5.65737292	Tm
$B\rho/\rho$	11420.33	8287.63	4080.15	Gauss
Magnetic Field Setpoint	11600	8471	4159	Gauss
Calculated MM Current	4700	3411	1679	Amps
MM Current Setpoint	4934	3495	1710	Amps

Table 6: Oxygen Parameters at Booster Extraction

Parameter	O^{7+}	O^{7+}	O^{7+}	Unit
mc^2	14.8955902	14.8955902	14.8955902	GeV
Date	–	–	–	
hf	3.542488	3.908024	2.916071	MHz
h	3	3	3	
$T = 1/f$	0.846863	0.767651	1.028781	μs
Kinetic E per Nucleon	603	1005	300	MeV
$B\rho$	9.29530930	12.94178669	6.14022898	Tm
$B\rho/\rho$	6703.86	9333.74	4428.39	Gauss
Magnetic Field Setpoint	6816.70	9480.94	4511.49	Gauss
Calculated MM Current	2759	3841	1822	Amps
MM Current Setpoint	2807	3923	1855	Amps

Table 7: Oxygen Parameters at Booster Extraction

Parameter	O^{7+}	O^{7+}	O^{7+}	Unit
mc^2	14.8955902	14.8955902	14.8955902	GeV
Date	1 Apr 05	1 Apr 05	1 Apr 05	
hf	3.53465	3.9024	2.9068	MHz
h	3	3	3	
$T = 1/f$	0.848740	0.768758	1.032063	μs
Kinetic E per Nucleon	597.2190	995.8105	297.0863	MeV
$B\rho$	9.23979087	12.86181984	6.10621885	Tm
$B\rho/\rho$	6663.82	9276.06	4403.86	Gauss
Magnetic Field Setpoint	6816.70	9480.94	4499.02	Gauss
Calculated MM Current	2742	3817	1812	Amps
MM Current Setpoint	2807	3923	1850	Amps

Table 8: OxygenSix Parameters at Booster Extraction

Parameter	O^{6+}	O^{6+}	Unit
mc^2	14.8961012155	14.8961012155	GeV
Date	–	–	
hf	3.5424597	3.908003	MHz
h	3	3	
$T = 1/f$	0.846869	0.767655	μs
Kinetic E per Nucleon	603	1005	MeV
$B\rho$	10.84466802	15.09891934	Tm
$B\rho/\rho$	7821.28	10889.48	Gauss
Magnetic Field Setpoint	7949	11057	Gauss
Calculated MM Current	3219	4481	Amps
MM Current Setpoint	3277	4641	Amps

Table 9: Carbon and Silicon Parameters at Booster Extraction

Parameter	C^{5+}	Si^{13+}	Unit
mc^2	11.17537316	26.05369658	GeV
Date	22 Mar 04	2 Sept 04	
hf	2.91717	3.532	MHz
h	3	3	
$T = 1/f$	1.02839	0.849377	μs
Kinetic E per Nucleon	300.4462	594.9717	MeV
$B\rho$	6.45361431	8.684641874	Tm
$B\rho/\rho$	4654.41	6263.44	Gauss
Magnetic Field Setpoint	4751	6410.8	Gauss
Calculated MM Current	1915	2578	Amps
MM Current Setpoint	1954	2639	Amps