

## APPENDIX A

## ROUTE POSITION LIST

**IR1-Ocean RPL**

Kp	Easting	Northing	Latitude	Longitude	Grid Heading	Geodetic Heading
0.000000	495261.98	4271546.87	38.592392°N	75.054406°W	94.05	94.02
0.440000	495700.88	4271515.77	38.592114°N	75.049366°W	114.05	114.02
0.940000	496157.46	4271311.99	38.590280°N	75.044122°W	118.43	118.4
21.517180	514253.16	4261515.76	38.501890°N	74.836538°W	184.37	184.47
26.037179	513908.80	4257008.90	38.461279°N	74.840577°W	184.37	184.47
31.666984	513479.89	4251395.45	38.410696°N	74.845601°W	147.86	147.96
32.930807	514152.18	4250325.28	38.401041°N	74.837922°W		

**IR2-Ocean RPL**

0.000000	495262.11	4271580.69	38.592697°N	75.054405°W	94.05	94.02
0.440172	495701.18	4271549.59	38.592419°N	75.049363°W	114.05	114.02
0.959140	496175.09	4271338.07	38.590515°N	75.043920°W	118.43	118.4
23.524969	516020.00	4260595.82	38.493569°N	74.816296°W	124.6	124.72
24.211021	516584.71	4260206.24	38.490048°N	74.809830°W	177.63	177.74
26.514434	516680.12	4257904.80	38.469305°N	74.808791°W	177.63	177.75
33.216576	516957.71	4251208.41	38.408951°N	74.805770°W	107.85	107.97
35.498049	519129.33	4250508.99	38.402604°N	74.780916°W		

**IR3-Ocean RPL**

Kp	Easting	Northing	Latitude	Longitude	Grid Heading	Geodetic Heading
0.000000	495262.11	4271614.52	38.593002°N	75.054405°W	94.05	94.02
0.440478	495701.49	4271583.40	38.592723°N	75.049359°W	114.05	114.02
0.978414	496192.72	4271364.15	38.590750°N	75.043717°W	118.43	118.4
23.541157	516034.76	4260623.08	38.493814°N	74.816126°W	123.99	124.1
24.240271	516614.44	4260232.26	38.490282°N	74.809489°W	129.58	129.7
27.712566	519290.77	4258020.01	38.470291°N	74.778861°W	143.95	144.09
34.347161	523194.75	4252655.61	38.421853°N	74.734286°W	182.31	182.47
41.691326	522899.02	4245317.40	38.355727°N	74.737912°W	166.64	166.8
44.053380	523444.75	4243019.25	38.335002°N	74.731743°W		

**IRB-CL-IR1 RPL**

Kp	Easting	Northing	Latitude	Longitude	Grid Heading	Geodetic Heading
0.000000	479340.09	4271064.51	38.58781718°N	75.23721945°W	90.94	90.79
0.527122	479866.94	4271055.85	38.58775131°N	75.23116998°W	82.17	82.03
1.188158	480521.56	4271145.85	38.58857693°N	75.22365615°W	73.91	73.77
1.308206	480636.85	4271179.11	38.58887924°N	75.22233322°W	65.36	65.23
1.701567	480994.27	4271343.02	38.59036409°N	75.21823379°W	85.36	85.23
1.808567	481100.87	4271351.67	38.59044427°N	75.21700990°W	97.19	97.05
2.178213	481467.47	4271305.44	38.59003539°N	75.21279925°W	77.19	77.05
2.269181	481556.14	4271325.60	38.59021897°N	75.21178166°W	59.8	59.67
2.491555	481748.25	4271437.42	38.59123064°N	75.20957867°W	75.65	75.52
2.733422	481982.48	4271497.33	38.59177535°N	75.20689064°W	95.65	95.52
2.95394	482201.84	4271475.62	38.59158412°N	75.20437125°W	100.65	100.52
3.740702	482974.74	4271330.25	38.59028918°N	75.19549279°W	88.2	88.08
4.601416	483834.69	4271357.22	38.59054828°N	75.18561908°W	76.34	76.22
8.541245	487661.54	4272287.35	38.59899205°N	75.14169371°W	89.3	89.21
8.85912	487979.26	4272291.22	38.59903127°N	75.13804506°W	81.82	81.74
11.269706	490364.39	4272633.93	38.60214891°N	75.11065926°W	74.27	74.2
11.749133	490825.68	4272763.87	38.60332477°N	75.10536340°W	81.67	81.61
11.946488	491020.87	4272792.44	38.60358423°N	75.10312201°W	100.88	100.81
12.196506	491266.30	4272745.27	38.60316161°N	75.10030279°W	115.88	115.82

12.775188	491786.74	4272492.80	38.60089129°N	75.09432273°W	122.88	122.82
12.913237	491902.63	4272417.89	38.60021726°N	75.09299096°W	107.88	107.82
13.073307	492054.91	4272368.76	38.59977594°N	75.09124161°W	92.88	92.82
13.229137	492210.48	4272360.94	38.59970682°N	75.08945495°W	72.88	72.82
13.351105	492327.00	4272396.83	38.60003131°N	75.08811726°W	57.88	57.82
13.473425	492430.55	4272461.85	38.60061809°N	75.08692875°W	41.79	41.74
13.671399	492562.44	4272609.39	38.60194888°N	75.08541578°W	37.41	37.35
13.779441	492628.04	4272695.18	38.60272257°N	75.08466327°W	53.32	53.27
13.889607	492716.35	4272760.97	38.60331614°N	75.08364972°W	73.29	73.24
14.000124	492822.16	4272792.73	38.60360327°N	75.08243490°W	93.29	93.24
14.078628	492900.50	4272788.23	38.60356333°N	75.08153510°W	113.29	113.24
14.157132	492972.58	4272757.20	38.60328430°N	75.08070699°W	133.29	133.24
14.267649	493053.00	4272681.45	38.60260228°N	75.07978272°W	153.29	153.24
14.37816	493102.65	4272582.78	38.60171339°N	75.07921149°W	173.21	173.16
14.487554	493115.59	4272474.19	38.60073495°N	75.07906186°W	190.24	190.19
14.595609	493096.38	4272367.90	38.59977691°N	75.07928139°W	174.35	174.3
14.67377	493104.07	4272290.15	38.59907629°N	75.07919227°W	154.66	154.61
14.743142	493133.75	4272227.48	38.59851171°N	75.07885085°W	135.13	135.09
14.974836	493297.13	4272063.33	38.59703363°N	75.07697304°W	115.16	180
14.974875	493297.21	4272063.29	38.59703327°N	75.07697208°W	135.16	135.11
15.354108	493564.51	4271794.48	38.59461279°N	75.07390009°W	115.16	115.12
15.454147	493655.02	4271751.97	38.59423028°N	75.07286035°W	95.16	95.12
15.554188	493754.61	4271742.97	38.59414990°N	75.07171660°W	91.52	91.47
15.858554	494058.75	4271734.92	38.59407944°N	75.06822408°W		

**IRB-CL\_IR2 RPL**

Kp	Easting	Northing	Latitude	Longitude	Grid Heading	Geodetic Heading
0.000000	479342.93	4271030.79	38.58751342°N	75.23718587°W	88.35	88.21
0.525350	479867.86	4271045.89	38.58766150°N	75.23115912°W	82.17	82.03
1.187555	480523.63	4271136.04	38.58848859°N	75.22363202°W	73.91	73.77
1.309072	480640.34	4271169.71	38.58879459°N	75.22229289°W	65.36	65.23
1.701417	480996.83	4271333.20	38.59027560°N	75.21820406°W	85.36	85.23
1.805617	481100.65	4271341.62	38.59035369°N	75.21701220°W	97.19	97.05
2.175990	481467.97	4271295.30	38.58994400°N	75.21279326°W	77.19	77.05
2.270253	481559.85	4271316.19	38.59013423°N	75.21173882°W	59.8	59.67
2.492763	481752.08	4271428.08	38.59114652°N	75.20953448°W	75.65	75.52
2.731473	481983.25	4271487.21	38.59168412°N	75.20688155°W	95.65	95.52
2.949792	482200.42	4271465.72	38.59149480°N	75.20438729°W	100.65	100.52
3.737207	482973.96	4271320.22	38.59019878°N	75.19550147°W	88.2	88.08
4.600053	483836.04	4271347.25	38.59045853°N	75.18560331°W	76.34	76.22
8.539784	487662.79	4272277.37	38.59890208°N	75.14167908°W	89.3	89.21
8.857180	487980.04	4272281.23	38.59894125°N	75.13803595°W	81.82	81.74
11.267630	490365.04	4272623.92	38.60205871°N	75.11065171°W	74.26	74.19
11.749157	490828.32	4272754.51	38.60324042°N	75.10533291°W	81.78	81.71
11.945253	491022.32	4272782.54	38.60349507°N	75.10310525°W	100.88	100.81
12.188584	491261.18	4272736.64	38.60308376°N	75.10036142°W	115.88	115.82
12.767489	491781.83	4272484.07	38.60081257°N	75.09437908°W	122.88	122.82
12.904926	491897.20	4272409.49	38.60014152°N	75.09305321°W	107.88	107.82
13.070175	492054.41	4272358.78	38.59968593°N	75.09124726°W	92.88	92.82
13.227768	492211.74	4272350.86	38.59961603°N	75.08944038°W	72.88	72.82
13.352818	492331.20	4272387.66	38.59994871°N	75.08806890°W	57.88	57.82

13.477868	492437.07	4272454.13	38.60054859°N	75.08685386°W	41.79	41.74
13.677644	492570.15	4272603.02	38.60189150°N	75.08532712°W	37.35	37.3
13.784687	492635.07	4272688.07	38.60265854°N	75.08458244°W	53.29	53.24
13.891729	492720.85	4272752.03	38.60323567°N	75.08359800°W	73.29	73.24
13.998771	492823.33	4272782.80	38.60351378°N	75.08242137°W	93.29	93.24
14.073801	492898.21	4272778.50	38.60347560°N	75.08156140°W	113.29	113.24
14.148831	492967.09	4272748.84	38.60320892°N	75.08076994°W	133.29	133.24
14.255873	493044.98	4272675.48	38.60254835°N	75.07987473°W	153.29	153.24
14.362916	493093.08	4272579.90	38.60168735°N	75.07932143°W	173.23	173.18
14.469093	493105.59	4272474.50	38.60073764°N	75.07917665°W	190.29	190.24
14.577411	493086.24	4272367.97	38.59977742°N	75.07939777°W	174.29	174.24
14.658327	493094.29	4272287.49	38.59905218°N	75.07930457°W	154.66	154.61
14.731264	493125.50	4272221.59	38.59845861°N	75.07894554°W	135.14	135.09
14.966366	493291.28	4272055.03	38.59695877°N	75.07704011°W	115.16	180
14.966406	493291.37	4272054.99	38.59695841°N	75.07703914°W	135.16	135.11
15.345638	493558.66	4271786.18	38.59453793°N	75.07396717°W	115.16	115.12
15.447443	493650.77	4271742.91	38.59414867°N	75.07290908°W	95.96	95.92
15.851221	494052.20	4271700.99	38.59377366°N	75.06829901°W		

**IRB-CL\_IR3 RPL**

Kp	Easting	Northing	Latitude	Longitude	Grid Heading	Geodetic Heading
0.000000	494046.65	4271666.14	38.59345948°N	75.06836245°W	279.61	279.56
0.405989	493646.52	4271733.86	38.59406707°N	75.07295782°W	295.16	295.12
0.509557	493552.81	4271777.88	38.59446308°N	75.07403423°W	315.16	315.12
0.888790	493285.52	4272046.69	38.59688356°N	75.07710622°W	315.13	315.08
1.127391	493117.25	4272215.71	38.59840553°N	75.07904025°W	334.65	334.6
1.203893	493084.51	4272284.82	38.59902809°N	75.07941687°W	354.31	354.26
1.287556	493076.21	4272368.04	38.59977797°N	75.07951298°W	10.23	10.18
1.396098	493095.48	4272474.81	38.60074036°N	75.07929273°W	353.23	353.18
1.499015	493083.35	4272576.97	38.60166092°N	75.07943306°W	333.29	333.24
1.602535	493036.84	4272669.41	38.60249358°N	75.07996815°W	313.29	313.24
1.706049	492961.52	4272740.36	38.60313238°N	75.08083386°W	293.29	293.24
1.777551	492895.87	4272768.61	38.60338652°N	75.08158811°W	273.29	273.24
1.849053	492824.52	4272772.72	38.60342291°N	75.08240764°W	253.29	253.24
1.952568	492725.41	4272742.96	38.60315397°N	75.08354549°W	233.29	233.24
2.056446	492642.17	4272680.89	38.60259390°N	75.08450083°W	217.35	217.3
2.162088	492578.10	4272596.95	38.60183688°N	75.08523577°W	219.57	180
2.162863	492577.61	4272596.35	38.60183150°N	75.08524142°W	221.82	221.77
2.364039	492443.52	4272446.49	38.60047978°N	75.08677970°W	237.87	237.82
2.491794	492335.37	4272378.57	38.59986682°N	75.08802095°W	252.91	252.85
2.619887	492212.98	4272340.94	38.59952662°N	75.08942603°W	272.82	272.77
2.779218	492053.91	4272348.79	38.59959592°N	75.09125291°W	287.88	287.82
2.949645	491891.78	4272401.09	38.60006579°N	75.09311545°W	302.88	302.82
3.086470	491776.91	4272475.34	38.60073385°N	75.09443542°W	295.88	295.82
3.665597	491256.07	4272728.00	38.60300590°N	75.10042005°W	280.88	280.82
3.902243	491023.77	4272772.65	38.60340592°N	75.10308849°W	261.9	261.83
4.097086	490830.95	4272745.19	38.60315653°N	75.10530259°W	254.23	254.17
4.580057	490366.34	4272614.01	38.60196936°N	75.11063665°W	261.82	261.75
6.991042	487980.81	4272271.24	38.59885121°N	75.13802692°W	269.3	269.22
7.307951	487664.05	4272267.38	38.59881211°N	75.14166446°W	256.34	256.25
11.247585	483837.39	4271337.29	38.59036877°N	75.18558756°W	268.2	268.09

12.112561	482973.19	4271310.19	38.59010838°N	75.19551013°W	280.65	280.53
12.900631	482199.00	4271455.81	38.59140548°N	75.20440333°W	275.65	275.52
13.116749	481984.02	4271477.08	38.59159289°N	75.20687244°W	255.65	255.52
13.352302	481755.91	4271418.74	38.59106241°N	75.20949029°W	239.8	239.67
13.574949	481563.56	4271306.78	38.59004948°N	75.21169599°W	257.19	257.06
13.672505	481468.47	4271285.15	38.58985261°N	75.21278726°W	277.19	277.05
14.043607	481100.43	4271331.56	38.59026310°N	75.21701450°W	265.36	265.23
14.145008	480999.40	4271323.37	38.59018712°N	75.21817434°W	245.36	245.23
14.536335	480643.83	4271160.31	38.58870995°N	75.22225255°W	253.91	253.77
14.659322	480525.71	4271126.23	38.58840024°N	75.22360789°W	262.17	262.03
15.321107	479870.35	4271036.14	38.58757368°N	75.23113020°W	265.74	265.6
15.847481	479345.64	4270997.08	38.58720965°N	75.23715381°W		