



COMPUTATION NOTEBOOK

Department $^{24}\text{Mg}(\text{d},\text{p}\gamma)$ AND
Subject $^{15}\text{N}(\text{p},\text{d}\gamma)$ WITH HAGRID
Name SEPTEMBER 2018
Address _____

43-648

75 Sheets, 4 x 4 Quad., 11 3/4" x 9 1/4"



0 73333 43648 8

Rediform Inc. • Coppell, TX 75019

Made in Mexico



$^{15}\text{N}(\text{p}, \gamma)^{12}\text{C}$ WITH HAGRID

BEAMTIME SEPTEMBER 10, 2018

15N(p,ag) deBoer
 Week of (Double click): September 10


**INSTITUTE FOR STRUCTURE
AND NUCLEAR ASTROPHYSICS**

9/10 MONDAY	9/11 TUESDAY	9/12 WEDNESDAY	9/13 THURSDAY	9/14 FRIDAY	9/15 SATURDAY
(1st Shifter) 00:00 - 08:00 N/A	Bryant Vande Kolk James deBoer	N/A			
(2nd Shifter) 00:00 - 08:00 N/A					N/A
(1st Shifter) 08:00 - 16:00 N/A	Bryce Frentz UTK	Samuel Henderson UTK	Maxime Renaud UTK	Bryce Frentz Sebastian Aguilar	N/A
(2nd Shifter) 08:00 - 16:00 N/A					N/A
(1st Shifter) 16:00 - 00:00 Kevin Macon Beka Kelmar	Gwen Gilardy UTK	Maxime Renaud UTK	Samuel Henderson Orlando Gomez	N/A N/A	N/A
(2nd Shifter) 16:00 - 00:00 N/A					N/A

Choose Shifter Details For Experiment

Sebastian Aguilar (305) 528-4395 (saguilar@nd.edu)	Bryant Vande Kolk (920) 322-7472 (bvandeko@nd.edu)
Bryce Frentz (605) 940-9288 (bfrentz@nd.edu)	
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Samuel Henderson (682) 554-8450 (shender4@nd.edu)	UTK2: Jerome Kovoov (jkovoov@vols.utk.edu)
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Maxime Renaud (574) 323-0814 (mrenaud1@nd.edu)	Carl Brune (brune@ohio.edu)

General Info

P.I Responsible: James deBoer (574) 850-1301 (rdeboer1@nd.edu)
Second Contact: Kevin Macon (kmacon@nd.edu)
Third Contact: Axel Boeltzig (aboeltzig@nd.edu)
Notes:

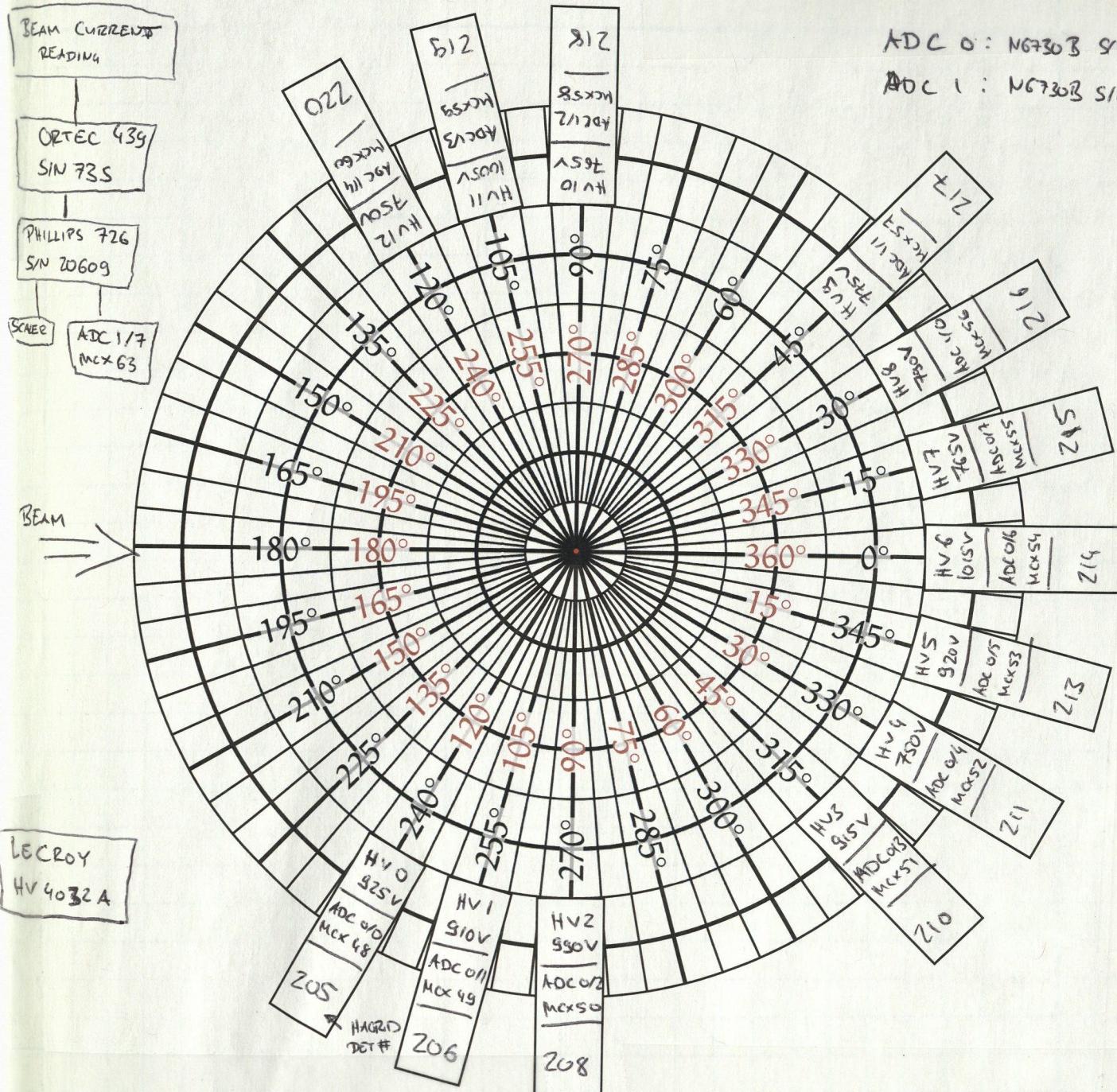
Target

Used ^{15}N target from previous ND measurement of the $^{15}\text{N}(\text{p}, \text{t})$ reaction. Details of the target are described in

LaBlanc et al (2010)

The target used was the first one described that was 7.2(3) keV thick @ 429 keV.

Target is marked as ^{15}NT ; #2, used April



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9/11 1AM READY FOR FIRST BEAM ON TARGET.

SUPPRESSION VOLTAGE - 600V. NO CHARGE INTEGRATION.

TARGET CURRENT INTEGRATION: 10^{-8} C/PULSE.

RUN 0 WAS TEST RUN. DID NOT RECORD CHARGE IN SCALER.

11-Sep-2018 00:32:39 Notre Dame 5U-4

$^{15}\text{N}(\rho, \alpha\gamma)$

KM

Page 1 of 1

Source 1				
RF S1-1 WR	34.20 %	TPS TK-1 PrbQCC	20.00 uA	$\text{H}^+ @ 884 \text{ keV}$
RF S1-1 TR	77.0 DegC	TPS TK-1 GridVR	-9.236 V	$E_p = 911 \text{ keV}$
RF S1-1 TR2	36.0 DegC	TPS TK-1 LINEgain	80.00 %	$NMR = 1378.6$
ATT S1-1 VC	64.40 %	Post Acceleration		
TUN S1-1 DR	51.57 %	EQ TX-1 Strength	4.9043 kV	<u>2 Shorting Rods</u>
GAS S1-1 DR	2.96 Trn	EQ TX-1 Balance	-2.68	$x_1: -0.18 \quad x_2: 0.68$
GAS S1-2 DR	2.65 Trn	EQ TX-1 +XVR	4.787 kV	$y_1: -0.29 \quad y_2: 0.05$
GAS S1-3 DR	2.99 Trn	EQ TX-1 -XVR	-4.777 kV	$Q_1: 4.1 \quad Q_2: 4.26$
GAS S1-4 DR	7.28 Trn	EQ TX-1 +YVR	4.893 kV	Q21: 0.22 $x_{22}: 0.10$
GAS S1-n PR	26.8 u	EQ TX-1 -YVR	-4.904 kV	$y_{21}: 0 \quad y_{22}: 0$
BIA S1-1 VC	-0.080 kV	IGC 01-1 PR	5.9e-08 T	$Q_3: 3.89 \quad Q_4: 4.13$
BIA S1-1 VR	-0.079 kV	ES 01-1 XVC	0.0000 kV	$Q_5: 1.64 \quad Q_6: 1.22$
BIA S1-1 CR	-0.017 mA	ES 01-1 +XVR	0.00 kV	$STx: 0.09 \quad STy: -0.33$
EXT S1-1 VC	17.000 kV	ES 01-1 -XVR	0.00 kV	
EXT S1-1 VR	17.052 kV	BLV 01-1 PosSR	open	
EXT S1-1 CR	0.691 mA	BM 01-1 CC	18.428 A	
FOC T-1 VC	13.077 kV	BM 01-1 CR	20 A	
FOC T-1 VR	12.932 kV	HPB 01-1 MfieldR	768.7 G	
FOC T-1 CR	0.069 mA	HPB 01-1 RangeSel	0.6 T	
ES T-1 XVC	0 V	IP 02-1 PR	0.0e+00 T	
ES T-1 +XVR	1 V	CVG 02-1 PR	3.1e-05 T	
ES T-1 -XVR	-2 V	BLV 02-1 PosSR	open	
MAG T-1 CC	0.754 A	Faraday Cups		
MAG T-1 CR	0.76 A	FC 01-1 LastCR	0.00e+00 A	
MAG T-1 VR	7.75 V	FC 02-1 LastCR	0.00e+00 A	
GAP T-1 VC	-25.416 kV	FC 01-1 CR	1.00e-10 A	
GAP T-1 VR	-25.467 kV	FC 01-1 PosSR	out	
GAP T-1 CR	-0.069 mA	FC 02-1 CR	1.00e-10 A	
TP T-1 CR	0.350 A	FC 02-1 PosSR	out	
TP T-3 CR	0.296 A	Vacuum		
INJ S1-1 TotInjV	17.052 kV	IGC 01-1 PR	5.9e-08 T	
IGC 01-1 PR	5.9e-08 T	IP 02-1 PR	0.0e+00 T	
FC 01-1 CR	1.00e-10 A	CVG 02-1 PR	3.1e-05 T	
Accelerator				
TNK TK-1 Pa/Ta	0.3093 Pa/Ta	Machine Setup		
CH TX-1 CR	33.0 uA	SETUP TotPartE	0.901 MeV	<u>Remote Slits (mm)</u>
CH TX-2 CR	30.9 uA	SETUP TotMachE	0.884 MeV	0.2
COL TX-1 ColCR	0.0 uA	SETUP TotInjE	0.017 MeV	5.0
COL TX-1 TubeCR	0.0 uA	SETUP Ispecies	1 AMU	<1.9
CH TX-n CRlost	45.1 uA	SETUP Ospecies	1 AMU	-0.4
CPS TX-1 VC	4.028 kV	SETUP ChgState	1	
CPS TX-1 +VR	4.05 kV	SETUP AtomNumb	H	
CPS TX-1 -VR	-4.04 kV	SETUP SrcSel	S1	
CPS T-1 +VR	3.97 kV	SETUP BLsel	L1	
CPS T-1 -VR	-3.99 kV			
TPS TK-1 TrvVC	0.884 MV			
TPS TK-1 GvmVR	0.8841 MV			
TPS TK-1 ModeSR	slit			
TPS TK-1 CtlGain	50.00 %			
TPS TK-1 CPOgain	70.00 %			
TPS TK-1 PrbDC	590.0 mm			
TPS TK-1 PrbDR	589.6 mm			
TPS TK-1 PrbCR	18.8 uA			

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Monday Sept 16th ~~Sept 16th~~ Tuesday Sept 17th

Run	GVM (MeV)	(A ₀ , M ₀)	NMR	Check Zero with Cap Inl			1.00E-08			C/pulse			Auto-calc			Notes				
				I (super - nA)	I (Target - uA)	Y	Q	TEST	Yield1	Yield2	Err	Y1/Q	Y2/Q	err	Ep (keV)	Y1/Q	Y2/Q	err	Y/Q (897 keV Resonance)	
0	0.8842	18.428	1378.6	150	11	185074	97.9	44	1114	44	44	910.92	910.52	0.0	910.00	1	910.50	0.0	915.00	
1	0.8842	18.428	1378.6	200	10.7	266475	1795	56	1753	49	47	910.52	910.52	0.0	910.00	0.1	910.50	0.0	915.00	
2	0.8837	18.422	1378.3	200	10.9	191798	1312	47	1367	47	47	909.47	909.47	0.0	908.94	#V.	908.94	0.0	915.00	
3	0.8831	18.415	1377.9	200	10.9	313011	2309	58	2521	57	57	908.94	908.94	0.0	908.41	0.0	908.41	0.0	915.00	
4	0.8827	18.410	1377.5	200	10.9	suppression off			2521			908.94			908.94			908.94		
5	0.8822	18.402	1377.1	200	10.9	352169	2593	61	2820	61	61	905.91	905.91	0.0	905.91	0.0	905.91	0.0	915.00	
6	0.8822	18.402	1377.1	200	11	282102	1947	53	1942	52	52	905.51	905.51	0.0	904.98	0.0	904.98	0.0	915.00	
7	0.8818	18.397	1376.7	200	11	206872	1858	53	1958	53	53	907.88	907.88	0.1	907.49	0.0	907.49	0.0	915.00	
8	0.8818	18.395	1376.3	200	11.2	235208	1114	59	2390	65	65	906.96	906.96	0.0	906.43	0.0	906.43	0.0	915.00	
9	0.8808	18.385	1376.0	200	11.2	28787	2654	61	2814	61	61	903.93	903.93	0.0	903.40	0.0	903.40	0.0	915.00	
10	0.8802	18.379	1375.6	200	11.2	313007	1115	55	3154	55	55	903.01	903.01	0.0	903.01	0.0	903.01	0.0	915.00	
11	0.8800	18.374	1375.2	200	11	213444	2384	62	2907	61	61	903.98	903.98	0.0	903.45	0.0	903.45	0.0	915.00	
12	0.8794	18.369	1374.8	200	10.9	205826	2886	62	2921	61	61	905.91	905.91	0.0	905.91	0.0	905.91	0.0	915.00	
13	0.8789	18.364	1374.5	200	11.1	199242	2887	66	3283	64	64	905.51	905.51	0.0	904.98	0.0	904.98	0.0	915.00	
14	0.8786	18.357	1374.1	200	11.2	202426	4041	75	4337	72	72	904.46	904.46	0.0	904.46	0.0	904.46	0.0	915.00	
15	0.8781	18.351	1373.7	200	11.3	195487	4690	82	5021	78	78	903.93	903.93	0.0	903.40	0.0	903.40	0.0	915.00	
16	0.8775	18.346	1373.3	200	11.2	155409	3922	73	4237	73	73	903.38	903.38	0.0	903.38	0.0	903.38	0.0	915.00	
17	0.8769	18.340	1372.9	200	11	134944	7522	99	8035	98	98	903.01	903.01	0.0	903.01	0.0	903.01	0.0	915.00	
18	0.8763	18.334	1372.6	200	11.5	134944	9158	110	9891	108	108	903.51	903.51	0.0	902.48	0.0	902.48	0.0	915.00	
19	0.8760	18.329	1372.2	200	11.5	136036	9158	110	10374	110	110	901.96	901.96	0.0	901.43	0.1	901.43	0.1	915.00	
20	0.8754	18.319	1371.8	200	11.2	10374	9306	111	10139	110	110	901.43	901.43	0.1	901.04	0.1	901.04	0.1	915.00	
21	0.8752	18.319	1371.4	200	10	77984	8240	105	9075	103	103	900.50	900.50	0.0	899.99	0.0	899.99	0.0	915.00	
22	0.8747	18.314	1371.1	200	10	121302	155	1703	155	155	155	898.00	898.00	0.0	897.52	0.0	897.52	0.0	915.00	
23	0.8741	18.307	1370.6	200	10.8	125560	28452	191	31087	194	194	898.02	898.02	0.0	897.49	0.0	897.49	0.0	915.00	
24	0.8741	18.307	1370.6	200	10.8	114280	35117	212	38384	215	215	900.38	900.38	0.0	899.97	0.0	899.97	0.0	915.00	
25	0.8738	18.303	1370.3	200	10.8	131355	68	3434	179	25500	175	899.99	899.99	0.0	898.97	0.0	898.97	0.0	915.00	
26	0.8731	18.296	1369.9	200	11.3	65472	23494	71	30335	193	193	898.93	898.93	0.0	898.41	0.0	898.41	0.0	915.00	
27	0.8726	18.291	1365.5	200	11.4	684303	31031	71	30359	197	197	898.41	898.41	0.0	897.79	0.0	897.79	0.0	915.00	
28	0.8721	18.285	1363.1	200	11.6	69303	4197	74	2980	64	64	895.00	895.00	0.0	895.52	0.0	895.52	0.0	915.00	
29	0.8716	18.280	1362.8	200	11.6	60414	43016	72	30273	192	192	898.02	898.02	0.0	897.58	0.0	897.58	0.0	915.00	
30	0.8711	18.274	1368.4	50	50	12470	5653	86	5763	84	84	898.48	898.48	0.0	897.97	0.0	897.97	0.0	915.00	
31	0.8705	18.269	1368.0	50	2.3	14219	5443	2348	2459	62	62	893.95	893.95	0.0	893.55	0.0	893.55	0.0	915.00	
32	0.8700	18.263	1367.6	50	2.3	134049	3315	68	3742	68	68	896.44	896.44	0.0	896.22	0.0	896.22	0.0	915.00	
33	0.8696	18.258	1367.3	50	2.3	136659	24454	71	30266	65	65	896.05	896.05	0.0	895.67	0.0	895.67	0.0	915.00	
34	0.8693	18.253	1366.9	50	2	17080	1859	54	2192	55	55	895.52	895.52	0.0	894.88	0.0	894.88	0.0	915.00	
35	0.8688	18.248	1366.5	100	4.6	4197	2980	64	3338	55	55	895.00	895.00	0.0	894.52	0.0	894.52	0.0	915.00	
36	0.8684	18.242	1366.1	100	4.8	43016	2051	56	2271	55	55	895.52	895.52	0.0	895.07	0.0	895.07	0.0	915.00	
37	0.8676	18.236	1365.7	150	7.9	68814	2459	62	2470	58	58	895.97	895.97	0.0	895.52	0.0	895.52	0.0	915.00	
38	0.8669	18.235	1365.0	200	10.8	94146	2019	56	2438	56	56	893.95	893.95	0.0	893.54	0.0	893.54	0.0	915.00	
39	0.8656	18.191	1362.6	200	12	244656	2437	60	2722	52	52	889.90	889.90	0.0	889.50	0.0	889.50	0.0	915.00	
40	0.8589	18.136	1358.8	200	12.2	336037	1709	52	1862	72	72	884.94	884.94	0.0	884.58	0.0	884.58	0.0	915.00	
41	0.8538	18.081	1354.9	200	12.1	735097	2333	58	2615	59	59	878.87	878.87	0.0	878.47	0.0	878.47	0.0	915.00	
42	0.8724	18.352	1369.2	50	1.1	34327	14954	138	16454	140	140	889.54	889.54	0.0	889.14	0.0	889.14	0.0	915.00	
43	0.9674	28.024	2042.5	200	10	319210	3831	75	4258	75	75	1999.45	1999.45	0.0	1999.04	0.0	1999.04	0.0	1915.00	
44	1.9578	27.950	2037.4	200	10	310430	4228	77	5090	81	81	989.56	989.56	0.0	989.16	0.0	989.16	0.0	1915.00	
45	1.9522	27.749	2034.8	200	10	249228	4726	78	5149	83	83	1984.48	1984.48	0.0	1983.97	0.0	1983.97	0.0	1915.00	
46	1.9482	27.878	2032.5	200	9	219162	4454	80	5274	83	83	1980.00	1980.00	0.0	1979.60	0.0	1979.60	0.0	1915.00	
47	1.9384	27.804	2027.4	200	10	331254	149417	9	3359	70	70	1970.08	1970.08	0.0	1969.68	0.0	1969.68	0.0	1915.00	
48	1.9281	27.779	2022.2	200	10.8	235764	9	244866	3539	71	71	1979.98	1979.98	0.0	1979.58	0.0	1979.58	0.0	1915.00	
49	1.9185	27.657	2017.2	200	9	1104	1104	72	4014	72	72	1959.30	1959.30	0.0	1958.91	0.0	1958.91	0.0	1915.00	
50	1.9077	27.773	2011.4	200	9	310000	2804	64	3741	67	67	1939.10	1939.10	0.0	1938.74	0.0	1938.74	0.0	1915.00	
51	1.8683	27.274	1990.6	200	10.2	311242	248204	66	3383	67	67	1926.55	1926.55	0.0	1925.97	0.0	1925.97	0.0	1915.00	
52	1.7684	26.507	1987.2	200	10	10	331254	245206	5800	92	92	1915.59	1915.59	0.0	1914.82	0.0	1914.82	0.0	1915.00	
53	1.6708	25.731</td																		

CAYLAR NMR HAS PROBLEM IN (1600 - 2100 GAUSS) RANGE AND SHOULD BE TRACKED MANUALLY

PROBE 2 RANGE ENDED NEAR 1600 GAUSS AND NMR WITH PROBE 1 WAS ALSO MEASURED FOR CROSS-CALIBRATION

* PROBE 1 RANGE DOES NOT QUITE REACH 1800 GAUSS EASILY

* RUN 65 - 66 ARE TWO RUNS AT 1012 keV TO CATCH 1_{mu}A & 10_{mu}A ON TARGET TO CHECK FOR DEADTIME

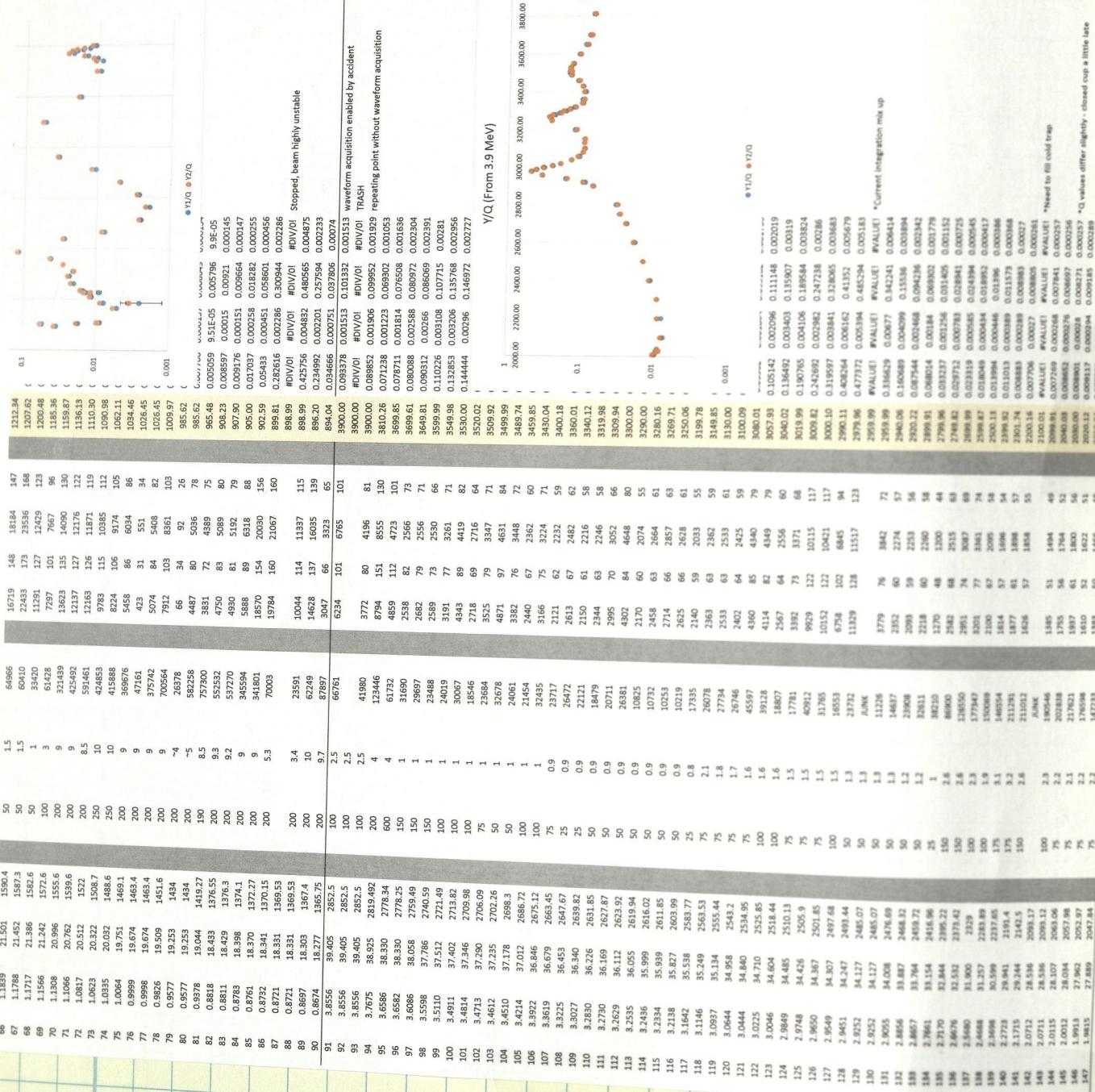
EFFECTS BECAUSE THERE WAS A CONCERN ABOUT DETECTORS COUNTING AT 3 kHz. YIELD WAS REPRODUCED VERY CLOSELY WITHIN 1%.

* RUN 68 SEAN SUGGESTED ADDING 1200 keV POINT

* RUN 69 INCREASING BEAM BACK TO 10_{mu}A

8

check rate effect, slits moved in from 5mm left/right to 0.5mm left/right



10

$$10/13/18 \quad {}^{15}N(p,\alpha\gamma)$$

Final Spreadsheet

Y/Q (897 keV Resonance) / Y/Q (897 keV Beam)

Energy (keV)

Left Panel (With Cup In):

- Y-axis: 1.00E-008 to 1.00E+000
- X-axis: 875.00 to 915.00
- Legend: ● Y/Q (With Cup In) ● Y/Q (Without Cup In)

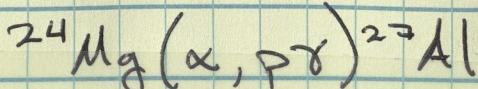
Right Panel (Without Cup In):

- Y-axis: 1.00E-008 to 1.00E+000
- X-axis: 875.00 to 915.00
- Legend: ● Y/Q (Without Cup In)

78	0.9806	19.509	1451.56	200	0	37542	50712	103	8361	103	102645	0.043504	0.000224	0.04393	0.000218	
79	0.9577	19.253	1434	200	~4	26328	66	34	92	26	1009.97	0.011394	0.000147	0.01195	0.000207	
80	0.9577	19.253	1434	200	~5	592258	4487	80	5036	78	985.62	0.020502	0.000289	0.000488	0.000286	
81	0.9378	19.044	1419.27	180	8.5	597300	3831	72	4389	75	965.48	0.070706	0.000337	0.000649	0.000134	
82	0.8818	18.433	1376.55	200	9.3	592532	4750	83	5089	80	908.23	0.08597	0.00105	0.000736	0.9E-05	
83	0.8811	18.429	1376.3	200	9.2	537270	4930	81	5192	79	907.30	0.069176	0.000151	0.000921	0.000145	
84	0.8783	18.398	1374.1	200	9	341809	5888	89	6318	88	905.00	0.017037	0.000258	0.016262	0.000255	
85	0.8761	18.370	1372.27	200	9	341809	1870	154	2030	156	902.59	0.05133	0.000451	0.058601	0.000456	
86	0.8732	18.341	1370.15	200	5.3	70003	19784	160	21067	160	898.99	0.028616	0.000286	0.000444	0.0002286	
87	0.8721	18.331	1369.53	200	3.4	25591	10044	114	11337	115	898.99	#DIV/0!	#DIV/0!	#DIV/0!	Stopped, beam highly unstable	
88	0.8721	18.331	1369.53	200	10	62249	14628	137	1635	139	895.60	0.34982	0.000832	0.480565	0.0004875	
89	0.8697	18.303	1367.4	200	9.7	87897	3047	66	3323	65	894.04	0.034666	0.000751	0.07594	0.0002333	
90	0.8674	18.277	1365.75	200	2.5	66761	6234	101	6765	101	390.00	0.093378	0.0001513	0.101332	0.00074	
91	3.8556	39.05	285.5	100	2.5	41980	3772	80	4196	81	390.00	#DIV/0!	#DIV/0!	#DIV/0!	TRASH	
92	3.8556	39.405	285.25	100	2.5	123446	8794	151	38126	130	390.00	#DIV/0!	#DIV/0!	#DIV/0!	repeating point without waveform acquisition	
93	3.8556	39.405	285.25	100	4	61732	4859	112	4723	101	3699.85	0.0787111	0.000184	0.076508	0.001558	
94	3.7675	38.925	2819.892	200	4	278.34	600	4	2538	82	989.81	0.080888	0.0002588	0.080972	0.0002304	
95	3.6586	38.330	278.25	150	1	29697	2682	79	2556	73	3649.81	0.096312	0.000256	0.080669	0.0002391	
96	3.6582	38.330	278.25	150	1	29697	2682	79	2556	73	3599.99	0.102326	0.003018	0.107715	0.002281	
97	3.6086	38.058	2759.49	150	1	29488	2589	73	2530	66	3549.98	0.135255	0.003016	0.135768	0.002956	
98	3.5598	37.778	270.59	150	1	3191	77	3191	71	3224	71	3530.00	0.144444	0.002926	0.146972	0.002277
99	3.5310	37.512	271.49	100	1	20419	4343	89	4419	82	3400.18	0.146447	0.002931	0.146447	0.002347	
100	3.4911	37.402	273.82	100	1	18057	18546	100	2178	64	3529.92	0.1484835	0.003336	0.143139	0.002958	
101	3.4814	37.346	2709.98	75	1	23684	3525	79	3347	71	3489.78	0.149561	0.002968	0.141716	0.002571	
102	3.4713	37.290	2706.09	75	1	23678	4871	97	3463	84	3489.78	0.149559	0.003159	0.143302	0.002292	
103	3.4612	37.255	2702.26	50	1	24051	3482	72	3448	72	3489.78	0.149569	0.003159	0.143302	0.002292	
104	3.4510	37.178	2696.5	50	1	21454	2440	67	2362	60	3459.85	0.113732	0.003133	0.110056	0.002297	
105	3.4214	37.012	2666.72	100	1	23435	3166	71	3224	71	3493.04	0.095611	0.002312	0.091594	0.00200	
106	3.3922	36.846	2615.12	100	1	2317	2121	62	2232	59	3400.18	0.089493	0.002614	0.09411	0.002488	
107	3.3619	36.679	2613.45	75	0.9	2647.67	2647.67	67	2482	62	3360.01	0.098708	0.002351	0.098759	0.002342	
108	3.3225	36.453	2611.85	50	0.9	21211	2150	61	2216	58	3340.12	0.097193	0.002758	0.100176	0.002622	
109	3.3027	36.340	2611.82	25	0.9	18079	2344	63	2246	58	3309.98	0.126847	0.003409	0.121543	0.003139	
110	3.2850	36.226	2611.85	50	0.9	18079	2985	70	3052	66	3309.94	0.140469	0.003458	0.147361	0.003187	
111	3.2730	36.169	2627.87	50	0.9	20711	2895	72	3071	66	3309.94	0.163022	0.003184	0.176187	0.003032	
112	3.2629	36.112	2623.92	50	0.9	26881	4802	84	4648	80	3300.00	0.163022	0.003133	0.176187	0.003032	
113	3.2535	36.055	2619.94	50	0.9	10252	2170	55	2047	55	3300.00	0.163022	0.003133	0.176187	0.003032	
114	3.2436	35.995	2616.02	50	0.9	10732	2458	63	2664	61	3300.00	0.163022	0.003133	0.176187	0.003032	
115	3.2334	35.939	2611.85	50	0.9	10253	2025	74	2857	63	3300.00	0.163022	0.003133	0.176187	0.003032	
116	3.2132	35.827	2603.99	50	0.9	10219	2625	66	2628	61	3300.00	0.163022	0.003133	0.176187	0.003032	
117	3.1642	35.538	2583.77	25	0.8	17335	2140	59	2033	55	3319.85	0.163022	0.003133	0.176187	0.003032	
118	3.1146	35.249	2563.53	75	2.1	26078	2863	72	2362	59	3319.85	0.163022	0.003133	0.176187	0.003032	
119	3.0937	35.134	2555.44	75	1.8	27734	2533	63	2553	61	3319.85	0.163022	0.003133	0.176187	0.003032	
120	3.0644	34.958	2543.2	75	1.7	26746	2402	63	2425	59	3300.00	0.163022	0.003133	0.176187	0.003032	
121	3.0444	34.840	2534.95	75	1.6	45597	4360	85	4340	79	3300.00	0.163022	0.003133	0.176187	0.003032	
122	3.0225	34.710	2525.85	100	1.6	100	12019	2625	64	2849	62	3300.00	0.163022	0.003133	0.176187	0.003032
123	3.0046	34.604	2515.44	75	1.6	100	18807	2567	60	2566	60	3300.00	0.163022	0.003133	0.176187	0.003032
124	2.9849	34.485	2510.13	75	1.5	17781	3392	73	3371	68	3300.00	0.163022	0.003133	0.176187	0.003032	
125	2.9748	34.242	2495.9	75	1.5	40512	59229	1015	117	117	3300.00	0.163022	0.003133	0.176187	0.003032	
126	2.9650	34.367	2501.85	75	1.5	31765	10152	122	10421	117	3300.00	0.163022	0.003133	0.176187	0.003032	
127	2.9549	34.247	2497.68	100	1.5	16553	27372	128	11517	123	3297.96	0.477372	0.005394	0.485294	0.005183	
128	2.9451	34.247	2493.44	50	1.3	45927	4360	85	4349	74	2959.99	#VALUE!	#VALUE!	#VALUE!	*Current integration mix up	
129	2.9252	34.127	2485.07	50	1.3	11226	17747	77	2301	74	2699.99	0.342241	0.000958	0.242484	0.000545	
130	2.9055	34.008	2476.69	50	1.3	14637	2352	60	2274	57	2940.06	0.163022	0.003133	0.176187	0.003032	
131	2.8856	33.887	2468.32	50	1.2	32618	21218	60	2260	58	2892.22	0.163022	0.003133	0.176187	0.003032	
132	2.8657	33.764	2459.72	50	1.2	34719	4499	87	5569	89	2899.91	0.163022	0.003133	0.176187	0.003032	
133	2.8531	33.657	2459.85	75	2.2	34720	30753	78	5569	89	2899.91	0.163022	0.003133	0.176187	0.003032	
134	2.7661	33.154	2415.96	25	2.6	38210	2852	68	2515	63	2749.82	0.029712	0.000783	0.028941	0.000725	
135	2.7175	32.844	2495.22	150	2.6	86800	2551	74	3087	69	2699.99	0.023319	0.000985	0.024284	0.000545	
136	2.6676	32.532	2473.42	150	2.6	177347	20288	72	3361	74	2640.02	0.023319	0.000984	0.024284	0.000545	
137	2.5680	31.900	2329	100	2.3	150069	21621	70	2105	67	2500.13	0.163022	0.003094	0.163022	0.003032	
138	2.4688	31.257	2385.89	100	1.9	14637	2352	60	2274	57	2999.92	0.163022	0.003133	0.176187	0.003032	
139	2.3698	27.889	2047.84	75	2.2	29007	5815	96	7202	101	3248.97	0.20469	0.00331	0.256958	*Filling in a few gaps - recycled magnet	
140	2.2723	29.941	2191.4	175	3.2	22421	3919	79	4754	82	3229.84	0.142921	0.002764	0.176187	0.003032	
141	2.1715	29.244	2142.5	150	2.6	34719	4499	87	5569	89	3229.84	0.142921	0.002764	0.176187	0.003032	
142	2.0712	28.536	2093.17	100	2.3	211012	1626	57	1856	55	3230.16	0.077036	0.000277	0.08865		

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10/13/15

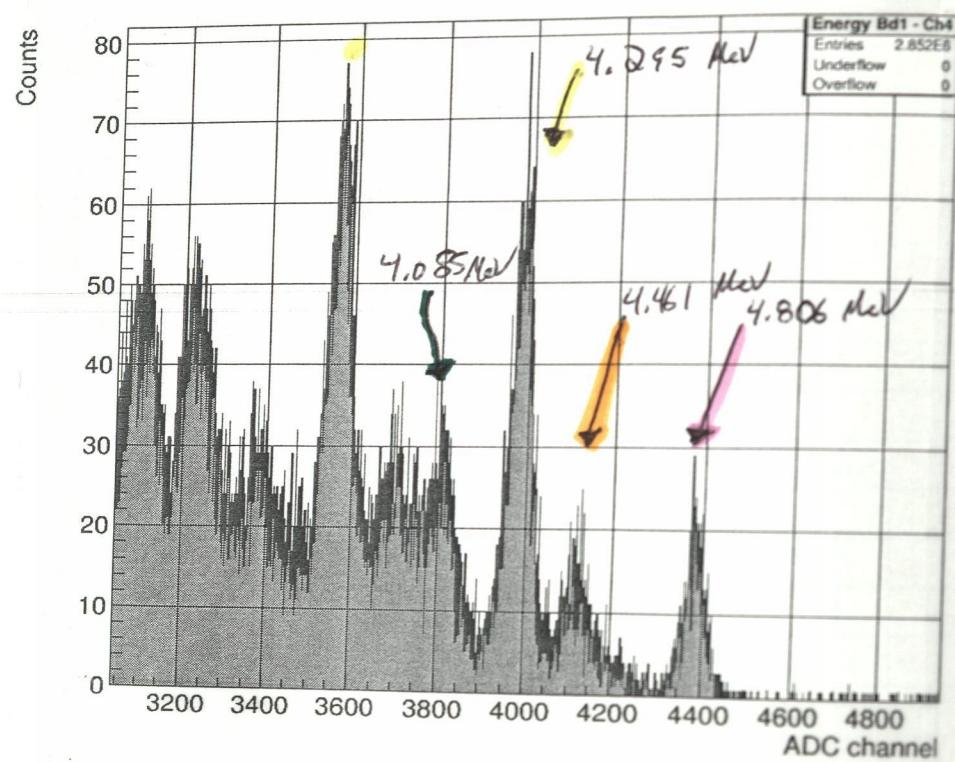


Run	GVM (MV)	I (An. Mag.)	NMR		C/pulse		Auto-Calc		Notes	
			I (Target - uA)	I (Supr - nA)	Yield1	Err	Y1/Q	err		
158	2.6866	46.353	3357.151	100	5.4	442026	128	1489	122	5440.82 0.00072 0.00029 0.003369 0.000276 mismatching NMR and TV
159	2.6866	46.353	3357.46	100	5.4	442026	1800	1839	149	5414.08 0.002726 0.000276 0.000274 0.000218
160	2.6725	46.232	3349.20	150	4.8	679892	154	1569	93	5403.41 0.001736 0.000147 0.01992 0.000118
161	2.6674	46.186	3345.90	200	4.3	787602	1367	116	113	5393.98 0.001917 0.000161 0.002174 0.00015
162	2.6620	46.139	3342.70	200	4	753317	1444	121	113	TRASH
163									Stopped for return	
164	2.6607	46.096	3339.68							
165	2.6572	46.096	3339.68							
166										
167	2.6577	46.096	3339.68	300	10	469056	3326	3447	135	5383.34 0.000936 0.000368 0.007966 0.000325 garbage
168	2.6530	46.051	3336.60	250	11	253127	6447	133	7340	136 0.007091 0.000288 0.007349 0.000288
169	2.6505	46.027	3335.00	300	11	174237	5452	119	5653	116 0.025409 0.000524 0.028929 0.000536
170	2.6484	46.008	3336.00	350	11	174901	5802	117	5970	118 0.000276 0.000683 0.02444 0.000666
171	2.6452	45.982	3331.80	350	11.4	159108	6018	116	6438	120 0.001736 0.000669 0.031291 0.001434 0.000675
172	2.6428	45.962	3330.44	350	11.4	257867	5813	123	6186	123 0.001917 0.000161 0.037823 0.000729 0.004663 0.000754
173	2.6399	45.938	3328.78	350	11.2	205291	3788	105	3935	104 0.000477 0.000473 0.023989 0.000477
174	2.6377	45.914	3327.12	350	11.4	151370	3850	100	4165	101 0.005
175	2.6350	45.891	3325.42	350	11.4	119593	4906	103	5384	105 0.033747
176	2.6327	45.870	3324.00	350	11.4	94234	5950	106	5995	106 0.0332.91
177	2.6301	45.847	3322.37	350	11.5	77640	6328	108	6851	112 0.0327.68
178	2.6278	45.825	3320.85	350	11.5	81958	8035	126	8491	128 0.0322.81
179	2.6252	45.801	3319.20	350	11.5	74029	9128	141	9668	139 0.0317.52
180	2.6232	45.781	3317.75	350	11.5	70120	9887	151	10563	152 0.0005
181	2.6203	45.760	3316.30	350	11.5	84341	12824	185	13309	23 0.0005 0.0350 0.0370 0.0430 0.0450
182										
183	2.6177	45.737	3314.47	350	11.5	44462	7586	144	8397	144 0.1706.18 0.0033239 0.188858 0.0003239
184	2.6153	45.714	3313.00	350	11.6	58099	11190	173	11447	172 0.1976.02 0.002978 0.197026 0.000239
185	2.6138	45.692	3311.52	350	11.6	34097	6598	132	7279	137 0.1935.07 0.003871 0.213479 0.0004018
186	2.6112	45.679	3310.65	350	11.6	36184	6018	128	6054	125 0.1935.07 0.166331 0.035337 0.1677312 0.003455
187	2.6086	45.654	3309.02	200	7	23063	2823	90	3264	92 0.122404 0.0035902 0.145125 0.003989
188	2.6068	45.631	3307.41	200	6.9	28152	2622	87	3023	93 0.093137 0.00309 0.107381 0.003303
189	2.6045	45.609	3305.89	200	6.5	36765	2449	87	5724.36	0.0666312 0.002366 0.068027 0.002394
190	2.6014	45.587	3304.33	200	6.8	49859	1825	83	2119	87 0.045796 0.002082 0.053162 0.002183
191	2.5987	45.565	3302.78	200	6.9	41234	1652	82	1811	85 0.0404064 0.001399 0.003439 0.003239
192	2.5966	45.542	3301.18	200	6.8	59410	1910	94	2182	100 0.0259.94 0.0321949 0.001582 0.036728 0.001683
193	2.5919	45.518	3298.60	200	6.7	62997	1290	82	1585	90 0.020477 0.001302 0.02516 0.001429
194	2.5881	45.496	3295.88	300	9.0	98550	1719	94	1839	95 0.0172958 0.00944 0.018473 0.000594
195	2.5848	45.473	3292.78	300	9.0	135594	1454	85	1628	88 0.010723 0.000627 0.012006 0.000649
196	2.5722	45.318	3285.48	300	9.6	262940	2127	98	2195	102 0.008089 0.0003073 0.008348 0.0003388
197	2.5614	45.227	3279.11	300	9.4	326417	2395	106	2584	107 0.007307 0.000325 0.007916 0.000325
198	2.5520	45.138	3272.85	300	10.2	163006	1618	80	1771	76 0.0170.05 0.0009526 0.000491 0.010865 0.000466
199	2.5422	45.047	3266.50	300	10.1	88941	1967	67	2200	70 0.021484 0.000746 0.024488 0.000779
200	2.5317	45.047	3260.13	300	10.1	79743	2931	78	3179	79 0.0253.94 0.002184 0.00379 0.000373 0.008348
201	2.5223	44.866	3253.80	300	9.9	595550	4706	103	5408	107 0.0110.04 0.008089 0.000325 0.007916 0.000325
202	2.5118	44.775	3247.41	300	10	23652	1705	97	1826	94 0.0089.99 0.000325 0.007916 0.000325
203	2.5095	44.684	3241.00	300	9.6	182311	1699	86	1875	88 0.0069.91 0.000325 0.007916 0.000325
204	2.4924	44.593	3234.62	300	9.8	89477	2290	72	2418	75 0.0494.97 0.001349 0.0062651 0.001368
211	2.4821	44.502	3228.25	300	9.8	83125	1946	70	2314	75 0.0530.10 0.0013368 0.000558 0.014079 0.000565
206	2.4720	44.410	3221.79	300	9.7	318794	1241	79	1414	81 0.0509.99 0.001349 0.0062651 0.001368
207	2.4623	44.319	3215.38	300	9.3	280574	1720	79	1888	81 0.0496.07 0.001349 0.0062651 0.001368
208	2.4522	44.227	3208.92	300	9.8	243535	1801	77	2087	81 0.0497.04 0.001349 0.0062651 0.001368
209	2.4429	44.136	3202.53	300	9.9	284966	1724	80	1999	84 0.0505.03 0.001349 0.0062651 0.001368
210	2.4335	44.044	3196.03	250	9.5	288526	1787	80	2116	83 0.0493.09 0.001349 0.0062651 0.001368
211	2.4231	43.951	3189.52	300	9.8	382619	1772	87	1983	81 0.0492.13 0.001349 0.0062651 0.001368
212	2.4127	43.858	3182.94	300	9.9	877054	1504	79	1488.89	81 0.0491.13 0.001349 0.0062651 0.001368
213	2.4016	43.749	3175.25	250	9.6	659027	926	90	4866.29	81 0.0490.07 0.001349 0.0062651 0.001368
214	2.3933	43.672	3169.94	300	9.9	774874	876	70	1210	95 0.0489.99 0.001349 0.0062651 0.001368
215	2.3833	43.579	3163.35	300	11	659225	1389	88	1491	92 0.0488.99 0.001349 0.0062651 0.001368
216	2.3733	43.486	3156.84	300	11.1	96852	2259	80	2482	83 0.0487.99 0.001349 0.0062651 0.001368
217	2.3633	43.393	3150.30	325	11.3	52641	3088	71	3298	72 0.0486.99 0.001349 0.0062651 0.001368
218	2.3532	43.299	3143.69	325	11.3	143407	1917	80	2019	81 0.0485.99 0.001349 0.0062651 0.001368
219	2.3428	43.205	3137.08	300	10.6	296907	1637	85	1817	86 0.0484.99 0.001349 0.0062651 0.001368
220	2.3330	43.111	3130.47	300	10.8	375219	1403	79	1611	85 0.0483.99 0.001349 0.0062651 0.001368
221	2.3223	43.017	3123.85	300	10.8	518017	2006	94	2398	99 0.0482.99 0.001349 0.0062651 0.001368
222	2.3136	42.922	3117.18	300	10.8	296915	1628	80	1737	81 0.0481.99 0.001349 0.0062651 0.001368
223	2.3043	42.829	3110.59	300	10.3	161748	2147	81	2524	86 0.0480.99 0.001349 0.0062651 0.001368
224	2.2931	42.733	3103.87	300	10.1	847148	2167	81	2419	81 0.0479.99 0.001349 0.0062651 0.001368
225	2.2847	42.639	3097.18	300	9.2	32651	3666	77	3835	77 0.0478.99 0.001349 0.0062651 0.001368
226	2.2736	42.543	3090.50	300	10.6	28416	3659	75	3994	75 0.0477.99 0.001349 0.0062651 0.001368

299	2.5950	45.231	3258.17	240	10	75229	4050	92	3652	87	5123.77	0.053836	0.001223	0.048545	0.001156
300	2.5271	45.208	3256.59	250	10.3	91227	6906	118	5909	111	5118.80	0.075701	0.001293	0.064772	0.001217
301	2.5248	45.185	3255.01	250	10.4	68872	5940	113	5458	107	5113.84	0.086247	0.001641	0.079248	0.001554
302	2.5290	45.171	3254.03	240	10.1	60888	5266	108	4771	101	5110.75	0.086487	0.001774	0.078357	0.001659
303	2.5223	45.162	3253.40	250	10.2	65255	5771	113	5476	106	5108.78	0.088438	0.001732	0.083917	0.001624
304	2.5210	45.153	3252.80	240	10.3	60591	5239	109	4767	102	5106.90	0.086465	0.001799	0.078675	0.001683
305	2.5200	45.144	3252.15	250	10.4	65884	5952	117	5309	109	5104.86	0.090341	0.001776	0.080581	0.001654
306	2.5190	45.135	3251.52	240	10.4	61648	5419	110	4823	104	5102.88	0.087902	0.001784	0.078234	0.001687
307	2.5170	45.125	3250.83	240	10	62841	4174	95	3861	90	5100.71	0.066422	0.001512	0.061441	0.001432
308	2.5178	45.124	3250.74	240	10.4	61775	4343	95	3887	91	5100.43	0.070304	0.001538	0.062922	0.001473
309	2.5175	45.122	3250.60	230	10.2	59563	4003	92	3885	88	5099.99	0.067206	0.001545	0.065225	0.001477
310	2.5168	45.117	3250.25	230	10	71667	4742	101	4197	95	5098.89	0.066167	0.001409	0.058563	0.001326
311	2.5159	45.107	3249.57	230	10	104560	6223	119	5717	113	5096.76	0.059516	0.001138	0.054677	0.001081
312	2.5145	45.093	3248.60	230	10	84770	2585	85	2387	82	5093.72	0.030494	0.001003	0.028159	0.000967
313	2.5104	45.049	3245.56	225	9.8	291264	2197	110	1940	100	5084.19	0.007543	0.000378	0.006661	0.000343
314	2.5044	45.004	3242.46	250	10.2	340155	3124	123	2488	111	5074.48	0.009184	0.000362	0.007314	0.000326
315	2.4994	44.960	3239.39	250	10.5	208700	2914	104	2644	97	5064.88	0.013963	0.000498	0.012669	0.000465
316	2.4944	44.914	3236.18	250	10.5	132324	2766	79	2410	75	5054.84	0.02076	0.000593	0.018088	0.000563
317	2.4895	44.867	3232.96	260	10.2	93834	3437	84	2826	78	5044.79	0.036329	0.000895	0.030117	0.000831
318	2.4880	44.854	3232.06	250	10.3	81198	3055	81	2928	76	5041.98	0.037624	0.000998	0.03606	0.000936
319	2.4863	44.839	3231.01	260	10.2	97257	3981	91	3559	86	5038.71	0.040933	0.000936	0.036594	0.000884
320	2.4852	44.826	3230.11	250	10.3	102786	4107	93	3477	85	5035.90	0.039397	0.000905	0.033828	0.000827
321	2.4836	44.812	3229.11	250	10.1	102614	3586	89	3161	84	5032.78	0.034946	0.000867	0.030805	0.000819
322	2.4810	44.789	3227.52	250	10.2	107006	3084	89	2716	81	5027.83	0.028821	0.000832	0.025382	0.000757
323	2.4799	44.775	3226.55	250	10	124196	3195	88	2869	82	5024.80	0.025725	0.000709	0.023101	0.000666
324	2.4775	44.752	3224.95	240	10	243690	3493	99	3043	92	5019.82	0.014334	0.000406	0.012487	0.000378
325	2.4768	44.743	3224.32	260	9.6	406014	3476	113	3036	104	5017.86	0.008561	0.000278	0.007478	0.000256
326	2.4765	44.743	3224.28	250	n/a	378007	3344	107	2924	103	5017.74	0.008846	0.000283	0.007735	0.000972
327	2.4754	44.729	3223.35	250	9.7	514690	3335	118	2969	112	5014.84	0.00648	0.000229	0.005769	0.000218
328	2.4700	44.682	3220.07	250	9.4	716789	3202	124	2958	117	5004.64	0.004467	0.000173	0.004127	0.000163
329	2.4650	44.635	3216.86	250	9.5	510224	2796	109	2843	106	4994.67	0.00548	0.000214	0.005572	0.000208
330	2.4600	44.589	3213.65	250	9.6	433524	3280	107	2849	100	4984.71	0.007566	0.000247	0.006572	0.000231
331	2.4550	44.542	3210.40	250	9.6	344290	3032	98	2760	94	4974.63	0.008807	0.000285	0.008016	0.000273
332	2.4547	44.534	3209.81	250	9.7	485406	4170	116	3933	114	4972.80	0.008591	0.000239	0.008102	0.000235
333	2.4522	44.510	3208.22	250	9.9	346582	3086	99	3044	99	4967.87	0.008904	0.000286	0.008783	0.000286
334	2.4510	44.496	3207.21	250	10	370113	3152	100	2948	97	4964.75	0.008516	0.000207	0.007965	0.000262
335	2.4490	44.483	3206.28	250	10	409353	3334	105	3042	98	4961.87	0.008145	0.000257	0.007431	0.000239
336	2.4467	44.459	3204.63	250	10	406396	3075	102	3029	98	4956.76	0.007567	0.000251	0.007453	0.000241
337	2.4417	44.412	3201.39	250	10	451864	3117	104	2965	104	4946.75	0.006898	0.00023	0.006562	0.000203
338	2.4374	44.366	3198.21	250	9.7	469757	3164	107	2898	101	4936.92	0.006735	0.000228	0.006169	0.000215
339	2.4314	44.316	3194.72	250	9.7	487671	3350	109	2934	102	4926.15	0.006869	0.000224	0.006016	0.000209
340	2.4280	44.286	3192.71	175	7.3	262522	1609	78	1579	80	4919.96	0.006129	0.000297	0.006015	0.000305
341	2.4186	44.193	3186.20	200	9	349564	1182	78	1035	80	4899.91	0.003381	0.000223	0.002961	0.000229
342	2.3792	43.817	3160.13	200	9.7	371570	1337	80	1288	77	4820.06	0.003598	0.000215	0.003466	0.000207
343	2.3772	43.795	3158.56	200	9.5	247621	1663	82	1573	78	4815.27	0.006716	0.000331	0.006352	0.000315
344	2.3759	43.780	3157.54	250	9.7	165359	1865	84	1858	83	4812.16	0.011278	0.000508	0.011236	0.000502
345	2.3689	43.722	3153.52	250	9.5	75550	3950	90	3611	85	4799.92	0.052283	0.001191	0.047796	0.001125
346	2.3596	43.628	3147.03	250	9.9	47081	2408	63	2321	62	4780.18	0.051146	0.001338	0.049298	0.001317
347	2.3566	43.604	3145.33	250	9	100784	2318	75	2205	71	4775.02	0.023	0.000744	0.021878	0.000704
348	2.3487	43.527	3140.01	250	9.7	165567	2107	93	1873	86	4758.88	0.017226	0.000562	0.011313	0.000519
349	2.3470	43.510	3138.79	250	9.8	171301	1801	88	1864	86	4755.18	0.010514	0.000514	0.010881	0.000502
350	2.3095	43.152	3113.93	200	9.3	238514	1904	86	1769	80	4680.15	0.007983	0.000361	0.007417	0.000335
351	2.2896	42.959	3100.53	225	9.6	68685	2399	68	2279	65	4639.96	0.034928	0.000999	0.031318	0.000946
352	2.2869	42.936	3098.93	225	9.3	45358	2721	68	2591	66	4635.17	0.059889	0.001499	0.057123	0.001455
353	2.2792	42.864	3093.93	150	7	19528	3098	69	2794	67	4620.23	0.158644	0.003533	0.143077	0.003431
354	2.2696	42.768	3087.24	150	7	44720	2728	67	2553	64	4600.27	0.061002	0.001498	0.057089	0.001431
355	2.2596	42.670	3080.44	200	9.2	21874	3059	62	2672	59	4580.03	0.139846	0.002834	0.122154	0.002697
356	2.2500	42.574	3073.76	200	9.3	224855	1888	75	1708	71	4560.18	0.287463	0.004049	0.266893	0.003863
357	2.2404	42.477	3067.03	200	9.3	17403	2831	60	2628	58	4540.24	0.162673	0.003448	0.151008	0.003333
358	2.2375	42.452	3065.28	200	9.3	24057	3332	66	3179	64	4535.06	0.138504	0.002743	0.132144	0.00266
359	2.2380	42.404	3061.96	200	9.3	33874	2839	62	2718	59	4525.24	0.083811	0.00183	0.080239	0.001742
360	2.2300	42.379	3060.21	200	8.2	61797	2797	67	2537	64	4520.07	0.045261	0.001084	0.041054	0.001036
361	2.2274	42.355	3058.52	175	8	86060	2314	64	2133	63	4515.08	0.026888	0.000744	0.024785	0.000732
362	2.2261	42.341	3057.54	200	9.1	222073	2114	75	2						

18

20



^{66}Ga activation

$\sim 100\text{ }\mu\text{m}$ thick ^{natty} foil with 400mA of 10 MeV protons $15:41\text{ PM}$ for approximately 2 mins 15 secs

RUN 410 TEST OF SOURCE ON MIDDLE OF TABLE
BEHIND $\sim 1\text{ mm}$ of lead

VERY STRONG $5/1\text{ keV}$ $\sim 1\text{ MeV}$ ^{Some}
~~RETEST~~ ~~DO AGAIN~~ RUN 411
~~RUN 411~~ ~~^{66}Ga~~ Mounted on ^{24}Mg TARGET

RUN 412 ^{66}Ga MOUNTED ON ^{24}Mg TARGET 9:56 AM 9/14/2018

↑
STUPID KEVIN, DON'T NEED ON THIS BACKING

RUN 413 ^{66}Ga Mounted on ^{15}N TARGET BACKING
SANDWICHED BETWEEN TWO PIECES OF TAPE
SO NOT TO PUT STICKY STUFF ON ^{15}N BACKING
WATER LINE PORTS ARE VERTICAL. NO WATER LINES ATTACHED.
h m s NO WATER IN CHAMBER.

RUN STARTED 10:13:35 AM ON SEPT 14th 2018

RUN STOPPED 16:54:35 PM ON SEPT 15th ~11-

(REAL TIME: 30:40:58)

RUN 414 AS 413, BUT WATER LINES CONNECTED AND WATER

COOLING RUNNING. USE THIS TO STUDY WATER ATTENUATION FOR MINI
LINE.

STARTED 17:05:05 PM 9/15

STOPPED 17:36:40 PM

REAL TIME Shown by COMPASS: 3 min? -- SPECTRUM SEEMS TO SHOW SHORTER

RUN 415 AS 414 (RESTARTED COMPASS)

STARTED	17:39:15 PM	9/15
STOPPED	19:29:20 PM	9/15
REAL TIME		1:50:01

TRANSFER OF ^{60}Co SAMPLE TO HPGe COUNTING STATION

STARTED RUN AT 18:06:13 PM (9/15). SAVING ACCUMULATED SPECTRA EVERY HOUR.

^{137}Cs SOURCE 1247-93 (3.752 kBq @ Aug 1st '07),
TAPED ON TOP OF ^{15}N TARGET (TAPED ON BOTH SIDES)

RUN 416

STARTED	19:51:15
STOPPED	20:55:00
 	
REAL TIME	1:03:17

^{60}Co SOURCE 1889-3Z-1 (34.51 kBq @ Aug 1st '16)

SAME SETUP AS PREVIOUS SOURCE

RUN 417

STARTED	21:06:00
STOPPED	21:21:00 PM
REAL TIME 15:56	

MOUNTED LARGER ^{50}Co SOURCE (ACTIVATED PIECE OF IRON)

RUN 418

STARTED	21:50:00 PM	9/15
STOPPED	13:18:00 PM	9/16

REAL TIME 15:28:01

↑ up

00

MOUNTED ^{60}Co SOURCE ON MG TARGET. WATER LINES CONNECTED. WATER ON.

RUN 419

START 13:17:15 9/16
END 14:04:00

REAL TIME 16:43

MOUNTED ^{137}Cs SOURCE ON MG TARGET. WATER LINES CONNECTED WATER ON.

RUN 420

START ~~14~~:16:00 9/16
STOP 15:50:30 9/16

REAL TIME 1:34:24

MOUNTED ^{56}Co SAMPLE ON MG TARGET. WATER ON.

RUN 421

START 16:13:00 9/16, LEFT OVERNIGHT
STOP 09:06:30 9/17/2018

RETURNED WATER CHILLED TO WAN PENG

RUN 422 ROOM / INTRINSIC BACKGROUND RUN

START 09:42:30 9/17
STOP 10:20:26

REAL TIME 02:37:58

RUN 423

SKIPPED

RUN 4284

BACKGROUND RUN (TARGET HOLDER OFF)

STOPPED 9/19 12:07 PM (25:24:49 REAL TIME)

26

Run 4285

Background (AS 424)

STARTED 9/19 12:09 PM

STOPPED 9/25 14:31 PM

REALTIME 11/6:22:22

SILENT DOWN DETECTOR MV

$Z^{64}\text{Mg}$... steel target holding ring

^{15}N ... aluminum target ring

2
6

