

**FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION 1
Boston, Massachusetts**

**WESTERLY, CHARLESTOWN,
NORTH KINGSTOWN, AND
NEW SHOREHAM COASTLINE**

**FIELD SURVEY DATA COLLECTED
TO QA/QC LIDAR DATA**

WASHINGTON COUNTY, RHODE ISLAND

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SURVEY REPORT

Field and Post Processing Crew

Michael K. Wilson was the survey party chief collecting control and LIDAR check points and was assisted by Bob Catino. Mr. Wilson was responsible for post processing and adjusting the data. Salvatore Longo was the project manager coordinating and overseeing the survey.

Project Time Frame

Field work started April 25, 2007 and was completed May 1, 2007.

Established Control Monuments

Various established NGS monuments and several CORS stations were used for this project. The published datasheets for the established monuments and CORS station are included in Appendix V.

Vertical Datum and Coordinate System

The field survey for the LIDAR check points was performed using coordinates in Rhode Island State Plane, North American Datum of 1983 (NAD83) and the elevations are referenced to the North American Vertical Datum of 1988 (NAVD88). GEOID03 was used to transform ellipsoidal heights to orthometric.

Equipment and Software Used

GPS Base – Topcon Legacy-E receiver with LegAnt-2 flat ground plane antenna on 2 meter fixed pole. GPS/GLONASS L1/L2.

GPS Rover – Topcon Hiper GGD on 2 meter fixed pole.

Data Collector – TDS Ranger

Total Station – Topcon GTS-603

Data Collection and point adjustment software – TDS Survey Pro V.4.2.1.

Post Processing Software – Topcon Pinnacle V.02.05.31.

Field Survey Procedure

A total of 20 check points were established along the coast for the communities in Westerly, Charlestown, North Kingstown, and New Shoreham in Washington County Rhode Island to act as quality control for the LIDAR flight conducted by Terrapoint USA in December 2006. The survey check points are in one of the four land use categories: 1) Urban, 2) Mixed Vegetation, 3) Bare Earth, and 4) Forest. The check points are distributed throughout the area in 5 clusters with each cluster consisting of four points, one for each of the land use categories. Figure 1, enclosed, shows the limits of the LIDAR mapping, the flight lines, and the location of the check points and base stations.

One cluster was surveyed in the Town of Westerly, one cluster in the Town of Charlestown, two clusters in the Town of North Kingstown, and one cluster in the Town of New Shoreham. A total of 5 clusters and 20 check points were collected for the four communities in Washington County, Rhode Island as follows

- At least one check point was surveyed twice within each cluster. The calculated elevations for these points differed less than 5 cm.
- Forest checkpoints were surveyed conventionally from points set using GPS.
- Digital photographs were taken to document all check points and control, see Appendix VI.

Cluster Field Survey Procedure (Field):

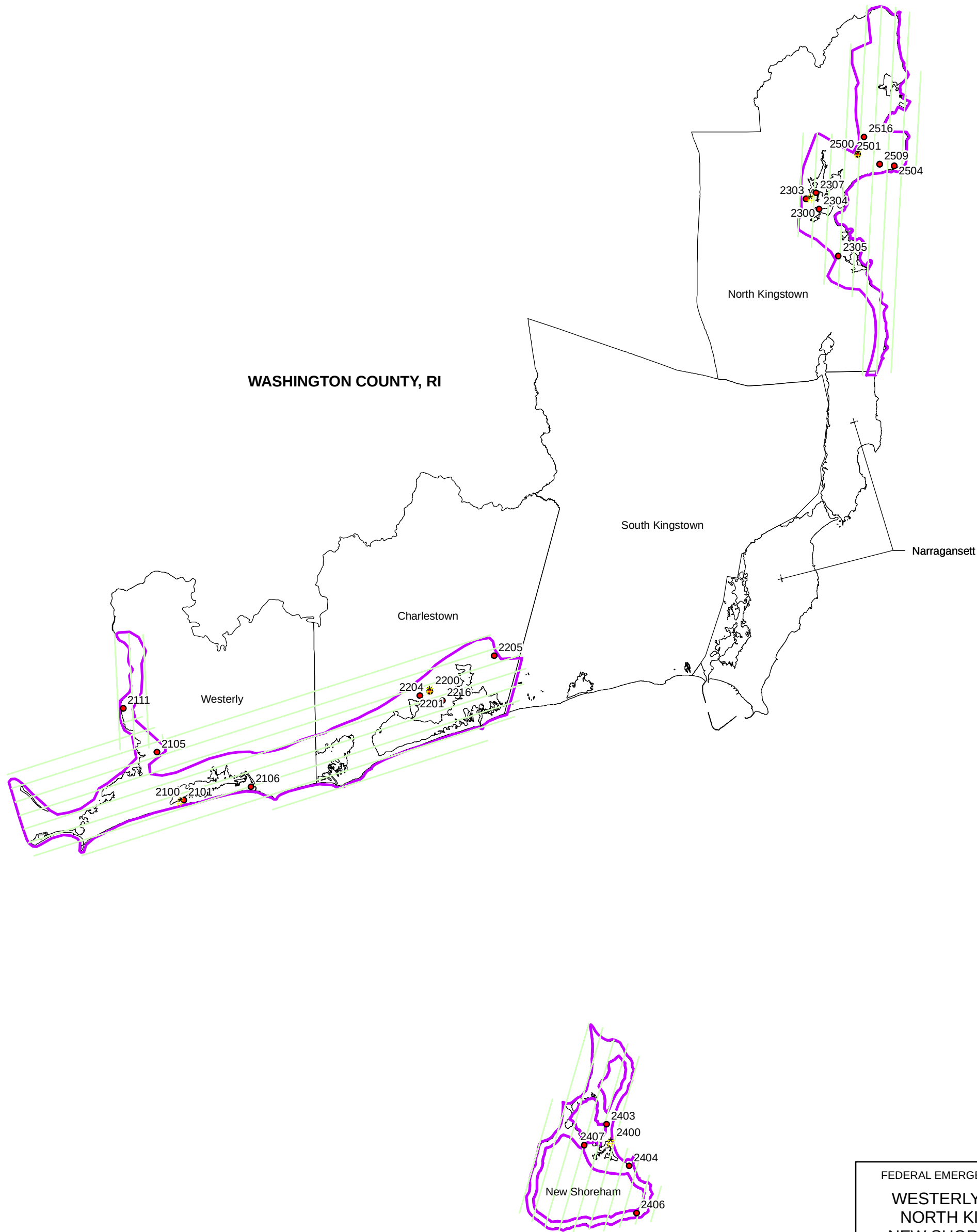
RTK Base Station was placed in open public area; get autonomous base position from receiver and simultaneously record static information at base station for a minimum of two hours. Set RTK Rover using base station autonomous position; set checkpoints using 60D spikes, PK nails, or wooden hubs with PK nails and collected position using RTK Rover. Collect NGS control points as a check for accuracy using a minimum of one horizontal and one vertical and/or one 3D monument.

Cluster Post-Processing Procedures (Office):

Download static collection from base station; downloaded data from a minimum of three CORS stations for the same time period. Post processed the base station data holding the published value of the CORS station's L1 phase centers fixed. Results give position of base receiver with average rms errors of s (N) 4.8 mm, s (E) 3.9 mm, and s (U) 10.6mm; see Appendix II for the Pinnacle Software post processing output for each cluster. The base station static collection data was also uploaded to OPUS for post

processing as a check to the Pinnacle Solution. Average deltas between Pinnacle Software and OPUS solutions are s (N) 0.01 sft, s (E) 0.01 sft, and s (Ellipsoid Height) 0.03 sft; see Appendix IV for the OPUS Solution and Summary Table comparing the results from Pinnacle and OPUS. The last step in the process was to adjust the check points and NGS control points in data collection software holding the processed base station position as horizontal and vertical control. Compare the published NGS values to that of the RTK adjusted values. Average deltas between published values and adjusted surveyed values with the exception of the Z value for the established control monuments LW0929 are s (N) 0.03 sft, s (E) 0.08 sft, and s (Z orthometric) 0.10 sft; see Appendix I for all the values. The published orthometric height for monument LW0929 on Block Island is local tidal and unchecked. The adjusted surveyed height (NAVD 88) is 1.31 feet lower than the published value (Local Tidal). However, the published ellipsoid height (Fourth, Class 1) of -96.194 sft matches within reason to the adjusted surveyed ellipsoid height of -96.36 sft.

All of the information in the Appendices of this report are also provided in digital format in the enclosed DVD labeled “Westerly, Charlestown, North Kingstown, And New Shoreham Coastline, Field Survey Data Collected to QA/QC LIDAR Data.” See readme.txt file for a listing of contents within each of the folders on the DVD.



APPENDIX I

WESTERLY, CHARLESTOWN, NORTH KINGSTOWN, AND NEW SHOREHAM COASTLINE

FIELD SURVEYED QA/QC CHECK POINTS

**WESTERLY, CHARLESTOWN, NORTH KINGSTOWN,
AND NEW SHOREHAM COASTLINE LIDAR CHECK SURVEY
FINAL QA/QC CHECK POINTS**

Horizontal Datum = Rhode Island State Plane, North American Datum of 1983

Vertical Datum = North American Vertical Datum of 1988, Geoid 2003

Point	Northing	Easting	Elevation	Description
2101	88,027.33	245,104.28	4.31	MIXEDVEG
2105	95,255.28	241,015.06	36.72	BITLOT
2106	90,029.32	255,270.13	3.46	GRASS
2111	101,924.22	235,911.59	21.81	FOREST
2201	104,477.94	282,309.01	24.60	GRASS
2204	103,843.06	280,816.08	18.77	MIXEDVEG
2205	109,882.38	292,048.17	32.15	BITLOT
2216	103,079.16	284,240.72	15.45	FOREST
2303	179,067.27	339,245.11	18.88	GRASS
2304	177,512.96	341,240.69	4.41	BITLOT
2305	170,448.92	344,175.21	18.62	MIXEDVEG
2307	179,974.14	340,755.11	6.50	FOREST
2403	38,913.97	309,073.53	8.56	MIXEDVEG
2404	32,624.90	312,510.77	6.20	BITLOT
2406	25,470.41	313,590.50	159.76	GRASS
2407	35,779.72	305,725.46	34.03	FOREST
2501	185,828.28	347,091.09	17.84	GRASS
2504	184,080.36	352,627.49	7.03	MIXEDVEG
2509	184,332.37	350,409.00	11.49	BITLOT
2516	188,408.93	348,075.60	34.39	FOREST

**WESTERLY, CHARLESTOWN, NORTH KINGSTOWN, AND NEW SHOREHAM COASTLINE
LIDAR CHECK SURVEY
ALL POINTS COLLECTED**

Horizontal Datum = Rhode Island State Plane, North American Datum of 1983

Vertical Datum = North American Vertical Datum of 1988, Geoid 2003

Point	Northing	Easting	Elevation	Description	Δ N	Δ E	Δ Z
2100	87,681.41	244,533.61	5.31				
2101	88,027.33	245,104.28	4.31	MIXEDVEG			
2102	97,991.47	255,625.60	72.74	LW5273	0.01	0.06	-0.01
2103	101,899.00	235,989.30	22.26	FORESTCOV1			
2104	101,920.65	236,137.84	21.56	FORESTCOV2			
2105	95,255.28	241,015.06	36.72	BITLOT			
2106	90,029.32	255,270.13	3.46	GRASS			
2107	88,027.29	245,104.29	4.37	PT2101CHK	-0.04	0.00	0.06
2108	97,991.46	255,625.60	72.73	LW5273CHK	-0.01	0.00	-0.02
2109	101,899.05	235,989.30	22.29	PT2103CHK	0.06	-0.01	0.03
2110	101,920.67	236,137.92	21.55	PT2104CHK	0.02	0.07	-0.01
2111	101,924.22	235,911.59	21.81	FOREST			
2112	101,924.21	235,911.60	21.81	FORESTCHK	-0.01	0.01	0.00
2113	95,255.30	241,015.09	36.66	PT2105CHK	0.01	0.03	-0.06
2200	104,553.95	282,258.97	24.96				
2201	104,477.94	282,309.01	24.60	GRASS			
2202	103,178.25	284,234.90	17.70	FORESTCONV1			
2203	103,257.96	284,113.02	18.04	FORESTCONV2			
2204	103,843.06	280,816.08	18.77	MIXEDVEG			
2205	109,882.38	292,048.17	32.15	BITLOT			
2206	109,410.15	288,881.52	20.16	LW0988			-0.10
2207	109,410.10	288,881.53	20.23	LW0988CHK	-0.05	0.02	0.07
2208	110,356.22	286,240.42	55.78	LW5525	-0.06	0.06	
2209	110,356.22	286,240.41	55.80	LW5525CHK	0.00	-0.01	0.02
2210	103,843.09	280,816.09	18.73	PT2204CHK	0.02	0.02	-0.04
2211	99,934.81	272,283.84	53.28	LW0894			-0.11
2212	99,934.83	272,283.85	53.26	LW0894CHK	0.02	0.01	-0.02
2213	104,477.90	282,309.01	24.64	PT2201CHK	-0.04	0.01	0.04
2214	103,178.25	284,234.94	17.76	PT2202CHK	0.00	0.03	0.06
2215	103,257.98	284,113.01	18.09	PT2203CHK	0.01	-0.01	0.05
2216	103,079.16	284,240.72	15.45	FOREST			
2217	103,079.15	284,240.72	15.43	FORESTCHK	-0.01	0.00	-0.02
2300	179,038.38	339,890.96	13.10				
2301	179,940.99	340,862.30	7.95	FORESTCONV1			
2302	180,091.12	340,902.07	7.60	FORESTCONV2			
2303	179,067.27	339,245.11	18.88	GRASS			
2304	177,512.96	341,240.69	4.41	BITLOT			
2305	170,448.92	344,175.21	18.62	MIXEDVEG			
2306	181,550.59	327,155.28	141.44	LW5671	0.04	0.14	-0.31
2307	179,974.14	340,755.11	6.50	FOREST			
2308	179,974.14	340,755.11	6.50	FORESTCHK	0.00	0.00	0.00
2309	179,940.97	340,862.32	7.99	PT2301CHK	-0.02	0.02	0.04
2310	180,091.14	340,902.06	7.66	PT2302CHK	0.02	-0.01	0.06
2311	179,067.28	339,245.12	18.90	PT2303CHK	0.01	0.01	0.02
2312	177,512.98	341,240.75	4.46	PT2304CHK	0.02	0.06	0.05
2313	170,448.91	344,175.26	18.63	PT2305CHK	0.00	0.05	0.01
2314	181,550.57	327,155.27	141.56	LW5671CHK	-0.01	-0.02	0.12
2315	181,550.58	327,155.28	141.52	LW5671CHK2	-0.01	0.00	0.08

**WESTERLY, CHARLESTOWN, NORTH KINGSTOWN, AND NEW SHOREHAM COASTLINE
LIDAR CHECK SURVEY
ALL POINTS COLLECTED**

Horizontal Datum = Rhode Island State Plane, North American Datum of 1983

Vertical Datum = North American Vertical Datum of 1988, Geoid 2003

Point	Northing	Easting	Elevation	Description	Δ N	Δ E	Δ Z
2400	36,196.12	309,654.57	6.73				
2401	35,721.57	305,870.58	40.61	FORESTCONV1			
2402	35,528.83	305,850.57	48.95	FORESTCONV2			
2403	38,913.97	309,073.53	8.56	MIXEDVEG			
2404	32,624.90	312,510.77	6.20	BITLOT			
2405	32,703.51	312,634.59	4.41	LW0929	-0.01	0.04	-1.31
2406	25,470.41	313,590.50	159.76	GRASS			
2407	35,779.72	305,725.46	34.03	FOREST			
2408	35,779.72	305,725.46	34.07	FORESTCHK	0.00	0.00	0.05
2409	35,721.54	305,870.55	40.61	PT2401CHK	-0.02	-0.03	0.00
2410	35,528.79	305,850.55	48.91	PT2402CHK	-0.04	-0.01	-0.03
2411	38,914.02	309,073.56	8.61	PT2403CHK	0.05	0.03	0.05
2412	32,624.91	312,510.77	6.15	PT2404CHK	0.01	-0.01	-0.04
2413	32,703.51	312,634.59	4.38	LW0929CHK	0.00	0.00	-0.03
2414	25,470.38	313,590.50	159.71	PT2406CHK	-0.02	0.00	-0.05
2500	185,801.97	347,081.70	17.89				
2501	185,828.28	347,091.09	17.84	GRASS			
2502	188,414.53	348,191.22	31.20	FORESTCONV1			
2503	188,201.75	348,105.75	31.60	FORESTCONV2			
2504	184,080.36	352,627.49	7.03	MIXEDVEG			
2505	189,037.40	350,550.65	5.45	LW0098?	0.06	0.08	-0.03
2506	189,037.38	350,550.63	5.49	LW0098?CHK	-0.01	-0.02	0.04
2507	187,317.09	352,918.72	8.56	AI5595	0.02	0.09	
2508	187,317.06	352,918.72	8.60	AI5595CHK	-0.02	0.00	0.05
2509	184,332.37	350,409.00	11.49	BITLOT			
2510	194,836.93	345,795.14	35.18	LW0101			-0.05
2511	194,836.99	345,795.11	35.22	LW0101CHK	0.06	-0.02	0.04
2512	185,828.28	347,091.08	17.87	PT2501CHK	0.01	-0.01	0.03
2513	188,414.60	348,191.24	31.30	PT2502CHK	0.07	0.02	0.09
2514	188,201.73	348,105.74	31.67	PT2503CHK	-0.02	0.00	0.07
2515	184,080.36	352,627.47	7.01	PT2504CHK	-0.01	-0.02	-0.02
2516	188,408.93	348,075.60	34.39	FOREST			
2517	188,408.94	348,075.61	34.39	FORESTCHK	0.01	0.01	0.00

MONUMENTS

PID	Northing	Easting	Elevation
LW5273	97,991.46	255,625.54	72.75
LW0988			20.26
LW5525	110,356.28	286,240.36	
LW0894			53.39
LW5671	181,550.55	327,155.14	141.75
LW0929	32,703.52	312,634.55	5.72
AI5595	187,317.07	352,918.63	
LW0098	189,037.34	350,550.57	5.48
LW0101			35.23

WESTERLY, CHARLESTOWN, NORTH KINGSTOWN, AND NEW SHOREHAM COASTLINE

**EXISTING MONUMENTS
USED IN QA/QC FIELD SURVEY**

Horizontal Datum = Rhode Island State Plane North American Datum of 1983

Vertical Datum = North American Vertical Datum of 1988, Geoid 2003

DATE	CLUSTER	LOCATION	PID	H order	V order	PUBLISHED VALUES		
						Northing(sFt)	Easting(sFt)	Elev.(sFt)
4/25/2007	21	Westerly	LW5273	A	2nd Class 2	97,991.46	255,625.54	72.75
	22	Charlestown	LW0988		2nd Class 0			20.26
			LW5525	3rd	2nd Class 0	110,356.28	286,240.36	53.39
			LW0894					
4/26/2007	23	Wickford	LW5671	A	2nd Class 2	181,550.55	327,155.14	141.75
4/30/2007	24	Block Island	LW0929	3rd	2nd Class 0	32,703.52	312,634.55	5.72
5/1/2007	25	Quonset Pt.	AI5595	B		187,317.07	352,918.63	
			LW0098	1st	1st Class 1	189,037.34	350,550.57	5.48
			LW0101		1st Class 1			35.23

APPENDIX II

NETWORK ADJUSTMENTS CLUSTERS 21 THROUGH 25

ADJUSTMENT SUMMARY

Item Name	Item Value
SubNet	
Name	New Subnet
Number of points	4
Number of unknowns	3
Degree of freedom	15
Declared adjustment type	with fixed and weighted points
Aposteriori standard error of unit weight	0.573
Adjustment Date and Time	3.May.07 20:12:15
Reference points	
Number	3
Plane coordinates - fixed	6
Heights - fixed	3
Plane coordinates - weighted	0
Heights - weighted	0
Apriori standard error of unit weight	1.000
Processed vectors	
Total number	6
Unused vectors	0
Rejected vectors	0
Downweighted vectors	0
Apriori standard error of unit weight	1.000
Aposteriori standard error of unit weight	0.141
Vectors' VPV test	
Confidence level (%)	95
Lower bound	2.70
Upper bound	19.02
Degree of freedom	9
VPV	0.18
VPV test	failed
Vectors' Tau test	
Confidence level (%)	95
Tau critical value	3.00
Number of flagged observations	0

SUBNET 'New Subnet' POINTS: ADJUSTED COORDINATES in NAD83(BLH)

#	Point		Coordinates			Sigmas(mm)			Corr.(%)		
	Name	Comment	Latitude	Longitude	height(m)	s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5		41°44'36.79685"N	70°53'13.02743"W	6.5600	0.0	0.0	0.0	0	0	0
2	CTGR		41°20'07.03570"N	72°02'58.96956"W	-18.2400	0.0	0.0	0.0	0	0	0
3	CTPU		41°53'58.88887"N	71°53'20.88990"W	57.2100	0.0	0.0	0.0	0	0	0
4	log0425a_IRY8		41°19'24.87505"N	71°48'15.02551"W	-29.0187	2.8	2.2	6.2	19	-8	-26

SUBNET 'New Subnet' POINTS: ADJUSTED COORDINATES in SPC83(sft)(Grid, Zone RI__)

#	Point		Coordinates			Sigmas(USFeet)			Corr.(%)		
	Name	Comment	Northing(USFeet)	Easting(USFeet)	Height (USFeet)	s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5		241162.99511	495388.45398	21.52227	0.000	0.000	0.000	0	0	0
2	CTGR		92280.50858	177116.09703	-59.84240	0.000	0.000	0.000	0	0	0
3	CTPU		297703.40688	222143.15757	187.69648	0.000	0.000	0.000	0	0	0
4	log0425a_IRY8		87681.40524	244533.61348	-95.20540	0.009	0.007	0.020	19	-8	-26

SUBNET 'New Subnet' PROCESSED VECTORS (X-Y-Z)

cluster21											
#	Stations from - to	X	Coordinates (m)			Sigmas (mm)			Corr.(%)		
			Y	Z	Length	s(X)	s(Y)	s(Z)	X-Y	X-Z	Y-Z
1	acu5-CTGR	-82443.5486	-59328.1131	-33956.2750	107097.1163	20.6	34.7	28.0	-50	30	-56
2	acu5-CTPU	-82586.5543	-15650.7807	12957.5456	85049.3026	17.1	28.2	28.8	-40	33	-62
3	acu5-log0425a_IRY8	-62638.4925	-53760.1411	-34940.0786	89635.6102	13.8	33.5	26.7	-43	38	-65
4	CTGR-CTPU	-143.0025	43677.3403	46913.8175	64098.6488	14.6	26.9	22.5	-39	23	-60
5	CTGR-log0425a_IRY8	19805.0559	5567.9853	-983.8107	20596.3731	4.3	10.0	8.7	-32	34	-64
6	CTPU-log0425a_IRY8	19948.0595	-38109.3632	-47897.6225	64377.2544	11.6	27.6	23.7	-30	30	-65
Mean weight matrix's estimations:						8.8	19.4	17.0	-34	32	-64

SUBNET 'New Subnet' PROCESSED VECTORS (N-E-U)

#	Stations from - to	N	Coordinates (m)			Sigmas (mm)			Corr.(%)		
			E	U	Length	s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5-CTGR	-44685.8649	-97324.7829	-923.2733	107097.1163	21.5	16.9	40.8	-10	-24	2
2	acu5-CTPU	17826.4277	-83158.5019	-515.6605	85049.3026	17.9	15.0	37.0	-2	6	-2
3	acu5-log0425a_IRY8	-46234.7134	-76788.3548	-665.1737	89635.6102	17.8	13.0	39.3	20	-21	-27
4	CTGR-CTPU	62697.8574	13324.9504	-247.3005	64098.6488	15.9	13.0	31.9	-6	-16	-11
5	CTGR-log0425a_IRY8	-1271.5599	20557.0374	-43.9850	20596.3731	5.5	4.3	12.1	19	-6	-25
6	CTPU-log0425a_IRY8	-63981.7424	7113.2205	-411.8557	64377.2544	14.9	11.7	33.1	18	-10	-30
Mean weight matrix's estimations:						10.8	8.5	23.5	15	-8	-22

SUBNET 'New Subnet' PROCESSED VECTORS (Distance-Azimuth-Elevation)

#	Stations from - to	Distance(m)	Coordinates		Sigmas (mm)			Corr.(%)		
			Azimuth	Elevation	s(D)	s(A)	s(E)	D-A	D-E	A-E
1	acu5-CTGR	107097.1163	245°20'17.42"	- 0°29'38.21"	16.9	21.5	40.8	-11	9	-23
2	acu5-CTPU	85049.3026	282°05'57.13"	- 0°20'50.61"	15.2	17.7	37.0	9	2	6
3	acu5-log0425a_IRY8	89635.6102	238°56'51.40"	- 0°25'30.68"	15.7	15.4	39.3	-36	30	-9
4	CTGR-CTPU	64098.6488	11°59'54.05"	- 0°13'15.80"	15.7	13.4	31.9	-14	-18	-6
5	CTGR-log0425a_IRY8	20596.3731	93°32'22.32"	- 0°07'20.50"	4.2	5.5	12.1	-16	-25	7
6	CTPU-log0425a_IRY8	64377.2544	173°39'22.14"	- 0°21'59.60"	14.6	12.1	33.1	22	7	30
Mean weight matrix's estimations:					8.6	10.2	23.3	-12	-16	6

Datum = NAD83
Coordinate system = SPC83(sft)
Projection = TM83
Zone = RI__
Linear unit = USFeet

POINT	MAPPING PROJECTION	GEODETIC	EC CARTESIAN
Pt# 0 COORDINATES	N = 241162.9951 E = 495388.4540	N 41°44'36.79685" W 70°53'13.02743" h 21.5223 H - ** -	X = 16797566.1766 Y = -48472773.7733 Z = 45470861.8275
acu5	Az = 244°55'46.32730" O = 0°24'29.51335" t-T Con = -1.57492" Dist = 1152797.6648 Scale= 1.000025736961	NSFA = 245°20'17.41556" NSBA = 64°34'01.49786" Ell Dist = 351368.0893 Delta h = -81.3647 Delta H = - ** - Gnd Dist= 351367.7675 Rad(A) = 6383451.8094	D X= -50260590.1276 D Y= +144061915.2144 D Z= -135434177.5378 S D= 204015633.6670

cluster21				
			Skew Con = -0.00084"	
			GsFA = 245°20'17.42931"	
			Gsc Dist = 351368.0893	
			GsBA = 64°34'01.51160"	
Pt# 2 COORDINATES	N = 92280.5086	N 41°20'07.03570"	X = 1478107.6667	
	E = 177116.0970	W 72°02'58.96956"	Y = -4562614.1956	
CTGR		h -59.8424	Z = 4190441.9531	
		H **		
Pt# 0 COORDINATES	N = 241162.9951	N 41°44'36.79685"	X = 16797566.1766	
	E = 495388.4540	W 70°53'13.02743"	Y = -48472773.7733	
acu5		h 21.5223	Z = 45470861.8275	
		H **		
	Az = 281°41'27.85459"	NSFA = 282°05'57.16991"	D X= -50261059.2861	
	O = 0°24'29.51335"	NSBA = 101°25'51.36005"	D Y= +144205213.3438	
	t-T Con = +0.19802"	Ell Dist = 279031.1060	D Z= -135280261.1467	
	Dist = 915463.0902	Delta h = +166.1742	S D= 204014868.8013	
	Scale= 1.000025736961	Delta H = **		
		Gnd Dist= 279032.5009		
		Rad(A) = 6386569.0056		
		Skew Con = -0.00141"		
		GsFA = 282°05'57.16527"		
		Gsc Dist = 279031.1060		
		GsBA = 101°25'51.35541"		
Pt# 3 COORDINATES	N = 297703.4069	N 41°53'58.88887"	X = 1477964.6670	
	E = 222143.1576	W 71°53'20.88990"	Y = -4518936.8384	
CTPU		h 187.6965	Z = 4237355.7630	
		H **		
Pt# 0 COORDINATES	N = 241162.9951	N 41°44'36.79685"	X = 16797566.1766	
	E = 495388.4540	W 70°53'13.02743"	Y = -48472773.7733	
acu5		h 21.5223	Z = 45470861.8275	
		H **		
	Az = 238°32'21.88455"	NSFA = 238°56'51.39542"	D X= -50195613.0408	
	O = 0°24'29.51335"	NSBA = 58°20'21.93405"	D Y= +144080182.8467	
	t-T Con = +0.00248"	Ell Dist = 294079.9638	D Z= -135437405.2613	
	Dist = 964836.9663	Delta h = -116.7277	S D= 204014679.3777	
	Scale= 1.000025736961	Delta H = **		
		Gnd Dist= 294079.4461		
		Rad(A) = 6381251.4070		
		Skew Con = -0.00156"		
		GsFA = 238°56'51.40664"		
		Gsc Dist = 294079.9638		
		GsBA = 58°20'21.94527"		
Pt# 1 COORDINATES	N = 87681.4052	N 41°19'24.87505"	X = 1497912.7224	
	E = 244533.6135	W 71°48'15.02551"	Y = -4557046.2102	
log0425a_IRY8		h -95.2054	Z = 4189458.1410	
		H **		
Pt# 2 COORDINATES	N = 92280.5086	N 41°20'07.03570"	X = 15910154.8703	

cluster21				
CTGR	E =	177116.0970	W 72°02'58.96956"	Y = -49111374.0218
			h -59.8424	Z = 45105361.3680
			H **	

	Az =	12°21'47.04972"	NSFA = 11°59'54.07140"	D X= -47349610.6922
	O = -	0°21'47.12188"	NSBA = 192°06'18.01225"	D Y= +146300354.3256
	t-T Con =	+5.85644"	Ell Dist = 210296.2134	D Z= -134081115.0559
	Dist =	689958.5739	Delta h = +247.5389	S D= 204018442.1152
	Scale=	1.000019797184	Delta H = **	
			Gnd Dist= 210296.8559	
			Rad(A) = 6364332.9547	
			Skew Con = +0.00141"	
			GsFA = 11°59'54.07404"	
			Gsc Dist = 210296.2134	
			GsBA = 192°06'18.01488"	

Pt# 3 COORDINATES	N =	297703.4069	N 41°53'58.88887"	X = 1477964.6670
CTPU	E =	222143.1576	W 71°53'20.88990"	Y = -4518936.8384
			h 187.6965	Z = 4237355.7630
			H **	

Pt# 2 COORDINATES	N =	92280.5086	N 41°20'07.03570"	X = 15910154.8703
CTGR	E =	177116.0970	W 72°02'58.96956"	Y = -49111374.0218
			h -59.8424	Z = 45105361.3680
			H **	

	Az =	93°54'09.33708"	NSFA = 93°32'22.33015"	D X= -47284164.4469
	O = -	0°21'47.12188"	NSBA = 273°42'06.07634"	D Y= +146175323.8285
	t-T Con =	-0.11494"	Ell Dist = 67573.5077	D Z= -134238259.1705
	Dist =	221699.7066	Delta h = -35.3630	S D= 204016979.0212
	Scale=	1.000019797184	Delta H = **	
			Gnd Dist= 67573.2573	
			Rad(A) = 6387377.5819	
			Skew Con = +0.00022"	
			GsFA = 93°32'22.33007"	
			Gsc Dist = 67573.5077	
			GsBA = 273°42'06.07626"	

Pt# 1 COORDINATES	N =	87681.4052	N 41°19'24.87505"	X = 1497912.7224
log0425a_IRY8	E =	244533.6135	W 71°48'15.02551"	Y = -4557046.2102
			h -95.2054	Z = 4189458.1410
			H **	

Pt# 3 COORDINATES	N =	297703.4069	N 41°53'58.88887"	X = 15908615.6396
CTPU	E =	222143.1576	W 71°53'20.88990"	Y = -48641236.7423
			h 187.6965	Z = 45610335.3944
			H **	

	Az =	173°54'53.23668"	NSFA = 173°39'22.15831"	D X= -47279114.4872
	O = -	0°15'35.58399"	NSBA = 353°42'45.27988"	D Y= +144632881.7708
	t-T Con =	-4.50562"	Ell Dist = 211210.3960	D Z= -135894994.7889
	Dist =	692951.8729	Delta h = -282.9019	S D= 204013320.0668
	Scale=	1.000006575043	Delta H = **	
			Gnd Dist= 211210.8628	
			Rad(A) = 6364207.8235	
			Skew Con = +0.00039"	
			GsFA = 173°39'22.15688"	

cluster21

		Gsc Dist = 211210.3960			
		GsBA = 353°42'45.27844"			
Pt# 1	COORDINATES	N = 87681.4052	N 41°19'24.87505"	X = 1497912.7224	
		E = 244533.6135	W 71°48'15.02551"	Y = -4557046.2102	
log0425a_IRY8			h -95.2054	Z = 4189458.1410	
			H -**-		

Az - Grid Azimuth
 NSFA - Normal Section Forward Azimuth
 NSBA - Normal Section Back Azimuth
 GsFA - Direct Geodetic Azimuth
 t - Geometric azimuth
 T - Azimuth Projected Geodetic
 t-T Con - t-T Correction
 Dist - Distance
 Ell Dist - Ellipsoidal Distance
 Gsc Dist - Geodetic Distance
 S D - Slope Distance
 Gnd Dist - Ground Distance
 O - Convergence
 Scale - Scale
 Delta h - Delta h Ellipsoidal
 Delta H - Delta H orthometric
 Rad(A) - Radius of curvature of normal section
 Skew Con - Inclination Correction

SUBNET 'New Subnet' ADJUSTED VECTOR RESIDUALS (X-Y-Z)

#	Points from - to	Vector status	Residuals(mm)			Normalized Residuals			Redundancy number (0..3)
			(X)	(Y)	(Z)	(X)	(Y)	(Z)	
1	acu5-CTGR		-12.5	29.1	-31.8	-0.61	0.84	-1.14	2.04
2	acu5-CTPU		-18.1	10.2	-26.5	-1.06	0.36	-0.92	1.60
3	acu5-log0425a_IRY8		-11.8	14.4	-23.1	-0.85	0.43	-0.87	1.68
4	CTGR-CTPU		-2.4	-11.0	2.2	-0.17	-0.41	0.10	1.76
5	CTGR-log0425a_IRY8		0.6	-1.4	1.7	0.14	-0.14	0.19	0.29
6	CTPU-log0425a_IRY8		4.1	1.4	5.1	0.36	0.05	0.22	1.63
R.M.S.			10.4	14.6	19.5	0.63	0.45	0.71	(1.50)

SUBNET 'New Subnet' ADJUSTED GPS-VECTOR RESIDUALS (N-E-U)

#	Points from - to	Vector status	Residuals (mm)			Normalized Residuals			Redundancy number (0...3)
			(North)	(East)	(Up)	(North)	(East)	(Up)	
1	acu5-CTGR		-2.7	-2.3	-44.8	-0.13	-0.14	-1.10	2.04
2	acu5-CTPU		-9.4	-13.8	-29.3	-0.53	-0.92	-0.79	1.60
3	acu5-log0425a_IRY8		-5.6	-6.4	-28.4	-0.32	-0.49	-0.72	1.68
4	CTGR-CTPU		-4.8	-5.7	8.8	-0.30	-0.44	0.28	1.76
5	CTGR-log0425a_IRY8		0.3	0.2	2.2	0.05	0.04	0.19	0.29
6	CTPU-log0425a_IRY8		3.9	4.3	3.4	0.26	0.37	0.10	1.63
R.M.S.			5.2	6.9	25.0	0.30	0.49	0.64	(1.50)

SUBNET 'New Subnet' ADJUSTED VECTOR RESIDUALS (Distance-Azimuth-Elevation)

#	Points from - to	Vector status	Residuals (mm)			Normalized Residuals			Redundancy number (0..3)
			(Dist)	(Azim)	(Elev)	(Dist)	(Azim)	(Elev)	
1	acu5-CTGR		3.6	-1.5	-44.7	0.21	-0.07	-1.10	2.04
2	acu5-CTPU		11.7	-12.1	-29.2	0.77	-0.68	-0.79	1.60

cluster21								
3	acu5-log0425a_IRY8	8.6	-1.5	-28.3	0.55	-0.10	-0.72	1.68
4	CTGR-CTPU	-5.9	-4.6	8.8	-0.38	-0.35	0.27	1.76
5	CTGR-log0425a_IRY8	0.1	-0.3	2.2	0.03	-0.05	0.19	0.29
6	CTPU-log0425a_IRY8	-3.4	-4.7	3.4	-0.23	-0.39	0.10	1.63
R.M.S.		6.7	5.7	25.0	0.43	0.35	0.64 (	1.50)

SUBNET 'New Subnet' Tau-VALUES(X-Y-Z) for VECTORS (Tau critical value = 3.00)

#	Points	Vector status	Distance (m)	Residuals (mm)			Residual Sigmas (mm)			Tau Values			Redundancy number
(0..3)	from - to			(X)	(Y)	(Z)	(X)	(Y)	(Z)	(X)	(Y)	(Z)	
1	acu5-CTGR		107097.1	0.6	7.7	-3.7	20.6	34.7	28.0	0.03	0.22	0.13	2.04
2	acu5-CTPU		85049.3	-1.5	-2.3	1.1	17.1	28.2	28.8	0.09	0.08	0.04	1.60
3	acu5-log0425a_IRY8		89635.6	0.7	-4.6	2.6	13.8	33.5	26.7	0.05	0.14	0.10	1.68
4	CTGR-CTPU		64098.6	1.0	-2.1	1.7	14.6	26.9	22.5	0.07	0.08	0.08	1.76
5	CTGR-log0425a_IRY8		20596.4	-0.1	1.1	-0.7	4.3	10.0	8.7	0.01	0.11	0.08	0.29
6	CTPU-log0425a_IRY8		64377.3	0.0	-5.1	3.3	11.6	27.6	23.7	0.00	0.18	0.14	1.63

SUBNET 'New Subnet' Tau-VALUES(N-E-U) for VECTORS (Tau critical value = 3.00)

#	Points	Vector status	Distance (m)	Residuals (mm)			Residual Sigmas (mm)			Tau Values			Redundancy number
(0..3)	from - to			(North)	(East)	(Up)	(North)	(East)	(Up)	(North)	(East)	(Up)	
1	acu5-CTGR		107097.1	1.9	3.1	-7.8	21.5	16.9	40.8	0.09	0.18	0.19	2.04
2	acu5-CTPU		85049.3	-0.3	-2.2	1.9	17.9	15.0	37.0	0.02	0.15	0.05	1.60
3	acu5-log0425a_IRY8		89635.6	-1.1	-0.8	5.1	17.8	13.0	39.3	0.06	0.06	0.13	1.68
4	CTGR-CTPU		64098.6	-0.3	0.3	2.9	15.9	13.0	31.9	0.02	0.02	0.09	1.76
5	CTGR-log0425a_IRY8		20596.4	0.2	0.3	-1.2	5.5	4.3	12.1	0.03	0.06	0.10	0.29
6	CTPU-log0425a_IRY8		64377.3	-0.8	-1.6	5.8	14.9	11.7	33.1	0.05	0.13	0.17	1.63

SUBNET 'New Subnet' Tau-VALUES for VECTORS (Tau critical value = 3.00)

#	Points	Vector status	Distance (m)	Residuals (mm)			Residual Sigmas (mm)			Tau Values			Redundancy number
(0..3)	from - to			(Dist)	(Azim)	(Elev)	(Dist)	(Azim)	(Elev)	(Dist)	(Azim)	(Elev)	
1	acu5-CTGR		107097.1	-3.6	0.4	-7.8	13.8	18.4	32.9	-0.26	0.02	-0.24	2.04
2	acu5-CTPU		85049.3	2.1	-0.8	2.0	11.5	12.8	26.7	0.18	-0.06	0.07	1.60
3	acu5-log0425a_IRY8		89635.6	1.2	-0.5	5.2	12.1	11.2	31.0	0.10	-0.04	0.17	1.68
4	CTGR-CTPU		64098.6	-0.2	0.3	2.9	12.0	10.7	23.9	-0.02	0.03	0.12	1.76
5	CTGR-log0425a_IRY8		20596.4	0.3	-0.2	-1.2	1.3	1.7	3.9	0.21	-0.10	-0.31	0.29
6	CTPU-log0425a_IRY8		64377.3	0.6	1.6	5.8	10.7	8.9	25.4	0.05	0.18	0.23	1.63

SUBNET 'New Subnet': CONTROL POINTS SUMMARY in NAD83(BLH)

#	Point name	Status	Plane	Height	Latitude	Coordinates	height (m)	Sigmas (mm)		
						Longitude		s(Lat)	s(Lon)	s(Hei)
1	acu5	Fixed	Fixed		41°44'36.79685"N	70°53'13.02743"W	6.5600			
2	CTGR	Fixed	Fixed		41°20'07.03570"N	72°02'58.96956"W	-18.2400			
3	CTPU	Fixed	Fixed		41°53'58.88887"N	71°53'20.88990"W	57.2100			

;SOFTWARE: Pinnacle Ver. 1000
;Project Name: FEMA TASK8 RI SHORE
;Subnet Name: New Subnet
;Coordinate System: SPC83(sft)
;Zone: RI
;Linear Units: USFeet
;Geoid: g2003u04

	cluster21								
	Name	N	E	Ell.H	Ortho.H	Sigma N	Sigma E	Sigma H	Description
	acu5	241162.9951	495388.4540	21.5223	0.0000	0.0000	0.0000	0.0000	""
	CTGR	92280.5086	177116.0970	-59.8424	0.0000	0.0000	0.0000	0.0000	""
	CTPU	297703.4069	222143.1576	187.6965	0.0000	0.0000	0.0000	0.0000	""
	log0425a_IRY8	87681.4052	244533.6135	-95.2054	0.0093	0.0072	0.0205	0.0000	""

ADJUSTMENT SUMMARY

Item Name	Item Value
SubNet	
Name	New Subnet
Number of points	4
Number of unknowns	3
Degree of freedom	15
Declared adjustment type	with fixed and weighted points
Aposteriori standard error of unit weight	0.640
Adjustment Date and Time	3.May.07 20:20:36
Reference points	
Number	3
Plane coordinates - fixed	6
Heights - fixed	3
Plane coordinates - weighted	0
Heights - weighted	0
Apriori standard error of unit weight	1.000
Processed vectors	
Total number	6
Unused vectors	0
Rejected vectors	0
Downweighted vectors	0
Apriori standard error of unit weight	1.000
Aposteriori standard error of unit weight	0.124
Vectors' VPV test	
Confidence level (%)	95
Lower bound	2.70
Upper bound	19.02
Degree of freedom	9
VPV	0.14
VPV test	failed
Vectors' Tau test	
Confidence level (%)	95
Tau critical value	3.00
Number of flagged observations	0

SUBNET 'New Subnet' POINTS: ADJUSTED COORDINATES in NAD83(BLH)

#	Point		Coordinates		height(m)	Sigmas(mm)			Corr.(%)		
	Name	Comment	Latitude	Longitude		s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5		41°44'36.79685"N	70°53'13.02743"W	6.5600	0.0	0.0	0.0	0	0	0
2	CTGR		41°20'07.03570"N	72°02'58.96956"W	-18.2400	0.0	0.0	0.0	0	0	0
3	CTPU		41°53'58.88887"N	71°53'20.88990"W	57.2100	0.0	0.0	0.0	0	0	0
4	log0425b_IRY8		41°22'12.58828"N	71°40'01.01512"W	-22.9031	4.2	3.8	9.4	4	-24	2

SUBNET 'New Subnet' POINTS: ADJUSTED COORDINATES in SPC83(sft)(Grid, Zone RI__)

#	Point		Coordinates			Sigmas(USFeet)			Corr.(%)		
	Name	Comment	Northing(USFeet)	Easting(USFeet)	Height (USFeet)	s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5		241162.99511	495388.45398	21.52227	0.000	0.000	0.000	0	0	0
2	CTGR		92280.50858	177116.09703	-59.84240	0.000	0.000	0.000	0	0	0
3	CTPU		297703.40688	222143.15757	187.69648	0.000	0.000	0.000	0	0	0
4	log0425b_IRY8		104553.95400	282258.97285	-75.14128	0.014	0.013	0.031	4	-24	2

SUBNET 'New Subnet' PROCESSED VECTORS (X-Y-Z)

cluster22											
#	Stations from - to	X	Coordinates (m)			Sigmas (mm)			Corr.(%)		
			Y	Z	Length	s(X)	s(Y)	s(Z)	X-Y	X-Z	Y-Z
1	acu5-CTGR	-82443.5483	-59328.1205	-33956.2713	107097.1190	18.2	35.3	29.0	-35	23	-70
2	acu5-CTPU	-82586.5480	-15650.7950	12957.5603	85049.3014	16.0	31.3	26.5	-33	19	-69
3	acu5-log0425b_IRY8	-52802.1882	-46919.3758	-31051.8121	77160.3133	15.9	29.4	25.1	-41	35	-68
4	CTGR-CTPU	-142.9996	43677.3233	46913.8370	64098.6515	14.5	27.2	22.2	-40	25	-64
5	CTGR-log0425b_IRY8	29641.3586	12408.7491	2904.4533	32264.8887	8.9	15.6	12.2	-45	44	-65
6	CTPU-log0425b_IRY8	29784.3573	-31268.5701	-44009.3878	61657.5837	15.4	26.4	21.5	-47	42	-66
Mean weight matrix's estimations:						13.6	24.6	19.7	-43	36	-66

SUBNET 'New Subnet' PROCESSED VECTORS (N-E-U)

#	Stations from - to	N	Coordinates (m)			Sigmas (mm)			Corr.(%)		
			E	U	Length	s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5-CTGR	-44685.8669	-97324.7850	-923.2654	107097.1190	18.2	17.1	42.4	-5	-18	-22
2	acu5-CTPU	17826.4282	-83158.5007	-515.6391	85049.3014	16.5	15.1	37.9	-8	-14	-25
3	acu5-log0425b_IRY8	-41174.4153	-65254.3901	-496.0305	77160.3133	15.6	14.1	36.1	1	-15	-10
4	CTGR-CTPU	62697.8608	13324.9480	-247.2748	64098.6515	15.2	13.0	32.4	-7	-19	-11
5	CTGR-log0425b_IRY8	3943.9562	32022.8174	-86.1446	32264.8887	8.3	7.7	18.6	6	-27	5
6	CTPU-log0425b_IRY8	-58787.5353	18588.7027	-378.7511	61657.5837	14.1	13.0	32.1	-1	-24	6
Mean weight matrix's estimations:						13.1	11.9	29.4	1	-23	-4

SUBNET 'New Subnet' PROCESSED VECTORS (Distance-Azimuth-Elevation)

#	Stations from - to	Distance(m)	Coordinates		Sigmas (mm)			Corr.(%)		
			Azimuth	Elevation	s(D)	s(A)	s(E)	D-A	D-E	A-E
1	acu5-CTGR	107097.1190	245°20'17.42"	- 0°29'38.20"	16.8	18.3	42.5	-1	27	-8
2	acu5-CTPU	85049.3014	282°05'57.13"	- 0°20'50.56"	15.4	16.2	37.9	11	20	-19
3	acu5-log0425b_IRY8	77160.3133	237°44'55.57"	- 0°22'06.00"	14.6	15.1	36.2	-9	16	-8
4	CTGR-CTPU	64098.6515	11°59'54.04"	- 0°13'15.72"	14.9	13.3	32.3	-12	-22	-6
5	CTGR-log0425b_IRY8	32264.8887	82°58'43.55"	- 0°09'10.71"	7.7	8.2	18.6	-8	1	28
6	CTPU-log0425b_IRY8	61657.5837	162°27'10.70"	- 0°21'07.06"	14.0	13.1	32.1	4	23	2
Mean weight matrix's estimations:					12.3	12.4	28.8	-3	8	7

Datum = NAD83
Coordinate system = SPC83(sft)
Projection = TM83
Zone = RI____
Linear unit = USFeet

POINT	MAPPING PROJECTION	GEODETIC	EC CARTESIAN
Pt# 0 COORDINATES	N = 241162.9951 E = 495388.4540	N 41°44'36.79685" W 70°53'13.02743" h 21.5223 H - ** -	X = 16797566.1766 Y = -48472773.7733 Z = 45470861.8275
acu5	Az = 244°55'46.32730" O = 0°24'29.51335" t-T Con = -1.57492" Dist = 1152797.6648 Scale= 1.000025736961	NSFA = 245°20'17.41556" NSBA = 64°34'01.49786" Ell Dist = 351368.0893 Delta h = -81.3647 Delta H = - ** - Gnd Dist= 351367.7675 Rad(A) = 6383451.8094	D X= -50260590.1276 D Y= +144061915.2144 D Z= -135434177.5378 S D= 204015633.6670

cluster22				
			Skew Con = -0.00084"	
			GsFA = 245°20'17.42931"	
			Gsc Dist = 351368.0893	
			GsBA = 64°34'01.51160"	
Pt# 2 COORDINATES	N = 92280.5086	N 41°20'07.03570"	X = 1478107.6667	
	E = 177116.0970	W 72°02'58.96956"	Y = -4562614.1956	
CTGR		h -59.8424	Z = 4190441.9531	
		H **		
Pt# 0 COORDINATES	N = 241162.9951	N 41°44'36.79685"	X = 16797566.1766	
	E = 495388.4540	W 70°53'13.02743"	Y = -48472773.7733	
acu5		h 21.5223	Z = 45470861.8275	
		H **		
	Az = 281°41'27.85459"	NSFA = 282°05'57.16991"	D X= -50261059.2861	
	O = 0°24'29.51335"	NSBA = 101°25'51.36005"	D Y= +144205213.3438	
	t-T Con = +0.19802"	Ell Dist = 279031.1060	D Z= -135280261.1467	
	Dist = 915463.0902	Delta h = +166.1742	S D= 204014868.8013	
	Scale= 1.000025736961	Delta H = **		
		Gnd Dist= 279032.5009		
		Rad(A) = 6386569.0056		
		Skew Con = -0.00141"		
		GsFA = 282°05'57.16527"		
		Gsc Dist = 279031.1060		
		GsBA = 101°25'51.35541"		
Pt# 3 COORDINATES	N = 297703.4069	N 41°53'58.88887"	X = 1477964.6670	
	E = 222143.1576	W 71°53'20.88990"	Y = -4518936.8384	
CTPU		h 187.6965	Z = 4237355.7630	
		H **		
Pt# 0 COORDINATES	N = 241162.9951	N 41°44'36.79685"	X = 16797566.1766	
	E = 495388.4540	W 70°53'13.02743"	Y = -48472773.7733	
acu5		h 21.5223	Z = 45470861.8275	
		H **		
	Az = 237°20'26.86230"	NSFA = 237°44'55.56357"	D X= -50163341.7761	
	O = 0°24'29.51335"	NSBA = 57°13'52.82089"	D Y= +144102626.2798	
	t-T Con = +0.81207"	Ell Dist = 253150.4120	D Z= -135424648.5402	
	Dist = 830551.2744	Delta h = -96.6635	S D= 204014124.9794	
	Scale= 1.000025736961	Delta H = **		
		Gnd Dist= 253150.0876		
		Rad(A) = 6380804.3583		
		Skew Con = -0.00126"		
		GsFA = 237°44'55.57205"		
		Gsc Dist = 253150.4120		
		GsBA = 57°13'52.82938"		
Pt# 1 COORDINATES	N = 104553.9540	N 41°22'12.58828"	X = 1507749.0236	
	E = 282258.9728	W 71°40'01.01512"	Y = -4550205.4381	
log0425b_IRY8		h -75.1413	Z = 4193346.3974	
		H **		
Pt# 2 COORDINATES	N = 92280.5086	N 41°20'07.03570"	X = 15910154.8703	

cluster22

CTGR	E = 177116.0970	W 72°02'58.96956"	Y = -49111374.0218
		h -59.8424	Z = 45105361.3680
		H _**_	
	Az = 12°21'47.04972"	NSFA = 11°59'54.07140"	D X= -47349610.6922
	0 = - 0°21'47.12188"	NSBA = 192°06'18.01225"	D Y= +146300354.3256
	t-T Con = +5.85644"	Ell Dist = 210296.2134	D Z= -134081115.0559
	Dist = 689958.5739	Delta h = +247.5389	S D= 204018442.1152
	Scale= 1.000019797184	Delta H = _**_	
		Gnd Dist= 210296.8559	
		Rad(A) = 6364332.9547	
		Skew Con = +0.00141"	
		GsFA = 11°59'54.07404"	
		Gsc Dist = 210296.2134	
		GsBA = 192°06'18.01488"	
Pt# 3 COORDINATES	N = 297703.4069	N 41°53'58.88887"	X = 1477964.6670
CTPU	E = 222143.1576	W 71°53'20.88990"	Y = -4518936.8384
		h 187.6965	Z = 4237355.7630
		H _**_	
Pt# 2 COORDINATES	N = 92280.5086	N 41°20'07.03570"	X = 15910154.8703
CTGR	E = 177116.0970	W 72°02'58.96956"	Y = -49111374.0218
		h -59.8424	Z = 45105361.3680
		H _**_	
	Az = 83°20'30.91354"	NSFA = 82°58'43.55769"	D X= -47251893.1822
	0 = - 0°21'47.12188"	NSBA = 263°13'53.96404"	D Y= +146197767.2616
	t-T Con = +0.23398"	Ell Dist = 105856.0649	D Z= -134225502.4494
	Dist = 347298.5132	Delta h = -15.2989	S D= 204017190.6222
	Scale= 1.000019797184	Delta H = _**_	
		Gnd Dist= 105855.7234	
		Rad(A) = 6387107.4645	
		Skew Con = -0.00034"	
		GsFA = 82°58'43.55809"	
		Gsc Dist = 105856.0649	
		GsBA = 263°13'53.96445"	
Pt# 1 COORDINATES	N = 104553.9540	N 41°22'12.58828"	X = 1507749.0236
log0425b_IRY8	E = 282258.9728	W 71°40'01.01512"	Y = -4550205.4381
		h -75.1413	Z = 4193346.3974
		H _**_	
Pt# 3 COORDINATES	N = 297703.4069	N 41°53'58.88887"	X = 15908615.6396
CTPU	E = 222143.1576	W 71°53'20.88990"	Y = -48641236.7423
		h 187.6965	Z = 45610335.3944
		H _**_	
	Az = 162°42'43.32149"	NSFA = 162°27'10.73610"	D X= -47246843.2225
	0 = - 0°15'35.58399"	NSBA = 342°36'02.16730"	D Y= +144655325.2039
	t-T Con = -2.99860"	Ell Dist = 202287.5362	D Z= -135882238.0678
	Dist = 663674.7334	Delta h = -262.8378	S D= 204013259.1932
	Scale= 1.000006575043	Delta H = _**_	
		Gnd Dist= 202288.0802	
		Rad(A) = 6366071.2483	
		Skew Con = +0.00080"	
		GsFA = 162°27'10.73266"	

cluster22

Gsc Dist = 202287.5362
GsBA = 342°36'02.16386"

Pt# 1 COORDINATES	N = 104553.9540	N 41°22'12.58828"	X = 1507749.0236
	E = 282258.9728	W 71°40'01.01512"	Y = -4550205.4381
log0425b_IRY8		h -75.1413	Z = 4193346.3974
		H -**-	

Az - Grid Azimuth
NSFA - Normal Section Forward Azimuth
NSBA - Normal Section Back Azimuth
GsFA - Direct Geodetic Azimuth
t - Geometric azimuth
T - Azimuth Projected Geodetic
t-T Con - t-T Correction
Dist - Distance
Ell Dist - Ellipsoidal Distance
Gsc Dist - Geodetic Distance
S D - Slope Distance
Gnd Dist - Ground Distance
O - Convergence
Scale - Scale
Delta h - Delta h Ellipsoidal
Delta H - Delta H orthometric
Rad(A) - Radius of curvature of normal section
Skew Con - Inclination Correction

SUBNET 'New Subnet' ADJUSTED VECTOR RESIDUALS (X-Y-Z)

#	Points from - to	Vector status	Residuals(mm)			Normalized Residuals			Redundancy
			(X)	(Y)	(Z)	(X)	(Y)	(Z)	number (0..3)
1	acu5-CTGR		-12.2	21.6	-28.1	-0.67	0.61	-0.97	1.94
2	acu5-CTPU		-11.8	-4.1	-11.8	-0.74	-0.13	-0.45	1.58
3	acu5-log0425b_IRY8		-8.4	7.5	-13.4	-0.53	0.26	-0.53	1.61
4	CTGR-CTPU		0.5	-28.0	21.7	0.03	-1.03	0.98	1.62
5	CTGR-log0425b_IRY8		2.4	-9.8	8.9	0.27	-0.63	0.73	0.66
6	CTPU-log0425b_IRY8		1.0	22.4	-16.9	0.06	0.85	-0.79	1.59
R.M.S.			7.8	17.9	18.0	0.47	0.66	0.77 (	1.50)

SUBNET 'New Subnet' ADJUSTED GPS-VECTOR RESIDUALS (N-E-U)

#	Points from - to	Vector status	Residuals (mm)			Normalized Residuals			Redundancy
			(North)	(East)	(Up)	(North)	(East)	(Up)	number (0...3)
1	acu5-CTGR		-4.7	-4.4	-36.9	-0.26	-0.26	-0.87	1.94
2	acu5-CTPU		-8.8	-12.5	-7.8	-0.53	-0.83	-0.21	1.58
3	acu5-log0425b_IRY8		-3.4	-5.5	-16.3	-0.22	-0.39	-0.45	1.61
4	CTGR-CTPU		-1.4	-8.2	34.5	-0.09	-0.63	1.07	1.62
5	CTGR-log0425b_IRY8		0.1	-0.8	13.4	0.01	-0.10	0.72	0.66
6	CTPU-log0425b_IRY8		1.4	7.9	-27.0	0.10	0.61	-0.84	1.59
R.M.S.			4.4	7.5	25.1	0.26	0.53	0.75 (	1.50)

SUBNET 'New Subnet' ADJUSTED VECTOR RESIDUALS (Distance-Azimuth-Elevation)

#	Points from - to	Vector status	Residuals (mm)			Normalized Residuals			Redundancy
			(Dist)	(Azim)	(Elev)	(Dist)	(Azim)	(Elev)	number (0..3)
1	acu5-CTGR		6.3	-2.4	-36.9	0.37	-0.13	-0.87	1.94
2	acu5-CTPU		10.5	-11.3	-7.8	0.68	-0.70	-0.20	1.58

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                                cluster22
3  acu5-log0425b_IRY8          6.6    0.0   -16.2    0.45    0.00   -0.45    1.61
4  CTGR-CTPU                   -3.2   -7.7    34.5   -0.21   -0.58    1.07    1.62
5  CTGR-log0425b_IRY8         -0.8   -0.1    13.4   -0.10   -0.02    0.72    0.66
6  CTPU-log0425b_IRY8          1.2   -7.9   -26.9    0.08   -0.61   -0.84    1.59
-----
R.M.S.                        5.8    6.5    25.1    0.38    0.45    0.75 ( 1.50)
-----
SUBNET 'New Subnet' Tau-VALUES(X-Y-Z) for VECTORS (Tau critical value = 3.00)
-----
#   Points      Vector status Distance (m)      Residuals (mm)      Residual Sigmas (mm)      Tau Values      Redundancy number
(0..3)
  from - to
      ( X )    ( Y )    ( Z )    ( X )    ( Y )    ( Z )    ( X )    ( Y )    ( Z )
-----
1  acu5-CTGR      107097.1      -0.2    0.7    -0.3    18.2    35.3    29.0    0.01    0.02    0.01    1.94
2  acu5-CTPU      85049.3      -0.4    3.8    -5.9    16.0    31.3    26.5    0.03    0.12    0.22    1.58
3  acu5-log0425b_IRY8  77160.3      1.1   -3.8     5.5    15.9    29.4    25.1    0.07    0.13    0.22    1.61
4  CTGR-CTPU      64098.7      0.0    0.9   -0.1    14.5    27.2    22.2    0.00    0.03    0.01    1.62
5  CTGR-log0425b_IRY8  32264.9     -0.1   -0.1     0.0     8.9    15.6    12.2    0.01    0.01    0.00    0.66
6  CTPU-log0425b_IRY8  61657.6     -1.0    3.2   -4.0    15.4    26.4    21.5    0.06    0.12    0.18    1.59
-----
SUBNET 'New Subnet' Tau-VALUES(N-E-U) for VECTORS (Tau critical value = 3.00)
-----
#   Points      Vector status Distance      Residuals (mm)      Residual Sigmas (mm)      Tau Values      Redundancy number
(0..3)
  from - to      (m)      (North) (East) (Up) (North) (East) (Up) (North) (East) (Up)
-----
1  acu5-CTGR      107097.1      0.3    0.0   -0.7    18.2    17.1    42.4    0.01    0.00    0.02    1.94
2  acu5-CTPU      85049.3     -1.9    0.9   -6.7    16.5    15.1    37.9    0.12    0.06    0.18    1.58
3  acu5-log0425b_IRY8  77160.3      1.5   -0.2     6.6    15.6    14.1    36.1    0.09    0.01    0.18    1.61
4  CTGR-CTPU      64098.7      0.5    0.3   -0.7    15.2    13.0    32.4    0.03    0.02    0.02    1.62
5  CTGR-log0425b_IRY8  32264.9     -0.1   -0.1     0.1     8.3     7.7    18.6    0.01    0.01    0.00    0.66
6  CTPU-log0425b_IRY8  61657.6     -0.8    0.1   -5.1    14.1    13.0    32.1    0.05    0.01    0.16    1.59
-----
SUBNET 'New Subnet' Tau-VALUES for VECTORS (Tau critical value = 3.00)
-----
#   Points      Vector status Distance      Residuals (mm)      Residual Sigmas (mm)      Tau Values      Redundancy number
(0..3)
  from - to      (m)      (Dist) (Azim) (Elev) (Dist) (Azim) (Elev) (Dist) (Azim) (Elev)
-----
1  acu5-CTGR      107097.1     -0.1    0.2   -0.7    13.5    14.7    34.3   -0.01    0.02   -0.02    1.94
2  acu5-CTPU      85049.3     -1.2   -1.7   -6.7    11.4    11.7    27.7   -0.11   -0.15   -0.24    1.58
3  acu5-log0425b_IRY8  77160.3     -0.7    1.3     6.6    10.7    10.9    26.6   -0.06    0.12    0.25    1.61
4  CTGR-CTPU      64098.7      0.5    0.2   -0.7    11.1     9.7    23.6    0.04    0.02   -0.03    1.62
5  CTGR-log0425b_IRY8  32264.9     -0.1    0.1     0.1     3.7     3.9     8.7   -0.03    0.02    0.01    0.66
6  CTPU-log0425b_IRY8  61657.6      0.8    0.2   -5.1    10.1     9.7    23.5    0.08    0.02   -0.22    1.59
-----
SUBNET 'New Subnet': CONTROL POINTS SUMMARY in NAD83( BLH )
-----
#   Point name      Status      Coordinates      Sigmas (mm)
      Plane      Height      Latitude      Longitude      height (m) s(Lat) s(Lon) s(Hei)
-----
1  acu5      Fixed      Fixed      41°44'36.79685"N  70°53'13.02743"W    6.5600
2  CTGR      Fixed      Fixed      41°20'07.03570"N  72°02'58.96956"W   -18.2400
3  CTPU      Fixed      Fixed      41°53'58.88887"N  71°53'20.88990"W   57.2100
-----
;SOFTWARE: Pinnacle Ver. 1000
;Project Name: FEMA TASK8 RI SHORE
;Subnet Name: New Subnet
;Coordinate System: SPC83(sft)
;Zone: RI
;Linear Units: USFeet
;Geoid: g2003u04

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	cluster22								
	Name	N	E	Ell.H	Ortho.H	Sigma N	Sigma E	Sigma H	Description
	acu5	241162.9951	495388.4540	21.5223	0.0000	0.0000	0.0000	0.0000	""
	CTGR	92280.5086	177116.0970	-59.8424	0.0000	0.0000	0.0000	0.0000	""
	CTPU	297703.4069	222143.1576	187.6965	0.0000	0.0000	0.0000	0.0000	""
	log0425b_IRY8	104553.9540	282258.9728	-75.1413	0.0137	0.0125	0.0308	0.0000	""

ADJUSTMENT SUMMARY

Item Name	Item Value
SubNet	
Name	New Subnet
Number of points	4
Number of unknowns	3
Degree of freedom	15
Declared adjustment type	with fixed and weighted points
Aposteriori standard error of unit weight	0.769
Adjustment Date and Time	3.May.07 20:27:46
Reference points	
Number	3
Plane coordinates - fixed	6
Heights - fixed	3
Plane coordinates - weighted	0
Heights - weighted	0
Apriori standard error of unit weight	1.000
Processed vectors	
Total number	6
Unused vectors	0
Rejected vectors	0
Downweighted vectors	0
Apriori standard error of unit weight	1.000
Aposteriori standard error of unit weight	0.151
Vectors' VPV test	
Confidence level (%)	95
Lower bound	2.70
Upper bound	19.02
Degree of freedom	9
VPV	0.21
VPV test	failed
Vectors' Tau test	
Confidence level (%)	95
Tau critical value	3.00
Number of flagged observations	0

SUBNET 'New Subnet' POINTS: ADJUSTED COORDINATES in NAD83(BLH)

#	Point		Coordinates		height(m)	Sigmas(mm)			Corr.(%)		
	Name	Comment	Latitude	Longitude		s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5		41°44'36.79685"N	70°53'13.02743"W	6.5600	0.0	0.0	0.0	0	0	0
2	CTGR		41°20'07.03570"N	72°02'58.96956"W	-18.2400	0.0	0.0	0.0	0	0	0
3	CTPU		41°53'58.88887"N	71°53'20.88990"W	57.2100	0.0	0.0	0.0	0	0	0
4	log0426a_IRY8		41°34'28.89190"N	71°27'24.64799"W	-26.0663	5.9	4.6	13.3	14	7	-5

SUBNET 'New Subnet' POINTS: ADJUSTED COORDINATES in SPC83(sft)(Grid, Zone RI__)

#	Point		Coordinates			Sigmas(USFeet)			Corr.(%)		
	Name	Comment	Northing(USFeet)	Easting(USFeet)	Height (USFeet)	s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5		241162.99511	495388.45398	21.52227	0.000	0.000	0.000	0	0	0
2	CTGR		92280.50858	177116.09703	-59.84240	0.000	0.000	0.000	0	0	0
3	CTPU		297703.40688	222143.15757	187.69648	0.000	0.000	0.000	0	0	0
4	log0426a_IRY8		179038.38117	339890.96305	-85.51927	0.019	0.015	0.044	14	7	-5

SUBNET 'New Subnet' PROCESSED VECTORS (X-Y-Z)

cluster23											
#	Stations from - to	X	Coordinates (m)			Sigmas (mm)			Corr.(%)		
			Y	Z	Length	s(X)	s(Y)	s(Z)	X-Y	X-Z	Y-Z
1	acu5-CTGR	-82443.5538	-59328.1438	-33956.2593	107097.1324	15.1	36.5	29.3	-23	30	-65
2	acu5-CTPU	-82586.5585	-15650.7767	12957.5422	85049.3054	14.6	30.9	27.3	-33	37	-63
3	acu5-log0426a_IRY8	-40911.7815	-27095.1293	-14033.7661	51037.8927	12.2	22.2	22.7	-49	49	-63
4	CTGR-CTPU	-143.0075	43677.3674	46913.8010	64098.6553	11.4	28.1	22.9	-21	30	-63
5	CTGR-log0426a_IRY8	41531.7709	32233.0306	19922.4829	56220.6509	12.1	23.4	24.1	-38	40	-66
6	CTPU-log0426a_IRY8	41674.7782	-11444.3501	-26991.3117	50953.8143	11.0	23.2	22.2	-40	42	-67
Mean weight matrix's estimations:						12.5	25.8	24.2	-36	39	-64

SUBNET 'New Subnet' PROCESSED VECTORS (N-E-U)

#	Stations from - to	N	Coordinates (m)			Sigmas (mm)			Corr.(%)		
			E	U	Length	s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5-CTGR	-44685.8714	-97324.7979	-923.2424	107097.1324	18.8	16.4	42.4	28	-17	-36
2	acu5-CTPU	17826.4285	-83158.5046	-515.6666	85049.3054	17.2	14.2	37.7	19	-7	-20
3	acu5-log0426a_IRY8	-18597.5218	-47528.3354	-236.6433	51037.8927	13.5	10.2	29.4	14	7	5
4	CTGR-CTPU	62697.8631	13324.9539	-247.3320	64098.6553	15.1	12.4	32.6	29	-14	-34
5	CTGR-log0426a_IRY8	26757.6899	49444.1336	-255.4670	56220.6509	13.8	11.0	31.0	12	13	-7
6	CTPU-log0426a_IRY8	-36005.8935	36052.5246	-286.8752	50953.8143	12.7	10.1	29.8	16	2	-12
Mean weight matrix's estimations:						14.7	11.7	32.5	18	0	-15

SUBNET 'New Subnet' PROCESSED VECTORS (Distance-Azimuth-Elevation)

#	Stations from - to	Distance(m)	Coordinates		Sigmas (mm)			Corr.(%)		
			Azimuth	Elevation	s(D)	s(A)	s(E)	D-A	D-E	A-E
1	acu5-CTGR	107097.1324	245°20'17.42"	- 0°29'38.15"	18.6	16.6	42.5	-29	34	-3
2	acu5-CTPU	85049.3054	282°05'57.13"	- 0°20'50.63"	13.6	17.7	37.7	-10	17	-10
3	acu5-log0426a_IRY8	51037.8927	248°37'47.73"	- 0°15'56.38"	11.3	12.6	29.4	-28	-8	5
4	CTGR-CTPU	64098.6553	11°59'54.06"	- 0°13'15.90"	15.7	11.6	32.6	19	-19	-32
5	CTGR-log0426a_IRY8	56220.6509	61°34'44.66"	- 0°15'37.28"	12.4	12.6	31.0	-25	0	-15
6	CTPU-log0426a_IRY8	50953.8143	134°57'46.52"	- 0°19'21.30"	10.6	12.3	29.8	23	-11	6
Mean weight matrix's estimations:					12.5	12.9	32.2	-7	-1	-7

Datum = NAD83
Coordinate system = SPC83(sft)
Projection = TM83
Zone = RI____
Linear unit = USFeet

POINT	MAPPING PROJECTION	GEODETIC	EC CARTESIAN
Pt# 0 COORDINATES	N = 241162.9951 E = 495388.4540	N 41°44'36.79685" W 70°53'13.02743" h 21.5223 H - ** -	X = 16797566.1766 Y = -48472773.7733 Z = 45470861.8275
acu5	Az = 244°55'46.32730" O = 0°24'29.51335" t-T Con = -1.57492" Dist = 1152797.6648 Scale= 1.000025736961	NSFA = 245°20'17.41556" NSBA = 64°34'01.49786" Ell Dist = 351368.0893 Delta h = -81.3647 Delta H = - ** - Gnd Dist= 351367.7675 Rad(A) = 6383451.8094	D X= -50260590.1276 D Y= +144061915.2144 D Z= -135434177.5378 S D= 204015633.6670

cluster23				
			Skew Con = -0.00084"	
			GsFA = 245°20'17.42931"	
			Gsc Dist = 351368.0893	
			GsBA = 64°34'01.51160"	
Pt# 2 COORDINATES	N = 92280.5086	N 41°20'07.03570"	X = 1478107.6667	
	E = 177116.0970	W 72°02'58.96956"	Y = -4562614.1956	
CTGR		h -59.8424	Z = 4190441.9531	
		H **		
Pt# 0 COORDINATES	N = 241162.9951	N 41°44'36.79685"	X = 16797566.1766	
	E = 495388.4540	W 70°53'13.02743"	Y = -48472773.7733	
acu5		h 21.5223	Z = 45470861.8275	
		H **		
	Az = 281°41'27.85459"	NSFA = 282°05'57.16991"	D X= -50261059.2861	
	O = 0°24'29.51335"	NSBA = 101°25'51.36005"	D Y= +144205213.3438	
	t-T Con = +0.19802"	Ell Dist = 279031.1060	D Z= -135280261.1467	
	Dist = 915463.0902	Delta h = +166.1742	S D= 204014868.8013	
	Scale= 1.000025736961	Delta H = **		
		Gnd Dist= 279032.5009		
		Rad(A) = 6386569.0056		
		Skew Con = -0.00141"		
		GsFA = 282°05'57.16527"		
		Gsc Dist = 279031.1060		
		GsBA = 101°25'51.35541"		
Pt# 3 COORDINATES	N = 297703.4069	N 41°53'58.88887"	X = 1477964.6670	
	E = 222143.1576	W 71°53'20.88990"	Y = -4518936.8384	
CTPU		h 187.6965	Z = 4237355.7630	
		H **		
Pt# 0 COORDINATES	N = 241162.9951	N 41°44'36.79685"	X = 16797566.1766	
	E = 495388.4540	W 70°53'13.02743"	Y = -48472773.7733	
acu5		h 21.5223	Z = 45470861.8275	
		H **		
	Az = 248°13'19.15408"	NSFA = 248°37'47.73551"	D X= -50124331.3146	
	O = 0°24'29.51335"	NSBA = 68°15'04.01933"	D Y= +144167666.3593	
	t-T Con = +0.93191"	Ell Dist = 167446.9928	D Z= -135368815.1767	
	Dist = 549370.0051	Delta h = -107.0415	S D= 204013432.7332	
	Scale= 1.000025736961	Delta H = **		
		Gnd Dist= 167446.7368		
		Rad(A) = 6384441.1183		
		Skew Con = -0.00107"		
		GsFA = 248°37'47.73830"		
		Gsc Dist = 167446.9928		
		GsBA = 68°15'04.02211"		
Pt# 1 COORDINATES	N = 179038.3812	N 41°34'28.89190"	X = 1519639.4360	
	E = 339890.9631	W 71°27'24.64799"	Y = -4530381.1822	
log0426a_IRY8		h -85.5193	Z = 4210364.4406	
		H **		
Pt# 2 COORDINATES	N = 92280.5086	N 41°20'07.03570"	X = 15910154.8703	

cluster23				
CTGR	E =	177116.0970	W 72°02'58.96956"	Y = -49111374.0218
			h -59.8424	Z = 45105361.3680
			H **	

	Az =	12°21'47.04972"	NSFA = 11°59'54.07140"	D X= -47349610.6922
	O = -	0°21'47.12188"	NSBA = 192°06'18.01225"	D Y= +146300354.3256
	t-T Con =	+5.85644"	Ell Dist = 210296.2134	D Z= -134081115.0559
	Dist =	689958.5739	Delta h = +247.5389	S D= 204018442.1152
	Scale=	1.000019797184	Delta H = **	
			Gnd Dist= 210296.8559	
			Rad(A) = 6364332.9547	
			Skew Con = +0.00141"	
			GsFA = 11°59'54.07404"	
			Gsc Dist = 210296.2134	
			GsBA = 192°06'18.01488"	

Pt# 3 COORDINATES	N =	297703.4069	N 41°53'58.88887"	X = 1477964.6670
CTPU	E =	222143.1576	W 71°53'20.88990"	Y = -4518936.8384
			h 187.6965	Z = 4237355.7630
			H **	

Pt# 2 COORDINATES	N =	92280.5086	N 41°20'07.03570"	X = 15910154.8703
CTGR	E =	177116.0970	W 72°02'58.96956"	Y = -49111374.0218
			h -59.8424	Z = 45105361.3680
			H **	

	Az =	61°56'32.65034"	NSFA = 61°34'44.66032"	D X= -47212882.7207
	O = -	0°21'47.12188"	NSBA = 241°58'17.65816"	D Y= +146262807.3411
	t-T Con =	+0.86815"	Ell Dist = 184451.1928	D Z= -134169669.0859
	Dist =	605156.6716	Delta h = -25.6769	S D= 204018051.1835
	Scale=	1.000019797184	Delta H = **	
			Gnd Dist= 184450.5522	
			Rad(A) = 6381977.0534	
			Skew Con = -0.00133"	
			GsFA = 61°34'44.66451"	
			Gsc Dist = 184451.1928	
			GsBA = 241°58'17.66235"	

Pt# 1 COORDINATES	N =	179038.3812	N 41°34'28.89190"	X = 1519639.4360
log0426a_IRY8	E =	339890.9631	W 71°27'24.64799"	Y = -4530381.1822
			h -85.5193	Z = 4210364.4406
			H **	

Pt# 3 COORDINATES	N =	297703.4069	N 41°53'58.88887"	X = 15908615.6396
CTPU	E =	222143.1576	W 71°53'20.88990"	Y = -48641236.7423
			h 187.6965	Z = 45610335.3944
			H **	

	Az =	135°13'21.36922"	NSFA = 134°57'46.55279"	D X= -47207832.7611
	O = -	0°15'35.58399"	NSBA = 315°15'02.57812"	D Y= +144720365.2834
	t-T Con =	-0.76755"	Ell Dist = 167170.3303	D Z= -135826404.7043
	Dist =	548458.1362	Delta h = -273.2157	S D= 204013175.5957
	Scale=	1.000006575043	Delta H = **	
			Gnd Dist= 167170.7384	
			Rad(A) = 6375792.5525	
			Skew Con = +0.00157"	
			GsFA = 134°57'46.54871"	

cluster23

		Gsc Dist = 167170.3303			
		GsBA = 315°15'02.57404"			
Pt# 1	COORDINATES	N = 179038.3812	N 41°34'28.89190"	X = 1519639.4360	
		E = 339890.9631	W 71°27'24.64799"	Y = -4530381.1822	
log0426a_IRY8			h -85.5193	Z = 4210364.4406	
			H _**_		

Az - Grid Azimuth
 NSFA - Normal Section Forward Azimuth
 NSBA - Normal Section Back Azimuth
 GsFA - Direct Geodetic Azimuth
 t - Geometric azimuth
 T - Azimuth Projected Geodetic
 t-T Con - t-T Correction
 Dist - Distance
 Ell Dist - Ellipsoidal Distance
 Gsc Dist - Geodetic Distance
 S D - Slope Distance
 Gnd Dist - Ground Distance
 O - Convergence
 Scale - Scale
 Delta h - Delta h Ellipsoidal
 Delta H - Delta H orthometric
 Rad(A) - Radius of curvature of normal section
 Skew Con - Inclination Correction

SUBNET 'New Subnet' ADJUSTED VECTOR RESIDUALS (X-Y-Z)

#	Points from - to	Vector status	Residuals(mm)			Normalized Residuals			Redundancy number (0..3)
			(X)	(Y)	(Z)	(X)	(Y)	(Z)	
1	acu5-CTGR		-17.7	-1.7	-16.1	-1.17	-0.05	-0.55	1.88
2	acu5-CTPU		-22.3	14.1	-29.9	-1.52	0.46	-1.09	1.75
3	acu5-log0426a_IRY8		-13.8	-0.5	-12.5	-1.13	-0.02	-0.55	1.23
4	CTGR-CTPU		-7.4	16.1	-14.3	-0.65	0.57	-0.62	1.45
5	CTGR-log0426a_IRY8		2.6	17.3	-6.7	0.21	0.74	-0.28	1.39
6	CTPU-log0426a_IRY8		9.8	-12.1	14.0	0.89	-0.52	0.63	1.30
R.M.S.			13.9	12.3	17.1	1.02	0.48	0.67	(1.50)

SUBNET 'New Subnet' ADJUSTED GPS-VECTOR RESIDUALS (N-E-U)

#	Points from - to	Vector status	Residuals (mm)			Normalized Residuals			Redundancy number (0...3)
			(North)	(East)	(Up)	(North)	(East)	(Up)	
1	acu5-CTGR		-9.2	-17.3	-13.9	-0.49	-1.05	-0.33	1.88
2	acu5-CTPU		-8.5	-16.5	-35.3	-0.50	-1.16	-0.94	1.75
3	acu5-log0426a_IRY8		-6.6	-13.2	-11.3	-0.49	-1.29	-0.39	1.23
4	CTGR-CTPU		0.9	-2.1	-22.6	0.06	-0.17	-0.69	1.45
5	CTGR-log0426a_IRY8		5.4	7.8	-16.2	0.39	0.70	-0.52	1.39
6	CTPU-log0426a_IRY8		0.8	5.5	20.2	0.06	0.55	0.68	1.30
R.M.S.			6.2	11.8	21.4	0.38	0.91	0.62	(1.50)

SUBNET 'New Subnet' ADJUSTED VECTOR RESIDUALS (Distance-Azimuth-Elevation)

#	Points from - to	Vector status	Residuals (mm)			Normalized Residuals			Redundancy number (0..3)
			(Dist)	(Azim)	(Elev)	(Dist)	(Azim)	(Elev)	
1	acu5-CTGR		19.7	-1.2	-13.7	1.06	-0.07	-0.32	1.88
2	acu5-CTPU		14.5	-11.8	-35.2	1.07	-0.67	-0.93	1.75


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                                cluster23
3  acu5-log0426a_IRY8          14.7   -1.3  -11.3   1.30  -0.10  -0.38   1.23
4  CTGR-CTPU                   0.6    -2.2  -22.6   0.04  -0.19  -0.69   1.45
5  CTGR-log0426a_IRY8          9.5    -1.0  -16.2   0.77  -0.08  -0.52   1.39
6  CTPU-log0426a_IRY8          3.3    -4.5   20.2   0.31  -0.36   0.68   1.30
-----
R.M.S.                        12.3    5.3   21.4   0.88   0.33   0.62 ( 1.50)
-----
SUBNET 'New Subnet' Tau-VALUES(X-Y-Z) for VECTORS (Tau critical value = 3.00)
-----
#   Points      Vector status Distance (m)      Residuals (mm)      Residual Sigmas (mm)      Tau Values      Redundancy number
(0..3)
  from - to
      ( X )    ( Y )    ( Z )    ( X )    ( Y )    ( Z )    ( X )    ( Y )    ( Z )
-----
1  acu5-CTGR          107097.1      -0.9    7.0    -4.0    15.1    36.5    29.3    0.06    0.19    0.14    1.88
2  acu5-CTPU           85049.3        1.2    1.5    -1.4    14.6    30.9    27.3    0.08    0.05    0.05    1.75
3  acu5-log0426a_IRY8  51037.9        0.2   -3.1    2.6    12.2    22.2    22.7    0.01    0.14    0.11    1.23
4  CTGR-CTPU          64098.7       -0.7   -5.1    2.1    11.4    28.1    22.9    0.06    0.18    0.09    1.45
5  CTGR-log0426a_IRY8  56220.7       -0.2    6.0   -3.8    12.1    23.4    24.1    0.02    0.26    0.16    1.39
6  CTPU-log0426a_IRY8  50953.8        0.3   -2.2    0.6    11.0    23.2    22.2    0.02    0.09    0.03    1.30
-----
SUBNET 'New Subnet' Tau-VALUES(N-E-U) for VECTORS (Tau critical value = 3.00)
-----
#   Points      Vector status Distance      Residuals (mm)      Residual Sigmas (mm)      Tau Values      Redundancy number
(0..3)
  from - to      status      (m)      (North) (East) (Up) (North) (East) (Up) (North) (East) (Up)
-----
1  acu5-CTGR          107097.1      1.6    1.4   -7.8    18.8    16.4    42.4    0.09    0.09    0.18    1.88
2  acu5-CTPU           85049.3     -0.3    1.6   -1.7    17.2    14.2    37.7    0.02    0.11    0.05    1.75
3  acu5-log0426a_IRY8  51037.9     -0.1   -0.9    4.0    13.5    10.2    29.4    0.01    0.08    0.13    1.23
4  CTGR-CTPU          64098.7     -1.5   -2.2    4.9    15.1    12.4    32.6    0.10    0.18    0.15    1.45
5  CTGR-log0426a_IRY8  56220.7      1.0    1.6   -6.8    13.8    11.0    31.0    0.07    0.15    0.22    1.39
6  CTPU-log0426a_IRY8  50953.8     -1.0   -0.4    2.0    12.7    10.1    29.8    0.08    0.04    0.07    1.30
-----
SUBNET 'New Subnet' Tau-VALUES for VECTORS (Tau critical value = 3.00)
-----
#   Points      Vector status Distance (m)      Residuals (mm)      Residual Sigmas (mm)      Tau Values      Redundancy number
(0..3)
  from - to
      (Dist) (Azim) (Elev) (Dist) (Azim) (Elev) (Dist) (Azim) (Elev)
-----
1  acu5-CTGR          107097.1     -1.9    0.9   -7.8    15.2    12.9    34.1   -0.12    0.07   -0.23    1.88
2  acu5-CTPU           85049.3     -1.6    0.0   -1.7    10.5    13.5    28.7   -0.16    0.00   -0.06    1.75
3  acu5-log0426a_IRY8  51037.9      0.8    0.2    4.0     7.1     8.3    19.1    0.12    0.03    0.21    1.23
4  CTGR-CTPU          64098.7     -2.0   -1.8    4.9    11.3     8.2    22.7   -0.17   -0.23    0.22    1.45
5  CTGR-log0426a_IRY8  56220.7      1.9   -0.1   -6.8     8.2     8.8    21.3    0.24   -0.01   -0.32    1.39
6  CTPU-log0426a_IRY8  50953.8      0.4    1.0    2.0     7.0     7.9    20.1    0.05    0.12    0.10    1.30
-----
SUBNET 'New Subnet': CONTROL POINTS SUMMARY in NAD83( BLH )
-----
#   Point name      Status      Coordinates      Sigmas (mm)
      Plane      Height      Latitude      Longitude      height (m) s(Lat) s(Lon) s(Hei)
-----
1  acu5      Fixed      Fixed      41°44'36.79685"N  70°53'13.02743"W   6.5600
2  CTGR      Fixed      Fixed      41°20'07.03570"N  72°02'58.96956"W  -18.2400
3  CTPU      Fixed      Fixed      41°53'58.88887"N  71°53'20.88990"W   57.2100
-----
;SOFTWARE: Pinnacle Ver. 1000
;Project Name: FEMA TASK8 RI SHORE
;Subnet Name: New Subnet
;Coordinate System: SPC83(sft)
;Zone: RI
;Linear Units: USFeet
;Geoid: g2003u04

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cluster23
;Name, N, E, Ell.H, Ortho.H, Sigma N, Sigma E, Sigma H, Description
acu5, 241162.9951, 495388.4540, 21.5223, 0.0000, 0.0000, 0.0000, ""
CTGR, 92280.5086, 177116.0970, -59.8424, 0.0000, 0.0000, 0.0000, ""
CTPU, 297703.4069, 222143.1576, 187.6965, 0.0000, 0.0000, 0.0000, ""
log0426a_IRY8, 179038.3812, 339890.9631, -85.5193, 0.0194, 0.0151, 0.0436, ""

```

ADJUSTMENT SUMMARY

Item Name	Item Value
SubNet	
Name	New Subnet
Number of points	4
Number of unknowns	3
Degree of freedom	15
Declared adjustment type	with fixed and weighted points
Aposteriori standard error of unit weight	0.833
Adjustment Date and Time	3.May.07 20:34:45
Reference points	
Number	3
Plane coordinates - fixed	6
Heights - fixed	3
Plane coordinates - weighted	0
Heights - weighted	0
Apriori standard error of unit weight	1.000
Processed vectors	
Total number	6
Unused vectors	0
Rejected vectors	0
Downweighted vectors	0
Apriori standard error of unit weight	1.000
Aposteriori standard error of unit weight	0.223
Vectors' VPV test	
Confidence level (%)	95
Lower bound	2.70
Upper bound	19.02
Degree of freedom	9
VPV	0.45
VPV test	failed
Vectors' Tau test	
Confidence level (%)	95
Tau critical value	3.00
Number of flagged observations	0

SUBNET 'New Subnet' POINTS: ADJUSTED COORDINATES in NAD83(BLH)

#	Point		Coordinates			Sigmas(mm)			Corr.(%)		
	Name	Comment	Latitude	Longitude	height(m)	s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5		41°44'36.79685"N	70°53'13.02743"W	6.5600	0.0	0.0	0.0	0	0	0
2	CTGR		41°20'07.03570"N	72°02'58.96956"W	-18.2400	0.0	0.0	0.0	0	0	0
3	CTMA		41°43'52.91712"N	72°12'38.87752"W	55.2900	0.0	0.0	0.0	0	0	0
4	log0430a_IRY8		41°10'57.56426"N	71°34'01.01405"W	-28.6528	7.0	5.7	15.5	9	-22	-22

SUBNET 'New Subnet' POINTS: ADJUSTED COORDINATES in SPC83(sft)(Grid, Zone RI__)

#	Point		Coordinates			Sigmas(USFeet)			Corr.(%)		
	Name	Comment	Northing(USFeet)	Easting(USFeet)	Height (USFeet)	s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5		241162.99511	495388.45398	21.52227	0.000	0.000	0.000	0	0	0
2	CTGR		92280.50858	177116.09703	-59.84240	0.000	0.000	0.000	0	0	0
3	CTMA		236926.63034	134064.33968	181.39728	0.000	0.000	0.000	0	0	0
4	log0430a_IRY8		36196.12053	309654.57107	-94.00495	0.023	0.019	0.051	9	-22	-22

SUBNET 'New Subnet' PROCESSED VECTORS (X-Y-Z)

cluster24											
#	Stations from - to	X	Coordinates (m)			Sigmas (mm)			Corr.(%)		
			Y	Z	Length	s(X)	s(Y)	s(Z)	X-Y	X-Z	Y-Z
1	acu5-CTGR	-82443.5600	-59328.1011	-33956.2939	107097.1244	16.7	36.5	28.7	-38	44	-67
2	acu5-CTMA	-104171.4947	-35744.8221	-977.8131	110137.8624	16.5	38.2	28.0	-39	38	-63
3	acu5-log0430a_IRY8	-40520.4545	-57309.5734	-46705.7988	84307.3311	15.5	32.1	25.3	-43	29	-66
4	CTGR-CTMA	-21727.9383	23583.2821	32978.4767	45998.4176	10.4	23.2	17.9	-39	33	-62
5	CTGR-log0430a_IRY8	41923.1014	2018.5385	-12749.5206	43865.3759	10.6	22.3	17.9	-42	37	-65
6	CTMA-log0430a_IRY8	63651.0471	-21564.7661	-45727.9840	81286.7975	13.5	33.0	24.6	-26	22	-68
Mean weight matrix's estimations:						13.0	28.8	22.3	-39	34	-65

SUBNET 'New Subnet' PROCESSED VECTORS (N-E-U)

#	Stations from - to	N	Coordinates (m)			Sigmas (mm)			Corr.(%)		
			E	U	Length	s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5-CTGR	-44685.8689	-97324.7898	-923.2971	107097.1244	18.3	15.8	43.0	25	-23	-19
2	acu5-CTMA	-506.6509	-110133.0128	-900.8509	110137.8624	20.2	15.8	43.1	24	-31	-24
3	acu5-log0430a_IRY8	-62068.2532	-57051.7891	-592.7894	84307.3311	17.0	13.9	37.8	0	-24	-20
4	CTGR-CTMA	44002.5949	-13402.1445	-92.6586	45998.4176	12.6	9.7	26.7	14	-24	-20
5	CTGR-log0430a_IRY8	-16838.2231	40504.5613	-161.1230	43865.3759	11.9	9.5	26.4	10	-21	-13
6	CTMA-log0430a_IRY8	-60737.9090	54019.3222	-602.2390	81286.7975	16.4	14.1	37.5	17	-27	-36
Mean weight matrix's estimations:						15.1	12.2	33.4	14	-24	-21

SUBNET 'New Subnet' PROCESSED VECTORS (Distance-Azimuth-Elevation)

#	Stations from - to	Distance(m)	Coordinates		Sigmas (mm)			Corr.(%)		
			Azimuth	Elevation	s(D)	s(A)	s(E)	D-A	D-E	A-E
1	acu5-CTGR	107097.1244	245°20'17.42"	- 0°29'38.26"	17.8	16.3	43.0	-27	23	-17
2	acu5-CTMA	110137.8624	269°44'11.12"	- 0°28'07.12"	15.7	20.1	43.1	-24	23	-31
3	acu5-log0430a_IRY8	84307.3311	222°35'18.77"	- 0°24'10.32"	15.6	15.4	37.8	-20	30	-5
4	CTGR-CTMA	45998.4176	343°03'37.84"	- 0°06'55.50"	12.0	10.5	26.7	-20	-26	
5	CTGR-log0430a_IRY8	43865.3759	112°34'23.64"	- 0°12'37.64"	9.5	11.9	26.4	9	-3	23
6	CTMA-log0430a_IRY8	81286.7975	138°21'02.23"	- 0°25'28.20"	14.1	16.4	37.5	16	-2	42
Mean weight matrix's estimations:					12.8	13.3	31.9	4	1	2

Datum = NAD83
Coordinate system = SPC83(sft)
Projection = TM83
Zone = RI__
Linear unit = USFeet

POINT	MAPPING PROJECTION	GEODETIC	EC CARTESIAN
Pt# 0 COORDINATES	N = 241162.9951 E = 495388.4540	N 41°44'36.79685" W 70°53'13.02743" h 21.5223 H - ** -	X = 16797566.1766 Y = -48472773.7733 Z = 45470861.8275
acu5	Az = 244°55'46.32730" O = 0°24'29.51335" t-T Con = -1.57492" Dist = 1152797.6648 Scale= 1.000025736961	NSFA = 245°20'17.41556" NSBA = 64°34'01.49786" Ell Dist = 351368.0893 Delta h = -81.3647 Delta H = - ** - Gnd Dist= 351367.7675 Rad(A) = 6383451.8094	D X= -50260590.1276 D Y= +144061915.2144 D Z= -135434177.5378 S D= 204015633.6670

cluster24				
			Skew Con = -0.00084"	
			GsFA = 245°20'17.42931"	
			Gsc Dist = 351368.0893	
			GsBA = 64°34'01.51160"	
Pt# 2 COORDINATES	N = 92280.5086	N 41°20'07.03570"	X = 1478107.6667	
	E = 177116.0970	W 72°02'58.96956"	Y = -4562614.1956	
CTGR		h -59.8424	Z = 4190441.9531	
		H **		
Pt# 0 COORDINATES	N = 241162.9951	N 41°44'36.79685"	X = 16797566.1766	
	E = 495388.4540	W 70°53'13.02743"	Y = -48472773.7733	
acu5		h 21.5223	Z = 45470861.8275	
		H **		
	Az = 269°19'41.54270"	NSFA = 269°44'11.12951"	D X= -50331875.8698	
	O = 0°24'29.51335"	NSBA = 88°51'18.33703"	D Y= +144139288.0335	
	t-T Con = -0.07347"	Ell Dist = 361342.1642	D Z= -135325980.6633	
	Dist = 1185525.6742	Delta h = +159.8750	S D= 204016060.9508	
	Scale= 1.000025736961	Delta H = **		
		Gnd Dist= 361343.9162		
		Rad(A) = 6387621.2615		
		Skew Con = +0.00003"		
		GsFA = 269°44'11.12969"		
		Gsc Dist = 361342.1642		
		GsBA = 88°51'18.33720"		
Pt# 3 COORDINATES	N = 236926.6303	N 41°43'52.91712"	X = 1456379.7291	
	E = 134064.3397	W 72°12'38.87752"	Y = -4539030.9132	
CTMA		h 181.3973	Z = 4223420.4264	
		H **		
Pt# 0 COORDINATES	N = 241162.9951	N 41°44'36.79685"	X = 16797566.1766	
	E = 495388.4540	W 70°53'13.02743"	Y = -48472773.7733	
acu5		h 21.5223	Z = 45470861.8275	
		H **		
	Az = 222°10'51.33479"	NSFA = 222°35'18.74726"	D X= -50123047.4233	
	O = 0°24'29.51335"	NSBA = 42°08'17.81094"	D Y= +144068537.6892	
	t-T Con = +2.10087"	Ell Dist = 276598.7425	D Z= -135476006.6006	
	Dist = 907484.0448	Delta h = -115.5272	S D= 204014244.1090	
	Scale= 1.000025736961	Delta H = **		
		Gnd Dist= 276598.2635		
		Rad(A) = 6374657.5636		
		Skew Con = -0.00174"		
		GsFA = 222°35'18.75848"		
		Gsc Dist = 276598.7425		
		GsBA = 42°08'17.82216"		
Pt# 1 COORDINATES	N = 36196.1205	N 41°10'57.56426"	X = 1520030.7669	
	E = 309654.5711	W 71°34'01.01405"	Y = -4560595.6613	
log0430a_IRY8		h -94.0050	Z = 4177692.4293	
		H **		
Pt# 2 COORDINATES	N = 92280.5086	N 41°20'07.03570"	X = 15910154.8703	

cluster24				
CTGR	E =	177116.0970	W 72°02'58.96956"	Y = -49111374.0218
			h -59.8424	Z = 45105361.3680
			H _**_	

	Az =	343°25'31.08718"	NSFA = 343°03'37.83947"	D X= -47420427.2759
	O =	- 0°21'47.12188"	NSBA = 162°57'13.32332"	D Y= +146234429.0153
	t-T Con =	+6.12583"	Ell Dist = 150912.5013	D Z= -134126834.5725
	Dist =	495133.6705	Delta h = +241.2397	S D= 204017677.9225
	Scale=	1.000019797184	Delta H = _**_	
			Gnd Dist= 150912.9396	
			Rad(A) = 6365337.2787	
			Skew Con = -0.00187"	
			GsFA = 343°03'37.83760"	
			Gsc Dist = 150912.5013	
			GsBA = 162°57'13.32145"	

Pt# 3 COORDINATES	N =	236926.6303	N 41°43'52.91712"	X = 1456379.7291
CTMA	E =	134064.3397	W 72°12'38.87752"	Y = -4539030.9132
			h 181.3973	Z = 4223420.4264
			H _**_	

Pt# 2 COORDINATES	N =	92280.5086	N 41°20'07.03570"	X = 15910154.8703
CTGR	E =	177116.0970	W 72°02'58.96956"	Y = -49111374.0218
			h -59.8424	Z = 45105361.3680
			H _**_	

	Az =	112°56'09.95781"	NSFA = 112°34'23.66367"	D X= -47211598.8294
	O =	- 0°21'47.12188"	NSBA = 292°53'29.78727"	D Y= +146163678.6710
	t-T Con =	-0.82774"	Ell Dist = 143915.5105	D Z= -134276860.5098
	Dist =	472165.4430	Delta h = -34.1626	S D= 204017232.8384
	Scale=	1.000019797184	Delta H = _**_	
			Gnd Dist= 143914.9815	
			Rad(A) = 6383895.8492	
			Skew Con = +0.00125"	
			GsFA = 112°34'23.66150"	
			Gsc Dist = 143915.5105	
			GsBA = 292°53'29.78510"	

Pt# 1 COORDINATES	N =	36196.1205	N 41°10'57.56426"	X = 1520030.7669
log0430a_IRY8	E =	309654.5711	W 71°34'01.01405"	Y = -4560595.6613
			h -94.0050	Z = 4177692.4293
			H _**_	

Pt# 3 COORDINATES	N =	236926.6303	N 41°43'52.91712"	X = 15676278.2312
CTMA	E =	134064.3397	W 72°12'38.87752"	Y = -48857526.6979
			h 181.3973	Z = 45460337.2803
			H _**_	

	Az =	138°49'22.07085"	NSFA = 138°21'02.24283"	D X= -46444288.5560
	O =	- 0°28'23.46945"	NSBA = 318°46'36.83446"	D Y= +145330847.9094
	t-T Con =	-3.64142"	Ell Dist = 266687.7202	D Z= -135441477.3152
	Dist =	874972.2744	Delta h = -275.4022	S D= 204015982.3908
	Scale=	1.000036767479	Delta H = _**_	
			Gnd Dist= 266688.2771	
			Rad(A) = 6374258.7514	
			Skew Con = +0.00173"	
			GsFA = 138°21'02.23243"	

```

                                cluster24
                                |
                                | Gsc Dist = 266687.7202
                                | GsBA = 318°46'36.82406"
                                |
-----
Pt#   1 COORDINATES | N =      36196.1205 | N      41°10'57.56426" | X = 1520030.7669
                                | E =      309654.5711 | W      71°34'01.01405" | Y = -4560595.6613
log0430a_IRY8       |                   | h              -94.0050 | Z = 4177692.4293
                                |                   | H              _**_   |
-----

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Az      - Grid Azimuth
NSFA    - Normal Section Forward Azimuth
NSBA    - Normal Section Back Azimuth
GsFA    - Direct Geodetic Azimuth
t        - Geometric azimuth
T        - Azimuth Projected Geodetic
t-T Con - t-T Correction
Dist     - Distance
Ell Dist - Ellipsoidal Distance
Gsc Dist - Geodetic Distance
S D      - Slope Distance
Gnd Dist - Ground Distance
O        - Convergence
Scale    - Scale
Delta h  - Delta h Ellipsoidal
Delta H  - Delta H orthometric
Rad(A)   - Radius of curvature of normal section
Skew Con - Inclination Correction

```

SUBNET 'New Subnet' ADJUSTED VECTOR RESIDUALS (X-Y-Z)

#	Points from - to	Vector status	Residuals(mm)			Normalized Residuals			Redundancy number (0..3)
			(X)	(Y)	(Z)	(X)	(Y)	(Z)	
1	acu5-CTGR		-24.0	41.1	-50.7	-1.43	1.13	-1.77	1.81
2	acu5-CTMA		-21.1	43.0	-47.2	-1.28	1.13	-1.69	1.77
3	acu5-log0430a_IRY8		-17.9	30.4	-30.0	-1.15	0.95	-1.19	1.53
4	CTGR-CTMA		-0.8	5.0	-0.5	-0.08	0.22	-0.03	1.08
5	CTGR-log0430a_IRY8		1.9	0.2	5.0	0.18	0.01	0.28	1.08
6	CTMA-log0430a_IRY8		10.2	-27.4	18.9	0.76	-0.83	0.77	1.72
R.M.S.			15.5	29.5	31.8	0.97	0.83	1.16 (	1.50)

SUBNET 'New Subnet' ADJUSTED GPS-VECTOR RESIDUALS (N-E-U)

#	Points from - to	Vector status	Residuals (mm)			Normalized Residuals			Redundancy number (0...3)
			(North)	(East)	(Up)	(North)	(East)	(Up)	
1	acu5-CTGR		-6.7	-9.2	-68.6	-0.37	-0.58	-1.59	1.81
2	acu5-CTMA		-3.6	-5.9	-66.9	-0.18	-0.37	-1.55	1.77
3	acu5-log0430a_IRY8		0.6	-6.9	-45.8	0.04	-0.50	-1.21	1.53
4	CTGR-CTMA		2.9	0.8	-4.1	0.23	0.08	-0.15	1.08
5	CTGR-log0430a_IRY8		3.4	1.9	3.6	0.29	0.20	0.14	1.08
6	CTMA-log0430a_IRY8		-5.3	1.3	34.3	-0.33	0.09	0.92	1.72
R.M.S.			4.2	5.4	45.6	0.26	0.36	1.10 (	1.50)

SUBNET 'New Subnet' ADJUSTED VECTOR RESIDUALS (Distance-Azimuth-Elevation)

#	Points from - to	Vector status	Residuals (mm)			Normalized Residuals			Redundancy number (0..3)
			(Dist)	(Azim)	(Elev)	(Dist)	(Azim)	(Elev)	
1	acu5-CTGR		11.7	-2.3	-68.5	0.66	-0.14	-1.59	1.81
2	acu5-CTMA		6.5	-3.6	-66.8	0.41	-0.18	-1.55	1.77

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                                cluster24
3  acu5-log0430a_IRY8          4.5    5.5  -45.8   0.29   0.36  -1.21   1.53
4  CTGR-CTMA                   2.6    1.6   -4.1   0.22   0.15  -0.15   1.08
5  CTGR-log0430a_IRY8          0.4   -3.9    3.6   0.05  -0.33   0.14   1.08
6  CTMA-log0430a_IRY8          4.6    2.5   34.4   0.33   0.16   0.92   1.72
-----
R.M.S.                        6.2    3.5   45.6   0.38   0.24   1.10 ( 1.50)
-----
SUBNET 'New Subnet' Tau-VALUES(X-Y-Z) for VECTORS (Tau critical value = 3.00)
-----
#   Points      Vector status Distance (m)      Residuals (mm)      Residual Sigmas (mm)      Tau Values      Redundancy number
(0..3)
  from - to
      ( X )    ( Y )    ( Z )    ( X )    ( Y )    ( Z )    ( X )    ( Y )    ( Z )
-----
1  acu5-CTGR      107097.1      -2.5    4.2    -6.2    16.7    36.5    28.7    0.15    0.11    0.22    1.81
2  acu5-CTMA      110137.9       2.5   -3.8     0.6    16.5    38.2    28.0    0.15    0.10    0.02    1.77
3  acu5-log0430a_IRY8  84307.3      -0.7   -0.5     4.4    15.5    32.1    25.3    0.05    0.02    0.17    1.53
4  CTGR-CTMA      45998.4       1.4   -4.8     2.8    10.4    23.2    17.9    0.13    0.21    0.16    1.08
5  CTGR-log0430a_IRY8  43865.4      -2.4     6.2    -5.2    10.6    22.3    17.9    0.22    0.28    0.29    1.08
6  CTMA-log0430a_IRY8  81286.8       3.7   -11.5     5.4    13.5    33.0    24.6    0.27    0.35    0.22    1.72
-----
SUBNET 'New Subnet' Tau-VALUES(N-E-U) for VECTORS (Tau critical value = 3.00)
-----
#   Points      Vector status Distance      Residuals (mm)      Residual Sigmas (mm)      Tau Values      Redundancy number
(0..3)
  from - to      (m)      (North) (East) (Up) (North) (East) (Up) (North) (East) (Up)
-----
1  acu5-CTGR      107097.1      -1.4   -1.0   -7.7    18.3    15.8    43.0    0.08    0.06    0.18    1.81
2  acu5-CTMA      110137.9      -2.5     1.1     3.7    20.2    15.8    43.1    0.12    0.07    0.09    1.77
3  acu5-log0430a_IRY8  84307.3       3.1   -0.9     3.1    17.0    13.9    37.8    0.18    0.06    0.08    1.53
4  CTGR-CTMA      45998.4      -1.2   -0.2     5.6    12.6     9.7    26.7    0.10    0.02    0.21    1.08
5  CTGR-log0430a_IRY8  43865.4       0.5   -0.3    -8.4    11.9     9.5    26.4    0.04    0.04    0.32    1.08
6  CTMA-log0430a_IRY8  81286.8      -4.0     0.0    12.6    16.4    14.1    37.5    0.24    0.00    0.34    1.72
-----
SUBNET 'New Subnet' Tau-VALUES for VECTORS (Tau critical value = 3.00)
-----
#   Points      Vector status Distance      Residuals (mm)      Residual Sigmas (mm)      Tau Values      Redundancy number
(0..3)
  from - to      (m)      (Dist) (Azim) (Elev) (Dist) (Azim) (Elev) (Dist) (Azim) (Elev)
-----
1  acu5-CTGR      107097.1       1.6   -0.9   -7.6    14.2    12.2    33.7    0.11   -0.07   -0.23    1.81
2  acu5-CTMA      110137.9      -1.1   -2.5     3.7    12.0    15.8    33.1   -0.09   -0.16     0.11    1.77
3  acu5-log0430a_IRY8  84307.3      -1.7     2.7     3.1    10.6    11.6    26.9   -0.16     0.24     0.11    1.53
4  CTGR-CTMA      45998.4      -1.2   -0.5     5.6     7.4     6.2    15.8   -0.16   -0.09     0.35    1.08
5  CTGR-log0430a_IRY8  43865.4      -0.5   -0.3    -8.4     5.7     7.1    15.9   -0.08   -0.05   -0.53    1.08
6  CTMA-log0430a_IRY8  81286.8       2.9     2.7    12.6    10.6    12.7    28.9     0.27     0.21     0.44    1.72
-----
SUBNET 'New Subnet': CONTROL POINTS SUMMARY in NAD83( BLH )
-----
#   Point name      Status      Coordinates      Sigmas (mm)
      Plane      Height      Latitude      Longitude      height (m) s(Lat) s(Lon) s(Hei)
-----
1  acu5      Fixed      Fixed      41°44'36.79685"N  70°53'13.02743"W    6.5600
2  CTGR      Fixed      Fixed      41°20'07.03570"N  72°02'58.96956"W   -18.2400
3  CTMA      Fixed      Fixed      41°43'52.91712"N  72°12'38.87752"W   55.2900
-----
;SOFTWARE: Pinnacle Ver. 1000
;Project Name: FEMA TASK8 RI SHORE
;Subnet Name: New Subnet
;Coordinate System: SPC83(sft)
;Zone: RI
;Linear Units: USFeet
;Geoid: g2003u04

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cluster24
;Name, N, E, Ell.H, Ortho.H, Sigma N, Sigma E, Sigma H, Description
acu5, 241162.9951, 495388.4540, 21.5223, 0.0000, 0.0000, 0.0000, ""
CTGR, 92280.5086, 177116.0970, -59.8424, 0.0000, 0.0000, 0.0000, ""
CTMA, 236926.6303, 134064.3397, 181.3973, 0.0000, 0.0000, 0.0000, ""
log0430a_IRY8, 36196.1205, 309654.5711, -94.0050, 0.0228, 0.0186, 0.0510, ""

```

ADJUSTMENT SUMMARY

Item Name	Item Value
SubNet	
Name	New Subnet
Number of points	4
Number of unknowns	3
Degree of freedom	15
Declared adjustment type	with fixed and weighted points
Aposteriori standard error of unit weight	0.500
Adjustment Date and Time	3.May.07 20:42:53
Reference points	
Number	3
Plane coordinates - fixed	6
Heights - fixed	3
Plane coordinates - weighted	0
Heights - weighted	0
Apriori standard error of unit weight	1.000
Processed vectors	
Total number	6
Unused vectors	0
Rejected vectors	0
Downweighted vectors	0
Apriori standard error of unit weight	1.000
Aposteriori standard error of unit weight	0.102
Vectors' VPV test	
Confidence level (%)	95
Lower bound	2.70
Upper bound	19.02
Degree of freedom	9
VPV	0.09
VPV test	failed
Vectors' Tau test	
Confidence level (%)	95
Tau critical value	3.00
Number of flagged observations	0

SUBNET 'New Subnet' POINTS: ADJUSTED COORDINATES in NAD83(BLH)

#	Point		Coordinates		Sigmas(mm)			Corr.(%)			
	Name	Comment	Latitude	Longitude	height(m)	s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5		41°44'36.79685"N	70°53'13.02743"W	6.5600	0.0	0.0	0.0	0	0	0
2	CTGR		41°20'07.03570"N	72°02'58.96956"W	-18.2400	0.0	0.0	0.0	0	0	0
3	CTPU		41°53'58.88887"N	71°53'20.88990"W	57.2100	0.0	0.0	0.0	0	0	0
4	log0501a_IRY8		41°35'35.66762"N	71°25'49.96847"W	-24.5507	3.9	3.0	8.5	21	-6	-17

SUBNET 'New Subnet' POINTS: ADJUSTED COORDINATES in SPC83(sft)(Grid, Zone RI__)

#	Point		Coordinates			Sigmas(USFeet)			Corr.(%)		
	Name	Comment	Northing(USFeet)	Easting(USFeet)	Height (USFeet)	s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5		241162.99511	495388.45398	21.52227	0.000	0.000	0.000	0	0	0
2	CTGR		92280.50858	177116.09703	-59.84240	0.000	0.000	0.000	0	0	0
3	CTPU		297703.40688	222143.15757	187.69648	0.000	0.000	0.000	0	0	0
4	log0501a_IRY8		185801.96782	347081.70364	-80.54684	0.013	0.010	0.028	21	-6	-17

SUBNET 'New Subnet' PROCESSED VECTORS (X-Y-Z)

cluster25											
#	Stations from - to	X	Coordinates (m)			Sigmas (mm)			Corr.(%)		
			Y	Z	Length	s(X)	s(Y)	s(Z)	X-Y	X-Z	Y-Z
1	acu5-CTPU	-82586.5438	-15650.7962	12957.5573	85049.2971	14.5	31.1	27.2	-30	26	-63
2	acu5-log0501a_IRY8	-39267.4740	-25102.0313	-12491.8223	48250.3069	10.7	22.9	20.4	-42	39	-62
3	CTGR-acu5	82443.5488	59328.1286	33956.2706	107097.1237	15.8	34.2	31.6	-44	34	-60
4	CTGR-CTPU	-142.9981	43677.3351	46913.8252	64098.6509	12.0	27.3	23.6	-41	36	-63
5	CTGR-log0501a_IRY8	43176.0741	34226.1044	21464.4412	59129.7035	12.0	26.0	22.7	-32	49	-62
6	CTPU-log0501a_IRY8	43319.0693	-9451.2368	-25449.3788	51122.7789	11.1	23.6	21.9	-32	29	-62
Mean weight matrix's estimations:						12.2	26.6	23.7	-37	37	-62

SUBNET 'New Subnet' PROCESSED VECTORS (N-E-U)

#	Stations from - to	N	Coordinates (m)			Sigmas (mm)			Corr.(%)		
			E	U	Length	s(N)	s(E)	s(U)	N-E	N-U	E-U
1	acu5-CTPU	17826.4244	-83158.4971	-515.6393	85049.2971	17.6	14.4	37.4	11	-8	-27
2	acu5-log0501a_IRY8	-16551.6453	-45322.0652	-213.4390	48250.3069	13.2	9.8	28.0	15	-8	-16
3	CTGR-acu5	45991.7644	96714.9849	-873.6072	107097.1237	20.7	14.0	42.3	8	-3	-14
4	CTGR-CTPU	62697.8590	13324.9531	-247.2906	64098.6509	15.2	11.0	33.0	13	-10	-19
5	CTGR-log0501a_IRY8	28833.0631	51622.6480	-280.2238	59129.7035	14.2	11.7	31.6	37	-7	-13
6	CTPU-log0501a_IRY8	-33934.4495	38234.9248	-286.6866	51122.7789	13.8	10.7	29.2	10	-2	-22
Mean weight matrix's estimations:						15.1	11.5	32.5	17	-7	-18

SUBNET 'New Subnet' PROCESSED VECTORS (Distance-Azimuth-Elevation)

#	Stations from - to	Distance(m)	Coordinates		Sigmas (mm)			Corr.(%)		
			Azimuth	Elevation	s(D)	s(A)	s(E)	D-A	D-E	A-E
1	acu5-CTPU	85049.2971	282°05'57.13"	- 0°20'50.56"	14.1	17.8	37.4	-1	23	-12
2	acu5-log0501a_IRY8	48250.3069	249°56'16.00"	- 0°15'12.43"	10.8	12.4	28.0	-31	16	-3
3	CTGR-acu5	107097.1237	64°34'01.50"	- 0°28'02.55"	16.1	19.2	42.3	-33	-15	-2
4	CTGR-CTPU	64098.6509	11°59'54.06"	- 0°13'15.77"	15.4	10.8	33.0	-1	-13	-16
5	CTGR-log0501a_IRY8	59129.7035	60°48'54.39"	- 0°16'17.52"	14.3	11.6	31.6	-36	-14	1
6	CTPU-log0501a_IRY8	51122.7789	131°35'23.48"	- 0°19'16.70"	11.6	13.2	29.1	24	-15	13
Mean weight matrix's estimations:					12.7	12.8	32.0	-12	-3	-2

Datum = NAD83
Coordinate system = SPC83(sft)
Projection = TM83
Zone = RI____
Linear unit = USFeet

POINT	MAPPING PROJECTION	GEODETIC	EC CARTESIAN
Pt# 2 COORDINATES	N = 241162.9951 E = 495388.4540	N 41°44'36.79685" W 70°53'13.02743" h 21.5223 H - ** -	X = 16797566.1766 Y = -48472773.7733 Z = 45470861.8275
acu5	Az = 281°41'27.85459" O = 0°24'29.51335" t-T Con = +0.19802" Dist = 915463.0902 Scale= 1.000025736961	NSFA = 282°05'57.16991" NSBA = 101°25'51.36005" Ell Dist = 279031.1060 Delta h = +166.1742 Delta H = - ** - Gnd Dist= 279032.5009 Rad(A) = 6386569.0056	D X= -50261059.2861 D Y= +144205213.3438 D Z= -135280261.1467 S D= 204014868.8013

cluster25				
			Skew Con = -0.00141"	
			GsFA = 282°05'57.16527"	
			Gsc Dist = 279031.1060	
			GsBA = 101°25'51.35541"	
Pt# 3 COORDINATES	N = 297703.4069	N 41°53'58.88887"	X = 1477964.6670	
	E = 222143.1576	W 71°53'20.88990"	Y = -4518936.8384	
CTPU		h 187.6965	Z = 4237355.7630	
		H **		
Pt# 2 COORDINATES	N = 241162.9951	N 41°44'36.79685"	X = 16797566.1766	
	E = 495388.4540	W 70°53'13.02743"	Y = -48472773.7733	
acu5		h 21.5223	Z = 45470861.8275	
		H **		
	Az = 249°31'47.39665"	NSFA = 249°56'16.01698"	D X= -50118936.6419	
	O = 0°24'29.51335"	NSBA = 69°34'34.99871"	D Y= +144174205.3777	
	t-T Con = +0.89301"	Ell Dist = 158301.3821	D Z= -135363756.3218	
	Dist = 519364.6787	Delta h = -102.0691	S D= 204013371.6989	
	Scale= 1.000025736961	Delta H = **		
		Gnd Dist= 158301.1588		
		Rad(A) = 6384802.7559		
		Skew Con = -0.00096"		
		GsFA = 249°56'16.01935"		
		Gsc Dist = 158301.3821		
		GsBA = 69°34'35.00108"		
Pt# 1 COORDINATES	N = 185801.9678	N 41°35'35.66762"	X = 1521283.7356	
	E = 347081.7036	W 71°25'49.96847"	Y = -4528388.0854	
log0501a_IRY8		h -80.5468	Z = 4211906.3827	
		H **		
Pt# 0 COORDINATES	N = 92280.5086	N 41°20'07.03570"	X = 15910154.8703	
	E = 177116.0970	W 72°02'58.96956"	Y = -49111374.0218	
CTGR		h -59.8424	Z = 45105361.3680	
		H **		
	Az = 64°55'46.47229"	NSFA = 64°34'01.49870"	D X= -47078658.0266	
	O = - 0°21'47.12188"	NSBA = 245°20'17.41640"	D Y= +146351701.9413	
	t-T Con = -2.14829"	Ell Dist = 351368.0893	D Z= -134123626.6841	
	Dist = 1152797.6648	Delta h = +81.3647	S D= 204020508.6201	
	Scale= 1.000019797184	Delta H = **		
		Gnd Dist= 351367.7675		
		Rad(A) = 6382997.0688		
		Skew Con = +0.00031"		
		GsFA = 64°34'01.51275"		
		Gsc Dist = 351368.0893		
		GsBA = 245°20'17.43046"		
Pt# 2 COORDINATES	N = 241162.9951	N 41°44'36.79685"	X = 1560551.2046	
	E = 495388.4540	W 70°53'13.02743"	Y = -4503286.0539	
acu5		h 21.5223	Z = 4224398.1928	
		H **		
Pt# 0 COORDINATES	N = 92280.5086	N 41°20'07.03570"	X = 15910154.8703	

cluster25

CTGR	E = 177116.0970	W 72°02'58.96956"	Y = -49111374.0218
		h -59.8424	Z = 45105361.3680
		H _**_	
	Az = 12°21'47.04972"	NSFA = 11°59'54.07140"	D X= -47349610.6922
	O = - 0°21'47.12188"	NSBA = 192°06'18.01225"	D Y= +146300354.3256
	t-T Con = +5.85644"	Ell Dist = 210296.2134	D Z= -134081115.0559
	Dist = 689958.5739	Delta h = +247.5389	S D= 204018442.1152
	Scale= 1.000019797184	Delta H = _**_	
		Gnd Dist= 210296.8559	
		Rad(A) = 6364332.9547	
		Skew Con = +0.00141"	
		GsFA = 11°59'54.07404"	
		Gsc Dist = 210296.2134	
		GsBA = 192°06'18.01488"	
Pt# 3 COORDINATES	N = 297703.4069	N 41°53'58.88887"	X = 1477964.6670
	E = 222143.1576	W 71°53'20.88990"	Y = -4518936.8384
CTPU		h 187.6965	Z = 4237355.7630
		H _**_	
Pt# 0 COORDINATES	N = 92280.5086	N 41°20'07.03570"	X = 15910154.8703
	E = 177116.0970	W 72°02'58.96956"	Y = -49111374.0218
CTGR		h -59.8424	Z = 45105361.3680
		H _**_	
	Az = 61°10'42.33898"	NSFA = 60°48'54.38695"	D X= -47207488.0480
	O = - 0°21'47.12188"	NSBA = 241°13'30.33773"	D Y= +146269346.3595
	t-T Con = +0.83015"	Ell Dist = 193995.3359	D Z= -134164610.2310
	Dist = 636469.5813	Delta h = -20.7044	S D= 204018164.0215
	Scale= 1.000019797184	Delta H = _**_	
		Gnd Dist= 193994.6852	
		Rad(A) = 6381704.2922	
		Skew Con = -0.00127"	
		GsFA = 60°48'54.39167"	
		Gsc Dist = 193995.3359	
		GsBA = 241°13'30.34245"	
Pt# 1 COORDINATES	N = 185801.9678	N 41°35'35.66762"	X = 1521283.7356
	E = 347081.7036	W 71°25'49.96847"	Y = -4528388.0854
log0501a_IRY8		h -80.5468	Z = 4211906.3827
		H _**_	
Pt# 3 COORDINATES	N = 297703.4069	N 41°53'58.88887"	X = 15908615.6396
	E = 222143.1576	W 71°53'20.88990"	Y = -48641236.7423
CTPU		h 187.6965	Z = 45610335.3944
		H _**_	
	Az = 131°50'58.50319"	NSFA = 131°35'23.51656"	D X= -47202438.0884
	O = - 0°15'35.58399"	NSBA = 311°53'42.77103"	D Y= +144726904.3018
	t-T Con = -0.59736"	Ell Dist = 167724.6798	D Z= -135821345.8494
	Dist = 550276.7608	Delta h = -268.2433	S D= 204013198.0501
	Scale= 1.000006575043	Delta H = _**_	
		Gnd Dist= 167725.1092	
		Rad(A) = 6377188.3622	
		Skew Con = +0.00147"	
		GsFA = 131°35'23.51249"	

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                                cluster25
                                | Gsc Dist = 167724.6798 |
                                | GsBA = 311°53'42.76696" |
-----
Pt# 1 COORDINATES | N =      185801.9678 | N      41°35'35.66762" | X = 1521283.7356
log0501a_IRY8     | E =      347081.7036 | W      71°25'49.96847" | Y = -4528388.0854
                   |                   | h      -80.5468      | Z = 4211906.3827
                   |                   | H      -**-         |

```

```

Az      - Grid Azimuth
NSFA    - Normal Section Forward Azimuth
NSBA    - Normal Section Back Azimuth
GsFA    - Direct Geodetic Azimuth
t       - Geometric azimuth
T       - Azimuth Projected Geodetic
t-T Con - t-T Correction
Dist    - Distance
Ell Dist - Ellipsoidal Distance
Gsc Dist - Geodetic Distance
S D     - Slope Distance
Gnd Dist - Ground Distance
O       - Convergence
Scale   - Scale
Delta h - Delta h Ellipsoidal
Delta H - Delta H orthometric
Rad(A)  - Radius of curvature of normal section
Skew Con - Inclination Correction

```

SUBNET 'New Subnet' ADJUSTED VECTOR RESIDUALS (X-Y-Z)

#	Points from - to	Vector status	Residuals(mm)			Normalized Residuals			Redundancy number (0..3)
			(X)	(Y)	(Z)	(X)	(Y)	(Z)	
1	acu5-CTPU		-7.7	-5.4	-14.9	-0.53	-0.17	-0.55	1.76
2	acu5-log0501a_IRY8		-5.8	0.9	-10.9	-0.54	0.04	-0.54	1.15
3	CTGR-acu5		12.7	-13.5	27.4	0.81	-0.40	0.87	1.91
4	CTGR-CTPU		2.0	-16.2	9.9	0.17	-0.59	0.42	1.41
5	CTGR-log0501a_IRY8		6.2	-5.6	9.4	0.52	-0.21	0.41	1.41
6	CTPU-log0501a_IRY8		1.4	4.6	4.7	0.13	0.19	0.21	1.37
R.M.S.			7.1	9.4	14.7	0.51	0.32	0.54 (	1.50)

SUBNET 'New Subnet' ADJUSTED GPS-VECTOR RESIDUALS (N-E-U)

#	Points from - to	Vector status	Residuals (mm)			Normalized Residuals			Redundancy number (0...3)
			(North)	(East)	(Up)	(North)	(East)	(Up)	
1	acu5-CTPU		-12.8	-9.0	-8.0	-0.73	-0.63	-0.21	1.76
2	acu5-log0501a_IRY8		-6.4	-5.2	-9.3	-0.48	-0.53	-0.33	1.15
3	CTGR-acu5		9.5	7.9	30.7	0.46	0.57	0.73	1.91
4	CTGR-CTPU		-3.1	-3.1	18.6	-0.21	-0.28	0.56	1.41
5	CTGR-log0501a_IRY8		2.3	4.2	11.6	0.16	0.36	0.37	1.41
6	CTPU-log0501a_IRY8		6.1	2.7	0.2	0.44	0.26	0.01	1.37
R.M.S.			7.6	5.9	16.2	0.45	0.46	0.43 (	1.50)

SUBNET 'New Subnet' ADJUSTED VECTOR RESIDUALS (Distance-Azimuth-Elevation)

#	Points from - to	Vector status	Residuals (mm)			Normalized Residuals			Redundancy number (0..3)
			(Dist)	(Azim)	(Elev)	(Dist)	(Azim)	(Elev)	
1	acu5-CTPU		6.2	-14.4	-7.9	0.44	-0.81	-0.21	1.76
2	acu5-log0501a_IRY8		7.1	-4.2	-9.3	0.66	-0.34	-0.33	1.15

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                                cluster25
3  CTGR-acu5                    11.0   -5.1   30.8   0.68   -0.27   0.73   1.91
4  CTGR-CTPU                    -3.8    -2.4   18.6   -0.25   -0.22   0.56   1.41
5  CTGR-log0501a_IRY8           4.7     0.0   11.6   0.33    0.00   0.37   1.41
6  CTPU-log0501a_IRY8           -2.0    -6.4    0.2   -0.17   -0.49   0.01   1.37
-----
R.M.S.                        6.4     7.0   16.2   0.46    0.43   0.44 ( 1.50)
-----
SUBNET 'New Subnet' Tau-VALUES(X-Y-Z) for VECTORS (Tau critical value = 3.00)
-----
#  Points      Vector status Distance (m)      Residuals (mm)      Residual Sigmas (mm)      Tau Values      Redundancy number
(0..3)
  from - to
      ( X )    ( Y )    ( Z )    ( X )    ( Y )    ( Z )    ( X )    ( Y )    ( Z )
-----
1  acu5-CTPU      85049.3      0.6    -0.8    0.4    14.5    31.1    27.2    0.04    0.03    0.02    1.76
2  acu5-log0501a_IRY8  48250.3      0.2    -0.9    1.2    10.7    22.9    20.4    0.02    0.04    0.06    1.15
3  CTGR-acu5     107097.1      1.1    -3.1    3.4    15.8    34.2    31.6    0.07    0.09    0.11    1.91
4  CTGR-CTPU     64098.7     -1.3    -1.2    1.2    12.0    27.3    23.6    0.11    0.05    0.05    1.41
5  CTGR-log0501a_IRY8  59129.7      0.6     3.1    -2.5    12.0    26.0    22.7    0.05    0.12    0.11    1.41
6  CTPU-log0501a_IRY8  51122.8     -0.9    -1.7    1.5    11.1    23.6    21.9    0.08    0.07    0.07    1.37
-----
SUBNET 'New Subnet' Tau-VALUES(N-E-U) for VECTORS (Tau critical value = 3.00)
-----
#  Points      Vector status Distance      Residuals (mm)      Residual Sigmas (mm)      Tau Values      Redundancy number
(0..3)
  from - to      (m)      (North) (East) (Up) (North) (East) (Up) (North) (East) (Up)
-----
1  acu5-CTPU      85049.3     -0.3     0.3     1.0     17.6     14.4     37.4     0.02     0.02     0.03     1.76
2  acu5-log0501a_IRY8  48250.3     0.3     -0.1     1.4     13.2      9.8     28.0     0.02     0.01     0.05     1.15
3  CTGR-acu5     107097.1     0.4     0.1     4.7     20.7     14.0     42.3     0.02     0.01     0.11     1.91
4  CTGR-CTPU     64098.7     0.4     -1.6     1.4     15.2     11.0     33.0     0.03     0.15     0.04     1.41
5  CTGR-log0501a_IRY8  59129.7     0.0     1.5     -3.8     14.2     11.7     31.6     0.00     0.13     0.12     1.41
6  CTPU-log0501a_IRY8  51122.8     0.2     -1.4     2.0     13.8     10.7     29.2     0.02     0.13     0.07     1.37
-----
SUBNET 'New Subnet' Tau-VALUES for VECTORS (Tau critical value = 3.00)
-----
#  Points      Vector status Distance      Residuals (mm)      Residual Sigmas (mm)      Tau Values      Redundancy number
(0..3)
  from - to      (m)      (Dist) (Azim) (Elev) (Dist) (Azim) (Elev) (Dist) (Azim) (Elev)
-----
1  acu5-CTPU      85049.3     -0.4     -0.3     1.0     11.1     13.5     28.4    -0.03    -0.02     0.04     1.76
2  acu5-log0501a_IRY8  48250.3      0.0      0.3     1.4      6.6      7.7     17.4      0.00      0.04     0.08     1.15
3  CTGR-acu5     107097.1      0.2     -0.3     4.8     12.4     15.8     33.7      0.02     -0.02     0.14     1.91
4  CTGR-CTPU     64098.7      0.1     -1.7     1.4     10.6      7.3     22.9      0.01     -0.23     0.06     1.41
5  CTGR-log0501a_IRY8  59129.7      1.4      0.8     -3.7     10.5      7.3     21.9      0.13      0.10    -0.17     1.41
6  CTPU-log0501a_IRY8  51122.8     -1.2      0.7     2.0      8.0      8.7     19.5     -0.15     0.08     0.10     1.37
-----
SUBNET 'New Subnet': CONTROL POINTS SUMMARY in NAD83( BLH )
-----
#  Point name      Status      Coordinates      Sigmas (mm)
      Plane      Height      Latitude      Longitude      height (m) s(Lat) s(Lon) s(Hei)
-----
1  acu5      Fixed      Fixed      41°44'36.79685"N  70°53'13.02743"W  6.5600
2  CTGR      Fixed      Fixed      41°20'07.03570"N  72°02'58.96956"W -18.2400
3  CTPU      Fixed      Fixed      41°53'58.88887"N  71°53'20.88990"W  57.2100
-----
;SOFTWARE: Pinnacle Ver. 1000
;Project Name: FEMA TASK8 RI SHORE
;Subnet Name: New Subnet
;Coordinate System: SPC83(sft)
;Zone: RI
;Linear Units: USFeet
;Geoid: g2003u04

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cluster25
;Name, N, E, Ell.H, Ortho.H, Sigma N, Sigma E, Sigma H, Description
acu5, 241162.9951, 495388.4540, 21.5223, 0.0000, 0.0000, 0.0000, ""
CTGR, 92280.5086, 177116.0970, -59.8424, 0.0000, 0.0000, 0.0000, ""
CTPU, 297703.4069, 222143.1576, 187.6965, 0.0000, 0.0000, 0.0000, ""
log0501a_IRY8, 185801.9678, 347081.7036, -80.5468, 0.0129, 0.0100, 0.0278, ""

```


APPENDIX III

RTK RAW DATA WITH ADJUSTMENT CLUSTER 21 THROUGH 25

FEMA_RI_CLUSTER_21_ADJ

```

JB,NMFEMA_RI_CLUSTER_21,DT04-21-2007,TM06:49:38
MO,AD0,UN2,SF1.0,EC0,E00.0,AU0
SP,PN1,N 500000.0,E 1000000.0,EL100.0,--JNKSTART(VOID)
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--No coordinate system is defined.
ES,RD,IF,EM
PJ,TP2048,LA,LN,HT,N ,E ,EL,SC1.0000000000,00,OT
CS,C02,ZG,ZN,DN
--Select zone record from database
ES,RD20925604.474167,IF298.2572215381,EMGeodetic Ref System 1980
ST,LA,LN,HT,SC1.0000000000,N 0.0,E 0.0
PJ,TP2062,LA41.0500,LN-71.3000,HT,N 0.0,E 328083.333333,EL,SC0.9999937500,00,OT
DT,DA513,RD20925604.474167,IF298.2572229329,OX0.00000000,0Y0.00000000,OZ0.00000000,LX0.0,LY0.0,LZ0.0,SP0.0
000000
HA,N ,E ,TH,TE,RT,SC
VA,PV2,N ,E ,LZ,SO,SA,GNGE0ID03 (Conus)
CG,A01,G01
CS,C03,ZGUS State Plane 1983,ZNRhode Island 3800,DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
-->> End Adjust with Projection.
-->>
--Activating GPS Receiver: Topcon TPS Legacy E [base reciver], COM1, 115200 baud, no parity
--09:05:08,Get autonomous base position at BASE:LA41.192497301,LN-71.481502734,HT-105.31538
--New point created by GPS autonomous base setup
EE,GF32,SG425090510
EP,TM09:05:10,LA41.192497301,LN-71.481502734,HT-105.31538,RH0.0,RV0.0,GM1,CL1
SP,PN2100,N 0.0,E 0.0,EL-105.31538,--
--04/25:09:05:10,Set BASE receiver at autonomous position
RX,DCBASE,RA6.737853,RE0,FI
EQ,DCBASE,RXLegacy E,RSAR7R2AQIRY8,AN0,AI0,ATLegAnt,TS,TA0.0,H00.0,V00.175853
AH,DCBASE,MA6.562,ME2,RA6.737853
BP,PN2100,LA41.192497301,LN-71.481502734,HT-105.31538,SG425090510
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--09:05:57,Set ROVER receiver with base reference position:LA41.192497301,LN-71.481502734,HT-105.31538
RX,DCROVER,RA6.909768,RE0,FI
EQ,DCROVER,RXHiPer,RS8RBXW35NFNK,AN0,AI0,ATTopcon HiPer,TS,TA0.0,H00.0,V00.347768
AH,DCROVER,MA6.562,ME2,RA6.909768
--A temporary localization was applied to start data collection.
HA,N 87691.321161,E 244533.508177,TH0.0,TE0.0,RT0.0000,SC1.0000000000
VA,PV3,N 87691.321161,E 244533.508177,LZ0.0,S00.00000,SA0.00000,GNGE0ID03 (Conus)
CS,C03,ZGSite,ZNFEMA_RI_CLUSTER_21,DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
GR,PN2100,N 87691.321161,E 244533.508177,EL-4.795014,--
EE,GF0,SG425090510
EP,TM09:06:19,LA41.192497301,LN-71.481502734,HT-105.31538,RH0.0,RV0.0,GM1,CL1
GP,PN2100,PTUSER_INPUT
-->> End Adjust with Projection.
-->>
--4-25-07 MKW BC SUN 70°F
EP,TM09:16:24,LA41.192841046,LN-71.480756384,HT-
106.312829,RH0.023482,RV0.037345,DH0.755327,DV1.201226,GM4,CL1
BL,DCROVER,PN2101,DX469.042294,DY396.661134,DZ260.745048,--MIXEDVEG,GM4,CL1,HP0.023482,VP0.037345
CV,DCROVER,SV4,SC0.007157,XX2.508244e-005,XY-2.956049e-005,XZ1.648641e-005,YY9.095982e-005,YZ-4.103037e-
005,ZZ6.474995e-005
GS,PN2101,N 88037.24808,E 245104.179741,EL-5.799834,--MIXEDVEG
EP,TM09:28:12,LA41.21071951,LN-71.455006539,HT-
37.687613,RH0.05009,RV0.068209,DH1.381654,DV1.884743,GM4,CL1
BL,DCROVER,PN2102,DX8383.654513,DY9899.604396,DZ7813.065579,--LW5273,GM4,CL1,HP0.05009,VP0.068209
CV,DCROVER,SV4,SC0.015267,XX6.887531e-005,XY-6.023258e-005,XZ-7.229571e-006,YY2.569671e-004,YZ-1.397927e-
004,ZZ3.394827e-004
GS,PN2102,N 98001.382258,E 255625.49151,EL62.634936,--LW5273
EP,TM10:01:17,LA41.214513072,LN-71.500773042,HT-
88.204349,RH0.028946,RV0.039553,DH0.761416,DV1.040738,GM4,CL1
BL,DCROVER,PN2103,DX-11087.164426,DY6208.42409,DZ10661.722158,--FORESTCOV1,GM4,CL1,HP0.028946,VP0.039553
CV,DCROVER,SV4,SC0.008823,XX4.356441e-005,XY-2.065490e-005,XZ1.301529e-005,YY1.022445e-004,YZ-4.907475e-
005,ZZ7.737541e-005
GS,PN2103,N 101908.911425,E 235989.197947,EL12.150807,--FORESTCOV1
EP,TM10:15:43,LA41.214535033,LN-71.500578355,HT-
88.904621,RH0.027204,RV0.042676,DH0.57609,DV0.903747,GM4,CL1

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FEMA_RI_CLUSTER_21_ADJ

BL,DCROVER,PN2104,DX-10950.843919,DY6269.148426,DZ10677.953029,--FORESTCOV2,GM4,CL1,HP0.027204,VP0.042676
CV,DCROVER,SV4,SC0.008292,XX2.875999e-005,XY-1.059480e-005,XZ2.411370e-006,YY1.139065e-004,YZ-6.769628e-005,ZZ9.528395e-005
GS,PN2104,N 101930.564607,E 236137.740111,EL11.449772,--FORESTCOV2
EP,TM10:40:14,LA41.203967822,LN-71.490150461,HT-73.817547,RH0.026049,RV0.040684,DH0.717379,DV1.120411,GM4,CL1
BL,DCROVER,PN2105,DX-4919.879168,DY3614.83368,DZ5698.403746,--BITLOT,GM4,CL1,HP0.026049,VP0.040684
CV,DCROVER,SV4,SC0.00794,XX1.993555e-005,XY-5.532973e-006,XZ8.527395e-006,YY1.363381e-004,YZ-5.351363e-005,ZZ5.328413e-005
GS,PN2105,N 95265.200264,E 241014.957057,EL26.611426,--BITLOT
EP,TM11:03:08,LA41.194851842,LN-71.455440715,HT-107.086641,RH0.029752,RV0.04909,DH0.756775,DV1.248667,GM4,CL1
BL,DCROVER,PN2106,DX9698.764768,DY4849.653838,DZ1788.558826,--GRASS,GM4,CL1,HP0.029752,VP0.04909
CV,DCROVER,SV4,SC0.009068,XX4.644546e-005,XY-3.644612e-005,XZ4.473370e-005,YY1.527535e-004,YZ-7.525369e-005,ZZ1.069179e-004
GS,PN2106,N 90039.236535,E 255270.023135,EL-6.650885,--GRASS
EP,TM11:17:46,LA41.192841004,LN-71.480756379,HT-106.252121,RH0.024345,RV0.03934,DH0.796011,DV1.286317,GM4,CL1
GS,PN2107,N 88037.205243,E 245104.183988,EL-5.739126,--PT2101CHK
EP,TM11:28:06,LA41.210719501,LN-71.455006537,HT-37.70525,RH0.031992,RV0.051828,DH0.76921,DV1.246155,GM4,CL1
GS,PN2108,N 98001.373144,E 255625.492809,EL62.617299,--LW5273CHK
EP,TM11:51:51,LA41.21451313,LN-71.500773049,HT-88.173612,RH0.043601,RV0.074696,DH0.904562,DV1.54967,GM4,CL1
GS,PN2109,N 101908.970097,E 235989.19282,EL12.181543,--PT2103CHK
EP,TM11:53:47,LA41.214535056,LN-71.500578262,HT-88.915211,RH0.042717,RV0.072713,DH0.911424,DV1.551425,GM4,CL1
GS,PN2110,N 101930.587885,E 236137.811578,EL11.439181,--PT2104CHK
--Activating Total Station: Topcon GTS Series [gts-603], COM1, 1200 baud, even parity
--Foresight Target:My Prism, HR:1.0 (1.0 + 0.0 Offset), Prism Const.:0.0mm
--Foresight Target:My Prism, HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
OC,OP2103,N 101908.911425,E 235989.197947,EL12.150807,--FORESTCOV1
--HR:0.0 (0.0 + 0.0 Offset)
LS,HI0.0,HR0.0
BK,OP2103,BP2104,BS81.422281,BC0.0000
--Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
--BS check 2103 - 2104:ZE90.1511,SD150.14,HD err= 0.026462, VD err= 0.037921
--BS Circle check : angular err= 0.0000
SS,OP2103,FP2111,AR206.1633,ZE90.1852,SD81.705,--FOREST
--Foresight Target:My Prism, HR:1.0 (1.0 + 0.0 Offset), Prism Const.:0.0mm
--HR:1.0 (1.0 + 0.0 Offset)
LS,HI0.0,HR1.0
SS,OP2103,FP2112,AR206.1620,ZE89.3657,SD81.695,--FORESTCHK
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
EP,TM12:18:41,LA41.203967836,LN-71.490150424,HT-73.880759,RH0.032187,RV0.047646,DH0.886401,DV1.312154,GM4,CL1
GS,PN2113,N 95265.214328,E 241014.985036,EL26.548214,--PT2105CHK
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating Total Station: Topcon GTS Series [gts-603], COM1, 1200 baud, even parity
DP,PN1
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--Import GPS Control - create GPS control point
EE,GF14,SG425090510
EP,TM15:37:35,LA41.192497301,LN-71.481502734,HT-105.31538,RH0.0,RV0.0,GM1,CL1
SP,PN2100,N 87681.405805,E 244533.613048,EL5.314984,--
--Solve calibration from control points.
CT,PN2100,DM4,RH0.0,RV0.0
EP,TM15:37:48,LA41.192497301,LN-71.481502734,HT-105.31538,RH0.0,RV0.0,GM1,CL2
RP,PN2100,N 87681.405805,E 244533.613048,EL5.314984,--
--Solve calibration from control points.
HA,N 87691.321161,E 244533.508177,TH-9.915356,TE0.104871,RT0.0000,SC1.0000000000
VA,PV3,N 87681.405805,E 244533.613048,LZ10.109998,S00.00000,SA0.00000,GNGE0ID03 (Conus)
CS,C03,ZGSite,ZNFEMA_RI_CLUSTER_21,DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
GR,PN2101,N 88027.332724,E 245104.284613,EL4.310164,--MIXEDVEG
GR,PN2102,N 97991.466903,E 255625.596382,EL72.744934,--LW5273
GR,PN2103,N 101898.996069,E 235989.302818,EL22.260805,--FORESTCOV1
GR,PN2104,N 101920.649252,E 236137.844982,EL21.55977,--FORESTCOV2
GR,PN2105,N 95255.284908,E 241015.061928,EL36.721423,--BITLOT
GR,PN2106,N 90029.32118,E 255270.128006,EL3.459113,--GRASS
GR,PN2107,N 88027.289888,E 245104.28886,EL4.370872,--PT2101CHK
GR,PN2108,N 97991.457788,E 255625.59768,EL72.727297,--LW5273CHK
GR,PN2109,N 101899.054742,E 235989.297692,EL22.291541,--PT2103CHK

FEMA_RI_CLUSTER_21_ADJ
GR,PN2110,N 101920.672529,E 236137.91645,EL21.549179,--PT2104CHK
GR,PN2113,N 95255.298973,E 241015.089907,EL36.658211,--PT2105CHK
-->> End Adjust with Projection.
-->>
SP,PN2111,N 101924.220095,E 235911.590191,EL21.812405,--FOREST
SP,PN2112,N 101924.211923,E 235911.59869,EL21.808566,--FORESTCHK
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FEMA_RI_CLUSTER_21_ADJ

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FEMA_RI_CLUSTER_22.ADJ

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JB,NMFEMA_CLUSTER_22,DT04-25-2007,TM10:20:00
MO,AD0,UN2,SF1.0,EC0,E00.0,AU0
SP,PN1,N 500000.0,E 1000000.0,EL100.0,--JNKSTART(VOID)
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--No coordinate system is defined.
ES,RD,IF,EM
PJ,TP2048,LA,LN,HT,N ,E ,EL,SC1.0000000000,00,OT
CS,C02,ZG,ZN,DN
--Select zone record from database
ES,RD20925604.474167,IF298.2572215381,EMGeodetic Ref System 1980
ST,LA,LN,HT,SC1.0000000000,N 0.0,E 0.0
PJ,TP2062,LA41.0500,LN-71.3000,HT,N 0.0,E 328083.333333,EL,SC0.9999937500,00,OT
DT,DA513,RD20925604.474167,IF298.2572229329,OX0.00000000, OY0.00000000, OZ0.00000000, LX0.0, LY0.0, LZ0.0, SP0.0
00000
HA,N ,E ,TH,TE,RT,SC
VA,PV2,N ,E ,LZ,S0,SA,GNGE0ID03 (Conus)
CG,A01,G01
CS,C03,ZGUS State Plane 1983,ZNRhode Island 3800,DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
-->> End Adjust with Projection.
-->>
--Activating GPS Receiver: Topcon TPS Legacy E [base reciver], COM1, 115200 baud, no parity
--13:20:38,Get autonomous base position at BASE:LA41.221263637,LN-71.400104331,HT-80.0815
--New point created by GPS autonomous base setup
EE,GF32,SG425132039
EP,TM13:20:39,LA41.221263637,LN-71.400104331,HT-80.0815,RH0.0,RV0.0,GM1,CL1
SP,PN2200,N 0.0,E 0.0,EL-80.0815,--
--04/25:13:20:39,Set BASE receiver at autonomous position
RX,DCBASE,RA6.737853,RE0,FI
EQ,DCBASE,RXLegacy E,RSAR7R2AQIRY8,AN0,AI0,ATLegAnt,TS,TA0.0,H00.0,V00.175853
AH,DCBASE,MA6.562,ME2,RA6.737853
BP,PN2200,LA41.221263637,LN-71.400104331,HT-80.0815,SG425132039
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--13:21:36,Set ROVER receiver with base reference position:LA41.221263637,LN-71.400104331,HT-80.0815
RX,DCROVER,RA6.909768,RE0,FI
EQ,DCROVER,RXHiPer,RS8RBXW35NFNK,AN0,AI0,ATTopcon HiPer,TS,TA0.0,H00.0,V00.347768
AH,DCROVER,MA6.562,ME2,RA6.909768
--A temporary localization was applied to start data collection.
HA,N 104558.826274,E 282256.832952,TH0.0,TE0.0,RT0.0000,SC1.0000000000
VA,PV3,N 104558.826274,E 282256.832952,LZ0.0,S00.00000,SA0.00000,GNGE0ID03 (Conus)
CS,C03,ZGSite,ZNFEMA_CLUSTER_22,DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
GR,PN2200,N 104558.826274,E 282256.832952,EL20.0219,--
EE,GF0,SG425132039
EP,TM13:22:00,LA41.221263637,LN-71.400104331,HT-80.0815,RH0.0,RV0.0,GM1,CL1
GP,PN2200,PTUSER_INPUT
-->> End Adjust with Projection.
-->>
--4-25-07 MKW BC M. SUN 70°F
EP,TM13:26:02,LA41.221188632,LN-71.400038518,HT-
80.448421,RH0.023703,RV0.036198,DH0.786476,DV1.201029,GM4,CL1
GS,PN2201,N 104482.813955,E 282306.865799,EL19.655605,--GRASS
EP,TM14:01:40,LA41.215908116,LN-71.393509459,HT-
87.347835,RH0.023386,RV0.03132,DH0.74625,DV0.999436,GM4,CL1
GS,PN2202,N 103183.120585,E 284232.763503,EL12.759744,--FORESTCONV1
EP,TM14:04:08,LA41.215986653,LN-71.393669503,HT-
87.005945,RH0.025938,RV0.035345,DH0.777709,DV1.059769,GM4,CL1
GS,PN2203,N 103262.836298,E 284110.878243,EL13.101465,--FORESTCONV2
EP,TM14:15:56,LA41.220558486,LN-71.401994921,HT-
86.291774,RH0.025466,RV0.048744,DH0.839276,DV1.60647,GM4,CL1
GS,PN2204,N 103847.933818,E 280813.935675,EL13.829298,--MIXEDVEG
EP,TM14:52:03,LA41.230544763,LN-71.375275811,HT-
72.755529,RH0.029356,RV0.058761,DH0.765501,DV1.532642,GM4,CL1
GS,PN2205,N 109887.249699,E 292046.029035,EL27.211216,--BITLOT
EP,TM15:47:17,LA41.230073253,LN-71.383428974,HT-
84.773909,RH0.039399,RV0.056599,DH1.099423,DV1.579418,GM4,CL1
GS,PN2206,N 109415.021661,E 288879.376922,EL15.223357,--LW0988
EP,TM15:48:51,LA41.230073206,LN-71.383428954,HT-
84.706626,RH0.038867,RV0.049851,DH1.478504,DV1.905141,GM4,CL1
GS,PN2207,N 109414.973534,E 288879.392462,EL15.29064,--LW0988CHK
EP,TM16:01:42,LA41.231003525,LN-71.390895819,HT-
49.169511,RH0.041586,RV0.060034,DH1.21262,DV1.73526,GM4,CL1
GS,PN2208,N 110361.093491,E 286238.280531,EL50.835159,--LW5525
EP,TM16:02:48,LA41.231003524,LN-71.390895834,HT-
49.148482,RH0.041689,RV0.059913,DH1.213807,DV1.7545,GM4,CL1
GS,PN2209,N 110361.092395,E 286238.26909,EL50.856187,--LW5525CHK

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FEMA_RI_CLUSTER_22.ADJ

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EP, TM16:10:21, LA41.22055851, LN-71.401994899, HT-86.327838, RH0.0385, RV0.058543, DH1.225843, DV1.86398, GM4, CL1
GS, PN2210, N 103847.957712, E 280813.952883, EL13.793234, --PT2204CHK
EP, TM16:33:11, LA41.212678875, LN-71.421173065, HT-
51.876027, RH0.042209, RV0.06708, DH1.090596, DV1.733155, GM4, CL1
GS, PN2211, N 99939.680852, E 272281.703554, EL48.340102, --LW0894
EP, TM16:33:47, LA41.212678895, LN-71.421173051, HT-
51.897055, RH0.039219, RV0.062926, DH1.091672, DV1.751576, GM4, CL1
GS, PN2212, N 99939.70107, E 272281.714176, EL48.319074, --LW0894CHK
EP, TM16:42:56, LA41.221188588, LN-71.400038511, HT-
80.404302, RH0.02842, RV0.03944, DH0.913043, DV1.267074, GM4, CL1
GS, PN2213, N 104482.769782, E 282306.871375, EL19.699725, --PT2201CHK
EP, TM16:46:33, LA41.215908115, LN-71.393509415, HT-
87.290225, RH0.03392, RV0.044612, DH1.036164, DV1.362792, GM4, CL1
GS, PN2214, N 103183.11902, E 284232.797365, EL12.817353, --PT2202CHK
EP, TM16:48:10, LA41.215986663, LN-71.393669517, HT-
86.95449, RH0.032715, RV0.043751, DH1.030447, DV1.377868, GM4, CL1
GS, PN2215, N 103262.846534, E 284110.867192, EL13.15292, --PT2203CHK
--Activating Total Station: Topcon GTS Series [gts-603], COM1, 1200 baud, even parity
--Foresight Target:My Prism, HR:1.0 (1.0 + 0.0 Offset), Prism Const.:0.0mm
--Foresight Target:My Prism, HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
OC, OP2202, N 103183.120585, E 284232.763503, EL12.759744, --FORESTCONV1
--HR:0.0 (0.0 + 0.0 Offset)
LS, HI0.0, HR0.0
BK, OP2202, BP2203, BS303.110813, BC0.0000
--Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
--BS check 2202 - 2203:ZE89.5038, SD145.685, HD err= 0.045826, VD err= 0.055219
--BS Circle check : angular err= 0.0000
SS, OP2202, FP2216, AR233.2727, ZE91.1750, SD99.28, --FOREST
--Foresight Target:My Prism, HR:1.0 (1.0 + 0.0 Offset), Prism Const.:0.0mm
--HR:1.0 (1.0 + 0.0 Offset)
LS, HI0.0, HR1.0
SS, OP2202, FP2217, AR233.2727, ZE90.4400, SD99.275, --FORESTCHK
DP, PN1
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--Import GPS Control - create GPS control point
EE, GF14, SG425132039
EP, TM15:45:44, LA41.221263637, LN-71.400104331, HT-80.0815, RH0.0, RV0.0, GM1, CL1
SP, PN2200, N 104553.954748, E 282258.972923, EL24.962193, --
--Solve calibration from control points.
CT, PN2200, DM4, RH0.0, RV0.0
EP, TM15:45:54, LA41.221263637, LN-71.400104331, HT-80.0815, RH0.0, RV0.0, GM1, CL2
RP, PN2200, N 104553.954748, E 282258.972923, EL24.962193, --
--Solve calibration from control points.
HA, N 104558.826274, E 282256.832952, TH-4.871526, TE2.139972, RT0.0000, SC1.0000000000
VA, PV3, N 104553.954748, E 282258.972923, LZ4.940293, SO0.000000, SA0.000000, GNGE0ID03 (Conus)
CS, C03, ZGSite, ZNFEMA_CLUSTER_22, DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
GR, PN2201, N 104477.942429, E 282309.005771, EL24.595898, --GRASS
GR, PN2202, N 103178.249059, E 284234.903475, EL17.700036, --FORESTCONV1
GR, PN2203, N 103257.964772, E 284113.018214, EL18.041758, --FORESTCONV2
GR, PN2204, N 103843.062292, E 280816.075646, EL18.769591, --MIXEDVEG
GR, PN2205, N 109882.378173, E 292048.169007, EL32.151509, --BITLOT
GR, PN2206, N 109410.150136, E 288881.516894, EL20.16365, --LW0988
GR, PN2207, N 109410.102008, E 288881.532434, EL20.230933, --LW0988CHK
GR, PN2208, N 110356.221965, E 286240.420502, EL55.775451, --LW5525
GR, PN2209, N 110356.220869, E 286240.409061, EL55.79648, --LW5525CHK
GR, PN2210, N 103843.086186, E 280816.092854, EL18.733527, --PT2204CHK
GR, PN2211, N 99934.809326, E 272283.843526, EL53.280395, --LW0894
GR, PN2212, N 99934.829544, E 272283.854147, EL53.259367, --LW0894CHK
GR, PN2213, N 104477.898256, E 282309.011346, EL24.640018, --PT2201CHK
GR, PN2214, N 103178.247495, E 284234.937337, EL17.757646, --PT2202CHK
GR, PN2215, N 103257.975008, E 284113.007164, EL18.093213, --PT2203CHK
-->> End Adjust with Projection.
-->>
SP, PN2216, N 103079.164336, E 284240.715411, EL15.452157, --FOREST
SP, PN2217, N 103079.152044, E 284240.716132, EL15.429149, --FORESTCHK

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FEMA_RI_CLUSTER_23.ADJ

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JB,NMFEMA_RI_CLUSTER_23,DT04-25-2007,TM18:02:33
MO,AD0,UN2,SF1.0,EC0,E00.0,AU0
SP,PN1,N 500000.0,E 1000000.0,EL100.0,--JNKSTART(VOID)
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--4-26-07 MKW BC M SUN 70°F
--No coordinate system is defined.
ES,RD,IF,EM
PJ,TP2048,LA,LN,HT,N ,E ,EL,SC1.0000000000,00,OT
CS,C02,ZG,ZN,DN
--Select zone record from database
ES,RD20925604.474167,IF298.2572215381,EMGeodetic Ref System 1980
ST,LA,LN,HT,SC1.0000000000,N 0.0,E 0.0
PJ,TP2062,LA41.0500,LN-71.3000,HT,N 0.0,E 328083.333333,EL,SC0.9999937500,00,OT
DT,DA513,RD20925604.474167,IF298.2572229329,OX0.00000000,0Y0.00000000,OZ0.00000000,LX0.0,LY0.0,LZ0.0,SP0.0
00000
HA,N ,E ,TH,TE,RT,SC
VA,PV2,N ,E ,LZ,SO,SA,GNGE0ID03 (Conus)
CG,A01,G01
CS,C03,ZGUS State Plane 1983,ZNRhode Island 3800,DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
-->> End Adjust with Projection.
-->>
--Activating GPS Receiver: Topcon TPS Legacy E [base reciver], COM1, 115200 baud, no parity
--10:49:45,Get autonomous base position at BASE:LA41.342894536,LN-71.272462152,HT-97.807481
--New point created by GPS autonomous base setup
EE,GF32,SG426104946
EP,TM10:49:46,LA41.342894536,LN-71.272462152,HT-97.807481,RH0.0,RV0.0,GM1,CL1
SP,PN2300,N 0.0,E 0.0,EL-97.807481,--
--04/26:10:49:46,Set BASE receiver at autonomous position
RX,DCBASE,RA6.737853,RE0,FI
EQ,DCBASE,RXLegacy E,RSAR7R2AQIRY8,AN0,AI0,ATLegAnt,TS,TA0.0,H00.0,V00.175853
AH,DCBASE,MA6.562,ME2,RA6.737853
BP,PN2300,LA41.342894536,LN-71.272462152,HT-97.807481,SG426104946
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--10:50:33,Set ROVER receiver with base reference position:LA41.342894536,LN-71.272462152,HT-97.807481
RX,DCROVER,RA6.909768,RE0,FI
EQ,DCROVER,RXHiPer,RS8RBXW35NFK,AN0,AI0,ATTopcon HiPer,TS,TA0.0,H00.0,V00.347768
AH,DCROVER,MA6.562,ME2,RA6.909768
--A temporary localization was applied to start data collection.
HA,N 179043.79442,E 339892.972014,TH0.0,TE0.0,RT0.0000,SC1.0000000000
VA,PV3,N 179043.79442,E 339892.972014,LZ0.0,S00.00000,SA0.00000,GNGE0ID03 (Conus)
CS,C03,ZGSite,ZNFEMA_RI_CLUSTER_23,DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
GR,PN2300,N 179043.79442,E 339892.972014,EL0.80798,--
EE,GF0,SG426104946
EP,TM10:51:00,LA41.342894536,LN-71.272462152,HT-97.807481,RH0.0,RV0.0,GM1,CL1
GP,PN2300,PTUSER_INPUT
-->> End Adjust with Projection.
-->>
EP,TM11:04:31,LA41.343785783,LN-71.27118353,HT-
102.930169,RH0.022467,RV0.038762,DH0.712186,DV1.228736,GM4,CL1
BL,DCROVER,PN2301,DX729.776249,DY880.142748,DZ671.560805,--FORESTCONV1,GM4,CL1,HP0.022467,VP0.038762
CV,DCROVER,SV4,SC0.006848,XX3.596644e-005,XY-2.873856e-005,XZ3.585926e-005,YY7.620984e-005,YZ-4.830675e-
005,ZZ7.430676e-005
GS,PN2301,N 179946.400263,E 340864.308438,EL-4.3386,--FORESTCONV1
EP,TM11:06:36,LA41.343934086,LN-71.271131098,HT-
103.278612,RH0.021915,RV0.037836,DH0.715533,DV1.23535,GM4,CL1
BL,DCROVER,PN2302,DX735.78636,DY987.521626,DZ783.629829,--FORESTCONV2,GM4,CL1,HP0.021915,VP0.037836
CV,DCROVER,SV4,SC0.00668,XX3.469408e-005,XY-2.789398e-005,XZ3.464027e-005,YY7.201688e-005,YZ-4.592338e-
005,ZZ7.090256e-005
GS,PN2302,N 180096.529875,E 340904.076783,EL-4.689331,--FORESTCONV2
EP,TM11:15:25,LA41.342923389,LN-71.273311878,HT-
92.032044,RH0.02122,RV0.036356,DH0.701971,DV1.202703,GM4,CL1
BL,DCROVER,PN2303,DX-617.063437,DY-191.227317,DZ25.78948,--GRASS,GM4,CL1,HP0.02122,VP0.036356
CV,DCROVER,SV4,SC0.006468,XX3.693427e-005,XY-2.871502e-005,XZ3.596733e-005,YY5.231929e-005,YZ-4.265235e-
005,ZZ7.537345e-005
GS,PN2303,N 179072.684443,E 339247.118925,EL6.591498,--GRASS
EP,TM11:25:28,LA41.341386763,LN-71.270687444,HT-
106.493383,RH0.021052,RV0.030816,DH0.650826,DV0.952674,GM4,CL1
BL,DCROVER,PN2304,DX1598.946358,DY-525.020184,DZ-1147.377428,--BITLOT,GM4,CL1,HP0.021052,VP0.030816
CV,DCROVER,SV4,SC0.006417,XX2.061038e-005,XY-1.374491e-005,XZ2.002292e-005,YY3.833132e-005,YZ-2.739683e-
005,ZZ7.045628e-005
GS,PN2304,N 177518.37473,E 341242.699714,EL-7.879633,--BITLOT
EP,TM11:33:16,LA41.33040589,LN-71.262833105,HT-
92.321197,RH0.02577,RV0.039281,DH0.654351,DV0.997431,GM4,CL1

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FEMA_RI_CLUSTER_23.ADJ

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BL,DCROVER,PN2305,DX5871.727516,DY-4046.715797,DZ-6425.025574,--MIXEDVEG,GM4,CL1,HP0.02577,VP0.039281
CV,DCROVER,SV4,SC0.007855,XX3.215121e-005,XY-2.264318e-005,XZ3.209068e-005,YY5.688310e-005,YZ-4.681983e-
005,ZZ1.160097e-004
GS,PN2305,N 170454.329035,E 344177.214261,EL6.329575,--MIXEDVEG
EP,TM11:48:37,LA41.345379414,LN-
71.301218515,HT30.406792,RH0.036506,RV0.060445,DH0.664342,DV1.100001,GM4,CL1
BL,DCROVER,PN2306,DX-12575.325475,DY-2553.485848,DZ1966.674094,--LW5671,GM4,CL1,HP0.036506,VP0.060445
CV,DCROVER,SV4,SC0.011127,XX6.376379e-005,XY-4.802925e-005,XZ6.703148e-005,YY1.443678e-004,YZ-1.205816e-
004,ZZ2.551092e-004
GS,PN2306,N 181555.997581,E 327157.291632,EL129.147533,--LW5671
--Activating Total Station: Topcon GTS Series [gts-603], COM1, 1200 baud, even parity
--Foresight Target:My Prism, HR:1.0 (1.0 + 0.0 Offset), Prism Const.:0.0mm
--Foresight Target:My Prism, HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
OC,OP2301,N 179946.400263,E 340864.308438,EL-4.3386,--FORESTCONV1
--HR:0.0 (0.0 + 0.0 Offset)
LS,HI0.0,HR0.0
BK,OP2301,BP2302,BS14.501147,BC0.0000
--Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
--BS check 2301 - 2302:ZE90.0734,SD155.34,HD err= 0.032118, VD err= 0.008819
--BS Circle check : angular err= 0.0000
SS,OP2301,FP2307,AR272.2059,ZE90.4426,SD112.205,--FOREST
--Foresight Target:My Prism, HR:1.0 (1.0 + 0.0 Offset), Prism Const.:0.0mm
--HR:1.0 (1.0 + 0.0 Offset)
LS,HI0.0,HR1.0
SS,OP2301,FP2308,AR272.2054,ZE90.1341,SD112.195,--FORESTCHK
DP,PN1
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
EP,TM12:47:19,LA41.343785763,LN-71.271183504,HT-
102.889607,RH0.021096,RV0.026904,DH0.658185,DV0.839395,GM4,CL1
BL,DCROVER,PN2309,DX729.809775,DY880.097096,DZ671.561435,--PT2301CHK,GM4,CL1,HP0.021096,VP0.026904
CV,DCROVER,SV4,SC0.00643,XX1.881279e-005,XY-1.791368e-005,XZ4.684257e-006,YY5.095378e-005,YZ-1.692074e-
005,ZZ3.882171e-005
GS,PN2309,N 179946.379318,E 340864.328695,EL-4.298038,--PT2301CHK
EP,TM12:49:19,LA41.343934104,LN-71.271131113,HT-
103.215852,RH0.02313,RV0.027822,DH0.755197,DV0.908394,GM4,CL1
BL,DCROVER,PN2310,DX735.781301,DY987.483276,DZ783.659948,--PT2302CHK,GM4,CL1,HP0.02313,VP0.027822
CV,DCROVER,SV4,SC0.00705,XX1.934971e-005,XY-1.523842e-005,XZ-2.112502e-006,YY4.705355e-005,YZ-1.950343e-
005,ZZ5.521099e-005
GS,PN2310,N 180096.548976,E 340904.065418,EL-4.62657,--PT2302CHK
EP,TM13:10:41,LA41.342923394,LN-71.273311859,HT-
92.011323,RH0.023878,RV0.033482,DH0.740488,DV1.038344,GM4,CL1
BL,DCROVER,PN2311,DX-617.046019,DY-191.244378,DZ25.818676,--PT2303CHK,GM4,CL1,HP0.023878,VP0.033482
CV,DCROVER,SV4,SC0.007278,XX2.662949e-005,XY-3.101676e-005,XZ6.968623e-006,YY9.331261e-005,YZ-2.832725e-
005,ZZ3.717731e-005
GS,PN2311,N 179072.689515,E 339247.133084,EL6.612219,--PT2303CHK
EP,TM13:14:59,LA41.341386783,LN-71.27068736,HT-
106.444868,RH0.02578,RV0.03729,DH0.785618,DV1.136381,GM4,CL1
BL,DCROVER,PN2312,DX1599.009714,DY-525.016469,DZ-1147.330062,--PT2304CHK,GM4,CL1,HP0.02578,VP0.03729
CV,DCROVER,SV4,SC0.007858,XX3.170940e-005,XY-3.966348e-005,XZ1.071325e-005,YY1.167950e-004,YZ-3.525117e-
005,ZZ4.242727e-005
GS,PN2312,N 177518.395385,E 341242.763956,EL-7.831119,--PT2304CHK
EP,TM13:20:48,LA41.330405886,LN-71.262833039,HT-
92.312739,RH0.038863,RV0.049869,DH0.946687,DV1.214793,GM4,CL1
BL,DCROVER,PN2313,DX5871.768048,DY-4046.70993,DZ-6425.02831,--PT2305CHK,GM4,CL1,HP0.038863,VP0.049869
CV,DCROVER,SV4,SC0.011845,XX6.198527e-005,XY-7.473687e-005,XZ1.038681e-006,YY2.186167e-004,YZ-5.523021e-
005,ZZ9.075618e-005
GS,PN2313,N 170454.32466,E 344177.264386,EL6.338032,--PT2305CHK
EP,TM13:33:24,LA41.345379399,LN-
71.301218536,HT30.529593,RH0.038642,RV0.058048,DH0.770194,DV1.156978,GM4,CL1
BL,DCROVER,PN2314,DX-12575.308234,DY-2553.573526,DZ1966.73149,--LW5671CHK,GM4,CL1,HP0.038642,VP0.058048
CV,DCROVER,SV4,SC0.011778,XX8.251254e-005,XY-1.043535e-004,XZ2.775703e-005,YY2.770325e-004,YZ-8.973257e-
005,ZZ9.221923e-005
GS,PN2314,N 181555.982592,E 327157.275738,EL129.270334,--LW5671CHK
EP,TM13:33:59,LA41.345379405,LN-
71.301218513,HT30.491452,RH0.038082,RV0.05655,DH0.782088,DV1.161375,GM4,CL1
BL,DCROVER,PN2315,DX-12575.311138,DY-2553.518857,DZ1966.713315,--LW5671CHK2,GM4,CL1,HP0.038082,VP0.05655
CV,DCROVER,SV4,SC0.011607,XX8.033084e-005,XY-9.626503e-005,XZ2.318891e-005,YY2.618621e-004,YZ-8.666684e-
005,ZZ8.963121e-005
GS,PN2315,N 181555.988442,E 327157.293878,EL129.232193,--LW5671CHK2
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
EE,GF0,SG0
EP,TM21:08:53,LA41.343818593,LN-71.271324536,HT-104.381544,RH0.0,RV0.0,GM1,CL1
GP,PN2307,PTUSER_INPUT
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511

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FEMA_RI_CLUSTER_23.ADJ

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--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--Import GPS Control - create GPS control point
EE,GF14,SG426104946
EP,TM16:03:55,LA41.342894536,LN-71.272462152,HT-97.807481,RH0.0,RV0.0,GM1,CL1
SP,PN2300,N 179038.382318,E 339890.96285,EL13.096365,--
--Solve calibration from control points.
CT,PN2300,DM4,RH0.0,RV0.0
EP,TM16:04:13,LA41.342894536,LN-71.272462152,HT-97.807481,RH0.0,RV0.0,GM1,CL2
RP,PN2300,N 179038.382318,E 339890.96285,EL13.096365,--
--Solve calibration from control points.
HA,N 179043.79442,E 339892.972014,TH-5.412102,TE-2.009165,RT0.0000,SC1.0000000000
VA,PV3,N 179038.382318,E 339890.96285,LZ12.288386,S00.00000,SA0.00000,GNGE0ID03 (Conus)
CS,C03,ZGSite,ZNFEMA_RI_CLUSTER_23,DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
GR,PN2301,N 179940.988161,E 340862.299274,EL7.949785,--FORESTCONV1
GR,PN2302,N 180091.117773,E 340902.067619,EL7.599055,--FORESTCONV2
GR,PN2303,N 179067.272341,E 339245.109761,EL18.879883,--GRASS
GR,PN2304,N 177512.962628,E 341240.69055,EL4.408752,--BITLOT
GR,PN2305,N 170448.916933,E 344175.205097,EL18.617961,--MIXEDVEG
GR,PN2306,N 181550.585479,E 327155.282467,EL141.435918,--LW5671
GR,PN2309,N 179940.967216,E 340862.319531,EL7.990347,--PT2301CHK
GR,PN2310,N 180091.136874,E 340902.056254,EL7.661815,--PT2302CHK
GR,PN2311,N 179067.277413,E 339245.12392,EL18.900605,--PT2303CHK
GR,PN2312,N 177512.983283,E 341240.754791,EL4.457266,--PT2304CHK
GR,PN2313,N 170448.912558,E 344175.255222,EL18.626418,--PT2305CHK
GR,PN2314,N 181550.57049,E 327155.266574,EL141.55872,--LW5671CHK
GR,PN2315,N 181550.57634,E 327155.284713,EL141.520579,--LW5671CHK2
-->> End Adjust with Projection.
-->>
SP,PN2307,N 179974.139678,E 340755.11342,EL6.499176,--FOREST
SP,PN2308,N 179974.136632,E 340755.114065,EL6.502829,--FORESTCHK
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FEMA_RI_CLUSTER_24_ADJ

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JB,NMFEMA_RI_CLUSTER _24,DT04-29-2007,TM17:01:25
MO,AD0,UN2,SF1.0,EC0,E00.0,AU0
SP,PN1,N 500000.0,E 1000000.0,EL100.0,--JNKSTART(VOID)
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--4-30-07 MKW BC P.SUN 65°F
--No coordinate system is defined.
ES,RD,IF,EM
PJ,TP2048,LA,LN,HT,N ,E ,EL,SC1.0000000000,00,OT
CS,C02,ZG,ZN,DN
--Select zone record from database
ES,RD20925604.474167,IF298.2572215381,EMGeodetic Ref System 1980
ST,LA,LN,HT,SC1.0000000000,N 0.0,E 0.0
PJ,TP2062,LA41.0500,LN-71.3000,HT,N 0.0,E 328083.333333,EL,SC0.9999937500,00,OT
DT,DA513,RD20925604.474167,IF298.2572229329,OX0.00000000,0Y0.00000000,OZ0.00000000,LX0.0,LY0.0,LZ0.0,SP0.0
00000
HA,N ,E ,TH,TE,RT,SC
VA,PV2,N ,E ,LZ,SO,SA,GNGE0ID03 (Conus)
CG,A01,G01
CS,C03,ZGUS State Plane 1983,ZNRhode Island 3800,DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
-->> End Adjust with Projection.
-->>
--Activating GPS Receiver: Topcon TPS Legacy E [base reciver], COM1, 115200 baud, no parity
--10:31:13,Get autonomous base position at BASE:LA41.105763967,LN-71.340097714,HT-107.478384
--New point created by GPS autonomous base setup
EE,GF32,SG430103116
EP,TM10:31:16,LA41.105763967,LN-71.340097714,HT-107.478384,RH0.0,RV0.0,GM1,CL1
SP,PN2400,N 0.0,E 0.0,EL-107.478384,--
--04/30:10:31:16,Set BASE receiver at autonomous position
RX,DCBASE,RA6.737853,RE0,FI
EQ,DCBASE,RXLegacy E,RSAR7R2AQIRY8,AN0,AI0,ATLegAnt,TS,TA0.0,H00.0,V00.175853
AH,DCBASE,MA6.562,ME2,RA6.737853
BP,PN2400,LA41.105763967,LN-71.340097714,HT-107.478384,SG430103116
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--10:32:04,Set ROVER receiver with base reference position:LA41.105763967,LN-71.340097714,HT-107.478384
RX,DCROVER,RA6.909768,RE0,FI
EQ,DCROVER,RXHiPer,RS8RBXW35NFK,AN0,AI0,ATTopcon HiPer,TS,TA0.0,H00.0,V00.347768
AH,DCROVER,MA6.562,ME2,RA6.909768
--A temporary localization was applied to start data collection.
HA,N 36203.751416,E 309657.399304,TH0.0,TE0.0,RT0.0000,SC1.0000000000
VA,PV3,N 36203.751416,E 309657.399304,LZ0.0,S00.00000,SA0.00000,GNGE0ID03 (Conus)
CS,C03,ZGSite,ZNFEMA_RI_CLUSTER _24,DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
GR,PN2400,N 36203.751416,E 309657.399304,EL-6.743889,--
EE,GF0,SG430103116
EP,TM10:32:27,LA41.105763967,LN-71.340097714,HT-107.478384,RH0.0,RV0.0,GM1,CL1
GP,PN2400,PTUSER_INPUT
-->> End Adjust with Projection.
-->>
DP,PN1
EP,TM10:54:36,LA41.105291917,LN-71.345045897,HT-
73.623748,RH0.025608,RV0.042761,DH0.731765,DV1.221908,GM4,CL1
BL,DCROVER,PN2401,DX-3482.091786,DY-1518.686182,DZ-337.176717,--FORESTCONV1,GM4,CL1,HP0.025608,VP0.042761
CV,DCROVER,SV4,SC0.007805,XX4.317355e-005,XY-3.651346e-005,XZ4.397759e-005,YY9.292653e-005,YZ-5.616906e-
005,ZZ9.469534e-005
GS,PN2401,N 35729.195221,E 305873.406816,EL27.141101,--FORESTCONV1
EP,TM10:58:53,LA41.105101471,LN-71.345071835,HT-
65.293537,RH0.026583,RV0.043366,DH0.760201,DV1.241492,GM4,CL1
BL,DCROVER,PN2402,DX-3458.817906,DY-1651.326646,DZ-476.766551,--FORESTCONV2,GM4,CL1,HP0.026583,VP0.043366
CV,DCROVER,SV4,SC0.008102,XX4.574108e-005,XY-3.899447e-005,XZ4.671195e-005,YY9.761652e-005,YZ-5.574723e-
005,ZZ9.700368e-005
GS,PN2402,N 35536.461878,E 305853.394297,EL35.474181,--FORESTCONV2
EP,TM11:13:17,LA41.112448853,LN-71.34086043,HT-
105.607332,RH0.022015,RV0.031897,DH0.692989,DV1.004049,GM4,CL1
BL,DCROVER,PN2403,DX-1118.54244,DY1511.782056,DZ2046.377147,--MIXEDVEG,GM4,CL1,HP0.022015,VP0.031897
CV,DCROVER,SV4,SC0.00671,XX2.058373e-005,XY-1.436669e-005,XZ2.337287e-005,YY3.587939e-005,YZ-2.853131e-
005,ZZ8.308187e-005
GS,PN2403,N 38921.602587,E 309076.357458,EL-4.909341,--MIXEDVEG
EP,TM11:21:38,LA41.102237467,LN-71.332359298,HT-
108.044194,RH0.02408,RV0.036892,DH0.723436,DV1.108369,GM4,CL1
BL,DCROVER,PN2404,DX3455.141131,DY-1324.873866,DZ-2686.674619,--BITLOT,GM4,CL1,HP0.02408,VP0.036892
CV,DCROVER,SV4,SC0.00734,XX2.640403e-005,XY-1.964997e-005,XZ3.124663e-005,YY4.599761e-005,YZ-4.067809e-
005,ZZ1.079124e-004
GS,PN2404,N 32632.529209,E 312513.600252,EL-7.27532,--BITLOT

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FEMA_RI_CLUSTER_24_ADJ

EP, TM11:25:42, LA41.102315215, LN-71.332197457, HT-109.828751, RH0.025195, RV0.038565, DH0.741805, DV1.135459, GM4, CL1
 BL, DCROVER, PN2405, DX3555.731908, DY-1235.29748, DZ-2628.634636, --LW0929, GM4, CL1, HP0.025195, VP0.038565
 CV, DCROVER, SV4, SC0.007679, XX2.645571e-005, XY-2.025090e-005, XZ3.208684e-005, YY5.645672e-005, YZ-4.406394e-005, ZZ1.142345e-004
 GS, PN2405, N 32711.137906, E 312637.418481, EL-9.061845, --LW0929
 EP, TM11:40:17, LA41.09116921, LN-71.330941771, HT45.4066, RH0.030525, RV0.051343, DH0.761716, DV1.281212, GM4, CL1
 BL, DCROVER, PN2406, DX6010.037007, DY-5558.189742, DZ-7971.393002, --GRASS, GM4, CL1, HP0.030525, VP0.051343
 CV, DCROVER, SV4, SC0.009304, XX3.975505e-005, XY-3.141666e-005, XZ4.239068e-005, YY1.236567e-004, YZ-8.807500e-005, ZZ1.680602e-004
 GS, PN2406, N 25478.038106, E 313593.327152, EL146.287971, --GRASS
 --Activating Total Station: Topcon GTS Series [gts-603], COM1, 1200 baud, even parity
 --Foresight Target: My Prism, HR:1.0 (1.0 + 0.0 Offset), Prism Const.:0.0mm
 --Foresight Target: My Prism, HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
 OC, OP2401, N 35729.195221, E 305873.406816, EL27.141101, --FORESTCONV1
 --HR:0.0 (0.0 + 0.0 Offset)
 LS, HI0.0, HR0.0
 BK, OP2401, BP2402, BS185.554108, BC0.0000
 --Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
 --BS check 2401 - 2402:ZE87.3315, SD193.96, HD err= 0.013744, VD err= -0.05586
 --BS Circle check : angular err= 0.0000
 SS, OP2401, FP2407, AR105.5440, ZE92.2446, SD156.48, --FOREST
 --Foresight Target: My Prism, HR:1.0 (1.0 + 0.0 Offset), Prism Const.:0.0mm
 --HR:1.0 (1.0 + 0.0 Offset)
 LS, HI0.0, HR1.0
 SS, OP2401, FP2408, AR105.5440, ZE92.0149, SD156.435, --FORESTCHK
 --Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
 EP, TM13:12:15, LA41.105291896, LN-71.345045936, HT-73.626903, RH0.02583, RV0.037144, DH0.789079, DV1.134683, GM4, CL1
 BL, DCROVER, PN2409, DX-3482.112439, DY-1518.730085, DZ-337.185398, --PT2401CHK, GM4, CL1, HP0.02583, VP0.037144
 CV, DCROVER, SV4, SC0.007873, XX3.416101e-005, XY-3.780515e-005, XZ8.837884e-006, YY1.173040e-004, YZ-3.620547e-005, ZZ3.869543e-005
 GS, PN2409, N 35729.174555, E 305873.376498, EL27.137947, --PT2401CHK
 EP, TM13:14:05, LA41.105101428, LN-71.345071852, HT-65.32732, RH0.02654, RV0.038169, DH0.783859, DV1.127314, GM4, CL1
 BL, DCROVER, PN2410, DX-3458.836512, DY-1651.324339, DZ-476.815933, --PT2402CHK, GM4, CL1, HP0.02654, VP0.038169
 CV, DCROVER, SV4, SC0.008089, XX3.656557e-005, XY-3.996935e-005, XZ9.456056e-006, YY1.230566e-004, YZ-3.844302e-005, ZZ4.116498e-005
 GS, PN2410, N 35536.418472, E 305853.380796, EL35.440399, --PT2402CHK
 EP, TM13:22:18, LA41.1124489, LN-71.340860387, HT-105.556892, RH0.025057, RV0.03561, DH0.762867, DV1.084187, GM4, CL1
 BL, DCROVER, PN2411, DX-1118.507507, DY1511.792719, DZ2046.448994, --PT2403CHK, GM4, CL1, HP0.025057, VP0.03561
 CV, DCROVER, SV4, SC0.007637, XX3.438739e-005, XY-3.513565e-005, XZ8.487769e-006, YY1.045036e-004, YZ-3.387032e-005, ZZ3.724693e-005
 GS, PN2411, N 38921.649768, E 309076.390377, EL-4.858901, --PT2403CHK
 EP, TM13:28:18, LA41.102237479, LN-71.332359306, HT-108.088349, RH0.022262, RV0.031975, DH0.770777, DV1.10705, GM4, CL1
 BL, DCROVER, PN2412, DX3455.126613, DY-1324.837244, DZ-2686.699776, --PT2404CHK, GM4, CL1, HP0.022262, VP0.031975
 CV, DCROVER, SV4, SC0.006786, XX2.764647e-005, XY-2.615817e-005, XZ6.517546e-006, YY8.225094e-005, YZ-2.876594e-005, ZZ3.112943e-005
 GS, PN2412, N 32632.540922, E 312513.594085, EL-7.319475, --PT2404CHK
 EP, TM13:31:48, LA41.102315217, LN-71.332197463, HT-109.858251, RH0.024503, RV0.033733, DH0.746766, DV1.028054, GM4, CL1
 BL, DCROVER, PN2413, DX3555.723442, DY-1235.274178, DZ-2628.651076, --LW0929CHK, GM4, CL1, HP0.024503, VP0.033733
 CV, DCROVER, SV4, SC0.007469, XX3.470662e-005, XY-3.216103e-005, XZ7.760424e-006, YY9.134669e-005, YZ-3.024964e-005, ZZ3.544574e-005
 GS, PN2413, N 32711.139928, E 312637.414051, EL-9.091346, --LW0929CHK
 EP, TM13:39:58, LA41.091169186, LN-71.330941772, HT45.352009, RH0.02772, RV0.037502, DH0.691726, DV0.935822, GM4, CL1
 BL, DCROVER, PN2414, DX6010.025766, DY-5558.183483, DZ-7971.437696, --PT2406CHK, GM4, CL1, HP0.02772, VP0.037502
 CV, DCROVER, SV4, SC0.008449, XX3.112652e-005, XY-1.918994e-005, XZ7.241563e-006, YY1.001650e-004, YZ-4.079241e-005, ZZ7.075802e-005
 GS, PN2414, N 25478.013552, E 313593.326709, EL146.233381, --PT2406CHK
 --Survey Pro Version: 4.2.1
 --Data Collector Serial Number: SS35A22511
 --Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
 --Survey Pro Version: 4.2.1
 --Data Collector Serial Number: SS35A22511
 --Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
 --Survey Pro Version: 4.2.1
 --Data Collector Serial Number: SS35A22511
 --Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
 --Survey Pro Version: 4.2.1
 --Data Collector Serial Number: SS35A22511
 --Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
 --Import GPS Control - create GPS control point
 EE, GF14, SG430103116
 EP, TM16:20:01, LA41.105763967, LN-71.340097714, HT-107.478384, RH0.0, RV0.0, GM1, CL1
 SP, PN2400, N 36196.121284, E 309654.571168, EL6.729565, --

FEMA_RI_CLUSTER_24_ADJ

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--Solve calibration from control points.
CT,PN2400,DM4,RH0.0,RV0.0
EP,TM16:20:04,LA41.105763967,LN-71.340097714,HT-107.478384,RH0.0,RV0.0,GM1,CL2
RP,PN2400,N 36196.121284,E 309654.571168,EL6.729565,--
--Solve calibration from control points.
HA,N 36203.751416,E 309657.399304,TH-7.630132,TE-2.828137,RT0.0000,SC1.0000000000
VA,PV3,N 36196.121284,E 309654.571168,LZ13.473454,S00.00000,SA0.00000,GNGE0ID03 (Conus)
CS,C03,ZGSite,ZNFEMA_RI_CLUSTER _24,DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
GR,PN2401,N 35721.56509,E 305870.578679,EL40.614556,--FORESTCONV1
GR,PN2402,N 35528.831746,E 305850.56616,EL48.947636,--FORESTCONV2
GR,PN2403,N 38913.972455,E 309073.529321,EL8.564114,--MIXEDVEG
GR,PN2404,N 32624.899077,E 312510.772115,EL6.198134,--BITLOT
GR,PN2405,N 32703.507774,E 312634.590345,EL4.41161,--LW0929
GR,PN2406,N 25470.407974,E 313590.499016,EL159.761426,--GRASS
GR,PN2409,N 35721.544424,E 305870.548361,EL40.611401,--PT2401CHK
GR,PN2410,N 35528.78834,E 305850.552659,EL48.913854,--PT2402CHK
GR,PN2411,N 38914.019636,E 309073.56224,EL8.614553,--PT2403CHK
GR,PN2412,N 32624.91079,E 312510.765948,EL6.153979,--PT2404CHK
GR,PN2413,N 32703.509797,E 312634.585914,EL4.382109,--LW0929CHK
GR,PN2414,N 25470.38342,E 313590.498572,EL159.706835,--PT2406CHK
-->> End Adjust with Projection.
-->>
SP,PN2407,N 35779.724617,E 305725.457904,EL34.026532,--FOREST
SP,PN2408,N 35779.722951,E 305725.46206,EL34.071982,--FORESTCHK
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FEMA_RI_CLUSTER_25_ADJ

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JB,NMFEMA_RI_CLUSTER_25,DT05-01-2007,TM04:10:57
MO,AD0,UN2,SF1.0,EC0,E00.0,AU0
SP,PN1,N 500000.0,E 1000000.0,EL100.0,--JNKSTART(VOID)
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--5-1-07 MKW BC M. SUN 70°F
--No coordinate system is defined.
ES,RD,IF,EM
PJ,TP2048,LA,LN,HT,N ,E ,EL,SC1.0000000000,00,OT
CS,C02,ZG,ZN,DN
--Select zone record from database
ES,RD20925604.474167,IF298.2572215381,EMGeodetic Ref System 1980
ST,LA,LN,HT,SC1.0000000000,N 0.0,E 0.0
PJ,TP2062,LA41.0500,LN-71.3000,HT,N 0.0,E 328083.333333,EL,SC0.9999937500,00,OT
DT,DA513,RD20925604.474167,IF298.2572229329,OX0.00000000,0Y0.00000000,OZ0.00000000,LX0.0,LY0.0,LZ0.0,SP0.0
00000
HA,N ,E ,TH,TE,RT,SC
VA,PV2,N ,E ,LZ,SO,SA,GNGE0ID03 (Conus)
CG,A01,G01
CS,C03,ZGUS State Plane 1983,ZNRhode Island 3800,DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
-->> End Adjust with Projection.
-->>
--Activating GPS Receiver: Topcon TPS Legacy E [base reciver], COM1, 115200 baud, no parity
--08:49:20,Get autonomous base position at BASE:LA41.353564365,LN-71.254994082,HT-83.711993
--New point created by GPS autonomous base setup
EE,GF32,SG501084922
EP,TM08:49:22,LA41.353564365,LN-71.254994082,HT-83.711993,RH0.0,RV0.0,GM1,CL1
SP,PN2500,N 0.0,E 0.0,EL-83.711993,--
--05/01:08:49:22,Set BASE receiver at autonomous position
RX,DCBASE,RA6.737853,RE0,FI
EQ,DCBASE,RXLegacy E,RSAR72AQIRY8,AN0,AI0,ATLegAnt,TS,TA0.0,H00.0,V00.175853
AH,DCBASE,MA6.562,ME2,RA6.737853
BP,PN2500,LA41.353564365,LN-71.254994082,HT-83.711993,SG501084922
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--08:50:12,Set ROVER receiver with base reference position:LA41.353564365,LN-71.254994082,HT-83.711993
RX,DCROVER,RA6.909768,RE0,FI
EQ,DCROVER,RXHiPer,RS8RBXW35NFK,AN0,AI0,ATTopcon HiPer,TS,TA0.0,H00.0,V00.347768
AH,DCROVER,MA6.562,ME2,RA6.909768
--A temporary localization was applied to start data collection.
HA,N 185799.54423,E 347083.8061,TH0.0,TE0.0,RT0.0000,SC1.0000000000
VA,PV3,N 185799.54423,E 347083.8061,LZ0.0,S00.00000,SA0.00000,GNGE0ID03 (Conus)
CS,C03,ZGSite,ZNFEMA_RI_CLUSTER_25,DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
GR,PN2500,N 185799.54423,E 347083.8061,EL14.719767,--
EE,GF0,SG501084922
EP,TM08:50:38,LA41.353564365,LN-71.254994082,HT-83.711993,RH0.0,RV0.0,GM1,CL1
GP,PN2500,PTUSER_INPUT
-->> End Adjust with Projection.
-->>
EP,TM08:55:14,LA41.353590349,LN-71.254981704,HT-
83.751904,RH0.020548,RV0.03043,DH0.694538,DV1.02854,GM4,CL1
BL,DCROVER,PN2501,DX3.378622,DY19.462564,DZ19.739378,--GRASS,GM4,CL1,HP0.020548,VP0.03043
CV,DCROVER,SV4,SC0.006263,XX2.049255e-005,XY-1.983938e-005,XZ1.021921e-005,YY5.595366e-005,YZ-2.688166e-
005,ZZ4.880443e-005
GS,PN2501,N 185825.85208,E 347093.190014,EL14.679433,--GRASS
EP,TM09:04:11,LA41.360144573,LN-71.253530952,HT-
70.348911,RH0.043018,RV0.043405,DH1.380845,DV1.393242,GM4,CL1
BL,DCROVER,PN2502,DX504.810916,DY1988.004438,DZ1962.080385,--FORESTCONV1,GM4,CL1,HP0.043018,VP0.043405
CV,DCROVER,SV4,SC0.013112,XX5.339335e-005,XY-2.768339e-005,XZ-4.688290e-005,YY8.158120e-005,YZ-4.573208e-
005,ZZ2.119766e-004
GS,PN2502,N 188412.101303,E 348193.324475,EL28.039096,--FORESTCONV1
EP,TM09:06:36,LA41.355934428,LN-71.253643694,HT-
69.955742,RH0.0438,RV0.045315,DH1.512373,DV1.564663,GM4,CL1
BL,DCROVER,PN2503,DX468.649613,DY1826.606554,DZ1803.293698,--FORESTCONV2,GM4,CL1,HP0.0438,VP0.045315
CV,DCROVER,SV4,SC0.01335,XX6.005483e-005,XY-4.281495e-005,XZ-4.548281e-005,YY1.140018e-004,YZ-4.682790e-
005,ZZ1.949467e-004
GS,PN2503,N 188199.324151,E 348107.848426,EL28.435683,--FORESTCONV2
EP,TM09:13:26,LA41.351858426,LN-71.243697811,HT-
94.499089,RH0.03839,RV0.048478,DH1.059824,DV1.338298,GM4,CL1
BL,DCROVER,PN2504,DX5617.931375,DY687.556799,DZ-1298.471631,--MIXEDVEG,GM4,CL1,HP0.03839,VP0.048478
CV,DCROVER,SV4,SC0.011701,XX3.039957e-005,XY-3.523046e-006,XZ-3.270131e-005,YY7.920793e-005,YZ-8.258886e-
005,ZZ2.456484e-004
GS,PN2504,N 184077.940172,E 352629.592936,EL3.863023,--MIXEDVEG
EP,TM09:59:21,LA41.360757845,LN-71.250424665,HT-
96.065078,RH0.018846,RV0.031216,DH0.553117,DV0.916167,GM4,CL1

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FEMA_RI_CLUSTER_25_ADJ

BL,DCROVER,PN2505,DX2604.403764,DY3148.786581,DZ2409.159786,--LW0098?,GM4,CL1,HP0.018846,VP0.031216
CV,DCROVER,SV4,SC0.005744,XX1.526600e-005,XY-8.466691e-006,XZ3.995792e-006,YY6.232013e-005,YZ-3.610033e-005,ZZ4.594170e-005
GS,PN2505,N 189034.972875,E 350552.750857,EL2.281003,--LW0098?
EP,TM10:03:26,LA41.360757832,LN-71.250424685,HT-96.020328,RH0.017768,RV0.029687,DH0.53008,DV0.885678,GM4,CL1
BL,DCROVER,PN2506,DX2604.401549,DY3148.72735,DZ2409.188224,--LW0098?CHK,GM4,CL1,HP0.017768,VP0.029687
CV,DCROVER,SV4,SC0.005416,XX1.499399e-005,XY-8.743291e-006,XZ5.605082e-006,YY5.877344e-005,YZ-3.215770e-005,ZZ3.743645e-005
GS,PN2506,N 189034.959934,E 350552.735503,EL2.325753,--LW0098?CHK
EP,TM10:26:06,LA41.355055893,LN-71.243310076,HT-92.93332,RH0.024085,RV0.037877,DH0.662213,DV1.04141,GM4,CL1
BL,DCROVER,PN2507,DX5212.625473,DY2816.725089,DZ1123.019411,--AI5595,GM4,CL1,HP0.024085,VP0.037877
CV,DCROVER,SV4,SC0.007341,XX2.243320e-005,XY-1.347486e-005,XZ1.366351e-005,YY1.111080e-004,YZ-4.639966e-005,ZZ5.363800e-005
GS,PN2507,N 187314.660608,E 352920.825856,EL5.391962,--AI5595
EP,TM10:33:38,LA41.35505587,LN-71.243310078,HT-92.887324,RH0.024516,RV0.041532,DH0.685201,DV1.160782,GM4,CL1
BL,DCROVER,PN2508,DX5212.644401,DY2816.667355,DZ1123.033383,--AI5595CHK,GM4,CL1,HP0.024516,VP0.041532
CV,DCROVER,SV4,SC0.007473,XX3.847234e-005,XY-2.938849e-005,XZ3.479682e-005,YY1.013816e-004,YZ-5.586871e-005,ZZ7.623617e-005
GS,PN2508,N 187314.63726,E 352920.824296,EL5.437958,--AI5595CHK
EP,TM10:53:34,LA41.352109573,LN-71.250616967,HT-90.068177,RH0.023399,RV0.038375,DH0.679769,DV1.114831,GM4,CL1
BL,DCROVER,PN2509,DX3462.645768,DY137.361404,DZ-1105.420085,--BITLOT,GM4,CL1,HP0.023399,VP0.038375
CV,DCROVER,SV4,SC0.007132,XX4.480195e-005,XY-3.502669e-005,XZ4.070984e-005,YY6.620652e-005,YZ-4.515134e-005,ZZ7.667107e-005
GS,PN2509,N 184329.943822,E 350411.101448,EL8.327494,--BITLOT
EP,TM11:35:14,LA41.370491565,LN-71.260678365,HT-66.350418,RH0.043002,RV0.063875,DH1.285372,DV1.909287,GM4,CL1
BL,DCROVER,PN2510,DX-3119.225835,DY5267.744075,DZ6768.135501,--LW0101,GM4,CL1,HP0.043002,VP0.063875
CV,DCROVER,SV4,SC0.013107,XX6.433389e-005,XY-4.851442e-005,XZ8.260552e-005,YY1.563124e-004,YZ-1.155354e-004,ZZ3.301965e-004
GS,PN2510,N 194834.501089,E 345797.238157,EL32.012064,--LW0101
EP,TM11:35:57,LA41.370491628,LN-71.260678395,HT-66.305647,RH0.036014,RV0.053294,DH1.0423,DV1.542434,GM4,CL1
BL,DCROVER,PN2511,DX-3119.246943,DY5267.744886,DZ6768.192193,--LW0101CHK,GM4,CL1,HP0.036014,VP0.053294
CV,DCROVER,SV4,SC0.010977,XX3.343930e-005,XY-2.022364e-005,XZ3.885685e-005,YY1.649994e-004,YZ-8.284448e-005,ZZ1.859296e-004
GS,PN2511,N 194834.565227,E 345797.215513,EL32.056835,--LW0101CHK
EP,TM11:49:51,LA41.353590356,LN-71.254981718,HT-83.72616,RH0.023119,RV0.032543,DH0.788692,DV1.107815,GM4,CL1
BL,DCROVER,PN2512,DX3.378248,DY19.444092,DZ19.766041,--PT2501CHK,GM4,CL1,HP0.023119,VP0.032543
CV,DCROVER,SV4,SC0.007047,XX2.007744e-005,XY-1.669812e-005,XZ1.455307e-005,YY4.919653e-005,YZ-2.929018e-005,ZZ7.876904e-005
GS,PN2512,N 185825.85938,E 347093.179298,EL14.705176,--PT2501CHK
EP,TM11:55:50,LA41.360144646,LN-71.253530928,HT-70.253979,RH0.026599,RV0.036127,DH0.824849,DV1.120316,GM4,CL1
BL,DCROVER,PN2513,DX504.840757,DY1987.990068,DZ1962.178251,--PT2502CHK,GM4,CL1,HP0.026599,VP0.036127
CV,DCROVER,SV4,SC0.008107,XX2.895735e-005,XY-2.149495e-005,XZ2.269882e-005,YY5.920475e-005,YZ-3.385284e-005,ZZ9.882072e-005
GS,PN2513,N 188412.175467,E 348193.34254,EL28.134028,--PT2502CHK
EP,TM11:58:36,LA41.355934405,LN-71.253643695,HT-69.890178,RH0.026528,RV0.035478,DH0.813746,DV1.088272,GM4,CL1
BL,DCROVER,PN2514,DX468.725292,DY1826.517654,DZ1803.309976,--PT2503CHK,GM4,CL1,HP0.026528,VP0.035478
CV,DCROVER,SV4,SC0.008086,XX2.853796e-005,XY-2.198243e-005,XZ1.945037e-005,YY6.324520e-005,YZ-3.193278e-005,ZZ9.053453e-005
GS,PN2514,N 188199.301226,E 348107.847792,EL28.501247,--PT2503CHK
EP,TM12:06:59,LA41.351858417,LN-71.243697831,HT-94.519195,RH0.028429,RV0.033069,DH0.748311,DV0.870437,GM4,CL1
BL,DCROVER,PN2515,DX5617.911543,DY687.564429,DZ-1298.496634,--PT2504CHK,GM4,CL1,HP0.028429,VP0.033069
CV,DCROVER,SV4,SC0.008665,XX2.479800e-005,XY-2.046098e-005,XZ2.600072e-006,YY7.227627e-005,YZ-2.236528e-005,ZZ7.960988e-005
GS,PN2515,N 184077.930991,E 352629.577905,EL3.842917,--PT2504CHK
--Activating Total Station: Topcon GTS Series [gts-603], COM1, 1200 baud, even parity
--Foresight Target:My Prism, HR:1.0 (1.0 + 0.0 Offset), Prism Const.:0.0mm
--Foresight Target:My Prism, HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
OC,OP2502,N 188412.101303,E 348193.324475,EL28.039096,--FORESTCONV1
--HR:0.0 (0.0 + 0.0 Offset)
LS,HI0.0,HR0.0
BK,OP2502,BP2503,BS201.531008,BC0.0000
--Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
--BS check 2502 - 2503:ZE89.5323,SD229.33,HD err= 0.025691, VD err= 0.044806
--BS Circle check : angular err= 0.0000
SS,OP2502,FP2516,AR65.2026,ZE88.2525,SD115.805,--FOREST
--Foresight Target:My Prism, HR:1.0 (1.0 + 0.0 Offset), Prism Const.:0.0mm
--HR:1.0 (1.0 + 0.0 Offset)
LS,HI0.0,HR1.0
SS,OP2502,FP2517,AR65.2051,ZE87.5544,SD115.825,--FORESTCHK
DP,PN1

FEMA_RI_CLUSTER_25_ADJ

```
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
EE,GF0,SG0
EP,TM21:30:32,LA41.360139136,LN-71.253683146,HT-67.16495,RH0.0,RV0.0,GM1,CL1
GP,PN2516,PTUSER_INPUT
--Survey Pro Version: 4.2.1
--Data Collector Serial Number: SS35A22511
--Activating GPS Receiver: Topcon TPS HiPer [rover], COM1, 115200 baud, no parity
--Import GPS Control - create GPS control point
EE,GF14,SG501084922
EP,TM16:27:49,LA41.353564365,LN-71.254994082,HT-83.711993,RH0.0,RV0.0,GM1,CL1
SP,PN2500,N 185801.968734,E 347081.703193,EL17.885011,--
--Solve calibration from control points.
CT,PN2500,DM4,RH0.0,RV0.0
EP,TM16:28:01,LA41.353564365,LN-71.254994082,HT-83.711993,RH0.0,RV0.0,GM1,CL2
RP,PN2500,N 185801.968734,E 347081.703193,EL17.885011,--
--Solve calibration from control points.
HA,N 185799.54423,E 347083.8061,TH2.424505,TE-2.102907,RT0.0000,SC1.0000000000
VA,PV3,N 185801.968734,E 347081.703193,LZ3.165244,S00.00000,SA0.00000,GNGE0ID03 (Conus)
CS,C03,ZGSite,ZNFEMA_RI_CLUSTER_25,DNNAD 1983 (Conus)
-->>
-->> Begin Adjust with Projection.
GR,PN2501,N 185828.276585,E 347091.087106,EL17.844677,--GRASS
GR,PN2502,N 188414.525807,E 348191.221568,EL31.20434,--FORESTCONV1
GR,PN2503,N 188201.748655,E 348105.745518,EL31.600928,--FORESTCONV2
GR,PN2504,N 184080.364677,E 352627.490028,EL7.028267,--MIXEDVEG
GR,PN2505,N 189037.39738,E 350550.647949,EL5.446247,--LW0098?
GR,PN2506,N 189037.384439,E 350550.632595,EL5.490998,--LW0098?CHK
GR,PN2507,N 187317.085113,E 352918.722949,EL8.557207,--AI5595
GR,PN2508,N 187317.061765,E 352918.721388,EL8.603202,--AI5595CHK
GR,PN2509,N 184332.368327,E 350408.998541,EL11.492738,--BITLOT
GR,PN2510,N 194836.925594,E 345795.13525,EL35.177309,--LW0101
GR,PN2511,N 194836.989732,E 345795.112605,EL35.22208,--LW0101CHK
GR,PN2512,N 185828.283885,E 347091.076391,EL17.870421,--PT2501CHK
GR,PN2513,N 188414.599972,E 348191.239632,EL31.299272,--PT2502CHK
GR,PN2514,N 188201.725731,E 348105.744885,EL31.666491,--PT2503CHK
GR,PN2515,N 184080.355496,E 352627.474997,EL7.008162,--PT2504CHK
-->> End Adjust with Projection.
-->>
SP,PN2516,N 188408.925253,E 348075.595885,EL34.389857,--FOREST
SP,PN2517,N 188408.939838,E 348075.607028,EL34.389992,--FORESTCHK
```

APPENDIX IV

OPUS BASE STATION SOLUTIONS FOR CLUSTERS 21 THROUGH 25 AND COMPARISON TO PINNACLE SOFTWARE SOLUTION

OPUS solution Cluster_21

From: opus@ngs.noaa.gov
 Sent: Friday, April 27, 2007 10:28 AM
 To: Michael Wilson
 Subject: OPUS solution : log0425a.tps 000123478

FILE: log0425a.tps 000123478

NGS OPUS SOLUTION REPORT

=====

USER: mwilson@rhiengineering.com
 RINEX FILE: log0115n.07o

DATE: April 27, 2007
 TIME: 14:27:35 UTC

SOFTWARE: page5 0612.06 master3.pl
 EPHEMERIS: igr14243.eph [rapid]
 NAV FILE: brdc1150.07n
 ANT NAME: TPSLEGANT2 NONE
 ARP HEIGHT: 2.0

START: 2007/04/25 13:07:00
 STOP: 2007/04/25 16:25:30
 OBS USED: 8488 / 8573 : 99%
 # FIXED AMB: 39 / 39 : 100%
 OVERALL RMS: 0.012(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2007.3140)

X:	1497912.719(m)	0.006(m)	1497911.996(m)	0.006(m)
Y:	-4557046.214(m)	0.015(m)	-4557044.771(m)	0.015(m)
Z:	4189458.142(m)	0.011(m)	4189458.065(m)	0.011(m)

LAT:	41 19 24.87502	0.004(m)	41 19 24.90732	0.004(m)
E LON:	288 11 44.97430	0.009(m)	288 11 44.96415	0.009(m)
W LON:	71 48 15.02570	0.009(m)	71 48 15.03585	0.009(m)
EL HGT:	-29.016(m)	0.017(m)	-30.266(m)	0.017(m)
ORTHO HGT:	1.623(m)	0.030(m)	[Geoid03 NAVD88]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 19)	SPC (3800 RI)
Northing (Y) [meters]	4578471.987	26725.345
Easting (X) [meters]	265309.655	74533.990
Convergence [degrees]	-1.85246972	-0.20085031
Point Scale	1.00027791	1.00000173
Combined Factor	1.00028246	1.00000628

US NATIONAL GRID DESIGNATOR: 19TBF6531078472(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	56594.8
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	20596.4
AI3285	NPRI NAVAL STATION NEW CORS ARP	N413035.415	W0711939.125	44897.7

NEAREST NGS PUBLISHED CONTROL POINT

LW3280	PLEASANT VIEW USE 1909	N411924.798	W0714812.487	59.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

OPUS solution Cluster_22

From: opus@ngs.noaa.gov
 Sent: Friday, April 27, 2007 10:31 AM
 To: Michael Wilson
 Subject: OPUS solution : log0425b.tps 000123487

FILE: log0425b.tps 000123487

NGS OPUS SOLUTION REPORT

=====

USER: mwilson@rhiengineering.com
 RINEX FILE: log0115r.07o

DATE: April 27, 2007
 TIME: 14:30:37 UTC

SOFTWARE: page5 0612.06 master22.pl
 EPHEMERIS: igr14243.eph [rapid]
 NAV FILE: brdc1150.07n
 ANT NAME: TPSLEGANT2 NONE
 ARP HEIGHT: 2.0

START: 2007/04/25 17:23:00
 STOP: 2007/04/25 20:40:30
 OBS USED: 6936 / 7042 : 98%
 # FIXED AMB: 39 / 39 : 100%
 OVERALL RMS: 0.012(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2007.3145)

X:	1507749.019(m)	0.005(m)	1507748.295(m)	0.005(m)
Y:	-4550205.437(m)	0.024(m)	-4550203.994(m)	0.024(m)
Z:	4193346.399(m)	0.014(m)	4193346.322(m)	0.014(m)
LAT:	41 22 12.58837	0.007(m)	41 22 12.62072	0.007(m)
E LON:	288 19 58.98471	0.004(m)	288 19 58.97466	0.004(m)
W LON:	71 40 1.01529	0.004(m)	71 40 1.02534	0.004(m)
EL HGT:	-22.904(m)	0.026(m)	-24.154(m)	0.026(m)
ORTHO HGT:	7.608(m)	0.036(m)	[Geoid03 NAVD88]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 19)	SPC (3800 RI)
Northing (Y) [meters]	4583282.240	31868.112
Easting (X) [meters]	276954.741	86032.703
Convergence [degrees]	-1.76336815	-0.11034010
Point Scale	1.00021229	0.99999615
Combined Factor	1.00021588	0.99999974

US NATIONAL GRID DESIGNATOR: 19TBF7695583282(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	60565.0
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	32264.9
AI3285	NPRI NAVAL STATION NEW CORS ARP	N413035.415	W0711939.125	32330.4

NEAREST NGS PUBLISHED CONTROL POINT
 LW3076 CHARLESTOWN USN FIELD CONT TWR N412205.951 W0713949.971 328.3

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

OPUS solution Cluster 23

From: opus@ngs.noaa.gov
 Sent: Wednesday, May 02, 2007 8:47 AM
 To: Michael Wilson
 Subject: OPUS solution : log0426a.jps 000127189

FILE: log0426a.jps 000127189

NGS OPUS SOLUTION REPORT =====

USER: mwilson@rhiengineering.com
 RINEX FILE: log01160.07o

DATE: May 02, 2007
 TIME: 12:47:16 UTC

SOFTWARE: page5 0612.06 master31.pl
 EPHEMERIS: igr14244.eph [rapid]
 NAV FILE: brdc1160.07n
 ANT NAME: TPSLEGANT2 NONE
 ARP HEIGHT: 2.0

START: 2007/04/26 14:50:00
 STOP: 2007/04/26 16:54:00
 OBS USED: 5388 / 5425 : 99%
 # FIXED AMB: 30 / 30 : 100%
 OVERALL RMS: 0.012(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2007.3169)

X:	1519639.434(m)	0.004(m)	1519638.709(m)	0.004(m)
Y:	-4530381.188(m)	0.018(m)	-4530379.747(m)	0.018(m)
Z:	4210364.445(m)	0.014(m)	4210364.371(m)	0.014(m)
LAT:	41 34 28.89190	0.002(m)	41 34 28.92445	0.002(m)
E LON:	288 32 35.35185	0.003(m)	288 32 35.34196	0.003(m)
W LON:	71 27 24.64815	0.003(m)	71 27 24.65804	0.003(m)
EL HGT:	-26.060(m)	0.023(m)	-27.303(m)	0.023(m)
ORTHO HGT:	3.998(m)	0.034(m)	[Geoid03 NAVD88]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 19)	SPC (3800 RI)
Northing (Y) [meters]	4605471.674	54571.008
Easting (X) [meters]	295172.949	103598.969
Convergence [degrees]	-1.63091896	0.02863635
Point Scale	1.00011632	0.99999391
Combined Factor	1.00012041	0.99999800

US NATIONAL GRID DESIGNATOR: 19TBG9517305472(NAD 83)

BASE STATIONS USED				
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	50953.8
AI3285	NPRI NAVAL STATION NEW CORS ARP	N413035.415	W0711939.125	12973.3
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	51037.9

NEAREST NGS PUBLISHED CONTROL POINT				
PID	DESIGNATION	LATITUDE	DISTANCE(m)	
LW2482	VAUGHNS HOUSE CUPOLA	N413425.451	W0712743.962	459.3

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

OPUS solution Cluster_24

From: opus@ngs.noaa.gov
 Sent: Wednesday, May 02, 2007 8:48 AM
 To: Michael Wilson
 Subject: OPUS solution : log0430a.jps 000127190

FILE: log0430a.jps 000127190

NGS OPUS SOLUTION REPORT

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USER: mwilson@rhiengineering.com
 RINEX FILE: log01200.070

DATE: May 02, 2007
 TIME: 12:48:10 UTC

SOFTWARE: page5 0612.06 master31.pl
 EPHEMERIS: igr14251.eph [rapid]
 NAV FILE: brdc1200.07n
 ANT NAME: TPSLEGANT2 NONE
 ARP HEIGHT: 2.0

START: 2007/04/30 14:33:00
 STOP: 2007/04/30 17:50:30
 OBS USED: 8435 / 8524 : 99%
 # FIXED AMB: 33 / 34 : 97%
 OVERALL RMS: 0.022(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2007.3279)

X:	1520030.756(m)	0.005(m)	1520030.032(m)	0.005(m)
Y:	-4560595.645(m)	0.003(m)	-4560594.199(m)	0.003(m)
Z:	4177692.422(m)	0.002(m)	4177692.344(m)	0.002(m)
LAT:	41 10 57.56448	0.004(m)	41 10 57.59675	0.004(m)
E LON:	288 25 58.98573	0.005(m)	288 25 58.97587	0.005(m)
W LON:	71 34 1.01427	0.005(m)	71 34 1.02413	0.005(m)
EL HGT:	-28.672(m)	0.001(m)	-29.928(m)	0.001(m)
ORTHO HGT:	2.032(m)	0.025(m)	[Geoid03 NAVD88]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 19)	SPC (3800 RI)
Northing (Y) [meters]	4562210.815	11032.606
Easting (X) [meters]	284703.087	94382.897
Convergence [degrees]	-1.69088525	-0.04408297
Point Scale	1.00017051	0.99999414
Combined Factor	1.00017501	0.99999864

US NATIONAL GRID DESIGNATOR: 19TBF8470362211(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DH5835	CTMA MANSFIELD CORS ARP	N414352.917	W0721238.877	81286.8
DH5831	CTGR GROTON CORS ARP	N412007.035	W0720258.969	43865.4
AI3285	NPRI NAVAL STATION NEW CORS ARP	N413035.415	W0711939.125	41495.1

NEAREST NGS PUBLISHED CONTROL POINT				
LW0924	845 9491 TIDAL 10	N411053.	W0713428.	643.7

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

OPUS solution Cluster_25

From: opus@ngs.noaa.gov
 Sent: Thursday, May 03, 2007 12:58 PM
 To: Michael Wilson
 Subject: OPUS solution : log0501a.jps 000128102

FILE: log0501a.jps 000128102

NGS OPUS SOLUTION REPORT

=====

USER: mwilson@rhiengineering.com
 RINEX FILE: log0121m.07o

DATE: May 03, 2007
 TIME: 16:57:50 UTC

SOFTWARE: page5 0612.06 master12.pl
 EPHEMERIS: igr14252.eph [rapid]
 NAV FILE: brdc1210.07n
 ANT NAME: TPSLEGANT2 NONE
 ARP HEIGHT: 2.0

START: 2007/05/01 12:51:00
 STOP: 2007/05/01 16:12:30
 OBS USED: 8621 / 8727 : 99%
 # FIXED AMB: 40 / 40 : 100%
 OVERALL RMS: 0.012(m)

REF FRAME: NAD_83(CORS96)(EPOCH:2002.0000) ITRF00 (EPOCH:2007.3304)

X:	1521283.736(m)	0.001(m)	1521283.011(m)	0.001(m)
Y:	-4528388.097(m)	0.018(m)	-4528386.656(m)	0.018(m)
Z:	4211906.393(m)	0.010(m)	4211906.319(m)	0.010(m)
LAT:	41 35 35.66763	0.006(m)	41 35 35.70019	0.006(m)
E LON:	288 34 10.03139	0.006(m)	288 34 10.02153	0.006(m)
W LON:	71 25 49.96861	0.006(m)	71 25 49.97847	0.006(m)
EL HGT:	-24.536(m)	0.019(m)	-25.779(m)	0.019(m)
ORTHO HGT:	5.466(m)	0.032(m)	[Geoid03 NAVD88]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 19)	SPC (3800 RI)
Northing (Y) [meters]	4607469.102	56632.553
Easting (X) [meters]	297423.749	105790.712
Convergence [degrees]	-1.61403694	0.04610566
Point Scale	1.00010503	0.99999416
Combined Factor	1.00010888	0.99999801

US NATIONAL GRID DESIGNATOR: 19TBG9742407469(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DH5837	CTPU PUTNAM CORS ARP	N415358.888	W0715320.889	51122.8
AI3285	NPRI NAVAL STATION NEW CORS ARP	N413035.415	W0711939.125	12635.9
DI0876	ACU5 ACUSHNET 5 CORS ARP	N414436.796	W0705313.027	48250.3

NEAREST NGS PUBLISHED CONTROL POINT				
LW0093	RRPC NAS	N413534.	W0712552.	69.8

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

WESTERLY, CHARLESTOWN, NORTH KINGSTOWN, AND NEW SHOREHAM COASTLINE

COMPARISON OF BASE STATION OPUS AND PINNACLE SOFTWARE SOLUTIONS

BASE PT.	OPUS(M)			OPUS(sFt)			PINNACLE(sFt)			DELTA(sFt)		
	Northing	Easting	Elip. Ht.	Northing	Easting	Elip. Ht.	Northing	Easting	Elip. Ht.	Northing	Easting	Elip. Ht.
2100	26725.345	74533.99	-29.016	87,681.40	244,533.60	-95.20	87,681.41	244,533.61	-95.21	0.00	0.01	0.01
2200	31868.112	86032.703	-22.904	104,553.96	282,258.96	-75.14	104,553.95	282,258.97	-75.14	0.01	0.01	0.00
2300	54571.008	103598.969	-26.06	179,038.38	339,890.95	-85.50	179,038.38	339,890.96	-85.52	0.00	0.01	0.02
2400	11032.606	94382.897	-28.672	36,196.14	309,654.55	-94.07	36,196.12	309,654.57	-94.00	0.02	0.02	0.06
2500	56632.553	105790.712	-24.536	185,801.97	347,081.69	-80.50	185,801.97	347,081.70	-80.55	0.00	0.01	0.05
AVGΔ										0.01	0.01	0.03
MINΔ										0.00	0.01	0.00
MAXΔ										0.02	0.02	0.06

APPENDIX V

PUBLISHED NGS DATASHEETS FOR ESTABLISHED MONUMENTS AND CORS STATIONS

DATASHEETS

The NGS Data SheetSee file dsdata.txt for more information about the datasheet.DATABASE
= Sybase ,PROGRAM = datasheet, VERSION = 7.45

```

1      National Geodetic Survey, Retrieval Date = MAY 7, 2007
AI5595 *****
AI5595 PACS - This is a Primary Airport Control Station.
AI5595 DESIGNATION - OQU A
AI5595 PID - AI5595
AI5595 STATE/COUNTY- RI/WASHINGTON
AI5595 USGS QUAD - WICKFORD (1995)
AI5595
AI5595 *CURRENT SURVEY CONTROL
AI5595
AI5595* NAD 83(1996)- 41 35 50.58277(N) 071 24 33.12965(W) ADJUSTED
AI5595* NAVD 88 - 2.62 (meters) 8.6 (feet) GPS OBS
AI5595
AI5595 X - 1,522,872.516 (meters) COMP
AI5595 Y - -4,527,529.545 (meters) COMP
AI5595 Z - 4,212,248.664 (meters) COMP
AI5595 LAPLACE CORR- 2.79 (seconds) DEFLEC99
AI5595 ELLIP HEIGHT- -27.33 (meters) (06/04/02) GPS OBS
AI5595 GEOID HEIGHT- -29.97 (meters) GEOID03
AI5595
AI5595 HORZ ORDER - B
AI5595 ELLP ORDER - FOURTH CLASS I
AI5595
AI5595.This mark is at Quonset State Airport (OQU)
AI5595
AI5595.The horizontal coordinates were established by GPS observations
AI5595.and adjusted by the National Geodetic Survey in May 2000.
AI5595
AI5595.The orthometric height was determined by GPS observations and a
AI5595.high-resolution geoid model.
AI5595
AI5595.GPS derived orthometric heights for airport stations designated as
AI5595.PACS or SACS are published to 2 decimal places. This maintains
AI5595.centimeter relative accuracy between the PACS and SACS. It does
AI5595.not indicate centimeter accuracy relative to other marks which are
AI5595.part of the NAVD 88 network.
AI5595
AI5595.Photographs are available for this station.
AI5595
AI5595.The X, Y, and Z were computed from the position and the ellipsoidal ht.
AI5595
AI5595.The Laplace correction was computed from DEFLEC99 derived deflections.
AI5595
AI5595.The ellipsoidal height was determined by GPS observations
AI5595.and is referenced to NAD 83.
AI5595
AI5595.The geoid height was determined by GEOID03.
AI5595
AI5595; North East Units Scale Factor Converg.
AI5595;SPC RI - 57,094.357 107,569.813 MT 0.99999445 +0 03 37.0
AI5595;SPC RI - 187,317.07 352,918.63 sFT 0.99999445 +0 03 37.0
AI5595;UTM 19 - 4,607,879.212 299,215.673 MT 1.00009614 -1 35 59.9
AI5595
AI5595! - Elev Factor x Scale Factor = Combined Factor
AI5595!SPC RI - 1.00000429 x 0.99999445 = 0.99999874
AI5595!UTM 19 - 1.00000429 x 1.00009614 = 1.00010043
AI5595
AI5595 SUPERSEDED SURVEY CONTROL
AI5595
AI5595.No superseded survey control is available for this station.
AI5595
AI5595_U.S. NATIONAL GRID SPATIAL ADDRESS: 19TBG9921607879(NAD 83)
AI5595_MARKER: DD = SURVEY DISK
AI5595_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AI5595_STAMPING: OQU A 1999
AI5595_MARK LOGO: NOS
AI5595_MAGNETIC: N = NO MAGNETIC MATERIAL
AI5595_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

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AI5595+STABILITY: SURFACE MOTION

AI5595_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

AI5595+SATELLITE: SATELLITE OBSERVATIONS - November 21, 2001

AI5595

AI5595 HISTORY - Date Condition Report By

AI5595 HISTORY - 1999 MONUMENTED WOOLPT

AI5595 HISTORY - 20011121 GOOD NGS

AI5595

AI5595 STATION DESCRIPTION

AI5595

AI5595'DESCRIBED BY WOOLPERT CONSULTANTS 1999 (ARL)

AI5595'THE STATION IS LOCATED APPROXIMATELY 16.0 MI (25.7 KM) SOUTH OF

AI5595'PROVIDENCE, 8.8 MI (14.2 KM) NORTHWEST OF NEWPORT, 9.9 MI (15.9 KM)

AI5595'SOUTHEAST OF WEST WARWICK, AND IS AT THE QUONSET STATE AIRPORT.

AI5595'OWNERSHIP-- STATE OF RHODE ISLAND, C/O TRACEY SMITH GENERAL AIRPORT

AI5595'MANAGER, OR KEVIN BUCKLAND AIRPORT OPERATIONS MANAGER, HAWTHORNE

AI5595'AVIATION, 210 AIRPORT STREET, NORTH KINGSTOWN RI, 02852. PHONE NUMBER

AI5595'(401) 295-5020, FAX NUMBER (401) 294-6967. CONTACT THE AIRPORT

AI5595'OPERATIONS MANAGER AT LEAST 24 HOURS PRIOR TO ARRANGE FOR ACCESS.

AI5595'TO REACH THE STATION FROM THE JUNCTION OF U.S. ROUTE 1, STATE ROUTE

AI5595'403, AND ROGER WILLIAMS WAY, PROCEED SOUTHEAST 2.2 MI (3.5 KM) ON

AI5595'ROGER WILLIAMS WAY TO THE JUNCTION OF AIRPORT STREET ON THE LEFT, TURN

AI5595'LEFT AND PROCEED NORTHEAST 0.3 MI (0.5 KM) TO THE MAIN GATE DIRECTLY

AI5595'AHED AND THE TERMINAL ON THE LEFT. PROCEED THROUGH THE GATE AND

AI5595'NORTHEAST 0.1 MI (0.2 KM) ACROSS THE RAMP, ALONG TAXIWAY ALPHA 2, AND

AI5595'ACROSS RUNWAY 16-34 TO THE INFIELD NEAR THE WINDSOCK. TURN LEFT AND

AI5595'PROCEED NORTHWEST APPROXIMATELY 122 M (400.3 FT) TO THE STATION

AI5595'DIRECTLY AHEAD AND ONLINE WITH THE RUNWAY DISTANCE REMAINING SIGNS FOR

AI5595'RUNWAY 16-34.

AI5595'THE STATION IS A STANDARD NOS DISK STAMPED--OQU A 1999-- SET IN THE

AI5595'TOP OF A 0.4 M (1.3 FT) DIAMETER ROUND CONCRETE MONUMENT 1.4 M (4.6

AI5595'FT) IN DEPTH, RECESSED 5 CM. THIS STATION IS DESIGNATED AS THE

AI5595'PRIMARY AIRPORT CONTROL STATION. THE STATION IS LOCATED 90.52 M

AI5595'(296.98 FT) FROM THE WINDSOCK ON A MAGNETIC COMPASS AZIMUTH OF 340

AI5595'DEGREES, 63.40 M (208.00 FT) FROM THE NORTHWEST CORNER ON A CONCRETE

AI5595'SHACK ON A MAGNETIC COMPASS AZIMUTH OF 260 DEGREES, 63.1 M (207.0 FT)

AI5595'FROM THE 3000 FEET (914.4 M) REMAINING SIGN ON A MAGNETIC COMPASS

AI5595'AZIMUTH OF 70 DEGREES, AND 1.00 M (3.28 FT) FROM THE CARSONITE WITNESS

AI5595'POST ON A MAGNETIC COMPASS AZIMUTH OF 250 DEGREES. THIS STATION IS

AI5595'DESIGNATED AS THE PRIMARY AIRPORT CONTROL STATION.

AI5595

AI5595 STATION RECOVERY (2001)

AI5595

AI5595'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2001

AI5595'RECOVERED AS DESCRIBED. NGS 11-21-2001.

AI5595'

1 National Geodetic Survey, Retrieval Date = MAY 7, 2007

LW0098 *****

LW0098 DESIGNATION - NEIDHALL USN

LW0098 PID - LW0098

LW0098 STATE/COUNTY- RI/WASHINGTON

LW0098 USGS QUAD - WICKFORD (1995)

LW0098

LW0098 *CURRENT SURVEY CONTROL

LW0098

LW0098* NAD 83(1996)- 41 36 07.60189(N) 071 25 04.27531(W) ADJUSTED

LW0098* NAVD 88 - 1.670 (meters) 5.48 (feet) ADJUSTED

LW0098

LW0098 X - 1,522,077.536 (meters) COMP

LW0098 Y - -4,527,428.343 (meters) COMP

LW0098 Z - 4,212,640.677 (meters) COMP

LW0098 LAPLACE CORR- 2.69 (seconds) DEFLEC99

LW0098 ELLIP HEIGHT- -28.28 (meters) (06/04/02) GPS OBS

LW0098 GEOD HEIGHT- -29.98 (meters) GEOD03

LW0098 DYNAMIC HT - 1.670 (meters) 5.48 (feet) COMP

LW0098 MODELED GRAV- 980,296.4 (mgal) NAVD 88

LW0098

LW0098 HORZ ORDER - FIRST

LW0098 VERT ORDER - FIRST CLASS I

LW0098 ELLP ORDER - FOURTH CLASS I

LW0098

LW0098.This mark is at Quonset State Airport (OQU)

LW0098

LW0098.The horizontal coordinates were established by GPS observations

LW0098.and adjusted by the National Geodetic Survey in May 2000.

LW0098

LW0098.The orthometric height was determined by differential leveling

LW0098.and adjusted by the NATIONAL GEODETIC SURVEY in June 1991.

LW0098

LW0098.Photographs are available for this station.

LW0098

LW0098.The X, Y, and Z were computed from the position and the ellipsoidal ht.

LW0098

LW0098.The Laplace correction was computed from DEFLEC99 derived deflections.

LW0098

LW0098.The ellipsoidal height was determined by GPS observations

LW0098.and is referenced to NAD 83.

LW0098

LW0098.The geoid height was determined by GEOID03.

LW0098

LW0098.The dynamic height is computed by dividing the NAVD 88

LW0098.geopotential number by the normal gravity value computed on the

LW0098.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

LW0098.degrees latitude (g = 980.6199 gals.).

LW0098

LW0098.The modeled gravity was interpolated from observed gravity values.

LW0098

	North	East	Units	Scale	Factor	Converg.
LW0098;SPC RI	- 57,618.697	106,848.028	MT	0.99999433	+0 03 16.3	
LW0098;SPC RI	- 189,037.34	350,550.57	sFT	0.99999433	+0 03 16.3	
LW0098;UTM 19	- 4,608,424.301	298,509.310	MT	1.00009963	-1 36 21.2	

LW0098

LW0098! - Elev Factor x Scale Factor = Combined Factor

LW0098!SPC RI - 1.00000444 x 0.99999433 = 0.99999877

LW0098!UTM 19 - 1.00000444 x 1.00009963 = 1.00010407

LW0098

SUPERSEDED SURVEY CONTROL

LW0098

LW0098	NAVD 88 (05/22/00)	1.67 (m)	5.5 (f)	LEVELING	3
LW0098	NGVD 29 (??/??/92)	1.935 (m)	6.35 (f)	ADJ UNCH	1 1

LW0098

LW0098.Superseded values are not recommended for survey control.

LW0098.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

LW0098.See file dsdata.txt to determine how the superseded data were derived.

LW0098

LW0098_U.S. NATIONAL GRID SPATIAL ADDRESS: 19TBG9850908424(NAD 83)

LW0098_MARKER: DD = SURVEY DISK

LW0098_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

LW0098_SP_SET: SET IN TOP OF CONCRETE MONUMENT

LW0098_MARK LOGO: USN

LW0098_MAGNETIC: N = NO MAGNETIC MATERIAL

LW0098_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

LW0098+STABILITY: SURFACE MOTION

LW0098_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

LW0098+SATELLITE: SATELLITE OBSERVATIONS - September 22, 1999

LW0098

HISTORY	Date	Condition	Report By	
LW0098	HISTORY	- UNK	MONUMENTED	USN
LW0098	HISTORY	- 1965	GOOD	NGS
LW0098	HISTORY	- 1974	GOOD	DOD
LW0098	HISTORY	- 1985	GOOD	NGS
LW0098	HISTORY	- 19990922	GOOD	WOOLPT

LW0098

STATION DESCRIPTION

LW0098

LW0098'DESCRIBED BY NATIONAL GEODETIC SURVEY 1965

LW0098'AT QUONSET POINT NAS.

LW0098'AT QUONSET POINT NAVAL AIR STATION, ABOUT 0.6 MILE NORTHWEST OF

LW0098'THE OPERATIONS BUILDING AND CONTROL TOWER, IN A TRIANGLE,

LW0098'AT THE INTERSECTION OF THE NORTHWEST-SOUTHEAST RUNWAY AND THE

LW0098'OLD EAST-WEST RUNWAY, 163 FEET SOUTHWEST OF THE SOUTHWEST EDGE

LW0098'OF RUNWAY NO. 1634, 48.9 FEET NORTH OF THE NORTH EDGE OF RUNWAY

LW0098'NO. 1028, 96.5 FEET WEST OF THE WEST CORNER OF A 4-BY-2-FOOT

LW0098'CONCRETE BLOCK SUPPORTING A SIGN, 2 FEET BELOW THE LEVEL OF THE

LW0098'RUNWAY AND SET IN THE TOP OF A CONCRETE POST 1/2 FOOT BELOW THE

LW0098'LEVEL OF THE GROUND.

LW0098

LW0098 STATION RECOVERY (1974)

LW0098
 LW0098'RECOVERY NOTE BY US DEPARTMENT OF DEFENSE 1974
 LW0098'RECOVERED IN GOOD CONDITION.
 LW0098
 LW0098 STATION RECOVERY (1985)
 LW0098
 LW0098'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1985
 LW0098'RECOVERED IN GOOD CONDITION.
 LW0098
 LW0098 STATION RECOVERY (1999)
 LW0098
 LW0098'RECOVERY NOTE BY WOOLPERT CONSULTANTS 1999 (ARL)
 LW0098'THE STATION IS LOCATED APPROXIMATELY 16.0 MI (25.7 KM) SOUTH OF
 LW0098'PROVIDENCE, 8.8 MI (14.2 KM) NORTHWEST OF NEWPORT, AND 9.9 MI (15.9
 LW0098'KM) SOUTHEAST OF WEST WARWICK, AND IS AT THE QUONSET STATE AIRPORT.
 LW0098'OWNERSHIP--STATE OF RHODE ISLAND, TRACEY SMITH GENERAL AIRPORT
 LW0098'MANAGER, C/O KEVIN BUCKLAND AIRPORT OPERATIONS MANAGER, HAWTHORNE
 LW0098'AVIATION, 240 AIRPORT STREET, NORTH KINGSTOWN RI 02852, PHONE NUMBER
 LW0098'(401) 295-5020, FAX NUMBER (401) 294-6967. NOTE--PERMISSION MUST BE
 LW0098'OBTAINED 24 HOURS BEFORE PROCEEDING AIRSIDE.
 LW0098'TO REACH THE STATION FROM THE JUNCTION OF US HIGHWAY 1, STATE HIGHWAY
 LW0098'403, AND ROGER WILLIAMS WAY GO SOUTHEAST 2.2 MI (3.5 KM) ON ROGER
 LW0098'WILLIAMS WAY ROAD TO THE JUNCTION OF AIRPORT STREET ON THE LEFT, TURN
 LW0098'LEFT AND GO NORTHEAST 0.3 MI (0.5 KM) TO THE MAIN AIRPORT GATE
 LW0098'DIRECTLY AHEAD AND THE TERMINAL ON THE LEFT, CONTINUE NORTHEAST
 LW0098'THROUGH THE GATE 0.05 MI (0.08 KM) ON THE RAMP TO TAXIWAY ALPHA, TURN
 LW0098'LEFT AND GO NORTHWEST 0.55 MI (0.89 KM) ON TAXIWAY ALPHA TO THE
 LW0098'STATION ON THE RIGHT.
 LW0098'THE STATION IS A BRONZE PLUG SET IN THE TOP OF A ROUND CONCRETE POST,
 LW0098'RECESSED 10 CM (4 INCHES) WITH THE GROUND. THE STATION IS 66.45 M
 LW0098'(218.01 FT) SOUTH 70 DEGREES WEST OF THE WEST EDGE-OF-PAVEMENT FOR
 LW0098'RUNWAY 16, 60.62 M (198.88 FT) NORTH 15 DEGREES EAST OF THE CENTERLINE
 LW0098'OF TAXIWAY ALPHA, 54.22 M (177.89 FT) SOUTH 72 DEGREES EAST OF THE
 LW0098'EAST CORNER OF CONCRETE PAD FOR TAXIWAY --A--AND --N-- SIGN, AND 46.57
 LW0098'M (152.79 FT) SOUTH 80 DEGREES EAST OF THE CENTER OF A STORM SEWER
 LW0098'MANHOLE.
 1 National Geodetic Survey, Retrieval Date = MAY 7, 2007
 LW0101 *****
 LW0101 DESIGNATION - G 17
 LW0101 PID - LW0101
 LW0101 STATE/COUNTY- RI/WASHINGTON
 LW0101 USGS QUAD - WICKFORD (1995)
 LW0101
 LW0101 *CURRENT SURVEY CONTROL
 LW0101
 LW0101* NAD 83(1986)- 41 37 00. (N) 071 26 07. (W) SCALED
 LW0101* NAVD 88 - 10.737 (meters) 35.23 (feet) ADJUSTED
 LW0101
 LW0101 GEOID HEIGHT- -29.98 (meters) GEOID03
 LW0101 DYNAMIC HT - 10.733 (meters) 35.21 (feet) COMP
 LW0101 MODELED GRAV- 980,292.6 (mgal) NAVD 88
 LW0101
 LW0101 VERT ORDER - FIRST CLASS I
 LW0101
 LW0101.The horizontal coordinates were scaled from a topographic map and have
 LW0101.an estimated accuracy of +/- 6 seconds.
 LW0101
 LW0101.The orthometric height was determined by differential leveling
 LW0101.and adjusted by the NATIONAL GEODETIC SURVEY in June 1991.
 LW0101
 LW0101.The geoid height was determined by GEOID03.
 LW0101
 LW0101.The dynamic height is computed by dividing the NAVD 88
 LW0101.geopotential number by the normal gravity value computed on the
 LW0101.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 LW0101.degrees latitude (g = 980.6199 gals.).
 LW0101
 LW0101.The modeled gravity was interpolated from observed gravity values.
 LW0101
 LW0101;
 LW0101;SPC RI - North East Units Estimated Accuracy
 LW0101; 59,230. 105,390. MT (+/- 180 meters Scaled)
 LW0101
 LW0101 SUPERSEDED SURVEY CONTROL
 LW0101

LW0101 NGVD 29 (??/??/92) 11.000 (m) 36.09 (f) ADJ UNCH 1 1
 LW0101
 LW0101.Superseded values are not recommended for survey control.
 LW0101.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 LW0101.See file dsdata.txt to determine how the superseded data were derived.
 LW0101
 LW0101_U.S. NATIONAL GRID SPATIAL ADDRESS: 19TBG971100(NAD 83)
 LW0101_MARKER: DB = BENCH MARK DISK
 LW0101_SETTING: 66 = SET IN ROCK OUTCROP
 LW0101_SP_SET: ROCK OUTCROP
 LW0101_STAMPING: G 17 1965
 LW0101_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD
 LW0101+STABILITY: POSITION/ELEVATION WELL
 LW0101

LW0101	HISTORY	- Date	Condition	Report By
LW0101	HISTORY	- 1965	MONUMENTED	CGS
LW0101	HISTORY	- 1988	GOOD	USPSQD

 LW0101
 LW0101 STATION DESCRIPTION
 LW0101
 LW0101'DESCRIBED BY COAST AND GEODETIC SURVEY 1965
 LW0101'5.8 MI SE FROM EAST GREENWICH.
 LW0101'4.2 MILES SOUTH ALONG U.S. HIGHWAY 1 FROM THE POST OFFICE AT
 LW0101'EAST GREENWICH, THENCE 1.6 MILES EAST AND NORTH ALONG NEWCOMB ROAD,
 LW0101'NEAR THE JUNCTION OF NEWCOMB AND FLETCHERS ROAD, NEAR THE NORTH
 LW0101'CORNER OF THE CONSTRUCTION BATTALLION AREA OF THE QUONSET POINT
 LW0101'NAVAL AIR STATION, SET IN THE TOP OF AN 8-BY-2 FOOT FLAT OUTCROP,
 LW0101'49 FEET SOUTHEAST OF THE CENTER LINE OF FLETCHERS ROAD, 118 FEET
 LW0101'EAST OF THE APPROXIMATE CENTER OF THE JUNCTION OF NEWCOMB AND
 LW0101'FLETCHERS ROAD, 41 FEET NORTHEAST OF A STEEL FENCE LINE AND 1
 LW0101'FOOT ABOVE THE LEVEL OF THE ROAD.
 LW0101
 LW0101 STATION RECOVERY (1988)
 LW0101
 LW0101'RECOVERY NOTE BY US POWER SQUADRON 1988 (AFA)
 LW0101'RECOVERED IN GOOD CONDITION.
 1 National Geodetic Survey, Retrieval Date = MAY 7, 2007
 LW0894 *****
 LW0894 DESIGNATION - 16 M
 LW0894 PID - LW0894
 LW0894 STATE/COUNTY- RI/WASHINGTON
 LW0894 USGS QUAD - QUONONCHONTAUG (1975)
 LW0894
 LW0894 *CURRENT SURVEY CONTROL
 LW0894

LW0894*	NAD 83(1986)-	41 21 26.	(N)	071 42 11.	(W)	SCALED
LW0894*	NAVD 88	- 16.273	(meters)	53.39	(feet)	ADJUSTED

 LW0894

LW0894	GEOID HEIGHT-	-30.55	(meters)		GEOID03
LW0894	DYNAMIC HT -	16.268	(meters)	53.37	(feet) COMP
LW0894	MODELED GRAV-	980,275.6	(mgal)		NAVD 88

 LW0894
 LW0894 VERT ORDER - SECOND CLASS 0
 LW0894
 LW0894.The horizontal coordinates were scaled from a topographic map and have
 LW0894.an estimated accuracy of +/- 6 seconds.
 LW0894
 LW0894.The orthometric height was determined by differential leveling
 LW0894.and adjusted by the NATIONAL GEODETIC SURVEY in June 1991.
 LW0894
 LW0894.The geoid height was determined by GEOID03.
 LW0894
 LW0894.The dynamic height is computed by dividing the NAVD 88
 LW0894.geopotential number by the normal gravity value computed on the
 LW0894.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 LW0894.degrees latitude (g = 980.6199 gals.).
 LW0894
 LW0894.The modeled gravity was interpolated from observed gravity values.
 LW0894

LW0894;		North	East	Units	Estimated Accuracy
LW0894;SPC RI	-	30,440.	83,010.	MT	(+/- 180 meters Scaled)

 LW0894
 LW0894 SUPERSEDED SURVEY CONTROL
 LW0894

LW0894 NGVD 29 (??/??/92) 16.558 (m) 54.32 (f) ADJ UNCH 2 0
 LW0894
 LW0894.Superseded values are not recommended for survey control.
 LW0894.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 LW0894.See file dsdata.txt to determine how the superseded data were derived.
 LW0894
 LW0894_U.S. NATIONAL GRID SPATIAL ADDRESS: 19TBF738819(NAD 83)
 LW0894_MARKER: DD = SURVEY DISK
 LW0894_SETTING: 66 = SET IN ROCK OUTCROP
 LW0894_SP_SET: BEDROCK
 LW0894_STAMPING: 16 M 1941 54
 LW0894_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD
 LW0894+STABILITY: POSITION/ELEVATION WELL
 LW0894

HISTORY	- Date	Condition	Report By
HISTORY	- 1941	MONUMENTED	USGS
HISTORY	- 1969	GOOD	NGS
HISTORY	- 1988	GOOD	USPSQD
HISTORY	- 1988	GOOD	USPSQD
HISTORY	- 1989	GOOD	USPSQD
HISTORY	- 1990	GOOD	USPSQD

 LW0894
 LW0894 STATION DESCRIPTION
 LW0894
 LW0894'DESCRIBED BY NATIONAL GEODETIC SURVEY 1969
 LW0894'4 MI SW FROM CHARLESTOWN.
 LW0894'ABOUT 4.0 MILES SOUTHWEST ALONG U.S. HIGHWAY 1 FROM THE
 LW0894'JUNCTION OF STATE HIGHWAY 112 AND 2 AT CHARLESTOWN, ALONG THE
 LW0894'OLD HIGHWAY, IN THE LAWN OF THE CHARLESTOWN FIRST BAPTIST
 LW0894'CHURCH, SET ON THE TOP AND IN THE CENTER OF A 3 1/2-BY 2-FOOT
 LW0894'EXPOSED LAYER OF BEDROCK, ABOUT 60 YARDS NORTH OF THE CENTER
 LW0894'LINE OF THE SOUTHBOUND LANE OF THE HIGHWAY, 63.2 FEET SOUTH
 LW0894'OF THE SOUTHWEST CORNER OF THE CHURCH BUILDING, 50.5 FEET
 LW0894'NORTH OF THE CENTER LINE OF THE OLD HIGHWAY, 72 1/2 FEET EAST
 LW0894'OF THE CENTER LINE OF A PRIVATE BLACK TOPPED ROAD LEADING
 LW0894'NORTH, ABOUT 3 FEET ABOVE THE LEVEL OF THE OLD HIGHWAY.
 LW0894
 LW0894 STATION RECOVERY (1988)
 LW0894
 LW0894'RECOVERY NOTE BY US POWER SQUADRON 1988 (FW)
 LW0894'RECOVERED IN GOOD CONDITION.
 LW0894
 LW0894 STATION RECOVERY (1988)
 LW0894
 LW0894'RECOVERY NOTE BY US POWER SQUADRON 1988 (AFA)
 LW0894'RECOVERED IN GOOD CONDITION.
 LW0894
 LW0894 STATION RECOVERY (1989)
 LW0894
 LW0894'RECOVERY NOTE BY US POWER SQUADRON 1989 (FW)
 LW0894'RECOVERED IN GOOD CONDITION.
 LW0894
 LW0894 STATION RECOVERY (1990)
 LW0894
 LW0894'RECOVERY NOTE BY US POWER SQUADRON 1990 (FW)
 LW0894'RECOVERED IN GOOD CONDITION.
 1 National Geodetic Survey, Retrieval Date = MAY 7, 2007
 LW0929 *****
 LW0929 TIDAL BM - This is a Tidal Bench Mark.
 LW0929 DESIGNATION - 845 9338 TIDAL 5
 LW0929 PID - LW0929
 LW0929 STATE/COUNTY- RI/WASHINGTON
 LW0929 USGS QUAD - BLOCK ISLAND (1975)
 LW0929
 LW0929 *CURRENT SURVEY CONTROL
 LW0929

LW0929*	NAD 83(1996)-	41 10 23.07690(N)	071 33 22.01207(W)	ADJUSTED
LW0929*	LOCAL TIDAL -	1.744 (meters)	5.72 (feet)	ADJ UNCH
LW0929	X	- 1,521,114.543 (meters)		COMP
LW0929	Y	- 4,560,972.178 (meters)		COMP
LW0929	Z	- 4,176,891.222 (meters)		COMP
LW0929	LAPLACE CORR-	1.08 (seconds)		DEFLEC99
LW0929	ELLIP HEIGHT-	-29.32 (meters)	(08/17/98)	GPS OBS

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LW0929 GEOID HEIGHT- -30.71 (meters) GEOID03
LW0929
LW0929 HORZ ORDER - THIRD
LW0929 VERT ORDER - SECOND CLASS 0
LW0929 ELLP ORDER - FOURTH CLASS I
LW0929
LW0929.The horizontal coordinates were established by GPS observations
LW0929.and adjusted by the National Geodetic Survey in August 1998.
LW0929
LW0929.The orthometric height was key entered from printed documents
LW0929.and not key verified.
LW0929
LW0929.This Tidal Bench Mark is designated as VM 16866
LW0929.by the Center for Operational Oceanographic Products and Services.
LW0929
LW0929.The X, Y, and Z were computed from the position and the ellipsoidal ht.
LW0929
LW0929.The Laplace correction was computed from DEFLEC99 derived deflections.
LW0929
LW0929.The ellipsoidal height was determined by GPS observations
LW0929.and is referenced to NAD 83.
LW0929
LW0929.The geoid height was determined by GEOID03.
LW0929
LW0929;
LW0929;          North          East          Units Scale Factor Converg.
LW0929;SPC RI - 9,968.054 95,291.200 MT 0.99999402 -0 02 13.0
LW0929;SPC RI - 32,703.52 312,634.55 sFT 0.99999402 -0 02 13.0
LW0929;UTM 19 - 4,561,120.411 285,580.578 MT 1.00016587 -1 41 00.3
LW0929
LW0929! - Elev Factor x Scale Factor = Combined Factor
LW0929!SPC RI - 1.00000460 x 0.99999402 = 0.99999862
LW0929!UTM 19 - 1.00000460 x 1.00016587 = 1.00017047
LW0929
LW0929 SUPERSEDED SURVEY CONTROL
LW0929
LW0929 NAD 83(1996)- 41 10 23.07511(N) 071 33 22.01083(W) AD( ) 3
LW0929 NAD 83(1992)- 41 10 23.07497(N) 071 33 22.01081(W) AD( ) 3
LW0929 ELLIP H (01/17/96) -29.39 (m) GP( ) 4 2
LW0929 NAD 83(1992)- 41 10 23.07388(N) 071 33 22.01112(W) AD( ) 3
LW0929 NAD 83(1986)- 41 10 23.07742(N) 071 33 22.00704(W) AD( ) 3
LW0929 NAD 27 - 41 10 22.70345(N) 071 33 23.80381(W) AD( ) 3
LW0929
LW0929.Superseded values are not recommended for survey control.
LW0929.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
LW0929.See file dsdata.txt to determine how the superseded data were derived.
LW0929
LW0929_U.S. NATIONAL GRID SPATIAL ADDRESS: 19TBF8558161120(NAD 83)
LW0929_MARKER: DB = BENCH MARK DISK
LW0929_SETTING: 80 = SET IN A BOULDER
LW0929_SP_SET: IN DRILL HOLE IN A BOULDER
LW0929_STAMPING: NO 5 1938
LW0929_MARK LOGO: CGS
LW0929_MAGNETIC: N = NO MAGNETIC MATERIAL
LW0929_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
LW0929+STABILITY: SURFACE MOTION
LW0929_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
LW0929+SATELLITE: SATELLITE OBSERVATIONS - June 28, 2003
LW0929
LW0929 HISTORY - Date Condition Report By
LW0929 HISTORY - 1938 MONUMENTED CGS
LW0929 HISTORY - 1943 GOOD NGS
LW0929 HISTORY - 1985 GOOD NGS
LW0929 HISTORY - 19880526 GOOD NGS
LW0929 HISTORY - 19900604 GOOD RIGS
LW0929 HISTORY - 19900717 GOOD USPSQD
LW0929 HISTORY - 20030628 GOOD USPSQD
LW0929
LW0929 STATION DESCRIPTION
LW0929
LW0929'DESCRIBED BY NATIONAL GEODETIC SURVEY 1943
LW0929'AT BLOCK ISLAND.
LW0929'ON BLOCK ISLAND, NEWPORT COUNTY, 132 FEET NORTH OF THE
LW0929'INTERSECTION OF THE NORTH-AND-SOUTH JETTY WITH THE NORTH EDGE
LW0929'OF THE EAST-AND-WEST DOCK. 50.5 FEET NORTH OF THE NORTHEAST CORNER

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LW0929' OF THE G.P. DUNN FISH MARKET (IN 1943), AND ON THE NORTHWEST
 LW0929' CORNER OF A LARGE FLAT RED SANDSTONE BOULDER ON THE WEST ROCK
 LW0929' JETTY. A STANDARD DISK, STAMPED NO 5 1938.
 LW0929
 LW0929 STATION RECOVERY (1985)
 LW0929
 LW0929' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1985
 LW0929' RECOVERED IN GOOD CONDITION EXCEPT BLOCK ISLAND WAS TRANSFERRED FROM
 LW0929' NEWPORT COUNTY TO WASHINGTON COUNTY IN SEPTEMBER 1963 AND THE G.P.
 LW0929' DUNN FISH MARKET IS NOT THERE.
 LW0929
 LW0929 STATION RECOVERY (1988)
 LW0929
 LW0929' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1988
 LW0929' THE STATION IS LOCATED ON BLOCK ISLAND ABOUT 0.1 KM (0.05 MI) EAST
 LW0929' FROM THE FERRY LANDING DOCK, IN TOP OF THE NORTHWEST CORNER OF THE
 LW0929' TWENTY-FOURTH LARGE, FLAT, RED SANDSTONE BLOCK LYING HORIZONTALLY FROM
 LW0929' THE SOUTH END OF THE WEST ROCK JETTY.
 LW0929' OWNERSHIP--UNKNOWN.
 LW0929' THE STATION IS A STANDARD CGS DISK STAMPED---NO 5 1939---, SET INTO A
 LW0929' DRILL HOLE IN THE NORTHWEST CORNER OF THE 1.4 BY 1.9 METER RED
 LW0929' SANDSTONE BLOCK ABOUT FLUSH WITH THE GROUND. LOCATED 36.9 M
 LW0929' (121.1 FT) NORTH FROM THE NORTHWEST CORNER OF THE WOODEN PIER AT THE
 LW0929' START OF THE JETTY, 12.1 M (39.7 FT) SOUTH FROM THE SOUTH EDGE OF THE
 LW0929' CONCRETE PORTION OF THE SEAWALL, 7.0 M (23.0 FT) NORTH-NORTHEAST FROM
 LW0929' THE NORTHEAST CORNER OF THE OLD HARBOR BIKE SHOP, 6.2 M (20.3 FT)
 LW0929' NORTHWEST FROM A LIGHT POLE, 0.35 M (1.1 FT) SOUTH FROM THE NORTH EDGE
 LW0929' OF THE SANDSTONE BLOCK, AND 0.2 M (0.7 FT) EAST FROM THE WEST EDGE OF
 LW0929' THE BLOCK.
 LW0929' DESCRIBED BY C.L. SMITH, TYPED BY R.L. ZURFLUH.
 LW0929
 LW0929 STATION RECOVERY (1990)
 LW0929
 LW0929' RECOVERY NOTE BY RHODE ISLAND GEODETIC SURVEY 1990
 LW0929' THE MARK IS ON BLOCK ISLAND IN THE OLD HARBOR AREA.
 LW0929' IT IS ON A RED SANDSTONE JETTY AND BEHIND A SHACK WHICH HOUSES OLD
 LW0929' HARBOR BIKE SHOP. IT IS 40.23 M (132.0 FT) NORTH OF THE INTERSECTION
 LW0929' OF THE NORTH-SOUTH JETTY WITH THE NORTH EDGE OF THE EAST-WEST DOCK AND
 LW0929' ON THE NORTHWEST CORNER OF A LARGE FLAT RECTANGULAR SHAPED RED
 LW0929' SANDSTONE BLOCK.
 LW0929
 LW0929 STATION RECOVERY (1990)
 LW0929
 LW0929' RECOVERY NOTE BY US POWER SQUADRON 1990 (RMS)
 LW0929' RECOVERED IN GOOD CONDITION.
 LW0929
 LW0929 STATION RECOVERY (2003)
 LW0929
 LW0929' RECOVERY NOTE BY US POWER SQUADRON 2003 (RLS)
 LW0929' RECOVERED IN GOOD CONDITION.
 1 National Geodetic Survey, Retrieval Date = MAY 7, 2007
 LW0988 *****
 LW0988 DESIGNATION - 308
 LW0988 PID - LW0988
 LW0988 STATE/COUNTY- RI/WASHINGTON
 LW0988 USGS QUAD - CAROLINA (1970)
 LW0988
 LW0988 *CURRENT SURVEY CONTROL
 LW0988

LW0988*	NAD 83(1986)-	41 23 00.	(N)	071 38 33.	(W)	SCALED
LW0988*	NAVD 88	- 6.175	(meters)	20.26	(feet)	ADJUSTED
LW0988	GEOID HEIGHT-	-30.48	(meters)			GEOID03
LW0988	DYNAMIC HT	- 6.172	(meters)	20.25	(feet)	COMP
LW0988	MODELED GRAV-	980,276.9	(mgal)			NAVD 88
LW0988	VERT ORDER	- SECOND	CLASS 0			

 LW0988
 LW0988.The horizontal coordinates were scaled from a topographic map and have
 LW0988.an estimated accuracy of +/- 6 seconds.
 LW0988
 LW0988.The orthometric height was determined by differential leveling
 LW0988.and adjusted by the NATIONAL GEODETIC SURVEY in June 1991.
 LW0988

LW0988.The geoid height was determined by GEOID03.

LW0988

LW0988.The dynamic height is computed by dividing the NAVD 88

LW0988.geopotential number by the normal gravity value computed on the

LW0988.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

LW0988.degrees latitude (g = 980.6199 gals.).

LW0988

LW0988.The modeled gravity was interpolated from observed gravity values.

LW0988

	North	East	Units	Estimated Accuracy
LW0988;SPC RI	- 33,330.	88,080.	MT	(+/- 180 meters Scaled)

LW0988

LW0988 SUPERSEDED SURVEY CONTROL

LW0988

LW0988	NGVD 29 (??/??/92)	6.458 (m)	21.19 (f)	ADJ UNCH	2 0
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LW0988

LW0988.Superseded values are not recommended for survey control.

LW0988.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

LW0988.See file dsdata.txt to determine how the superseded data were derived.

LW0988

LW0988_U.S. NATIONAL GRID SPATIAL ADDRESS: 19TBF790846(NAD 83)

LW0988_MARKER: DD = SURVEY DISK

LW0988_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

LW0988_SP_SET: CONCRETE POST

LW0988_STAMPING: 308

LW0988_MARK LOGO: RIBPR

LW0988_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

LW0988+STABILITY: SURFACE MOTION

LW0988

HISTORY	- Date	Condition	Report By	
LW0988	HISTORY	- UNK	MONUMENTED	RIBPR
LW0988	HISTORY	- 1969	GOOD	NGS
LW0988	HISTORY	- 1989	GOOD	USPSQD
LW0988	HISTORY	- 1990	GOOD	USPSQD
LW0988	HISTORY	- 19900606	GOOD	RIGS

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LW0988

LW0988' THE SOUTHWEST SIDE OF A ROCK WALL, ABOUT LEVEL WITH STATE HIGHWAY 1A
 LW0988' AND SET IN THE TOP OF A CONCRETE POST PROJECTING 1 INCH ABOVE THE
 LW0988' LEVEL OF THE GROUND.

1 National Geodetic Survey, Retrieval Date = MAY 7, 2007

LW5273 *****

LW5273 CBN - This is a Cooperative Base Network Control Station.

LW5273 DESIGNATION - WE 002

LW5273 PID - LW5273

LW5273 STATE/COUNTY - RI/WASHINGTON

LW5273 USGS QUAD - WATCH HILL (1984)

LW5273

LW5273 *CURRENT SURVEY CONTROL

LW5273* NAD 83(1996)- 41 21 07.09707(N) 071 45 50.06433(W) ADJUSTED

LW5273* NAVD 88 - 22.173 (meters) 72.75 (feet) ADJUSTED

LW5273

LW5273 X - 1,500,468.043 (meters) COMP

LW5273 Y - -4,554,028.785 (meters) COMP

LW5273 Z - 4,191,839.551 (meters) COMP

LW5273 LAPLACE CORR- 0.78 (seconds) DEFLEC99

LW5273 ELLIP HEIGHT- -8.38 (meters) (09/18/02) GPS OBS

LW5273 GEOID HEIGHT- -30.58 (meters) GEOID03

LW5273 DYNAMIC HT - 22.166 (meters) 72.72 (feet) COMP

LW5273 MODELED GRAV- 980,275.5 (mgal) NAVD 88

LW5273

LW5273 HORZ ORDER - A

LW5273 VERT ORDER - SECOND CLASS II

LW5273 ELLP ORDER - FOURTH CLASS II

LW5273

LW5273. The horizontal coordinates were established by GPS observations

LW5273. and adjusted by the National Geodetic Survey in June 2001.

LW5273

LW5273. The orthometric height was determined by differential leveling

LW5273. and adjusted by the NATIONAL GEODETIC SURVEY in June 1991.

LW5273. WARNING-GPS observations at this control monument resulted in a GPS

LW5273. derived orthometric height which differed from the leveled height by

LW5273. more than one decimeter (0.1 meter).

LW5273

LW5273. The X, Y, and Z were computed from the position and the ellipsoidal ht.

LW5273

LW5273. The Laplace correction was computed from DEFLEC99 derived deflections.

LW5273

LW5273. The ellipsoidal height was determined by GPS observations

LW5273. and is referenced to NAD 83.

LW5273

LW5273. The geoid height was determined by GEOID03.

LW5273

LW5273. The dynamic height is computed by dividing the NAVD 88

LW5273. geopotential number by the normal gravity value computed on the

LW5273. Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

LW5273. degrees latitude (g = 980.6199 gals.).

LW5273

LW5273. The modeled gravity was interpolated from observed gravity values.

LW5273

LW5273; North East Units Scale Factor Converg.

LW5273; SPC RI - 29,867.857 77,914.821 MT 0.99999975 -0 10 27.7

LW5273; SPC RI - 97,991.46 255,625.54 sFT 0.99999975 -0 10 27.7

LW5273; SPC CT - 210,469.784 387,320.061 MT 0.99998814 +0 39 13.8

LW5273; SPC CT - 690,516.28 1,270,732.57 sFT 0.99998814 +0 39 13.8

LW5273; UTM 19 - 4,581,516.536 268,780.606 MT 1.00025800 -1 49 36.7

LW5273

LW5273! - Elev Factor x Scale Factor = Combined Factor

LW5273! SPC RI - 1.00000131 x 0.99999975 = 1.00000106

LW5273! SPC CT - 1.00000131 x 0.99998814 = 0.99998945

LW5273! UTM 19 - 1.00000131 x 1.00025800 = 1.00025931

LW5273

LW5273 SUPERSEDED SURVEY CONTROL

LW5273 ELLIP H (06/22/01) -8.04 (m) GP() 4 1

LW5273 NAD 83(1996)- 41 21 07.09654(N) 071 45 50.06206(W) AD() 2

LW5273 NAD 83(1992)- 41 21 07.09520(N) 071 45 50.06125(W) AD() 2

LW5273 NAD 83(1986)- 41 21 07.09385(N) 071 45 50.06308(W) AD() 2

LW5273 NAVD 88 (09/18/02) 22.17 (m) 72.7 (f) LEVELING 3

LW5273 NGVD 29 (05/30/90) 22.46 (m) 73.7 (f) LEVELING 3

LW5273

LW5273.Superseded values are not recommended for survey control.

LW5273.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

LW5273.See file dsdata.txt to determine how the superseded data were derived.

LW5273

LW5273_U.S. NATIONAL GRID SPATIAL ADDRESS: 19TBF6878181517(NAD 83)

LW5273_MARKER: DD = SURVEY DISK

LW5273_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

LW5273_SP_SET: CONCRETE POST

LW5273_STAMPING: WE 002 1987

LW5273_MARK LOGO: RIGS

LW5273_MAGNETIC: N = NO MAGNETIC MATERIAL

LW5273_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

LW5273+STABILITY: SURFACE MOTION

LW5273_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

LW5273+SATELLITE: SATELLITE OBSERVATIONS - April 10, 2005

LW5273

LW5273	HISTORY	- Date	Condition	Report By
LW5273	HISTORY	- 1987	MONUMENTED	RIGS
LW5273	HISTORY	- 1987	GOOD	RIGS
LW5273	HISTORY	- 19941001	GOOD	USPSQD
LW5273	HISTORY	- 20000831	GOOD	RIDT
LW5273	HISTORY	- 20010829	GOOD	RIDT
LW5273	HISTORY	- 20050410	GOOD	CTGS

LW5273

LW5273 STATION DESCRIPTION

LW5273

LW5273'DESCRIBED BY RHODE ISLAND GEODETIC SURVEY 1987 (GEC)

LW5273'THE STATION IS LOCATED ABOUT 6.3 KM (3.9 MI)

LW5273'SOUTHEAST OF WESTERLY.

LW5273'OWNERSHIP--STATE RIGHT OF WAY.

LW5273'

LW5273'TO REACH THE STATION FROM THE JUNCTION OF STATE HIGHWAY 78 AND U S

LW5273'HIGHWAY 1, WHICH IS ABOUT 2.9 KM (1.8 MI) SOUTHEAST OF WESTERLY, GO

LW5273'EAST FOR 3.8 KM (2.35 MI) ON U S 1 TO THE STATION ON THE LEFT.

LW5273'

LW5273'THE STATION IS A STANDARD RIGS DISK

LW5273'STAMPED---WE 002 1987---

LW5273'SET INTO THE TOP OF A ROUND CONCRETE MONUMENT

LW5273'30 CM IN DIAMETER PROJECTING 5 CM ABOVE GROUND. LOCATED

LW5273'37.8 METERS (124.0 FT) EAST FROM THE CENTERLINE OF WOODYHILL ROAD,

LW5273'31.0 METERS (101.0 FT) WEST FROM A SQUARE CONCRETE STATE HIGHWAY

LW5273'BOUND,

LW5273'12.1 METERS (39.7 FT) NORTH FROM THE CENTERLINE OF TWO TRAVEL LANES

LW5273'OF U S 1 SOUTH,

LW5273'0.85 METERS (2.8 FT) SOUTH FROM A FIBERGLASS WITNESS POST.

LW5273'

LW5273'DESCRIBED BY RHODE ISLAND GEODETIC SURVEY.

LW5273

LW5273 STATION RECOVERY (1987)

LW5273

LW5273'RECOVERY NOTE BY RHODE ISLAND GEODETIC SURVEY 1987

LW5273'2.4 KM (1.5 MI) NORTH FROM WEEKAPAUG.

LW5273'THE STATION IS LOCATED ABOUT 6.3 KM (3.9 MI) SOUTHEAST OF WESTERLY.

LW5273'OWNERSHIP--STATE RIGHT OF WAY. TO REACH THE STATION FROM THE

LW5273'JUNCTION OF STATE HIGHWAY 78 AND U S HIGHWAY 1, WHICH IS ABOUT 2.9 KM

LW5273'(1.8 MI) SOUTHEAST OF WESTERLY, GO EAST FOR 3.8 KM (2.35 MI) ON U S 1

LW5273'TO THE STATION ON THE LEFT. THE STATION IS A STANDARD RIGS DISK SET

LW5273'INTO THE TOP OF A ROUND CONCRETE MONUMENT 30 CM IN DIAMETER

LW5273'PROJECTING 5 CM ABOVE GROUND. LOCATED 37.8 METERS (124.0 FT) EAST

LW5273'FROM THE CENTERLINE OF WOODYHILL ROAD, 31.0 METERS (101.0 FT) WEST

LW5273'FROM A SQUARE CONCRETE STATE HIGHWAY BOUND, 12.1 METERS (39.7 FT)

LW5273'NORTH FROM THE CENTERLINE OF TWO TRAVEL LANES OF U S 1 SOUTH, 0.85

LW5273'METERS (2.8 FT) SOUTH FROM A FIBERGLASS WITNESS POST.

LW5273

LW5273 STATION RECOVERY (1994)

LW5273

LW5273'RECOVERY NOTE BY US POWER SQUADRON 1994

LW5273'RECOVERED IN GOOD CONDITION.

LW5273

LW5273 STATION RECOVERY (2000)

LW5273

LW5273'RECOVERY NOTE BY RI DEPT OF TRANSP 2000 (CSM)

LW5273'THE STATION IS LOCATED IN WESTERLY, RI ABOUT 3.9 MI (6.3 KM)

LW5273'SOUTHEAST OF WESTERLY CENTER, 3.4 MI (5.5 KM) SOUTHWEST OF
LW5273'BRADFORD CENTER AND 1.5 MI (2.4 KM) NORTH OF WEEKAPAUG CENTER ON
LW5273'STATE RIGHT-OF-WAY. TO REACH FROM A POINT ABOUT 1.8 MI (2.9 KM)
LW5273'SOUTHEAST OF WESTERLY CENTER AT THE JUNCTION OF U.S. HIGHWAY 1
LW5273'AND STATE ROUTE 78, GO EASTERLY ON U.S. HIGHWAY 1 FOR 2.4 MI (3.9 KM)
LW5273'TO THE STATION ON THE LEFT. A STANDARD RIGS DISK SET IN THE TOP OF
LW5273'A 30 CM DIAMETER CONCRETE MONUMENT PROJECTING 2 CM ABOVE
LW5273'GROUND LEVEL. IT IS, 37.8 M (124.0 FT) EAST FROM THE CENTERLINE OF
LW5273'WOODY HILL ROAD, 31.0 M (101.7 FT) WEST FROM A SQUARE CONCRETE
LW5273'STATE HIGHWAY BOUNDARY AND 12.1 M (39.7 FT) NORTH FROM THE
LW5273'CENTERLINE OF 2 TRAVEL LANES OF U.S. HIGHWAY 1 SOUTH. DESCRIBED BY
LW5273'JOHN F. OLIVER.
LW5273'
LW5273
LW5273 STATION RECOVERY (2001)
LW5273
LW5273 RECOVERY NOTE BY RI DEPT OF TRANSP 2001 (JFO)
LW5273'RECOVERED AS DESCRIBED.
LW5273'
LW5273
LW5273 STATION RECOVERY (2005)
LW5273
LW5273 RECOVERY NOTE BY CONNECTICUT GEODETIC SURVEY 2005
LW5273'RECOVERED AS DESCRIBED IN NGS DATABASE
1 National Geodetic Survey, Retrieval Date = MAY 7, 2007
LW5525 *****
LW5525 DESIGNATION - CH 002
LW5525 PID - LW5525
LW5525 STATE/COUNTY- RI/WASHINGTON
LW5525 USGS QUAD - CAROLINA (1970)
LW5525
LW5525 *CURRENT SURVEY CONTROL
LW5525
LW5525* NAD 83(1996)- 41 23 09.98769(N) 071 39 08.93078(W) ADJUSTED
LW5525* NAVD 88 - 17.1 (meters) 56. (feet) VERTCON
LW5525
LW5525 X - 1,508,531.743 (meters) COMP
LW5525 Y - -4,548,720.313 (meters) COMP
LW5525 Z - 4,194,681.419 (meters) COMP
LW5525 LAPLACE CORR- 1.14 (seconds) DEFLEC99
LW5525 ELLIP HEIGHT- -13.39 (meters) (06/13/02) GPS OBS
LW5525 GEOID HEIGHT- -30.48 (meters) GEOID03
LW5525
LW5525 HORZ ORDER - THIRD
LW5525 ELLP ORDER - FOURTH CLASS II
LW5525
LW5525.The horizontal coordinates were established by GPS observations
LW5525.and adjusted by the National Geodetic Survey in August 1998.
LW5525
LW5525.The NAVD 88 height was computed by applying the VERTCON shift value to
LW5525.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
LW5525
LW5525.The X, Y, and Z were computed from the position and the ellipsoidal ht.
LW5525
LW5525.The Laplace correction was computed from DEFLEC99 derived deflections.
LW5525
LW5525.The ellipsoidal height was determined by GPS observations
LW5525.and is referenced to NAD 83.
LW5525
LW5525.The geoid height was determined by GEOID03.
LW5525
LW5525;
LW5525; North East Units Scale Factor Converg.
LW5525;SPC RI - 33,636.660 87,246.237 MT 0.99999575 -0 06 02.9
LW5525;SPC RI - 110,356.28 286,240.36 SFT 0.99999575 -0 06 02.9
LW5525;UTM 19 - 4,585,015.409 278,219.064 MT 1.00020537 -1 45 15.7
LW5525
LW5525!
LW5525! SPC RI - Elev Factor x Scale Factor = Combined Factor
LW5525! SPC RI - 1.00000210 x 0.99999575 = 0.99999785
LW5525! UTM 19 - 1.00000210 x 1.00020537 = 1.00020747
LW5525
LW5525;
LW5525;SPC RI - Primary Azimuth Mark Grid Az
LW5525;SPC RI - CH 003 255 01 29.2
LW5525;UTM 19 - CH 003 256 40 42.0
LW5525

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LW5525|-----|
LW5525| PID      Reference Object                      Distance      Geod. Az      |
LW5525|                                     dddmmss.s |
LW5525| LW5526 CH 003                                APPROX. 0.9 KM 2545526.3 |
LW5525|-----|
LW5525
LW5525          SUPERSEDED SURVEY CONTROL
LW5525
LW5525 ELLIP H (08/17/98) -13.36 (m) GP( ) 4 1
LW5525 NAD 83(1992)- 41 23 09.98633(N) 071 39 08.93001(W) AD( ) 3
LW5525 ELLIP H (01/17/96) -13.43 (m) GP( ) 4 2
LW5525 NAD 83(1986)- 41 23 09.98515(N) 071 39 08.93034(W) AD( ) 3
LW5525 NGVD 29 (07/30/91) 17.4 (m) 57. (f) GPS OBS
LW5525
LW5525.Superseded values are not recommended for survey control.
LW5525.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
LW5525.See file dsdata.txt to determine how the superseded data were derived.
LW5525
LW5525_U.S. NATIONAL GRID SPATIAL ADDRESS: 19TBF7821985015(NAD 83)
LW5525_MARKER: DD = SURVEY DISK
LW5525_SETTING: 80 = SET IN A BOULDER
LW5525_SP_SET: PARTIALLY EXPOSED BOULDER
LW5525_STAMPING: CH 002 1989
LW5525_MARK LOGO: RIGS
LW5525_MAGNETIC: N = NO MAGNETIC MATERIAL
LW5525_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
LW5525+STABILITY: SURFACE MOTION
LW5525_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
LW5525+SATELLITE: SATELLITE OBSERVATIONS - 1989
LW5525
LW5525 HISTORY - Date Condition Report By
LW5525 HISTORY - 1989 MONUMENTED RIGS
LW5525
LW5525          STATION DESCRIPTION
LW5525
LW5525'DESCRIBED BY RHODE ISLAND GEODETIC SURVEY 1989
LW5525'THE STATION IS LOCATED ABOUT 0.7 KM (0.45 MI) NORTHWEST OF CHARLESTOWN
LW5525'CENTER. OWNERSHIP--STATE RIGHT OF WAY, RHODE ISLAND GEODETIC SURVEY,
LW5525'401 277-2814.
LW5525'TO REACH FROM THE JUNCTION OF STATE HIGHWAY 112/2 AND U S HIGHWAY 1,
LW5525'GO WEST 0.9 KM (0.55 MI) ON HIGHWAY 1 SOUTHBOUND TO THE STATION ON THE
LW5525'RIGHT AT THE TOP OF SLOPE.
LW5525'THE STATION IS A STANDARD RIGS DISK SET INTO A DRILL HOLE OF A
LW5525'PARTIALLY EXPOSED FLAT TOP BOULDER FLUSH WITH THE GROUND. IT IS 22.85
LW5525'M (75.0 FT) NORTH FROM THE CENTER OF HIGHWAY 1 SOUTHBOUND, 14.0 M
LW5525'(45.9 FT) WEST SOUTHWEST NECO AND NET+T POLE 301/4412, 7.7 M
LW5525'(25.3 FT) SOUTH FROM A WIRE RIGHT OF WAY FENCE, 2.9 M (9.5 FT) NORTH
LW5525'FROM A FIBERGLASS WITNESS POST AND ABOUT 3.0 M (9.8 FT) ABOVE THE
LW5525'LEVEL OF THE HIGHWAY.
1 National Geodetic Survey, Retrieval Date = MAY 7, 2007
LW5671 *****
LW5671 CBN - This is a Cooperative Base Network Control Station.
LW5671 DESIGNATION - NK 004
LW5671 PID - LW5671
LW5671 STATE/COUNTY- RI/WASHINGTON
LW5671 USGS QUAD - SLOCUM (1975)
LW5671
LW5671          *CURRENT SURVEY CONTROL
LW5671
LW5671* NAD 83(1996)- 41 34 53.74034(N) 071 30 12.21343(W) ADJUSTED
LW5671* NAVD 88 - 43.204 (meters) 141.75 (feet) ADJUSTED
LW5671
LW5671 X - 1,515,806.420 (meters) COMP
LW5671 Y - -4,531,159.475 (meters) COMP
LW5671 Z - 4,210,963.849 (meters) COMP
LW5671 LAPLACE CORR- 1.57 (seconds) DEFLEC99
LW5671 ELLIP HEIGHT- 13.03 (meters) (06/22/01) GPS OBS
LW5671 GEOID HEIGHT- -30.10 (meters) GEOID03
LW5671 DYNAMIC HT - 43.189 (meters) 141.70 (feet) COMP
LW5671 MODELED GRAV- 980,276.6 (mgal) NAVD 88
LW5671
LW5671 HORZ ORDER - A
LW5671 VERT ORDER - SECOND CLASS II
LW5671 ELLP ORDER - FOURTH CLASS I

```

LW5671

LW5671.The horizontal coordinates were established by GPS observations
LW5671.and adjusted by the National Geodetic Survey in June 2001.

LW5671

LW5671.The orthometric height was determined by differential leveling
LW5671.and adjusted by the NATIONAL GEODETIC SURVEY in April 1995.

LW5671

LW5671.The X, Y, and Z were computed from the position and the ellipsoidal ht.

LW5671

LW5671.The Laplace correction was computed from DEFLEC99 derived deflections.

LW5671

LW5671.The ellipsoidal height was determined by GPS observations
LW5671.and is referenced to NAD 83.

LW5671

LW5671.The geoid height was determined by GEOID03.

LW5671

LW5671.The dynamic height is computed by dividing the NAVD 88

LW5671.geopotential number by the normal gravity value computed on the

LW5671.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

LW5671.degrees latitude (g = 980.6199 gals.).

LW5671

LW5671.The modeled gravity was interpolated from observed gravity values.

LW5671

	North	East	Units	Scale	Factor	Converg.
LW5671;SPC RI	- 55,336.719	99,717.087	MT	0.99999375	-0 00 08.1	
LW5671;SPC RI	- 181,550.55	327,155.14	sFT	0.99999375	-0 00 08.1	
LW5671;UTM 19	- 4,606,349.611	291,314.362	MT	1.00013596	-1 39 43.4	
LW5671!	- Elev Factor	x Scale Factor	=	Combined Factor		
LW5671!SPC RI	- 0.99999796	x 0.99999375	=	0.99999171		
LW5671!UTM 19	- 0.99999796	x 1.00013596	=	1.00013392		

LW5671

LW5671

SUPERSEDED SURVEY CONTROL

LW5671

LW5671	NAD 83(1996)-	41 34 53.74060(N)	071 30 12.21318(W)	AD()	2
LW5671	NAD 83(1996)-	41 34 53.73967(N)	071 30 12.21254(W)	AD()	2
LW5671	NAD 83(1992)-	41 34 53.73917(N)	071 30 12.21240(W)	AD()	2
LW5671	NAD 83(1992)-	41 34 53.73850(N)	071 30 12.21238(W)	AD()	2
LW5671	NAD 83(1986)-	41 34 53.73853(N)	071 30 12.21202(W)	AD()	2
LW5671	NGVD 29 (06/03/94)	43.50 (m)	142.7 (f)	LEVELING	3

LW5671

LW5671.Superseded values are not recommended for survey control.

LW5671.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

LW5671.See file dsdata.txt to determine how the superseded data were derived.

LW5671

LW5671_U.S. NATIONAL GRID SPATIAL ADDRESS: 19TBG9131406350(NAD 83)

LW5671_MARKER: DD = SURVEY DISK

LW5671_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

LW5671_SP_SET: CONCRETE POST

LW5671_STAMPING: NK 004 1988

LW5671_MARK LOGO: RIGS

LW5671_MAGNETIC: N = NO MAGNETIC MATERIAL

LW5671_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

LW5671+STABILITY: SURFACE MOTION

LW5671_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

LW5671+SATELLITE: SATELLITE OBSERVATIONS - August 30, 2000

LW5671

	Date	Condition	Report By
LW5671 HISTORY	- 1988	MONUMENTED	RIGS
LW5671 HISTORY	- 20000830	GOOD	RIDT

LW5671

LW5671

STATION DESCRIPTION

LW5671

LW5671'DESCRIBED BY RHODE ISLAND GEODETIC SURVEY 1988

LW5671'THE STATION IS LOCATED ABOUT 4.0 KM (2.50 MI) SOUTHWEST OF DAVISVILLE

LW5671'CENTER. OWNERSHIP-- STATE RIGHT OF WAY. TO REACH FROM THE STATE

LW5671'HIGHWAY 4 BRIDGE OVER STATE HIGHWAY 102 AND 2 , GO NORTH FOR 0.08 KM

LW5671'(0.05 MI) ON HIGHWAY 4 TO THE STATION ON THE RIGHT. IT IS 24.4 M

LW5671'(80.1 FT) SOUTH SOUTHEAST FROM THE CENTER OF A SQUARE CATCH BASIN,

LW5671'8.4 M (27.6 FT) EAST NORTHEAST FROM THE CENTERLINE OF HIGHWAY 4

LW5671'NORTHBOUND, 5.6 M (18.4 FT) NORTH FROM THE CENTER OF A ROUND

LW5671'ELECTRICAL HANDHOLE, 0.65 M (2.1 FT) WEST SOUTHWEST FROM A FIBERGLASS

LW5671'WITNESS POST. MARK IS FLUSH WITH THE SURROUNDING GROUND.

LW5671

LW5671 STATION RECOVERY (2000)
LW5671
LW5671 RECOVERY NOTE BY RI DEPT OF TRANSP 2000 (CSM)
LW5671 THE STATION IS LOCATED IN NORTH KINGSTOWN RI ABOUT 2.5 MI (4.0 KM)
LW5671 SOUTHWEST OF DAVISVILLE CENTER, 6.6 MI (10.6 KM) NORTH FROM
LW5671 KINGSTON CENTER AND 2.75 MI (4.43 KM) NORTHWEST FROM WICKFORD
LW5671 CENTER ON STATE RIGHT-OF-WAY. TO REACH THE STATION FROM ABOUT
LW5671 2.75 MI (4.43 KM) NORTHWEST OF WICKFORD CENTER AT THE STATE
LW5671 HIGHWAY 4 OVERPASS CROSSING STATE HIGHWAYS 102 AND 2, GO TO THE
LW5671 NORTHEAST CORNER OF THE OVERPASS AND THE STATION TO THE NORTH.
LW5671 NOTE---THERE IS NO BREAKDOWN LANE IN THE IMMEDIATE VICINITY OF THE
LW5671 MARK AND ONE SHOULD PULL AHEAD TO A SAFE LOCATION BEFORE
LW5671 STOPPING. A STANDARD RIGS DISK SET INTO THE TOP OF A 30 CM
LW5671 DIAMETER CONCRETE POST FLUSH WITH GROUND. IT IS, 24.4 M (80.1 FT)
LW5671 SOUTH-SOUTHEAST FROM THE CENTER OF A CATCH BASIN, 14.5 M (47.6 FT)
LW5671 NORTH OF THE NORTHEAST ENDWALL OF THE OVERPASS, 8.4 M (27.6 FT)
LW5671 EAST-NORTHEAST FROM THE CENTERLINE OF HIGHWAY 4 NORTHBOUND
LW5671 AND 5.6 M (18.4 FT) NORTH FROM THE CENTER OF A ROUND ELECTRICAL
LW5671 HANDHOLE. DESCRIBED BY PHILIP V. DERCOLE.
LW5671

*** retrieval complete.
Elapsed Time = 00:00:05

DATASHEETS

The NGS Data SheetSee file dsdata.txt for more information about the datasheet.DATABASE
= Sybase ,PROGRAM = datasheet, VERSION = 7.45

```

1 National Geodetic Survey, Retrieval Date = MAY 7, 2007
DH5832 *****
DH5832 CORS - This is a GPS Continuously Operating Reference Station.
DH5832 DESIGNATION - GROTON CORS L1 PHASE CENTER
DH5832 CORS_ID - CTGR
DH5832 PID - DH5832
DH5832 STATE/COUNTY- CT/NEW LONDON
DH5832 USGS QUAD - NEW LONDON (1984)
DH5832
DH5832 *CURRENT SURVEY CONTROL
DH5832
DH5832* NAD 83(CORS)- 41 20 07.03570(N) 072 02 58.96956(W) ADJUSTED
DH5832* NAVD 88 -
DH5832
DH5832 EPOCH DATE - 2002.00
DH5832 X - 1,478,107.667 (meters) COMP
DH5832 Y - -4,562,614.196 (meters) COMP
DH5832 Z - 4,190,441.953 (meters) COMP
DH5832 ELLIP HEIGHT- -18.24 (meters) (09/??/05) GPS OBS
DH5832 GEOID HEIGHT- -30.63 (meters) GEOID03
DH5832
DH5832 HORZ ORDER - SPECIAL (CORS)
DH5832 ELLP ORDER - SPECIAL (CORS)
DH5832
DH5832. ITRF positions are available for this station.
DH5832. The coordinates were established by GPS observations
DH5832. and adjusted by the National Geodetic Survey in September 2005.
DH5832. The coordinates are valid at the epoch date displayed above.
DH5832. The epoch date for horizontal control is a decimal equivalence
DH5832. of Year/Month/Day.
DH5832
DH5832
DH5832. The PID for the CORS ARP is DH5831.
DH5832
DH5832. The XYZ, and position/ellipsoidal ht. are equivalent.
DH5832
DH5832. The ellipsoidal height was determined by GPS observations
DH5832. and is referenced to NAD 83.
DH5832
DH5832. The geoid height was determined by GEOID03.
DH5832
DH5832; North East Units Scale Factor Converge.
DH5832; SPC CT - 208,383.581 363,418.458 MT 0.99998910 +0 27 51.6
DH5832; SPC CT - 683,671.80 1,192,315.39 SFT 0.99998910 +0 27 51.6
DH5832
DH5832! - Elev Factor x Scale Factor = Combined Factor
DH5832! SPC CT - 1.00000286 x 0.99998910 = 0.99999196
DH5832
DH5832 SUPERSEDED SURVEY CONTROL
DH5832
DH5832. No superseded survey control is available for this station.
DH5832
DH5832_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TYL4687680178(NAD 83)
DH5832_MARKER: STATION IS THE L1 PHASE CENTER OF THE GPS ANTENNA
DH5832
DH5832 STATION DESCRIPTION
DH5832
DH5832'DESCRIBED BY NATIONAL GEODETIC SURVEY
DH5832'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
DH5832'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DH5832'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DH5832' FTP CORS.NGS.NOAA.GOV: CORS/COORD AND CORS/STATION_LOG
DH5832' HTTP://WWW.NGS.NOAA.GOV UNDER PRODUCTS AND SERVICES.
1 National Geodetic Survey, Retrieval Date = MAY 7, 2007
DH8938 *****
DH8938 CORS - This is a GPS Continuously Operating Reference Station.
DH8938 DESIGNATION - MANSFIELD CORS L1 PHASE CENTER
DH8938 CORS_ID - CTMA

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RhodeIsland_CORS.txt

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DH8938 PID - DH8938
DH8938 STATE/COUNTY- CT/TOLLAND
DH8938 USGS QUAD - WILLIMANTIC (1984)
DH8938
DH8938 *CURRENT SURVEY CONTROL
DH8938
DH8938* NAD 83(CORS)- 41 43 52.91712(N) 072 12 38.87752(W) ADJUSTED
DH8938* NAVD 88 -
DH8938
DH8938 EPOCH DATE - 2002.00
DH8938 X - 1,456,379.729 (meters) COMP
DH8938 Y - -4,539,030.913 (meters) COMP
DH8938 Z - 4,223,420.426 (meters) COMP
DH8938 ELLIP HEIGHT- 55.29 (meters) (09/??/05) GPS OBS
DH8938 GEOID HEIGHT- -29.88 (meters) GEOID03
DH8938
DH8938 HORZ ORDER - SPECIAL (CORS)
DH8938 ELLP ORDER - SPECIAL (CORS)
DH8938
DH8938. ITRF positions are available for this station.
DH8938. The coordinates were established by GPS observations
DH8938. and adjusted by the National Geodetic Survey in September 2005.
DH8938. The coordinates are valid at the epoch date displayed above.
DH8938. The epoch date for horizontal control is a decimal equivalence
DH8938. of Year/Month/Day.
DH8938
DH8938
DH8938. The PID for the CORS ARP is DH5835.
DH8938
DH8938. The XYZ, and position/ellipsoidal ht. are equivalent.
DH8938
DH8938. The ellipsoidal height was determined by GPS observations
DH8938. and is referenced to NAD 83.
DH8938
DH8938. The geoid height was determined by GEOID03.
DH8938
DH8938; North East Units Scale Factor Converg.
DH8938; SPC CT - 252,275.482 349,660.415 MT 0.99998908 +0 21 27.1
DH8938; SPC CT - 827,673.81 1,147,177.54 SFT 0.99998908 +0 21 27.1
DH8938
DH8938! - Elev Factor x Scale Factor = Combined Factor
DH8938! SPC CT - 0.99999133 x 0.99998908 = 0.99998041
DH8938
DH8938 SUPERSEDED SURVEY CONTROL
DH8938
DH8938. No superseded survey control is available for this station.
DH8938
DH8938_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TYM3197523711(NAD 83)
DH8938_MARKER: STATION IS THE L1 PHASE CENTER OF THE GPS ANTENNA
DH8938
DH8938 STATION DESCRIPTION
DH8938
DH8938'DESCRIBED BY NATIONAL GEODETIC SURVEY
DH8938'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
DH8938'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DH8938'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DH8938' FTP CORS.NGS.NOAA.GOV: CORS/COORD AND CORS/STATION_LOG
DH8938' HTTP://WWW.NGS.NOAA.GOV UNDER PRODUCTS AND SERVICES.
1 National Geodetic Survey, Retrieval Date = MAY 7, 2007
DH5838 *****
DH5838 CORS - This is a GPS Continuously Operating Reference Station.
DH5838 DESIGNATION - PUTNAM CORS L1 PHASE CENTER
DH5838 CORS_ID - CTPU
DH5838 PID - DH5838
DH5838 STATE/COUNTY- CT/WINDHAM
DH5838 USGS QUAD - PUTNAM (1970)
DH5838
DH5838 *CURRENT SURVEY CONTROL
DH5838
DH5838* NAD 83(CORS)- 41 53 58.88887(N) 071 53 20.88990(W) ADJUSTED
DH5838* NAVD 88 -
DH5838
DH5838 EPOCH DATE - 2002.00
DH5838 X - 1,477,964.667 (meters) COMP

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DH5838 Y - -4,518,936.838 (meters) COMP
DH5838 Z - 4,237,355.763 (meters) COMP
DH5838 ELLIP HEIGHT- 57.21 (meters) (09/??/05) GPS OBS
DH5838 GEOID HEIGHT- -29.62 (meters) GEOID03
DH5838
DH5838 HORZ ORDER - SPECIAL (CORS)
DH5838 ELLP ORDER - SPECIAL (CORS)
DH5838
DH5838. ITRF positions are available for this station.
DH5838. The coordinates were established by GPS observations
DH5838. and adjusted by the National Geodetic Survey in September 2005.
DH5838. The coordinates are valid at the epoch date displayed above.
DH5838. The epoch date for horizontal control is a decimal equivalence
DH5838. of Year/Month/Day.
DH5838
DH5838
DH5838. The PID for the CORS ARP is DH5837.
DH5838
DH5838. The XYZ, and position/ellipsoidal ht. are equivalent.
DH5838
DH5838. The ellipsoidal height was determined by GPS observations
DH5838. and is referenced to NAD 83.
DH5838
DH5838. The geoid height was determined by GEOID03.
DH5838
DH5838; North East Units Scale Factor Converg.
DH5838; SPC CT - 271,187.131 376,234.814 MT 1.00000351 +0 34 14.9
DH5838; SPC CT - 889,719.78 1,234,363.72 SFT 1.00000351 +0 34 14.9
DH5838
DH5838! - Elev Factor x Scale Factor = Combined Factor
DH5838! SPC CT - 0.99999103 x 1.00000351 = 0.99999454
DH5838
DH5838 SUPERSEDED SURVEY CONTROL
DH5838
DH5838. No superseded survey control is available for this station.
DH5838
DH5838. U.S. NATIONAL GRID SPATIAL ADDRESS: 19TBG6034242676(NAD 83)
DH5838. MARKER: STATION IS THE L1 PHASE CENTER OF THE GPS ANTENNA
DH5838
DH5838 STATION DESCRIPTION
DH5838
DH5838' DESCRIBED BY NATIONAL GEODETIC SURVEY
DH5838' STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
DH5838' VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DH5838' BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DH5838' FTP CORS.NGS.NOAA.GOV: CORS/COORD AND CORS/STATION_LOG
DH5838' HTTP://WWW.NGS.NOAA.GOV UNDER PRODUCTS AND SERVICES.
1 National Geodetic Survey, Retrieval Date = MAY 7, 2007
DI0877 *****
DI0877 CORS - This is a GPS Continuously Operating Reference Station.
DI0877 DESIGNATION - ACUSHNET 5 CORS L1 PHASE CENTER
DI0877 CORS_ID - ACU5
DI0877 PID - DI0877
DI0877 STATE/COUNTY - MA/BRISTOL
DI0877 USGS QUAD -
DI0877
DI0877 *CURRENT SURVEY CONTROL
DI0877
DI0877* NAD 83(CORS)- 41 44 36.79685(N) 070 53 13.02743(W) ADJUSTED
DI0877* NAVD 88 -
DI0877
DI0877 EPOCH DATE - 2002.00
DI0877 X - 1,560,551.205 (meters) COMP
DI0877 Y - -4,503,286.054 (meters) COMP
DI0877 Z - 4,224,398.193 (meters) COMP
DI0877 ELLIP HEIGHT- 6.56 (meters) (08/??/06) GPS OBS
DI0877 GEOID HEIGHT- -28.95 (meters) GEOID03
DI0877
DI0877 HORZ ORDER - SPECIAL (CORS)
DI0877 ELLP ORDER - SPECIAL (CORS)
DI0877
DI0877. ITRF positions are available for this station.
DI0877. The coordinates were established by GPS observations
DI0877. and adjusted by the National Geodetic Survey in August 2006.

```

DI0877.The coordinates are valid at the epoch date displayed above.
 DI0877.The epoch date for horizontal control is a decimal equivalence
 DI0877.of Year/Month/Day.
 DI0877
 DI0877
 DI0877.The PID for the CORS ARP is DI0876.
 DI0877
 DI0877.The XYZ, and position/ellipsoidal ht. are equivalent.
 DI0877
 DI0877.The ellipsoidal height was determined by GPS observations
 DI0877.and is referenced to NAD 83.
 DI0877
 DI0877.The geoid height was determined by GEOID03.
 DI0877
 DI0877;

	North	East	Units	Scale	Factor	Converg.
DI0877;SPC MA M	- 832,769.473	250,994.275	MT	0.99999617	+0 24 42.5	
DI0877;SPC MA M	- 2,732,177.85	823,470.38	sFT	0.99999617	+0 24 42.5	

 DI0877
 DI0877!

	Elev Factor	x	Scale Factor	=	Combined Factor
DI0877!SPC MA M	- 0.99999897	x	0.99999617	=	0.99999514

 DI0877
 DI0877
 DI0877
 DI0877
 DI0877.No superseded survey control is available for this station.
 DI0877
 DI0877_U.S. NATIONAL GRID SPATIAL ADDRESS: 19TCG4309823025(NAD 83)
 DI0877_MARKER: STATION IS THE L1 PHASE CENTER OF THE GPS ANTENNA
 DI0877
 DI0877
 DI0877
 DI0877
 DI0877
 DI0877'DESCRIBED BY NATIONAL GEODETIC SURVEY
 DI0877'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
 DI0877'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
 DI0877'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
 DI0877' FTP CORS.NGS.NOAA.GOV: CORS/COORD AND CORS/STATION_LOG
 DI0877' HTTP://WWW.NGS.NOAA.GOV UNDER PRODUCTS AND SERVICES.

*** retrieval complete.
 Elapsed Time = 00:00:02

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-----
- This listing contains control for which complete digital -
- data sheets where not provided. The complete data sheets were -
- not provided for the reason listed below. The reason below is -
- associated with a horizontal control Nonpub code shown under -
- the heading 'H' and/or a vertical control Nonpub code shown under -
- the heading 'v' -
- -
- The format of the records are as follows: -
- Pid = Station Permanent Identifier) -
- Name = Station Designation -
- Lat = Approx. Latitude (Degrees, Minutes, truncated Seconds) -
- Lon = Approx. Longitude (Degrees, Minutes, truncated Seconds) -
- O = Horizontal Order -
- o = Vertical Order -
- H = Horizontal Nonpub Code -
- v = Vertical Nonpub Code -
- -
- H Nonpub HORIZONTAL CONTROL NONPUB REASON -
- ----- -
- X Surface Mark Reported Destroyed -
- Y Surface and underground mark reported destroyed -
- A A-Order Horizontal mark not tied to an adjusted HARN -
- C C-Nonoperational CORS Station -
- W weakly determined position. -
- P Purpose of position is not for network control -
- D No Descriptive Text available -
- R Restricted position -
- O Outside NGS Publication Area -
- N No geodetic control at this mark -
- -

```

```

-      v Nonpub VERTICAL CONTROL NONPUB REASON      -
-      -----
-      X      Surface Mark Reported Destroyed      -
-      Y      Surface and underground mark reported destroyed -
-      F      Bench Mark not yet adjusted.      -
-      D      No Descriptive Text available      -
-      Z      Presumed destroyed      -
-      R      Restricted elevation      -
-      O      Outside NGS Publication Area      -
-      N      No geodetic control at this mark      -
-      S      Mark is in a subsidence area      -
-
-
-      NOTE - Stations found in this listing may still have a valid
-      datasheet produced by use of other publishable values.
-      For example, an ADJUSTED height may be non-publishable
-      but a good GPS height might be found on the datasheet.
-      This listing does not imply that values found on the datasheet
-      are restricted.  If it's on the datasheet, use it.
-
-
-----
Pid      Name                               Lat      Lon      Elev      O o Hv
-----
>DH5836 MANSFIELD CORS L1 PHASE CENTER 41 43 52. /072 12 38.      NN

```

APPENDIX VI

PHOTOS

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 21**



NO. 1

4/25/07

PT. 2100 - BASE STATION



NO. 2

4/25/07

PT. 2100 - BASE STATION - LOOKING SOUTH

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 21**



NO. 3

4/25/07

PT. 2101 – MIXED VEGETATION



NO. 4

4/25/07

PT. 2101 - LOOKING NORTHWEST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 21**



NO. 5

4/25/07

PT. 2102 – HORIZONTAL AND VERTICAL CONTROL LW5273



NO. 6

4/25/07

PT. 2102 - LOOKING EAST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 21**



NO. 7

4/25/07

PT. 2103 - FOREST - CONVENTIONAL POINT NO. 1



NO. 8

4/25/07

PT. 2103 - FOREST - LOOKING NORTH

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 21**



NO. 9

4/25/07

PT. 2104 – FOREST – CONVENTIONAL POINT NO. 2



NO. 10

4/25/07

PT. 2104 - LOOKING NORTHWEST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 21**



NO. 11

4/25/07

PT. 2105 - BITUMINOUS LOT



NO. 12

4/25/07

PT. 2105 - LOOKING NORTHEAST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 21**



NO. 13

PT. 2106 - GRASS

4/25/07



NO. 14

PT. 2106 - LOOKING EAST

4/25/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 21**



NO. 15

PT. 2111 - FOREST

4/25/07



NO. 16

PT. 2111 – LOOKING NORTHWEST

4/25/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 22**



NO. 1

4/25/07

PT. 2200 - BASE STATION



NO. 2

4/25/07

PT. 2200 - BASE STATION - LOOKING SOUTH

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 22**



NO. 3

PT. 2201 - GRASS

4/25/07



NO. 4

PT. 2201 - LOOKING SOUTHEAST

4/25/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 22**



NO. 5

4/25/07

PT. 2202 - FOREST - CONVENTIONAL POINT NO. 1



NO. 6

4/25/07

PT. 2202 - LOOKING NORTHWEST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 22**



NO. 7

4/25/07

PT. 2203 - FOREST - CONVENTIONAL POINT NO. 2



NO. 8

4/25/07

PT. 2203 - FOREST - LOOKING SOUTH

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 22**



NO. 9

4/25/07

PT. 2204 - MIXED VEGETATION



NO. 10

4/25/07

PT. 2204 - LOOKING WEST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 22**



NO. 11

4/25/07

PT. 2205 - BITUMINOUS LOT

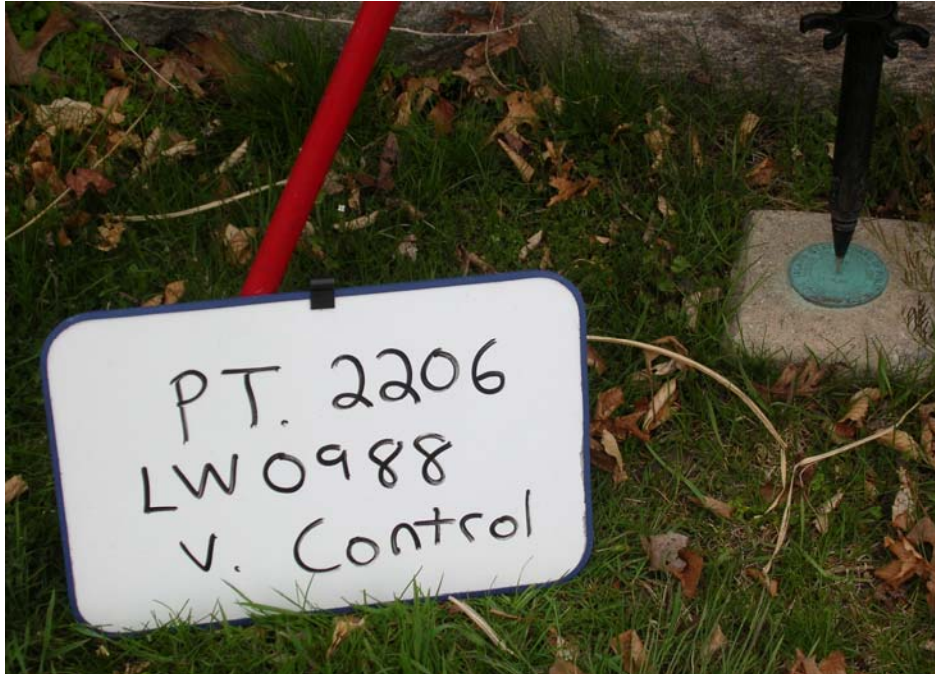


NO. 12

4/25/07

PT. 2205 - LOOKING NORTH

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 22**



NO. 13

4/25/07

PT. 2206 - VERTICAL CONTROL LW0988



NO. 14

4/25/07

PT. 2206 - LOOKING NORTHEAST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 22**



NO. 15

4/25/07

PT. 2208 - HORIZONTAL CONTROL LX5525



NO. 16

4/25/07

PT. 2208 – LOOKING NORTHWEST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 22**



NO. 17

4/25/07

PT. 2211 – VERTICAL CONTROL LW0894



NO. 18

4/25/07

PT. 2211 – LOOKING NORTH

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 22**



NO. 19

PT. 2216 - FOREST

4/25/07



NO. 20

PT. 2216 - LOOKING SOUTH

4/25/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 23**



NO. 1

4/26/07

PT. 2300 - BASE STATION



NO. 2

4/26/07

PT. 2300 - BASE STATION - LOOKING NORTHWEST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 23**



NO. 3

4/26/07

PT. 2301 – FOREST CONVENTIONAL POINT NO. 1



NO. 4

4/26/07

PT. 2301 - LOOKING NORTHEAST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 23**



NO. 5

4/26/07

PT. 2302 - FOREST - CONVENTIONAL POINT NO. 2



NO. 6

4/26/07

PT. 2302 - LOOKING SOUTHWEST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 23**



NO. 7

PT. 2303 - GRASS

4/26/07



NO. 8

PT. 2303 - LOOKING NORTH

4/26/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 23**



NO. 9

PT. 2304 – BITUMINOUS LOT

4/26/07



NO. 10

PT. 2304 - LOOKING WEST

4/26/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 23**



NO. 11

4/25/07

PT. 2305 – MIXED VEGETATION



NO. 12

4/25/07

PT. 2305 - LOOKING NORTHWEST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 23**



NO. 13 4/26/07
PT. 2306 – HORIZONTAL & VERTICAL CONTROL LW5671



NO. 14 4/26/07
PT. 2306 - LOOKING NORTH

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 23**



NO. 15

PT. 2307 - FOREST

4/25/07



NO. 16

PT. 2307 – LOOKING WEST

4/25/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 24**



NO. 1

PT. 2400 - BASE STATION

4/30/07



NO. 2

PT. 2400 - BASE STATION - LOOKING EAST

4/30/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 24**



NO. 3

4/30/07

PT. 2401 – FOREST CONVENTIONAL POINT NO. 1



NO. 4

4/30/07

PT. 2401 - LOOKING SOUTHEAST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 24**



NO. 5

4/30/07

PT. 2402 - FOREST - CONVENTIONAL POINT NO. 2



NO. 6

4/30/07

PT. 2402 - LOOKING NORTH

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 24**



NO. 7

4/30/07

PT. 2403 – MIXED VEGETATION



NO. 8

4/30/07

PT. 2403 - FOREST - LOOKING SOUTHWEST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 24**



NO. 9

4/30/07

PT. 2404 – BITUMINOUS LOT



NO. 10

4/30/07

PT. 2404 - LOOKING SOUTHWEST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 24**



NO. 11 4/30/07
PT. 2405 – HORIZONTAL AND VERTICAL CONTROL LW0929



NO. 12 4/30/07
PT. 2405 - LOOKING NORTHEAST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 24**



NO. 13

PT. 2406 - GRASS

4/30/07



NO. 14

PT. 2406 - LOOKING EAST

4/30/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 24**



NO. 15

PT. 2407 - FOREST

4/30/07



NO. 16

PT. 2407 - LOOKING NORTHEAST

4/30/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 25**



NO. 1

PT. 2500 - BASE STATION

5/1/07



NO. 2

PT. 2500 - BASE STATION - LOOKING NORTHWEST

5/1/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 25**



NO. 3

PT. 2501 - GRASS

5/1/07



NO. 4

PT. 2501 - LOOKING NORTH

5/1/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 25**



NO. 5

5/1/07

PT. 2502 - FOREST - CONVENTIONAL POINT NO. 1



NO. 6

5/1/07

PT. 2502 - LOOKING NORTHEAST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 25**



NO. 7

5/1/07

PT. 2503 - FOREST - CONVENTIONAL POINT NO. 2



NO. 8

5/1/07

PT. 2503 - FOREST - LOOKING SOUTHWEST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 25**



NO. 9

PT. 2504 - MIXED VEGETATION

5/1/07



NO. 10

PT. 2504 - LOOKING EAST

5/1/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 25**



NO. 11

5/1/07

PT. 2505 – HORIZONTAL AND VERTICAL CONTROL LW0098

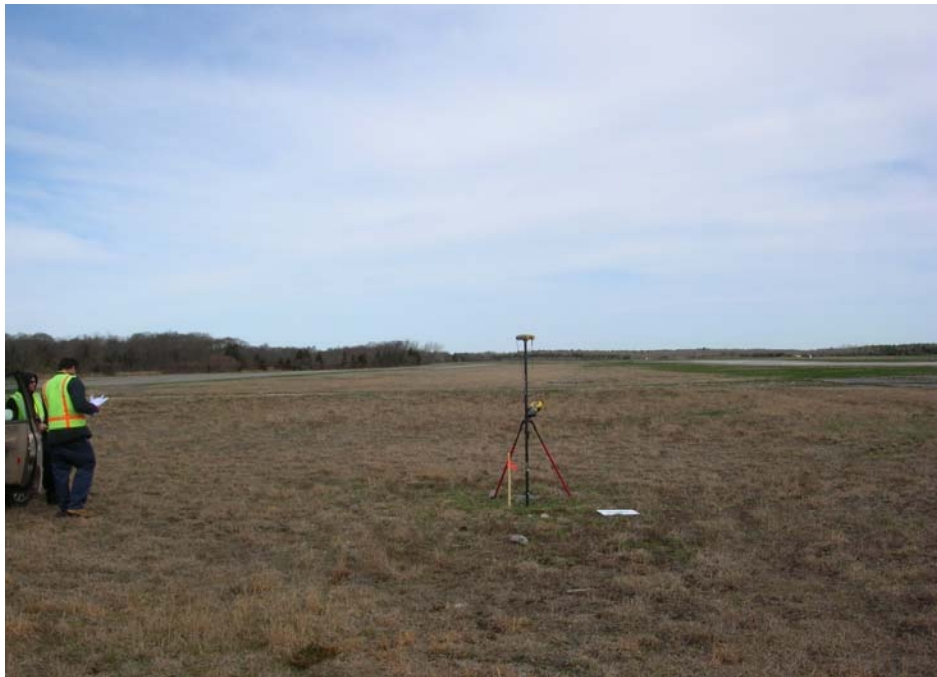


NO. 12

5/1/07

PT. 2505 - CLOSEUP

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 25**



NO. 13

PT. 2505 – LOOKING NORTH

5/1/07

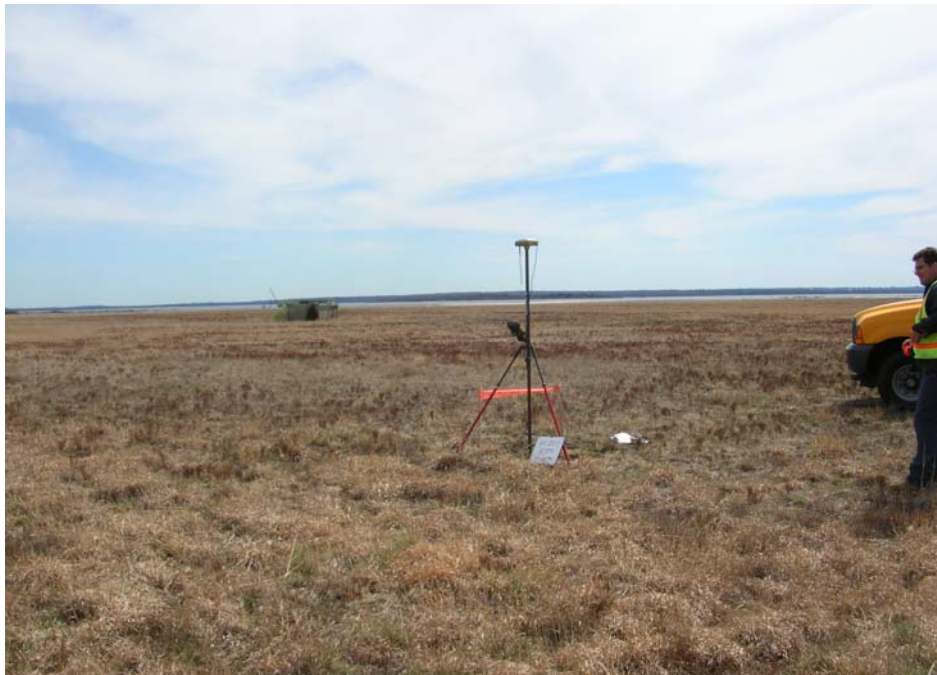
**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 25**



NO. 14

5/1/07

PT. 2507 - HORIZONTAL CONTROL AI5595



NO. 15

5/1/07

PT. 2507 – LOOKING EAST

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 25**



NO. 16

PT. 2509 – BITUMINOUS LOT

5/1/07



NO. 17

PT. 2509 – LOOKING NORTHWEST

5/1/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 25**



NO. 18

5/1/07

PT. 2510 - VERTICAL CONTROL LW0101



NO. 19

5/1/07

PT. 2510 - CLOSEUP

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 25**



NO. 20

PT. 2510 – LOOKING NORTH

5/1/07

**FEDERAL EMERGENCY MANAGEMENT AGENCY - REGION 1
RHODE ISLAND COASTAL LIDAR CHECK POINT SURVEY (TASK 8)
CLUSTER 25**



NO. 21

PT. 2516 - FOREST

5/1/07



NO. 22

PT. 2516 – LOOKING WEST

5/1/07