STATENS KARTVERK

Rapport fra grensemålinger og beregningen Norge – Sverige søndre avsnitt fra Riksrøys B til Riksrøys KBc

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Forord

Etter henvendelse fra Landkart-divisjonen ble Geodesidivisjonen bedt om å bestemme en del riksrøyser, beliggende i Østfolds søndre del, i koordinatsystemet Euref89 med geodetisk nøyaktighet. Samtidig ble det ønsket, om mulig, å finne størrelsen på eventuelle forskjeller mellom den svenske og norske realiseringen av referanserammen Euref89 i området.
På denne bakgrunn ble det utarbeidet en observasjonsplan av geodet Trond Espelund, etter en kort rekognoseringstur i felten, der god nett forbindelse mellom svenske og norske grunnlagspunkter også ble tatt hensyn til.

Målinger

Målingene ble utført med Ashtech Z-Surveyor med Dorne Margolin Ashtech antenner. Alle treføttene ble nøye kalibrert på forhånd. GPS data ble logget med 30 sekunders epoker og alle synlige satellitter over 5 grader ble logget.
I de fleste stasjoner er det samlet data gjennom hele natten. Dette gir oss store valgmuligheter under beregningen av uavhengige vektorkombinasjoner. Det ble stasjonert i flere sentrale grunnlagspunkter gjennom hele kampanjen, hvilket gir oss muligheter for uavhengige dataanalyser ved bruk av geodesiens Gipsy program og presis punktberegning.

Feltmålingene foregikk fra mandag 21 oktober til og med lørdag 26 oktober. Dessverre ble feltarbeidet sinket og vanskeliggjort på grunn av nesten uavbrutt regn. Det ble observert i 9 grenserøyser og 12 grunnlagspunkter.

Beregning

Det ble regnet 67 uavhengige vektorer i området med AOSS (Ashtech Office Suite for Survey). Alle vektorene er regnet som L1 løsninger med fix-løsning. Vektorene ble testet med trekantsummering, og dårligste trekantpresisjon ble 5,5 ppm. De fleste trekantpresisjonene lå mellom 1-3 ppm, hvilket tyder på gode GPS-data.

Det ble kjørt en utjevning med H38T0040 Rødklevmyr som grunnlag for å sjekke de svenske punktene. Det synes å være en systematisk forskjell mellom den norske og svenske realiseringen av Euref89 i området på 10-15 mm i nord og 35-40 mm i øst. Det svenske nettet ligger lenger sør og vest. I høyde fant vi ingen systematisk forskjell.

Som en endelig utjevning ble 6 norske og 6 svenske punkter brukt som grunnlag. De norske grunnlagspunktene er H37T0009 Bjørnerødpiggen, H37T0308 Grensemerke D 02, H38T0010 Solhøyberget, H38T0024 Gåssen, H38T0040 Rødklevmyr, H38T0042 Enningdalen. Svenske grunnlagspunkter er 791621 Porsås, 791701.2 Farlighögen, 7907890 Hämmen, 7908990 Allemarken, 7918290 Högen og 7919290 Gunnarsbyn.

Resultat

På grunn av forskjellen mellom det svenske og norske nettet er det innført en liten tvang i utjevningen. I grunnriss ligger standardavviket mellom 8 - 43 mm, i høyde mellom 14 – 58 mm.

Koordinater i Euref89 UTM - sone 32 i meter

Riksrøys	Nord	Øst	Ellipsoidisk høyde	Ortometrisk høyde
RRB sikr.bolt I	6540493.313	641222.693	226.133	189.727
RRC sikr.bolt I	6539661.979	641557.079	230.010	193.621
RRD sikr.bolt I	6537364.634	641486.969	233.602	197.226
RRDA sikr.bolt II	6536421.805	641629.199	165.797	129.434
RRE sikr.bolt II	6536098.404	641664.113	188.768	152.409
RRF sikr.bolt I	6535216.205	641782.038	232.050	195.702
RRG sikr.bolt II.	6533360.269	641436.923	197.223	160.877
RRI sikr.bolt I	6530370.255	641799.141	187.829	151.522
RRKBc sikr.bolt I	6530813.867	649242.019	204.499	168.449

Resultatet fra beregningen i AOSS og riss følger vedlagt.

Beregning

Ashtech **Network Adjustment**

Statistics

Network Adjustment in WGS84.

Number of baselines ..... : **67**
Number of terrestrial measurements ..... : **0**
Number of control points in WGS84 ..... : **12**
Number of adjusted points ..... : **21**
Confidence level ..... : **1 Sigmas**
Significance level for tau test ..... : **1.00 %**
Standard error of unit weight ..... : **4.110**
Number of iterations ..... : **1**

1. Baselines Input in WGS84 (Components and Std.Dev.)

Baseline	DX [m]	DY [m]	DZ [m]	sDX [mm]	sDY [mm]	sDZ [mm]
1621-1701	-81.922	-9873.025	1252.220	14.3	9.1	25.4
7890-1701	-2427.775	7232.840	728.986	14.1	8.8	24.4
7890-1621	-2345.853	17105.863	-523.270	7.3	5.4	11.7
7890-8990	-6833.864	3153.669	3720.861	9.5	6.6	12.4
7890-RRI	-3028.211	5097.679	1275.697	3.9	2.5	5.7
7890-RRG	-5492.613	4340.856	2834.159	7.1	6.0	12.2
8290-1621	6977.164	648.892	-4142.114	12.7	8.2	16.8
8290-9290	-4887.692	244.898	2863.510	5.1	4.1	9.5
9290-T024	-535.286	-1092.754	476.865	7.5	5.7	12.9
RKBc-1701	2217.902	-5144.020	-644.951	11.1	6.3	19.9
RKBc-1621	2299.836	4729.002	-1897.155	7.5	4.5	11.2
RKBc-8290	-4677.292	4080.118	2244.936	10.2	5.8	13.8
RRB-8990	4646.471	-22.578	-2819.628	4.1	3.0	7.6
RRB-RRC	649.842	441.554	-431.293	6.6	4.8	21.5
RRB-RRD	2608.469	680.866	-1610.777	4.4	3.6	9.1
RRC-8990	3996.625	-464.123	-2388.364	6.8	4.9	13.9
RRD-8990	2038.013	-703.442	-1208.838	3.2	2.4	6.0
RRDA-8990	1298.025	-963.111	-661.954	7.3	3.7	9.3
RRDA-RRD	-739.981	-259.676	546.886	14.3	9.0	19.8
RRE-8990	1018.520	-1043.252	-514.212	2.5	1.6	3.8
RRE-RRDA	-279.502	-80.142	147.753	8.9	3.8	11.7
RRE-RRF	748.832	238.955	-420.155	16.9	13.1	43.2
RRF-8990	269.686	-1282.203	-94.063	13.3	9.4	25.2
RRG-1701	3064.836	2891.989	-2105.188	9.6	6.4	18.1
RRG-8990	-1341.266	-1187.191	886.705	3.3	2.6	5.9
RRG-RRF	-1610.956	95.004	980.770	17.8	13.7	37.9
RRG-RRI	2464.396	756.827	-1558.472	6.0	4.0	9.6
RRG-RRE	-2359.783	-143.943	1400.910	14.6	7.7	18.9
RRI-1701	600.445	2135.160	-546.726	8.8	4.4	14.2
RRI-RKBc	-1617.467	7279.196	98.250	17.7	8.8	27.7
T009-8990	7006.000	3633.521	-4682.833	4.4	3.1	7.5
T009-RRC	3009.344	4097.637	-2294.446	5.0	3.8	11.1
T009-RRD	4967.967	4336.954	-3473.979	4.8	3.6	10.0
T009-RRDA	5707.946	4596.615	-4020.855	16.8	6.5	18.8
T009-RRB	2359.515	3656.086	-1863.200	4.6	3.5	10.0
T010-1621	7737.339	1443.928	-4707.424	16.4	11.0	21.8
T010-T024	-4662.812	-52.816	2775.041	11.3	6.1	19.2
T010-9290	-4127.521	1039.933	2298.190	6.5	4.8	12.0

Ashtech **Network Adjustment**

T010-8290	760.171	795.037	-565.311	3.6	2.6	5.7
T010-RKBc	5437.500	-3285.080	-2810.223	12.1	6.2	16.5
T040-RRC	2415.701	-5161.089	-807.456	8.7	6.4	18.0
T040-RRD	4374.327	-4921.784	-1987.006	4.9	3.6	9.3
T040-RRDA	5114.322	-4662.101	-2533.884	7.8	3.8	9.8
T040-RRB	1765.860	-5602.651	-376.231	3.5	2.6	7.4
T040-T009	-593.646	-9258.692	1486.995	9.5	6.9	17.4
T040-T024	-1499.797	6830.215	42.492	11.9	6.3	18.2
T040-9290	-964.506	7922.975	-434.360	5.0	4.0	11.8
T040-RKBc	8600.440	3597.959	-5542.771	11.7	6.2	16.0
T040-RRF	6142.629	-4342.997	-3101.765	24.7	22.2	33.2
T040-RRE	5393.809	-4581.956	-2681.634	5.4	3.3	7.7
T040-RRG	7753.612	-4438.033	-4082.582	10.5	9.2	20.0
T040-T010	3163.016	6683.051	-2732.575	6.6	4.8	10.7
T042-RRD	-2532.117	-4298.145	2187.673	8.3	4.8	12.6
T042-RRDA	-1792.110	-4038.466	1640.813	12.4	5.1	16.4
T042-T040	-6906.455	623.629	4174.701	9.9	5.5	13.0
T042-1701	3911.972	-922.424	-2013.059	15.6	9.3	26.8
T042-T024	-8406.215	7453.854	4217.219	18.0	9.5	30.4
T042-8290	-2983.248	8301.704	876.841	12.3	5.4	14.9
T042-T010	-3743.434	7506.679	1442.132	12.7	5.8	15.2
T042-RKBc	1694.060	4221.590	-1368.094	11.8	6.5	18.6
T042-RRF	-763.792	-3719.363	1072.905	22.8	19.8	54.5
T042-RRI	3311.549	-3057.582	-1466.313	6.9	3.3	8.0
T042-RRE	-1512.620	-3958.337	1493.085	8.9	4.4	12.3
T042-RRG	847.157	-3814.407	92.161	7.9	4.0	11.0
T308-RRB	3107.019	1369.224	-1773.213	6.9	4.1	10.2
T308-T009	747.491	-2296.854	89.984	5.4	2.7	6.5
T308-T040	1341.129	6971.859	-1397.017	5.4	3.5	8.0

Baselines which were rejected by the statistical test are marked red.

2. WGS84 Control Points Input (Cart. Coordinates and Std.Dev.)

Point	X [m]	Y [m]	Z [m]	sX [mm]	sY [mm]	sZ [mm]
1701	3238450.595	658565.005	5437208.159	0.0	0.0	0.0
1621	3238532.531	668438.043	5435955.955	0.0	0.0	0.0
8990	3234044.513	654485.836	5440200.052	0.0	0.0	0.0
T024	3226132.340	666941.326	5443438.401	0.0	0.0	0.0
9290	3226667.657	668034.049	5442961.566	0.0	0.0	0.0
8290	3231555.359	667789.149	5440098.051	0.0	0.0	0.0
T009	3227038.509	650852.334	5444882.824	0.0	0.0	0.0
T010	3230795.176	666994.149	5440663.362	0.0	0.0	0.0
T040	3227632.146	660111.096	5443395.904	0.0	0.0	0.0
T042	3234538.606	659487.469	5439221.201	0.0	0.0	0.0
T308	3226290.986	653139.209	5444792.886	0.0	0.0	0.0
7890	3240878.379	651332.165	5436479.199	0.0	0.0	0.0

3. Adjusted Baselines in WGS84 (Components and Std.Dev.)

Baseline	DX [m]	DY [m]	DZ [m]	sDX [mm]	sDY [mm]	sDZ [mm]
1621-1701	-81.936	-9873.038	1252.204	0.0	0.0	0.0
7890-1701	-2427.784	7232.840	728.960	0.0	0.0	0.0
7890-1621	-2345.848	17105.878	-523.244	0.0	0.0	0.0
7890-8990	-6833.866	3153.671	3720.853	0.0	0.0	0.0
7890-RRI	-3028.212	5097.693	1275.695	11.5	6.8	16.2
7890-RRG	-5492.605	4340.871	2834.158	9.8	7.0	16.2
8290-1621	6977.172	648.894	-4142.096	0.0	0.0	0.0
8290-9290	-4887.702	244.900	2863.515	0.0	0.0	0.0
9290-T024	-535.317	-1092.723	476.835	0.0	0.0	0.0
RKBc-1701	2217.924	-5144.041	-644.958	16.6	9.3	24.6
RKBc-1621	2299.860	4728.997	-1897.162	16.6	9.3	24.6

RKBc-8290	-4677.312	4080.103	2244.934	16.6	9.3	24.6
RRB-8990	4646.493	-22.593	-2819.612	7.8	5.7	15.6
RRB-RRC	649.843	441.547	-431.266	14.3	10.7	33.1
RRB-RRD	2608.469	680.864	-1610.780	10.3	7.7	20.1
RRC-8990	3996.650	-464.140	-2388.346	13.2	9.8	30.0
RRD-8990	2038.024	-703.457	-1208.832	8.3	6.1	15.6
RRDA-8990	1298.032	-963.134	-661.960	16.4	7.8	21.1
RRDA-RRD	-739.992	-259.678	546.872	18.1	9.7	25.6
RRE-8990	1018.525	-1043.266	-514.216	8.6	5.2	12.9
RRE-RRDA	-279.507	-80.132	147.744	17.7	8.7	23.4
RRE-RRF	748.822	238.960	-420.137	31.2	24.0	61.9
RRF-8990	269.704	-1282.227	-94.079	30.5	23.7	60.8
RRG-1701	3064.821	2891.969	-2105.198	9.8	7.0	16.2
RRG-8990	-1341.261	-1187.200	886.695	9.8	7.0	16.2
RRG-RRF	-1610.965	95.027	980.775	31.5	24.4	62.4
RRG-RRI	2464.393	756.822	-1558.463	13.7	8.9	21.0
RRG-RRE	-2359.786	-143.933	1400.911	12.9	8.5	20.3
RRI-1701	600.428	2135.147	-546.735	11.5	6.8	16.2
RRI-RKBc	-1617.496	7279.188	98.223	19.8	11.2	29.0
T009-8990	7006.004	3633.502	-4682.772	0.0	0.0	0.0
T009-RRC	3009.354	4097.642	-2294.426	13.2	9.8	30.0
T009-RRD	4967.980	4336.959	-3473.940	8.3	6.1	15.6
T009-RRDA	5707.972	4596.636	-4020.812	16.4	7.8	21.1
T009-RRB	2359.511	3656.095	-1863.160	7.8	5.7	15.6
T010-1621	7737.355	1443.894	-4707.407	0.0	0.0	0.0
T010-T024	-4662.836	-52.823	2775.039	0.0	0.0	0.0
T010-9290	-4127.519	1039.900	2298.204	0.0	0.0	0.0
T010-8290	760.183	795.000	-565.311	0.0	0.0	0.0
T010-RKBc	5437.495	-3285.103	-2810.245	16.6	9.3	24.6
T040-RRC	2415.717	-5161.120	-807.506	13.2	9.8	30.0
T040-RRD	4374.343	-4921.803	-1987.020	8.3	6.1	15.6
T040-RRDA	5114.335	-4662.126	-2533.892	16.4	7.8	21.1
T040-RRB	1765.874	-5602.667	-376.240	7.8	5.7	15.6
T040-T009	-593.637	-9258.762	1486.920	0.0	0.0	0.0
T040-T024	-1499.806	6830.230	42.497	0.0	0.0	0.0
T040-9290	-964.489	7922.953	-434.338	0.0	0.0	0.0
T040-RKBc	8600.525	3597.950	-5542.787	16.6	9.3	24.6
T040-RRF	6142.663	-4343.033	-3101.773	30.5	23.7	60.8
T040-RRE	5393.642	-4581.994	-2681.636	8.6	5.2	12.9
T040-RRG	7753.628	-4438.060	-4082.547	9.8	7.0	16.2
T040-T010	3163.030	6883.053	-2732.542	0.0	0.0	0.0
T042-RRD	-2532.117	-4298.176	2187.683	8.3	6.1	15.6
T042-RRDA	-1792.125	-4038.499	1640.811	16.4	7.8	21.1
T042-T040	-6906.460	623.627	4174.703	0.0	0.0	0.0
T042-1701	3911.989	-922.464	-2013.042	0.0	0.0	0.0
T042-T024	-8406.266	7453.857	4217.200	0.0	0.0	0.0
T042-8290	-2983.247	8301.680	876.850	0.0	0.0	0.0
T042-T010	-3743.430	7506.680	1442.161	0.0	0.0	0.0
T042-RKBc	1694.065	4221.577	-1358.084	16.6	9.3	24.6
T042-RRF	-763.797	-3719.406	1072.930	30.5	23.7	60.8
T042-RRI	3311.561	-3057.611	-1466.307	11.5	6.8	16.2
T042-RRE	-1512.618	-3958.367	1493.067	8.6	5.2	12.9
T042-RRG	847.168	-3814.433	92.156	9.8	7.0	16.2
T308-RRB	3107.034	1369.220	-1773.222	7.8	5.7	15.6
T308-T009	747.523	-2286.875	89.938	0.0	0.0	0.0
T308-T040	1341.160	6971.887	-1396.982	0.0	0.0	0.0

4. Baseline Corrections (Corrections and Normalized Corrections)

Baseline	vX [mm]	vY [mm]	vZ [mm]	vX/sX	vY/sY	vZ/sZ
1621-1701	-14.0	-12.9	-16.2	-2415.9	-2219.5	-2779.7
7890-1701	-9.4	-0.0	-25.9	-1619.4	-8.4	-4456.8
7890-1621	5.1	15.4	25.7	879.2	2641.0	4417.4
7890-8990	-2.1	2.0	-8.2	-355.4	343.5	-1409.4
7890-RRI	-0.8	14.2	-2.0	-0.1	2.1	-0.1
7890-RRG	7.6	14.6	-1.4	0.8	2.1	-0.1
8290-1621	8.4	1.8	17.7	1442.1	310.2	3040.6
8290-9290	-10.4	1.9	5.0	-1789.6	322.7	853.9
9290-T024	-30.9	31.2	-30.3	-5321.4	5371.8	-5208.2
RKBc-1701	21.8	-20.8	-6.8	1.3	-2.2	-0.3
RKBc-1621	23.6	-5.0	-6.9	1.4	-0.5	-0.3
RKBc-8290	-20.3	-15.1	-1.6	-1.2	-1.6	-0.1
RRB-8990	22.3	-14.1	15.8	2.9	-2.5	1.0
RRB-RRC	1.1	-7.0	26.3	0.1	-0.7	0.8
RRB-RRD	0.2	-1.6	-2.6	0.0	-0.2	-0.1
RRC-8990	25.3	-16.9	17.7	1.9	-1.7	0.6
RRD-8990	10.6	-14.7	5.2	1.3	-2.4	0.3
RRDA-8990	6.9	-22.9	-6.4	0.4	-2.9	-0.3
RRDA-RRD	-10.4	-2.2	-14.1	-0.6	-0.2	-0.6
RRE-8990	5.5	-14.0	-3.7	0.6	-2.7	-0.3
RRE-RRDA	-5.1	9.7	-8.2	-0.3	1.1	-0.4
RRE-RRF	-10.7	5.4	18.9	-0.3	0.2	0.3
RRF-8990	17.3	-23.7	-16.7	0.6	-1.0	-0.3
RRG-1701	-14.4	-19.7	-9.4	-1.5	-2.8	-0.6
RRG-8990	4.6	-8.8	-9.7	0.5	-1.3	-0.6
RRG-RRF	-8.3	22.6	4.6	-0.3	0.9	0.1
RRG-RRI	-3.4	-4.8	8.8	-0.2	-0.5	0.4
RRG-RRE	-3.1	9.9	1.3	-0.2	1.2	0.1
RRI-1701	-16.8	-12.9	-9.3	-1.5	-1.9	-0.6
RRI-RKBc	-28.2	-8.0	-27.4	-1.4	-0.7	-0.9
T009-8990	3.7	-19.0	60.6	642.8	-3277.1	10429.6
T009-RRC	9.5	4.6	19.7	0.7	0.5	0.7
T009-RRD	13.1	4.5	39.7	1.6	0.7	2.6
T009-RRDA	25.5	21.2	43.2	1.6	2.7	2.0
T009-RRB	-4.6	8.0	40.3	-0.6	1.4	2.6
T010-1621	15.8	-34.4	16.6	2720.3	-5914.4	2858.7
T010-T024	-24.3	-7.3	-2.0	-4181.6	-1256.9	-345.6
T010-9290	1.6	-32.7	13.8	277.1	-5634.4	2367.5
T010-8290	11.7	-37.0	-0.3	2006.0	-6369.3	-50.9
T010-RKBc	-4.5	-23.4	-22.3	-0.3	-2.5	-0.9
T040-RRC	15.6	-31.4	-49.8	1.2	-3.2	-1.7
T040-RRD	16.2	-19.3	-13.4	2.0	-3.2	-0.9
T040-RRDA	13.2	-24.6	-7.9	0.8	-3.2	-0.4
T040-RRB	13.7	-16.3	-9.0	1.8	-2.8	-0.6
T040-T009	9.1	-70.0	-75.1	1570.4	-12041.1	-12926.6
T040-T024	-8.6	15.1	4.8	-1478.0	2594.7	830.0
T040-9290	16.5	-22.4	21.6	2839.8	-3852.8	3710.9
T040-RKBc	85.2	-9.8	-15.9	5.1	-1.1	-0.6
T040-RRF	34.2	-36.8	-7.8	1.1	-1.6	-0.1
T040-RRE	32.7	-37.8	-1.9	3.8	-7.3	-0.1
T040-RRG	16.2	-27.5	35.2	1.7	-4.0	2.2
T040-T010	13.8	2.1	32.5	2369.5	367.4	5597.4
T042-RRD	-0.1	-31.1	10.4	-0.0	-5.1	0.7
T042-RRDA	-14.9	-32.4	-1.1	-0.9	-4.2	-0.1
T042-T040	-5.5	-1.7	2.0	-939.9	-285.7	347.9
T042-1701	17.2	-39.7	17.1	2953.6	-6825.1	2949.3
T042-T024	-50.5	3.3	-18.8	-8693.8	565.9	-3230.2
T042-8290	1.4	-24.4	8.7	246.4	-4200.7	1494.0
T042-T010	3.7	0.7	29.0	639.5	122.1	4982.1
T042-RKBc	5.6	-13.2	9.6	0.3	-1.4	0.4

T042-RRF	-4.2	-23.1	25.0	-0.1	-1.0	0.4
T042-RRI	11.7	-28.6	5.6	1.0	-4.2	0.3
T042-RRE	2.1	-29.7	-18.4	0.2	-5.7	-1.4
T042-RRG	11.1	-26.5	-4.9	1.1	-3.8	-0.3
T308-RRB	14.5	-4.3	-8.9	1.9	-0.8	-0.6
T308-T009	32.1	-20.7	-46.4	5514.6	-3556.3	-7986.7
T308-T040	31.3	28.4	35.5	5377.4	4891.5	6102.9

Baselines which were rejected by the statistical test are marked red.

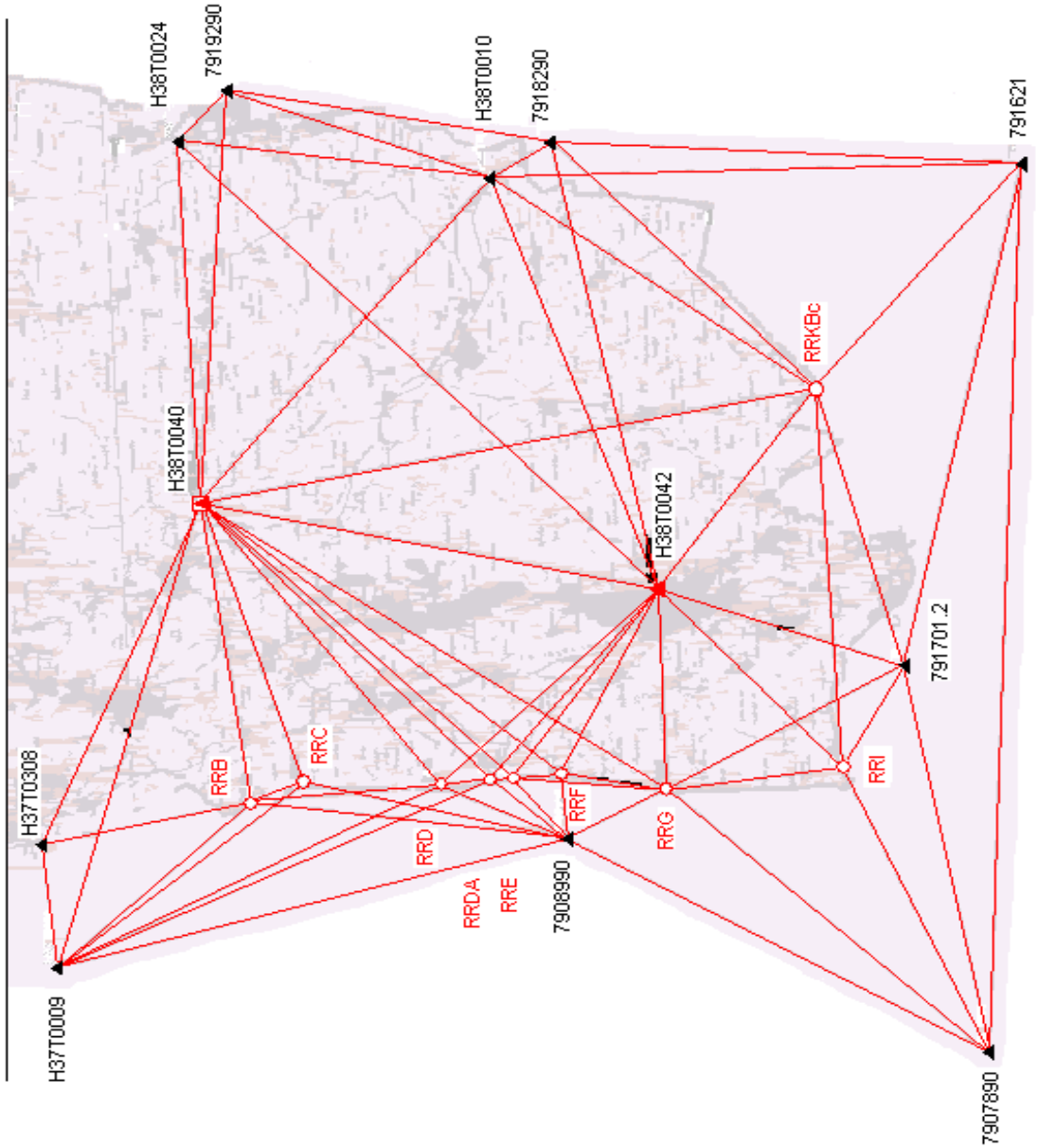
5. Adjusted Points in WGS84 (Cart. Coordinates and Std.Dev.)

Point	X [m]	Y [m]	Z [m]	sX [mm]	sY [mm]	sZ [mm]
1621	3236532.531	668438.043	5435955.955	0.0	0.0	0.0
1701	3238450.595	658565.005	5437208.159	0.0	0.0	0.0
7890	3240878.379	651332.165	5436479.199	0.0	0.0	0.0
8290	3231555.359	667789.149	5440098.051	0.0	0.0	0.0
8990	3234044.513	654485.836	5440200.052	0.0	0.0	0.0
9290	3226667.657	668034.049	5442961.566	0.0	0.0	0.0
RKBc	3235232.671	663709.046	5437853.117	16.6	9.3	24.6
RRB	3229398.020	654508.429	5443019.664	7.8	5.7	15.6
RRC	3230047.863	654949.976	5442588.398	13.2	9.8	30.0
RRD	3232006.489	655189.293	5441408.884	8.3	6.1	15.6
RRDA	3232746.481	655448.970	5440862.012	16.4	7.8	21.1
RRE	3233025.988	655529.102	5440714.268	8.6	5.2	12.9
RRF	3233774.809	655768.063	5440294.131	30.5	23.7	60.8
RRG	3235385.774	655673.036	5439313.357	9.8	7.0	16.2
RRI	3237850.167	656429.858	5437754.894	11.5	6.8	16.2
T009	3227038.509	650652.334	5444882.624	0.0	0.0	0.0
T010	3230795.176	666994.149	5440563.362	0.0	0.0	0.0
T024	3226132.340	666941.326	5443438.401	0.0	0.0	0.0
T040	3227632.146	660111.096	5443395.904	0.0	0.0	0.0
T042	3234538.606	659487.469	5439221.201	0.0	0.0	0.0
T308	3226290.986	653139.209	5444792.886	0.0	0.0	0.0

6. Adjusted Points in WGS84 (Geogr. Coordinates and Std.Dev.)

Point	Lat [Deg]	Lon [Deg]	H [m]	sN [mm]	sE [mm]	sH [mm]
1621	N58° 51' 27.55555"	E11° 39' 43.80359"	237.527	0.0	0.0	0.0
1701	N58° 52' 45.51466"	E11° 29' 41.33245"	243.386	0.0	0.0	0.0
7890	N58° 52' 7.15521"	E11° 21' 48.88787"	108.591	0.0	0.0	0.0
8290	N58° 55' 49.41108"	E11° 40' 32.23901"	166.173	0.0	0.0	0.0
8990	N58° 55' 57.39031"	E11° 26' 26.33815"	156.498	0.0	0.0	0.0
9290	N58° 58' 48.28511"	E11° 41' 49.16887"	196.737	0.0	0.0	0.0
RKBc	N58° 53' 27.93116"	E11° 35' 23.66294"	204.499	13.9	8.3	26.5
RRB	N58° 58' 50.34870"	E11° 27' 25.41768"	226.133	7.6	5.5	15.7
RRC	N58° 58' 23.09849"	E11° 27' 44.42261"	230.010	15.4	9.6	29.0
RRD	N58° 57' 8.97606"	E11° 27' 34.74769"	233.603	6.9	6.0	16.3
RRDA	N58° 56' 38.35287"	E11° 27' 41.46874"	165.797	11.0	7.7	24.4
RRE	N58° 56' 27.86522"	E11° 27' 42.90645"	188.768	6.9	4.8	14.0
RRF	N58° 55' 59.22919"	E11° 27' 48.24445"	232.051	36.8	22.0	57.9
RRG	N58° 54' 59.69094"	E11° 27' 22.42055"	197.223	8.1	6.2	17.4
RRI	N58° 53' 22.68024"	E11° 27' 38.17067"	187.829	9.0	6.2	17.9
T009	N59° 0' 45.49211"	E11° 24' 10.27139"	258.667	0.0	0.0	0.0
T010	N58° 56' 23.89797"	E11° 39' 53.17901"	203.278	0.0	0.0	0.0
T024	N58° 59' 16.87525"	E11° 40' 48.95754"	221.209	0.0	0.0	0.0
T040	N58° 59' 13.58108"	E11° 33' 31.17181"	232.903	0.0	0.0	0.0
T042	N58° 55' 0.10063"	E11° 31' 26.52667"	81.974	0.0	0.0	0.0
T308	N59° 0' 51.74670"	E11° 26' 40.00227"	37.528	0.0	0.0	0.0

Riss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