Appendix 1

Target Array and Energy Propagation Calculations

TITLE: Irradiation of Zn-68 targets at 117 MeV Linac: 105 and 50 MeV entrance on the targets_____

Target Array Number: TA-16-08

Preparer: ___Medvedev/Phelps_____

Layer Number	Layer	Material	Density	Thickness inch	Thickness mm	MeV Ei	MeV Eout	Energy deposited

Energy: 116.8 MeV — 165

water displacement by can	layer number	Layer	Material	density	thickness inches	thickness mm	Ei	Eout	delta E	power, Wts
	1	Be window	Berillium	1.85	0.012	0.305	116.80	116.50	0.30	49.27
	2	AlBeMet window	AlBeMet	2.10	0.012	0.305	116.50	116.16	0.34	56.09
	3	Beamline window	stainless steel	7.99	0.031	0.787	116.16	113.30	2.86	471.74
	4	water gap	water	1.00	0.106	2.692	113.30	111.49	1.81	298.72
	5	1st box upstream window	stainless steel	7.99	0.020	0.508	111.49	109.60	1.90	312.72
	6	water gap	water	1.00	0.200	5.080	109.60	106.06	3.53	583.21
Zn target can 0.500	7	Zn can window	Al 6061	2.70	0.020	0.508	106.06	105.31	0.75	123.65
	8	Zn disk	Zn	7.13	0.020	0.508	105.31	103.60	1.71	282.31
	9	Aluminum well bottom	Al 6061	2.70	0.167	4.229	103.60	97.13	6.47	1068.01
	10	water outside well	water	1.00	0.298	7.569	97.13	91.31	5.82	960.89
	11	cooling channel	water	1.00	0.100	2.540	91.31	89.29	2.02	332.76
Al degrader	12	Al degrader	Aluminum	2.70	0.354	8.992	89.29	73.22	16.07	2651.72
	13	cooling channel	water	1.00	0.200	5.080	73.22	68.37	4.85	800.40
Zn target can 0.500 flipped	14	water outside well	water	1.00	0.298	7.568	68.37	60.58	7.78	1284.02
	15	Aluminum well bottom	Aluminum	2.70	0.167	4.241	60.58	50.57	10.01	1652.11
	16	Zn disk	Zn	7.13	0.020	0.508	50.57	47.66	2.91	480.80
	17	can window	inconel	8.43	0.020	0.508	47.66	46.28	1.38	228.16
	18	cooling channel	water	1.00	0.200	5.080	46.28	39.10	7.18	1184.62
Al stop 0.754	19	Al beam stop	Aluminum	8.92	0.754	19.152	39.10	stop	39.10	6450.81
	20	cooling channel	water	1.00	0.200	5.080	0.00	0.00		

RSC Approval: Dana Beavis | **Date Approved:** 7/22/15

Appendix 2

Target Loading Table

Title Irradiation of Zn-68 targets at 117 MeV Linac: 105 and 50 MeV entrance on the targets _____

Target Array Number: **TA**-16-08_____

Preparer: ___Medvedev/Phelps_____

Proposed Run Time (e.g. days, hrs.): up to 2.8

Desired Completion Date: July 31

Requested Beam Energy (MeV): 117 | Requested Beam Current (μA): 165

	Item	Type and stamped ID (*if available*)	Layer #'s from "Target Array and Energy Propagation Calculations"	Thickness *inch*	BLIP Operator *(Initial)*	Witness *(Initial)*
Box 1	Water gap	n/a	6	0.200		
	Zn-68 target can		7-10	0.500		
	Water gap	n/a	11	0.200		
	Al degrader		12	0.354		
	Water gap	n/a	13	0.200		
	Zn-68 target can (flipped)		14-17	0.500		
	Water gap	n/a	18	0.200		
	Al beam stop		19	0.754		
	Water gap	n/a	20	0.200		

RSC Approval: Dana Beavis **Date Approved:** 7/22/16