

APPENDIX C

NETWORK #2 ADJUSTMENT REPORTS

2006

GEODETTIC CONTROL DENSIFICATION
AND RESTORATION

of

JEFFERSON COUNTY, KENTUCKY

JUNE 2006

Jacobi, Toombs and Lanz, Inc.
401 West Main Street, Suite 600
Louisville, Kentucky 40202



Network Adjustment Report

Project : 0260-2006-Network East

User name	tbooker	Date & Time	5:06:15 PM 6/22/2006
Coordinate System	US State Plane 1983	Zone	Kentucky North 1601
Project Datum	NAD 1983 (Conus)		
Vertical Datum		Geoid Model	GEOID99 (Conus)
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

Adjustment Style Settings - 95% Confidence Limits

Residual Tolerances

To End Iterations : 0.000033sft

Final Convergence Cutoff : 0.016404sft

Covariance Display

Horizontal

Propagated Linear Error [E] : U.S.

Constant Term [C] : 0.00000000sft

Scale on Linear Error [S] : 1.96

Three-Dimensional

Propagated Linear Error [E] : U.S.

Constant Term [C] : 0.00000000sft

Scale on Linear Error [S] : 1.96

Elevation Errors were used in the calculations.

Adjustment Controls

Compute Correlations for Geoid : False

Horizontal and Vertical adjustment performed

Set-up Errors

GPS

Error in Height of Antenna : 0.000sft

Centering Error : 0.000sft

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Statistical Summary

Successful Adjustment in 1 iteration(s)

Network Reference Factor : 1.12

Chi Square Test ($\alpha=95\%$) : PASS

Degrees of Freedom : 75.00

GPS Observation Statistics

Reference Factor : 1.13

Redundancy Number (r) : 74.01

Individual GPS Observation Statistics

Observation ID	Reference Factor	Redundancy Number
B2	0.17	1.32
B4	0.60	1.74
B5	1.22	2.18
B6	2.29	2.42
B7	1.61	2.28
B9	1.33	2.22
B10	0.94	2.26
B12	0.37	2.45
B13	0.37	0.69
B15	0.49	2.04
B18	0.76	2.12
B21	0.47	1.88
B24	0.64	1.97
B25	0.97	1.89
B27	0.70	2.50
B29	0.33	2.14
B31	1.23	1.39
B33	1.22	2.08
B34	1.44	2.41
B35	1.52	2.51
B37	0.64	2.38
B38	1.68	2.08
B42	0.25	1.34
B45	0.68	2.10
B46	1.41	2.25
B47	1.09	0.84
B48	1.79	1.87
B49	1.52	1.98
B50	1.84	2.37
B51	1.01	0.62

B52	0.99	0.91
B54	0.59	2.00
B55	0.23	0.97
B57	0.47	1.75
B63	1.38	2.67
B69	0.51	1.82
B70	0.56	1.20
B71	0.32	2.02
B75	1.04	2.31

Geoid Model Statistics

Reference Factor : 0.16

Redundancy Number (r) : 0.99

Weighting Strategies

GPS Observations

User-defined Scalar Applied to All Observations

Scalar : 4.35

Geoid Observations

Default Scalar Applied to All Observations

Scalar : 1.00

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Adjusted Coordinates

Adjustment performed in **NAD 1983 (Conus)**

Number of Points : 16

Number of Constrained Points : 6

Horizontal Only : 2

Elevation Only : 3

Horizontal and Elevation Only : 1

Adjusted Grid Coordinates

Errors are reported using 1.96σ .

Point Name	Northing	N error	Easting	E error	Elevation	e error	Fix
RILEY-3	218580.909sft	0.040sft	1222970.923sft	0.035sft	542.569sft	0.882sft	
STA067-2006	221635.538sft	0.038sft	1228598.054sft	0.032sft	525.218sft	0.813sft	
STA036-2001	213739.346sft	0.027sft	1264842.452sft	0.024sft	515.349sft	0.937sft	
AZI067-2006	221157.215sft	0.035sft	1229281.562sft	0.030sft	536.801sft	0.819sft	
GPS86-38	245849.390sft	0.000sft	1260903.761sft	0.000sft	738.978sft	0.000sft	N E e
STA049-2003	230622.888sft	0.000sft	1289663.018sft	0.000sft	720.710sft	0.713sft	N E
STA028-2001RESET	254115.966sft	0.024sft	1289632.889sft	0.017sft	574.661sft	0.518sft	
STA068-2006	263805.210sft	0.021sft	1254428.111sft	0.018sft	641.335sft	0.493sft	
AZI068-2006	264089.875sft	0.020sft	1253892.227sft	0.018sft	644.155sft	0.496sft	
AZITV1-2001RESET	264463.531sft	0.027sft	1244432.586sft	0.023sft	554.278sft	0.518sft	
TV-1	265271.077sft	0.032sft	1243840.933sft	0.026sft	540.967sft	0.000sft	e
STA009-2001	242934.169sft	0.027sft	1237384.069sft	0.023sft	508.562sft	0.000sft	e
STA014-2001RESET	217769.210sft	0.024sft	1274721.369sft	0.022sft	688.058sft	0.878sft	
AZI028-2001	254079.322sft	0.023sft	1288052.297sft	0.017sft	568.762sft	0.000sft	e
AZI014-2001RESET	217511.586sft	0.024sft	1275216.775sft	0.022sft	689.622sft	0.884sft	
AZI8641-2001	273209.782sft	0.000sft	1275891.530sft	0.000sft	727.517sft	0.639sft	N E

Adjusted Geodetic Coordinates

Errors are reported using 1.96σ .

Point Name	Latitude	N error	Longitude	E error	Height	h error	Fix
RILEY-3	38°05'28.33825"N	0.040sft	85°42'01.88370"W	0.035sft	433.510sft	0.799sft	
STA067-2006	38°05'59.40201"N	0.038sft	85°40'52.09825"W	0.032sft	416.095sft	0.722sft	
STA036-2001	38°04'46.67225"N	0.027sft	85°33'17.32331"W	0.024sft	405.865sft	0.860sft	

AZI067-2006	38°05'54.77891"N	0.035sft	85°40'43.45571"W	0.030sft	427.673sft	0.729sft	
GPS86-38	38°10'03.51637"N	0.000sft	85°34'12.33351"W	0.000sft	629.690sft	0.234sft	Lat Long e
STA049-2003	38°07'36.92504"N	0.000sft	85°28'09.72431"W	0.000sft	611.067sft	0.608sft	Lat Long
STA028-2001RESET	38°11'29.14631"N	0.024sft	85°28'13.99736"W	0.017sft	465.171sft	0.360sft	
STA068-2006	38°13'00.07761"N	0.021sft	85°35'36.69100"W	0.018sft	532.036sft	0.323sft	
AZI068-2006	38°13'02.81409"N	0.020sft	85°35'43.45714"W	0.018sft	534.856sft	0.328sft	
AZITV1-2001RESET	38°13'05.12486"N	0.027sft	85°37'42.04651"W	0.023sft	444.983sft	0.359sft	
TV-1	38°13'13.01949"N	0.032sft	85°37'49.61100"W	0.026sft	431.664sft	0.371sft	e
STA009-2001	38°09'31.26518"N	0.027sft	85°39'06.25194"W	0.023sft	399.328sft	0.325sft	e
STA014-2001RESET	38°05'27.87197"N	0.024sft	85°31'14.47844"W	0.022sft	578.483sft	0.795sft	
AZI028-2001	38°11'28.57657"N	0.023sft	85°28'33.78777"W	0.017sft	459.277sft	0.346sft	e
AZI014-2001RESET	38°05'25.39292"N	0.024sft	85°31'08.23780"W	0.022sft	580.040sft	0.801sft	
AZI8641-2001	38°14'36.04790"N	0.000sft	85°31'09.39916"W	0.000sft	618.167sft	0.519sft	Lat Long

Coordinate Deltas

Point Name	Δ Northing	Δ Easting	Δ Elevation	Δ Height	Δ Geoid Separation
RILEY-3	0.000sft	0.000sft	-0.031sft	-0.031sft	0.000sft
STA067-2006	0.000sft	0.000sft	-0.030sft	-0.030sft	0.000sft
STA036-2001	0.000sft	0.000sft	-0.040sft	-0.040sft	0.000sft
AZI067-2006	0.000sft	0.000sft	-0.030sft	-0.030sft	0.000sft
GPS86-38	0.000sft	0.000sft	0.000sft	-0.014sft	0.014sft
STA049-2003	0.000sft	0.000sft	-0.029sft	-0.029sft	0.000sft
STA028-2001RESET	0.000sft	0.000sft	-0.011sft	-0.011sft	0.000sft
STA068-2006	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
AZI068-2006	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft
AZITV1-2001RESET	0.000sft	0.000sft	0.002sft	0.002sft	0.000sft
TV-1	0.000sft	0.000sft	0.000sft	0.002sft	-0.002sft
STA009-2001	0.000sft	0.000sft	0.000sft	-0.014sft	0.014sft
STA014-2001RESET	0.000sft	0.000sft	-0.037sft	-0.037sft	0.000sft
AZI028-2001	0.000sft	0.000sft	0.000sft	-0.011sft	0.011sft
AZI014-2001RESET	0.000sft	0.000sft	-0.038sft	-0.038sft	0.000sft
AZI8641-2001	0.000sft	0.000sft	0.005sft	0.005sft	0.000sft

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Control Coordinate Comparisons

Values shown are control coord minus adjusted coord.

Point Name	Δ Northing	Δ Easting	Δ Elevation	Δ Height
RILEY-3	-0.019sft	0.007sft	-0.051sft	N/A
STA036-2001	-0.023sft	0.002sft	-0.012sft	N/A
GPS86-38	N/A	N/A	N/A	N/A
STA049-2003	N/A	N/A	0.108sft	N/A
TV-1	0.033sft	0.004sft	N/A	N/A
STA009-2001	-0.003sft	-0.018sft	N/A	N/A
AZI028-2001	-0.024sft	0.041sft	N/A	N/A
AZI8641-2001	N/A	N/A	-0.217sft	N/A

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Adjusted Observations

Adjustment performed in **NAD 1983 (Conus)**

GPS Observations

GPS Transformation Group: <GPS Default>

Deflection in Longitude : -0°00'00.1093" (1.96 σ) : 0°00'01.9924"

Deflection in Latitude : -0°00'00.4156" (1.96 σ) : 0°00'04.4804"

Azimuth Rotation : 0°00'00.0618" (1.96 σ) : 0°00'00.1108"

Network Scale : 1.00000056 (1.96 σ) : 0.00000050

Number of Observations : 39

Number of Outliers : 0

Observation Adjustment (Critical Tau = 3.44). Any outliers are in red.

Obs. ID	From Pt.	To Pt.		Observation	A-posteriori Error (1.96 σ)	Residual	Stand. Residual
B50	AZI8641-2001	AZI068-2006	Az.	246°41'37.1618"	0°00'00.1893"	0°00'00.0686"	0.39
			Δ Ht.	-83.304sft	0.067sft	-0.028sft	-0.34
			Dist.	23815.458sft	0.019sft	-0.048sft	-2.88
B6	STA049-2003	GPS86-38	Az.	297°08'24.3963"	0°00'00.1108"	0°00'00.3437"	2.26
			Δ Ht.	18.578sft	0.082sft	-0.006sft	-0.08
			Dist.	32542.124sft	0.016sft	0.046sft	2.54
B35	AZI014-2001RESET	GPS86-38	Az.	332°24'46.2225"	0°00'00.1005"	0°00'00.0052"	0.04
			Δ Ht.	49.585sft	0.051sft	0.108sft	2.41
			Dist.	31748.008sft	0.022sft	0.020sft	0.58
B46	AZI028-2001	GPS86-38	Az.	252°22'21.9033"	0°00'00.1477"	0°00'00.2302"	2.16
			Δ Ht.	170.415sft	0.053sft	0.030sft	0.53
			Dist.	28369.289sft	0.016sft	-0.018sft	-1.12
B48	AZI028-2001	AZI8641-2001	Az.	326°47'38.8515"	0°00'00.1749"	0°00'00.2359"	-2.09
			Δ Ht.	158.845sft	0.056sft	0.049sft	1.66
			Dist.	22669.110sft	0.023sft	0.027sft	1.01
B9	GPS86-38	STA068-2006	Az.	339°20'50.1922"	0°00'00.1918"	0°00'00.3295"	-2.06
			Δ Ht.	-97.694sft	0.054sft	-0.012sft	-0.23
			Dist.	19088.352sft	0.021sft	-0.002sft	-0.10
B38	STA009-2001	GPS86-38	Az.	82°03'45.1685"	0°00'00.1998"	0°00'00.2743"	-1.78
			Δ Ht.	230.368sft	0.053sft	-0.074sft	-1.99
			Dist.	23700.251sft	0.019sft	0.016sft	0.91

B33	STA049-2003	AZI014-2001RESET	Az.	227°00'52.9855"	0°00'00.2295"	0°00'00.3040"	1.93
			ΔHt.	-31.007sft	0.080sft	-0.031sft	-0.52
			Dist.	19509.347sft	0.022sft	-0.006sft	-0.32
B49	AZI8641-2001	STA068-2006	Az.	245°32'55.8733"	0°00'00.2002"	0°00'00.3242"	1.78
			ΔHt.	-86.123sft	0.066sft	-0.031sft	-0.67
			Dist.	23434.103sft	0.019sft	-0.024sft	-1.62
B34	STA049-2003	STA014-2001RESET	Az.	228°32'14.3709"	0°00'00.2289"	0°00'00.5114"	1.75
			ΔHt.	-32.565sft	0.081sft	-0.068sft	-0.70
			Dist.	19710.015sft	0.023sft	0.008sft	0.21
B63	GPS86-38	AZI8641-2001	Az.	27°53'32.8023"	0°00'00.1108"	0°00'00.1415"	-0.89
			ΔHt.	-11.571sft	0.062sft	-0.030sft	-0.30
			Dist.	31197.416sft	0.016sft	-0.037sft	-1.64
B75	AZI8641-2001	STA028-2001RESET	Az.	143°28'07.9120"	0°00'00.1764"	0°00'00.0988"	-0.50
			ΔHt.	-152.951sft	0.059sft	-0.049sft	-0.82
			Dist.	23525.111sft	0.023sft	-0.040sft	-1.54
B47	AZI028-2001	STA028-2001RESET	Az.	87°54'33.3137"	0°00'02.2668"	0°00'00.2428"	-0.25
			ΔHt.	5.894sft	0.041sft	-0.010sft	-0.55
			Dist.	1581.059sft	0.012sft	0.006sft	1.43
B7	STA049-2003	STA028-2001RESET	Az.	359°10'04.8239"	0°00'00.1829"	0°00'00.2229"	-1.10
			ΔHt.	-145.944sft	0.082sft	-0.061sft	-0.69
			Dist.	23493.662sft	0.024sft	0.051sft	1.35
B52	AZITV1-2001RESET	AZI068-2006	Az.	91°24'16.7658"	0°00'00.4233"	0°00'00.2161"	1.30
			ΔHt.	89.878sft	0.035sft	0.000sft	0.04
			Dist.	9467.293sft	0.015sft	-0.004sft	-0.69
B31	AZI014-2001RESET	STA036-2001	Az.	249°13'43.0277"	0°00'00.3902"	0°00'00.1929"	1.06

			ΔHt.	-174.173sft	0.051sft	-0.036sft	-1.30
			Dist.	11039.039sft	0.014sft	-0.001sft	-0.11
B25	STA009-2001	AZITV1-2001RESET	Az.	17°15'21.8253"	0°00'00.1749"	0°00'00.0098"	0.08
			ΔHt.	45.615sft	0.049sft	0.021sft	0.74
			Dist.	22654.412sft	0.026sft	-0.024sft	-1.23
B51	STA068-2006	AZI068-2006	Az.	297°08'30.3972"	0°00'05.0855"	0°00'01.2790"	0.82
			ΔHt.	2.819sft	0.033sft	0.003sft	0.41
			Dist.	606.818sft	0.012sft	0.004sft	1.15
B27	TV-1	STA009-2001	Az.	195°15'50.7110"	0°00'00.2024"	0°00'00.1706"	-0.74
			ΔHt.	-32.295sft	0.070sft	0.030sft	0.33
			Dist.	23252.042sft	0.031sft	0.041sft	1.00
B24	STA009-2001	AZI068-2006	Az.	37°05'37.2350"	0°00'00.1487"	0°00'00.0329"	0.33
			ΔHt.	135.493sft	0.049sft	0.005sft	0.14
			Dist.	26835.080sft	0.023sft	-0.016sft	-0.93
B18	GPS86-38	STA014-2001RESET	Az.	152°58'41.5475"	0°00'00.1007"	0°00'00.0437"	0.57
			ΔHt.	-51.143sft	0.052sft	-0.017sft	-0.31
			Dist.	31296.392sft	0.021sft	0.022sft	0.93
B10	GPS86-38	AZI068-2006	Az.	338°09'08.3448"	0°00'00.1762"	0°00'00.0853"	-0.62
			ΔHt.	-94.875sft	0.052sft	-0.057sft	-0.88
			Dist.	19542.199sft	0.019sft	-0.010sft	-0.62
B45	GPS86-38	STA028-2001RESET	Az.	73°07'34.6118"	0°00'00.1364"	0°00'00.1448"	0.81
			ΔHt.	-164.522sft	0.050sft	-0.016sft	-0.28
			Dist.	29895.576sft	0.015sft	-0.004sft	-0.39
B37	GPS86-38	AZI067-2006	Az.	231°11'38.8114"	0°00'00.1229"	0°00'00.0598"	0.51
			ΔHt.	-201.983sft	0.062sft	-0.078sft	-0.80
			Dist.	40121.518sft	0.023sft	-0.010sft	-0.56

B70	AZI014-2001RESET	STA014-2001RESET	Az.	296°41'10.3636"	0°00'06.3434"	0°00'01.1827"	0.42
			ΔHt.	-1.558sft	0.044sft	-0.016sft	-0.79
			Dist.	558.398sft	0.014sft	-0.001sft	-0.10
B69	AZI067-2006	STA009-2001	Az.	19°31'11.7578"	0°00'00.1526"	0°00'00.0164"	0.16
			ΔHt.	-28.385sft	0.042sft	-0.018sft	-0.77
			Dist.	23235.944sft	0.023sft	0.002sft	0.10
B5	GPS86-38	STA036-2001	Az.	172°11'08.7669"	0°00'00.1017"	0°00'00.0684"	-0.67
			ΔHt.	-223.758sft	0.056sft	0.020sft	0.29
			Dist.	32351.370sft	0.024sft	0.020sft	0.71
B54	TV-1	STA068-2006	Az.	97°01'27.1990"	0°00'00.5073"	0°00'00.1790"	-0.66
			ΔHt.	100.380sft	0.068sft	0.023sft	0.33
			Dist.	10688.487sft	0.020sft	0.005sft	0.34
B21	AZI028-2001	AZI014-2001RESET	Az.	198°34'43.1652"	0°00'00.1048"	0°00'00.0473"	-0.47
			ΔHt.	120.830sft	0.053sft	-0.008sft	-0.27
			Dist.	38755.860sft	0.025sft	0.012sft	0.65
B4	STA036-2001	AZI067-2006	Az.	280°58'14.6624"	0°00'00.1736"	0°00'00.0047"	-0.04
			ΔHt.	21.774sft	0.072sft	-0.025sft	-0.49
			Dist.	36326.933sft	0.022sft	0.007sft	0.55
B15	RILEY-3	STA009-2001	Az.	29°42'59.0575"	0°00'00.1413"	0°00'00.0479"	-0.46
			ΔHt.	-34.225sft	0.046sft	0.011sft	0.33
			Dist.	28299.350sft	0.026sft	-0.011sft	-0.55
B57	STA036-2001	STA014-2001RESET	Az.	66°59'47.8245"	0°00'00.4176"	0°00'00.1516"	0.54
			ΔHt.	172.615sft	0.052sft	0.015sft	0.45
			Dist.	10669.421sft	0.015sft	0.000sft	0.02

B29	STA009-2001	STA067-2006	Az.	201°32'41.5773"	0°00'00.1691"	0°00'00.0659"	-0.48
			ΔHt.	16.806sft	0.045sft	0.002sft	0.07
			Dist.	23040.143sft	0.025sft	0.002sft	0.10
B71	STA014-2001RESET	STA028-2001RESET	Az.	21°30'57.3379"	0°00'00.0988"	0°00'00.0176"	0.17
			ΔHt.	-113.379sft	0.056sft	-0.007sft	-0.11
			Dist.	39287.515sft	0.023sft	-0.009sft	-0.44
B12	AZITV1-2001RESET	GPS86-38	Az.	137°38'16.4711"	0°00'00.1855"	0°00'00.0218"	0.08
			ΔHt.	184.753sft	0.054sft	0.015sft	0.31
			Dist.	24855.971sft	0.022sft	-0.010sft	-0.40
B13	TV-1	AZITV1-2001RESET	Az.	142°54'45.8566"	0°00'03.6845"	0°00'00.4062"	0.36
			ΔHt.	13.320sft	0.056sft	-0.002sft	-0.14
			Dist.	1001.120sft	0.022sft	0.000sft	-0.05
B42	RILEY-3	AZI067-2006	Az.	66°53'24.3839"	0°00'00.4963"	0°00'00.0312"	0.14
			ΔHt.	-5.840sft	0.034sft	-0.002sft	-0.12
			Dist.	6816.389sft	0.017sft	0.002sft	0.30
B55	AZI067-2006	STA067-2006	Az.	304°05'44.7744"	0°00'04.2760"	0°00'00.3068"	-0.20
			ΔHt.	-11.579sft	0.031sft	0.001sft	0.06
			Dist.	834.267sft	0.013sft	0.001sft	0.28
B2	RILEY-3	STA067-2006	Az.	60°36'10.3927"	0°00'00.5226"	0°00'00.0395"	-0.17
			ΔHt.	-17.419sft	0.035sft	-0.002sft	-0.11
			Dist.	6402.875sft	0.018sft	0.002sft	0.20

Geoid Observations

Number of Observations : 16

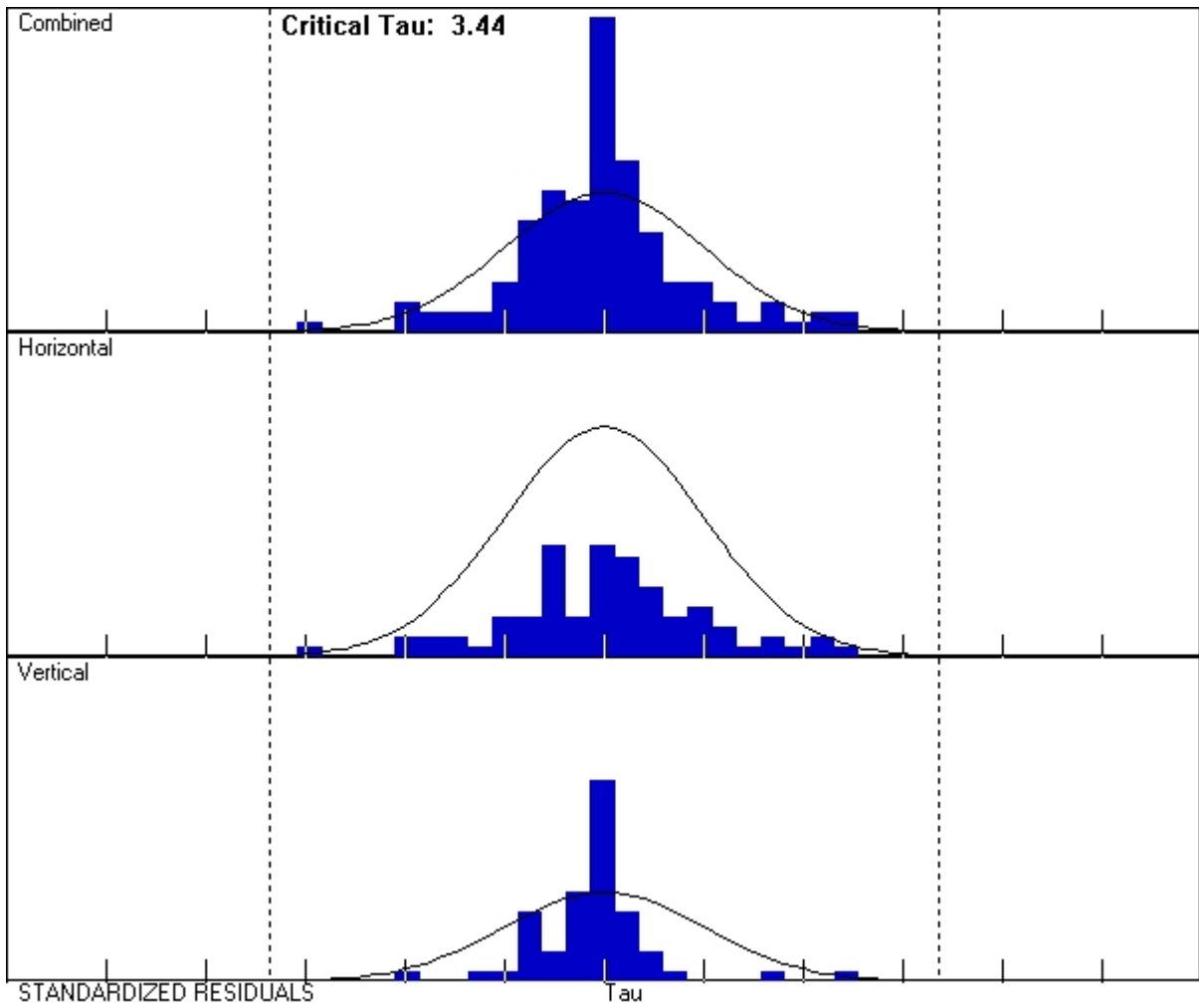
Number of Outliers : 0

Observation Adjustment (Critical Tau = 3.44). Any outliers are in **red**.

Observation ID	Point Name	Separation	A-posteriori Error (1.96 σ)	Residual	Standardized Residual
G59	TV-1	-109.303sft	0.371sft	-0.005sft	-0.31
G53	GPS86-38	-109.288sft	0.234sft	0.022sft	0.15
G60	STA009-2001	-109.234sft	0.325sft	-0.012sft	-0.13
G62	AZI028-2001	-109.485sft	0.346sft	-0.005sft	-0.07
G61	STA014-2001RESET	-109.574sft	0.373sft	0.000sft	0.00
G49	RILEY-3	-109.059sft	0.373sft	0.000sft	0.00
G50	STA067-2006	-109.123sft	0.373sft	0.000sft	0.00
G51	STA036-2001	-109.484sft	0.373sft	0.000sft	0.00
G52	AZI067-2006	-109.128sft	0.373sft	0.000sft	0.00
G54	STA049-2003	-109.644sft	0.373sft	0.000sft	0.00
G55	STA028-2001RESET	-109.490sft	0.373sft	0.000sft	0.00
G56	STA068-2006	-109.299sft	0.373sft	0.000sft	0.00
G57	AZI068-2006	-109.299sft	0.373sft	0.000sft	0.00
G58	AZITV1-2001RESET	-109.295sft	0.373sft	0.000sft	0.00
G63	AZI014-2001RESET	-109.582sft	0.373sft	0.000sft	0.00
G64	AZI8641-2001	-109.350sft	0.373sft	0.000sft	0.00

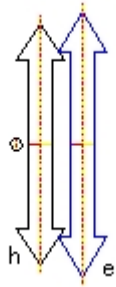
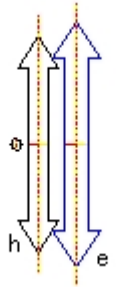
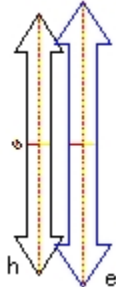
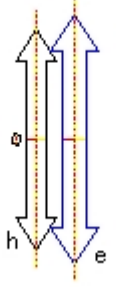

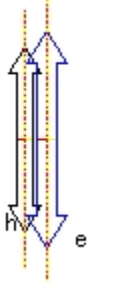
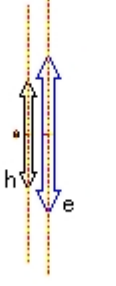
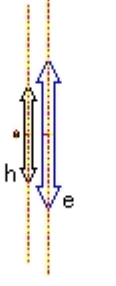
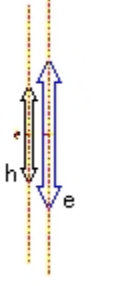
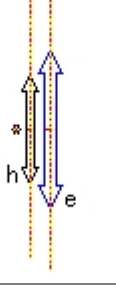
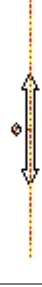
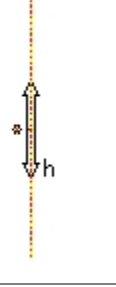
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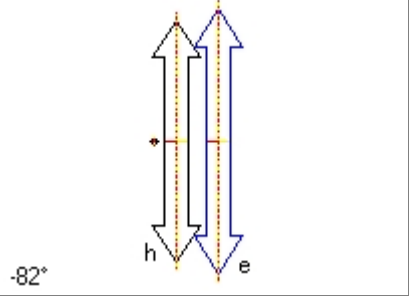
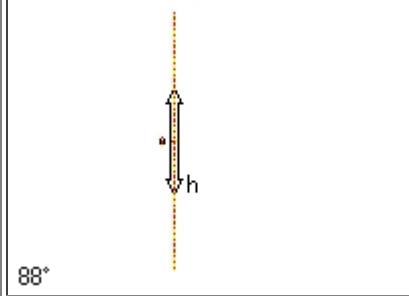
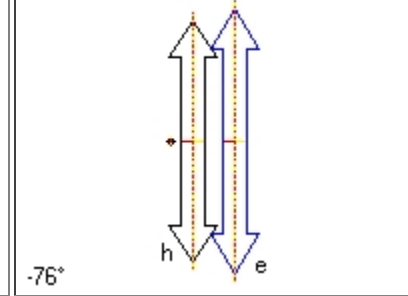
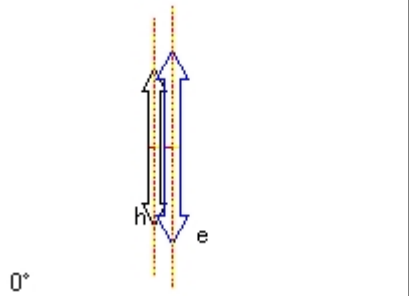
Histograms of Standardized Residuals



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Point Error Ellipses

RILEY-3	STA067-2006	STA036-2001
 <p style="text-align: center;">86°</p>	 <p style="text-align: center;">87°</p>	 <p style="text-align: center;">-73°</p>
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		
AZI067-2006	GPS86-38	STA049-2003
 <p style="text-align: center;">-85°</p>	 <p style="text-align: center;">0°</p>	 <p style="text-align: center;">0°</p>
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		
STA028-2001RESET	STA068-2006	AZI068-2006
 <p style="text-align: center;">83°</p>	 <p style="text-align: center;">90°</p>	 <p style="text-align: center;">-87°</p>
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		
AZITV1-2001RESET	TV-1	STA009-2001
 <p style="text-align: center;">79°</p>	 <p style="text-align: center;">-88°</p>	 <p style="text-align: center;">79°</p>
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		

STA014-2001RESET	AZI028-2001	AZI014-2001RESET
		
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		
AZI8641-2001		
		
Tick Size: 0.0100sft Horizontal Bivariate Scalar: 2.45σ Vertical Univariate Scalar: 1.96σ		

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Covariant Terms

Adjustment performed in **NAD 1983 (Conus)**

From Point	To Point		Components	A-posteriori Error (1.96σ)	Horiz. Precision (Ratio)	3D Precision (Ratio)
RILEY-3	STA067-2006	Az.	60°36'10.3310"	0°00'00.5343"	1:342552	1:342552
		ΔHt.	-17.415sft	0.090sft		
		ΔElev.	-17.351sft	1.199sft		
		Dist.	6402.871sft	0.019sft		

RILEY-3	AZI067-2006	Az.	66°53'24.3222"	0°00'00.5088"	1:383261	1:383261
		ΔHt.	-5.837sft	0.086sft		
		ΔElev.	-5.769sft	1.203sft		
		Dist.	6816.385sft	0.018sft		
RILEY-3	STA009-2001	Az.	29°42'58.9960"	0°00'00.1772"	1:977440	1:977440
		ΔHt.	-34.182sft	0.540sft		
		ΔElev.	-34.007sft	0.882sft		
		Dist.	28299.334sft	0.029sft		
STA067-2006	AZI067-2006	Az.	124°05'39.3799"	0°00'04.2768"	1:64117	1:64117
		ΔHt.	11.577sft	0.033sft		
		ΔElev.	11.582sft	1.154sft		
		Dist.	834.266sft	0.013sft		
STA067-2006	STA009-2001	Az.	21°31'36.1619"	0°00'00.1991"	1:846204	1:846204
		ΔHt.	-16.768sft	0.467sft		
		ΔElev.	-16.656sft	0.813sft		
		Dist.	23040.130sft	0.027sft		
STA036-2001	AZI067-2006	Az.	280°58'14.6003"	0°00'00.2018"	1:1332161	1:1332161
		ΔHt.	21.807sft	0.391sft		
		ΔElev.	21.451sft	1.244sft		
		Dist.	36326.912sft	0.027sft		
STA036-2001	GPS86-38	Az.	352°11'42.6662"	0°00'00.1507"	1:1171041	1:1171041
		ΔHt.	223.825sft	0.704sft		
		ΔElev.	223.629sft	0.937sft		
		Dist.	32351.352sft	0.028sft		

STA036-2001	STA014-2001RESET	Az.	66°59'47.7629"	0°00'00.4303"	1:686435	1:686435
		ΔHt.	172.618sft	0.134sft		
		ΔElev.	172.709sft	1.284sft		
		Dist.	10669.415sft	0.016sft		
STA036-2001	AZI014-2001RESET	Az.	69°12'23.3421"	0°00'00.4002"	1:747833	1:747833
		ΔHt.	174.175sft	0.134sft		
		ΔElev.	174.273sft	1.288sft		
		Dist.	11039.032sft	0.015sft		
AZI067-2006	GPS86-38	Az.	51°07'37.2350"	0°00'00.1733"	1:1268335	1:1268335
		ΔHt.	202.017sft	0.600sft		
		ΔElev.	202.177sft	0.819sft		
		Dist.	40121.496sft	0.032sft		
AZI067-2006	STA009-2001	Az.	19°31'11.6962"	0°00'00.1846"	1:926086	1:926086
		ΔHt.	-28.345sft	0.476sft		
		ΔElev.	-28.239sft	0.819sft		
		Dist.	23235.931sft	0.025sft		
GPS86-38	STA049-2003	Az.	117°04'40.3560"	0°00'00.0000"	1:0	1:0
		ΔHt.	-18.623sft	0.453sft		
		ΔElev.	-18.268sft	0.713sft		
		Dist.	32542.106sft	0.000sft		
GPS86-38	STA028-2001RESET	Az.	73°07'34.5504"	0°00'00.1567"	1:1649860	1:1649860
		ΔHt.	-164.519sft	0.320sft		
		ΔElev.	-164.317sft	0.518sft		
		Dist.	29895.559sft	0.018sft		

GPS86-38	STA068-2006	Az.	339°20'50.1304"	0°00'00.2013"	1:907216	1:907216
		ΔHt.	-97.654sft	0.400sft		
		ΔElev.	-97.643sft	0.493sft		
		Dist.	19088.341sft	0.021sft		
GPS86-38	AZI068-2006	Az.	338°09'08.2830"	0°00'00.1903"	1:986981	1:986981
		ΔHt.	-94.834sft	0.407sft		
		ΔElev.	-94.823sft	0.496sft		
		Dist.	19542.188sft	0.020sft		
GPS86-38	AZITV1-2001RESET	Az.	317°40'26.0773"	0°00'00.2110"	1:1027080	1:1027080
		ΔHt.	-184.707sft	0.443sft		
		ΔElev.	-184.700sft	0.518sft		
		Dist.	24855.957sft	0.024sft		
GPS86-38	STA009-2001	Az.	262°06'46.7201"	0°00'00.2368"	1:999466	1:999466
		ΔHt.	-230.362sft	0.233sft		
		ΔElev.	-230.416sft	0.000sft		
		Dist.	23700.238sft	0.024sft		
GPS86-38	STA014-2001RESET	Az.	152°58'41.4858"	0°00'00.1437"	1:1310994	1:1310994
		ΔHt.	-51.206sft	0.636sft		
		ΔElev.	-50.920sft	0.878sft		
		Dist.	31296.375sft	0.024sft		
GPS86-38	AZI028-2001	Az.	72°18'52.5771"	0°00'00.1645"	1:1604425	1:1604425
		ΔHt.	-170.413sft	0.306sft		
		ΔElev.	-170.216sft	0.000sft		
		Dist.	28369.273sft	0.018sft		

GPS86-38	AZI014-2001RESET	Az.	152°22'52.4936"	0°00'00.1408"	1:1322337	1:1322337
		ΔHt.	-49.650sft	0.642sft		
		ΔElev.	-49.356sft	0.884sft		
		Dist.	31747.990sft	0.024sft		
GPS86-38	AZI8641-2001	Az.	27°53'32.7408"	0°00'00.0000"	1:0	1:0
		ΔHt.	-11.523sft	0.604sft		
		ΔElev.	-11.461sft	0.639sft		
		Dist.	31197.399sft	0.000sft		
STA049-2003	STA028-2001RESET	Az.	359°10'04.7622"	0°00'00.1492"	1:996885	1:996885
		ΔHt.	-145.896sft	0.517sft		
		ΔElev.	-146.049sft	0.882sft		
		Dist.	23493.649sft	0.024sft		
STA049-2003	STA014-2001RESET	Az.	228°32'14.3090"	0°00'00.2445"	1:881954	1:881954
		ΔHt.	-32.583sft	0.315sft		
		ΔElev.	-32.653sft	1.131sft		
		Dist.	19710.004sft	0.022sft		
STA049-2003	AZI014-2001RESET	Az.	227°00'52.9236"	0°00'00.2490"	1:880174	1:880174
		ΔHt.	-31.026sft	0.318sft		
		ΔElev.	-31.089sft	1.136sft		
		Dist.	19509.336sft	0.022sft		
STA028-2001RESET	STA014-2001RESET	Az.	201°32'48.7420"	0°00'00.1402"	1:1381498	1:1381498
		ΔHt.	113.313sft	0.794sft		
		ΔElev.	113.397sft	1.020sft		
		Dist.	39287.493sft	0.028sft		

STA028-2001RESET	AZI028-2001	Az.	267°54'45.4882"	0°00'02.2698"	1:127245	1:127245
		ΔHt.	-5.894sft	0.045sft		
		ΔElev.	-5.899sft	0.518sft		
		Dist.	1581.058sft	0.012sft		
STA028-2001RESET	AZI8641-2001	Az.	323°29'56.3622"	0°00'00.1783"	1:1133813	1:1133813
		ΔHt.	152.996sft	0.447sft		
		ΔElev.	152.856sft	0.823sft		
		Dist.	23525.097sft	0.021sft		
STA068-2006	AZI068-2006	Az.	297°08'30.3355"	0°00'05.0874"	1:50172	1:50172
		ΔHt.	2.820sft	0.034sft		
		ΔElev.	2.820sft	0.700sft		
		Dist.	606.817sft	0.012sft		
STA068-2006	TV-1	Az.	277°02'49.3699"	0°00'00.5180"	1:510944	1:510944
		ΔHt.	-100.372sft	0.123sft		
		ΔElev.	-100.368sft	0.493sft		
		Dist.	10688.481sft	0.021sft		
STA068-2006	AZI8641-2001	Az.	65°30'10.4057"	0°00'00.1839"	1:1247197	1:1247197
		ΔHt.	86.131sft	0.286sft		
		ΔElev.	86.182sft	0.807sft		
		Dist.	23434.090sft	0.019sft		
AZI068-2006	AZITV1-2001RESET	Az.	271°25'30.0697"	0°00'00.4354"	1:616073	1:616073
		ΔHt.	-89.873sft	0.097sft		
		ΔElev.	-89.877sft	0.717sft		
		Dist.	9467.288sft	0.015sft		

AZI068-2006	STA009-2001	Az.	217°07'42.5503"	0°00'00.1752"	1:1066147	1:1066147
		ΔHt.	-135.528sft	0.476sft		
		ΔElev.	-135.593sft	0.496sft		
		Dist.	26835.065sft	0.025sft		
AZI068-2006	AZI8641-2001	Az.	66°38'47.5058"	0°00'00.1711"	1:1318217	1:1318217
		ΔHt.	83.311sft	0.285sft		
		ΔElev.	83.362sft	0.809sft		
		Dist.	23815.444sft	0.018sft		
AZITV1-2001RESET	TV-1	Az.	322°54'50.4748"	0°00'03.6861"	1:45987	1:45987
		ΔHt.	-13.319sft	0.057sft		
		ΔElev.	-13.311sft	0.518sft		
		Dist.	1001.119sft	0.022sft		
AZITV1-2001RESET	STA009-2001	Az.	197°16'13.8236"	0°00'00.2003"	1:826559	1:826559
		ΔHt.	-45.655sft	0.467sft		
		ΔElev.	-45.716sft	0.518sft		
		Dist.	22654.399sft	0.027sft		
TV-1	STA009-2001	Az.	195°15'50.6492"	0°00'00.2242"	1:722146	1:722146
		ΔHt.	-32.337sft	0.481sft		
		ΔElev.	-32.405sft	0.000sft		
		Dist.	23252.029sft	0.032sft		
STA014-2001RESET	AZI014-2001RESET	Az.	116°41'06.4519"	0°00'06.3392"	1:38853	1:38853
		ΔHt.	1.557sft	0.044sft		
		ΔElev.	1.564sft	1.246sft		
		Dist.	558.397sft	0.014sft		

AZI028-2001	AZI014-2001RESET	Az.	198°34'43.1032"	0°00'00.1421"	1:1374015	1:1374015
		ΔHt.	120.763sft	0.796sft		
		ΔElev.	120.860sft	0.884sft		
		Dist.	38755.839sft	0.028sft		
AZI028-2001	AZI8641-2001	Az.	326°47'38.7896"	0°00'00.1750"	1:1063494	1:1063494
		ΔHt.	158.890sft	0.443sft		
		ΔElev.	158.755sft	0.639sft		
		Dist.	22669.097sft	0.021sft		

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