

Final Survey Report

Kansas LiDAR Add-ons

AOI 3

15115



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Section 1: Narrative

1.1 Introduction

A survey was performed to support the acquisition of Light Detection and Ranging (LiDAR) data for the Kansas Department of Agriculture Kansas add-ons areas of interest (AOI). This report concerns the methods used for the ground control survey in AOI 3.

1.2 Applicable Standards

This Geodetic Control Survey was conducted so as to support Light Detection and Ranging (LiDAR) data in accordance with the National Digital Elevation Program (NDEP) and the American Society for Photogrammetry and Remote Sensing (ASPRS) guidelines.

Section 2: Ground Control Geodetic Network Survey

2.1 Ground Control Points

A GPS control network was performed for the purposes of establishing a three-dimensional coordinates on each of the base station locations. The control network included a combination of a National Geodetic Survey (NGS) Control Monuments (*GLADE 2, MIDWAY, and NORTONPORT*), National Geodetic Survey (NGS) CORS (*ICT4, ICT5, NEAP, NEMC, NERC, and OKBF*), and points set by Atlantic. A control network was established for each individual area of interest.

A graphical representation of all the ground control points is provided in figures 1.

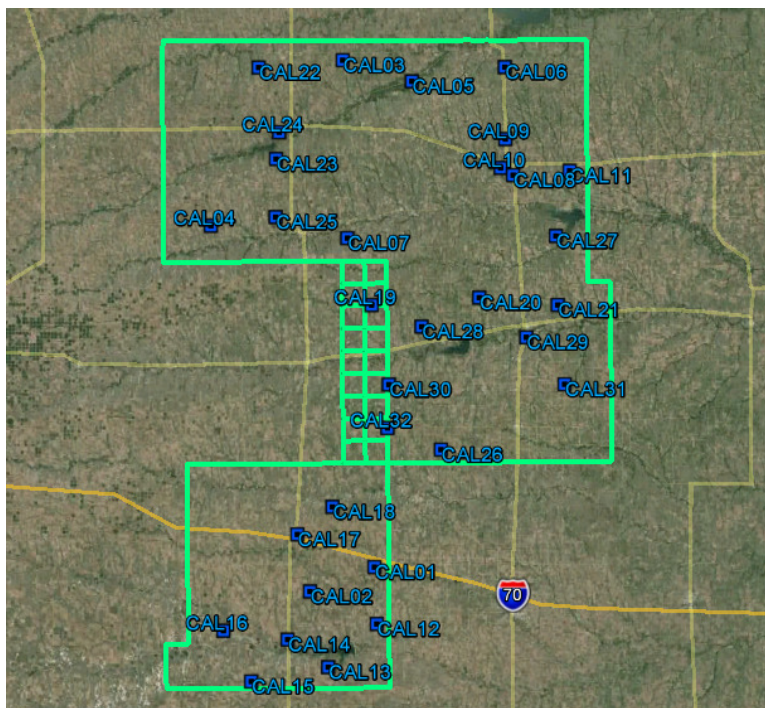


Figure 1: AOI 3 Ground Control Geodetic Network Points

2.2 Ground Control Station Collection

GPS observations at all ground control points in the network were made with Leica System 500 dual-frequency GPS-receivers with Leica AT502 antenna or a Topcon HiPER V between March 2015 and April 2015. Session lengths were based upon the distance between points and were set for a minimum of one hour per every 10 km. Some baselines were collected during LiDAR acquisition and are much longer than typically required.

2.3 Ground Control Data Processing and Analysis

Data collected during each GPS session was processed using GrafNet 8.60.2105 with their respective GPS antenna type, and antenna height reading. Two (2) networks were processed in order to establish coordinates and height values for all points. The RMS values for the latitude, longitude and ellipsoid heights for all results were reviewed to ensure that they are within acceptable limits. Two adjustments were made during each network's development. Each adjustment reports baseline RMSE and residual values at the control points.

2.3.1 AOI 3 Network Processing – North

The network development involved performing a minimally constrained network adjustment, holding NGS Monument (**NORTONPORT 2**) as a horizontal and vertical control point. This minimally constrained adjustment allowed for blunders and errors to appear within the network. These blunders were analyzed and the baselines were rejected if they had high residuals against other redundant baselines. In all, a total of 185 baselines were kept in the minimally constrained adjustment.

Three (3) control points within the network were then fully constrained for a final network adjustment, holding NGS Monuments (**GLADE 2, MIDWAY, and NORTONPORT 2**) as horizontal and vertical control points. Geoid12A was utilized during GPS processing. In all, 185 baselines were kept in the fully constrained adjustment after the final network analyses. Final network control values were then assigned to control points

A tabulated summary of the final coordinates resulting from the network survey are listed in section 2.4.1.

2.3.2 AOI 3 Network Processing – South

The network development involved performing a minimally constrained network adjustment, holding NGS Monument (**OKBF**) as a horizontal and vertical control point. This minimally constrained adjustment allowed for blunders and errors to appear within the network. These blunders were analyzed and the baselines were rejected if they had high residuals against other redundant baselines. In all, a total of 167 baselines were kept in the minimally constrained adjustment.

Six (6) control points within the network were then fully constrained for a final network adjustment, holding NGS Monuments (**ICT4, ICT5, NEAP, NEMC, NERC, and OKBF**) as horizontal and vertical control points. Geoid12A was utilized during GPS processing. In all, 167 baselines were kept in the fully constrained adjustment after the final network analyses. Final network control values were then assigned to control points

A tabulated summary of the final coordinates resulting from the network survey are listed in section 2.4.1.

2.4 Overall Network Final Coordinates

After analyzing all fully constrained final network adjustments, a tabulated summary of the final coordinates were established for all ground control points. These summaries are listed below.

2.4.1 AOI 3 Final Coordinates

NAD83 (HARN), UTM Zone 14N, NAVD88 (Geoid12A), Meters				
PointID	Easting	Northing	Elevation	Description
CAL01	442009.629	4312094.326	686.940	Control Point
CAL02	427538.238	4306757.234	741.914	Control Point
CAL03	435639.559	4425011.352	716.954	Control Point
CAL04	405900.539	4388304.421	766.683	Control Point
CAL05	451092.888	4420175.341	636.669	Control Point
CAL06	471901.777	4423189.961	652.060	Control Point
CAL07	436445.002	4385320.658	673.964	Control Point
CAL08	473600.595	4399082.398	577.289	Control Point
CAL09	471920.837	4407126.528	623.890	Control Point
CAL10	470836.305	4400707.085	588.982	Control Point
CAL11	486248.664	4399974.054	552.112	Control Point
CAL12	442431.919	4299420.394	686.175	Control Point
CAL13	431473.193	4289873.988	696.132	Control Point
CAL14	422446.676	4296059.039	688.930	Control Point
CAL15	414205.618	4286766.259	728.159	Control Point
CAL16	408069.014	4298116.585	700.745	Control Point
CAL17	424818.348	4319481.392	748.442	Control Point
CAL18	432718.932	4325544.769	717.709	Control Point
CAL19	441795.615	4370364.156	663.732	Control Point
CAL20	465845.106	4371847.434	613.833	Control Point
CAL21	483368.326	4370103.192	572.969	Control Point
CAL22	416788.462	4423549.770	734.722	Control Point
CAL23	420600.004	4403076.028	747.298	Control Point
CAL24	421308.331	4409040.082	701.417	Control Point
CAL25	420427.395	4390128.182	725.901	Control Point
CAL26	457061.220	4338116.161	672.937	Control Point
CAL27	483073.963	4385459.930	549.887	Control Point
CAL28	452916.930	4365485.383	623.670	Control Point
CAL29	476289.347	4362951.851	539.977	Control Point
CAL30	445506.714	4352664.931	643.476	Control Point
CAL31	484784.957	4352455.412	595.026	Control Point
CAL32	445141.845	4342996.471	707.241	Control Point

Section 3: Ground Cover Classification Survey

3.1 Ground Cover Classification Check Point Collection

GPS observations were conducted at each ground control point in order to conduct a Real Time Kinematic (RTK) survey. The purpose of this survey was to collect ground test points for use during the processing of the LiDAR data to ensure that the highest possible accuracy was achieved. GPS observations at each Real Time Kinematic (RTK) ground control point were made with a Leica SR530 dual-frequency GPS-receivers w/ Leica AT502 antenna. The GPS units were configured to log data at 1 Hz, and at 10 degrees mask. RTK test points collected to represent differing types of ground cover. All observations were conducted between March 2015 and April 2015.

The purpose of this survey was to collect ground check points for use during the processing of the LiDAR data to ensure that the highest possible accuracy was achieved.

A graphical representation of all the Ground Cover Classification Check Points is provided in figure 2.

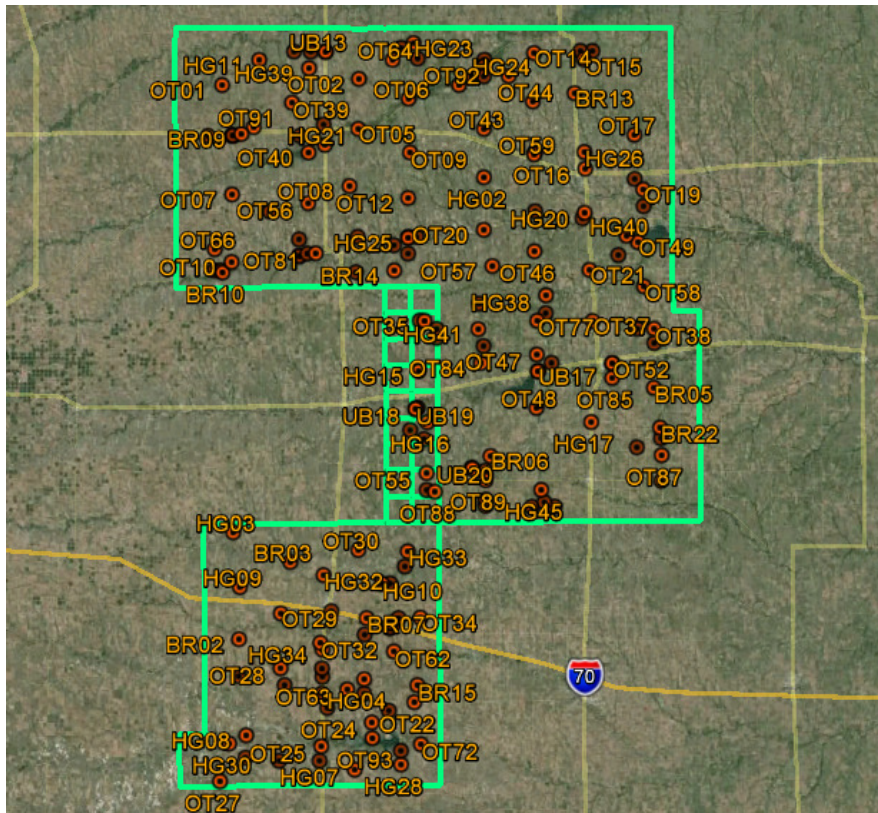


Figure 2: AOI 3 Ground Cover Classification Check Points

3.2 Check Point Data Processing and Analysis

Data collected was processed using Leica Geosystems GeoOffice 7.0 software using their respective GPS antenna type, and antenna height reading. Base station coordinates were derived from the secondary network processing. The final coordinates were output into HARN UTM 14 or UTM 15, NAVD Orthometric Height datum.

A tabulated summary of the final coordinates resulting from the Ground Cover Classification Survey are listed in sections 3.2.1.

3.2.1 AOI 3 Ground Cover Classification Check Points

NAD83 (HARN), UTM Zone 14N, NAVD88 (Geoid12A), Meters				
PointID	Easting	Northing	Elevation	Description
OT01	404207.646	4418885.123	769.806	Open Terrain/Bare Earth
OT02	430447.263	4419799.081	721.197	Open Terrain/Bare Earth
OT03	438560.300	4425652.254	712.329	Open Terrain/Bare Earth
OT04	406080.406	4409200.181	766.711	Open Terrain/Bare Earth
OT05	430264.879	4410253.761	677.003	Open Terrain/Bare Earth
OT06	439942.102	4415940.701	655.227	Open Terrain/Bare Earth
OT07	406032.423	4397954.589	769.378	Open Terrain/Bare Earth
OT08	428557.611	4399356.341	729.252	Open Terrain/Bare Earth
OT09	440155.827	4405681.680	721.390	Open Terrain/Bare Earth
OT10	405873.078	4385056.966	741.115	Open Terrain/Bare Earth
OT11	430066.099	4389668.088	672.504	Open Terrain/Bare Earth
OT12	439746.025	4396986.944	681.890	Open Terrain/Bare Earth
OT13	454365.611	4420087.191	642.709	Open Terrain/Bare Earth
OT14	463978.662	4424483.461	635.156	Open Terrain/Bare Earth
OT15	473541.828	4423202.596	657.006	Open Terrain/Bare Earth
OT16	473622.769	4402298.896	593.922	Open Terrain/Bare Earth
OT17	483072.707	4408738.439	585.932	Open Terrain/Bare Earth
OT18	473060.387	4392867.450	554.009	Open Terrain/Bare Earth
OT19	484676.407	4398294.826	552.387	Open Terrain/Bare Earth
OT20	454170.976	4390811.954	590.365	Open Terrain/Bare Earth
OT21	474309.560	4383038.616	600.541	Open Terrain/Bare Earth
OT22	440256.088	4301025.760	674.491	Open Terrain/Bare Earth
OT23	430866.323	4313951.843	722.967	Open Terrain/Bare Earth
OT24	432099.428	4297225.829	683.136	Open Terrain/Bare Earth
OT25	422390.316	4292738.547	659.196	Open Terrain/Bare Earth
OT26	414286.416	4290006.040	723.918	Open Terrain/Bare Earth
OT27	402923.247	4286160.932	752.876	Open Terrain/Bare Earth
OT28	414711.979	4307669.039	727.456	Open Terrain/Bare Earth
OT29	414867.165	4318083.343	742.210	Open Terrain/Bare Earth

OT30	429781.645	4330069.222	680.610	Open Terrain/Bare Earth
OT31	438660.933	4326874.811	704.092	Open Terrain/Bare Earth
OT32	422383.503	4312461.751	749.189	Open Terrain/Bare Earth
OT33	436518.078	4315966.463	723.099	Open Terrain/Bare Earth
OT34	441554.779	4317120.023	700.740	Open Terrain/Bare Earth
OT35	442719.679	4373551.415	695.285	Open Terrain/Bare Earth
OT36	465898.445	4374861.995	634.844	Open Terrain/Bare Earth
OT37	474824.804	4373309.614	587.568	Open Terrain/Bare Earth
OT38	486567.195	4371748.218	576.730	Open Terrain/Bare Earth
OT39	417607.417	4415382.835	750.381	Open Terrain/Bare Earth
OT40	420728.634	4405815.420	715.528	Open Terrain/Bare Earth
OT41	413274.659	4394628.074	766.288	Open Terrain/Bare Earth
OT42	429683.520	4382922.044	700.972	Open Terrain/Bare Earth
OT43	454307.873	4410054.929	673.471	Open Terrain/Bare Earth
OT44	463702.044	4415212.492	682.831	Open Terrain/Bare Earth
OT45	464009.644	4394276.547	594.833	Open Terrain/Bare Earth
OT46	463813.916	4386662.758	594.527	Open Terrain/Bare Earth
OT47	464144.597	4367011.047	592.920	Open Terrain/Bare Earth
OT48	463992.032	4356844.539	577.587	Open Terrain/Bare Earth
OT49	483608.595	4388262.640	544.005	Open Terrain/Bare Earth
OT50	453972.358	4368688.956	664.882	Open Terrain/Bare Earth
OT51	487760.166	4342835.198	629.124	Open Terrain/Bare Earth
OT52	478530.570	4365239.414	532.389	Open Terrain/Bare Earth
OT53	478530.515	4365239.381	532.264	Open Terrain/Bare Earth
OT54	487740.837	4350916.789	580.354	Open Terrain/Bare Earth
OT55	442933.475	4344626.772	699.999	Open Terrain/Bare Earth
OT56	420613.697	4396143.777	739.752	Open Terrain/Bare Earth
OT57	455764.473	4383902.497	650.733	Open Terrain/Bare Earth
OT58	484679.182	4379835.744	570.287	Open Terrain/Bare Earth
OT59	463894.578	4405109.052	612.736	Open Terrain/Bare Earth
OT60	422716.196	4305973.968	736.536	Open Terrain/Bare Earth
OT61	423652.668	4411138.358	719.636	Open Terrain/Bare Earth
OT62	436426.027	4310727.960	700.687	Open Terrain/Bare Earth
OT63	427460.574	4303548.877	709.325	Open Terrain/Bare Earth
OT64	436918.556	4423393.436	701.133	Open Terrain/Bare Earth
OT65	401442.299	4409210.000	770.547	Open Terrain/Bare Earth
OT66	402644.743	4387545.916	776.097	Open Terrain/Bare Earth
OT67	452017.461	4420093.006	636.650	Open Terrain/Bare Earth
OT68	475168.116	4424796.127	636.449	Open Terrain/Bare Earth
OT69	436972.619	4388002.816	620.267	Open Terrain/Bare Earth

OT70	484725.395	4395098.302	534.385	Open Terrain/Bare Earth
OT71	435386.587	4299434.373	682.097	Open Terrain/Bare Earth
OT72	441457.798	4293007.848	644.959	Open Terrain/Bare Earth
OT73	407868.704	4290645.240	727.042	Open Terrain/Bare Earth
OT74	424528.906	4318472.026	743.660	Open Terrain/Bare Earth
OT75	435861.530	4323655.459	711.916	Open Terrain/Bare Earth
OT76	445054.416	4370344.856	679.125	Open Terrain/Bare Earth
OT77	464266.197	4373438.419	638.315	Open Terrain/Bare Earth
OT78	483372.057	4371759.740	585.143	Open Terrain/Bare Earth
OT79	418025.545	4425160.228	745.293	Open Terrain/Bare Earth
OT80	419112.206	4409037.649	723.773	Open Terrain/Bare Earth
OT81	422016.704	4386584.532	679.230	Open Terrain/Bare Earth
OT82	466930.841	4365397.712	575.867	Open Terrain/Bare Earth
OT83	479839.911	4385831.669	589.693	Open Terrain/Bare Earth
OT84	453438.431	4365451.761	625.959	Open Terrain/Bare Earth
OT85	478493.710	4362447.524	550.668	Open Terrain/Bare Earth
OT86	439858.317	4352795.926	672.161	Open Terrain/Bare Earth
OT87	487846.342	4347682.042	596.443	Open Terrain/Bare Earth
OT88	444494.822	4341056.480	698.863	Open Terrain/Bare Earth
OT89	454192.272	4343182.514	691.115	Open Terrain/Bare Earth
OT90	462971.656	4338047.386	668.861	Open Terrain/Bare Earth
OT91	410239.780	4410764.203	753.042	Open Terrain/Bare Earth
OT92	449606.551	4418483.702	640.864	Open Terrain/Bare Earth
OT93	432185.746	4294218.377	657.968	Open Terrain/Bare Earth
OT94	435836.188	4316154.375	724.101	Open Terrain/Bare Earth
OT95	483113.837	4349218.760	606.438	Open Terrain/Bare Earth
UB01	454162.612	4339476.988	685.417	Urban Terrain
UB02	406222.440	4409230.589	767.406	Urban Terrain
UB03	406205.416	4409230.749	767.325	Urban Terrain
UB04	403818.789	4383481.696	738.653	Urban Terrain
UB05	402639.951	4383506.629	740.656	Urban Terrain
UB06	454392.985	4422041.960	631.155	Urban Terrain
UB07	454393.093	4422026.230	631.077	Urban Terrain
UB08	441300.646	4389585.407	622.026	Urban Terrain
UB09	439694.669	4389586.976	623.430	Urban Terrain
UB10	435710.518	4315252.924	717.716	Urban Terrain
UB11	435708.215	4315190.064	719.383	Urban Terrain
UB12	424080.149	4425087.620	716.328	Urban Terrain
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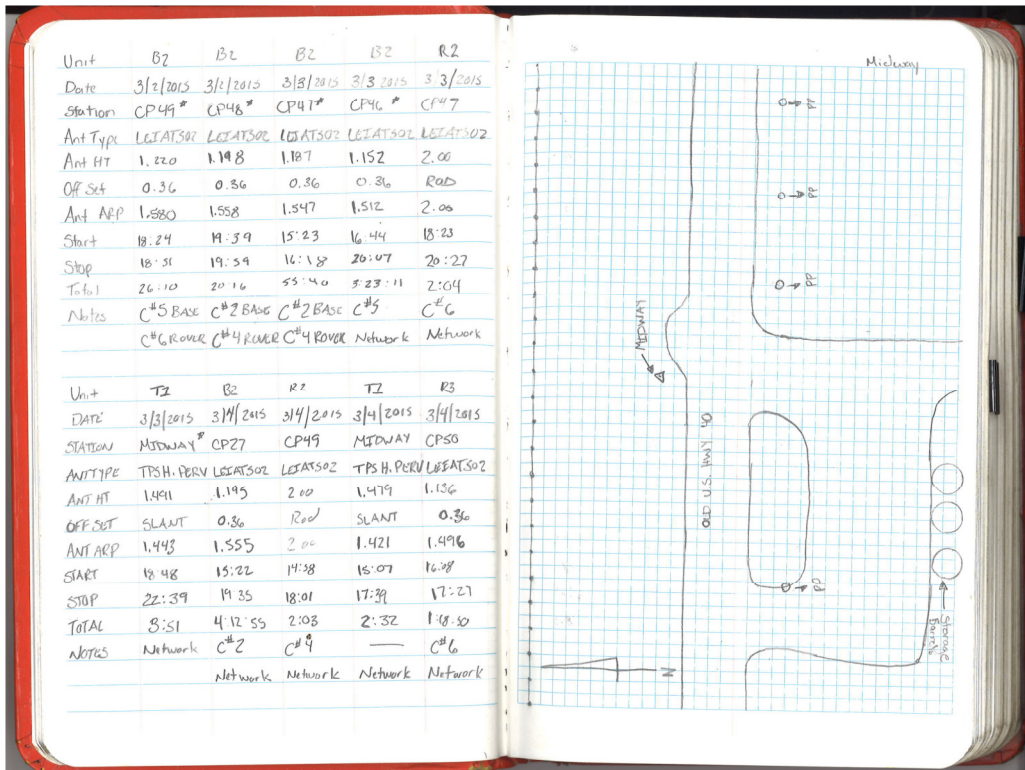
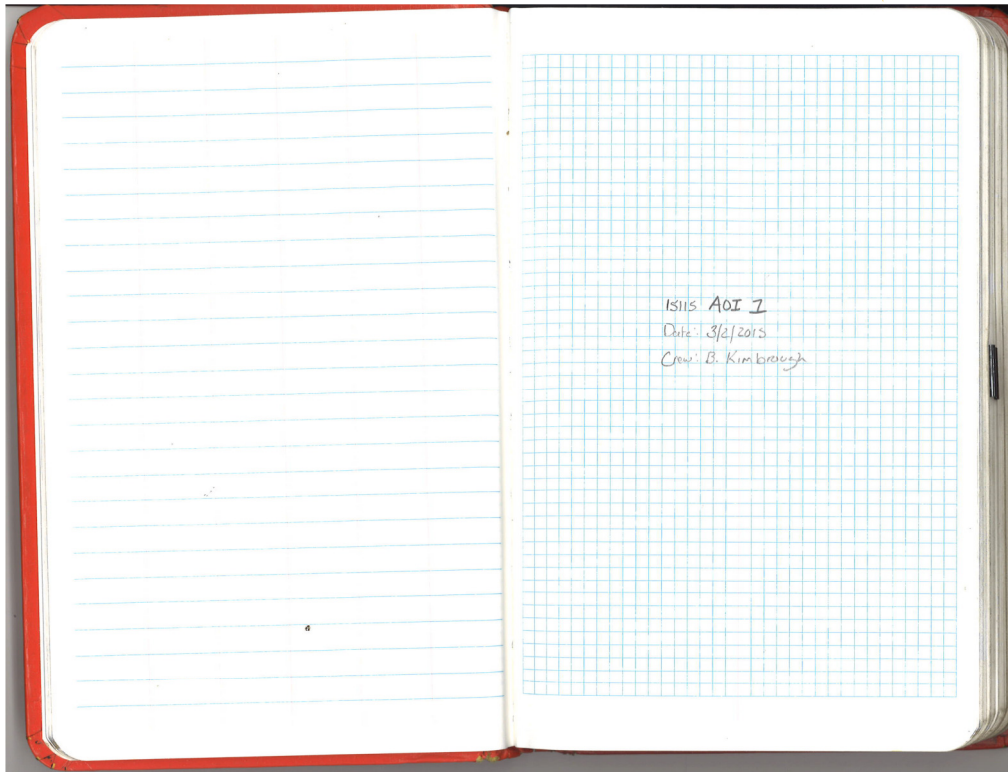
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UB18	440903.866	4356811.500	625.269	Urban Terrain
UB19	440904.157	4356819.527	625.166	Urban Terrain
UB20	451683.174	4345380.345	684.365	Urban Terrain
UB21	451569.405	4345557.193	687.571	Urban Terrain

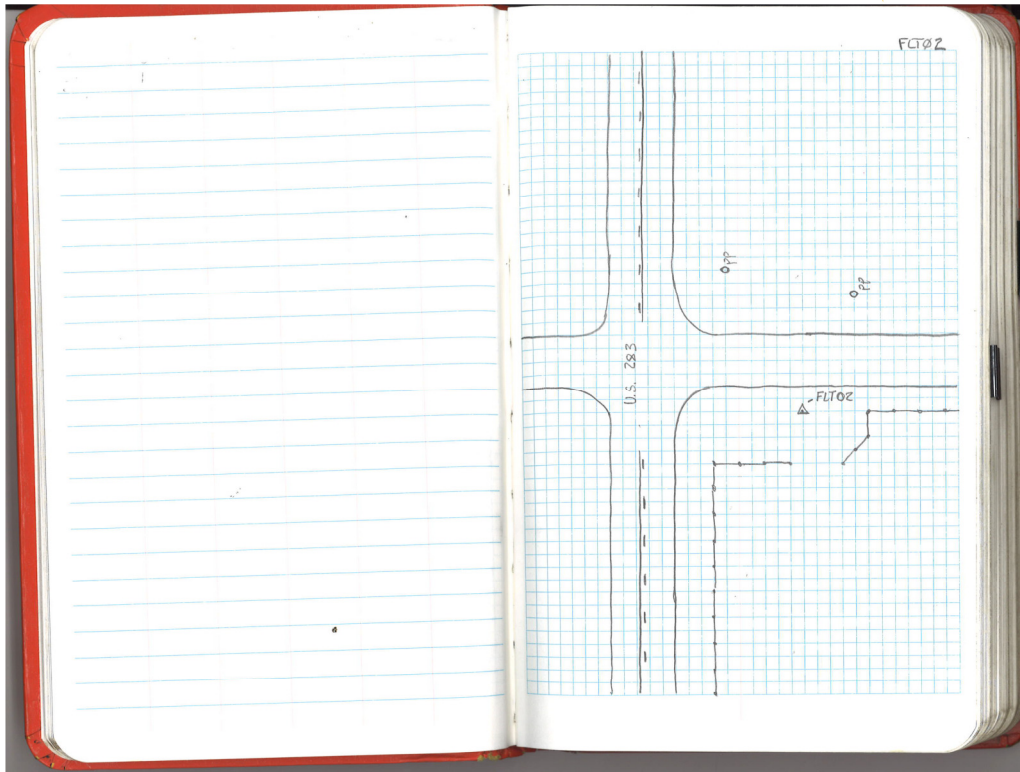
NAD83 (HARN), UTM Zone 14N, NAVD88 (Geoid12A), Meters				
PointID	Easting	Northing	Elevation	Description
BR01	406661.271	4306185.734	735.493	Brush
BR02	406804.655	4313235.049	769.112	Brush
BR03	416747.437	4327862.791	719.653	Brush
BR04	453172.590	4376760.122	676.137	Brush
BR05	486438.823	4360521.680	569.556	Brush
BR06	455153.010	4347752.533	647.641	Brush
BR07	431274.707	4317094.726	738.923	Brush
BR08	441717.120	4423589.581	673.777	Brush
BR09	407867.363	4409493.558	734.573	Brush
BR10	404125.769	4383089.644	725.052	Brush
BR11	454488.121	4423281.855	629.705	Brush
BR12	472854.374	4424829.543	636.355	Brush
BR13	471695.607	4416752.620	648.843	Brush
BR14	437012.373	4383200.215	683.839	Brush
BR15	440875.166	4304269.093	698.941	Brush
BR16	423613.747	4300057.251	699.046	Brush
BR17	486575.782	4369049.671	546.981	Brush
BR18	420931.188	4426707.261	730.486	Brush
BR19	418820.807	4389275.732	707.427	Brush
BR20	454158.547	4338296.098	677.981	Brush
BR21	442494.504	4351074.850	658.658	Brush
BR22	487585.497	4352936.279	573.990	Brush
BR23	467348.918	4338053.956	653.534	Brush
HG01	439663.757	4386396.561	667.974	High Grass
HG02	454254.862	4400814.302	653.740	High Grass
HG03	405851.989	4333581.029	756.514	High Grass
HG04	430713.769	4305485.282	728.020	High Grass
HG05	422600.011	4302789.109	717.239	High Grass
HG06	437608.295	4291790.906	685.686	High Grass
HG07	428742.336	4288244.435	701.739	High Grass

HG08	408022.760	4294893.607	683.320	High Grass
HG09	407067.941	4323153.906	773.902	High Grass
HG10	434238.145	4323634.918	710.703	High Grass
HG11	411343.345	4423627.053	733.389	High Grass
HG12	421238.374	4425106.636	730.447	High Grass
HG13	418850.545	4386087.442	678.607	High Grass
HG14	464069.167	4405575.916	615.403	High Grass
HG15	441546.022	4364029.747	643.138	High Grass
HG16	443121.212	4354287.228	644.612	High Grass
HG17	474426.823	4354085.857	599.953	High Grass
HG18	465394.497	4338887.695	655.624	High Grass
HG19	422664.392	4307578.569	738.445	High Grass
HG20	473451.765	4393927.313	569.257	High Grass
HG21	423879.500	4407243.551	699.386	High Grass
HG22	430679.255	4302716.416	714.365	High Grass
HG23	440942.275	4426576.718	702.397	High Grass
HG24	459129.066	4420140.750	664.045	High Grass
HG25	439702.892	4389405.686	620.903	High Grass
HG26	473496.215	4405501.385	603.898	High Grass
HG27	483061.749	4400311.725	560.569	High Grass
HG28	437613.753	4289161.730	692.472	High Grass
HG29	422032.233	4289972.645	696.468	High Grass
HG30	404742.180	4293350.955	706.580	High Grass
HG31	415467.914	4304444.064	719.201	High Grass
HG32	423100.377	4325327.483	707.043	High Grass
HG33	439214.609	4329738.633	645.803	High Grass
HG34	422773.406	4311173.888	740.354	High Grass
HG35	437380.674	4317060.451	710.643	High Grass
HG36	441846.812	4373599.598	683.637	High Grass
HG37	445041.007	4372004.628	690.729	High Grass
HG38	465976.836	4378261.595	595.699	High Grass
HG39	420899.359	4421935.610	736.168	High Grass
HG40	481442.029	4389485.715	542.431	High Grass
HG41	452996.083	4371915.827	677.439	High Grass
HG42	441306.942	4357022.089	619.463	High Grass
HG43	442917.664	4341387.446	702.516	High Grass
HG44	454174.565	4345007.353	686.250	High Grass
HG45	464800.407	4341262.638	667.695	High Grass



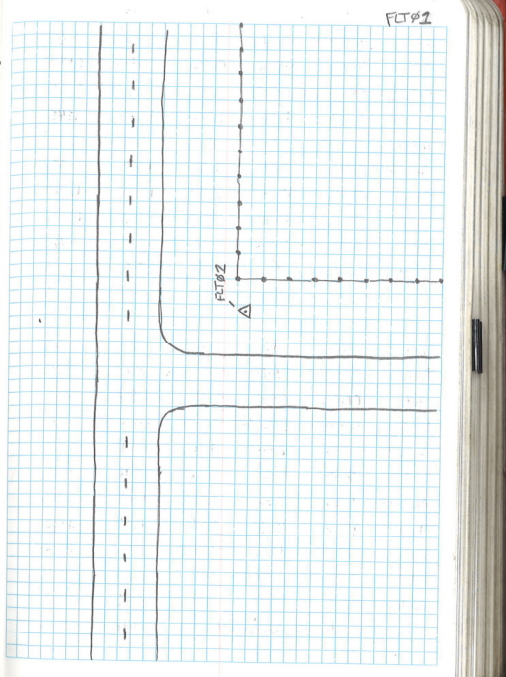
Appendix A: Field Notes

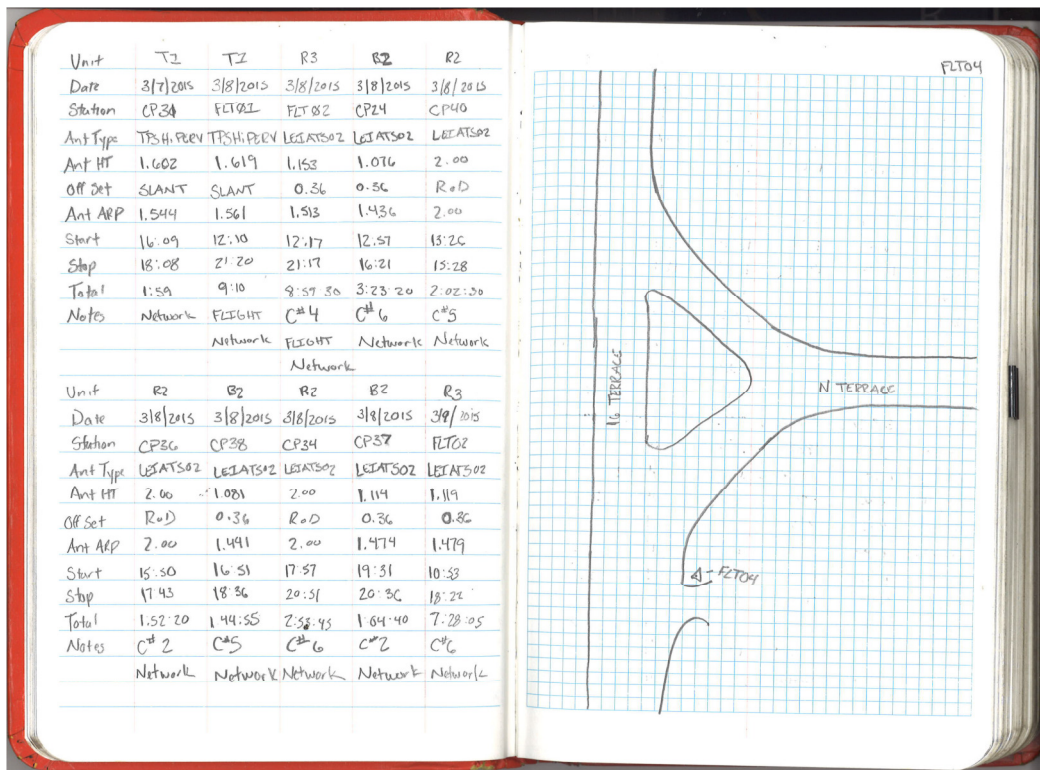
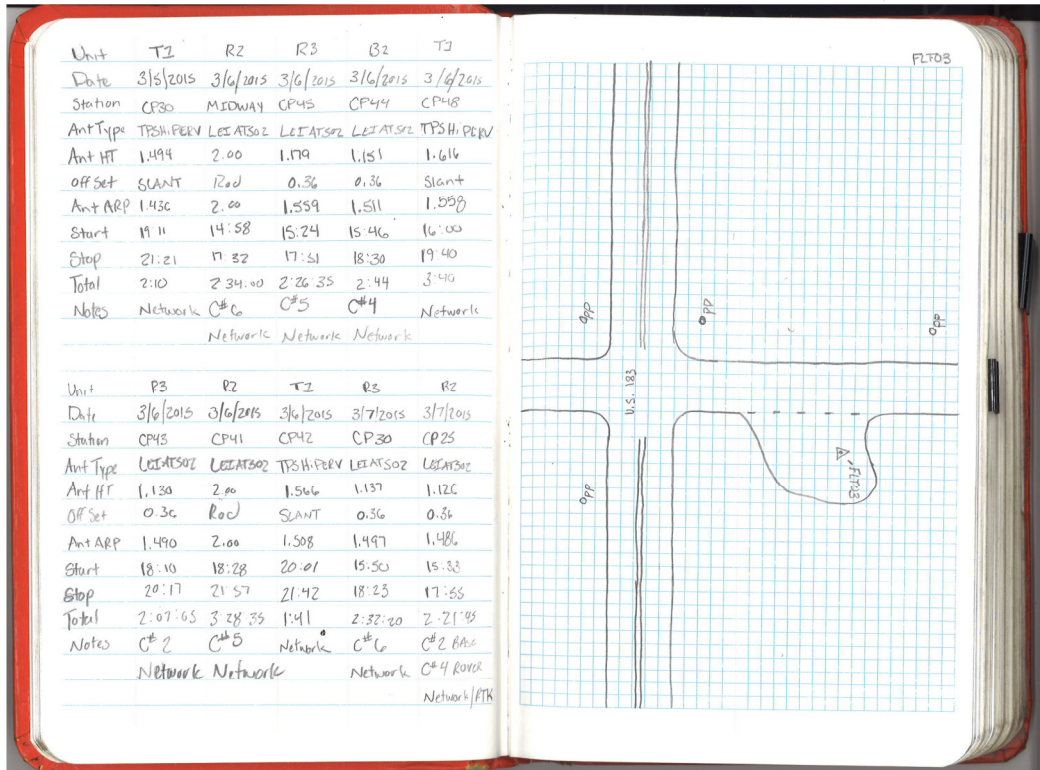


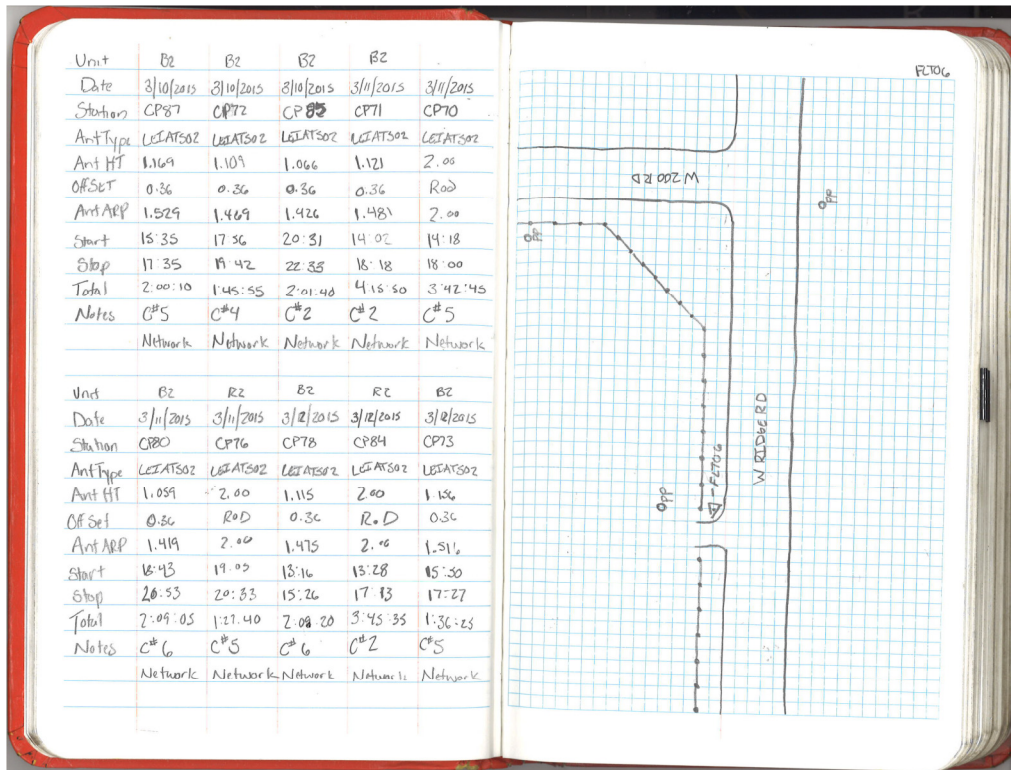
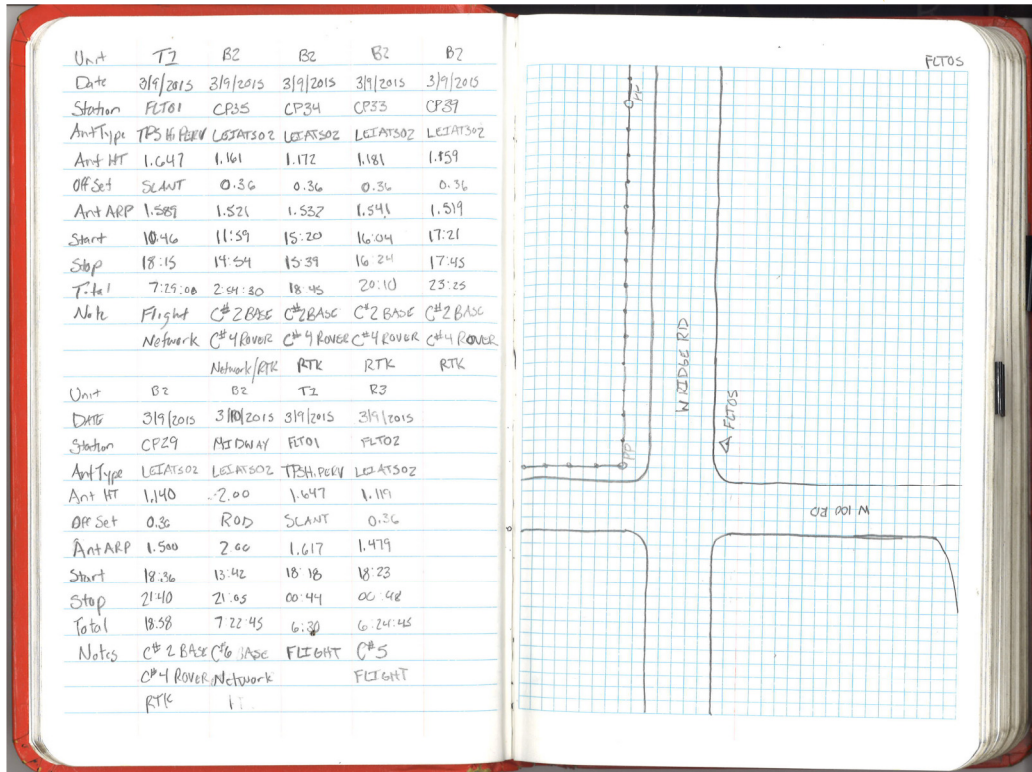


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Date	3/4/2015	3/4/2015	3/5/2015	3/5/2015	3/5/2015
Station	CP26	CP28	MIDWAY	CP48	FLT02 #
Ant Type	LEIATS02	TPSH.PRV	LEIATS02	LEIATS02	TPSH.PRV
Ant HT	1.156	1.585	2.00	1.149	1.545
Offset	0.56	Start	Road	0.56	SLANT
Ant ARP	1.516	1.527	2.00	1.509	1.487
Start	19:00	18:16	14:55	15:12	16:20
Stop	19:57	20:07	17:30	16:18	18:06
Total	1:56:10	1:51	2:35	1:06:00	2:46
Notes	C#5	Network	C#6	C#4	Network
	Network		Network	Network	SEP21

Unit	R3	B2	R2	B2	R3
Date	3/5/2015	3/5/2015	3/5/2015	3/5/2015	3/5/2015
Station	FLT02 #	CP39 #	CP29	CP33 #	CP32 #
Ant Type	LEIATS02	LEIATS02	LEIATS02	LEIATS02	LEIATS02
Ant HT	1.165	1.142	2.00	1.099	1.095
Offset	0.56	0.56	Road	0.56	0.56
Ant ARP	1.525	1.502	2.00	1.459	1.455
Start	15:30	16:35	17:34	18:27	18:45
Stop	18:13	17:52	21:29	20:32	20:41
Total	2:42:45	1:17:00	3:54:13	2:05	1:57:30
Notes	C#2	C#5	C#4	C#6	C#5
	Network	Network	Network	Network	Network
	ⓐ	ⓑ	ⓐ	ⓐ	ⓑ

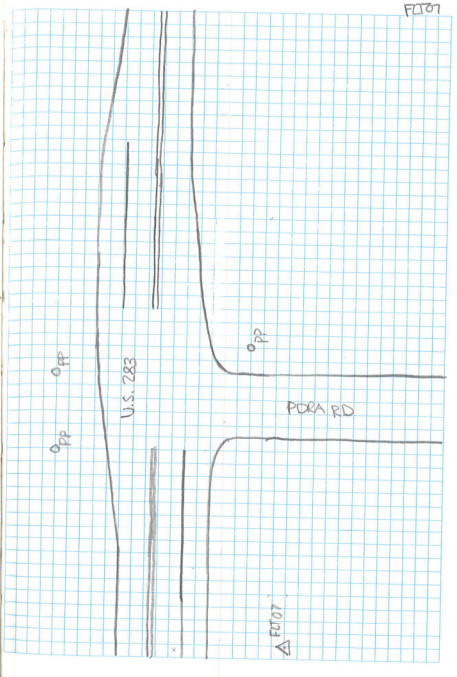




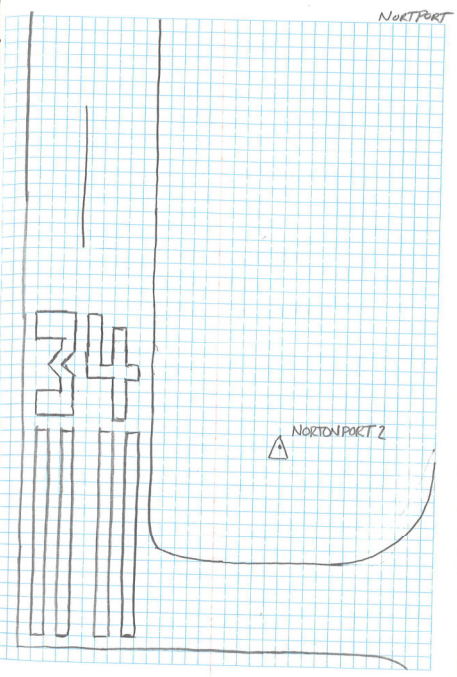


Unit	B2	R2	B2	R2	B2
Date	3/12/2015	3/12/2015	3/10/2015	3/13/2015	3/18/2015
Station	CP54	CP55	FT04	FT05	CP18
Ant Type	LEIATS02	LEIATS02	LEIATS01	LEIATS02	LEIATS02
Ant HT	1.161	2.00	1.160	2.00	1.113
Offset	0.36	RoD	0.36	RoD	0.36
Ant ARP	1.529	2.00	1.520	2.00	1.473
Start	17:59	18:13	13:33	13:41	18:51
Stop	21:16	21:17	17:59	18:04	20:27
Total	3:16:30	3:04	4:26:20	4:23:00	1:35:30
Notes	C#2	C#6	C#5	C#6	C#2
Network	Network	Network	Network	Network	Network

Unit	R2	R2	B2
Date	3/13/2015	3/14/2015	3/14/2015
Station	CP74	FT05	FT06
Ant Type	LEIATS02	LEIATS02	LEIATS02
Ant HT	2.00	2.00	1.174
Offset	RoD	RoD	0.36
Ant ARP	2.00	2.00	1.539
Start	15:09	13:26	13:54
Stop	20:55	20:12	20:17
Total	1:46	6:46:55	6:43:25
Notes	C#5	C#6	C#5
Network	Network	Network	Network



Unit	R2	R2	B2
Date	3/13/2015	3/14/2015	3/14/2015
Station	CP74	FT05	FT06
Ant Type	LEIATS02	LEIATS02	LEIATS02
Ant HT	2.00	2.00	1.174
Offset	RoD	RoD	0.36
Ant ARP	2.00	2.00	1.539
Start	15:09	13:26	13:54
Stop	20:55	20:12	20:17
Total	1:46	6:46:55	6:43:25
Notes	C#5	C#6	C#5
Network	Network	Network	Network





Unit	BZ	BZ	BZ	BZ	BZ
Date	3/31/2015	3/31/2015	3/31/2015	3/31/2015	3/31/2015
Station	CP32	CP31	CP30	CP16	CP44
Ant Type	LEIATS02	LEIATS02	LEIATS02	LEIATS02	LEIATS02
Ant HT	1.328	1.301	1.221	1.278	1.258
Off Set	0.36	0.36	0.36	0.36	0.36
Ant ARP	1.688	1.661	1.581	1.638	1.618
Start	14:34	15:30	17:30	12:24	13:56
Stop	16:05	16:12	18:16	13:07	14:39
Total	31:10	41:40	45:00	45:00	43:15
Notes	C#1 BASE C#2 REVER	C#5 BASE C#6 REVER	C#5 BASE C#2 REVER	C#5 BASE C#6 REVER	C#1 BASE C#2 REVER

Unit	BZ	BZ	BZ	BZ	BZ
Date	4/1/2015	4/1/2015	4/1/2015	4/2/2015	4/2/2015
Station	CP36	CP26	CP26	CP49	CP87
Ant Type	LEIATS02	LEIATS02	LEIATS02	LEIATS02	LEIATS02
Ant HT	1.227	1.262	1.283	1.287	1.239
Off Set	0.36	0.36	0.36	0.36	0.36
Ant ARP	1.587	1.622	1.643	1.647	1.599
Start	15:40	17:26	19:34	12:27	13:49
Stop	16:20	19:09	20:10	13:31	14:57
Total	50:00	1:12:45	36:39	1:04:55	47:28
Notes	C#5 BASE C#6 REVER	C#7 BASE C#2 REVER	C#5 BASE C#6 REVER	C#2 BASE C#2 REVER	C#5 BASE C#6 REVER

Unit	BZ	BZ	BZ	BZ	BZ
Date	4/2/2015	4/2/2015	4/2/2015	4/2/2015	4/2/2015
Station	CP72	CP85	CP80	CP86	CP87
Ant Type	LEIATS02	LEIATS02	LEIATS02	LEIATS02	LEIATS02
Ant HT	1.264	1.184	1.271	1.278	1.263
Off Set	0.36	0.36	0.36	0.36	0.36
Ant ARP	1.624	1.544	1.657	1.638	1.623
Start	14:56	15:27	17:24	19:04	20:05
Stop	15:37	16:38	18:43	19:50	20:58
Total	40:10	4:25	1:19:30	46:20	48:10
Notes	C#1 BASE C#2 REVER	C#5 BASE C#6 REVER	C#1 BASE C#2 REVER	C#5 BASE C#6 REVER	C#1 BASE C#2 REVER

Unit	BZ	BZ	BZ	BZ	BZ
Date	4/2/2015	4/3/2015	4/3/2015	4/3/2015	4/3/2015
Station	CP78	CP84	CP83	CP79	CP70
Ant Type	LEIATS02	LEIATS02	LEIATS02	LEIATS02	LEIATS02
Ant HT	1.256	1.244	1.274	1.217	1.230
Off Set	0.36	0.36	0.36	0.36	0.36
Ant ARP	1.618	1.604	1.634	1.577	1.590
Start	21:19	14:02	16:20	18:15	19:49
Stop	22:05	14:53	16:35	19:21	20:23
Total	46:15	9:00	1:15:45	1:06:25	38:20
Notes	C#5 BASE C#6 REVER	C#1 BASE C#2 REVER	C#5 BASE C#6 REVER	C#2 BASE C#2 REVER	C#5 BASE C#6 REVER



Unit	B2	B1	B2	B2	B2
Date	4/3/2015	4/4/2015	4/4/2015	4/4/2015	4/4/2015
Station	CP81	CP57	CP04	CP10	CP61
Ant Type	LEIATS02	LEIATS02	LEIATS02	LEIATS02	LEIATS02
Ant HT	1.280	1.196	1.225	1.284	1.249
Off Set	0.36	0.36	0.36	0.36	0.36
Ant ARP	1.610	1.556	1.585	1.644	1.609
Start	20:44	12:16	14:27	17:21	18:49
Stop	21:47	13:55	16:43	18:32	20:45
Total	1:02:10	1:38:30	2:15:40	1:11:15	1:56:00
Notes	C#1 BASE C#2 ROVER	C#1 BASE C#2 ROVER	C#5 BASE C#6 ROVER	C#1 BASE C#2 ROVER	C#5 BASE C#6 ROVER

Unit	B2	B2	TJ	B2	TJ
Date	4/4/2015	4/5/2015	4/5/2015	4/5/2015	4/5/2015
Station	CP16	CP03	CP06	CP13	CP64
Ant Type	LEIATS02	LEIATS02	TRSH-PRV	LEIATS02	TRSH-PRV
Ant HT	1.267	1.233	2.00	1.251	2.00
Off Set	0.36	0.36	ROD	0.36	ROD
Ant ARP	1.627	1.593	2.00	1.611	2.00
Start	21:18	12:41	12:19	17:10	11:10
Stop	22:22	13:29	18:42	19:05	21:07
Total	1:03:35	48:35	6:23	1:55	1:57
Notes	C#1 BASE C#2 ROVER	C#5 BASE C#6 ROVER	---	C#1 BASE C#2 ROVER	---

Unit	TJ	B2	B1	B2	B2
Date	4/6/2015	4/6/2015	4/6/2015	4/6/2015	4/6/2015
Station	CP10	CP75	CP05	CP55	CP53
Ant Type	TRSH-PRV	LEIATS02	LEIATS02	LEIATS02	LEIATS02
Ant HT	2.00	1.267	1.285	1.322	1.267
Off Set	ROD	0.36	0.36	0.36	0.36
Ant ARP	2.00	1.627	1.645	1.686	1.627
Start	14:20	15:39	16:50	20:04	21:01
Stop	16:45	16:28	17:44	20:25	21:31
Total	2:25	55:05	54:20	30:55	29:35
Notes	---	C#2 BASE C#4 ROVER	C#5 BASE C#6 ROVER	C#2 BASE C#6 ROVER	C#5 BASE C#6 ROVER

Unit	B2	B2	TJ	B2	B2
Date	4/6/2015	4/6/2015	4/7/2015	4/7/2015	4/7/2015
Station	CP77	CP51	F207	CP59	CP08
Ant Type	LEIATS02	LEIATS02	TRSH-PRV	LEIATS02	LEIATS02
Ant HT	1.258	1.157	2.00	1.224	2.00
Off Set	0.36	0.36	ROD	0.36	ROD
Ant ARP	1.619	1.517	2.00	1.589	2.00
Start	21:49	22:31	12:29	12:47	14:49
Stop	22:22	23:35	13:24	14:31	16:50
Total	32:20	57:58	56:00	1:45:10	2:01
Notes	C#2 BASE C#6 ROVER	C#5 BASE C#6 ROVER	---	C#5 BASE C#6 ROVER	C#4



Appendix B: Data Sheets



The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

PROGRAM = datasheet95, VERSION = 8.6.1

1 National Geodetic Survey, Retrieval Date = APRIL 7, 2015

KG0555 *****

KG0555 DESIGNATION - GLADE 2

KG0555 PID - KG0555

KG0555 STATE/COUNTY- KS/PHILLIPS

KG0555 COUNTRY - US

KG0555 USGS QUAD - PHILLIPSBURG SOUTH (1972)

KG0555

KG0555 *CURRENT SURVEY CONTROL

KG0555

KG0555* NAD 83(1997) POSITION- 39 41 41.20206(N) 099 18 34.70925(W) ADJUSTED

KG0555* NAVD 88 ORTHO HEIGHT - 569.263 (meters) 1867.66 (feet) ADJUSTED

KG0555

KG0555	LAPLACE CORR	-	-1.77 (seconds)	DEFLEC12A
KG0555	GEOID HEIGHT	-	-25.51 (meters)	GEOID12A
KG0555	DYNAMIC HEIGHT	-	568.895 (meters)	1866.45 (feet) COMP
KG0555	MODELED GRAVITY	-	979,962.0 (mgal)	NAVD 88

KG0555

KG0555 HORZ ORDER - THIRD

KG0555 VERT ORDER - THIRD

KG0555

KG0555.The horizontal coordinates were established by classical geodetic methods

KG0555.and adjusted by the National Geodetic Survey in October 1998.

KG0555.

KG0555.The orthometric height was determined by differential leveling and

KG0555.adjusted by the NATIONAL GEODETIC SURVEY

KG0555.in June 1991.

KG0555

KG0555.The Laplace correction was computed from DEFLEC12A derived deflections.

KG0555

KG0555.The dynamic height is computed by dividing the NAVD 88

KG0555.geopotential number by the normal gravity value computed on the

KG0555.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

KG0555.degrees latitude (g = 980.6199 gals.).

KG0555

KG0555.The modeled gravity was interpolated from observed gravity values.

KG0555

KG0555. The following values were computed from the NAD 83(1997) position.

KG0555

KG0555; North East Units Scale Factor Converg.



KG0555;SPC KS N - 151,952.407 287,673.722 MT 0.99998683 -0 49 43.1
 KG0555;SPC KS N - 498,530.52 943,809.54 sFT 0.99998683 -0 49 43.1
 KG0555;UTM 14 - 4,393,927.314 473,451.771 MT 0.99960868 -0 11 52.0
 KG0555

KG0555! - Elev Factor x Scale Factor = Combined Factor
 KG0555!SPC KS N - 0.99991470 x 0.99998683 = 0.99990153
 KG0555!UTM 14 - 0.99991470 x 0.99960868 = 0.99952341
 KG0555

KG0555: Primary Azimuth Mark Grid Az
 KG0555:SPC KS N - GLADE AZ MK 003 58 46.9
 KG0555:UTM 14 - GLADE AZ MK 003 20 55.8
 KG0555

PID	Reference Object	Distance	Geod. Az
KG0729	PHILLIPSBURG K N NATL GAS TWR	APPROX. 8.6 KM	0004547.1
KG0851	PHILLIPSBURG CATV MAST	APPROX. 7.9 KM	0022600.3
KG0849	GLADE AZ MK	APPROX. 0.6 KM	0030903.8
KG0716	GLADE	12.196 METERS	08646
KG0556	GLADE 2 RM 5	13.319 METERS	17913
AI1603	GLADE 2 RM 6	14.206 METERS	35902

KG0555
 KG0555 SUPERSEDED SURVEY CONTROL
 KG0555

KG0555 NAD 83(1995)- 39 41 41.20590(N) 099 18 34.71024(W) AD() 3
 KG0555 NAD 83(1986)- 39 41 41.20787(N) 099 18 34.71196(W) AD() 3
 KG0555 NGVD 29 (12/08/88) 569.03 (m) 1866.9 (f) LEVELING 3
 KG0555

KG0555.Superseded values are not recommended for survey control.
 KG0555

KG0555.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 KG0555.See file dsdata.txt to determine how the superseded data were derived.
 KG0555

KG0555_U.S. NATIONAL GRID SPATIAL ADDRESS: 14SMJ7345193927(NAD 83)
 KG0555

KG0555_MARKER: DS = TRIANGULATION STATION DISK
 KG0555_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 KG0555_SP_SET: CONCRETE POST
 KG0555_STAMPING: GLADE 2 1985
 KG0555_MARK LOGO: NGS

KG0555_PROJECTION: PROJECTING 10 CENTIMETERS
 KG0555_MAGNETIC: N = NO MAGNETIC MATERIAL
 KG0555_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 KG0555+STABILITY: SURFACE MOTION
 KG0555_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 KG0555+SATELLITE: SATELLITE OBSERVATIONS - February 12, 2013
 KG0555



KG0555 HISTORY	- Date	Condition	Report By
KG0555 HISTORY	- 1985	MONUMENTED	NGS
KG0555 HISTORY	- 1987	GOOD	NOS
KG0555 HISTORY	- 20130212	GOOD	KSDT

KG0555

KG0555 STATION DESCRIPTION

KG0555

KG0555'DESCRIBED BY NATIONAL GEODETIC SURVEY 1985 (CLN)

KG0555'THE STATION IS LOCATED ABOUT 6.8 KM (4.20 MI) SOUTH OF PHILLIPSBURG, KG0555'1.2 KM (0.75 MI) NORTH OF GLADE AND ON THE WEST RIGHT-OF-WAY OF U.S KG0555'HIGHWAY 183. CONTACT THE AREA ENGINEER, KANSAS DEPARTMENT OF KG0555'TRANSPORTATION, POST OFFICE BOX 268, PHILLIPSBURG, KANSAS 67661.

TO

KG0555'REACH THE STATION FROM THE POST OFFICE IN GLADE, GO WEST ON STATE KG0555'HIGHWAY 9 FOR 0.08 KM (0.05 MI) TO U.S HIGHWAY 183. TURN RIGHT AND GO KG0555'NORTH ON HIGHWAY 183 FOR 0.64 KM (0.40 MI) TO BENCH MARK F 157 RESET KG0555'1985 ON THE RIGHT. CONTINUE NORTH ON THE HIGHWAY FOR 0.56 KM (0.35 KG0555'MI) TO THE STATION ON THE LEFT. THE STATION IS A STANDARD NGS DISK KG0555'STAMPED---GLADE 2 1985---, SET INTO THE TOP OF A ROUND CONCRETE KG0555'MONUMENT, 12 INCHES (30 CM) IN DIAMETER, PROJECTING 4 INCHES (10 CM) KG0555'ABOVE THE GROUND. THE STATION IS LOCATED 16.15 METERS (52.99 FT)

WEST

KG0555'FROM THE CENTERLINE OF THE HIGHWAY, 14.51 METERS (47.60 FT) SOUTH FROM

KG0555'A WITNESS POST AT REFERENCE MARK 6, 13.62 METERS (44.68 FT) NORTH FROM

KG0555'A WITNESS POST AT REFERENCE MARK 5, 0.46 METERS (1.51 FT) EAST FROM A

KG0555'WITNESS POST. REFERENCE MARK NO 5 IS A STANDARD NGS DISK KG0555'STAMPED---GLADE 2 NO 5 1985---, SET INTO THE TOP OF A ROUND CONCRETE KG0555'MONUMENT, 12 INCHES (30 CM) IN DIAMETER, PROJECTING 4 INCHES (10 CM) KG0555'ABOVE THE GROUND. THE STATION IS LOCATED 16.2 METERS (53.1 FT) WEST KG0555'FROM THE CENTERLINE OF THE HIGHWAY, 0.30 METERS (0.98 FT) NORTH FROM A

KG0555'WITNESS POST. REFERENCE MARK NO 6 IS A STANDARD NGS DISK KG0555'STAMPED---GLADE 2 NO 6 1985---, SET INTO THE TOP OF A ROUND CONCRETE KG0555'MONUMENT, 12 INCHES (30 CM) IN DIAMETER, PROJECTING 4 INCHES (10 CM) KG0555'ABOVE THE GROUND. THE STATION IS LOCATED 16.2 METERS (53.1 FT) WEST KG0555'FROM THE CENTERLINE OF THE HIGHWAY, 0.3 METERS (1.0 FT) SOUTH FROM A

KG0555'WITNESS POST. AZIMUTH MARK NO 1 IS A STANDARD CGS DISK KG0555'STAMPED---GLADE 1950---, SET INTO THE TOP OF A SQUARE CONCRETE KG0555'MONUMENT, 12.0 INCHES (30.0 CM IN DIAMETER, RECESSED 4 INCHES (10 CM) KG0555'BELOW THE GROUND. THE STATION IS LOCATED 21.4 METERS (70.2 FT) EAST KG0555'FROM THE CENTERLINE OF THE HIGHWAY, 2.14 METERS (7.02 FT) SOUTH FROM A

KG0555'POWER POLE, 0.30 METERS (0.98 FT) NORTH FROM A WITNESS POST. TO REACH



KG0555'THE AZIMUTH MARK FROM THE STATION, GO NORTH ON THE HIGHWAY FOR 0.64 KM

KG0555'(0.40 MI) TO THE MARK ON THE RIGHT.

KG0555

KG0555 STATION RECOVERY (1987)

KG0555

KG0555'RECOVERY NOTE BY NATIONAL OCEAN SERVICE 1987

KG0555'6.8 KM (4.25 MI) SOUTH FROM PHILLIPSBURG.

KG0555'ABOUT 6.8 KM (4.25 MI) SOUTH OF PHILLIPSBURG, 1.2 KM (0.75 MI) NORTH

KG0555'OF GLADE AND ON THE WEST RIGHT-OF-WAY OF US HIGHWAY 183. FROM THE

KG0555'POST OFFICE IN GLADE GO WEST ON STATE HIGHWAY 9 FOR 0.08 KM (0.05 MI)

KG0555'US HIGHWAY 183, TURN RIGHT AND GO NORTH ON HIGHWAY 183 FOR 1.20 KM

KG0555'(0.75 MI) TO THE STATION ON LEFT, 16.15 M (53 FT) WEST OF THE

KG0555'CENTERLINE OF THE HIGHWAY, 14.51 M (47.6 FT) SOUTH OF A WITNESS

KG0555'POST AT GLADE 2 RM 6, 13.62 M (44.7 FT) NORTH OF A WITNESS POST AT

KG0555'GLADE 2 RM 5, 0.46 M (1.5 FT) EAST OF A WITNESS POST, AND SET IN THE

KG0555'TOP OF A CONCRETE POST PROJECTING 0.01 CM ABOVE THE GROUND.

KG0555

KG0555 STATION RECOVERY (2013)

KG0555

KG0555'RECOVERY NOTE BY KANSAS DEPARTMENT OF TRANSPORTATION 2013 (JWB)

KG0555'RECOVERED IN GOOD CONDITION.

*** retrieval complete.

Elapsed Time = 00:00:03



The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

PROGRAM = datasheet95, VERSION = 8.6.1

1 National Geodetic Survey, Retrieval Date = MARCH 4, 2015

KG0331 *****

KG0331 DESIGNATION - MIDWAY

KG0331 PID - KG0331

KG0331 STATE/COUNTY- KS/TREGO

KG0331 COUNTRY - US

KG0331 USGS QUAD - WA KEENEY EAST (1962)

KG0331

KG0331 *CURRENT SURVEY CONTROL

KG0331

KG0331* NAD 83(1997) POSITION- 39 00 00.60563(N) 099 47 37.19477(W) ADJUSTED

KG0331* NAVD 88 ORTHO HEIGHT - 738.867 (meters) 2424.10 (feet) ADJUSTED

KG0331

KG0331	LAPLACE CORR	-	-1.65 (seconds)	DEFLEC12A
KG0331	GEOID HEIGHT	-	-25.79 (meters)	GEOID12A
KG0331	DYNAMIC HEIGHT	-	738.308 (meters)	2422.27 (feet) COMP
KG0331	MODELED GRAVITY	-	979,847.5 (mgal)	NAVD 88

KG0331

KG0331 HORZ ORDER - THIRD

KG0331 VERT ORDER - FIRST CLASS II

KG0331

KG0331.The horizontal coordinates were established by classical geodetic methods

KG0331.and adjusted by the National Geodetic Survey in October 1998.

KG0331.

KG0331.The orthometric height was determined by differential leveling and

KG0331.adjusted by the NATIONAL GEODETIC SURVEY

KG0331.in June 1991.

KG0331

KG0331.The Laplace correction was computed from DEFLEC12A derived deflections.

KG0331

KG0331.The dynamic height is computed by dividing the NAVD 88

KG0331.geopotential number by the normal gravity value computed on the

KG0331.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

KG0331.degrees latitude (g = 980.6199 gals.).

KG0331

KG0331.The modeled gravity was interpolated from observed gravity values.

KG0331

KG0331. The following values were computed from the NAD 83(1997) position.

KG0331

KG0331; North East Units Scale Factor Converg.



KG0331;SPC KS N - 75,564.517 244,636.987 MT 0.99996636 -1 08 05.6
 KG0331;SPC KS N - 247,914.59 802,613.18 sFT 0.99996636 -1 08 05.6
 KG0331;UTM 14 - 4,317,094.816 431,274.838 MT 0.99965816 -0 29 58.2
 KG0331

KG0331! - Elev Factor x Scale Factor = Combined Factor
 KG0331!SPC KS N - 0.99988813 x 0.99996636 = 0.99985450
 KG0331!UTM 14 - 0.99988813 x 0.99965816 = 0.99954633
 KG0331

KG0331: Primary Azimuth Mark Grid Az
 KG0331:SPC KS N - MIDWAY AZ MK 286 29 45.8
 KG0331:UTM 14 - MIDWAY AZ MK 285 51 38.4
 KG0331

PID	Reference Object	Distance ddmmss.s	Geod. Az
KG0331	KG0329 MIDWAY RM 1	8.153 METERS	11134
KG0331	KG0330 MIDWAY RM 2	20.441 METERS	20414
KG0331	KG0332 MIDWAY AZ MK		2852140.2
KG0331	KG0782 WAKEENEY MUNICIPAL TANK		APPROX. 8.3 KM 2904202.2

KG0331
 KG0331
 KG0331 SUPERSEDED SURVEY CONTROL
 KG0331

KG0331 NAD 83(1986)- 39 00 00.61154(N) 099 47 37.19669(W) AD() 3
 KG0331 NAD 27 - 39 00 00.57600(N) 099 47 35.77000(W) AD() 3
 KG0331 NGVD 29 (??/??/92) 738.568 (m) 2423.12 (f) ADJ UNCH 1 2
 KG0331 NGVD 29 (07/19/86) 738.57 (m) 2423.1 (f) LEVELING 3
 KG0331

KG0331.Superseded values are not recommended for survey control.
 KG0331

KG0331.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 KG0331.See file dsdata.txt to determine how the superseded data were derived.
 KG0331

KG0331_U.S. NATIONAL GRID SPATIAL ADDRESS: 14SMJ3127417094(NAD 83)
 KG0331

KG0331_MARKER: DS = TRIANGULATION STATION DISK
 KG0331_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 KG0331_SP_SET: SET IN TOP OF CONCRETE MONUMENT
 KG0331_STAMPING: MIDWAY 1950

KG0331_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 KG0331+STABILITY: SURFACE MOTION

KG0331_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 KG0331+SATELLITE: SATELLITE OBSERVATIONS - September 21, 2006
 KG0331

HISTORY	Date	Condition	Report By
KG0331 HISTORY	- 1950	MONUMENTED	CGS
KG0331 HISTORY	- 1953	GOOD	CGS
KG0331 HISTORY	- 1953	GOOD	CGS



KG0331 HISTORY - 1963 GOOD CGS
KG0331 HISTORY - 20060921 GOOD GEOCAC
KG0331 HISTORY - 20080528 GOOD GEOCAC

KG0331

KG0331 STATION DESCRIPTION

KG0331

KG0331'DESCRIBED BY COAST AND GEODETIC SURVEY 1950 (RLE)

KG0331'THE STATION IS LOCATED ABOUT 5.0 MILES EAST AND 1.5 MILES SOUTH
KG0331'OF WAKEENEY AND 3.5 MILES WEST AND 0.3 MILE NORTH OF THE
KG0331'COMMUNITY OF OGALLAH. IT IS AT THE SOUTH EDGE OF A SMALL
KG0331'CULTIVATED FIELD, ABOUT 40 YARDS SOUTH OF THE SOUTH RAIL OF
KG0331'THE UNION PACIFIC RAILROAD TRACKS, 34.0 FEET NORTH OF THE
KG0331'CENTER OF U.S. HIGHWAY NO. 40, 14.0 FEET WEST OF THE CENTER OF A
KG0331'DRIVEWAY INTO A FIELD AND 3.5 FEET EAST OF A WITNESS POST. IT
KG0331'PROJECTS 8 INCHES AND IS STAMPED MIDWAY 1950.

KG0331'

KG0331'REFERENCE MARK NO. 1 IS LOCATED AT THE SOUTH EDGE OF A SMALL
KG0331'CULTIVATED FIELD, 32.0 FEET NORTH OF THE CENTER OF U.S. HIGHWAY
KG0331'NO. 40 AND 13.0 FEET EAST OF THE CENTER OF A DRIVEWAY INTO A
KG0331'FIELD. IT PROJECTS 6 INCHES AND IS STAMPED MIDWAY NO 1 1950.

KG0331'

KG0331'REFERENCE MARK NO. 2 IS ACROSS THE HIGHWAY FROM THE STATION
KG0331'AT THE NORTH EDGE OF A CULTIVATED FIELD, 37.0 FEET WEST OF
KG0331'A TELEPHONE POLE, 33.0 FEET SOUTH OF THE CENTER OF U.S. HIGHWAY
KG0331'NO. 40 AND 15.0 FEET WEST OF THE CENTER OF A DRIVEWAY INTO A
KG0331'FIELD. IT PROJECTS 7 INCHES AND IS STAMPED MIDWAY NO 2 1950.

KG0331'

KG0331'THE DISTANCE BETWEEN REFERENCE MARK NO. 1 AND REFERENCE MARK
KG0331'NO. 2 IS 73.35 FEET.

KG0331'

KG0331'THE AZIMUTH MARK IS LOCATED AT THE NORTH EDGE OF A CULTIVATED
KG0331'FIELD, 35.0 FEET SOUTH OF THE CENTER OF U.S. HIGHWAY NO. 40,
KG0331'2.5 FEET EAST OF A TELEPHONE POLE AND 1.5 FEET EAST OF A WITNESS
KG0331'POST. IT PROJECTS 6 INCHES AND IS STAMPED MIDWAY 1950.

KG0331'

KG0331'TO REACH THE STATION FROM THE POST OFFICE IN WAKEENEY, GO SOUTH
KG0331'ON MAIN STREET FOR 0.3 MILE TO THE JUNCTION WITH U.S. HIGHWAY
KG0331'NOS 40 AND 283. HERE TURN LEFT AND GO EAST ON U.S. HIGHWAY
KG0331'NO. 40 AND U.S. HIGHWAY NO. 283 FOR 0.6 MILE TO WHERE U.S.
KG0331'HIGHWAY NO. 283 TURNS LEFT AND U.S. HIGHWAY NO. 40 CONTINUES
KG0331'STRAIGHT AHEAD. HERE GO EAST ON U.S. HIGHWAY NO. 40 FOR 4.25
KG0331'MILES AND THE AZIMUTH MARK ON THE RIGHT AS DESCRIBED. CONTINUE
KG0331'EAST ON U.S. HIGHWAY NO. 40 FOR 0.3 MILE TO A DRIVEWAY LEADING
KG0331'INTO A SMALL FIELD AND THE STATION ON THE LEFT AS DESCRIBED.

KG0331

KG0331 STATION RECOVERY (1953)

KG0331

KG0331'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1953



KG0331'5.1 MILES EAST ALONG U.S. HIGHWAY 40 FROM ITS INTERSECTION WITH
KG0331'MAIN STREET AT WAKEENEY, 0.2 MILE EAST OF AN INTERSECTION WITH
KG0331'A DIRT ROAD, 131 FEET SOUTH OF THE SOUTH RAIL OF THE UNION
KG0331'PACIFIC RAILROAD, 82.2 FEET SOUTH OF A FENCE, 32.5 FEET NORTH
KG0331'OF THE CENTER LINE OF THE HIGHWAY, 3 FEET EAST OF A WITNESS
KG0331'POST, A TRIANGULATION STATION DISK SET IN THE TOP OF A CONCRETE
KG0331'POST WHICH PROJECTS 0.6 FOOT ABOVE THE GROUND, STAMPED MIDWAY
KG0331'1950.

KG0331'

KG0331'MIDWAY R.M. 1 IS 26.75 FEET EAST OF TRIANGULATION STATION MIDWAY
KG0331'1950, 132.2 FEET SOUTH OF THE SOUTH RAIL OF THE UNION PACIFIC
KG0331'RAILROAD, 83.3 FEET SOUTH OF A FENCE, 32 FEET NORTH OF THE
KG0331'CENTER LINE OF THE HIGHWAY, A REFERENCE MARK DISK SET IN THE
KG0331'TOP OF A CONCRETE POST, STAMPED MIDWAY NO 1 1950.

KG0331'

KG0331'MIDWAY R.M. 2 IS 67.1 FEET SOUTH OF TRIANGULATION STATION MIDWAY
KG0331'1950, 36.5 FEET WEST OF A TELEPHONE POLE, 34.5 FEET SOUTH OF
KG0331'THE CENTER LINE OF THE HIGHWAY, A REFERENCE MARK DISK SET IN THE
KG0331'TOP OF A CONCRETE POST WHICH PROJECTS 0.4 FOOT ABOVE THE
GROUND,

KG0331'STAMPED MIDWAY NO 2 1950.

KG0331'

KG0331'MIDWAY 1950 AZIMUTH IS 0.3 MILE WEST OF TRIANGULATION STATION
KG0331'MIDWAY 1950, 0.1 MILE WEST OF AN INTERSECTION WITH A DIRT
KG0331'ROAD, 151 FEET SOUTH OF A FENCE, 68 FEET SOUTH OF A POWER
KG0331'POLE, 33.2 FEET SOUTH OF THE CENTER LINE OF THE HIGHWAY, 2.2
KG0331'FEET EAST OF A TELEPHONE POLE, 1.4 FEET EAST OF A WITNESS
KG0331'POST, AN AZIMUTH MARK DISK SET IN THE TOP OF A CONCRETE POST
KG0331'WHICH PROJECTS 0.3 FOOT ABOVE THE GROUND, STAMPED MIDWAY 1950.

KG0331

KG0331 STATION RECOVERY (1953)

KG0331

KG0331'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1953

KG0331'5.1 MI E FROM WAKEENEY.

KG0331'5.1 MILES EAST ALONG U.S. HIGHWAY 40 FROM ITS INTERSECTION WITH
KG0331'MAIN STREET AT WAKEENEY, 0.2 MILE EAST OF AN INTERSECTION WITH
KG0331'A DIRT ROAD, 131 FEET SOUTH OF THE SOUTH RAIL OF THE UNION
KG0331'PACIFIC RAILROAD, 82.2 FEET SOUTH OF A FENCE, 32.5 FEET NORTH
KG0331'OF THE CENTER LINE OF THE HIGHWAY, 3 FEET EAST OF A WITNESS
KG0331'POST, SET IN THE TOP OF A CONCRETE POST WHICH PROJECTS 0.6 FOOT
KG0331'ABOVE THE GROUND.

KG0331

KG0331 STATION RECOVERY (1963)

KG0331

KG0331'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1963 (CJB)

KG0331'THIS STATION WAS RECOVERED AS DESCRIBED AND ALL MARKS WERE
FOUND

KG0331'IN GOOD CONDITION. ADDITIONAL ANGLES WERE MEASURED AS LISTED



KG0331'ABOVE AND THERE ARE A FEW ADDITIONAL REFERENCE MEASUREMENTS.
THE

KG0331'STATION MARK IS 119 FEET WEST OF A POWER POLE, 90 FEET EAST
KG0331'OF ANOTHER POWER POLE, 74 FEET NORTH-NORTHWEST OF A TELEPHONE
KG0331'1135, AND 1 FOOT WEST OF A STEEL WITNESS POST. REFERENCE MARK
KG0331'NO. 1 IS 92 FEET WEST OF A POWER POLE. REFERENCE MARK NO. 2 IS
KG0331'37 FEET WEST OF TELEPHONE POLE 1135.

KG0331'

KG0331'HEIGHT OF LIGHT ABOVE STATION MARK 1 METERS.

KG0331

KG0331 STATION RECOVERY (2006)

KG0331

KG0331'RECOVERY NOTE BY GEOCACHING 2006 (WD)

KG0331'FOUND THE STATION IN GOOD CONDITION. DID NOT FIND REFERENCE MARK
NO.

KG0331'1. FOUND THE CONCRETE MONUMENT FOR REFERENCE MARK NO. 2, BUT IT
WAS

KG0331'BADLY DAMAGED AND NEITHER THE DISK NOR STEM REMAINS. DID NOT
FIND THE

KG0331'AZIMUTH MARK.

KG0331

KG0331 STATION RECOVERY (2008)

KG0331

KG0331'RECOVERY NOTE BY GEOCACHING 2008 (TFW)

KG0331'RECOVERED IN GOOD CONDITION.

*** retrieval complete.

Elapsed Time = 00:00:02



The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

PROGRAM = datasheet95, VERSION = 8.6.1

1 National Geodetic Survey, Retrieval Date = APRIL 7, 2015

KG0520 *****

KG0520 FBN - This is a Federal Base Network Control Station.

KG0520 PACS - This is a Primary Airport Control Station.

KG0520 DESIGNATION - NORTONPORT 2

KG0520 PID - KG0520

KG0520 STATE/COUNTY- KS/NORTON

KG0520 COUNTRY - US

KG0520 USGS QUAD - NORTON (1978)

KG0520

KG0520 *CURRENT SURVEY CONTROL

KG0520

KG0520* NAD 83(2011) POSITION- 39 50 48.59768(N) 099 53 32.71819(W) ADJUSTED

KG0520* NAD 83(2011) ELLIP HT- 694.975 (meters) (06/27/12) ADJUSTED

KG0520* NAD 83(2011) EPOCH - 2010.00

KG0520* NAVD 88 ORTHO HEIGHT - 719.643 (meters) 2361.03 (feet) ADJUSTED

KG0520

KG0520 NAD 83(2011) X - -842,528.026 (meters) COMP

KG0520 NAD 83(2011) Y - -4,831,240.713 (meters) COMP

KG0520 NAD 83(2011) Z - 4,065,388.422 (meters) COMP

KG0520 LAPLACE CORR - -2.15 (seconds) DEFLEC12A

KG0520 GEOID HEIGHT - -24.66 (meters) GEOID12A

KG0520 DYNAMIC HEIGHT - 719.171 (meters) 2359.48 (feet) COMP

KG0520 MODELED GRAVITY - 979,946.7 (mgal) NAVD 88

KG0520

KG0520 VERT ORDER - FIRST CLASS II

KG0520

KG0520 Network accuracy estimates per FGDC Geospatial Positioning Accuracy

KG0520 Standards:

KG0520 FGDC (95% conf, cm) Standard deviation (cm) CorrNE

KG0520 Horiz Ellip SD_N SD_E SD_h (unitless)

KG0520 -----

KG0520 NETWORK 0.31 0.57 0.13 0.12 0.29 -0.01544766

KG0520 -----

KG0520 Click here for local accuracies and other accuracy information.

KG0520

KG0520

KG0520.This mark is at Norton Municipal Airport (NRN)

KG0520

KG0520.The horizontal coordinates were established by GPS observations



KG0520.and adjusted by the National Geodetic Survey in June 2012.

KG0520

KG0520.NAD 83(2011) refers to NAD 83 coordinates where the reference
KG0520.frame has been affixed to the stable North American tectonic plate. See
KG0520.NA2011 for more information.

KG0520

KG0520.The horizontal coordinates are valid at the epoch date displayed above
KG0520.which is a decimal equivalence of Year/Month/Day.

KG0520

KG0520.The orthometric height was determined by differential leveling and
KG0520.adjusted by the NATIONAL GEODETIC SURVEY
KG0520.in June 1991.

KG0520

KG0520.The X, Y, and Z were computed from the position and the ellipsoidal ht.

KG0520

KG0520.The Laplace correction was computed from DEFLEC12A derived deflections.

KG0520

KG0520.The ellipsoidal height was determined by GPS observations
KG0520.and is referenced to NAD 83.

KG0520

KG0520.The dynamic height is computed by dividing the NAVD 88
KG0520.geopotential number by the normal gravity value computed on the
KG0520.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
KG0520.degrees latitude (g = 980.6199 gals.).

KG0520

KG0520.The modeled gravity was interpolated from observed gravity values.

KG0520

KG0520. The following values were computed from the NAD 83(2011) position.

KG0520

KG0520;	North	East	Units	Scale	Factor	Converg.
KG0520;SPC KS N	- 169,715.032	238,048.344	MT	1.00001092	-1 11	50.5
KG0520;SPC KS N	- 556,806.73	780,996.94	sFT	1.00001092	-1 11	50.5
KG0520;UTM 14	- 4,411,138.358	423,652.662	MT	0.99967176	-0 34	18.6

KG0520

KG0520! - Elev Factor x Scale Factor = Combined Factor

KG0520!SPC KS N - 0.99989098 x 1.00001092 = 0.99990190

KG0520!UTM 14 - 0.99989098 x 0.99967176 = 0.99956278

KG0520

KG0520:	Primary Azimuth Mark	Grid Az
KG0520:SPC KS N	- NORTONPORT 2 AZ MK	001 10 17.1
KG0520:UTM 14	- NORTONPORT 2 AZ MK	000 32 45.2

KG0520

KG0520	-----		
KG0520	PID	Reference Object	Distance Geod. Az
KG0520			dddmmss.s
KG0520	KG0846	NORTON AIRPORT BEACON	393.633 METERS 13508
KG0520	KG0844	ET 01	148.829 METERS 32638
KG0520	KG0845	ET 02	182.550 METERS 33448



KG0520| KG0521 NORTONPORT 2 AZ MK APPROX. 1.0 KM 3595826.6 |

KG0520|-----|

KG0520

KG0520 SUPERSEDED SURVEY CONTROL

KG0520

KG0520 NAD 83(2007)- 39 50 48.59766(N) 099 53 32.71880(W) AD(2002.00) 0

KG0520 ELLIP H (02/10/07) 694.994 (m) GP(2002.00)

KG0520 ELLIP H (08/12/03) 694.988 (m) GP() 4 1

KG0520 NAD 83(1997)- 39 50 48.59704(N) 099 53 32.71805(W) AD() B

KG0520 ELLIP H (12/22/97) 695.035 (m) GP() 4 1

KG0520 NAD 83(1995)- 39 50 48.60074(N) 099 53 32.71808(W) AD() 3

KG0520 NAD 83(1986)- 39 50 48.60256(N) 099 53 32.72066(W) AD() 3

KG0520 NAD 27 - 39 50 48.56115(N) 099 53 31.28438(W) AD() 3

KG0520 NAVD 88 (12/22/97) 719.64 (m) 2361.0 (f) LEVELING 3

KG0520 NGVD 29 (02/14/92) 719.381 (m) 2360.17 (f) ADJUSTED 1 2

KG0520 NGVD 29 (12/08/88) 719.35 (m) 2360.1 (f) LEVELING 3

KG0520

KG0520.Superseded values are not recommended for survey control.

KG0520

KG0520.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

KG0520.See file dsdata.txt to determine how the superseded data were derived.

KG0520

KG0520_U.S. NATIONAL GRID SPATIAL ADDRESS: 14SMK2365211138(NAD 83)

KG0520

KG0520_MARKER: DH = HORIZONTAL CONTROL DISK

KG0520_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

KG0520_SP_SET: CONCRETE POST

KG0520_STAMPING: NORTONPORT 2 1986

KG0520_MARK LOGO: NGS

KG0520_PROJECTION: FLUSH

KG0520_MAGNETIC: N = NO MAGNETIC MATERIAL

KG0520_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

KG0520+STABILITY: SURFACE MOTION

KG0520_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

KG0520+SATELLITE: SATELLITE OBSERVATIONS - July 18, 2002

KG0520

KG0520 HISTORY - Date Condition Report By

KG0520 HISTORY - 1986 MONUMENTED NGS

KG0520 HISTORY - 1987 GOOD NOS

KG0520 HISTORY - 1987 GOOD NOS

KG0520 HISTORY - 19970327 GOOD NGS

KG0520 HISTORY - 20020718 GOOD NGS

KG0520

KG0520 STATION DESCRIPTION

KG0520

KG0520'DESCRIBED BY NATIONAL GEODETIC SURVEY 1986

KG0520'IN NORTON.

KG0520'IN NORTON, AT THE NORTON MUNICIPAL AIRPORT, AT A JUNCTION OF THE



KG0520'EAST-WEST ASPHALT TAXIWAY APPROACH AND THE MAIN NORTH-SOUTH ASPHALT

KG0520'RUNWAY, 22.0 METERS (72 FT) EAST OF THE CENTER OF THE MAIN NORTH-SOUTH

KG0520'ASPHALT RUNWAY, 40.0 METERS (131 FT) NORTH OF THE CENTER OF THE KG0520'TAXIWAY APPROACH, 11.6 METERS (38 FT) EAST OF A BOUNDARY LITE FOR THE

KG0520'MAIN NORTH-SOUTH RUNWAY AND 50.3 METERS (165 FT) NORTH OF THE EAST 1

KG0520'OF 3 END MAIN RUNWAY LITES. NOTE--AIRPORT MANAGER MR. D. MILLER

KG0520'PHONE--877-2201.

KG0520'THE MARK IS 0.3 METERS S FROM A WITNESS POST

KG0520'THE MARK IS ABOVE LEVEL WITH THE MAIN RUNWAY.

KG0520

KG0520 STATION RECOVERY (1987)

KG0520

KG0520'RECOVERY NOTE BY NATIONAL OCEAN SERVICE 1987 (REM)

KG0520'THE STATION IS AT THE NORTON MUNICIPAL AIRPORT, AT THE JUNCTION OF

KG0520'THE EAST WEST ASPHALT TAXIWAY APPROACH AND THE MAIN NORTH SOUTH

KG0520'ASPHALT RUNWAY.

KG0520'

KG0520'SEE AIRPORT MANAGER, MR. D. MILLER.

KG0520'

KG0520'THE STATION IS A STANDARD NGS DISK STAPMED---NORTONPORT 2 1986---

KG0520'22.0 M (72 FT) EAST OF THE CENTER OF THE MAIN NORTH SOUTH ASPHALT

KG0520'RUNWAY, 40.0 M (131 FT) NORTH OF THE CENTER OF THE TAXI APPROACH,

KG0520'11.6 M (38 FT) EAST OF THE BOUNDARY LIGHT FOR THE MAIN NORTH SOUTH

KG0520'RUNWAY AND 50.3 M (165 FT) NORTH OF THE EAST 1 OF 3 END MAIN RUNWAY

KG0520'LIGHTS.

KG0520'

KG0520'HEIGHT OF LIGHT SHOWN WAS 1.35 METERS ABOVE THE MARK.

KG0520'

KG0520'DESCRIBED BY PBW.

KG0520

KG0520 STATION RECOVERY (1987)

KG0520

KG0520'RECOVERY NOTE BY NATIONAL OCEAN SERVICE 1987

KG0520'RECOVERED IN GOOD CONDITION.

KG0520

KG0520 STATION RECOVERY (1997)

KG0520

KG0520'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1997 (CSM)

KG0520'THE STATION IS LOCATED ON THE NORTH SIDE OF NORTON, AT THE NORTON

KG0520'MUNICIPAL AIRPORT, IN THE NORTHEAST QUADRANT OF THE JUNCTION OF RUNWAY

KG0520'END 35 AND THE CONNECTOR TAXI TO THE RUNWAY END. OWNERSHIP--CITY OF KG0520'NORTON.



Appendix C: Final Constraint



```

*****
* NETWORK - WEIGHTED GNSS NETWORK ADJUSTMENT *
*
* (c) Copyright NovAtel Inc., (2015) *
*
* Version: 8.60.4331 *
*
* FILE: C:\Users\ben.kimbrough\Documents\Projects\2015\15115 Kansas LiDAR Add-
ons\307_Control_Network\2015APRIL21_NORTH\Data Processing\2015APRIL21.net
*****

```

DATE(m/d/y): Fri. 5/22/15 TIME: 8:01:31

```

DATUM:      'WGS84'
SCALE_FACTOR: 1.0000
CONFIDENCE LEVEL: 39.40 % (Scale factor is 1.0009)

```

INPUT CONTROL/CHECK POINTS

```

STA_ID  TYPE  -- LATITUDE -- -- LONGITUDE -- ELLHGT - HZ-SD  V-SD
GLADE2  GCP-3D 39 41 41.20206 -99 18 34.70925 543.753 0.00010 0.00010
NORTONPORT2 GCP-3D 39 50 48.59768 -99 53 32.71819 694.975 0.00010 0.00010

```

INPUT VECTORS

```

SESSION NAME      VECTOR(m) ----- Covariance (m) [unscaled] -----
                   DX/DY/DZ      standard deviations in brackets
CAL34 to CP13 (1) -7909.8794 2.9926e-008 (0.0002)
                   11001.3244 1.4508e-008 1.3195e-007 (0.0004)
                   11482.5838 -6.1717e-009 -7.7988e-008 9.9783e-008 (0.0003)

CAL34 to CP19 (1) -9953.1835 3.5169e-006 (0.0019)
                   -1190.7202 6.9178e-008 2.8041e-006 (0.0017)
                   -3315.5442 -3.1641e-007 -1.0095e-006 1.2507e-006 (0.0011)

CAL34 to CP63 (1) -8977.6378 2.8800e-007 (0.0005)
                   4630.4358 -5.5921e-008 1.0615e-007 (0.0003)
                   3800.3233 -2.5759e-008 -3.8935e-008 6.0717e-008 (0.0002)

```



CP01 to CP02 (1) 25982.9603 5.4936e-007 (0.0007)
-3747.2113 6.9649e-007 2.2435e-006 (0.0015)
888.0411 -4.5098e-007 -1.1066e-006 1.5217e-006 (0.0012)

CP01 to CP04 (1) 875.5835 8.8977e-008 (0.0003)
-6447.1552 7.8635e-008 2.7607e-007 (0.0005)
-7419.6995 -3.0246e-009 -1.4614e-007 2.7004e-007 (0.0005)

CP01 to CP07 (1) -298.1992 2.3706e-007 (0.0005)
-13551.0520 2.1443e-007 9.1566e-007 (0.0010)
-16064.1114 6.9076e-008 -4.5291e-007 9.0544e-007 (0.0010)

CP01 to CP56 (1) 7518.9516 1.6263e-007 (0.0004)
1840.9027 1.0953e-007 6.1275e-007 (0.0008)
3679.9402 -4.7025e-009 -1.4092e-007 2.1540e-007 (0.0005)

CP01 to CP57 (1) 17429.0504 3.3695e-007 (0.0006)
1135.6238 3.5322e-007 1.3562e-006 (0.0012)
4895.7944 -9.3750e-008 -2.9673e-007 4.0278e-007 (0.0006)

CP02 to CP03 (1) 8595.8248 2.7009e-007 (0.0005)
2388.2408 3.1554e-007 8.8422e-007 (0.0009)
4536.5537 -1.4554e-007 -3.3831e-007 4.4429e-007 (0.0007)

CP02 to CP06 (1) 8991.2869 1.5858e-007 (0.0004)
-3955.1409 1.7917e-007 5.0721e-007 (0.0007)
-2941.4283 -7.7851e-008 -1.7979e-007 2.5011e-007 (0.0005)

CP02 to CP56 (1) -18464.0088 3.2260e-007 (0.0006)
5588.1249 3.8645e-007 1.1500e-006 (0.0011)
2791.8936 -1.8449e-007 -3.9229e-007 5.1971e-007 (0.0007)

CP02 to CP57 (1) -8553.9101 1.4637e-007 (0.0004)
4882.8575 1.6230e-007 4.5858e-007 (0.0007)
4007.7529 -6.8361e-008 -1.6080e-007 2.2890e-007 (0.0005)

CP03 to CP06 (1) 395.4619 2.6784e-007 (0.0005)
-6343.3841 3.1285e-007 8.7661e-007 (0.0009)
-7477.9817 -1.4446e-007 -3.3574e-007 4.4087e-007 (0.0007)

CP03 to CP06 (2) 395.4570 9.4224e-008 (0.0003)
-6343.3834 5.9372e-008 4.1685e-007 (0.0006)
-7477.9796 -4.4862e-008 -2.1677e-007 2.8210e-007 (0.0005)

CP04 to CP07 (1) -1173.7832 9.2210e-008 (0.0003)
-7103.9067 1.1598e-007 5.0342e-007 (0.0007)
-8644.4098 -6.7156e-008 -2.2213e-007 3.4677e-007 (0.0006)



CP05 to CP02 (1) 1132.1340 2.1051e-007 (0.0005)
5984.7829 3.0668e-007 1.3679e-006 (0.0012)
7357.3333 -1.3792e-007 -4.6808e-007 4.0095e-007 (0.0006)

CP05 to CP03 (1) 9727.9610 4.0929e-007 (0.0006)
8373.0279 6.4276e-007 2.6893e-006 (0.0016)
11893.8892 -2.8750e-007 -1.0025e-006 8.2057e-007 (0.0009)

CP05 to CP06 (1) 10123.4236 7.0256e-008 (0.0003)
2029.6391 5.8133e-008 2.2200e-007 (0.0005)
4415.9091 -4.2238e-008 -1.2428e-007 2.1336e-007 (0.0005)

CP05 to CP08 (1) -2783.0189 1.4682e-007 (0.0004)
-6649.7161 1.1606e-007 5.1851e-007 (0.0007)
-8355.5853 -1.5572e-008 -3.8887e-007 6.8504e-007 (0.0008)

CP05 to CP09 (1) 9297.0304 2.3803e-007 (0.0005)
-4550.8020 2.5131e-007 1.7355e-006 (0.0013)
-3420.5110 -6.4830e-008 -4.7106e-007 3.7011e-007 (0.0006)

CP05 to CP09 (2) 9297.0256 1.6496e-007 (0.0004)
-4550.7855 1.6263e-007 5.9792e-007 (0.0008)
-3420.5216 -9.2191e-008 -3.6642e-007 5.7016e-007 (0.0008)

CP05 to CP58 (1) -11983.2469 1.9558e-007 (0.0004)
5288.1364 1.3174e-007 7.3671e-007 (0.0009)
3889.0018 -7.2083e-008 -1.7902e-007 4.0009e-007 (0.0006)

CP05 to CP59 (1) -9858.8440 1.7169e-007 (0.0004)
-1260.9923 1.1565e-007 6.4654e-007 (0.0008)
-3456.8692 -6.3304e-008 -1.5728e-007 3.5127e-007 (0.0006)

CP05 to SETPOINT3 (1) -6605.0360 4.5131e-008 (0.0002)
-867.4835 4.4408e-008 1.4826e-007 (0.0004)
-2345.1089 -1.4677e-008 -7.2692e-008 1.2111e-007 (0.0003)

CP06 to CP13 (1) 14655.7100 4.1634e-007 (0.0006)
290.6861 2.0196e-007 6.0036e-007 (0.0008)
3250.4779 -1.1413e-007 -4.4889e-007 5.7774e-007 (0.0008)

CP06 to CP63 (1) 13587.9335 7.2001e-008 (0.0003)
-6080.2695 4.0039e-008 3.2055e-007 (0.0006)
-4431.7809 2.0465e-008 -1.2331e-007 2.1641e-007 (0.0005)

CP07 to CP10 (1) -1441.9076 1.5791e-007 (0.0004)
-8087.6077 1.4220e-007 6.4505e-007 (0.0008)
-9950.9603 -7.0608e-008 -2.8965e-007 3.5587e-007 (0.0006)



CP07 to CP60 (1) 6810.7552 3.4348e-007 (0.0006)
-3309.0991 1.9134e-007 6.5861e-007 (0.0008)
-2496.3898 -5.4026e-008 -3.8231e-007 4.6222e-007 (0.0007)

CP08 to CP09 (1) 12080.0492 1.1969e-007 (0.0003)
2098.9420 9.6558e-008 4.2356e-007 (0.0007)
4935.0569 -3.5273e-008 -2.9397e-007 5.5111e-007 (0.0007)

CP08 to CP11 (1) 527.4064 1.9409e-007 (0.0004)
-6320.7024 4.7039e-008 7.1229e-007 (0.0008)
-7483.1226 3.0590e-008 -2.3983e-007 3.7398e-007 (0.0006)

CP08 to CP12 (1) 10810.3601 2.4334e-007 (0.0005)
-3299.1799 1.9424e-007 1.1699e-006 (0.0011)
-1779.5661 -3.1994e-008 -3.4931e-007 4.6012e-007 (0.0007)

CP08 to CP88 (1) -8160.4824 1.3392e-007 (0.0004)
-722.4881 2.3945e-008 4.7923e-007 (0.0007)
-2525.0367 1.8887e-008 -1.6979e-007 2.9441e-007 (0.0005)

CP09 to CP03 (1) 430.9286 8.0603e-007 (0.0009)
12923.8310 1.0627e-006 3.2145e-006 (0.0018)
15314.3969 -7.2546e-007 -1.8365e-006 2.4944e-006 (0.0016)

CP09 to CAL34 (1) 23391.9258 7.9848e-006 (0.0028)
-4130.2744 -3.0978e-007 7.5726e-006 (0.0028)
-395.7016 -5.2088e-007 -2.6040e-006 2.9241e-006 (0.0017)

CP09 to CP02 (1) -8164.8984 3.9318e-007 (0.0006)
10535.5830 4.2408e-007 1.5774e-006 (0.0013)
10777.8404 -1.1084e-007 -3.9569e-007 5.0573e-007 (0.0007)

CP09 to CP06 (1) 826.3912 3.8066e-008 (0.0002)
6580.4373 3.8487e-008 1.3437e-007 (0.0004)
7836.4189 -1.5793e-008 -6.7972e-008 1.1850e-007 (0.0003)

CP09 to CP19 (1) 13438.7784 8.6360e-008 (0.0003)
-5321.0145 4.6779e-008 2.0391e-007 (0.0005)
-3711.2394 -3.0707e-008 -1.6274e-007 2.8395e-007 (0.0005)

CP09 to CP63 (1) 14414.3234 8.9956e-008 (0.0003)
500.1650 7.0143e-008 3.1251e-007 (0.0006)
3404.6388 -2.8140e-008 -1.8476e-007 3.3969e-007 (0.0006)

CP10 to CP60 (1) 8252.6561 4.3290e-007 (0.0007)
4778.4985 2.4538e-007 8.0505e-007 (0.0009)
7454.5728 -6.7722e-008 -4.5802e-007 5.5701e-007 (0.0007)



CP11 to CP12 (1) 10282.9502 4.8163e-008 (0.0002)
3021.5141 4.0506e-008 2.0646e-007 (0.0005)
5703.5624 -2.2079e-008 -1.1102e-007 1.4214e-007 (0.0004)

CP11 to CP16 (1) 9145.4105 1.2781e-007 (0.0004)
-3635.3393 1.3665e-007 4.8389e-007 (0.0007)
-2460.8787 -1.2353e-007 -3.4861e-007 5.6692e-007 (0.0008)

CP11 to CP60 (1) -16082.6680 4.1304e-007 (0.0006)
5842.2862 2.5725e-007 9.2136e-007 (0.0010)
3747.4920 -2.1875e-008 -3.7828e-007 5.1820e-007 (0.0007)

CP11 to CP62 (1) -1054.5851 6.3719e-008 (0.0003)
-4209.8480 6.0947e-008 2.0977e-007 (0.0005)
-5182.8358 -1.7350e-008 -1.0108e-007 1.4833e-007 (0.0004)

CP11 to CP88 (1) -8687.8870 4.8706e-007 (0.0007)
5598.2128 2.1348e-007 1.1958e-006 (0.0011)
4958.0879 2.4494e-008 -3.7032e-007 8.3599e-007 (0.0009)

CP12 to CP16 (1) -1137.5413 1.2843e-007 (0.0004)
-6656.8605 1.2855e-007 5.1048e-007 (0.0007)
-8164.4312 -6.6119e-008 -2.9844e-007 4.5676e-007 (0.0007)

CP12 to CP16 (2) -1137.5461 3.2176e-007 (0.0006)
-6656.8919 2.9540e-007 6.2800e-007 (0.0008)
-8164.4273 -4.4791e-008 -2.0486e-007 2.5081e-007 (0.0005)

CP12 to CP62 (1) -11337.5360 1.2914e-007 (0.0004)
-7231.3566 1.2542e-007 5.1983e-007 (0.0007)
-10886.4107 -5.9826e-008 -3.5703e-007 5.6811e-007 (0.0008)

CP12 to CP67 (1) 22739.7105 3.2440e-007 (0.0006)
-10351.6996 -1.9507e-009 9.9813e-007 (0.0010)
-7889.8107 -2.4179e-008 -2.4122e-007 3.8842e-007 (0.0006)

CP12 to CP88 (1) -18970.8411 1.0397e-007 (0.0003)
2576.7002 3.8765e-008 4.1065e-007 (0.0006)
-745.4810 -9.3727e-009 -2.1292e-007 2.9092e-007 (0.0005)

CP13 to CP14 (1) 9934.4351 1.2338e-007 (0.0004)
1244.3481 5.8410e-008 5.5398e-007 (0.0007)
3406.2906 -2.3728e-008 -3.6684e-007 5.0125e-007 (0.0007)

CP13 to CP64 (1) 8724.0030 6.6973e-008 (0.0003)
-4627.2710 4.8027e-008 1.6140e-007 (0.0004)
-3676.9348 -2.2530e-008 -9.4639e-008 1.5893e-007 (0.0004)



CP14 to CP15 (1) 9312.8127 2.8486e-007 (0.0005)
-2361.5395 1.8420e-007 3.1633e-007 (0.0006)
-938.1713 1.0280e-007 -2.6011e-008 5.9475e-007 (0.0008)

CP16 to CP51 (1) 1732.0201 1.6726e-007 (0.0004)
-8605.7954 -1.4617e-008 3.4895e-007 (0.0006)
-9871.0665 -1.4012e-007 3.2054e-008 4.8583e-007 (0.0007)

CP16 to CP52 (1) 12372.5363 1.9951e-007 (0.0004)
-8274.1197 1.2850e-008 4.2507e-007 (0.0007)
-7352.9048 -1.7802e-007 2.9052e-008 5.2481e-007 (0.0007)

CP16 to CP62 (1) -10199.9964 1.2536e-007 (0.0004)
-574.4999 1.1394e-008 5.5731e-007 (0.0007)
-2721.9761 3.8820e-008 -4.4998e-007 7.3491e-007 (0.0009)

CP16 to CP89 (1) 15646.7933 9.3927e-008 (0.0003)
-4178.3700 2.2842e-008 2.9775e-007 (0.0005)
-1849.1736 -9.4802e-009 -1.7642e-007 2.1024e-007 (0.0005)

CP17 to CP21 (1) 10522.6897 9.7327e-008 (0.0003)
-4256.0399 1.0314e-007 4.8846e-007 (0.0007)
-3083.5115 -4.1699e-008 -2.4225e-007 4.5345e-007 (0.0007)

CP19 to CP22 (1) -1074.9459 1.2368e-007 (0.0004)
-6253.2594 8.4706e-008 3.9038e-007 (0.0006)
-7739.0746 -1.8027e-008 -2.0764e-007 4.8136e-007 (0.0007)

CP19 to CP63 (1) 975.5457 7.1283e-008 (0.0003)
5821.1851 7.9606e-008 3.3407e-007 (0.0006)
7115.8738 -3.0564e-008 -1.2042e-007 1.9462e-007 (0.0004)

CP20 to CP66 (1) -8514.4714 4.2572e-007 (0.0007)
3307.7129 2.2592e-007 7.8376e-007 (0.0009)
2341.3805 -1.4748e-007 -6.5087e-007 7.9964e-007 (0.0009)

CP20 to CP23 (1) 145.5030 3.2843e-008 (0.0002)
-6408.1369 2.9301e-008 1.4730e-007 (0.0004)
-7531.1591 -1.1902e-008 -7.0362e-008 1.1621e-007 (0.0003)

CP20 to CP71 (1) -12647.2886 7.2095e-007 (0.0008)
-21194.7239 2.5093e-007 6.2025e-006 (0.0025)
-27805.1269 -1.3149e-007 -5.1511e-006 5.2522e-006 (0.0023)

CP20 to CP75 (1) 9859.1013 6.2997e-008 (0.0003)
-4551.9122 1.5712e-008 2.8794e-007 (0.0005)
-3521.7635 -3.3904e-008 -6.1000e-008 2.2474e-007 (0.0005)



CP20 to CP90 (1) 10072.6708 1.1052e-007 (0.0003)
-10050.0109 1.2723e-007 4.4602e-007 (0.0007)
-9998.9590 -7.2663e-008 -1.4881e-007 2.6045e-007 (0.0005)

CP22 to CP16 (1) -14771.1374 5.3040e-007 (0.0007)
-480.7282 6.4856e-007 1.4876e-006 (0.0012)
-3428.8210 -8.8467e-008 -1.8600e-007 2.9442e-007 (0.0005)

CP22 to CP67 (1) 9106.1564 1.6174e-007 (0.0004)
-4175.4514 8.6773e-009 7.3288e-007 (0.0009)
-3154.1724 4.3750e-009 -2.7748e-007 2.9973e-007 (0.0005)

CP22 to CP89 (1) 875.7324 2.5328e-007 (0.0005)
-4659.0846 6.6603e-008 3.4382e-007 (0.0006)
-5277.9235 -2.8841e-008 -1.9622e-007 4.5771e-007 (0.0007)

CP23 to CP54 (1) -459.0999 1.4464e-007 (0.0004)
-6194.3045 1.5193e-008 5.5848e-007 (0.0007)
-7512.0134 -4.4313e-009 -4.2093e-007 5.2098e-007 (0.0007)

CP23 to CP55 (1) 10985.8672 4.0733e-007 (0.0006)
-9032.2600 2.1846e-007 1.5094e-006 (0.0012)
-8701.7579 -1.6896e-008 -2.1498e-007 4.4817e-007 (0.0007)

CP23 to CP67 (1) -10002.7096 1.1712e-007 (0.0003)
3969.2145 -5.0627e-009 4.3637e-007 (0.0007)
2757.0757 1.4712e-008 -2.7289e-007 2.8562e-007 (0.0005)

CP51 to CP77 (1) 10628.0221 1.7570e-007 (0.0004)
-4862.8399 1.0810e-007 6.6177e-007 (0.0008)
-3715.8045 3.4804e-008 -3.2814e-007 5.1427e-007 (0.0007)

CP52 to CP51 (1) -10640.5181 5.2028e-008 (0.0002)
-331.6845 3.5415e-008 2.5986e-007 (0.0005)
-2518.1741 -6.8568e-009 -1.0099e-007 1.6548e-007 (0.0004)

CP52 to CP53 (1) 12381.3635 9.4333e-008 (0.0003)
-3215.4789 1.0056e-007 3.5874e-007 (0.0006)
-1439.6969 -5.8692e-008 -2.1385e-007 3.2944e-007 (0.0006)

CP52 to CP77 (1) -12.5016 1.1142e-007 (0.0003)
-5194.5315 2.7473e-008 4.2052e-007 (0.0006)
-6233.9788 9.8069e-009 -1.8621e-007 2.5425e-007 (0.0005)

CP52 to CP89 (1) 3274.2588 4.1824e-008 (0.0002)
4095.7570 3.3663e-008 1.9825e-007 (0.0004)
5503.7084 -2.2549e-008 -8.7554e-008 1.3733e-007 (0.0004)



CP52 to CP89 (2) 3274.2539 1.0716e-007 (0.0003)
4095.7609 7.2301e-008 3.3874e-007 (0.0006)
5503.7170 -1.6685e-008 -1.8123e-007 4.1600e-007 (0.0006)

CP53 to CP54 (1) 8666.9306 4.1185e-007 (0.0006)
-2368.6551 2.4475e-007 4.5634e-007 (0.0007)
-1201.9216 -8.4749e-008 -2.6929e-007 4.2094e-007 (0.0006)

CP56 to CP57 (1) 9910.0948 2.0432e-007 (0.0005)
-705.2841 2.4434e-007 7.3454e-007 (0.0009)
1215.8629 -1.1629e-007 -2.4294e-007 3.2575e-007 (0.0006)

CP58 to CP01 (1) -12867.5769 5.8515e-008 (0.0002)
4443.8633 5.7640e-008 1.8892e-007 (0.0004)
2580.2925 -1.9750e-008 -9.3103e-008 1.5366e-007 (0.0004)

CP58 to CP02 (1) 13115.3835 1.2328e-007 (0.0004)
696.6456 1.1883e-007 4.8550e-007 (0.0007)
3468.3376 -1.0334e-007 -3.1625e-007 5.3010e-007 (0.0007)

CP58 to CP04 (1) -11991.9959 7.6577e-008 (0.0003)
-2003.2934 7.1709e-008 2.6271e-007 (0.0005)
-4839.4064 -9.5837e-009 -1.4096e-007 2.5783e-007 (0.0005)

CP58 to CP07 (1) -13165.7782 1.4887e-007 (0.0004)
-9107.1990 1.5201e-007 6.5592e-007 (0.0008)
-13483.8067 4.6840e-009 -3.3114e-007 6.2708e-007 (0.0008)

CP58 to CP56 (1) -5348.6259 1.2246e-007 (0.0003)
6284.7682 1.0131e-007 4.4101e-007 (0.0007)
6260.2345 -3.6775e-008 -1.7295e-007 2.7199e-007 (0.0005)

CP58 to CP57 (1) 4561.4739 1.4722e-007 (0.0004)
5579.5016 1.6906e-007 4.9019e-007 (0.0007)
7476.0908 -7.5168e-008 -1.6481e-007 2.2959e-007 (0.0005)

CP58 to CP59 (1) 2124.4035 1.0324e-007 (0.0003)
-6549.1290 4.3082e-008 3.5266e-007 (0.0006)
-7345.8706 -6.5700e-008 -1.7367e-007 3.4522e-007 (0.0006)

CP58 to CP59 (2) 2124.3912 8.1652e-008 (0.0003)
-6549.1571 7.4358e-008 2.8969e-007 (0.0005)
-7345.8476 6.7104e-010 -1.5750e-007 2.9668e-007 (0.0005)

CP58 to SETPOINT3 (1) 5378.2163 7.3030e-008 (0.0003)
-6155.6143 6.5424e-008 2.2325e-007 (0.0005)
-6234.1121 -4.5803e-008 -1.1975e-007 2.0069e-007 (0.0004)



CP59 to CP04 (1) -14116.3871 2.4036e-007 (0.0005)
4545.8637 2.1045e-007 6.4015e-007 (0.0008)
2506.4409 -1.1500e-007 -4.3631e-007 4.2564e-007 (0.0007)

CP59 to CP07 (1) -15290.1691 1.7236e-007 (0.0004)
-2558.0412 2.5435e-008 5.6892e-007 (0.0008)
-6137.9603 1.4502e-007 -2.4959e-007 5.1286e-007 (0.0007)

CP59 to CP10 (1) -16732.0873 8.8678e-006 (0.0030)
-10645.6501 7.5878e-006 8.0736e-006 (0.0028)
-16088.8848 -1.0684e-005 -1.1310e-005 2.0062e-005 (0.0045)

CP59 to CP60 (1) -8479.4193 5.7274e-006 (0.0024)
-5867.1465 4.9017e-006 5.2161e-006 (0.0023)
-8634.3413 -6.8971e-006 -7.3018e-006 1.2940e-005 (0.0036)

CP59 to CP88 (1) -1084.6442 4.2727e-007 (0.0007)
-6111.2122 1.2321e-007 8.9966e-007 (0.0009)
-7423.7783 -2.6820e-007 1.2367e-007 3.1084e-006 (0.0018)

CP59 to SETPOINT3 (1) 3253.8109 2.3392e-008 (0.0002)
393.5072 2.1733e-008 7.1388e-008 (0.0003)
1111.7577 -1.4757e-008 -3.6323e-008 5.9547e-008 (0.0002)

CP60 to CP61 (1) 4658.8570 2.1019e-007 (0.0005)
-6248.0515 7.1184e-008 3.0634e-007 (0.0006)
-6586.7693 -2.9805e-008 -2.3614e-007 4.6419e-007 (0.0007)

CP60 to CP88 (1) 7394.7704 9.3658e-008 (0.0003)
-244.0771 3.9423e-008 2.3685e-007 (0.0005)
1210.5891 -2.3808e-008 -1.4861e-007 1.7792e-007 (0.0004)

CP61 to CP62 (1) 10369.2117 4.1183e-007 (0.0006)
-3804.0792 4.1239e-007 1.0349e-006 (0.0010)
-2343.5710 -1.2951e-008 -6.8231e-008 2.3699e-007 (0.0005)

CP63 to CP13 (1) 1067.7700 8.5095e-008 (0.0003)
6370.9467 3.7902e-008 2.1826e-007 (0.0005)
7682.2662 -1.9694e-008 -1.3125e-007 1.5772e-007 (0.0004)

CP63 to CP64 (1) 9791.7710 3.1077e-007 (0.0006)
1743.6629 3.0562e-007 6.9934e-007 (0.0008)
4005.3390 -2.5401e-008 -1.2941e-007 2.0198e-007 (0.0004)

CP64 to CP14 (1) 1210.4307 1.1956e-007 (0.0003)
5871.5966 -2.3997e-008 5.5602e-007 (0.0007)
7083.2451 4.3440e-008 -4.4126e-007 6.3235e-007 (0.0008)



CP64 to CP14 (2) 1210.4454 1.4041e-007 (0.0004)
5871.5883 1.3355e-007 3.6013e-007 (0.0006)
7083.2063 -1.0843e-008 -1.0333e-007 3.6306e-007 (0.0006)

CP64 to CP15 (1) 10523.2573 3.2381e-007 (0.0006)
3510.0461 2.0939e-007 3.5959e-007 (0.0006)
6145.0338 1.1686e-007 -2.9568e-008 6.7609e-007 (0.0008)

CP66 to CP19 (1) -9373.9412 1.6366e-007 (0.0004)
4682.0806 1.0343e-007 5.3827e-007 (0.0007)
3777.7820 -3.9017e-008 -3.1496e-007 6.9005e-007 (0.0008)

CP66 to CP22 (1) -10448.8915 1.9248e-007 (0.0004)
-1571.1813 1.8293e-007 5.4842e-007 (0.0007)
-3961.2880 -6.3706e-008 -2.5707e-007 2.6703e-007 (0.0005)

CP66 to CP67 (1) -1342.7393 3.4489e-007 (0.0006)
-5746.6358 5.8820e-008 1.4982e-006 (0.0012)
-7115.4600 -2.1097e-008 -3.5679e-007 4.0264e-007 (0.0006)

CP67 to CP54 (1) 9543.6107 1.4810e-007 (0.0004)
-10163.5207 4.5276e-008 4.8387e-007 (0.0007)
-10269.0848 -1.0470e-008 -3.1814e-007 4.1392e-007 (0.0006)

CP67 to CP52 (1) -11504.6796 1.3685e-007 (0.0004)
-4579.3943 4.3937e-008 4.1405e-007 (0.0006)
-7627.4595 6.2641e-008 -1.5849e-007 4.4229e-007 (0.0007)

CP67 to CP53 (1) 876.6855 6.1453e-008 (0.0002)
-7794.8637 5.0800e-008 1.8637e-007 (0.0004)
-9067.1667 -1.4802e-008 -9.5263e-008 1.3818e-007 (0.0004)

CP67 to CP89 (1) -8230.4269 1.6342e-007 (0.0004)
-483.6261 1.2308e-007 5.0451e-007 (0.0007)
-2123.7511 -6.3859e-009 -2.4642e-007 6.3199e-007 (0.0008)

CP71 to CP79 (1) 15197.8298 1.2610e-007 (0.0004)
2974.5071 6.3946e-008 3.5693e-007 (0.0006)
6502.8464 -1.9015e-008 -2.0723e-007 2.8228e-007 (0.0005)

CP71 to CP82 (1) 10028.4181 3.1782e-007 (0.0006)
-3416.9147 2.9672e-007 8.1078e-007 (0.0009)
-2088.3826 -1.6985e-008 -1.6486e-007 2.8045e-007 (0.0005)

CP71 to FLT03 (1) 10464.7210 2.7721e-007 (0.0005)
-937.6617 2.5000e-007 7.1313e-007 (0.0008)
985.1135 -1.4007e-008 -1.5570e-007 2.6066e-007 (0.0005)



CP71 to FLT04 (1) 8836.8180 1.2161e-006 (0.0011)
-664.0751 1.1304e-006 1.5256e-006 (0.0012)
946.6649 -7.2390e-007 -9.5280e-007 8.6130e-007 (0.0009)

CP75 to CP17 (2) -8466.1613 1.4852e-007 (0.0004)
10411.4056 1.6782e-007 7.3948e-007 (0.0009)
10814.2745 -6.5107e-008 -3.6514e-007 6.8445e-007 (0.0008)

CP75 to CP17 (1) -8466.1724 9.1594e-007 (0.0010)
10411.3805 7.0565e-007 2.5541e-006 (0.0016)
10814.2944 4.0614e-007 -1.2553e-006 2.8549e-006 (0.0017)

CP75 to CP21 (1) 2056.5307 1.1989e-007 (0.0003)
6155.3685 1.0700e-007 4.7378e-007 (0.0007)
7730.7659 -9.1906e-008 -2.4859e-007 5.0746e-007 (0.0007)

CP75 to CP90 (1) 213.5711 1.6438e-007 (0.0004)
-5498.1010 2.2222e-007 9.9985e-007 (0.0010)
-6477.1983 -1.5974e-007 -4.5422e-007 7.3343e-007 (0.0009)

CP79 to CP82 (1) -5169.4154 3.3584e-007 (0.0006)
-6391.4375 3.9514e-007 9.7992e-007 (0.0010)
-8591.2256 -7.3228e-008 -1.5419e-007 2.1922e-007 (0.0005)

CP79 to FLT03 (1) -4733.1086 3.4853e-007 (0.0006)
-3912.1799 4.2213e-007 9.9597e-007 (0.0010)
-5517.7293 -6.5444e-008 -1.3661e-007 2.0531e-007 (0.0005)

CP79 to FLT04 (1) -6361.0112 1.0165e-007 (0.0003)
-3638.5893 6.7737e-008 2.7034e-007 (0.0005)
-5556.1794 -1.9065e-008 -1.2980e-007 1.8123e-007 (0.0004)

CP82 to FLT03 (1) 436.2975 5.0477e-008 (0.0002)
2479.2377 4.0834e-008 1.3111e-007 (0.0004)
3073.5045 -5.4534e-009 -4.7112e-008 6.4706e-008 (0.0003)

CP82 to FLT04 (1) -1191.5958 4.6672e-008 (0.0002)
2752.8258 4.0223e-008 1.2406e-007 (0.0004)
3035.0451 -5.7294e-009 -4.3264e-008 5.7137e-008 (0.0002)

CP88 to CP61 (1) -2735.9064 1.5524e-007 (0.0004)
-6003.9797 1.6047e-007 4.7164e-007 (0.0007)
-7797.3476 -4.5529e-008 -1.5846e-007 1.9511e-007 (0.0004)

CP88 to CP62 (2) 7633.3055 2.3796e-007 (0.0005)
-9808.0604 2.3562e-007 6.2394e-007 (0.0008)
-10140.9165 4.0889e-008 -1.3429e-007 4.2385e-007 (0.0007)



CP90 to CP55 (1) 1058.6998 1.0342e-007 (0.0003)
 -5390.3868 9.8459e-008 3.6350e-007 (0.0006)
 -6233.9680 -7.3329e-008 -1.8978e-007 3.2300e-007 (0.0006)

FLT03 to FLT04 (1) -1627.8951 8.2779e-008 (0.0003)
 273.5844 1.0020e-007 2.3630e-007 (0.0005)
 -38.4582 -1.5519e-008 -3.2393e-008 4.8750e-008 (0.0002)

GLADE2 to CP20 (1) -389.4862 7.4724e-008 (0.0003)
 -617.6757 3.8656e-008 1.6022e-007 (0.0004)
 -835.0385 -2.6239e-008 -1.3333e-007 1.5632e-007 (0.0004)

GLADE2 to CP66 (1) -8903.9515 2.7827e-007 (0.0005)
 2690.0330 1.5925e-007 6.9893e-007 (0.0008)
 1506.3481 -8.5394e-008 -4.5666e-007 5.4931e-007 (0.0007)

NORTONPORT2 to CP05 (1) 6441.0622 8.6781e-008 (0.0003)
 -1619.8873 7.2565e-008 2.1800e-007 (0.0005)
 -658.3536 -2.5243e-008 -1.1508e-007 2.1794e-007 (0.0005)

NORTONPORT2 to CP08 (1) 3658.0512 7.9335e-007 (0.0009)
 -8269.6123 7.2483e-007 1.4556e-006 (0.0012)
 -9013.9255 1.7288e-009 -4.8777e-007 1.0354e-006 (0.0010)

NORTONPORT2 to CP58 (1) -5542.1940 1.7742e-007 (0.0004)
 3668.2413 8.9007e-008 3.0890e-007 (0.0006)
 3230.6557 -3.0335e-008 -1.1821e-007 3.2570e-007 (0.0006)

NORTONPORT2 to CP59 (1) -3417.7976 3.2498e-007 (0.0006)
 -2880.8755 8.6474e-010 6.1904e-007 (0.0008)
 -4115.2239 8.9575e-008 -2.2831e-007 5.2506e-007 (0.0007)

NORTONPORT2 to SETPOINT3 (1) -163.9800 2.5648e-008 (0.0002)
 -2487.3808 2.2941e-008 6.6998e-008 (0.0003)
 -3003.4545 -9.0365e-009 -3.3817e-008 5.6357e-008 (0.0002)

OUTPUT VECTOR RESIDUALS (East, North, Height - Local Level)

SESSION NAME	-- RE --	-- RN --	-- RH --	- PPM -	DIST -	STD -
(m)	(m)	(m)	(km)	(m)		
CAL34 to CP13 (1)	0.0014	0.0149	-0.0139	\$ 1.151	17.8	0.0005
CAL34 to CP19 (1)	0.0186	-0.0304	0.0346	\$ 4.705	10.6	0.0028



CAL34 to CP63 (1)	0.0046	-0.0109	0.0105 \$	1.465	10.8	0.0007
CP01 to CP02 (1)	0.0043	-0.0039	0.0107 \$	0.464	26.3	0.0021
CP01 to CP04 (1)	-0.0006	0.0001	-0.0031 \$	0.323	9.9	0.0008
CP01 to CP07 (1)	0.0019	0.0028	0.0004	0.163	21.0	0.0014
CP01 to CP56 (1)	-0.0001	0.0010	-0.0026	0.323	8.6	0.0010
CP01 to CP57 (1)	-0.0015	0.0076	-0.0034 \$	0.466	18.1	0.0014
CP02 to CP03 (1)	0.0050	0.0018	-0.0024 \$	0.580	10.0	0.0013
CP02 to CP06 (1)	0.0049	0.0007	0.0031 \$	0.569	10.3	0.0010
CP02 to CP56 (1)	-0.0023	0.0023	-0.0015	0.187	19.5	0.0014
CP02 to CP57 (1)	-0.0017	-0.0024	0.0030 \$	0.394	10.6	0.0009
CP03 to CP06 (1)	-0.0003	0.0001	0.0034	0.353	9.8	0.0013
CP03 to CP06 (2)	0.0047	-0.0014	0.0020 \$	0.536	9.8	0.0009
CP04 to CP07 (1)	0.0012	0.0073	-0.0053 \$	0.809	11.3	0.0010
CP05 to CP02 (1)	0.0020	0.0019	0.0002	0.285	9.6	0.0014
CP05 to CP03 (1)	0.0054	-0.0008	-0.0001	0.315	17.5	0.0020
CP05 to CP06 (1)	0.0037	0.0009	-0.0011 \$	0.356	11.2	0.0007
CP05 to CP08 (1)	0.0107	0.0030	0.0091 \$	1.298	11.0	0.0012
CP05 to CP09 (1)	0.0076	0.0083	-0.0057 \$	1.156	10.9	0.0015
CP05 to CP09 (2)	0.0151	0.0065	0.0130 \$	1.922	10.9	0.0012
CP05 to CP58 (1)	-0.0044	-0.0016	-0.0061 \$	0.563	13.7	0.0012
CP05 to CP59 (1)	-0.0083	-0.0002	0.0079 \$	1.093	10.5	0.0011
CP05 to SETPOINT3 (1)	-0.0056	-0.0026	0.0024 \$	0.942	7.1	0.0006
CP06 to CP13 (1)	-0.0026	-0.0096	0.0307 \$	2.151	15.0	0.0013
CP06 to CP63 (1)	0.0072	0.0075	0.0009 \$	0.671	15.5	0.0008
CP07 to CP10 (1)	0.0023	0.0056	-0.0084 \$	0.800	12.9	0.0011
CP07 to CP60 (1)	0.0063	0.0055	-0.0029 \$	1.115	8.0	0.0012
CP08 to CP09 (1)	0.0018	0.0011	0.0175 \$	1.333	13.2	0.0010
CP08 to CP11 (1)	0.0084	0.0008	0.0012 \$	0.873	9.8	0.0011
CP08 to CP12 (1)	0.0062	0.0021	0.0069 \$	0.833	11.4	0.0014
CP08 to CP88 (1)	0.0028	-0.0045	-0.0021 \$	0.667	8.6	0.0010
CP09 to CP03 (1)	0.0000	-0.0071	0.0083 \$	0.542	20.0	0.0026
CP09 to CAL34 (1)	0.0352	0.0350	-0.0065 \$	2.108	23.8	0.0043
CP09 to CP02 (1)	-0.0040	-0.0020	0.0067 \$	0.471	17.1	0.0016
CP09 to CP06 (1)	-0.0025	-0.0039	0.0022 \$	0.500	10.3	0.0005
CP09 to CP19 (1)	0.0149	0.0085	0.0136 \$	1.469	14.9	0.0008
CP09 to CP63 (1)	0.0055	0.0049	0.0003 \$	0.499	14.8	0.0009
CP10 to CP60 (1)	0.0088	0.0052	-0.0045 \$	0.927	12.1	0.0013
CP11 to CP12 (1)	-0.0002	0.0024	-0.0049 \$	0.448	12.1	0.0006
CP11 to CP16 (1)	0.0057	0.0007	0.0190 \$	1.952	10.1	0.0011
CP11 to CP60 (1)	0.0012	0.0011	-0.0015	0.124	17.5	0.0014
CP11 to CP62 (1)	-0.0012	-0.0021	-0.0033 \$	0.603	6.8	0.0006
CP11 to CP88 (1)	-0.0076	-0.0061	-0.0054 \$	0.974	11.5	0.0016
CP12 to CP16 (1)	0.0062	-0.0047	0.0119 \$	1.337	10.6	0.0010
CP12 to CP16 (2)	0.0057	0.0126	-0.0150 \$	1.927	10.6	0.0011
CP12 to CP62 (1)	0.0006	0.0018	0.0136 \$	0.794	17.3	0.0011
CP12 to CP67 (1)	-0.0186	0.0326	-0.0568 \$	2.600	26.2	0.0013
CP12 to CP88 (1)	-0.0033	-0.0040	0.0042 \$	0.349	19.2	0.0009
CP13 to CP14 (1)	0.0094	-0.0077	0.0195 \$	2.171	10.6	0.0011



CP13 to CP64 (1)	-0.0018	0.0052	0.0004 \$	0.527	10.5	0.0006
CP14 to CP15 (1)	0.0031	-0.0106	-0.0039 \$	1.209	9.7	0.0011
CP16 to CP51 (1)	0.0105	-0.0061	0.0128 \$	1.336	13.2	0.0010
CP16 to CP52 (1)	0.0146	0.0100	0.0245 \$	1.822	16.6	0.0011
CP16 to CP62 (1)	-0.0046	0.0064	-0.0035 \$	0.819	10.6	0.0012
CP16 to CP89 (1)	0.0129	0.0019	0.0116 \$	1.068	16.3	0.0008
CP17 to CP21 (1)	0.0009	0.0012	-0.0025	0.251	11.8	0.0010
CP19 to CP22 (1)	0.0186	0.0146	0.0278 \$	3.649	10.0	0.0010
CP19 to CP63 (1)	-0.0092	-0.0037	-0.0062 \$	1.266	9.2	0.0008
CP20 to CP66 (1)	-0.0234	-0.0057	-0.0165 \$	3.091	9.4	0.0014
CP20 to CP23 (1)	-0.0069	-0.0035	-0.0036 \$	0.860	9.9	0.0005
CP20 to CP71 (1)	-0.0000	-0.0000	-0.0000	0.000	37.2	0.0035
CP20 to CP75 (1)	-0.0009	0.0013	-0.0000	0.142	11.4	0.0008
CP20 to CP90 (1)	-0.0004	0.0002	0.0011	0.067	17.4	0.0009
CP22 to CP16 (1)	0.0473	0.0557	-0.0130 \$	4.892	15.2	0.0015
CP22 to CP67 (1)	0.0003	-0.0061	-0.0063 \$	0.836	10.5	0.0011
CP22 to CP89 (1)	-0.0131	-0.0138	-0.0267 \$	4.616	7.1	0.0010
CP23 to CP54 (1)	-0.0151	-0.0016	-0.0194 \$	2.527	9.7	0.0011
CP23 to CP55 (1)	0.0056	-0.0034	0.0009 \$	0.394	16.7	0.0015
CP23 to CP67 (1)	-0.0244	-0.0043	-0.0219 \$	2.980	11.1	0.0009
CP51 to CP77 (1)	-0.0006	-0.0027	0.0105 \$	0.884	12.3	0.0012
CP52 to CP51 (1)	-0.0039	-0.0008	-0.0107 \$	1.042	10.9	0.0007
CP52 to CP53 (1)	0.0090	0.0054	0.0135 \$	1.330	12.9	0.0009
CP52 to CP77 (1)	-0.0001	0.0017	-0.0063 \$	0.800	8.1	0.0009
CP52 to CP89 (1)	-0.0024	0.0047	0.0073 \$	1.186	7.6	0.0006
CP52 to CP89 (2)	0.0030	-0.0038	0.0042 \$	0.847	7.6	0.0009
CP53 to CP54 (1)	0.0088	0.0043	0.0059 \$	1.259	9.1	0.0011
CP56 to CP57 (1)	0.0016	0.0036	-0.0109 \$	1.161	10.0	0.0011
CP58 to CP01 (1)	0.0006	0.0020	-0.0013 \$	0.176	13.9	0.0006
CP58 to CP02 (1)	0.0036	-0.0010	0.0020 \$	0.315	13.6	0.0011
CP58 to CP04 (1)	0.0022	0.0029	-0.0063 \$	0.553	13.1	0.0008
CP58 to CP07 (1)	0.0028	0.0021	-0.0168 \$	0.819	20.9	0.0012
CP58 to CP56 (1)	0.0015	0.0003	-0.0034 \$	0.362	10.4	0.0009
CP58 to CP57 (1)	0.0012	-0.0026	0.0038 \$	0.458	10.4	0.0009
CP58 to CP59 (1)	-0.0046	0.0012	0.0136 \$	1.433	10.1	0.0009
CP58 to CP59 (2)	0.0027	0.0027	-0.0240 \$	2.415	10.1	0.0008
CP58 to SETPOINT3 (1)	-0.0056	-0.0040	0.0143 \$	1.549	10.3	0.0007
CP59 to CP04 (1)	-0.0005	0.0005	0.0179 \$	1.192	15.0	0.0011
CP59 to CP07 (1)	-0.0001	-0.0000	0.0086 \$	0.517	16.7	0.0011
CP59 to CP10 (1)	0.0125	-0.0201	-0.0250 \$	1.346	25.5	0.0061
CP59 to CP60 (1)	0.0105	0.0031	-0.0054	0.907	13.4	0.0049
CP59 to CP88 (1)	0.0088	0.0170	0.0167 \$	2.631	9.7	0.0021
CP59 to SETPOINT3 (1)	-0.0005	0.0003	-0.0047 \$	1.368	3.5	0.0004
CP60 to CP61 (1)	0.0071	0.0049	0.0066 \$	1.061	10.2	0.0010
CP60 to CP88 (1)	0.0010	0.0015	-0.0039 \$	0.572	7.5	0.0007
CP61 to CP62 (1)	0.0052	0.0009	0.0004 \$	0.466	11.3	0.0013
CP63 to CP13 (1)	-0.0050	-0.0165	0.0174 \$	2.445	10.0	0.0007
CP63 to CP64 (1)	-0.0069	-0.0088	0.0030 \$	1.083	10.7	0.0011



CP64 to CP14 (1)	0.0089	-0.0136	-0.0108 \$	2.099	9.3	0.0011
CP64 to CP14 (2)	-0.0070	0.0199	0.0097 \$	2.499	9.3	0.0009
CP64 to CP15 (1)	-0.0035	0.0120	0.0044 \$	1.046	12.7	0.0012
CP66 to CP19 (1)	-0.0304	-0.0134	-0.0254 \$	3.755	11.1	0.0012
CP66 to CP22 (1)	-0.0079	-0.0003	-0.0029 \$	0.747	11.3	0.0010
CP66 to CP67 (1)	-0.0040	-0.0043	-0.0124 \$	1.480	9.2	0.0015
CP67 to CP54 (1)	0.0080	0.0003	-0.0014 \$	0.469	17.3	0.0010
CP67 to CP52 (1)	-0.0148	-0.0103	-0.0304 \$	2.429	14.5	0.0010
CP67 to CP53 (1)	-0.0057	-0.0031	-0.0029 \$	0.592	12.0	0.0006
CP67 to CP89 (1)	-0.0093	-0.0119	-0.0153 \$	2.527	8.5	0.0011
CP71 to CP79 (1)	0.0002	0.0008	-0.0060 \$	0.359	16.8	0.0009
CP71 to CP82 (1)	-0.0000	0.0044	-0.0078 \$	0.828	10.8	0.0012
CP71 to FLT03 (1)	-0.0022	0.0010	0.0068 \$	0.681	10.6	0.0011
CP71 to FLT04 (1)	0.0056	-0.0045	-0.0002 \$	0.811	8.9	0.0019
CP75 to CP17 (2)	-0.0002	0.0022	0.0048 \$	0.303	17.2	0.0013
CP75 to CP17 (1)	0.0067	0.0038	-0.0284 \$	1.706	17.2	0.0025
CP75 to CP21 (1)	-0.0011	-0.0009	0.0028 \$	0.313	10.1	0.0010
CP75 to CP90 (1)	-0.0015	0.0022	0.0013	0.351	8.5	0.0014
CP79 to CP82 (1)	0.0010	0.0112	-0.0164 \$	1.675	11.9	0.0012
CP79 to FLT03 (1)	-0.0044	0.0045	0.0020 \$	0.796	8.3	0.0012
CP79 to FLT04 (1)	0.0036	-0.0025	-0.0010 \$	0.489	9.2	0.0007
CP82 to FLT03 (1)	0.0007	0.0003	-0.0031 \$	0.794	4.0	0.0005
CP82 to FLT04 (1)	-0.0009	0.0011	-0.0009 \$	0.407	4.3	0.0005
CP88 to CP61 (1)	-0.0018	-0.0024	0.0004 \$	0.293	10.2	0.0009
CP88 to CP62 (2)	0.0029	-0.0021	-0.0017 \$	0.249	16.0	0.0011
CP90 to CP55 (1)	-0.0014	0.0011	0.0021 \$	0.329	8.3	0.0009
FLT03 to FLT04 (1)	-0.0004	0.0024	-0.0017 \$	1.819	1.7	0.0006
GLADE2 to CP20 (1)	-0.0219	-0.0053	-0.0065 \$	21.132	1.1	0.0006
GLADE2 to CP66 (1)	-0.0520	-0.0138	-0.0293 \$	6.496	9.4	0.0012
NORTONPORT2 to CP05 (1)	0.0072	0.0048	0.0094 \$	1.918	6.7	0.0007
NORTONPORT2 to CP08 (1)	0.0086	0.0022	0.0042 \$	0.767	12.8	0.0018
NORTONPORT2 to CP58 (1)	0.0106	0.0035	-0.0086 \$	1.903	7.4	0.0009
NORTONPORT2 to CP59 (1)	0.0152	0.0046	0.0191 \$	4.080	6.1	0.0012
NORTONPORT2 to SETPOINT3 (1)	0.0059	0.0031	-0.0016 \$	1.767	3.9	0.0004

RMS 0.0105 0.0093 0.0126

\$ - This session is flagged as a 3-sigma outlier

CONTROL POINT RESIDUALS (ADJUSTMENT MADE)

STA. NAME	-- RE --	-- RN --	-- RH --
	(m)	(m)	(m)
GLADE2	-0.0057	-0.0004	-0.0009



NORTONPORT2 0.0058 0.0005 0.0008

RMS 0.0058 0.0004 0.0008

OUTPUT STATION COORDINATES (LAT/LONG/HT)

STA_ID	--	LATITUDE	--	LONGITUDE	--	ELLHGT
CAL34		39 47 42.62854		-99 25 18.19809		587.5105
CP01		39 54 52.72783		-100 07 14.92628		745.3027
CP02		39 55 31.58945		-99 48 50.14779		696.5163
CP03		39 58 43.68460		-99 43 10.37385		687.5933
CP04		39 49 39.39972		-100 05 51.04723		742.1498
CP05		39 50 21.95535		-99 48 54.16270		652.2562
CP06		39 53 29.06534		-99 42 08.89712		630.4203
CP07		39 43 34.67955		-100 05 47.27339		744.6835
CP08		39 44 28.00829		-99 50 01.72007		704.4060
CP09		39 47 56.38138		-99 41 56.52157		696.4897
CP10		39 36 36.33105		-100 05 47.34758		716.2081
CP11		39 39 14.23290		-99 48 54.64646		647.4341
CP12		39 43 14.27053		-99 42 10.88383		656.8464
CP13		39 55 46.79106		-99 32 02.62998		617.8045
CP14		39 58 11.05171		-99 25 18.50823		610.0665
CP15		39 57 30.77902		-99 18 35.18438		631.7545
CP16		39 37 30.75395		-99 42 10.85472		642.7178
CP17		39 46 12.76842		-99 18 28.73327		568.5018
CP19		39 45 21.65810		-99 32 02.44713		628.5928
CP20		39 41 06.44337		-99 18 46.64586		528.0018
CP21		39 44 03.86095		-99 10 43.77698		526.8202
CP22		39 39 57.21073		-99 32 03.46790		565.0239
CP23		39 35 48.10167		-99 17 57.16944		574.8856
CP51		39 30 34.87109		-99 39 58.68869		669.8395
CP52		39 32 21.23000		-99 32 41.79326		650.6110
CP53		39 31 21.81999		-99 23 48.31847		609.1663
CP54		39 30 32.57350		-99 17 34.23848		561.7877
CP55		39 29 42.87471		-99 09 22.40226		550.8190
CP56		39 57 29.30691		-100 02 16.73038		708.8622
CP57		39 58 20.81733		-99 55 20.37033		705.8605
CP58		39 53 04.21794		-99 57 48.99661		725.8101
CP59		39 47 54.99933		-99 55 33.42913		690.8596
CP60		39 41 49.55692		-100 00 41.52085		741.5142
CP61		39 37 14.53444		-99 56 43.64871		653.5972
CP62		39 35 35.31822		-99 49 08.11887		675.7836
CP63		39 50 21.38820		-99 32 02.53625		648.4587
CP64		39 53 10.30706		-99 25 28.31039		657.7402



CP66	39 42	43.74363	-99 25	01.82674	578.4917
CP67	39 37	44.29178	-99 25	17.94266	569.0196
CP71	39 21	37.09955	-99 25	04.66549	551.9351
CP75	39 38	38.37691	-99 11	27.74034	518.3286
CP77	39 27	59.58466	-99 32	06.27839	639.2931
CP79	39 26	11.15497	-99 14	58.12156	506.4934
CP82	39 20	08.94924	-99 17	48.25654	574.0932
CP88	39 42	41.28602	-99 55	34.05784	714.9435
CP89	39 36	13.39775	-99 30	54.92704	625.2693
CP90	39 34	05.10227	-99 10	42.11984	544.4983
FLT03	39 22	17.75673	-99 17	47.00115	576.6370
FLT04	39 22	16.93154	-99 18	55.95700	547.0273
GLADE2	39 41	41.20205	-99 18	34.70949	543.7521
NORTONPORT2	39 50	48.59769	-99 53	32.71795	694.9758
SETPOINT3	39 48	42.35333	-99 53	21.54456	674.6926

OUTPUT VARIANCE/COVARIANCE

2

STA_ID	SE/SN/SUP	CX matrix (m)-----			
	(39.40 %)	(not scaled by confidence level)			
	(m)	(ECEF, XYZ cartesian)			
CAL34	0.0003	1.2183e-007			
	0.0003	4.7776e-008	2.5601e-007		
	0.0006	-2.2963e-008	-1.2568e-007	2.0224e-007	
CP01	0.0002	6.0587e-008			
	0.0003	4.4502e-008	1.6557e-007		
	0.0005	-1.4514e-008	-7.2195e-008	1.2835e-007	
CP02	0.0002	5.9267e-008			
	0.0003	4.8836e-008	1.7951e-007		
	0.0005	-2.2664e-008	-7.4667e-008	1.2085e-007	
CP03	0.0003	8.6115e-008			
	0.0003	7.5282e-008	2.8771e-007		
	0.0006	-3.8372e-008	-1.2843e-007	1.8938e-007	
CP04	0.0002	6.2582e-008			
	0.0003	4.5041e-008	1.7333e-007		
	0.0005	-1.6904e-008	-8.9603e-008	1.4167e-007	
CP05	0.0002	3.3645e-008			
	0.0002	2.1199e-008	7.9769e-008		
	0.0003	-7.6925e-009	-3.5387e-008	6.9534e-008	



CP06 0.0002 5.2513e-008
0.0003 3.8178e-008 1.4540e-007
0.0005 -1.7383e-008 -6.8599e-008 1.2015e-007

CP07 0.0002 6.2658e-008
0.0003 4.0000e-008 1.8713e-007
0.0005 -4.8421e-009 -8.4789e-008 1.5199e-007

CP08 0.0002 6.5956e-008
0.0003 4.3036e-008 1.7616e-007
0.0005 -9.7529e-009 -9.0119e-008 1.6274e-007

CP09 0.0002 5.2224e-008
0.0003 3.6886e-008 1.4481e-007
0.0005 -1.5312e-008 -6.9631e-008 1.2058e-007

CP10 0.0004 1.6384e-007
0.0004 1.1271e-007 4.1203e-007
0.0008 -4.5331e-008 -2.1319e-007 3.2522e-007

CP11 0.0003 8.2091e-008
0.0003 4.7952e-008 2.2172e-007
0.0006 -1.5417e-008 -1.0596e-007 1.7754e-007

CP12 0.0003 7.8793e-008
0.0003 4.4891e-008 2.1546e-007
0.0006 -1.4579e-008 -1.0167e-007 1.6578e-007

CP13 0.0003 1.0786e-007
0.0003 5.8843e-008 2.5859e-007
0.0006 -2.4753e-008 -1.3438e-007 2.1083e-007

CP14 0.0004 1.5514e-007
0.0004 9.1800e-008 4.0640e-007
0.0008 -3.1606e-008 -2.1085e-007 3.5389e-007

CP15 0.0005 2.8781e-007
0.0006 1.8115e-007 5.1376e-007
0.0009 2.5159e-008 -1.8547e-007 5.9363e-007

CP16 0.0003 8.1449e-008
0.0003 4.7718e-008 2.1728e-007
0.0006 -1.7114e-008 -1.0616e-007 1.7467e-007

CP17 0.0004 1.8442e-007
0.0006 1.3110e-007 7.1184e-007
0.0010 -7.3803e-008 -3.3412e-007 6.3448e-007



CP19 0.0002 6.8767e-008
0.0003 4.3602e-008 1.8682e-007
0.0005 -1.8630e-008 -1.0089e-007 1.7564e-007

CP20 0.0002 5.8624e-008
0.0002 2.6052e-008 1.2491e-007
0.0005 -1.6132e-008 -9.2774e-008 1.1943e-007

CP21 0.0004 1.8263e-007
0.0006 1.2235e-007 6.8060e-007
0.0010 -9.1057e-008 -3.2094e-007 6.2451e-007

CP22 0.0003 8.4834e-008
0.0003 5.0688e-008 2.2205e-007
0.0006 -1.8620e-008 -1.1348e-007 1.7084e-007

CP23 0.0003 7.1515e-008
0.0003 3.6010e-008 1.9856e-007
0.0006 -1.7248e-008 -1.1749e-007 1.6497e-007

CP51 0.0003 1.1152e-007
0.0004 5.6729e-008 3.2721e-007
0.0007 -2.4864e-008 -1.4041e-007 2.7029e-007

CP52 0.0003 8.7728e-008
0.0003 4.5874e-008 2.3785e-007
0.0006 -1.8853e-008 -1.1832e-007 2.0232e-007

CP53 0.0003 1.0275e-007
0.0003 6.0226e-008 2.8518e-007
0.0007 -2.5220e-008 -1.5304e-007 2.2616e-007

CP54 0.0003 1.2028e-007
0.0003 5.1505e-008 3.2555e-007
0.0007 -2.2148e-008 -1.9938e-007 2.8241e-007

CP55 0.0004 1.7324e-007
0.0005 1.2336e-007 5.6981e-007
0.0009 -6.0470e-008 -2.2136e-007 3.6048e-007

CP56 0.0003 8.3323e-008
0.0003 6.6500e-008 2.5743e-007
0.0006 -2.4886e-008 -9.1939e-008 1.5479e-007

CP57 0.0003 8.6257e-008
0.0003 7.8163e-008 2.5792e-007
0.0006 -3.2088e-008 -9.2191e-008 1.4848e-007



CP58 0.0002 3.7320e-008
0.0002 2.1549e-008 8.6739e-008
0.0004 -9.1243e-009 -3.7243e-008 7.6039e-008

CP59 0.0002 3.3904e-008
0.0002 1.8809e-008 7.6656e-008
0.0003 -7.9214e-009 -3.2466e-008 6.7225e-008

CP60 0.0003 1.0134e-007
0.0003 5.5602e-008 2.1727e-007
0.0006 -1.8245e-008 -1.1282e-007 1.9040e-007

CP61 0.0003 1.3886e-007
0.0004 8.5486e-008 3.0673e-007
0.0007 -2.3024e-008 -1.3172e-007 2.3628e-007

CP62 0.0003 9.1669e-008
0.0003 5.6230e-008 2.4497e-007
0.0006 -1.4303e-008 -1.1568e-007 2.0331e-007

CP63 0.0002 6.9040e-008
0.0003 4.6997e-008 2.0695e-007
0.0005 -1.6407e-008 -9.9431e-008 1.6946e-007

CP64 0.0003 1.3621e-007
0.0004 8.5743e-008 3.3486e-007
0.0007 -2.9231e-008 -1.5948e-007 2.5928e-007

CP66 0.0003 8.1655e-008
0.0002 4.5229e-008 1.9814e-007
0.0006 -2.1880e-008 -1.2022e-007 1.6366e-007

CP67 0.0003 7.4543e-008
0.0003 3.2758e-008 2.1060e-007
0.0005 -1.3097e-008 -1.0910e-007 1.5698e-007

CP71 0.0009 7.7957e-007
0.0008 2.7698e-007 6.3274e-006
0.0033 -1.4762e-007 -5.2438e-006 5.3717e-006

CP75 0.0003 1.0658e-007
0.0004 4.8890e-008 3.5317e-007
0.0007 -4.3897e-008 -1.5203e-007 2.9571e-007

CP77 0.0004 1.5610e-007
0.0004 7.1291e-008 4.9369e-007
0.0008 -1.2535e-008 -2.3235e-007 3.7199e-007



CP79 0.0009 8.5343e-007
0.0008 3.2806e-007 6.5051e-006
0.0034 -1.6237e-007 -5.3203e-006 5.4780e-006

CP82 0.0009 8.6300e-007
0.0008 3.4500e-007 6.5205e-006
0.0034 -1.6183e-007 -5.3100e-006 5.4638e-006

CP88 0.0003 7.9513e-008
0.0003 4.1246e-008 1.9501e-007
0.0005 -1.1733e-008 -9.3448e-008 1.7122e-007

CP89 0.0003 8.9606e-008
0.0003 4.6657e-008 2.3875e-007
0.0006 -1.7385e-008 -1.2781e-007 2.0680e-007

CP90 0.0003 1.2045e-007
0.0004 9.1433e-008 3.9575e-007
0.0007 -5.3283e-008 -1.7674e-007 2.7505e-007

FLT03 0.0010 8.6471e-007
0.0008 3.4916e-007 6.5285e-006
0.0034 -1.6193e-007 -5.3077e-006 5.4620e-006

FLT04 0.0010 8.6337e-007
0.0008 3.4318e-007 6.5099e-006
0.0034 -1.6587e-007 -5.3145e-006 5.4662e-006

GLADE2 0.0001 9.5155e-009
0.0001 1.1332e-010 9.7153e-009
0.0001 2.6128e-011 -1.7289e-010 9.6993e-009

NORTONPORT2 0.0001 9.5155e-009
0.0001 1.1332e-010 9.7153e-009
0.0001 2.6128e-011 -1.7289e-010 9.6993e-009

SETPOINT3 0.0001 2.5627e-008
0.0002 1.3990e-008 5.2692e-008
0.0003 -5.2477e-009 -2.2089e-008 4.6743e-008

VARIANCE FACTOR = 380.7789

Note: Values < 1.0 indicate statistics are pessimistic, while values > 1.0 indicate optimistic statistics. Entering this value as the network adjustment scale factor will bring variance factor to one.





```

*****
* NETWORK - WEIGHTED GPS NETWORK ADJUSTMENT *
*
* (c) Copyright NovAtel Inc., (2014) *
*
* Version: 8.50.4320 *
*
* FILE: C:\Users\ben.kimbrough\Documents\Projects\2015\15115 Kansas LiDAR Add-
ons\307_Control_Network\2015APRIL28\Data Processing\2015APRIL28.net
*****

```

DATE(m/d/y): Wed. 4/29/15 TIME: 16:18:46

```

DATUM:      'WGS84'
SCALE_FACTOR: 1.0000
CONFIDENCE LEVEL: 39.40 % (Scale factor is 1.0009)

```

INPUT CONTROL/CHECK POINTS

```

STA_ID  TYPE  -- LATITUDE -- -- LONGITUDE -- ELLHGT - HZ-SD  V-SD
GLADE2   GCP-3D 39 41 41.20206 -99 18 34.70925 543.759 0.00010 0.00010
MIDWAY   GCP-3D 39 00 00.60563 -99 47 37.19477 713.074 0.00010 0.00010
NORTONPORT2 GCP-3D 39 50 48.59768 -99 53 32.71819 694.975 0.00010 0.00010

```

INPUT VECTORS

```

SESSION NAME      VECTOR(m) ----- Covariance (m) [unscaled] -----
                   DX/DY/DZ      standard deviations in brackets
CAL34 to CP13 (1) -7909.8836 2.0409e-006 (0.0014)
                   11001.3597 1.1320e-007 3.8935e-007 (0.0006)
                   11482.5710 -2.0193e-007 -1.3660e-007 1.7739e-007 (0.0004)

CP19 to CAL34 (1) 9953.1841 4.1595e-006 (0.0020)
                   1190.7178 1.3204e-007 3.2215e-006 (0.0018)
                   3315.5462 -4.0898e-007 -1.1773e-006 1.4684e-006 (0.0012)

CAL34 to CP63 (1) -8977.6404 3.6450e-007 (0.0006)

```




4630.4380 -6.2427e-008 1.4032e-007 (0.0004)
3800.3228 -3.5974e-008 -5.9087e-008 7.9478e-008 (0.0003)

CP01 to CP04 (1) 875.5847 1.2757e-007 (0.0004)
-6447.1516 1.2830e-007 3.8021e-007 (0.0006)
-7419.7000 -2.2341e-008 -2.0049e-007 3.3334e-007 (0.0006)

CP01 to CP56 (1) 7518.9527 1.9507e-007 (0.0004)
1840.9106 1.3983e-007 7.6724e-007 (0.0009)
3679.9338 -6.0853e-009 -2.0415e-007 2.8141e-007 (0.0005)

CP02 to CP03 (1) 8595.8248 2.7009e-007 (0.0005)
2388.2408 3.1554e-007 8.8422e-007 (0.0009)
4536.5537 -1.4554e-007 -3.3831e-007 4.4429e-007 (0.0007)

CP02 to CP06 (1) 8991.2871 1.3914e-007 (0.0004)
-3955.1443 1.8316e-007 7.6442e-007 (0.0009)
-2941.4241 -9.0644e-008 -3.5789e-007 4.1935e-007 (0.0006)

CP02 to CP57 (1) -8553.9164 1.5553e-007 (0.0004)
4882.8312 2.3464e-007 9.2377e-007 (0.0010)
4007.7626 -8.7675e-008 -3.0782e-007 2.6422e-007 (0.0005)

CP03 to CP06 (1) 395.4549 1.3504e-007 (0.0004)
-6343.3813 9.8537e-008 5.8668e-007 (0.0008)
-7477.9805 -6.2838e-008 -3.4022e-007 4.2793e-007 (0.0007)

CP03 to CP06 (2) 395.4619 2.6858e-007 (0.0005)
-6343.3841 3.1384e-007 8.7963e-007 (0.0009)
-7477.9817 -1.4500e-007 -3.3681e-007 4.4211e-007 (0.0007)

CP03 to CP13 (1) 15051.1527 1.7193e-007 (0.0004)
-6052.7125 1.2468e-007 7.4728e-007 (0.0009)
-4227.4881 -7.8376e-008 -4.3558e-007 5.4645e-007 (0.0007)

CP03 to CP63 (1) 13983.4686 6.3553e-007 (0.0008)
-12423.7373 3.3656e-007 1.2518e-006 (0.0011)
-11909.7621 -2.2318e-007 -1.0418e-006 1.2540e-006 (0.0011)

CP04 to CP07 (1) -1173.7816 9.7828e-008 (0.0003)
-7103.9079 1.1138e-007 5.7833e-007 (0.0008)
-8644.4089 -6.6405e-008 -2.9301e-007 4.2373e-007 (0.0007)

CP05 to CP02 (1) 1132.1340 2.1051e-007 (0.0005)
5984.7829 3.0668e-007 1.3679e-006 (0.0012)
7357.3333 -1.3792e-007 -4.6808e-007 4.0095e-007 (0.0006)

CP05 to CP03 (1) 9727.9610 4.0929e-007 (0.0006)



8373.0279 6.4276e-007 2.6893e-006 (0.0016)
11893.8892 -2.8750e-007 -1.0025e-006 8.2057e-007 (0.0009)

CP05 to CP06 (1) 10123.4216 8.7481e-008 (0.0003)
2029.6360 7.6217e-008 2.8964e-007 (0.0005)
4415.9101 -4.5624e-008 -1.5968e-007 2.6963e-007 (0.0005)

CP05 to CP08 (1) -2783.0186 1.5449e-007 (0.0004)
-6649.7172 1.6473e-007 5.7412e-007 (0.0008)
-8355.5848 -1.6769e-008 -3.2276e-007 5.7104e-007 (0.0008)

CP05 to CP09 (1) 9297.0287 1.1928e-007 (0.0003)
-4550.8035 1.0253e-007 3.8745e-007 (0.0006)
-3420.5058 -5.4033e-008 -1.9148e-007 3.1593e-007 (0.0006)

CP05 to CP09 (2) 9297.0287 1.1928e-007 (0.0003)
-4550.8035 1.0253e-007 3.8745e-007 (0.0006)
-3420.5058 -5.4033e-008 -1.9148e-007 3.1593e-007 (0.0006)

CP05 to CP59 (1) -9858.8445 1.8882e-007 (0.0004)
-1260.9913 8.3756e-008 8.1725e-007 (0.0009)
-3456.8711 -2.4857e-008 -2.9601e-007 4.7520e-007 (0.0007)

CP05 to FLT07 (1) -6605.0362 5.7689e-008 (0.0002)
-867.4818 5.8696e-008 1.9542e-007 (0.0004)
-2345.1114 -1.9633e-008 -9.9703e-008 1.6952e-007 (0.0004)

CP06 to CP13 (1) 14655.7086 4.6738e-007 (0.0007)
290.6850 2.4604e-007 9.4677e-007 (0.0010)
3250.4807 -1.6402e-007 -7.8680e-007 9.3812e-007 (0.0010)

CP06 to CP63 (1) 13587.9339 9.1076e-008 (0.0003)
-6080.2663 5.5330e-008 4.7007e-007 (0.0007)
-4431.7821 2.6136e-008 -1.9367e-007 3.0147e-007 (0.0005)

CP07 to CP10 (1) -1441.9049 2.1317e-007 (0.0005)
-8087.6025 1.8349e-007 8.5725e-007 (0.0009)
-9950.9591 -9.3935e-008 -4.6216e-007 5.7074e-007 (0.0008)

CP07 to CP60 (1) 6810.7562 2.1459e-007 (0.0005)
-3309.0965 1.4957e-007 8.7337e-007 (0.0009)
-2496.3945 -3.9708e-008 -4.8332e-007 5.4937e-007 (0.0007)

CP07 to CP88 (1) 14205.6041 2.5241e-007 (0.0005)
-3553.1153 5.5217e-008 5.2440e-007 (0.0007)
-1285.8866 -1.4570e-007 -4.2281e-008 1.3275e-006 (0.0012)

CP08 to CP11 (1) 527.4075 1.0733e-007 (0.0003)



-6320.7018 6.6970e-008 6.4664e-007 (0.0008)
-7483.1222 -2.1357e-008 -3.1862e-007 3.4164e-007 (0.0006)

CP08 to CP09 (1) 12080.0491 1.2403e-007 (0.0004)
2098.9414 1.0362e-007 4.5320e-007 (0.0007)
4935.0569 -4.6011e-008 -3.2273e-007 5.9683e-007 (0.0008)

CP08 to CP12 (1) 10810.3592 1.9023e-007 (0.0004)
-3299.1879 1.1316e-007 1.4997e-006 (0.0012)
-1779.5628 -7.0755e-008 -7.1600e-007 6.3093e-007 (0.0008)

CP08 to CP88 (1) -8160.4827 7.9465e-008 (0.0003)
-722.4884 4.9014e-008 4.6008e-007 (0.0007)
-2525.0394 -1.4712e-008 -2.3402e-007 2.6878e-007 (0.0005)

CP08 to FLT07 (1) -3822.0185 9.7793e-008 (0.0003)
5782.2350 1.1172e-007 4.1740e-007 (0.0006)
6010.4735 -2.7139e-008 -2.2901e-007 3.9355e-007 (0.0006)

CP09 to CP06 (1) 826.3915 4.5552e-008 (0.0002)
6580.4383 4.6830e-008 1.7117e-007 (0.0004)
7836.4170 -1.8428e-008 -8.8701e-008 1.5092e-007 (0.0004)

CP09 to CP02 (1) -8164.8984 3.9318e-007 (0.0006)
10535.5830 4.2408e-007 1.5774e-006 (0.0013)
10777.8403 -1.1084e-007 -3.9569e-007 5.0573e-007 (0.0007)

CP09 to CP03 (1) 430.9286 8.0603e-007 (0.0009)
12923.8309 1.0627e-006 3.2145e-006 (0.0018)
15314.3968 -7.2546e-007 -1.8365e-006 2.4944e-006 (0.0016)

CP09 to CP19 (1) 13438.7780 1.0345e-007 (0.0003)
-5321.0165 1.1341e-007 6.7914e-007 (0.0008)
-3711.2393 -8.8325e-008 -3.0530e-007 3.9070e-007 (0.0006)

CP09 to CP63 (1) 14414.3238 9.6553e-008 (0.0003)
500.1669 1.0592e-007 4.6922e-007 (0.0007)
3404.6396 -3.0140e-008 -2.5460e-007 4.4030e-007 (0.0007)

CP10 to CP60 (1) 8252.6552 5.5271e-007 (0.0007)
4778.4991 4.1560e-007 1.0549e-006 (0.0010)
7454.5702 -2.5588e-007 -7.1632e-007 8.3624e-007 (0.0009)

CP11 to CP12 (1) 10282.9513 5.6998e-008 (0.0002)
3021.5080 5.0121e-008 2.8251e-007 (0.0005)
5703.5663 -2.6028e-008 -1.5745e-007 1.8537e-007 (0.0004)

CP11 to CP16 (1) 9145.4107 1.4053e-007 (0.0004)



-3635.3505 1.3151e-007 6.5528e-007 (0.0008)
-2460.8670 -1.0276e-007 -5.4261e-007 8.1649e-007 (0.0009)

CP11 to CP62 (1) -1054.5844 7.4307e-008 (0.0003)
-4209.8486 7.3617e-008 2.7129e-007 (0.0005)
-5182.8406 -5.6045e-008 -1.6450e-007 2.8558e-007 (0.0005)

CP11 to CP88 (2) -8687.8877 8.2649e-007 (0.0009)
5598.2158 3.9488e-007 1.5536e-006 (0.0012)
4958.0901 -1.6243e-007 -7.5373e-007 1.9631e-006 (0.0014)

CP12 to CP16 (1) -1137.5549 2.6371e-007 (0.0005)
-6656.9002 2.2910e-007 6.9552e-007 (0.0008)
-8164.4238 -7.1865e-008 -2.9673e-007 3.5317e-007 (0.0006)

CP12 to CP16 (2) -1137.5411 1.4250e-007 (0.0004)
-6656.8610 1.3306e-007 6.6461e-007 (0.0008)
-8164.4321 -1.0406e-007 -5.5066e-007 8.2907e-007 (0.0009)

CP12 to CP19 (1) 14708.4523 2.2732e-007 (0.0005)
77.0781 -1.1874e-007 1.5348e-006 (0.0012)
3003.3915 1.5876e-007 -1.3293e-006 1.6818e-006 (0.0013)

CP12 to CP62 (1) -11337.5359 1.8244e-007 (0.0004)
-7231.3537 1.8587e-007 6.4207e-007 (0.0008)
-10886.4126 -3.7747e-008 -3.8105e-007 6.2749e-007 (0.0008)

CP12 to CP67 (1) 22739.7132 5.3824e-007 (0.0007)
-10351.7121 6.2569e-007 2.6897e-006 (0.0016)
-7889.8118 -1.6343e-007 -5.8666e-007 4.6143e-007 (0.0007)

CP12 to CP88 (2) -18970.8414 9.0994e-008 (0.0003)
2576.7054 6.5324e-008 4.9404e-007 (0.0007)
-745.4854 -4.2670e-008 -2.7416e-007 3.0166e-007 (0.0005)

CP12 to CP89 (1) 14509.1037 7.5052e-006 (0.0027)
-10835.5449 9.2364e-006 1.2834e-005 (0.0036)
-10013.4441 -7.4176e-006 -1.0687e-005 1.0969e-005 (0.0033)

CP13 to CP14 (1) 9934.4366 1.9299e-007 (0.0004)
1244.3458 1.6246e-007 8.7430e-007 (0.0009)
3406.2946 -5.5639e-008 -5.7218e-007 6.7552e-007 (0.0008)

CP13 to CP64 (1) 8724.0056 7.1432e-008 (0.0003)
-4627.2688 6.3754e-008 3.2210e-007 (0.0006)
-3676.9356 -1.0989e-008 -2.0265e-007 2.6704e-007 (0.0005)

CP14 to CP15 (1) 9312.8160 2.9113e-007 (0.0005)



-2361.5344 3.5808e-007 8.5553e-007 (0.0009)
-938.1681 -4.2638e-008 -2.3641e-007 3.2937e-007 (0.0006)

CP16 to CP51 (1) 1732.0228 2.2776e-007 (0.0005)
-8605.7871 -1.2799e-008 4.8442e-007 (0.0007)
-9871.0790 -2.0159e-007 5.9201e-008 7.8713e-007 (0.0009)

CP16 to CP52 (1) 12372.5375 2.6085e-007 (0.0005)
-8274.1151 -1.4638e-008 5.5478e-007 (0.0007)
-7352.9126 -2.3105e-007 6.8013e-008 9.0265e-007 (0.0010)

CP16 to CP62 (1) -10199.9970 1.5446e-007 (0.0004)
-574.4974 -3.1305e-009 7.4136e-007 (0.0009)
-2721.9783 5.6310e-008 -6.2939e-007 9.9082e-007 (0.0010)

CP16 to CP89 (1) 15646.7940 7.0143e-008 (0.0003)
-4178.3656 4.0263e-008 2.9936e-007 (0.0005)
-1849.1809 -3.0753e-008 -1.8166e-007 2.3693e-007 (0.0005)

CP19 to CP63 (1) 975.5467 7.6558e-008 (0.0003)
5821.1880 6.5084e-008 4.6072e-007 (0.0007)
7115.8738 -1.8390e-008 -2.0900e-007 2.8821e-007 (0.0005)

CP19 to CP22 (1) -1074.9465 1.5119e-007 (0.0004)
-6253.2533 1.5683e-007 6.6830e-007 (0.0008)
-7739.0827 -1.0113e-007 -5.2357e-007 8.3312e-007 (0.0009)

CP20 to CP23 (1) 145.5033 4.1050e-008 (0.0002)
-6408.1323 3.9872e-008 1.8629e-007 (0.0004)
-7531.1637 -1.6015e-008 -9.2465e-008 1.5382e-007 (0.0004)

CP20 to CP66 (1) -8514.4714 4.2572e-007 (0.0007)
3307.7129 2.2592e-007 7.8376e-007 (0.0009)
2341.3805 -1.4748e-007 -6.5087e-007 7.9964e-007 (0.0009)

CP20 to CP71 (1) -12647.2818 8.8107e-007 (0.0009)
-21194.7043 7.2239e-007 7.5918e-006 (0.0028)
-27805.1449 -5.6629e-007 -6.4325e-006 6.4341e-006 (0.0025)

CP20 to CP75 (1) 9859.1005 6.0833e-008 (0.0002)
-4551.9116 5.1100e-008 3.2378e-007 (0.0006)
-3521.7623 -3.7375e-008 -1.3705e-007 2.7096e-007 (0.0005)

CP20 to CP90 (1) 10072.6713 1.5972e-007 (0.0004)
-10050.0056 2.1116e-007 7.6548e-007 (0.0009)
-9998.9649 -1.4008e-007 -2.9749e-007 4.3761e-007 (0.0007)

CP22 to CP16 (1) -14771.1495 1.9133e-006 (0.0014)



-480.7592 1.4785e-006 1.9460e-006 (0.0014)
-3428.8250 -8.6115e-007 -9.8064e-007 8.2879e-007 (0.0009)

CP22 to CP67 (1) 9106.1627 2.9925e-007 (0.0005)
-4175.4385 3.4859e-007 1.4968e-006 (0.0012)
-3154.1775 -9.0811e-008 -3.2654e-007 2.5600e-007 (0.0005)

CP22 to CP89 (1) 875.7276 4.4852e-007 (0.0007)
-4659.0866 1.4490e-007 6.5653e-007 (0.0008)
-5277.9233 -6.8049e-008 -5.2892e-007 1.1006e-006 (0.0010)

CP23 to CP53 (1) -9126.0920 4.5098e-007 (0.0007)
-3825.7186 1.5653e-007 6.8526e-007 (0.0008)
-6310.0636 -7.5858e-008 -5.9234e-007 1.1856e-006 (0.0011)

CP23 to CP54 (1) -459.1004 1.8724e-007 (0.0004)
-6194.3056 4.6157e-008 8.1063e-007 (0.0009)
-7512.0113 -3.2175e-008 -6.4160e-007 7.4767e-007 (0.0009)

CP23 to CP55 (1) 10985.8665 3.8359e-007 (0.0006)
-9032.2596 3.0009e-007 1.3531e-006 (0.0012)
-8701.7615 -1.6694e-007 -5.3663e-007 1.0127e-006 (0.0010)

CP23 to CP67 (1) -10002.7092 1.5036e-007 (0.0004)
3969.2073 -1.4662e-008 7.1529e-007 (0.0008)
2757.0826 2.9992e-008 -5.1150e-007 5.3017e-007 (0.0007)

CP23 to CP75 (1) 9713.5981 5.9314e-008 (0.0002)
1856.2248 4.9975e-008 3.1608e-007 (0.0006)
4009.3994 -3.5990e-008 -1.3386e-007 2.5944e-007 (0.0005)

CP23 to CP90 (1) 9927.1673 5.9885e-008 (0.0002)
-3641.8740 5.8422e-008 2.1689e-007 (0.0005)
-2467.7922 -1.6612e-008 -1.1165e-007 1.9703e-007 (0.0004)

CP26 to CP28 (1) -9879.0285 1.1387e-007 (0.0003)
-616.6916 4.8669e-008 3.5385e-007 (0.0006)
-2727.4347 -9.7598e-008 -9.3391e-008 4.1398e-007 (0.0006)

CP27 to CP26 (1) 8895.0560 4.7603e-007 (0.0007)
-4619.7195 1.8758e-007 1.5927e-006 (0.0013)
-3859.1151 -3.9354e-007 -5.4697e-007 1.9024e-006 (0.0014)

CP27 to CP28 (1) -983.9717 3.9664e-007 (0.0006)
-5236.4171 3.1083e-007 2.1159e-006 (0.0015)
-6586.5531 -2.6179e-007 -8.6718e-007 1.5718e-006 (0.0013)

CP27 to CP49 (1) 5775.6370 2.9684e-007 (0.0005)



322.6857 2.9813e-007 9.8955e-007 (0.0010)
1603.7287 -1.0169e-007 -5.0436e-007 8.1084e-007 (0.0009)

CP27 to CP50 (1) 10863.0894 9.2307e-007 (0.0010)
232.0393 7.9505e-007 2.2698e-006 (0.0015)
2516.8024 -2.1035e-007 -1.1753e-006 1.9608e-006 (0.0014)

CP41 to CP42 (1) -7196.9562 1.5968e-007 (0.0004)
4435.0369 5.9279e-008 6.7618e-007 (0.0008)
3891.7773 -3.5801e-008 -5.3296e-007 6.0874e-007 (0.0008)

CP41 to CP43 (1) 2822.0948 7.9495e-008 (0.0003)
5792.4725 5.6840e-008 3.6295e-007 (0.0006)
7598.7087 -4.7239e-008 -1.6357e-007 2.6778e-007 (0.0005)

CP42 to CP43 (1) 10019.0472 9.6642e-007 (0.0010)
1357.4335 4.4584e-007 4.2330e-006 (0.0021)
3706.9288 1.3110e-007 -2.5513e-006 2.7214e-006 (0.0016)

CP44 to CP41 (1) -8754.8394 2.5793e-007 (0.0005)
-932.4385 1.5935e-007 1.0885e-006 (0.0010)
-2980.8098 -1.1363e-007 -6.4227e-007 8.3395e-007 (0.0009)

CP44 to CP43 (1) -5932.7434 3.2877e-007 (0.0006)
4860.0372 2.0628e-007 1.6652e-006 (0.0013)
4617.8959 -2.0080e-007 -6.7578e-007 1.1609e-006 (0.0011)

CP44 to CP48 (1) -1894.5403 1.8904e-007 (0.0004)
-5682.2246 1.7861e-007 7.6170e-007 (0.0009)
-7287.7091 -7.6154e-008 -3.8004e-007 6.5717e-007 (0.0008)

CP45 to CP48 (1) -9044.1738 5.5165e-007 (0.0007)
-9787.6451 6.2503e-007 1.1288e-006 (0.0011)
-13692.5590 -8.8644e-008 -2.5249e-007 4.7450e-007 (0.0007)

CP46 to CP47 (1) -4685.2663 1.3519e-007 (0.0004)
-1297.2618 2.1997e-009 2.8286e-007 (0.0005)
-2539.8362 -1.1951e-007 1.6895e-008 4.9426e-007 (0.0007)

CP48 to CP41 (1) -6860.2983 1.2383e-007 (0.0004)
4749.7860 2.1319e-008 4.4953e-007 (0.0007)
4306.9007 -8.6760e-008 -7.8821e-008 4.6016e-007 (0.0007)

CP48 to CP43 (1) -4038.2022 1.7361e-007 (0.0004)
10542.2617 4.9504e-008 4.8078e-007 (0.0007)
11905.6022 -1.8001e-007 -8.9662e-008 7.1090e-007 (0.0008)

CP49 to CP50 (1) 5087.4462 1.4845e-007 (0.0004)



-90.6533 1.2778e-007 3.6546e-007 (0.0006)
913.0809 -3.3870e-008 -1.8941e-007 3.1601e-007 (0.0006)

CP51 to CP52 (1) 10640.5175 4.8873e-008 (0.0002)
331.6821 4.8352e-008 2.6831e-007 (0.0005)
2518.1733 -2.9152e-008 -1.2319e-007 1.8065e-007 (0.0004)

CP52 to CP89 (1) 3274.2583 5.0772e-008 (0.0002)
4095.7553 4.2101e-008 2.5333e-007 (0.0005)
5503.7076 -2.7650e-008 -1.1888e-007 1.8762e-007 (0.0004)

CP52 to CP53 (1) 12381.3635 1.0561e-007 (0.0003)
-3215.4807 1.0014e-007 4.4201e-007 (0.0007)
-1439.6947 -4.4629e-008 -2.9490e-007 4.3667e-007 (0.0007)

CP52 to CP89 (2) 3274.2510 1.4408e-007 (0.0004)
4095.7718 8.2022e-008 8.5927e-007 (0.0009)
5503.7023 -3.2149e-008 -7.5408e-007 1.0570e-006 (0.0010)

CP54 to CP53 (1) -8666.9444 2.2514e-006 (0.0015)
2368.6393 2.1322e-006 2.7683e-006 (0.0017)
1201.9284 -1.4310e-006 -1.9086e-006 1.8074e-006 (0.0013)

CP54 to CP55 (1) 11444.9888 4.7099e-007 (0.0007)
-2837.9140 3.0863e-007 2.3543e-006 (0.0015)
-1189.7863 -2.3244e-007 -9.4800e-007 1.5658e-006 (0.0013)

CP54 to CP67 (1) -9543.6108 2.1340e-007 (0.0005)
10163.5142 -4.4669e-008 1.2890e-006 (0.0011)
10269.0907 3.8535e-008 -9.2795e-007 9.7060e-007 (0.0010)

CP55 to CP90 (1) -1058.6984 1.2624e-007 (0.0004)
5390.3843 1.3102e-007 4.6837e-007 (0.0007)
6233.9670 -8.7368e-008 -2.3989e-007 3.9275e-007 (0.0006)

CP56 to CP57 (1) 9910.0951 2.2045e-007 (0.0005)
-705.2833 2.6404e-007 7.8595e-007 (0.0009)
1215.8633 -1.2602e-007 -2.6734e-007 3.5452e-007 (0.0006)

CP58 to CP02 (1) 13115.3825 1.4465e-007 (0.0004)
696.6461 1.5960e-007 5.9726e-007 (0.0008)
3468.3381 -1.2367e-007 -3.6266e-007 5.5115e-007 (0.0007)

CP58 to CP01 (1) -12867.5768 7.4595e-008 (0.0003)
4443.8624 7.5649e-008 2.4479e-007 (0.0005)
2580.2929 -2.6476e-008 -1.2627e-007 2.1217e-007 (0.0005)

CP58 to CP04 (1) -11991.9968 1.0093e-007 (0.0003)



-2003.2939 1.0691e-007 3.4928e-007 (0.0006)
-4839.4054 -2.6636e-008 -1.8741e-007 3.1045e-007 (0.0006)

CP58 to CP56 (1) -5348.6239 1.4387e-007 (0.0004)
6284.7703 1.3044e-007 5.4014e-007 (0.0007)
6260.2314 -4.8882e-008 -2.1846e-007 3.2979e-007 (0.0006)

CP58 to CP57 (1) 4561.4729 1.9445e-007 (0.0004)
5579.4948 2.2924e-007 6.6750e-007 (0.0008)
7476.0912 -1.0660e-007 -2.3251e-007 3.1121e-007 (0.0006)

CP58 to CP59 (1) 2124.4026 1.0861e-007 (0.0003)
-6549.1267 9.8804e-008 3.5970e-007 (0.0006)
-7345.8719 -6.2974e-008 -1.7839e-007 3.1574e-007 (0.0006)

CP58 to CP59 (2) 2124.3918 1.0657e-007 (0.0003)
-6549.1416 1.1736e-007 3.7863e-007 (0.0006)
-7345.8627 -2.4440e-008 -2.0368e-007 3.4302e-007 (0.0006)

CP58 to FLT07 (1) 5378.2134 9.4300e-008 (0.0003)
-6155.6151 8.7756e-008 3.0705e-007 (0.0006)
-6234.1118 -5.4160e-008 -1.6155e-007 2.7984e-007 (0.0005)

CP59 to CP07 (1) -15290.1703 1.8430e-007 (0.0004)
-2558.0649 1.6417e-009 5.0325e-007 (0.0007)
-6137.9374 1.3743e-007 -2.9431e-007 6.6406e-007 (0.0008)

CP59 to CP04 (1) -14116.3892 3.6771e-007 (0.0006)
4545.8434 3.6336e-007 1.0739e-006 (0.0010)
2506.4594 -2.1781e-007 -7.6115e-007 7.2075e-007 (0.0008)

CP59 to CP88 (1) -1084.6483 4.2727e-007 (0.0007)
-6111.2341 1.2321e-007 8.9966e-007 (0.0009)
-7423.7602 -2.6820e-007 1.2367e-007 3.1084e-006 (0.0018)

CP59 to FLT07 (1) 3253.8105 2.9295e-008 (0.0002)
393.5066 2.7094e-008 9.8442e-008 (0.0003)
1111.7596 -1.6967e-008 -4.8805e-008 8.5903e-008 (0.0003)

CP60 to CP61 (1) 4658.8525 6.3369e-007 (0.0008)
-6248.0523 6.2146e-007 1.3797e-006 (0.0012)
-6586.7771 -4.9365e-007 -1.1230e-006 1.4401e-006 (0.0012)

CP60 to CP88 (1) 7394.7711 1.4764e-007 (0.0004)
-244.0733 2.1765e-008 5.9156e-007 (0.0008)
1210.5871 -7.3964e-009 -4.2570e-007 4.4333e-007 (0.0007)

CP61 to CP62 (1) 10369.2032 7.2381e-007 (0.0009)



-3804.1032 1.0248e-006 2.5513e-006 (0.0016)
-2343.5608 -2.2593e-007 -8.4081e-007 5.6031e-007 (0.0007)

CP63 to CP64 (1) 9791.7758 3.6105e-007 (0.0006)
1743.6714 3.6977e-007 8.0066e-007 (0.0009)
4005.3352 -9.7834e-008 -2.9960e-007 3.2587e-007 (0.0006)

CP64 to CP15 (1) 10523.2588 3.2241e-007 (0.0006)
3510.0481 3.9655e-007 9.4750e-007 (0.0010)
6145.0375 -4.7097e-008 -2.6168e-007 3.6428e-007 (0.0006)

CP64 to CP14 (1) 1210.4442 1.6620e-007 (0.0004)
5871.5845 1.9025e-007 4.9996e-007 (0.0007)
7083.2053 -3.6129e-008 -1.8051e-007 2.4048e-007 (0.0005)

CP64 to CP14 (2) 1210.4314 1.5698e-007 (0.0004)
5871.6041 7.8293e-008 6.4093e-007 (0.0008)
7083.2389 -5.9726e-008 -5.2201e-007 7.6293e-007 (0.0009)

CP66 to CP12 (1) -24082.4284 2.6195e-007 (0.0005)
4605.1301 -8.6561e-009 1.2645e-006 (0.0011)
774.2691 9.6728e-008 -1.0744e-006 1.6831e-006 (0.0013)

CP66 to CP19 (1) -9373.9455 1.9982e-007 (0.0004)
4682.0922 1.4775e-008 9.5967e-007 (0.0010)
3777.7672 7.3152e-008 -8.3083e-007 1.3775e-006 (0.0012)

CP66 to CP22 (1) -10448.8921 9.6258e-008 (0.0003)
-1571.1796 8.2629e-008 4.6030e-007 (0.0007)
-3961.2893 -6.1644e-008 -2.9486e-007 3.6083e-007 (0.0006)

CP66 to CP67 (1) -1342.7420 4.7570e-007 (0.0007)
-5746.6355 4.6660e-008 1.4932e-006 (0.0012)
-7115.4555 -2.4669e-007 -3.3225e-007 7.8964e-007 (0.0009)

CP66 to CP71 (1) -4132.7690 1.3916e-006 (0.0012)
-24502.6256 1.5506e-006 1.0989e-005 (0.0033)
-30146.5229 -1.1470e-006 -8.7675e-006 8.3826e-006 (0.0029)

CP67 to CP53 (1) 876.6843 7.5290e-008 (0.0003)
-7794.8689 6.6619e-008 2.5307e-007 (0.0005)
-9067.1639 -2.3082e-008 -1.3750e-007 1.8763e-007 (0.0004)

CP67 to CP52 (1) -11504.6805 1.4982e-007 (0.0004)
-4579.3965 5.4103e-008 4.4849e-007 (0.0007)
-7627.4593 7.2649e-008 -1.6080e-007 4.6355e-007 (0.0007)

CP67 to CP75 (1) 19716.3795 4.3214e-007 (0.0007)



-2112.9144 5.2184e-007 1.9234e-006 (0.0014)
1252.2479 -1.1103e-007 -8.3982e-007 1.4845e-006 (0.0012)

CP67 to CP89 (1) -8230.4276 1.7022e-007 (0.0004)
-483.6229 1.0623e-007 7.1335e-007 (0.0008)
-2123.7545 2.3574e-008 -4.0848e-007 7.7438e-007 (0.0009)

CP69 to CP87 (1) -9232.6074 1.2788e-006 (0.0011)
-1739.6860 7.3390e-007 3.7247e-006 (0.0019)
-3942.2951 -3.1733e-007 -1.7105e-006 3.1601e-006 (0.0018)

CP70 to CP77 (1) -9885.9380 1.1129e-007 (0.0003)
2640.6422 1.2296e-007 4.5928e-007 (0.0007)
1300.4044 -2.2163e-008 -2.4847e-007 4.4416e-007 (0.0007)

CP70 to CP81 (1) -10759.1332 1.0164e-007 (0.0003)
-3367.3664 1.0851e-007 3.6029e-007 (0.0006)
-6200.4453 -2.3882e-008 -1.8898e-007 3.1862e-007 (0.0006)

CP71 to CP70 (1) 1158.8145 2.2370e-007 (0.0005)
6341.2248 2.2209e-007 8.6593e-007 (0.0009)
7869.2404 -9.9993e-008 -4.7438e-007 7.5449e-007 (0.0009)

CP71 to CP77 (1) -8727.1222 5.4919e-007 (0.0007)
8981.8688 3.4333e-007 2.0276e-006 (0.0014)
9169.6457 -8.4844e-008 -1.3982e-006 2.4988e-006 (0.0016)

CP71 to CP79 (1) 15197.8329 1.6610e-006 (0.0013)
2974.4998 6.9146e-007 6.7424e-006 (0.0026)
6502.8491 -6.2736e-007 -1.5992e-006 3.0708e-006 (0.0018)

CP71 to CP79 (2) 15197.8322 1.6702e-007 (0.0004)
2974.5137 9.3699e-008 5.4883e-007 (0.0007)
6502.8419 -4.0465e-008 -3.2454e-007 3.8468e-007 (0.0006)

CP71 to CP81 (1) -9600.3190 3.6557e-007 (0.0006)
2973.8568 3.8602e-007 1.3867e-006 (0.0012)
1668.7964 -1.0019e-007 -7.3548e-007 1.2379e-006 (0.0011)

CP71 to CP83 (1) 10028.4178 8.1582e-007 (0.0009)
-3416.9171 1.0722e-006 2.5828e-006 (0.0016)
-2088.3842 -1.6138e-007 -3.4432e-007 4.6179e-007 (0.0007)

CP71 to FLT03 (1) 10464.7213 7.1203e-007 (0.0008)
-937.6540 5.9172e-007 1.1630e-006 (0.0011)
985.1116 -2.8250e-007 -5.1474e-007 5.0489e-007 (0.0007)

CP71 to FLT04 (1) 8836.8215 4.4271e-007 (0.0007)



-664.0763 3.2422e-007 6.8572e-007 (0.0008)
946.6627 -1.7086e-007 -3.6050e-007 3.8290e-007 (0.0006)

CP72 to CP86 (1) 1801.9619 9.5225e-007 (0.0010)
5041.5149 4.9812e-007 2.3978e-006 (0.0015)
6392.8821 -6.9596e-007 -1.8429e-007 4.0574e-006 (0.0020)

CP73 to CP84 (1) 331.7966 8.2120e-007 (0.0009)
-6232.1373 7.3472e-007 2.6597e-006 (0.0016)
-7422.3048 -4.5270e-008 -1.2406e-006 1.9008e-006 (0.0014)

CP75 to CP21 (1) 2056.5310 1.2738e-007 (0.0004)
6155.3675 7.8815e-008 6.4881e-007 (0.0008)
7730.7669 -6.1962e-008 -4.0664e-007 6.6862e-007 (0.0008)

CP75 to CP90 (1) 213.5703 1.6825e-007 (0.0004)
-5498.1008 2.0618e-007 9.8930e-007 (0.0010)
-6477.1985 -1.0906e-007 -4.9702e-007 9.1838e-007 (0.0010)

CP76 to CP51 (1) 2098.8453 2.1785e-007 (0.0005)
5749.2112 1.8136e-007 1.3154e-006 (0.0011)
7393.7896 -5.4466e-008 -4.2891e-007 3.5834e-007 (0.0006)

CP76 to CP77 (1) 12726.8825 3.7261e-007 (0.0006)
886.3314 -7.6759e-008 1.9475e-006 (0.0014)
3678.0572 -5.9974e-008 -5.8559e-007 1.4456e-006 (0.0012)

CP76 to CP80 (1) 587.1260 7.5703e-007 (0.0009)
-6366.6051 5.3051e-007 3.5818e-006 (0.0019)
-7523.8598 -3.1186e-007 -2.3383e-006 2.6724e-006 (0.0016)

CP76 to CP81 (1) 11853.6687 1.7053e-007 (0.0004)
-5121.6414 1.1922e-007 8.0781e-007 (0.0009)
-3822.8716 -6.9962e-008 -5.2799e-007 6.0335e-007 (0.0008)

CP77 to CP80 (1) -12139.8146 1.0851e-006 (0.0010)
-7253.0572 6.3967e-007 5.4466e-006 (0.0023)
-11201.7994 -7.5776e-007 -1.4106e-006 4.5717e-006 (0.0021)

CP77 to CP81 (1) -873.1931 4.2607e-008 (0.0002)
-6008.0085 4.1540e-008 1.9963e-007 (0.0004)
-7500.8502 -1.7621e-008 -9.6461e-008 1.6370e-007 (0.0004)

CP78 to CP83 (1) -12052.3382 7.5349e-007 (0.0009)
9178.3690 8.2103e-007 3.0819e-006 (0.0018)
8668.9854 -3.2110e-007 -1.2405e-006 1.7681e-006 (0.0013)

CP78 to CP84 (1) 787.5176 5.7288e-007 (0.0008)



5095.3539 6.2674e-007 2.3484e-006 (0.0015)
6228.6039 -2.6296e-007 -9.7255e-007 1.3685e-006 (0.0012)

CP79 to CP55 (1) 8580.8332 1.1509e-007 (0.0003)
2779.7962 6.4425e-008 6.0434e-007 (0.0008)
5069.3831 -7.5502e-008 -2.1006e-007 4.3051e-007 (0.0007)

CP79 to CP54 (1) -2864.1548 4.4088e-007 (0.0007)
5617.7144 2.7623e-007 2.2951e-006 (0.0015)
6259.1643 -2.7554e-007 -8.8625e-007 1.7179e-006 (0.0013)

CP79 to CP70 (1) -14039.0138 2.6492e-007 (0.0005)
3366.7327 3.6833e-007 1.5607e-006 (0.0012)
1366.3828 -2.0455e-007 -8.1224e-007 9.3939e-007 (0.0010)

CP79 to CP73 (1) 7338.6264 6.3847e-007 (0.0008)
-4242.6378 5.8853e-007 2.2337e-006 (0.0015)
-3609.0414 -5.1289e-008 -1.0812e-006 1.6923e-006 (0.0013)

CP79 to CP78 (1) 6882.8903 1.6126e-006 (0.0013)
-15570.1034 1.7735e-006 6.1268e-006 (0.0025)
-17259.9705 -4.6759e-007 -1.9096e-006 2.4249e-006 (0.0016)

CP79 to CP80 (1) -36064.6854 4.3532e-006 (0.0021)
-1245.6133 -7.2784e-008 2.4583e-005 (0.0050)
-8535.0478 6.0936e-007 -2.3360e-005 2.6602e-005 (0.0052)

CP79 to CP83 (1) -5169.4178 6.6665e-007 (0.0008)
-6391.4397 1.0977e-006 2.7461e-006 (0.0017)
-8591.2302 -2.1378e-007 -4.3406e-007 5.4221e-007 (0.0007)

CP79 to CP83 (2) -5169.4537 1.6905e-007 (0.0004)
-6391.7586 2.4507e-007 9.1126e-007 (0.0010)
-8590.9615 -1.1532e-007 -2.6717e-007 2.4017e-007 (0.0005)

CP79 to FLT03 (1) -4733.1166 1.2299e-006 (0.0011)
-3912.1772 1.5800e-006 2.5136e-006 (0.0016)
-5517.7234 -1.0885e-006 -1.5804e-006 1.3221e-006 (0.0011)

CP79 to FLT04 (1) -6361.0099 1.3765e-007 (0.0004)
-3638.5905 1.0530e-007 3.9195e-007 (0.0006)
-5556.1788 -3.5431e-008 -1.9480e-007 2.5444e-007 (0.0005)

CP80 to CP81 (1) 11266.5394 1.8044e-006 (0.0013)
1244.9643 -6.6777e-007 8.3197e-006 (0.0029)
3700.9864 2.5078e-007 -6.2176e-006 6.0949e-006 (0.0025)

CP85 to CP83 (1) 32045.3936 6.9896e-006 (0.0026)



911.1636 8.9367e-006 2.0045e-005 (0.0045)
7389.5069 -1.4453e-006 -5.0364e-006 6.4749e-006 (0.0025)

CP85 to CP86 (1) 12378.9339 1.6457e-006 (0.0013)
7.9074 6.5790e-007 2.5940e-006 (0.0016)
2449.7420 -3.3515e-007 -2.3961e-006 4.6502e-006 (0.0022)

CP88 to CP61 (1) -2735.9140 4.6681e-007 (0.0007)
-6003.9867 5.1021e-007 9.0141e-007 (0.0009)
-7797.3442 -2.6089e-007 -4.8621e-007 4.7740e-007 (0.0007)

CP88 to CP62 (1) 7633.3058 2.7799e-007 (0.0005)
-9808.0604 2.8668e-007 7.5087e-007 (0.0009)
-10140.9182 4.1656e-008 -1.6475e-007 5.4032e-007 (0.0007)

FLT03 to FLT04 (1) -1627.9251 2.2593e-009 (0.0000)
273.5393 1.7703e-009 1.0785e-008 (0.0001)
-38.4268 -1.1907e-009 -5.9796e-009 8.2362e-009 (0.0001)

GLADE2 to CP20 (1) -389.4862 7.4724e-008 (0.0003)
-617.6757 3.8656e-008 1.6022e-007 (0.0004)
-835.0385 -2.6239e-008 -1.3333e-007 1.5632e-007 (0.0004)

GLADE2 to CP66 (1) -8903.9528 2.4435e-007 (0.0005)
2690.0340 1.8685e-007 1.0012e-006 (0.0010)
1506.3474 -9.4537e-008 -6.4138e-007 7.0637e-007 (0.0008)

MIDWAY to CP44 (1) -7335.6389 6.7764e-007 (0.0008)
4264.1168 5.6132e-007 1.6835e-006 (0.0013)
3627.0459 -2.2495e-007 -9.0126e-007 1.5899e-006 (0.0013)

MIDWAY to CP27 (1) -710.3541 1.1206e-007 (0.0003)
-1874.5309 1.1119e-007 3.5259e-007 (0.0006)
-2456.6944 -4.2353e-008 -1.7782e-007 2.7636e-007 (0.0005)

MIDWAY to CP39 (1) -17266.5011 6.0351e-006 (0.0025)
-3102.2052 7.8074e-006 1.6172e-005 (0.0040)
-7465.2472 -3.4649e-006 -9.2298e-006 9.5976e-006 (0.0031)

MIDWAY to CP45 (1) -186.0059 1.0065e-007 (0.0003)
8369.5423 9.7157e-008 3.0957e-007 (0.0006)
10031.8986 -3.2885e-008 -1.5377e-007 2.4412e-007 (0.0005)

MIDWAY to CP46 (1) 8257.9094 1.0065e-007 (0.0003)
4900.8264 6.9155e-008 5.1979e-007 (0.0007)
7624.5689 -5.4318e-008 -1.9492e-007 3.3049e-007 (0.0006)

MIDWAY to CP47 (1) 3572.6391 1.1356e-007 (0.0003)



3603.5626 5.2932e-008 3.9925e-007 (0.0006)
5084.7252 -7.0772e-008 -1.1139e-007 5.1464e-007 (0.0007)

MIDWAY to CP48 (1) -9230.1797 2.3569e-007 (0.0005)
-1418.1043 2.5420e-007 5.3360e-007 (0.0007)
-3660.6621 -4.3310e-008 -2.0236e-007 3.6699e-007 (0.0006)

MIDWAY to CP48 (2) -9230.1836 1.0902e-006 (0.0010)
-1418.1793 9.4460e-007 3.9312e-006 (0.0020)
-3660.6100 9.2571e-008 -7.0080e-007 1.3908e-006 (0.0012)

MIDWAY to CP49 (1) 5065.2779 6.5398e-008 (0.0003)
-1551.8640 6.6771e-008 2.0996e-007 (0.0005)
-852.9564 -2.7767e-008 -1.0865e-007 1.6664e-007 (0.0004)

MIDWAY to CP50 (1) 10152.7283 6.6803e-007 (0.0008)
-1642.5104 7.1063e-007 1.1516e-006 (0.0011)
60.1220 -8.9825e-008 -2.3118e-007 4.8071e-007 (0.0007)

MIDWAY to CP69 (1) 45075.4370 1.4502e-005 (0.0038)
9833.6832 4.2489e-006 1.6179e-005 (0.0040)
20983.9722 -2.6269e-006 -4.7098e-006 4.7988e-006 (0.0022)

MIDWAY to CP72 (1) 24807.2800 1.8433e-006 (0.0014)
10251.2649 2.3349e-008 3.8023e-006 (0.0019)
17472.7316 -1.6432e-006 2.5138e-007 6.7569e-006 (0.0026)

MIDWAY to CP85 (1) 14230.2690 3.0178e-006 (0.0017)
15284.9667 8.4603e-007 1.1184e-005 (0.0033)
21415.7690 -5.1205e-007 -9.9703e-006 1.3869e-005 (0.0037)

MIDWAY to CP86 (1) 26609.1551 1.4017e-007 (0.0004)
15292.7124 8.1498e-008 6.4768e-007 (0.0008)
23865.5949 -6.4477e-008 -3.8996e-007 5.0451e-007 (0.0007)

MIDWAY to CP87 (1) 35842.8528 7.5227e-005 (0.0087)
8093.9175 -1.0203e-005 7.2717e-005 (0.0085)
17041.7017 -6.1931e-006 -1.1679e-005 2.3232e-005 (0.0048)

NORTONPORT2 to CP08 (1) 3658.0482 1.1174e-006 (0.0011)
-8269.6180 1.2664e-006 2.4915e-006 (0.0016)
-9013.9236 -2.3225e-007 -8.4844e-007 1.1790e-006 (0.0011)

NORTONPORT2 to CP05 (1) 6441.0580 1.4297e-007 (0.0004)
-1619.8930 1.2885e-007 3.5239e-007 (0.0006)
-658.3507 -3.6095e-008 -1.8563e-007 3.6134e-007 (0.0006)

NORTONPORT2 to CP09 (1) 15738.1010 3.5400e-006 (0.0019)



-6170.6653 3.5821e-006 8.1991e-006 (0.0029)
 -4078.8755 -3.5833e-007 -4.2855e-006 7.0116e-006 (0.0026)

NORTONPORT2 to CP58 (1) -5542.1962 3.3081e-007 (0.0006)
 3668.2444 2.5953e-007 6.3288e-007 (0.0008)
 3230.6459 1.2494e-007 -7.1569e-008 8.8321e-007 (0.0009)

NORTONPORT2 to CP59 (1) -3343.9771 2.1268e-007 (0.0005)
 -2837.3042 1.8974e-007 8.5933e-007 (0.0009)
 -4048.7141 4.4032e-008 -1.9752e-007 6.0054e-007 (0.0008)

NORTONPORT2 to FLT07 (1) -163.9811 3.9048e-008 (0.0002)
 -2487.3821 3.4624e-008 9.9188e-008 (0.0003)
 -3003.4549 -1.0752e-008 -5.0593e-008 8.8611e-008 (0.0003)

OUTPUT VECTOR RESIDUALS (East, North, Height - Local Level)

SESSION NAME	-- RE --	-- RN --	-- RH --	- PPM -	DIST -	STD -
(m)	(m)	(m)	(km)	(m)		
CAL34 to CP13 (1)	0.2128	0.1538	-0.1373	\$ 16.685	17.8	0.0016
CP19 to CAL34 (1)	0.2764	0.5644	-0.3886	\$ 69.985	10.6	0.0030
CAL34 to CP63 (1)	0.0245	-0.0207	0.0025	\$ 2.979	10.8	0.0008
CP01 to CP04 (1)	0.2335	0.3438	-0.0728	\$ 42.758	9.9	0.0009
CP01 to CP56 (1)	-0.2075	-0.2180	0.0019	\$ 35.111	8.6	0.0011
CP02 to CP03 (1)	-0.5897	-0.6072	0.4151	\$ 94.195	10.0	0.0013
CP02 to CP06 (1)	-0.6560	-0.6190	0.3704	\$ 95.088	10.3	0.0012
CP02 to CP57 (1)	0.6324	0.5748	-0.0333	\$ 80.425	10.6	0.0012
CP03 to CP06 (1)	-0.0582	-0.0117	-0.0415	\$ 7.380	9.8	0.0011
CP03 to CP06 (2)	-0.0655	-0.0097	-0.0420	\$ 7.990	9.8	0.0013
CP03 to CP13 (1)	-0.0909	-0.1332	-0.0732	\$ 10.561	16.8	0.0012
CP03 to CP63 (1)	-0.3676	-0.2309	0.0149	\$ 19.585	22.2	0.0018
CP04 to CP07 (1)	-0.1229	-0.7607	-0.6796	\$ 91.323	11.3	0.0010
CP05 to CP02 (1)	0.7268	0.5912	-0.1961	\$ 100.214	9.6	0.0014
CP05 to CP03 (1)	0.1360	-0.0205	0.2223	\$ 14.942	17.5	0.0020
CP05 to CP06 (1)	0.0704	-0.0271	0.1727	\$ 16.785	11.2	0.0008
CP05 to CP08 (1)	-0.0290	-0.3508	-0.4344	\$ 50.667	11.0	0.0011
CP05 to CP09 (1)	-0.0665	-0.1728	0.1387	\$ 21.224	10.9	0.0009
CP05 to CP09 (2)	-0.0665	-0.1728	0.1387	\$ 21.224	10.9	0.0009
CP05 to CP59 (1)	4.1464	3.4760	-0.7667	\$ 519.301	10.5	0.0012
CP05 to FLT07 (1)	0.5111	0.4656	0.0201	\$ 97.938	7.1	0.0007
CP06 to CP13 (1)	-0.0407	-0.1240	-0.0103	\$ 8.719	15.0	0.0015
CP06 to CP63 (1)	-0.2158	-0.2669	0.1146	\$ 23.297	15.5	0.0009
CP07 to CP10 (1)	-0.2531	-0.4434	0.1257	\$ 40.748	12.9	0.0013



CP07 to CP60 (1)	-0.9179	-0.9672	0.4697	\$ 177.317	8.0	0.0013
CP07 to CP88 (1)	-1.5981	-1.3776	0.5758	\$ 148.787	14.7	0.0015
CP08 to CP11 (1)	-0.2772	-0.5029	0.4205	\$ 72.561	9.8	0.0010
CP08 to CP09 (1)	-0.0345	0.1776	0.6085	\$ 48.028	13.2	0.0011
CP08 to CP12 (1)	-0.3202	-0.5565	0.3962	\$ 65.941	11.4	0.0015
CP08 to CP88 (1)	0.5076	0.2568	-0.2438	\$ 72.201	8.6	0.0009
CP08 to FLT07 (1)	0.5410	0.8169	0.4534	\$ 117.678	9.2	0.0010
CP09 to CP06 (1)	0.1381	0.1458	0.0325	\$ 19.815	10.3	0.0006
CP09 to CP02 (1)	0.7968	0.7652	-0.3380	\$ 67.400	17.1	0.0016
CP09 to CP03 (1)	0.2061	0.1518	0.0820	\$ 13.408	20.0	0.0026
CP09 to CP19 (1)	-0.3787	-0.6402	0.5122	\$ 60.520	14.9	0.0011
CP09 to CP63 (1)	-0.0769	-0.1214	0.1403	\$ 13.550	14.8	0.0010
CP10 to CP60 (1)	-0.6599	-0.5228	0.3354	\$ 74.868	12.1	0.0016
CP11 to CP12 (1)	-0.0430	-0.0551	-0.0327	\$ 6.359	12.1	0.0007
CP11 to CP16 (1)	-0.4615	-0.5387	0.1583	\$ 71.645	10.1	0.0013
CP11 to CP62 (1)	0.0346	-0.0329	0.1136	\$ 18.230	6.8	0.0008
CP11 to CP88 (2)	0.7824	0.7521	-0.6672	\$ 111.132	11.5	0.0021
CP12 to CP16 (1)	-0.4118	-0.4630	0.1508	\$ 60.183	10.6	0.0011
CP12 to CP16 (2)	-0.4187	-0.4827	0.1876	\$ 62.859	10.6	0.0013
CP12 to CP19 (1)	-0.0826	0.1091	0.6900	\$ 46.856	15.0	0.0019
CP12 to CP62 (1)	0.0782	0.0247	0.1521	\$ 9.987	17.3	0.0012
CP12 to CP67 (1)	-1.3256	-1.3812	0.7468	\$ 78.429	26.2	0.0019
CP12 to CP88 (2)	0.8283	0.8160	-0.6297	\$ 69.015	19.2	0.0009
CP12 to CP89 (1)	-0.6792	-0.6828	0.1578	\$ 47.163	20.7	0.0056
CP13 to CP14 (1)	-0.0099	-0.0333	-0.0091	\$ 3.395	10.6	0.0013
CP13 to CP64 (1)	-0.0295	-0.0212	-0.0083	\$ 3.541	10.5	0.0008
CP14 to CP15 (1)	-0.0013	-0.0123	0.0037	\$ 1.335	9.7	0.0012
CP16 to CP51 (1)	-0.4321	-0.4053	0.2341	\$ 48.224	13.2	0.0012
CP16 to CP52 (1)	-0.4510	-0.4106	0.3907	\$ 43.630	16.6	0.0013
CP16 to CP62 (1)	0.4978	0.5091	-0.0417	\$ 67.465	10.6	0.0014
CP16 to CP89 (1)	-0.3537	-0.2865	0.3394	\$ 34.833	16.3	0.0008
CP19 to CP63 (1)	0.3026	0.5197	-0.3644	\$ 76.057	9.2	0.0009
CP19 to CP22 (1)	-0.7680	-1.0414	-0.3339	\$ 133.538	10.0	0.0013
CP20 to CP23 (1)	0.3059	0.4839	-0.2808	\$ 64.477	9.9	0.0006
CP20 to CP66 (1)	1.2404	1.0146	-0.7456	\$ 187.438	9.4	0.0014
CP20 to CP71 (1)	0.7169	0.6663	-0.2559	\$ 27.209	37.2	0.0039
CP20 to CP75 (1)	0.2394	0.2712	-0.1402	\$ 33.988	11.4	0.0008
CP20 to CP90 (1)	0.2579	0.3817	-0.2711	\$ 30.737	17.4	0.0012
CP22 to CP16 (1)	0.5195	0.5720	-0.1858	\$ 52.381	15.2	0.0022
CP22 to CP67 (1)	-0.4154	-0.4620	0.4950	\$ 75.634	10.5	0.0014
CP22 to CP89 (1)	0.0903	0.1886	0.1406	\$ 35.520	7.1	0.0015
CP23 to CP53 (1)	1.0086	0.6674	-0.0087	\$ 103.057	11.7	0.0015
CP23 to CP54 (1)	0.4034	0.2818	0.1607	\$ 53.107	9.7	0.0013
CP23 to CP55 (1)	0.1508	0.0690	-0.0469	\$ 10.335	16.7	0.0017
CP23 to CP67 (1)	0.9031	0.5844	0.2022	\$ 98.525	11.1	0.0012
CP23 to CP75 (1)	-0.0672	-0.2136	0.1448	\$ 24.991	10.7	0.0008
CP23 to CP90 (1)	-0.0480	-0.1083	0.0033	\$ 10.916	10.9	0.0007
CP26 to CP28 (1)	0.0002	-0.0007	0.0001	\$ 0.077	10.3	0.0009



CP27 to CP26 (1)	0.0010	-0.0031	0.0005	0.305	10.7	0.0020
CP27 to CP28 (1)	-0.0006	0.0024	-0.0018	0.366	8.5	0.0020
CP27 to CP49 (1)	-0.0004	-0.0028	0.0106 \$	1.825	6.0	0.0014
CP27 to CP50 (1)	-0.0043	-0.0016	0.0185 \$	1.714	11.2	0.0023
CP41 to CP42 (1)	0.0004	0.0003	-0.0002	0.060	9.3	0.0012
CP41 to CP43 (1)	-0.0000	-0.0006	-0.0019	0.203	10.0	0.0008
CP42 to CP43 (1)	0.0029	0.0029	-0.0022	0.434	10.8	0.0028
CP44 to CP41 (1)	0.0005	0.0005	-0.0002	0.076	9.3	0.0015
CP44 to CP43 (1)	-0.0002	0.0002	0.0023	0.264	9.0	0.0018
CP44 to CP48 (1)	-0.0006	0.0008	0.0014	0.183	9.4	0.0013
CP45 to CP48 (1)	-0.0006	-0.0011	0.0068 \$	0.360	19.1	0.0015
CP46 to CP47 (1)	-0.0011	-0.0026	-0.0008 \$	0.534	5.5	0.0010
CP48 to CP41 (1)	0.0002	-0.0015	-0.0025	0.310	9.4	0.0010
CP48 to CP43 (1)	-0.0006	0.0015	0.0027	0.193	16.4	0.0012
CP49 to CP50 (1)	0.0010	0.0006	-0.0027 \$	0.577	5.2	0.0009
CP51 to CP52 (1)	-0.0195	-0.0174	0.1607 \$	14.882	10.9	0.0007
CP52 to CP89 (1)	0.0967	0.1389	-0.0309 \$	22.628	7.6	0.0007
CP52 to CP53 (1)	-0.3491	-0.4584	0.1537 \$	46.327	12.9	0.0010
CP52 to CP89 (2)	0.1066	0.1334	-0.0159 \$	22.562	7.6	0.0014
CP54 to CP53 (1)	0.5672	0.3625	-0.1113 \$	75.268	9.1	0.0026
CP54 to CP55 (1)	-0.2679	-0.2121	-0.1517 \$	31.542	11.9	0.0021
CP54 to CP67 (1)	0.5019	0.3044	0.0441 \$	33.997	17.3	0.0016
CP55 to CP90 (1)	-0.2000	-0.1747	0.0507 \$	32.543	8.3	0.0010
CP56 to CP57 (1)	-0.3267	-0.3525	0.1913 \$	51.681	10.0	0.0012
CP58 to CP02 (1)	-1.1110	-1.0530	0.1215 \$	113.043	13.6	0.0011
CP58 to CP01 (1)	0.0534	0.0913	-0.0883 \$	9.943	13.9	0.0007
CP58 to CP04 (1)	0.2911	0.4371	-0.1662 \$	42.092	13.1	0.0009
CP58 to CP56 (1)	-0.1548	-0.1284	-0.0916 \$	21.338	10.4	0.0010
CP58 to CP57 (1)	-0.4821	-0.4831	0.1081 \$	66.540	10.4	0.0011
CP58 to CP59 (1)	2.3085	1.8376	-0.4436 \$	296.354	10.1	0.0009
CP58 to CP59 (2)	2.3165	1.8410	-0.4623 \$	297.466	10.1	0.0009
CP58 to FLT07 (1)	-1.3260	-1.1778	0.3465 \$	175.783	10.3	0.0008
CP59 to CP07 (1)	-2.1471	-2.1741	-0.3922 \$	184.763	16.7	0.0012
CP59 to CP04 (1)	-2.0236	-1.4046	0.2941 \$	164.942	15.0	0.0015
CP59 to CP88 (1)	-3.6772	-3.5546	0.0863 \$	528.611	9.7	0.0021
CP59 to FLT07 (1)	-3.6364	-3.0100	0.7873 \$	1382.768	3.5	0.0005
CP60 to CP61 (1)	-0.5780	-0.4134	-0.0447 \$	69.775	10.2	0.0019
CP60 to CP88 (1)	-0.6136	-0.4286	0.0044 \$	99.831	7.5	0.0011
CP61 to CP62 (1)	-0.7678	-0.7905	0.8117 \$	121.218	11.3	0.0020
CP63 to CP64 (1)	0.1485	0.1228	-0.1469 \$	22.596	10.7	0.0012
CP64 to CP15 (1)	0.0014	0.0136	-0.0041 \$	1.125	12.7	0.0013
CP64 to CP14 (1)	0.0017	0.0246	-0.0060 \$	2.738	9.3	0.0010
CP64 to CP14 (2)	0.0175	-0.0122	-0.0143 \$	2.767	9.3	0.0012
CP66 to CP12 (1)	1.2855	1.4605	0.0192 \$	79.320	24.5	0.0018
CP66 to CP19 (1)	1.1539	1.5566	0.5586 \$	181.042	11.1	0.0016
CP66 to CP22 (1)	0.3824	0.5074	0.1925 \$	58.836	11.3	0.0010
CP66 to CP67 (1)	-0.0238	0.0489	0.6651 \$	72.182	9.2	0.0017
CP66 to CP71 (1)	-0.5979	-0.2219	0.3383 \$	18.478	39.1	0.0046



CP67 to CP53 (1)	0.0485	0.0540	-0.1474 \$	13.701	12.0	0.0007
CP67 to CP52 (1)	0.3972	0.5102	-0.3136 \$	49.414	14.5	0.0010
CP67 to CP75 (1)	-1.0304	-0.7948	0.0464 \$	65.540	19.9	0.0020
CP67 to CP89 (1)	0.5025	0.6404	-0.3290 \$	103.126	8.5	0.0013
CP69 to CP87 (1)	0.0002	-0.0002	0.0043	0.418	10.2	0.0029
CP70 to CP77 (1)	0.0745	0.1037	0.0135 \$	12.450	10.3	0.0010
CP70 to CP81 (1)	0.0817	0.1150	0.0091 \$	10.986	12.9	0.0009
CP71 to CP70 (1)	0.1090	0.1539	-0.0351 \$	18.863	10.2	0.0014
CP71 to CP77 (1)	0.1824	0.2559	-0.0208 \$	20.292	15.5	0.0023
CP71 to CP79 (1)	-0.0869	-0.0223	-0.0429 \$	5.919	16.8	0.0034
CP71 to CP79 (2)	-0.0839	-0.0254	-0.0279 \$	5.477	16.8	0.0010
CP71 to CP81 (1)	0.1907	0.2690	-0.0284 \$	32.481	10.2	0.0017
CP71 to CP83 (1)	-0.0806	-0.0121	0.1860 \$	18.807	10.8	0.0020
CP71 to FLT03 (1)	-0.0452	-0.0094	-0.0412 \$	5.862	10.6	0.0015
CP71 to FLT04 (1)	-0.0639	-0.0189	0.0050 \$	7.495	8.9	0.0012
CP72 to CP86 (1)	-0.0150	-0.0270	0.0447 \$	6.519	8.3	0.0027
CP73 to CP84 (1)	-0.0098	0.0008	-0.0425 \$	4.501	9.7	0.0023
CP75 to CP21 (1)	-0.0000	0.0000	-0.0000	0.000	10.1	0.0012
CP75 to CP90 (1)	0.0180	0.1118	-0.1386 \$	21.056	8.5	0.0014
CP76 to CP51 (1)	0.4917	0.4572	-0.4015 \$	81.506	9.6	0.0014
CP76 to CP77 (1)	-0.2769	-0.2330	-0.1843 \$	30.585	13.3	0.0019
CP76 to CP80 (1)	-0.1762	-0.1589	0.0133 \$	24.065	9.9	0.0026
CP76 to CP81 (1)	-0.2453	-0.1813	-0.1134 \$	24.167	13.5	0.0013
CP77 to CP80 (1)	0.1377	0.0652	0.0231 \$	8.543	18.0	0.0033
CP77 to CP81 (1)	0.0051	0.0113	-0.0036 \$	1.342	9.6	0.0006
CP78 to CP83 (1)	-0.0088	0.0104	-0.0931 \$	5.389	17.5	0.0024
CP78 to CP84 (1)	0.0052	-0.0071	0.0331 \$	4.241	8.1	0.0021
CP79 to CP55 (1)	-0.1911	-0.0917	-0.0493 \$	21.033	10.3	0.0011
CP79 to CP54 (1)	0.0766	0.1217	0.1087 \$	20.295	8.9	0.0021
CP79 to CP70 (1)	0.1928	0.1774	0.0198 \$	18.121	14.5	0.0017
CP79 to CP73 (1)	-0.0078	0.0007	-0.0368 \$	4.080	9.2	0.0021
CP79 to CP78 (1)	-0.0038	0.0099	-0.0818 \$	3.402	24.2	0.0032
CP79 to CP80 (1)	0.3363	0.3223	0.1416 \$	13.130	37.1	0.0075
CP79 to CP83 (1)	0.0051	0.0223	0.2093 \$	17.704	11.9	0.0020
CP79 to CP83 (2)	-0.0108	0.0180	-0.2090 \$	17.666	11.9	0.0011
CP79 to FLT03 (1)	0.0428	0.0172	-0.0256 \$	6.390	8.3	0.0023
CP79 to FLT04 (1)	0.0191	0.0064	0.0324 \$	4.149	9.2	0.0009
CP80 to CP81 (1)	-0.0657	-0.0212	-0.1252 \$	11.993	11.9	0.0040
CP85 to CP83 (1)	1.7021	1.2952	-0.8715 \$	70.202	32.9	0.0058
CP85 to CP86 (1)	-0.4368	-0.2219	-0.3148 \$	46.145	12.6	0.0030
CP88 to CP61 (1)	0.0298	0.0042	-0.0674 \$	7.229	10.2	0.0014
CP88 to CP62 (1)	-0.7495	-0.7970	0.7766 \$	83.641	16.0	0.0013
FLT03 to FLT04 (1)	0.0001	0.0001	-0.0003	0.170	1.7	0.0001
GLADE2 to CP20 (1)	1.3921	0.6302	-0.4625 \$	1439.281	1.1	0.0006
GLADE2 to CP66 (1)	2.6266	1.6430	-1.2141 \$	353.148	9.4	0.0014
MIDWAY to CP44 (1)	-0.0012	0.0034	0.0064 \$	0.799	9.2	0.0020
MIDWAY to CP27 (1)	-0.0007	-0.0013	0.0065 \$	2.107	3.2	0.0009
MIDWAY to CP39 (1)	-0.0000	0.0000	0.0000	0.000	19.1	0.0056



MIDWAY to CP45 (1)	0.0002	0.0000	0.0032 \$	0.242	13.1	0.0008
MIDWAY to CP46 (1)	-0.0013	-0.0018	-0.0005	0.184	12.3	0.0010
MIDWAY to CP47 (1)	0.0013	0.0032	0.0013 \$	0.510	7.2	0.0010
MIDWAY to CP48 (1)	-0.0006	0.0012	0.0099 \$	0.993	10.0	0.0011
MIDWAY to CP48 (2)	-0.0096	0.0076	-0.0809 \$	8.158	10.0	0.0025
MIDWAY to CP49 (1)	0.0006	0.0008	-0.0038 \$	0.729	5.4	0.0007
MIDWAY to CP50 (1)	-0.0013	-0.0013	0.0009	0.200	10.3	0.0015
MIDWAY to CP69 (1)	0.0015	-0.0045	0.0134	0.280	50.7	0.0060
MIDWAY to CP72 (1)	-0.0176	-0.0347	0.0604 \$	2.243	32.0	0.0035
MIDWAY to CP85 (1)	0.4591	0.1869	0.5505 \$	24.764	29.9	0.0053
MIDWAY to CP86 (1)	0.0418	0.0041	0.0542 \$	1.764	38.9	0.0011
MIDWAY to CP87 (1)	-0.0345	0.0234	-0.0560 \$	1.723	40.5	0.0131
NORTONPORT2 to CP08 (1)	4.8850	4.1475	-1.7608 \$	520.502	12.8	0.0022
NORTONPORT2 to CP05 (1)	4.9247	4.5042	-1.3096 \$	1019.016	6.7	0.0009
NORTONPORT2 to CP09 (1)	4.8536	4.3209	-1.1311 \$	379.305	17.4	0.0043
NORTONPORT2 to CP58 (1)	6.7616	6.1535	-1.6341 \$	1256.779	7.4	0.0014
NORTONPORT2 to CP59 (1)	-56.1434	-78.7226	-1.9493 \$	16203.307	6.0	0.0013
NORTONPORT2 to FLT07 (1)	5.4347	4.9711	-1.3038 \$	1916.345	3.9	0.0005

RMS 4.2783 5.8653 0.3970

\$ - This session is flagged as a 3-sigma outlier

CONTROL POINT RESIDUALS (ADJUSTMENT MADE)

STA. NAME	-- RE --	-- RN --	-- RH --
	(m)	(m)	(m)
GLADE2	0.3005	0.2095	-0.0158
MIDWAY	0.0046	0.0003	0.0008
NORTONPORT2	-0.3036	-0.2118	0.0168

RMS 0.2466 0.1720 0.0133

OUTPUT STATION COORDINATES (LAT/LONG/HT)

STA_ID	-- LATITUDE --	-- LONGITUDE --	- ELLHGT -
CAL34	39 47 42.75721	-99 25 18.01080	586.5344
CP01	39 54 52.92351	-100 07 14.65369	743.5873
CP02	39 55 31.74748	-99 48 49.92326	695.0327
CP03	39 58 43.82276	-99 43 10.17393	686.5378



CP04	39 49 39.60648	-100 05 50.76502	740.3543
CP05	39 50 22.09422	-99 48 53.96894	650.9619
CP06	39 53 29.20309	-99 42 08.70016	629.3140
CP07	39 43 34.86130	-100 05 46.99673	742.2043
CP08	39 44 28.13563	-99 50 01.52828	702.6611
CP09	39 47 56.51424	-99 41 56.33078	695.3486
CP10	39 36 36.49823	-100 05 47.08201	713.8486
CP11	39 39 14.34382	-99 48 54.46680	646.1037
CP12	39 43 14.37944	-99 42 10.70544	655.5056
CP13	39 55 46.92489	-99 32 02.43413	616.6733
CP14	39 58 11.18460	-99 25 18.31270	608.9206
CP15	39 57 30.91185	-99 18 34.98868	630.6202
CP16	39 37 30.84727	-99 42 10.69438	641.5473
CP19	39 45 21.76961	-99 32 02.27262	627.9586
CP20	39 41 06.47078	-99 18 46.57368	527.5366
CP21	39 44 03.89711	-99 10 43.69452	526.2183
CP22	39 39 57.28789	-99 32 03.32669	564.0135
CP23	39 35 48.14482	-99 17 57.08425	574.1354
CP26	38 55 39.10296	-99 41 16.53178	641.5482
CP27	38 58 18.54159	-99 47 53.02606	697.2721
CP28	38 53 43.85866	-99 47 56.28346	702.2600
CP39	38 54 49.62253	-99 59 01.46152	701.7392
CP41	39 00 27.47927	-99 58 59.68370	716.5226
CP42	39 03 09.08586	-100 04 26.40008	748.2846
CP43	39 05 45.33667	-99 57 45.81936	694.0037
CP44	39 02 32.15176	-99 53 07.90816	706.5135
CP45	39 07 01.03616	-99 48 44.07960	654.8343
CP46	39 05 19.83013	-99 42 33.31130	678.4095
CP47	39 03 33.57561	-99 45 36.27282	685.1105
CP48	38 57 27.64898	-99 53 44.90517	723.4020
CP49	38 59 25.43226	-99 43 58.84380	697.3942
CP50	39 00 04.11537	-99 40 29.84581	674.9411
CP51	39 30 34.95121	-99 39 58.54701	668.8719
CP52	39 32 21.30933	-99 32 41.65231	649.8016
CP53	39 31 21.88412	-99 23 48.19232	608.5056
CP54	39 30 32.62583	-99 17 34.13588	561.2178
CP55	39 29 42.91998	-99 09 22.31099	550.0201
CP56	39 57 29.49536	-100 02 16.46605	707.1526
CP57	39 58 20.99401	-99 55 20.11935	704.3636
CP58	39 53 04.41035	-99 57 48.72577	724.1912
CP59	39 47 55.25109	-99 55 33.06130	688.7745
CP60	39 41 49.70684	-100 00 41.28275	739.5070
CP61	39 37 14.67036	-99 56 43.43537	651.5339
CP62	39 35 35.42798	-99 49 07.93784	674.5636
CP63	39 50 21.51678	-99 32 02.34840	647.4694
CP64	39 53 10.43985	-99 25 28.11545	656.6014
CP66	39 42 43.80422	-99 25 01.70159	577.2947
CP67	39 37 44.35417	-99 25 17.81861	568.5001



CP69	39 14	39.78373	-99 17	54.77900	630.6400
CP70	39 27	06.95493	-99 25	00.14484	566.5208
CP71	39 21	37.14850	-99 25	04.56365	551.1772
CP72	39 12	12.05780	-99 31	51.13058	659.6325
CP73	39 23	38.74750	-99 09	26.85492	542.8869
CP75	39 38	38.41302	-99 11	27.65807	517.7259
CP76	39 25	25.80750	-99 40	44.70710	617.0509
CP77	39 27	59.64339	-99 32	06.16786	638.6093
CP78	39 14	05.08760	-99 08	30.45310	602.3480
CP79	39 26	11.20299	-99 14	58.02288	505.7129
CP80	39 20	10.16756	-99 39	35.85774	618.4304
CP81	39 22	46.80818	-99 32	00.56508	563.9176
CP83	39 20	08.99746	-99 17	48.15796	573.5333
CP84	39 18	27.24642	-99 08	31.78951	553.6606
CP85	39 14	56.71546	-99 39	40.84003	674.6917
CP86	39 16	40.68657	-99 31	11.82004	621.9316
CP87	39 11	54.81380	-99 24	02.73674	629.6975
CP88	39 42	41.42188	-99 55	33.84522	712.9476
CP89	39 36	13.48137	-99 30	54.78178	624.4267
CP90	39 34	05.14189	-99 10	42.03686	543.7543
FLT03	39 22	17.80535	-99 17	46.90099	575.8284
FLT04	39 22	16.97988	-99 18	55.85778	546.2776
FLT07	39 48	42.50746	-99 53	21.32938	673.4061
GLADE2	39 41	41.20885	-99 18	34.69664	543.7431
MIDWAY	39 00	00.60564	-99 47	37.19458	713.0748
NORTONPORT2	39 50	48.59081	-99 53	32.73096	694.9918

OUTPUT VARIANCE/COVARIANCE

2

STA_ID	SE/SN/SUP	-----	CX matrix (m)-----
	(39.40 %)	(not scaled by confidence level)	
	(m)	(ECEF, XYZ cartesian)	
CAL34	0.0006	3.4776e-007	
	0.0003	1.8940e-008	3.2895e-007
	0.0007	-4.4295e-008	-1.6375e-007 2.4865e-007
CP01	0.0003	8.8539e-008	
	0.0003	7.5387e-008	2.6111e-007
	0.0006	-2.3054e-008	-1.2166e-007 2.1210e-007
CP02	0.0002	7.1154e-008	
	0.0003	6.6613e-008	2.5247e-007
	0.0006	-2.8096e-008	-1.0830e-007 1.6183e-007



CP03 0.0003 8.8902e-008
0.0003 7.7039e-008 2.8469e-007
0.0006 -3.6796e-008 -1.4107e-007 2.0745e-007

CP04 0.0002 7.8929e-008
0.0003 6.5111e-008 2.3972e-007
0.0006 -2.4053e-008 -1.2775e-007 1.9817e-007

CP05 0.0002 4.1757e-008
0.0002 3.0616e-008 1.1030e-007
0.0004 -9.4394e-009 -5.2853e-008 9.8587e-008

CP06 0.0002 5.9490e-008
0.0003 4.7344e-008 1.8455e-007
0.0005 -1.8626e-008 -9.2919e-008 1.5670e-007

CP07 0.0003 8.1478e-008
0.0004 4.5493e-008 2.5425e-007
0.0006 -8.3916e-009 -1.2540e-007 2.3295e-007

CP08 0.0002 5.1189e-008
0.0003 4.0082e-008 1.5903e-007
0.0005 -1.1860e-008 -8.2817e-008 1.3846e-007

CP09 0.0002 5.3720e-008
0.0003 4.1324e-008 1.6014e-007
0.0005 -1.6071e-008 -8.1519e-008 1.4104e-007

CP10 0.0004 2.2820e-007
0.0005 1.6532e-007 7.0390e-007
0.0010 -7.9718e-008 -4.0998e-007 5.4915e-007

CP11 0.0002 7.0915e-008
0.0003 4.7401e-008 2.4614e-007
0.0006 -1.8784e-008 -1.3454e-007 1.9988e-007

CP12 0.0002 6.1128e-008
0.0003 3.7676e-008 2.0845e-007
0.0006 -1.4582e-008 -1.1434e-007 1.6598e-007

CP13 0.0003 1.4452e-007
0.0004 9.1876e-008 3.5978e-007
0.0007 -4.0925e-008 -1.9534e-007 2.7587e-007

CP14 0.0004 2.0226e-007
0.0004 1.5615e-007 5.8198e-007
0.0009 -5.7617e-008 -3.1348e-007 4.2939e-007



CP15 0.0005 3.2715e-007
0.0006 3.2090e-007 9.3596e-007
0.0011 -7.1946e-008 -3.8432e-007 5.3109e-007

CP16 0.0003 7.4339e-008
0.0003 4.6122e-008 2.3596e-007
0.0006 -2.1321e-008 -1.3488e-007 2.0227e-007

CP19 0.0002 6.6226e-008
0.0003 4.4741e-008 2.4596e-007
0.0006 -2.0141e-008 -1.4215e-007 2.1312e-007

CP20 0.0002 5.6098e-008
0.0002 2.7265e-008 1.2658e-007
0.0005 -1.7257e-008 -9.3907e-008 1.2005e-007

CP21 0.0004 2.0629e-007
0.0006 1.3000e-007 9.1336e-007
0.0012 -9.2468e-008 -5.5389e-007 8.9727e-007

CP22 0.0003 8.8173e-008
0.0003 6.2123e-008 2.7637e-007
0.0006 -3.2525e-008 -1.5607e-007 2.1106e-007

CP23 0.0002 6.7908e-008
0.0003 3.9682e-008 1.9784e-007
0.0006 -2.1351e-008 -1.2110e-007 1.6937e-007

CP26 0.0005 3.3430e-007
0.0008 2.0732e-007 1.2271e-006
0.0013 -2.1305e-007 -4.8166e-007 1.1671e-006

CP27 0.0003 9.0438e-008
0.0003 7.9507e-008 2.5982e-007
0.0006 -2.9059e-008 -1.2570e-007 2.0778e-007

CP28 0.0005 3.2390e-007
0.0008 2.1987e-007 1.2715e-006
0.0013 -1.9424e-007 -5.1135e-007 1.1205e-006

CP39 0.0019 6.0451e-006
0.0019 7.8074e-006 1.6182e-005
0.0050 -3.4649e-006 -9.2298e-006 9.6076e-006

CP41 0.0004 1.8932e-007
0.0005 1.4555e-007 5.0309e-007
0.0008 -5.9840e-008 -1.7405e-007 4.0225e-007



CP42 0.0005 3.1823e-007
0.0006 1.9117e-007 1.0562e-006
0.0013 -7.5930e-008 -5.9762e-007 8.7451e-007

CP43 0.0004 1.9689e-007
0.0006 1.5261e-007 5.2297e-007
0.0008 -7.1391e-008 -1.7797e-007 4.3438e-007

CP44 0.0004 1.8997e-007
0.0005 1.6414e-007 5.2228e-007
0.0009 -5.4188e-008 -2.2815e-007 4.2108e-007

CP45 0.0003 9.7299e-008
0.0003 8.6886e-008 2.5618e-007
0.0006 -2.5647e-008 -1.1080e-007 1.9192e-007

CP46 0.0003 8.0247e-008
0.0004 3.6141e-008 3.0111e-007
0.0006 -3.8686e-008 -9.5214e-008 2.4491e-007

CP47 0.0003 8.6389e-008
0.0005 3.1695e-008 2.7616e-007
0.0006 -5.1170e-008 -6.9237e-008 3.2509e-007

CP48 0.0003 1.3279e-007
0.0004 1.2779e-007 2.9721e-007
0.0006 -2.0737e-008 -1.0047e-007 1.9533e-007

CP49 0.0002 6.1728e-008
0.0003 5.2365e-008 1.6567e-007
0.0005 -1.9654e-008 -7.6917e-008 1.3118e-007

CP50 0.0003 1.4634e-007
0.0004 1.3086e-007 3.0978e-007
0.0006 -3.1581e-008 -1.1893e-007 2.2225e-007

CP51 0.0003 1.0513e-007
0.0004 6.3940e-008 3.5959e-007
0.0007 -3.6704e-008 -1.7768e-007 3.0264e-007

CP52 0.0003 8.2930e-008
0.0003 4.9233e-008 2.6063e-007
0.0006 -2.2874e-008 -1.4670e-007 2.3269e-007

CP53 0.0003 1.0132e-007
0.0003 6.6807e-008 2.9589e-007
0.0007 -3.2329e-008 -1.7513e-007 2.5521e-007



CP54 0.0003 1.2379e-007
0.0003 6.6745e-008 4.1624e-007
0.0008 -4.1795e-008 -2.7166e-007 3.5110e-007

CP55 0.0003 1.2489e-007
0.0004 9.4180e-008 4.3553e-007
0.0008 -5.8821e-008 -2.2916e-007 3.4600e-007

CP56 0.0003 1.1321e-007
0.0004 9.9634e-008 3.8080e-007
0.0007 -3.3807e-008 -1.4345e-007 2.3249e-007

CP57 0.0003 1.1270e-007
0.0004 1.1873e-007 4.0721e-007
0.0007 -4.6580e-008 -1.4965e-007 2.1193e-007

CP58 0.0002 4.8881e-008
0.0003 3.6480e-008 1.3131e-007
0.0004 -1.1902e-008 -5.7898e-008 1.1589e-007

CP59 0.0002 4.0107e-008
0.0002 2.6893e-008 1.0551e-007
0.0004 -8.0515e-009 -4.4843e-008 9.2838e-008

CP60 0.0003 1.2357e-007
0.0004 7.2688e-008 4.0806e-007
0.0008 -2.7691e-008 -2.4236e-007 3.2358e-007

CP61 0.0004 2.3424e-007
0.0004 2.2734e-007 5.8898e-007
0.0009 -9.2512e-008 -2.9802e-007 3.5788e-007

CP62 0.0003 8.4309e-008
0.0003 5.9906e-008 2.7552e-007
0.0006 -1.9639e-008 -1.4839e-007 2.3913e-007

CP63 0.0002 7.1932e-008
0.0003 5.3021e-008 2.4788e-007
0.0006 -1.6922e-008 -1.3018e-007 2.0568e-007

CP64 0.0004 1.7010e-007
0.0004 1.3129e-007 4.7079e-007
0.0008 -4.7629e-008 -2.4796e-007 3.4366e-007

CP66 0.0002 6.9472e-008
0.0003 3.9689e-008 2.2334e-007
0.0006 -2.0789e-008 -1.4735e-007 1.9331e-007



CP67 0.0003 7.3274e-008
0.0003 4.3428e-008 2.3541e-007
0.0006 -2.0457e-008 -1.2746e-007 1.7490e-007

CP69 0.0033 1.1921e-005
0.0020 2.6627e-006 1.3034e-005
0.0037 -1.9212e-006 -3.5925e-006 4.0006e-006

CP70 0.0004 1.9127e-007
0.0005 1.5243e-007 7.9788e-007
0.0011 -8.2105e-008 -4.3021e-007 5.6552e-007

CP71 0.0004 1.6683e-007
0.0004 1.1736e-007 6.4064e-007
0.0010 -7.2278e-008 -3.7324e-007 4.6783e-007

CP72 0.0008 6.7305e-007
0.0014 2.1244e-007 1.6480e-006
0.0015 -5.0702e-007 -1.6212e-007 2.6716e-006

CP73 0.0007 6.2459e-007
0.0009 5.5820e-007 2.2755e-006
0.0018 -1.2943e-007 -1.1072e-006 1.6328e-006

CP75 0.0003 7.8907e-008
0.0003 5.1185e-008 2.6455e-007
0.0006 -3.0506e-008 -1.4725e-007 2.2865e-007

CP76 0.0004 1.9415e-007
0.0005 1.3656e-007 8.3481e-007
0.0010 -6.4598e-008 -3.9127e-007 4.8839e-007

CP77 0.0004 1.9616e-007
0.0005 1.4881e-007 8.1383e-007
0.0011 -7.5783e-008 -4.2845e-007 5.8194e-007

CP78 0.0007 5.7886e-007
0.0009 5.7557e-007 2.2624e-006
0.0017 -2.1179e-007 -9.4249e-007 1.2825e-006

CP79 0.0004 1.4628e-007
0.0004 1.0333e-007 5.7903e-007
0.0009 -6.6787e-008 -3.1842e-007 4.2497e-007

CP80 0.0007 4.7316e-007
0.0007 2.6249e-007 2.0399e-006
0.0018 -1.8385e-007 -1.2769e-006 1.5481e-006



CP81 0.0004 1.9121e-007
0.0005 1.4762e-007 7.8844e-007
0.0011 -7.5791e-008 -4.1879e-007 5.4626e-007

CP83 0.0004 2.3857e-007
0.0006 2.4022e-007 9.8877e-007
0.0011 -1.1091e-007 -4.1630e-007 5.1983e-007

CP84 0.0008 7.7203e-007
0.0010 7.5229e-007 2.9208e-006
0.0020 -2.4160e-007 -1.3075e-006 1.8410e-006

CP85 0.0009 8.9589e-007
0.0009 4.4895e-007 1.9430e-006
0.0019 -2.0485e-007 -1.4140e-006 2.3829e-006

CP86 0.0004 1.3744e-007
0.0004 7.2271e-008 5.4227e-007
0.0009 -5.7468e-008 -3.1589e-007 4.4623e-007

CP87 0.0034 1.2678e-005
0.0023 2.8192e-006 1.5097e-005
0.0041 -1.9723e-006 -4.3769e-006 5.8903e-006

CP88 0.0002 6.5371e-008
0.0003 4.0014e-008 2.0428e-007
0.0005 -1.2994e-008 -1.0336e-007 1.7402e-007

CP89 0.0003 8.3904e-008
0.0003 5.2223e-008 2.6915e-007
0.0007 -2.4590e-008 -1.6347e-007 2.4599e-007

CP90 0.0003 8.7566e-008
0.0003 6.5086e-008 2.8261e-007
0.0007 -3.6089e-008 -1.5820e-007 2.2958e-007

FLT03 0.0004 2.2007e-007
0.0005 1.7083e-007 7.3881e-007
0.0010 -1.0222e-007 -4.0893e-007 5.1544e-007

FLT04 0.0004 2.1882e-007
0.0005 1.6900e-007 7.3473e-007
0.0010 -1.0074e-007 -4.0687e-007 5.1319e-007

FLT07 0.0002 3.1145e-008
0.0002 2.0041e-008 7.0979e-008
0.0003 -5.6451e-009 -3.1432e-008 6.4505e-008



GLADE2 0.0001 9.4568e-009
 0.0001 1.2451e-010 9.7224e-009
 0.0001 3.2481e-011 -1.7969e-010 9.7023e-009

MIDWAY 0.0001 9.9764e-009
 0.0001 1.0857e-011 9.9895e-009
 0.0001 3.7352e-012 -5.6545e-012 9.9872e-009

NORTONPORT2 0.0001 9.4625e-009
 0.0001 1.2121e-010 9.7271e-009
 0.0001 3.1278e-011 -1.7642e-010 9.7075e-009

VARIANCE FACTOR = 47878000.8795

Note: Values < 1.0 indicate statistics are pessimistic, while
values > 1.0 indicate optimistic statistics. Entering this
value as the network adjustment scale factor will bring
variance factor to one.





```

*****
* NETWORK - WEIGHTED GNSS NETWORK ADJUSTMENT *
*
* (c) Copyright NovAtel Inc., (2015) *
*
* Version: 8.60.4331 *
*
* FILE: C:\Users\ben.kimbrough\Documents\Projects\2015\15115 Kansas LiDAR Add-
ons\307_Control_Network\2015JUNE15\Data Processing\2015JUNE15.net
*****

```

DATE(m/d/y): Wed. 6/17/15 TIME: 8:13:57

DATUM: 'WGS84'
SCALE_FACTOR: 1.0000
CONFIDENCE LEVEL: 39.40 % (Scale factor is 1.0009)

INPUT CONTROL/CHECK POINTS

STA_ID	TYPE	-- LATITUDE --	-- LONGITUDE --	ELLHGT -	HZ-SD	V-SD
ICT4	GCP-3D	37 37 08.55552	-97 37 56.95827	393.239	0.00010	0.00050
ICT5	GCP-3D	37 47 12.01949	-97 37 32.69149	412.184	0.00010	0.00050
NEAP	GCP-3D	40 18 21.07849	-99 54 19.33320	647.251	0.00010	0.00050
NEMC	GCP-3D	40 11 57.84817	-100 34 41.39506	740.679	0.00010	0.00050
NERC	GCP-3D	40 04 32.25430	-98 31 05.27213	495.036	0.00010	0.00050
OKBF	GCP-3D	36 49 40.88148	-99 38 28.84092	539.834	0.00010	0.00050

INPUT VECTORS

SESSION NAME	VECTOR(m)	----- Covariance (m) [unscaled] -----
	DX/DY/DZ	standard deviations in brackets
CP18 to CP74 (1)	1263.3366	9.0665e-005 (0.0095)
	4965.6390	3.7944e-005 7.8786e-004 (0.0281)
	6212.9232	-2.7096e-005 -6.6369e-004 7.4830e-004 (0.0274)



CP24 to CP40 (1) -1068.5942 1.1225e-004 (0.0106)
-12837.2451 9.5161e-005 3.5514e-004 (0.0188)
-15788.2071 -9.1216e-005 -1.4171e-004 6.6158e-004 (0.0257)

CP25 to CP31 (1) -3520.5988 1.0307e-004 (0.0102)
-5294.7048 8.3562e-005 2.2086e-004 (0.0149)
-7207.5562 -1.6852e-005 -8.1747e-005 1.6595e-004 (0.0129)

CP26 to CP27 (1) -8895.0569 6.1731e-005 (0.0079)
4619.7294 3.0642e-005 2.3647e-004 (0.0154)
3859.1015 -3.6623e-005 -7.3502e-005 1.9707e-004 (0.0140)

CP26 to CP28 (1) -9879.0280 6.2407e-005 (0.0079)
-616.6950 3.0298e-005 2.2945e-004 (0.0151)
-2727.4432 -3.4014e-005 -7.2733e-005 1.7933e-004 (0.0134)

CP29 to CP33 (1) -1185.3090 1.1347e-004 (0.0107)
-6147.3726 7.7144e-005 2.7014e-004 (0.0164)
-7871.0263 -5.0166e-005 -9.2697e-005 1.8461e-004 (0.0136)

CP29 to CP39 (1) -7303.2323 8.3926e-005 (0.0092)
4331.4739 3.8947e-005 2.9906e-004 (0.0173)
3742.9517 7.0090e-005 -2.4555e-004 5.4068e-004 (0.0233)

CP30 to CP32 (1) -4195.4748 9.3768e-005 (0.0097)
-5019.7171 4.2928e-005 3.0224e-004 (0.0174)
-7015.5457 -4.4643e-005 -1.3152e-004 2.1907e-004 (0.0148)

CP32 to CP33 (1) -5821.0437 1.2130e-004 (0.0110)
3864.1106 8.4026e-005 3.0123e-004 (0.0174)
3432.7445 -5.1550e-005 -9.4915e-005 1.8675e-004 (0.0137)

CP36 to CP38 (1) -241.2175 9.9913e-005 (0.0100)
7187.7456 8.9686e-005 2.4519e-004 (0.0157)
8817.6391 4.7847e-006 -1.0866e-004 2.1155e-004 (0.0145)

CP36 to FLT02 (1) 15574.2347 9.6740e-005 (0.0098)
4378.2577 7.5090e-005 2.2515e-004 (0.0150)
8788.1365 -2.0370e-005 -8.2721e-005 1.6942e-004 (0.0130)

CP38 to FLT01 (1) 15921.8004 9.5972e-005 (0.0098)
-1806.4875 8.4009e-005 2.3759e-004 (0.0154)
1220.4523 4.0446e-006 -9.7920e-005 1.9975e-004 (0.0141)

CP38 to FLT02 (1) 15815.4580 9.1603e-005 (0.0096)
-2809.5025 8.0527e-005 2.3537e-004 (0.0153)
-29.4788 3.1082e-008 -9.9217e-005 2.0361e-004 (0.0143)



CP39 to FLT02 (1) 7728.1713 1.2844e-004 (0.0113)
-2389.8671 1.2643e-004 3.1118e-004 (0.0176)
-1249.8365 -4.4255e-005 -1.9179e-004 3.0802e-004 (0.0176)

CP41 to CP42 (1) -7196.9663 1.0394e-004 (0.0102)
4435.0258 4.7882e-005 3.3289e-004 (0.0182)
3891.7760 -1.3958e-005 -2.1102e-004 2.8527e-004 (0.0169)

CP41 to CP43 (1) 2822.0944 7.0602e-005 (0.0084)
5792.4594 2.4115e-005 2.5690e-004 (0.0160)
7598.7030 -2.8275e-005 -1.1135e-004 2.1406e-004 (0.0146)

CP42 to CP43 (1) 10019.0481 9.0432e-005 (0.0095)
1357.4471 2.9261e-005 4.5141e-004 (0.0212)
3706.9074 -4.1495e-006 -3.0601e-004 3.4703e-004 (0.0186)

CP44 to CP45 (1) 7149.6310 9.4911e-005 (0.0097)
4105.4285 7.1418e-005 2.4148e-004 (0.0155)
6404.8579 -2.2438e-005 -9.1366e-005 1.7943e-004 (0.0134)

CP44 to MIDWAY (1) 7335.6402 9.4506e-005 (0.0097)
-4264.1087 6.9676e-005 2.4066e-004 (0.0155)
-3627.0423 -2.1350e-005 -8.4338e-005 1.6465e-004 (0.0128)

CP45 to CP48 (1) -9044.1712 1.0259e-004 (0.0101)
-9787.6499 7.7451e-005 2.2661e-004 (0.0151)
-13692.5560 -2.0747e-005 -9.2040e-005 1.8076e-004 (0.0134)

CP46 to CP47 (1) -4685.2526 1.8872e-005 (0.0043)
-1297.2487 1.1392e-005 6.9799e-005 (0.0084)
-2539.8363 -1.0401e-005 -2.2192e-005 5.4922e-005 (0.0074)

CP48 to FLT01 (1) -201.7800 2.8978e-005 (0.0054)
-3070.8736 2.9558e-005 1.0595e-004 (0.0103)
-3804.5224 -1.7882e-005 -4.4112e-005 6.4775e-005 (0.0080)

CP48 to MIDWAY (1) 9230.1820 1.0072e-004 (0.0100)
1418.1098 7.9040e-005 2.1602e-004 (0.0147)
3660.6531 -1.6815e-005 -7.5589e-005 1.5832e-004 (0.0126)

CP49 to CP50 (1) 5087.4474 3.3460e-005 (0.0058)
-90.6520 2.6604e-005 7.0048e-005 (0.0084)
913.0861 -5.0508e-006 -2.4854e-005 5.2349e-005 (0.0072)

CP54 to CP55 (1) 11444.9937 6.6853e-005 (0.0082)
-2837.8916 3.3629e-005 2.4574e-004 (0.0157)
-1189.7830 -3.0368e-005 -7.4336e-005 1.6376e-004 (0.0128)



CP70 to CP71 (1) -1158.8139 8.0787e-005 (0.0090)
-6341.2184 6.2973e-005 2.6390e-004 (0.0162)
-7869.2372 -2.8796e-005 -1.2606e-004 2.2310e-004 (0.0149)

CP70 to CP79 (1) 14039.0114 7.6629e-005 (0.0088)
-3366.7106 6.4931e-005 3.2588e-004 (0.0181)
-1366.4030 -5.4143e-005 -1.9021e-004 2.7900e-004 (0.0167)

CP72 to CP82 (1) 10472.8609 5.5668e-005 (0.0075)
3435.6252 5.2897e-005 2.3683e-004 (0.0154)
6166.2676 -3.1370e-005 -1.1413e-004 2.3346e-004 (0.0153)

CP72 to CP86 (1) 1801.9631 6.2837e-005 (0.0079)
5041.5146 2.9168e-005 2.1466e-004 (0.0147)
6392.8937 -3.3307e-005 -6.1778e-005 1.6044e-004 (0.0127)

CP72 to FLT04 (1) 20276.6987 8.1086e-005 (0.0090)
8697.4553 5.5405e-005 2.4515e-004 (0.0157)
14367.9035 -6.8809e-005 -1.0442e-004 2.7258e-004 (0.0165)

CP73 to CP84 (1) 331.8011 1.1821e-004 (0.0109)
-6232.1522 1.0612e-004 2.6758e-004 (0.0164)
-7422.3040 -1.7227e-005 -9.8860e-005 1.8526e-004 (0.0136)

CP76 to CP77 (1) 12726.8488 6.8192e-005 (0.0083)
886.3847 2.6439e-005 2.0419e-004 (0.0143)
3677.9752 -3.9062e-005 -6.1658e-005 1.8454e-004 (0.0136)

CP76 to CP79 (1) 36651.8548 3.0551e-004 (0.0175)
-5121.0658 -6.3799e-005 1.6076e-004 (0.0127)
1011.1948 -1.6730e-005 1.1077e-006 3.4450e-005 (0.0059)

CP76 to CP80 (1) 587.1274 9.0273e-005 (0.0095)
-6366.5875 4.5789e-005 4.3055e-004 (0.0207)
-7523.8663 -4.5288e-005 -2.9685e-004 3.9694e-004 (0.0199)

CP78 to CP83 (1) -12052.3338 7.4868e-005 (0.0087)
9178.3847 5.7867e-005 2.9225e-004 (0.0171)
8668.9832 -2.7270e-005 -1.1973e-004 2.3198e-004 (0.0152)

CP79 to CP80 (1) -36064.7600 1.2210e-004 (0.0111)
-1245.5991 5.3914e-005 1.2049e-003 (0.0347)
-8535.1153 -3.5860e-005 -1.1043e-003 1.1846e-003 (0.0344)

CP82 to CP87 (1) 562.7655 7.8020e-005 (0.0088)
-5592.9073 7.4686e-005 2.6454e-004 (0.0163)
-6597.2698 -4.5431e-006 -1.4080e-004 2.4873e-004 (0.0158)



CP82 to FLT03 (1) 11431.7435 6.1978e-005 (0.0079)
4988.2820 5.6864e-005 2.2775e-004 (0.0151)
8240.0840 -2.0580e-005 -1.1248e-004 2.2953e-004 (0.0152)

CP82 to FLT04 (1) 9803.8160 6.1845e-005 (0.0079)
5261.8128 5.6744e-005 2.2725e-004 (0.0151)
8201.6582 -2.0538e-005 -1.1223e-004 2.2903e-004 (0.0151)

FLT01 to FLT02 (3) -106.3570 3.0679e-005 (0.0055)
-1003.0019 2.8431e-005 8.8669e-005 (0.0094)
-1249.9489 -8.4570e-006 -4.2107e-005 7.3014e-005 (0.0085)

FLT03 to FLT04 (1) -1627.9248 2.1253e-005 (0.0046)
273.5391 1.1298e-005 7.2279e-005 (0.0085)
-38.4280 -8.0178e-006 -3.2933e-005 5.6681e-005 (0.0075)

FLT03 to MIDWAY (1) -46711.7955 3.8171e-007 (0.0006)
-18675.1229 2.3905e-008 4.8882e-007 (0.0007)
-31879.0292 -3.0139e-008 -1.3239e-007 1.6279e-007 (0.0004)

ICT4 to CP35 (1) -203480.3449 1.5857e-004 (0.0126)
107844.5081 -7.9321e-006 2.1947e-004 (0.0148)
96183.4807 4.3638e-006 -2.5714e-005 5.9824e-005 (0.0077)

ICT4 to CP38 (1) -197827.3854 6.5250e-005 (0.0081)
119631.9014 -1.3484e-005 8.8195e-005 (0.0094)
111816.7637 -1.4155e-006 -3.2031e-005 3.3777e-005 (0.0058)

ICT4 to CP73 (1) -113690.0653 1.3116e-004 (0.0115)
140659.3772 -9.4661e-005 1.6809e-004 (0.0130)
154289.9159 8.1683e-006 -2.4470e-005 2.7711e-005 (0.0053)

ICT4 to CP78 (1) -114145.8299 1.0371e-004 (0.0102)
129331.7805 4.8506e-005 1.8893e-004 (0.0137)
140639.0289 -1.4429e-005 -3.9093e-005 4.1513e-005 (0.0064)

ICT4 to CP79 (1) -121028.6821 9.3857e-005 (0.0097)
144901.9647 1.2491e-005 2.8845e-005 (0.0054)
157898.9814 -5.7260e-006 -3.0124e-006 7.6573e-006 (0.0028)

ICT4 to CP82 (1) -137193.5380 3.8168e-005 (0.0062)
136001.3162 -1.1484e-005 5.1031e-005 (0.0071)
144141.3284 1.2461e-008 -1.2905e-005 1.4495e-005 (0.0038)

ICT4 to CP83 (1) -126198.2676 4.0131e-004 (0.0200)
138510.5031 -5.6335e-005 1.4561e-004 (0.0121)
149307.8115 -5.2984e-007 -6.2010e-005 1.1944e-004 (0.0109)



ICT4 to CP84 (1) -113358.2792 5.8515e-006 (0.0024)
134427.2223 -1.4333e-006 7.4789e-006 (0.0027)
146867.6052 -5.9739e-007 -9.4823e-007 1.8074e-006 (0.0013)

ICT4 to CP85 (1) -158243.4542 2.8966e-004 (0.0170)
137599.2993 3.3039e-005 3.7537e-005 (0.0061)
141918.2256 -2.6523e-005 -2.2213e-005 3.1026e-005 (0.0056)

ICT4 to CP86 (1) -145864.4422 1.6587e-005 (0.0041)
137607.1867 -6.5280e-006 5.3116e-006 (0.0023)
144367.9865 -1.5203e-006 -1.1736e-007 1.9574e-006 (0.0014)

ICT4 to FLT02 (2) -182011.9341 7.6131e-006 (0.0028)
116822.4114 -2.0431e-007 8.8572e-006 (0.0030)
111787.2919 6.0623e-007 -1.1893e-006 2.8808e-006 (0.0017)

ICT5 to CP79 (1) -123126.5993 8.5419e-005 (0.0092)
133717.3823 1.1354e-005 2.6157e-005 (0.0051)
143166.0852 -5.2079e-006 -2.7269e-006 6.9467e-006 (0.0026)

ICT5 to CP17 (1) -124284.2369 3.1562e-004 (0.0178)
157796.9517 2.8632e-005 2.5161e-004 (0.0159)
171760.9099 -4.1866e-005 -9.5487e-005 1.2794e-004 (0.0113)

ICT5 to CP35 (1) -205578.2407 1.5119e-004 (0.0123)
96659.8833 -7.8568e-006 2.0828e-004 (0.0144)
81450.5964 4.1612e-006 -2.4332e-005 5.6739e-005 (0.0075)

ICT5 to CP38 (1) -199925.2980 6.1402e-005 (0.0078)
108447.2815 -1.2732e-005 8.2922e-005 (0.0091)
97083.8856 -1.3205e-006 -3.0116e-005 3.1772e-005 (0.0056)

ICT5 to CP73 (1) -115787.9710 1.1918e-004 (0.0109)
129474.7711 -8.6236e-005 1.5256e-004 (0.0124)
139557.0284 7.4261e-006 -2.2185e-005 2.5072e-005 (0.0050)

ICT5 to CP78 (1) -116243.7220 9.3750e-005 (0.0097)
118147.2006 4.3786e-005 1.7064e-004 (0.0131)
125906.1348 -1.3042e-005 -3.5336e-005 3.7525e-005 (0.0061)

ICT5 to CP82 (1) -139291.4375 3.4941e-005 (0.0059)
124816.7157 -1.0574e-005 4.6616e-005 (0.0068)
129408.4450 1.8628e-008 -1.1777e-005 1.3231e-005 (0.0036)

ICT5 to CP84 (1) -115456.1792 5.2877e-006 (0.0023)
123242.6190 -1.3012e-006 6.7537e-006 (0.0026)
132134.7177 -5.4012e-007 -8.5617e-007 1.6333e-006 (0.0013)



ICT5 to CP85 (1) -160341.3446 2.6756e-004 (0.0164)
126414.7050 3.0420e-005 3.4504e-005 (0.0059)
127185.3264 -2.4461e-005 -2.0429e-005 2.8568e-005 (0.0053)

ICT5 to CP86 (1) -147962.3430 1.5227e-005 (0.0039)
126422.5830 -5.9944e-006 4.8688e-006 (0.0022)
129635.0989 -1.3975e-006 -1.0519e-007 1.7946e-006 (0.0013)

ICT5 to FLT02 (2) -184109.8472 7.1171e-006 (0.0027)
105637.8089 -1.9640e-007 8.2770e-006 (0.0029)
97054.4031 5.6775e-007 -1.1120e-006 2.6966e-006 (0.0016)

ICT5 to ICT4 (6) -2097.9116 7.2194e-005 (0.0085)
-11184.6076 4.6741e-005 2.2942e-004 (0.0151)
-14732.8917 -1.8840e-005 -1.1114e-004 1.7633e-004 (0.0133)

NEAP to CP20 (1) 42404.5998 1.3921e-005 (0.0037)
-52012.9210 1.3135e-006 3.8901e-005 (0.0062)
-52874.2953 -1.6278e-006 -2.4689e-006 5.2895e-006 (0.0023)

NEAP to CP28 (1) -8083.0537 5.0347e-006 (0.0022)
-99954.3621 -2.2201e-007 1.2337e-006 (0.0011)
-120624.8806 -5.9082e-008 -5.7103e-007 9.2434e-007 (0.0010)

NEAP to CP35 (1) -37395.4591 9.8506e-005 (0.0099)
-107313.5163 -7.1869e-006 1.3328e-004 (0.0115)
-135900.4449 2.3455e-006 -1.5064e-005 3.6202e-005 (0.0060)

NEAP to CP38 (1) -31742.5431 3.1706e-005 (0.0056)
-95526.0889 -6.7795e-006 4.2409e-005 (0.0065)
-120267.1792 -8.7977e-007 -1.5324e-005 1.6394e-005 (0.0040)

NEAP to CP54 (1) 42191.9999 1.7921e-005 (0.0042)
-64638.3184 -6.3160e-006 5.4670e-006 (0.0023)
-67925.8009 -1.6881e-006 -4.6941e-007 2.4981e-006 (0.0016)

NEAP to CP65 (1) 34789.2166 2.9199e-005 (0.0054)
-42590.0559 -1.9999e-005 4.0667e-005 (0.0064)
-43086.7112 -2.0987e-007 -3.8026e-006 7.9619e-006 (0.0028)

NEAP to CP66 (1) 33602.2526 4.1025e-005 (0.0064)
-49704.2975 5.7100e-006 2.6873e-005 (0.0052)
-51791.8738 -4.8816e-006 -8.9554e-006 1.6579e-005 (0.0041)

NEAP to CP73 (1) 52394.8117 5.6093e-005 (0.0075)
-74498.6504 -4.1592e-005 7.1362e-005 (0.0084)
-77794.0200 3.4858e-006 -1.0614e-005 1.1810e-005 (0.0034)



NEAP to CP77 (1) 21131.2084 1.0408e-006 (0.0010)
-64248.6426 -1.6078e-007 8.3873e-007 (0.0009)
-71518.1864 -4.0193e-008 -3.5881e-007 4.4302e-007 (0.0007)

NEAP to CP79 (1) 45056.1849 3.4828e-005 (0.0059)
-70255.9623 4.7212e-006 1.0409e-005 (0.0032)
-74184.9771 -2.1963e-006 -1.0916e-006 2.8059e-006 (0.0017)

NEAP to CP82 (1) 28891.3107 1.5668e-005 (0.0040)
-79156.6543 -4.9721e-006 2.0646e-005 (0.0045)
-87942.6163 -5.7989e-008 -5.1686e-006 5.9080e-006 (0.0024)

NEAP to CP84 (1) 52726.5845 2.6972e-006 (0.0016)
-80730.7697 -7.2980e-007 3.4896e-006 (0.0019)
-85216.3349 -2.8061e-007 -4.6129e-007 8.6356e-007 (0.0009)

NEAP to CP85 (1) 7841.4869 1.0624e-004 (0.0103)
-77558.6457 1.1705e-005 1.3207e-005 (0.0036)
-90165.7487 -9.6997e-006 -7.8319e-006 1.1236e-005 (0.0034)

NEAP to CP86 (1) 20220.3732 6.4346e-006 (0.0025)
-77550.7440 -2.5163e-006 2.0091e-006 (0.0014)
-87715.9882 -6.3727e-007 -2.2148e-008 7.6731e-007 (0.0009)

NEAP to FLT01 (2) -15820.7263 7.6440e-007 (0.0009)
-97332.5486 -1.4019e-007 4.2018e-007 (0.0006)
-119046.7248 -6.7269e-008 -1.2767e-007 2.1665e-007 (0.0005)

NEMC to CP29 (1) 41352.7740 3.2822e-006 (0.0018)
-102868.5809 -8.1740e-007 1.0329e-006 (0.0010)
-113827.7595 -3.5239e-007 -3.6534e-007 6.7147e-007 (0.0008)

NEMC to CP20 (1) 100109.4416 1.8671e-005 (0.0043)
-54604.3499 1.7539e-006 5.2596e-005 (0.0073)
-43912.2860 -2.1941e-006 -3.3649e-006 7.1298e-006 (0.0027)

NEMC to CP24 (1) 27860.9988 1.5484e-005 (0.0039)
-80952.6373 5.1278e-006 2.9442e-005 (0.0054)
-90008.9670 -2.0795e-006 -5.9982e-006 6.3947e-006 (0.0025)

NEMC to CP30 (1) 50184.0154 1.1766e-005 (0.0034)
-107860.3632 -3.7802e-006 2.7314e-006 (0.0017)
-118115.9842 -8.8956e-007 -1.5287e-007 1.0787e-006 (0.0010)

NEMC to CP32 (1) 45988.4736 3.5205e-005 (0.0059)
-112880.0504 -1.3690e-005 9.8508e-006 (0.0031)
-125131.5400 -2.7548e-006 -1.3110e-006 4.5636e-006 (0.0021)



NEMC to CP33 (1) 40167.4376 2.4269e-004 (0.0156)
-109015.9634 -8.1988e-005 5.7923e-005 (0.0076)
-121698.7692 -2.4953e-005 -8.3362e-006 3.7492e-005 (0.0061)

NEMC to CP35 (1) 20309.3888 9.2796e-005 (0.0096)
-109904.9579 -7.1248e-006 1.2604e-004 (0.0112)
-126938.4317 2.2276e-006 -1.4161e-005 3.3995e-005 (0.0058)

NEMC to CP36 (1) 26203.4912 7.5511e-006 (0.0027)
-105305.2138 -4.7958e-006 8.7601e-006 (0.0030)
-120122.8138 -1.4146e-008 -1.3540e-006 2.1290e-006 (0.0015)

NEMC to CP38 (1) 25962.2760 3.0192e-005 (0.0055)
-98117.5101 -6.4677e-006 4.0331e-005 (0.0064)
-111305.1442 -8.9876e-007 -1.4537e-005 1.5564e-005 (0.0039)

NEMC to CP39 (1) 34049.5640 1.0641e-004 (0.0103)
-98537.0943 -3.4119e-005 1.3594e-004 (0.0117)
-110084.8009 1.6541e-006 -5.3852e-006 2.0136e-005 (0.0045)

NEMC to CP40 (1) 26792.4281 5.8353e-006 (0.0024)
-93789.9066 1.6998e-006 1.6608e-005 (0.0041)
-105797.1773 -6.3617e-007 -3.3450e-006 2.7633e-006 (0.0017)

NEMC to CP48 (2) 42085.8972 1.4022e-004 (0.0118)
-96853.0490 8.6002e-005 1.5528e-004 (0.0125)
-106280.1899 -4.6189e-005 -6.0251e-005 9.3714e-005 (0.0097)

NEMC to CP65 (1) 92494.0609 3.9045e-005 (0.0062)
-45181.4953 -2.6613e-005 5.4581e-005 (0.0074)
-34124.6997 -2.9265e-007 -5.1664e-006 1.0808e-005 (0.0033)

NEMC to CP69 (1) 96391.4569 4.4771e-006 (0.0021)
-85601.6366 6.5011e-007 9.1950e-006 (0.0030)
-81635.3254 -4.1528e-007 -1.7345e-006 2.2120e-006 (0.0015)

NEMC to CP72 (1) 76123.2715 5.0891e-005 (0.0071)
-85183.7110 -7.6635e-006 1.9886e-005 (0.0045)
-85146.8365 -4.7574e-006 -9.7148e-006 1.6691e-005 (0.0041)

NEMC to CP73 (1) 110099.6502 7.2101e-005 (0.0085)
-77090.0840 -5.3553e-005 9.2051e-005 (0.0096)
-68831.9905 4.5774e-006 -1.3762e-005 1.5260e-005 (0.0039)

NEMC to CP79 (1) 102761.0199 4.4621e-005 (0.0067)
-72847.4057 6.1187e-006 1.3368e-005 (0.0037)
-65222.9471 -2.8515e-006 -1.4134e-006 3.6062e-006 (0.0019)



NEMC to CP80 (1) 66696.2775 1.1219e-004 (0.0106)
-74093.0345 -5.6076e-005 3.9651e-005 (0.0063)
-73758.0018 -4.1718e-006 -7.9249e-007 7.9385e-006 (0.0028)

NEMC to CP82 (1) 86596.1324 1.8590e-005 (0.0043)
-81748.0837 -5.8884e-006 2.4540e-005 (0.0050)
-78980.5774 -9.9429e-008 -6.1389e-006 7.0358e-006 (0.0027)

NEMC to CP83 (1) 97591.5921 2.0378e-004 (0.0143)
-79238.8953 -3.2233e-005 7.4107e-005 (0.0086)
-73814.1454 -1.2881e-006 -3.1581e-005 6.0980e-005 (0.0078)

NEMC to CP84 (1) 110431.4111 3.4153e-006 (0.0018)
-83322.1972 -9.3743e-007 4.4467e-006 (0.0021)
-76254.3080 -3.5362e-007 -5.9360e-007 1.1006e-006 (0.0010)

NEMC to CP85 (1) 65546.2833 1.1713e-004 (0.0108)
-80150.0805 1.2967e-005 1.4619e-005 (0.0038)
-81203.7139 -1.0773e-005 -8.6591e-006 1.2431e-005 (0.0035)

NEMC to FLT01 (3) 41883.9992 1.4163e-006 (0.0012)
-99924.0593 -1.4287e-008 1.4742e-006 (0.0012)
-110084.7245 -9.2003e-008 -4.6293e-007 6.3716e-007 (0.0008)

NEMC to FLT02 (1) 41777.7499 9.6031e-007 (0.0010)
-100926.9581 -1.8971e-007 1.4093e-006 (0.0012)
-111334.6443 -4.2672e-008 -4.0762e-007 3.7350e-007 (0.0006)

NEMC to NEAP (3) 57704.8291 7.9182e-008 (0.0003)
-2591.4152 -7.1325e-009 6.4830e-008 (0.0003)
8962.0163 -5.6010e-009 -2.8167e-008 3.5233e-008 (0.0002)

NERC to CP20 (1) -71588.2769 1.3529e-005 (0.0037)
-16930.6827 1.3649e-006 3.7308e-005 (0.0061)
-33245.7876 -1.5612e-006 -2.3538e-006 5.1085e-006 (0.0023)

NERC to CP30 (1) -121513.7173 1.2625e-005 (0.0036)
-70186.6455 -4.0229e-006 2.8813e-006 (0.0017)
-107449.5011 -9.6061e-007 -1.7289e-007 1.1641e-006 (0.0011)

NERC to CP35 (1) -151388.3638 1.1906e-004 (0.0109)
-72231.2431 -7.5081e-006 1.6093e-004 (0.0127)
-116271.9421 2.8507e-006 -1.8480e-005 4.4250e-005 (0.0067)

NERC to CP38 (1) -145735.4238 4.0079e-005 (0.0063)
-60443.7755 -8.4942e-006 5.3800e-005 (0.0073)
-100638.6961 -9.5607e-007 -1.9525e-005 2.0814e-005 (0.0046)



NERC to CP50 (1) -110228.8999 1.8923e-005 (0.0044)
-59403.6385 -9.2888e-006 1.8375e-005 (0.0043)
-91893.0157 5.6639e-007 -3.7158e-006 5.9058e-006 (0.0024)

NERC to CP54 (1) -71800.8821 1.6310e-005 (0.0040)
-29556.0015 -5.7769e-006 5.0055e-006 (0.0022)
-48297.3152 -1.4952e-006 -4.4374e-007 2.2663e-006 (0.0015)

NERC to CP55 (1) -60355.8996 1.7231e-005 (0.0042)
-32393.8848 -4.4121e-006 4.8030e-006 (0.0022)
-49487.1275 -1.3564e-006 -1.6103e-006 3.9479e-006 (0.0020)

NERC to CP66 (1) -80390.6222 4.4312e-005 (0.0067)
-14622.0745 6.4937e-006 2.8838e-005 (0.0054)
-32163.3318 -5.2487e-006 -9.6490e-006 1.7782e-005 (0.0042)

NERC to CP69 (1) -75306.2506 3.8569e-006 (0.0020)
-47927.8556 8.0445e-007 7.6004e-006 (0.0028)
-70968.8834 -3.5940e-007 -1.4389e-006 1.8019e-006 (0.0013)

NERC to CP71 (1) -84134.5432 4.4177e-006 (0.0021)
-38148.2026 -1.2005e-006 5.6510e-006 (0.0024)
-61059.3463 -1.7641e-007 -1.8318e-006 1.8654e-006 (0.0014)

NERC to CP73 (1) -61597.9925 8.6417e-004 (0.0294)
-39416.2521 -2.6507e-004 6.1315e-004 (0.0248)
-58165.5260 4.3172e-005 -1.2634e-004 2.7836e-004 (0.0167)

NERC to CP73 (2) -61598.0931 3.8381e-004 (0.0196)
-39416.3812 -1.1804e-004 5.1422e-004 (0.0227)
-58165.5469 -8.1320e-006 -8.1485e-005 1.1508e-004 (0.0107)

NERC to CP74 (1) -58850.7268 8.5891e-006 (0.0029)
-3552.5149 -2.0260e-006 4.4418e-006 (0.0021)
-14783.5419 -4.2934e-007 5.1298e-007 1.0442e-006 (0.0010)

NERC to CP78 (1) -62053.8487 4.1829e-005 (0.0065)
-50743.8696 1.9097e-005 7.6505e-005 (0.0087)
-71816.4387 -5.9228e-006 -1.6084e-005 1.7127e-005 (0.0041)

NERC to CP79 (1) -68936.7056 3.0238e-005 (0.0055)
-35173.6526 4.0183e-006 9.0456e-006 (0.0030)
-54556.4842 -1.8587e-006 -9.3643e-007 2.4305e-006 (0.0016)

NERC to CP82 (1) -85101.5793 1.5177e-005 (0.0039)
-44074.3710 -4.7882e-006 1.9996e-005 (0.0045)
-68314.1200 -9.5742e-009 -5.0198e-006 5.7013e-006 (0.0024)



NERC to CP83 (1) -74106.1450 1.5382e-004 (0.0124)
-41565.2004 -2.4822e-005 5.4003e-005 (0.0073)
-63147.6501 -2.5698e-007 -2.3104e-005 4.4188e-005 (0.0066)

NERC to CP84 (1) -61266.3041 3.6249e-006 (0.0019)
-45648.4493 3.6225e-007 5.2703e-006 (0.0023)
-65587.8537 -4.4501e-007 -7.6493e-007 1.1119e-006 (0.0011)

NERC to CP84 (2) -61266.3757 3.1827e-004 (0.0178)
-45648.4157 -1.5463e-004 4.5681e-004 (0.0214)
-65587.8363 7.4224e-007 -6.7086e-005 1.0909e-004 (0.0104)

NERC to CP85 (1) -106151.4393 1.2126e-004 (0.0110)
-42476.3640 1.3321e-005 1.5073e-005 (0.0039)
-70537.2357 -1.0942e-005 -8.9497e-006 1.2786e-005 (0.0036)

NERC to CP86 (1) -93772.5115 6.6669e-006 (0.0026)
-42468.4633 -2.6185e-006 2.0947e-006 (0.0014)
-68087.4686 -6.4257e-007 -3.0415e-008 7.9184e-007 (0.0009)

NERC to CP87 (1) -84538.8190 7.6783e-005 (0.0088)
-49667.2686 -1.3319e-005 7.4000e-005 (0.0086)
-74911.3669 -5.3688e-006 -1.2655e-005 2.3674e-005 (0.0049)

NERC to FLT01 (2) -129813.6056 8.6938e-007 (0.0009)
-62250.2384 -1.5289e-007 4.8635e-007 (0.0007)
-99418.2405 -7.3869e-008 -1.4986e-007 2.5170e-007 (0.0005)

NERC to ICT4 (10) 52091.9489 4.2645e-007 (0.0007)
-180075.7371 -3.0874e-008 3.6318e-007 (0.0006)
-212455.3974 -2.6083e-008 -1.5830e-007 1.8906e-007 (0.0004)

NERC to ICT4 (11) 52091.9610 4.3093e-007 (0.0007)
-180075.6752 -3.2941e-008 3.6459e-007 (0.0006)
-212455.4416 -2.3215e-008 -1.5982e-007 1.8976e-007 (0.0004)

NERC to ICT5 (10) 54189.8657 3.8642e-007 (0.0006)
-168891.0961 -3.0041e-008 3.3374e-007 (0.0006)
-197722.5340 -1.9935e-008 -1.4336e-007 1.7116e-007 (0.0004)

NERC to ICT5 (11) 54189.8686 3.8678e-007 (0.0006)
-168891.0761 -3.1695e-008 3.2589e-007 (0.0006)
-197722.5524 -1.9866e-008 -1.4180e-007 1.6892e-007 (0.0004)

NERC to NEAP (10) -113992.8857 2.3466e-007 (0.0005)
35082.2884 -1.5522e-008 1.2383e-007 (0.0004)
19628.4981 -1.7336e-008 -5.5965e-008 7.2536e-008 (0.0003)



NERC to NEAP (5) -113992.8793 1.2786e-007 (0.0004)
35082.2820 -1.0759e-008 1.0653e-007 (0.0003)
19628.5073 -7.6943e-009 -4.6430e-008 5.7595e-008 (0.0002)

NERC to NEAP (6) -113992.8802 1.3319e-007 (0.0004)
35082.3141 -1.1717e-008 1.0538e-007 (0.0003)
19628.4833 -8.1256e-009 -4.6469e-008 5.7858e-008 (0.0002)

NERC to NEMC (5) -171697.7081 2.0144e-007 (0.0004)
37673.7102 -1.6904e-008 1.6790e-007 (0.0004)
10666.4785 -1.2880e-008 -7.3207e-008 9.0743e-008 (0.0003)

NERC to NEMC (6) -171697.7086 2.0919e-007 (0.0005)
37673.7442 -1.8581e-008 1.6577e-007 (0.0004)
10666.4545 -1.3311e-008 -7.3039e-008 9.0848e-008 (0.0003)

OKBF to CP80 (1) 27163.1260 3.2117e-004 (0.0179)
169497.0395 -1.6035e-004 1.1622e-004 (0.0108)
219184.4875 -1.0475e-005 -3.2913e-006 2.3206e-005 (0.0048)

OKBF to CP17 (1) 62070.2203 4.2536e-004 (0.0206)
194822.1748 4.2889e-005 3.5881e-004 (0.0189)
256314.4198 -6.0777e-005 -1.3575e-004 1.8319e-004 (0.0135)

OKBF to CP18 (1) 72050.5827 7.1535e-004 (0.0267)
197398.0774 -3.4039e-004 2.6577e-004 (0.0163)
261279.5906 -7.3363e-005 2.4531e-005 5.9866e-005 (0.0077)

OKBF to CP24 (1) -11672.1238 4.2891e-005 (0.0065)
162637.3632 1.4595e-005 8.1524e-005 (0.0090)
202933.5577 -5.4060e-006 -1.6109e-005 1.7061e-005 (0.0041)

OKBF to CP25 (1) 19074.5372 1.0917e-005 (0.0033)
136751.9787 -7.1765e-006 1.4023e-005 (0.0037)
177833.3198 1.1980e-007 -2.0039e-006 3.0119e-006 (0.0017)

OKBF to CP26 (1) 19967.6404 1.1639e-005 (0.0034)
141660.9743 -1.0091e-006 6.4444e-006 (0.0025)
184007.0636 -1.0883e-006 -3.4031e-006 4.8020e-006 (0.0022)

OKBF to CP27 (1) 11072.5992 8.2983e-006 (0.0029)
146280.6834 -2.5643e-006 9.8359e-006 (0.0031)
187866.1830 -3.0983e-007 -3.2926e-006 3.5144e-006 (0.0019)

OKBF to CP28 (1) 10088.5635 1.4492e-005 (0.0038)
141044.3210 -1.9350e-006 5.2356e-006 (0.0023)
181279.5997 -1.3714e-006 -2.2212e-006 4.2740e-006 (0.0021)



OKBF to CP29 (1) 1819.6668 5.5301e-006 (0.0024)
140721.4137 -1.3753e-006 1.7538e-006 (0.0013)
179114.7661 -5.8132e-007 -6.1161e-007 1.0998e-006 (0.0010)

OKBF to CP30 (1) 10650.8521 3.4370e-005 (0.0059)
135729.6336 -1.5168e-005 1.1872e-005 (0.0034)
174826.5556 -3.2941e-006 8.2712e-007 2.8819e-006 (0.0017)

OKBF to CP31 (1) 15553.9276 5.9504e-006 (0.0024)
131457.2448 -3.3856e-006 7.8265e-006 (0.0028)
170625.7584 6.8535e-008 -1.2587e-006 1.9040e-006 (0.0014)

OKBF to CP32 (1) 6455.3935 4.6695e-005 (0.0068)
130709.9443 -1.8239e-005 1.3214e-005 (0.0036)
167810.9867 -3.5382e-006 -1.7722e-006 5.9710e-006 (0.0024)

OKBF to CP33 (1) 634.3775 3.4650e-004 (0.0186)
134574.0286 -1.1732e-004 8.4200e-005 (0.0092)
171243.7560 -3.5183e-005 -1.2445e-005 5.3705e-005 (0.0073)

OKBF to CP35 (1) -19223.7689 1.2732e-004 (0.0113)
133685.0858 -8.2518e-006 1.7756e-004 (0.0133)
166004.0394 3.7516e-006 -2.0376e-005 4.6909e-005 (0.0068)

OKBF to CP36 (1) -13329.6238 1.1773e-005 (0.0034)
138284.8012 -7.3893e-006 1.3706e-005 (0.0037)
172819.7148 4.7961e-008 -2.1038e-006 3.2191e-006 (0.0018)

OKBF to CP39 (1) -5483.5431 1.9539e-004 (0.0140)
145052.9333 -5.7443e-005 2.4384e-004 (0.0156)
182857.7086 4.2984e-006 -1.0238e-005 3.6271e-005 (0.0060)

OKBF to CP40 (1) -12740.7065 1.2084e-005 (0.0035)
149800.0987 3.6826e-006 3.4086e-005 (0.0058)
187145.3449 -1.2556e-006 -6.7621e-006 5.5542e-006 (0.0024)

OKBF to CP41 (1) -4307.5603 9.0953e-006 (0.0030)
151486.7699 -2.7588e-006 2.8138e-006 (0.0017)
190969.2075 -7.7842e-007 -3.7799e-007 1.2173e-006 (0.0011)

OKBF to CP42 (1) -11504.5525 3.3579e-005 (0.0058)
155921.7714 -5.4966e-007 1.2885e-005 (0.0036)
194860.9847 -1.9787e-006 -6.8973e-007 3.3236e-006 (0.0018)

OKBF to CP43 (1) -1485.4736 2.7064e-005 (0.0052)
157279.2557 -4.7679e-006 7.4292e-006 (0.0027)
198567.9281 -4.2883e-006 -3.6089e-006 7.2867e-006 (0.0027)



OKBF to CP44 (1) 4447.2839 1.3042e-005 (0.0036)
152419.2060 -1.9488e-006 5.1443e-006 (0.0023)
193950.0163 -1.2769e-006 -2.0047e-006 2.5445e-006 (0.0016)

OKBF to CP45 (1) 11596.9243 1.0205e-005 (0.0032)
156524.6334 5.8643e-007 1.1911e-005 (0.0035)
200354.8919 7.4005e-007 -4.7121e-007 4.3193e-006 (0.0021)

OKBF to CP46 (1) 20040.8610 2.3652e-006 (0.0015)
153056.0461 -5.8252e-007 2.0958e-006 (0.0014)
197947.4375 -5.2117e-008 -7.4261e-007 9.1733e-007 (0.0010)

OKBF to CP47 (1) 15355.5507 2.3238e-005 (0.0048)
151758.8565 -2.8383e-006 9.1681e-006 (0.0030)
195407.5437 -2.2888e-006 -4.4085e-006 7.7832e-006 (0.0028)

OKBF to CP48 (1) 2552.7425 3.5368e-006 (0.0019)
146736.9837 1.3510e-007 2.0008e-006 (0.0014)
186662.3145 -3.4765e-007 -6.7804e-007 7.5538e-007 (0.0009)

OKBF to CP49 (1) 16848.2065 3.8243e-006 (0.0020)
146603.4066 7.7040e-008 4.4175e-006 (0.0021)
189469.9133 -3.0499e-007 -1.4484e-006 1.4722e-006 (0.0012)

OKBF to CP50 (1) 21935.6641 3.5394e-005 (0.0059)
146512.7723 -1.7397e-005 3.4899e-005 (0.0059)
190382.9772 1.1845e-006 -6.9947e-006 1.0957e-005 (0.0033)

OKBF to CP54 (1) 60363.7326 7.3290e-005 (0.0086)
176360.2562 -2.5479e-005 2.2724e-005 (0.0048)
233978.7370 -6.7635e-006 -2.0825e-006 1.0087e-005 (0.0032)

OKBF to CP55 (1) 71808.7315 7.8584e-005 (0.0089)
173522.4048 -1.9949e-005 2.2935e-005 (0.0048)
232788.9133 -6.8212e-006 -7.6524e-006 1.8929e-005 (0.0044)

OKBF to CP69 (1) 56858.3086 1.5785e-005 (0.0040)
157988.4603 5.1529e-006 3.1207e-005 (0.0056)
211307.1664 -1.7411e-006 -6.0134e-006 6.7889e-006 (0.0026)

OKBF to CP70 (1) 49188.8524 7.3413e-006 (0.0027)
174109.3372 1.9689e-006 7.8640e-006 (0.0028)
229085.9453 -3.7199e-007 -2.0325e-006 2.5045e-006 (0.0016)

OKBF to CP71 (1) 48030.0493 1.5725e-005 (0.0040)
167768.1062 -4.1260e-006 2.0152e-005 (0.0045)
221216.6921 -6.2733e-007 -6.4497e-006 6.4458e-006 (0.0025)



OKBF to CP72 (1) 36590.1375 1.2232e-004 (0.0111)
158406.2965 -1.7636e-005 5.0083e-005 (0.0071)
207795.6773 -1.2412e-005 -2.4859e-005 4.1494e-005 (0.0064)

OKBF to CP73 (1) 70566.5070 1.7937e-004 (0.0134)
166499.9828 -1.3109e-004 2.3293e-004 (0.0153)
224110.5044 1.1827e-005 -3.4295e-005 3.8084e-005 (0.0062)

OKBF to CP76 (1) 26576.0677 1.3309e-004 (0.0115)
175863.6059 -6.3288e-005 5.0656e-005 (0.0071)
226708.3568 -1.3882e-005 5.0604e-006 1.0876e-005 (0.0033)

OKBF to CP77 (1) 39302.9011 4.4516e-006 (0.0021)
176749.9731 -6.2541e-007 3.5365e-006 (0.0019)
230386.3380 -1.9269e-007 -1.4936e-006 1.8212e-006 (0.0013)

OKBF to CP78 (1) 70110.7313 1.3938e-004 (0.0118)
155172.4343 6.4293e-005 2.5863e-004 (0.0161)
210459.6300 -1.9797e-005 -5.3209e-005 5.6442e-005 (0.0075)

OKBF to CP79 (2) 63227.9104 4.1905e-005 (0.0065)
170742.5839 6.8352e-006 9.2249e-005 (0.0096)
227719.5328 -3.2572e-006 -1.6955e-005 1.9514e-005 (0.0044)

OKBF to CP82 (1) 47063.0410 4.6218e-005 (0.0068)
161841.8916 -1.3810e-005 6.2056e-005 (0.0079)
213961.9505 -2.1231e-007 -1.5656e-005 1.7682e-005 (0.0042)

OKBF to CP83 (1) 58058.2923 4.8703e-004 (0.0221)
164351.1503 -6.4521e-005 1.8417e-004 (0.0136)
219128.3601 -2.8589e-006 -7.7652e-005 1.5125e-004 (0.0123)

OKBF to CP84 (1) 70898.2777 7.9709e-006 (0.0028)
160267.8447 -2.0177e-006 1.0302e-005 (0.0032)
216688.1974 -8.1802e-007 -1.3025e-006 2.4762e-006 (0.0016)

OKBF to CP85 (1) 26013.1210 3.1496e-004 (0.0177)
163439.9305 3.6237e-005 4.0890e-005 (0.0064)
211738.8057 -2.9310e-005 -2.4030e-005 3.3762e-005 (0.0058)

OKBF to CP86 (1) 38392.1178 1.9265e-005 (0.0044)
163447.7986 -7.5954e-006 6.1772e-006 (0.0025)
214188.5650 -1.7813e-006 -1.1325e-007 2.2724e-006 (0.0015)

OKBF to CP87 (1) 47625.7736 2.0023e-004 (0.0142)
156249.0098 -3.5135e-005 2.1310e-004 (0.0146)
207364.6677 -1.5149e-005 -3.7280e-005 6.8993e-005 (0.0083)



OKBF to FLT01 (1) 2350.9644 1.6038e-006 (0.0013)
143666.1148 -4.0659e-010 2.3139e-006 (0.0015)
182857.7829 -2.2572e-007 -8.1339e-007 8.9533e-007 (0.0009)

OKBF to FLT02 (2) 2244.6119 7.1186e-006 (0.0027)
142663.0404 -2.6137e-007 8.2315e-006 (0.0029)
181607.8777 5.6886e-007 -1.0994e-006 2.6408e-006 (0.0016)

OKBF to FLT03 (1) 58494.7359 1.8645e-006 (0.0014)
166830.2146 -7.0636e-007 2.6348e-006 (0.0016)
222202.0080 -1.9845e-008 -7.1169e-007 6.3832e-007 (0.0008)

OKBF to FLT04 (1) 56866.8022 1.6989e-006 (0.0013)
167103.7631 -5.8137e-007 2.2555e-006 (0.0015)
222163.5750 -3.5025e-008 -6.3240e-007 5.9294e-007 (0.0008)

OKBF to ICT4 (1) 184256.5440 5.1176e-007 (0.0007)
25840.5970 -6.9282e-008 3.2017e-007 (0.0006)
69820.6027 -2.8366e-008 -1.4121e-007 1.6125e-007 (0.0004)

OKBF to ICT4 (11) 184256.5464 5.0478e-007 (0.0007)
25840.6681 -6.1853e-008 3.1830e-007 (0.0006)
69820.5503 -2.9008e-008 -1.4118e-007 1.6127e-007 (0.0004)

OKBF to ICT4 (2) 184256.5502 6.6790e-007 (0.0008)
25840.6231 -6.5975e-008 3.9440e-007 (0.0006)
69820.5891 -3.4325e-008 -1.6862e-007 1.8799e-007 (0.0004)

OKBF to ICT5 (5) 186354.4662 5.3233e-007 (0.0007)
37025.2043 -6.8144e-008 3.4230e-007 (0.0006)
84553.4925 -2.9442e-008 -1.5050e-007 1.7215e-007 (0.0004)

OKBF to ICT5 (6) 186354.4642 6.8646e-007 (0.0008)
37025.2076 -5.7730e-009 3.7474e-007 (0.0006)
84553.4859 -7.0790e-008 -1.7511e-007 2.1205e-007 (0.0005)

OKBF to ICT5 (7) 186354.4534 4.9571e-007 (0.0007)
37025.2365 -5.6219e-008 3.4916e-007 (0.0006)
84553.4621 -3.3476e-008 -1.4984e-007 1.7340e-007 (0.0004)

OKBF to MIDWAY (1) 11782.9355 1.4718e-006 (0.0012)
148155.0904 -4.1022e-007 1.0476e-006 (0.0010)
190322.9821 -1.9565e-008 -3.9247e-007 4.7712e-007 (0.0007)

OKBF to MIDWAY (4) 11782.9150 1.0269e-005 (0.0032)
148155.1209 5.0073e-006 1.0625e-005 (0.0033)
190322.9598 -1.1234e-006 -3.0706e-006 6.5907e-006 (0.0026)



OKBF to MIDWAY (5) 11782.8860 7.6270e-006 (0.0028)
 148155.0850 2.5960e-006 8.5386e-006 (0.0029)
 190322.9742 6.0964e-008 -1.2066e-006 4.5002e-006 (0.0021)

OKBF to NEAP (10) 18171.6894 1.8384e-006 (0.0014)
 240998.5468 -2.3270e-008 1.0490e-006 (0.0010)
 301904.5762 -2.1615e-007 -5.1036e-007 6.4399e-007 (0.0008)

OKBF to NEAP (11) 18171.7045 1.3812e-006 (0.0012)
 240998.6188 -1.4919e-007 9.8711e-007 (0.0010)
 301904.5103 -1.1048e-007 -4.3467e-007 5.1937e-007 (0.0007)

OKBF to NEAP (9) 18171.7008 1.8540e-006 (0.0014)
 240998.5566 -2.5505e-008 1.0543e-006 (0.0010)
 301904.5497 -2.1312e-007 -5.0749e-007 6.3925e-007 (0.0008)

OKBF to NEMC (7) -39533.1150 1.4964e-006 (0.0012)
 243589.9917 -1.9041e-007 9.4995e-007 (0.0010)
 292942.5262 -1.0839e-007 -4.2795e-007 5.0632e-007 (0.0007)

OKBF to NERC (11) 132164.5887 1.5095e-006 (0.0012)
 205916.2872 -2.4252e-007 9.5406e-007 (0.0010)
 282276.0368 -8.3316e-008 -4.1237e-007 4.8171e-007 (0.0007)

OUTPUT VECTOR RESIDUALS (East, North, Height - Local Level)

SESSION NAME	-- RE --	-- RN --	-- RH --	- PPM -	DIST -	STD -
(m)	(m)	(m)	(km)	(m)		
CP18 to CP74 (1)	-0.0054	0.0097	-0.0533	6.760	8.1	0.0403
CP24 to CP40 (1)	0.0196	-0.0146	0.0121	1.335	20.4	0.0336
CP25 to CP31 (1)	-0.0076	-0.0216	0.0185	3.064	9.6	0.0221
CP26 to CP27 (1)	0.0101	0.0033	0.0220	2.279	10.7	0.0223
CP26 to CP28 (1)	0.0169	0.0096	0.0212	2.802	10.3	0.0217
CP29 to CP33 (1)	-0.0097	0.0036	0.0165	1.939	10.1	0.0238
CP29 to CP39 (1)	0.0148	0.0141	-0.0159	2.787	9.3	0.0304
CP30 to CP32 (1)	-0.0242	-0.0037	-0.0154	3.019	9.6	0.0248
CP32 to CP33 (1)	0.0060	0.0072	0.0257	3.518	7.8	0.0247
CP36 to CP38 (1)	0.0063	-0.0082	0.0268	2.523	11.4	0.0236
CP36 to FLT02 (1)	0.0158	0.0228	0.0226	1.947	18.4	0.0222
CP38 to FLT01 (1)	0.0030	0.0092	-0.0240	1.611	16.1	0.0231
CP38 to FLT02 (1)	0.0014	0.0209	-0.0294	2.247	16.1	0.0230
CP39 to FLT02 (1)	0.0094	-0.0003	0.0000	1.148	8.2	0.0273



CP41 to CP42 (1)	-0.0115	-0.0131	0.0187	2.741	9.3	0.0269
CP41 to CP43 (1)	-0.0086	0.0270	-0.0083	2.963	10.0	0.0233
CP42 to CP43 (1)	0.0176	0.0483	-0.0059	4.806	10.8	0.0298
CP44 to CP45 (1)	0.0064	0.0127	0.0105	1.691	10.4	0.0227
CP44 to MIDWAY (1)	0.0035	0.0040	0.0031	0.665	9.2	0.0224
CP45 to CP48 (1)	-0.0052	-0.0164	-0.0114	1.081	19.1	0.0226
CP46 to CP47 (1)	-0.0219	-0.0143	-0.0615 \$	12.182	5.5	0.0120
CP48 to FLT01 (1)	0.0109	-0.0208	0.0369 \$	8.947	4.9	0.0141
CP48 to MIDWAY (1)	0.0002	0.0115	0.0038	1.209	10.0	0.0218
CP49 to CP50 (1)	0.0163	-0.0120	0.0215	5.712	5.2	0.0125
CP54 to CP55 (1)	-0.0057	-0.0167	-0.0338	3.214	11.9	0.0218
CP70 to CP71 (1)	0.0119	-0.0173	-0.0064	2.161	10.2	0.0238
CP70 to CP79 (1)	0.0225	0.0192	0.0010	2.043	14.5	0.0261
CP72 to CP82 (1)	0.0145	-0.0113	-0.0149	1.879	12.6	0.0229
CP72 to CP86 (1)	-0.0062	-0.0017	-0.0069	1.129	8.3	0.0209
CP72 to FLT04 (1)	-0.0311	-0.0135	0.0120	1.364	26.3	0.0245
CP73 to CP84 (1)	-0.0208	-0.0001	-0.0168	2.759	9.7	0.0239
CP76 to CP77 (1)	0.0179	-0.0092	0.0289	2.655	13.3	0.0214
CP76 to CP79 (1)	-0.0331	0.0532	-0.0582 \$	2.309	37.0	0.0224
CP76 to CP80 (1)	-0.0203	-0.0086	0.0283	3.636	9.9	0.0303
CP78 to CP83 (1)	-0.0092	0.0220	-0.3241 \$	18.620	17.5	0.0245
CP79 to CP80 (1)	0.0321	0.0320	0.0577	1.978	37.1	0.0501
CP82 to CP87 (1)	0.0005	0.0084	0.0119	1.681	8.7	0.0243
CP82 to FLT03 (1)	-0.0296	-0.0088	0.0112	2.199	14.9	0.0228
CP82 to FLT04 (1)	-0.0268	-0.0063	-0.0032	2.008	13.8	0.0228
FLT01 to FLT02 (3)	0.0150	0.0190	0.0137	17.328	1.6	0.0139
FLT03 to FLT04 (1)	0.0015	-0.0013	-0.0064	4.035	1.7	0.0123
FLT03 to MIDWAY (1)	-0.0020	0.0000	0.0003	0.035	59.6	0.0010
ICT4 to CP35 (1)	0.0456	-0.0207	0.0315	0.237	249.6	0.0209
ICT4 to CP38 (1)	0.0016	0.0003	-0.0017	0.009	256.8	0.0137
ICT4 to CP73 (1)	0.0286	-0.0102	0.0168	0.146	237.7	0.0181
ICT4 to CP78 (1)	0.0170	0.0171	-0.0539 \$	0.265	222.6	0.0183
ICT4 to CP79 (1)	0.0217	0.0167	-0.0460 \$	0.218	246.1	0.0114
ICT4 to CP82 (1)	0.0065	0.0052	-0.0011	0.035	241.0	0.0102
ICT4 to CP83 (1)	0.1636	-0.0069	-0.0039 \$	0.684	239.6	0.0258
ICT4 to CP84 (1)	0.0223	-0.0021	0.0001 \$	0.098	229.1	0.0039
ICT4 to CP85 (1)	0.0622	0.0045	-0.0370 \$	0.286	253.2	0.0189
ICT4 to CP86 (1)	-0.0107	0.0023	-0.0288 \$	0.125	247.1	0.0049
ICT4 to FLT02 (2)	0.0122	0.0084	-0.0269 \$	0.126	243.5	0.0044
ICT5 to CP79 (1)	0.0255	0.0278	-0.0378 \$	0.231	231.4	0.0109
ICT5 to CP17 (1)	-0.0015	0.0147	0.0049	0.059	264.3	0.0264
ICT5 to CP35 (1)	0.0217	0.0048	0.0019	0.093	241.3	0.0204
ICT5 to CP38 (1)	-0.0049	0.0197	-0.0333	0.157	247.3	0.0133
ICT5 to CP73 (1)	0.0175	0.0075	0.0025	0.086	222.8	0.0172
ICT5 to CP78 (1)	-0.0037	0.0225	-0.0422	0.230	208.1	0.0174
ICT5 to CP82 (1)	-0.0100	0.0156	-0.0128	0.099	227.4	0.0097
ICT5 to CP84 (1)	0.0060	0.0134	-0.0113 \$	0.086	214.4	0.0037
ICT5 to CP85 (1)	0.0377	0.0226	-0.0330 \$	0.229	240.6	0.0182



ICT5 to CP86 (1)	-0.0262	0.0182	-0.0405 \$	0.221	233.8	0.0047
ICT5 to FLT02 (2)	0.0089	0.0256	-0.0384 \$	0.201	233.4	0.0043
ICT5 to ICT4 (6)	-0.0051	0.0223	-0.0139	1.435	18.6	0.0219
NEAP to CP20 (1)	0.0096	-0.0143	0.0183 \$	0.294	85.4	0.0076
NEAP to CP28 (1)	-0.0292	-0.0033	-0.0133 \$	0.205	156.9	0.0027
NEAP to CP35 (1)	-0.0142	-0.0152	-0.0017	0.118	177.2	0.0164
NEAP to CP38 (1)	-0.0102	0.0028	-0.0028	0.070	156.8	0.0095
NEAP to CP54 (1)	0.0010	-0.0004	-0.0074	0.073	102.8	0.0051
NEAP to CP65 (1)	0.0068	-0.0073	0.0023	0.146	69.9	0.0088
NEAP to CP66 (1)	0.0107	-0.0061	0.0409 \$	0.539	79.3	0.0092
NEAP to CP73 (1)	-0.0232	0.0068	-0.0133	0.230	119.8	0.0118
NEAP to CP77 (1)	-0.0045	-0.0015	-0.0013 \$	0.050	98.4	0.0015
NEAP to CP79 (1)	-0.0048	-0.0102	0.0141	0.161	111.7	0.0069
NEAP to CP82 (1)	-0.0084	-0.0040	0.0149	0.144	121.8	0.0065
NEAP to CP84 (1)	-0.0108	-0.0027	-0.0016 \$	0.087	128.7	0.0027
NEAP to CP85 (1)	-0.0398	-0.0067	0.0285 \$	0.415	119.2	0.0114
NEAP to CP86 (1)	0.0138	-0.0050	0.0325 \$	0.300	118.8	0.0030
NEAP to FLT01 (2)	-0.0186	-0.0085	-0.0046 \$	0.136	154.6	0.0012
NEMC to CP29 (1)	0.0063	-0.0052	0.0140 \$	0.102	158.9	0.0022
NEMC to CP20 (1)	-0.0020	-0.0019	0.0222	0.183	122.2	0.0089
NEMC to CP24 (1)	0.0027	-0.0041	0.0105	0.093	124.2	0.0072
NEMC to CP30 (1)	-0.0193	0.0012	0.0120 \$	0.136	167.6	0.0039
NEMC to CP32 (1)	0.0276	-0.0058	0.0166 \$	0.187	174.7	0.0070
NEMC to CP33 (1)	0.0220	-0.0054	0.0089	0.144	168.3	0.0184
NEMC to CP35 (1)	-0.0342	0.0012	-0.0090	0.210	169.1	0.0159
NEMC to CP36 (1)	0.0050	-0.0010	0.0118 \$	0.080	161.9	0.0043
NEMC to CP38 (1)	0.0017	-0.0071	-0.0124	0.096	150.6	0.0093
NEMC to CP39 (1)	0.0013	-0.0067	0.0066	0.063	151.6	0.0162
NEMC to CP40 (1)	-0.0051	-0.0038	0.0094	0.079	143.9	0.0050
NEMC to CP48 (2)	-0.0333	-0.0123	0.0025	0.238	149.8	0.0197
NEMC to CP65 (1)	-0.0092	0.0097	-0.0029	0.126	108.4	0.0102
NEMC to CP69 (1)	-0.0071	0.0087	-0.0400 \$	0.273	152.6	0.0040
NEMC to CP72 (1)	-0.0151	-0.0060	0.0050	0.119	142.5	0.0094
NEMC to CP73 (1)	-0.0326	0.0068	-0.0263 \$	0.281	151.0	0.0134
NEMC to CP79 (1)	-0.0123	-0.0039	-0.0072	0.104	141.8	0.0078
NEMC to CP80 (1)	-0.0025	-0.0018	-0.0084	0.072	124.0	0.0126
NEMC to CP82 (1)	-0.0004	-0.0120	-0.0031	0.087	142.9	0.0071
NEMC to CP83 (1)	-0.0293	-0.0039	0.0496 \$	0.396	145.8	0.0184
NEMC to CP84 (1)	-0.0073	-0.0031	-0.0100 \$	0.081	158.0	0.0030
NEMC to CP85 (1)	-0.0077	-0.0053	0.0057	0.083	131.6	0.0120
NEMC to FLT01 (3)	0.0696	0.0751	-0.0729 \$	0.814	154.5	0.0019
NEMC to FLT02 (1)	-0.0031	-0.0053	0.0154 \$	0.106	156.0	0.0017
NEMC to NEAP (3)	0.0031	-0.0003	0.0081 \$	0.149	58.5	0.0004
NERC to CP20 (1)	-0.0072	0.0150	-0.0333 \$	0.462	80.7	0.0075
NERC to CP30 (1)	-0.0026	-0.0005	0.0025	0.021	176.7	0.0041
NERC to CP35 (1)	0.0020	-0.0015	-0.0276	0.136	204.1	0.0180
NERC to CP38 (1)	-0.0111	0.0040	0.0177	0.114	187.1	0.0107
NERC to CP50 (1)	-0.0365	0.0147	-0.0443 \$	0.382	155.3	0.0066



NERC to CP54 (1)	0.0019	-0.0035	0.0140	0.159	91.4	0.0049
NERC to CP55 (1)	0.0086	-0.0015	0.0039	0.113	84.5	0.0051
NERC to CP66 (1)	-0.0107	0.0064	-0.0440 \$	0.521	87.8	0.0095
NERC to CP69 (1)	-0.0046	-0.0040	0.0282 \$	0.253	114.0	0.0036
NERC to CP71 (1)	-0.0021	-0.0003	0.0009	0.021	110.7	0.0035
NERC to CP73 (1)	-0.0866	-0.0615	0.0736 \$	1.383	93.4	0.0419
NERC to CP73 (2)	-0.0070	0.0459	-0.0231	0.555	93.4	0.0318
NERC to CP74 (1)	0.0004	-0.0004	0.0003	0.011	60.8	0.0038
NERC to CP78 (1)	-0.0115	0.0091	-0.0066	0.149	107.6	0.0116
NERC to CP79 (1)	0.0030	-0.0132	0.0243 \$	0.294	94.7	0.0065
NERC to CP82 (1)	-0.0050	0.0069	0.0028	0.076	117.7	0.0064
NERC to CP83 (1)	-0.0123	-0.0001	0.0145	0.179	105.9	0.0159
NERC to CP84 (1)	-0.0029	-0.0037	0.0244 \$	0.246	100.7	0.0032
NERC to CP84 (2)	0.0730	-0.0312	0.0304	0.844	100.7	0.0297
NERC to CP85 (1)	-0.0012	-0.0036	-0.0001	0.028	134.3	0.0122
NERC to CP86 (1)	0.0112	-0.0110	0.0045 \$	0.132	123.4	0.0031
NERC to CP87 (1)	0.0022	-0.0079	0.0070	0.087	123.4	0.0132
NERC to FLT01 (2)	-0.0214	-0.0062	0.0127 \$	0.147	175.0	0.0013
NERC to ICT4 (10)	-0.0088	-0.0061	-0.0678 \$	0.242	283.3	0.0010
NERC to ICT4 (11)	-0.0120	-0.0111	0.0090 \$	0.066	283.3	0.0010
NERC to ICT5 (10)	-0.0040	-0.0277	-0.0104 \$	0.112	265.6	0.0009
NERC to ICT5 (11)	-0.0040	-0.0262	0.0169 \$	0.118	265.6	0.0009
NERC to NEAP (10)	-0.0000	0.0059	-0.0087 \$	0.087	120.9	0.0007
NERC to NEAP (5)	-0.0074	0.0023	-0.0186 \$	0.167	120.9	0.0005
NERC to NEAP (6)	-0.0013	0.0003	0.0209 \$	0.174	120.9	0.0005
NERC to NEMC (5)	-0.0086	0.0039	-0.0088 \$	0.073	176.1	0.0007
NERC to NEMC (6)	-0.0025	0.0007	0.0323 \$	0.184	176.1	0.0007
OKBF to CP80 (1)	0.0388	-0.0038	0.0315	0.180	278.4	0.0215
OKBF to CP17 (1)	0.0026	-0.0211	-0.0069	0.068	327.9	0.0311
OKBF to CP18 (1)	-0.0543	0.0224	-0.0162	0.182	335.3	0.0323
OKBF to CP24 (1)	0.0029	0.0082	-0.0245	0.100	260.3	0.0119
OKBF to CP25 (1)	0.0013	-0.0010	0.0013	0.009	225.1	0.0053
OKBF to CP26 (1)	0.0067	0.0001	0.0015	0.029	233.1	0.0048
OKBF to CP27 (1)	-0.0021	0.0003	-0.0012	0.010	238.4	0.0047
OKBF to CP28 (1)	0.0788	0.0062	0.0612 \$	0.435	229.9	0.0049
OKBF to CP29 (1)	-0.0097	0.0082	-0.0241 \$	0.120	227.8	0.0029
OKBF to CP30 (1)	0.0204	0.0080	-0.0410 \$	0.210	221.6	0.0070
OKBF to CP31 (1)	-0.0006	0.0006	-0.0007	0.005	216.0	0.0040
OKBF to CP32 (1)	-0.0152	0.0039	-0.0183	0.113	212.8	0.0081
OKBF to CP33 (1)	-0.0409	0.0049	-0.0246	0.220	217.8	0.0220
OKBF to CP35 (1)	0.0081	0.0330	0.0172	0.178	214.0	0.0188
OKBF to CP36 (1)	0.0001	-0.0014	-0.0134	0.061	221.7	0.0054
OKBF to CP39 (1)	-0.0092	-0.0006	0.0041	0.043	233.5	0.0218
OKBF to CP40 (1)	0.0076	0.0088	-0.0221 \$	0.104	240.1	0.0072
OKBF to CP41 (1)	-0.0020	0.0004	-0.0001	0.008	243.8	0.0036
OKBF to CP42 (1)	0.0078	0.0042	-0.0044	0.040	249.8	0.0071
OKBF to CP43 (1)	0.0016	-0.0018	-0.0003	0.009	253.3	0.0065
OKBF to CP44 (1)	0.0016	-0.0000	0.0003	0.007	246.7	0.0046



OKBF to CP45 (1)	-0.0014	-0.0014	-0.0000	0.008	254.5	0.0051
OKBF to CP46 (1)	-0.0047	0.0003	-0.0024	0.021	251.0	0.0023
OKBF to CP47 (1)	0.0402	0.0004	0.0099 \$	0.167	247.9	0.0063
OKBF to CP48 (1)	0.0039	-0.0002	0.0008	0.017	237.4	0.0025
OKBF to CP49 (1)	0.0043	-0.0011	0.0024	0.021	240.2	0.0031
OKBF to CP50 (1)	0.0135	-0.0071	0.0530 \$	0.229	241.2	0.0090
OKBF to CP54 (1)	-0.0230	0.0177	-0.0374 \$	0.158	299.2	0.0103
OKBF to CP55 (1)	-0.0273	0.0072	-0.0136	0.105	299.1	0.0110
OKBF to CP69 (1)	0.0349	-0.0105	0.0163 \$	0.148	269.9	0.0073
OKBF to CP70 (1)	0.0040	0.0006	-0.0007	0.014	291.9	0.0042
OKBF to CP71 (1)	0.0032	0.0024	-0.0051	0.023	281.8	0.0065
OKBF to CP72 (1)	-0.0024	0.0116	-0.0195	0.086	263.8	0.0146
OKBF to CP73 (1)	-0.0007	0.0034	0.0054	0.022	288.0	0.0212
OKBF to CP76 (1)	-0.0126	0.0074	-0.0061	0.055	288.2	0.0140
OKBF to CP77 (1)	0.0177	0.0064	0.0038 \$	0.065	293.0	0.0031
OKBF to CP78 (1)	0.0052	-0.0082	-0.0369	0.141	270.7	0.0213
OKBF to CP79 (2)	-0.0265	0.0486	-0.0214 \$	0.203	291.6	0.0124
OKBF to CP82 (1)	-0.0349	0.0095	-0.0554 \$	0.243	272.4	0.0112
OKBF to CP83 (1)	0.1531	0.0153	0.0383 \$	0.566	280.0	0.0287
OKBF to CP84 (1)	0.0106	-0.0003	-0.0024	0.039	278.7	0.0046
OKBF to CP85 (1)	0.0334	0.0087	-0.0233	0.155	268.7	0.0197
OKBF to CP86 (1)	-0.0276	0.0203	-0.0301 \$	0.168	272.2	0.0053
OKBF to CP87 (1)	0.0023	0.0164	-0.0203	0.099	264.0	0.0220
OKBF to FLT01 (1)	0.0137	-0.0161	0.0476 \$	0.224	232.6	0.0022
OKBF to FLT02 (2)	0.0118	0.0120	-0.0216 \$	0.119	231.0	0.0042
OKBF to FLT03 (1)	-0.0098	0.0019	-0.0021 \$	0.036	284.0	0.0023
OKBF to FLT04 (1)	0.0020	-0.0003	0.0008	0.008	283.8	0.0021
OKBF to ICT4 (1)	-0.0028	0.0096	-0.0302 \$	0.160	198.7	0.0010
OKBF to ICT4 (11)	0.0056	0.0086	0.0577 \$	0.295	198.7	0.0010
OKBF to ICT4 (2)	-0.0050	0.0043	-0.0008 \$	0.033	198.7	0.0011
OKBF to ICT5 (5)	-0.0077	-0.0117	-0.0141 \$	0.096	208.0	0.0010
OKBF to ICT5 (6)	-0.0053	-0.0083	-0.0077 \$	0.060	208.0	0.0011
OKBF to ICT5 (7)	0.0098	-0.0057	0.0282 \$	0.146	208.0	0.0010
OKBF to MIDWAY (1)	-0.0073	0.0006	-0.0055 \$	0.038	241.5	0.0017
OKBF to MIDWAY (4)	0.0182	0.0019	0.0292 \$	0.143	241.5	0.0052
OKBF to MIDWAY (5)	0.0406	0.0153	-0.0115 \$	0.186	241.5	0.0045
OKBF to NEAP (10)	0.0137	0.0101	-0.0808 \$	0.214	386.7	0.0019
OKBF to NEAP (11)	0.0109	0.0159	0.0178 \$	0.068	386.7	0.0017
OKBF to NEAP (9)	0.0041	0.0236	-0.0552 \$	0.156	386.7	0.0019
OKBF to NEMC (7)	-0.0090	0.0157	-0.0417 \$	0.119	383.0	0.0017
OKBF to NERC (11)	0.0056	0.0176	-0.0223 \$	0.077	373.6	0.0017

 RMS 0.0256 0.0150 0.0342

\$ - This session is flagged as a 3-sigma outlier



CONTROL POINT RESIDUALS (ADJUSTMENT MADE)

STA. NAME	-- RE --	-- RN --	-- RH --
	(m)	(m)	(m)
ICT4	0.0005	-0.0007	0.0097
ICT5	0.0007	0.0096	0.0071
NEAP	-0.0003	-0.0055	-0.0084
NEMC	0.0013	-0.0007	0.0013
NERC	-0.0025	-0.0063	-0.0135
OKBF	0.0005	0.0036	-0.0114

RMS	0.0012	0.0054	0.0094

OUTPUT STATION COORDINATES (LAT/LONG/HT)

STA_ID	-- LATITUDE --	-- LONGITUDE --	- ELLHGT -
CP17	39 46 12.76461	-99 18 28.73719	568.5367
CP18	39 49 42.50416	-99 11 52.12073	560.5177
CP20	39 41 06.77954	-99 18 50.98667	528.4865
CP24	39 08 46.81107	-100 05 22.19033	731.0357
CP25	38 51 21.71659	-99 41 18.78888	648.5558
CP26	38 55 39.10021	-99 41 16.53799	641.4262
CP27	38 58 18.53870	-99 47 53.03193	697.1569
CP28	38 53 43.85596	-99 47 56.28894	702.1567
CP29	38 52 13.95926	-99 53 31.98521	691.4370
CP30	38 49 16.32032	-99 46 55.83325	657.2459
CP31	38 46 21.48187	-99 43 05.62808	659.7571
CP32	38 44 24.01992	-99 49 11.70045	675.8653
CP33	38 46 47.87353	-99 53 36.60858	633.3570
CP35	38 43 07.57965	-100 06 59.98652	727.2012
CP36	38 47 52.80245	-100 03 33.03299	657.5967
CP38	38 53 58.55841	-100 04 34.98240	709.8340
CP39	38 54 49.62002	-99 59 01.46697	701.7429
CP40	38 57 47.26165	-100 04 32.48309	743.5027
CP41	39 00 27.47598	-99 58 59.69013	716.5668
CP42	39 03 09.08184	-100 04 26.40734	748.3568
CP43	39 05 45.33386	-99 57 45.82608	694.0479
CP44	39 02 32.14842	-99 53 07.91421	706.5583
CP45	39 07 01.03352	-99 48 44.08556	654.8937
CP46	39 05 19.82714	-99 42 33.31736	678.2902
CP47	39 03 33.57255	-99 45 36.27928	684.9188
CP48	38 57 27.64583	-99 53 44.91116	723.4489



CP49	38 59 25.43010	-99 43 58.85086	697.2480
CP50	39 00 04.11296	-99 40 29.85220	674.8211
CP54	39 30 32.57177	-99 17 34.24064	561.8031
CP55	39 29 42.87292	-99 09 22.40486	550.7038
CP65	39 47 57.79809	-99 25 10.94900	590.1777
CP66	39 41 51.28459	-99 25 11.22602	569.4263
CP69	39 14 39.77945	-99 17 54.78384	631.0787
CP70	39 27 06.89933	-99 25 00.25440	567.1856
CP71	39 21 37.09758	-99 25 04.66804	551.8002
CP72	39 12 12.05410	-99 31 51.13844	659.6396
CP73	39 23 38.69793	-99 09 26.95602	543.5826
CP74	39 54 03.16663	-99 11 33.03749	625.3981
CP76	39 25 25.74184	-99 40 44.82992	617.5916
CP77	39 27 59.58403	-99 32 06.28036	639.2680
CP78	39 14 05.03703	-99 08 30.55498	603.1529
CP79	39 26 11.15386	-99 14 58.12386	506.3640
CP80	39 20 10.10702	-99 39 35.97398	618.9707
CP82	39 16 31.76184	-99 25 04.01202	600.3726
CP83	39 20 08.94736	-99 17 48.25976	574.0955
CP84	39 18 27.19660	-99 08 31.89068	554.3952
CP85	39 14 56.70541	-99 39 40.86601	674.3142
CP86	39 16 40.68398	-99 31 11.82748	621.8943
CP87	39 11 54.81032	-99 24 02.74155	629.7784
FLT01	38 54 49.33768	-99 53 31.25741	712.6701
FLT02	38 53 57.30550	-99 53 28.45460	710.7753
FLT03	39 22 17.75500	-99 17 47.00401	576.8063
FLT04	39 22 16.92944	-99 18 55.96070	547.2495
ICT4	37 37 08.55550	-97 37 56.95825	393.2487
ICT5	37 47 12.01980	-97 37 32.69146	412.1911
MIDWAY	39 00 00.60280	-99 47 37.20055	713.1248
NEAP	40 18 21.07831	-99 54 19.33321	647.2426
NEMC	40 11 57.84815	-100 34 41.39501	740.6803
NERC	40 04 32.25410	-98 31 05.27223	495.0225
OKBF	36 49 40.88160	-99 38 28.84090	539.8226

 OUTPUT VARIANCE/COVARIANCE

2

STA_ID SE/SN/SUP ----- CX matrix (m)-----
 (39.40 %) (not scaled by confidence level)
 (m) (ECEF, XYZ cartesian)
 CP17 0.0132 1.8117e-004
 0.0070 1.7198e-005 1.4794e-004
 0.0134 -2.4801e-005 -5.6085e-005 7.5353e-005



CP18 0.0092 7.7121e-005
0.0063 -2.1070e-005 8.1920e-005
0.0090 -3.3844e-006 -1.8462e-005 4.5680e-005

CP20 0.0023 5.0213e-006
0.0024 4.8984e-007 1.4013e-005
0.0032 -5.8861e-007 -9.1107e-007 1.9271e-006

CP24 0.0030 1.0229e-005
0.0027 3.7426e-006 2.0411e-005
0.0044 -1.4522e-006 -4.1721e-006 4.6110e-006

CP25 0.0033 8.8780e-006
0.0020 -5.1341e-006 1.1825e-005
0.0030 1.6032e-008 -1.8990e-006 2.9834e-006

CP26 0.0029 8.4422e-006
0.0014 -4.4146e-007 6.0521e-006
0.0029 -1.0315e-006 -3.2083e-006 4.5800e-006

CP27 0.0028 7.2963e-006
0.0015 -2.0321e-006 9.3148e-006
0.0031 -3.8575e-007 -3.1709e-006 3.4639e-006

CP28 0.0019 3.4679e-006
0.0006 -2.0247e-007 1.0234e-006
0.0012 -1.0221e-007 -4.7851e-007 7.7776e-007

CP29 0.0015 1.9753e-006
0.0004 -4.7989e-007 6.7205e-007
0.0009 -2.1513e-007 -2.5363e-007 4.3693e-007

CP30 0.0023 4.8406e-006
0.0007 -1.6063e-006 1.2367e-006
0.0009 -3.8065e-007 -7.5951e-008 4.8367e-007

CP31 0.0025 5.3954e-006
0.0016 -2.8367e-006 7.2577e-006
0.0024 3.1521e-008 -1.2441e-006 1.9103e-006

CP32 0.0040 1.4249e-005
0.0013 -5.3377e-006 4.5835e-006
0.0020 -1.2284e-006 -8.8482e-007 2.5316e-006

CP33 0.0060 3.3743e-005
0.0030 -7.1378e-006 1.6958e-005
0.0048 -5.9359e-006 -6.5199e-006 1.7532e-005



CP35 0.0045 1.9960e-005
0.0035 -1.2983e-006 2.7315e-005
0.0047 5.1030e-007 -3.1435e-006 7.4086e-006

CP36 0.0021 3.7465e-006
0.0012 -2.1123e-006 4.5837e-006
0.0019 -2.3167e-008 -8.1403e-007 1.2853e-006

CP38 0.0024 5.6085e-006
0.0016 -6.0516e-008 8.9249e-006
0.0032 -3.6668e-007 -3.5029e-006 3.9859e-006

CP39 0.0045 2.2109e-005
0.0044 7.5119e-006 3.8592e-005
0.0058 1.1562e-006 -4.5750e-006 1.2061e-005

CP40 0.0019 3.8004e-006
0.0018 1.1926e-006 1.0847e-005
0.0031 -4.2903e-007 -2.1968e-006 1.8527e-006

CP41 0.0029 7.6691e-006
0.0010 -2.2481e-006 2.6599e-006
0.0015 -6.6696e-007 -4.4702e-007 1.2260e-006

CP42 0.0045 2.0717e-005
0.0023 4.1305e-007 1.1446e-005
0.0031 -1.1396e-006 -9.7672e-007 3.2026e-006

CP43 0.0042 1.6717e-005
0.0016 -2.6514e-006 6.7895e-006
0.0032 -2.6907e-006 -3.7554e-006 6.7323e-006

CP44 0.0031 9.5689e-006
0.0011 -1.0429e-006 4.7859e-006
0.0024 -1.0745e-006 -1.9981e-006 2.4863e-006

CP45 0.0028 8.2757e-006
0.0025 1.0739e-006 1.0506e-005
0.0029 5.5007e-007 -6.2215e-007 4.1170e-006

CP46 0.0016 2.2346e-006
0.0008 -5.1596e-007 2.0749e-006
0.0015 -6.8001e-008 -7.5205e-007 9.3110e-007

CP47 0.0032 1.0400e-005
0.0018 -4.0733e-007 7.7686e-006
0.0034 -1.6939e-006 -3.8553e-006 6.8325e-006



CP48 0.0016 2.7512e-006
0.0007 2.5020e-007 1.9337e-006
0.0015 -3.2372e-007 -6.8150e-007 7.6042e-007

CP49 0.0019 3.5050e-006
0.0011 1.6340e-007 4.2169e-006
0.0021 -3.0342e-007 -1.4056e-006 1.4562e-006

CP50 0.0029 7.5655e-006
0.0018 -2.3691e-006 8.5314e-006
0.0028 5.1593e-008 -2.0397e-006 3.5825e-006

CP54 0.0027 6.8835e-006
0.0010 -2.3932e-006 2.2498e-006
0.0013 -6.5608e-007 -2.4841e-007 1.0742e-006

CP55 0.0035 1.1599e-005
0.0013 -2.8495e-006 3.7380e-006
0.0021 -1.0220e-006 -1.3555e-006 3.2219e-006

CP65 0.0045 1.6711e-005
0.0029 -1.1413e-005 2.3338e-005
0.0039 -1.2684e-007 -2.2162e-006 4.6095e-006

CP66 0.0045 2.1307e-005
0.0025 3.0454e-006 1.3943e-005
0.0042 -2.5332e-006 -4.6693e-006 8.6035e-006

CP69 0.0013 1.8326e-006
0.0011 3.6638e-007 3.6950e-006
0.0018 -1.7753e-007 -7.1739e-007 8.8711e-007

CP70 0.0024 6.1595e-006
0.0017 1.7991e-006 7.4592e-006
0.0028 -3.8389e-007 -1.9957e-006 2.4812e-006

CP71 0.0019 3.2723e-006
0.0010 -8.1474e-007 4.3212e-006
0.0021 -1.5248e-007 -1.4245e-006 1.4566e-006

CP72 0.0035 1.2140e-005
0.0021 -1.6634e-008 1.1102e-005
0.0041 -2.4701e-006 -5.8735e-006 1.0134e-005

CP73 0.0038 1.2218e-005
0.0023 -7.1745e-006 1.6364e-005
0.0035 5.6820e-007 -2.7732e-006 3.6737e-006



CP74 0.0030 8.4978e-006
0.0016 -2.0187e-006 4.4326e-006
0.0015 -4.3525e-007 4.7256e-007 1.0645e-006

CP76 0.0054 2.6690e-005
0.0031 -9.4275e-006 1.8855e-005
0.0036 -2.9336e-006 -3.9462e-007 7.2150e-006

CP77 0.0009 8.4333e-007
0.0004 -1.2166e-007 7.0899e-007
0.0009 -3.7926e-008 -3.1245e-007 3.7875e-007

CP78 0.0039 1.7024e-005
0.0033 7.6291e-006 3.1724e-005
0.0055 -2.4057e-006 -6.8093e-006 7.6117e-006

CP79 0.0025 6.5097e-006
0.0011 8.6627e-007 2.6186e-006
0.0016 -4.2067e-007 -2.9651e-007 7.2434e-007

CP80 0.0060 3.1570e-005
0.0024 -1.4459e-005 1.4994e-005
0.0033 -8.4988e-007 -1.9180e-006 5.6695e-006

CP82 0.0018 2.9804e-006
0.0012 -6.3845e-007 4.4648e-006
0.0021 -7.2786e-008 -1.1974e-006 1.4294e-006

CP83 0.0059 3.4450e-005
0.0031 -3.2205e-006 1.9918e-005
0.0052 -1.0378e-006 -8.7890e-006 1.7181e-005

CP84 0.0009 6.8657e-007
0.0006 -1.3156e-007 9.3010e-007
0.0009 -7.6045e-008 -1.4174e-007 2.3745e-007

CP85 0.0051 2.7352e-005
0.0012 3.0494e-006 3.4680e-006
0.0026 -2.5028e-006 -2.0588e-006 2.9210e-006

CP86 0.0015 2.0068e-006
0.0005 -7.8062e-007 6.6733e-007
0.0007 -1.9582e-007 -3.2382e-008 2.6303e-007

CP87 0.0051 2.6828e-005
0.0041 3.4098e-006 4.0200e-005
0.0064 -1.9845e-006 -9.6055e-006 1.6383e-005



FLT01 0.0005 2.5707e-007
 0.0003 -3.1118e-008 2.0585e-007
 0.0005 -2.6228e-008 -7.9077e-008 1.0893e-007

FLT02 0.0008 6.3918e-007
 0.0005 -8.0368e-008 9.1411e-007
 0.0009 -1.9815e-008 -2.5229e-007 2.7346e-007

FLT03 0.0009 7.3435e-007
 0.0005 -1.1943e-007 8.6866e-007
 0.0010 -4.1929e-008 -2.8640e-007 3.2075e-007

FLT04 0.0013 1.4764e-006
 0.0007 -4.2830e-007 2.1318e-006
 0.0014 -5.6640e-008 -6.3197e-007 6.0982e-007

ICT4 0.0001 9.9411e-009
 0.0001 6.5128e-009 5.8958e-008
 0.0003 -5.2852e-009 -3.9037e-008 3.5813e-008

ICT5 0.0001 9.9046e-009
 0.0001 6.4700e-009 5.8156e-008
 0.0003 -5.2651e-009 -3.8635e-008 3.5678e-008

MIDWAY 0.0008 6.5695e-007
 0.0004 -1.0356e-007 6.4682e-007
 0.0009 -3.6533e-008 -2.3968e-007 2.9013e-007

NEAP 0.0001 8.5684e-009
 0.0001 5.4316e-009 3.9804e-008
 0.0003 -4.9766e-009 -2.8449e-008 2.8003e-008

NEMC 0.0001 9.3394e-009
 0.0001 6.4521e-009 4.4399e-008
 0.0003 -5.7783e-009 -3.1496e-008 3.1172e-008

NERC 0.0001 7.9864e-009
 0.0001 4.4203e-009 3.7322e-008
 0.0002 -4.0939e-009 -2.6414e-008 2.5668e-008

OKBF 0.0001 9.7651e-009
 0.0001 6.4916e-009 4.8450e-008
 0.0003 -5.4062e-009 -3.1819e-008 2.9244e-008



VARIANCE FACTOR = 190.9046

Note: Values < 1.0 indicate statistics are pessimistic, while values > 1.0 indicate optimistic statistics. Entering this value as the network adjustment scale factor will bring variance factor to one.

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