Appendix 1

Target Array and Energy Propagation Calculations

Title: GaAs Cross Section Array #1: 20160427AJD AMENDED
Target Submission: TS15_07(b)
Target Array: TA15_07(b)
Preparer: Anthony J. DeGraffenreid

Layer No.	Material in Beam	density(g/cm^3)	thickness (inches)	thickness (mm)	KE (MeV in)	Range(mm)	KE (MeV out) 116.5	Delta E (MeV)
1	Beryllium	1.85	0.012	0.305	116.500	66.780	116.19	0.31
2	AlBeMet	2.10	0.012	0.305	116.190	59.670	115.85	0.34
3	Stainless Steel window	7.99	0.031	0.787	115.850	18.180	112.93	2.92
4	Water	1.00	0.106	2.692	112.930	94.800	111.10	1.83
5	Stainless Steel window	7.99	0.020	0.508	111.100	16.910	109.19	1.91
6	Water	1.00	0.100	2.540	109.190	89.310	107.43	1.76
7	Water	1.00	0.135	3.429	107.430	86.770	103.84	3.59
8	Aluminum Degrader	2.70	0.085	2.159	103.840	39.446	100.60	3.24
9	Water	1.00	0.200	5.080	100.600	77.200	96.82	3.78
10	Al Target Front	2.70	0.020	0.508	96.820	34.878	96.02	0.80
11	Al Monitor Foil	2.70	0.001	0.025	96.020	34.369	95.97	0.05
12	GaAs	5.32	0.005	0.115	95.970	21.460	95.65	0.32
13	Al Target Back	2.70	0.181	4.597	95.650	34.137	88.12	7.53
14	Water Back of Aluminum	1.00	0.298	7.569	88.120	60.970	87.71	0.41
15	Water	1.00	0.100	2.540	87.710	60.460	85.63	2.08
16	Aluminum Degrader	2.70	0.056	1.422	85.630	28.081	83.15	2.48
17	Water	1.00	0.200	5.080	83.150	54.960	78.77	4.38
18	Al Target Front	2.70	0.020	0.508	78.770	24.225	77.83	0.94
19	Al Monitor Foil	2.70	0.001	0.025	77.830	23.716	77.78	0.05
20	GaAs	5.32	0.005	0.115	77.780	14.880	77.40	0.38
21	Al Target Back	2.70	0.181	4.597	77.400	23.483	68.45	8.95
22	Water Back of Aluminum	1.00	0.298	7.569	68.450	38.770	67.95	0.50
23	Water	1.00	0.200	5.080	67.950	38.260	62.77	5.18
24	Al Target Front	2.70	0.020	0.508	62.770	16.192	61.65	1.12
25	Al Monitor Foil	2.70	0.001	0.025	61.650	15.683	61.59	0.06
26	GaAs	5.32	0.005	0.115	61.590	9.897	61.10	0.49
27	Al Target Back	2.70	0.181	4.597	61.100	15.435	50.09	11.01
28	Water Back of Aluminum	1.00	0.298	7.569	50.090	22.090	39.71	10.38
29	Water	1.00	0.1	2.540	39.710	14.520	35.70	4.01
30	Aluminum Degrader	2.7	0.158	4.0132	35.700	5.930	18.88	16.82
31	Water	1.00	0.100	2.540	18.880	3.794	10.18	8.70
32	SS Degrader disk	7.99	0.521	13.233	10.180	0.263	#N/A	10.18
33	Water	1.00	0.200	5.080	#N/A	#N/A	#N/A	0.00
34	Stainless Steel window	7.99	0.02	0.508	#N/A	#N/A	#N/A	0.00

Raster (On/Off)	Off	**Thickness in Box 1**	2.77
Beam Energy (MeV)	116.5	**MaxTotalThickness in Box 1**	2.87
Current (uA)	70	**Space Left in Box 1**	0.093
Target Holder	Bolted Aluminum		
Irradiation Time (min)	60		
Beam Energy on Target (MeV)	95.65		
	77.4		
	61.1		

RSC Approval:	**Date Approved:**

Appendix 2

Target Loading Table						
Title: GaAs Cross Section Array #1: 20160427AJD						
Target Array: TA15_07(b)_____						
Preparer: Anthony J. DeGraffenreid						
Proposed Run Time (e.g. days, hrs.): 1 hour						
Desired Completion Date: Wednesday April 27, 2016						
Requested Beam Energy (MeV): 116.5 gaussian			Requested Beam Current (µA): 70			
	Item	Type and stamped ID (*if available*)	Thickness *inch*	Thickness *mm*	BLIP Operator *(Initial)*	Witness *(Initial)*
Box 1	Water gap	0.135”	0.135	3.43		
	Aluminium Degrader	n/a	0.085	2.159		
	Water gap	n/a	0.200	5.08		
	GaAs Tgt #1	n/a	0.5	12.7		
	Water gap	n/a	.1	2.54		
	Aluminum Degrader	n/a	0.056	1.422		
	Water gap	n/a	0.2	5.08		
	GaAs Tgt #2	n/a	0.5	12.7		
	Water gap	n/a	0.2	5.08		
	GaAs Tgt #3	n/a	0.5	12.7		
	Water gap	n/a	0.1	2.54		
	Aluminum Degrader	0.158”	0.158	4.013		
	Water gap	n/a	0.1	2.54		
	Stainless Degrader	0.521”	0.521	13.23		
	Water gap	n/a	0.2	5.08		
RSC Approval:				**Date Approved:**		