

APPENDIX A

LOOP CLOSURES

2008
GEODETTIC CONTROL
RESTORATION

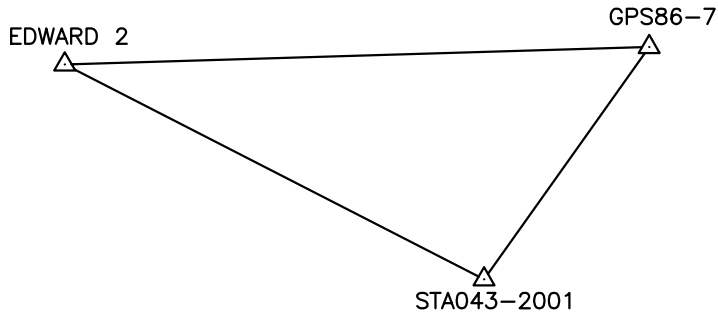
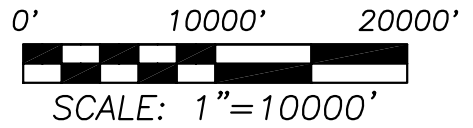
of

JEFFERSON COUNTY, KENTUCKY

OCTOBER, 2007

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





GPS Loop # 1:					
EDWARD 2: GPS86-7: STA043-2001: EDWARD 2					
Observations:					
Baseline ID	Solution ID	From	To	Solution Type	
B3	S4	EDWARD 2	GPS86-7	Iono free fixed	
B15	S13	GPS86-7	STA043-2001	L1 fixed	
B11	S9	EDWARD 2	STA043-2001	Iono free fixed	
Passed Combination for Loop 1:					
S4-S13-S9					
		Length	Horiz	Vert	PPM
		69854.8084sft	0.0318sft	0.0512sft	0.863

GPS NETWORK RESTORATION FOR
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(812) 288-6646



SHEET

1 of 17

SCALE: 1" = 10000'

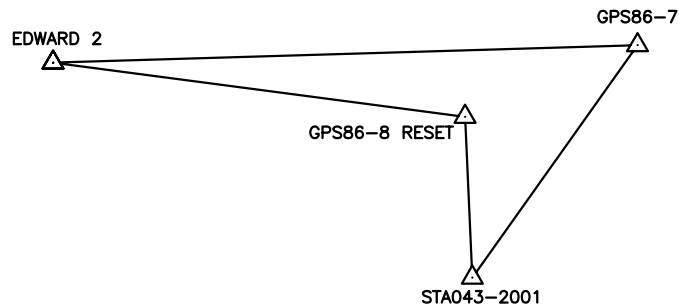
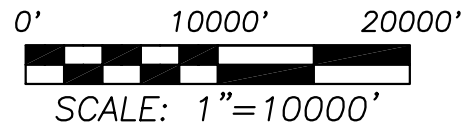
DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

JOB No. 0780



GPS Loop # 2:					
EDWARD 2: GPS86-7: STA043-2001: GPS86-8 RESET: EDWARD 2					
Observations:					
Baseline ID	Solution ID	From	To	Solution Type	
B3	S4	EDWARD 2	GPS86-7	Iono free fixed	
B15	S13	GPS86-7	STA043-2001	L1 fixed	
B17	S15	STA043-2001	GPS86-8 RESET	L1 fixed	
B6	S7	EDWARD 2	GPS86-8 RESET	Iono free fixed	
Passed Combination for Loop 2:					
S4-S13-S9					
		Length	Horiz	Vert	PPM
		75342.8114sft	0.0060sft	-0.0359sft	0.483

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STATIC NETWORK #1 LOOP #2 CLOSURE

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2 of 17

SCALE: 1" = 10000'

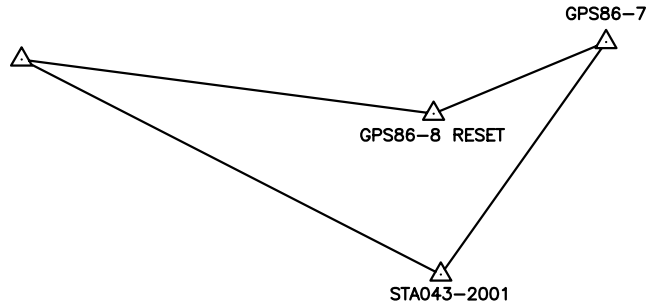
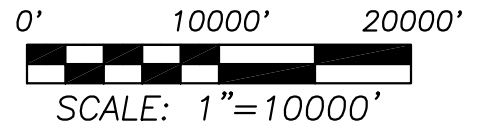
DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

JOB No. 0780



GPS Loop # 3:					
EDWARD 2: GPS86-8: GPS86-7: STA043-2001: EDWARD 2					
Observations:					
Baseline ID	Solution ID	From	To	Solution Type	
B6	S7	EDWARD 2	GPS86-8 RESET	Iono free fixed	
B8	S18	GPS86-7	GPS86-8 RESET	L1 fixed	
B11	S9	GPS86-7	STA043-2001	L1 fixed	
B11	S9	EDWARD 2	STA043-2001	Iono free fixed	
Passed Combination for Loop 3:					
S7-S18-S13-S9					
		Length	Horiz	Vert	PPM
		70771.6034sft	0.0263sft	0.0876sft	1.292

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STATIC NETWORK#1 LOOP #3 CLOSURE

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3 of 17

SCALE: 1" = 10000'

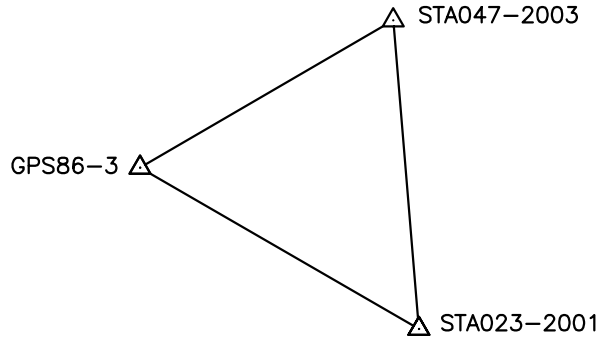
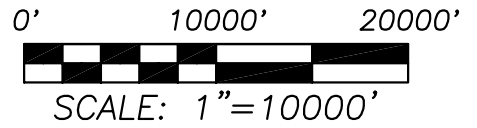
DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

JOB No. 0780



GPS Loop # 4:					
GPS86-3: STA047-2003: STA023-2001: GPS86-3					
Observations:					
Baseline ID	Solution ID	From	To	Solution Type	
B2	S13	GPS86-3	STA047-2003	L1 fixed	
B15	S15	STA023-2001	STA047-2003	L1 fixed	
B13	S17	GPS86-3	STA023-2001	Iono free fixed	
Passed Combination for Loop 4:					
S13-S15-S17					
		Length	Horiz	Vert	PPM
		48165.7458sft	0.0473sft	0.0211sft	1.075

GPS NETWORK RESTORATION FOR
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STATIC NETWORK #2 LOOP #4 CLOSURE

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SCALE: 1" = 10000'

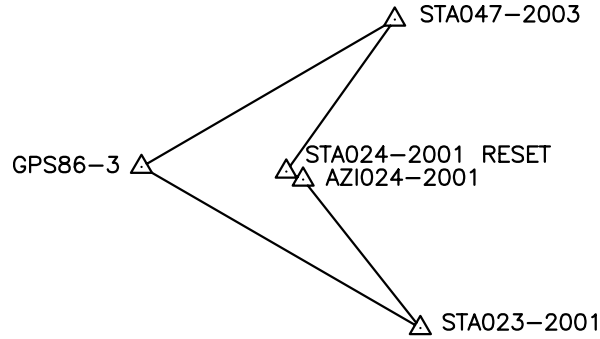
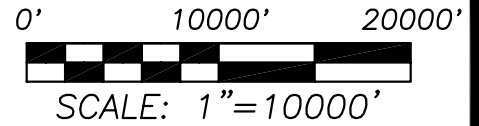
DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

JOB No. 0780



GPS Loop # 5:				
SAT047-2003: STA024-2001 RESET: AZI024-2001: STA023-2001: GPS86-3:				
SAT047-2003				
Observations:				
Baseline ID	Solution ID	From	To	Solution Type
B8	S12	STA047-2003	STA024-2001 RESET	L1 fixed
B10	S19	AZI024-2001	STA024-2001 RESET	L1 fixed
B11	S39	STA023-2001	AZI024-2001	L1 fixed
B13	S17	GPS86-3	STA023-2001	Iono free fixed
B2	S13	GPS86-3	STA047-2003	L1 fixed
Passed Combination for Loop 5:				
S12-S19-S39-S17-S13				
		Length	Horiz	Vert
		52600.4925sft	0.0671sft	0.0181sft
				PPM
				1.322

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SCALE: 1" = 10000'

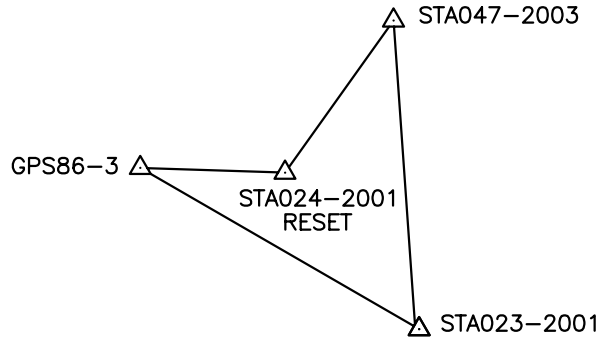
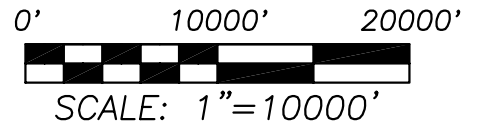
DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

JOB No. 0780



GPS Loop # 6:				
SAT041-2003: STA024-2001 RESET: GPS86-3: STA023-2001: STA047-2003				
Observations:				
Baseline ID	Solution ID	From	To	Solution Type
B8	S12	STA047-2003	STA024-2001 RESET	L1 fixed
B7	S33	GPS86-3	STA024-2001 RESET	L1 fixed
B13	S17	GPS86-3	STA023-2001	Iono free fixed
B15	S15	STA023-2001	STA047-2003	L1 fixed
Passed Combination for Loop 6:				
S12-S33-S17-S15				
		Length	Horiz	Vert
		50178.1151sft	0.0509sft	0.0183sft
				PPM
				1.077

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STATIC NETWORK #2 LOOP #6 CLOSURE

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SCALE: 1" = 10000'

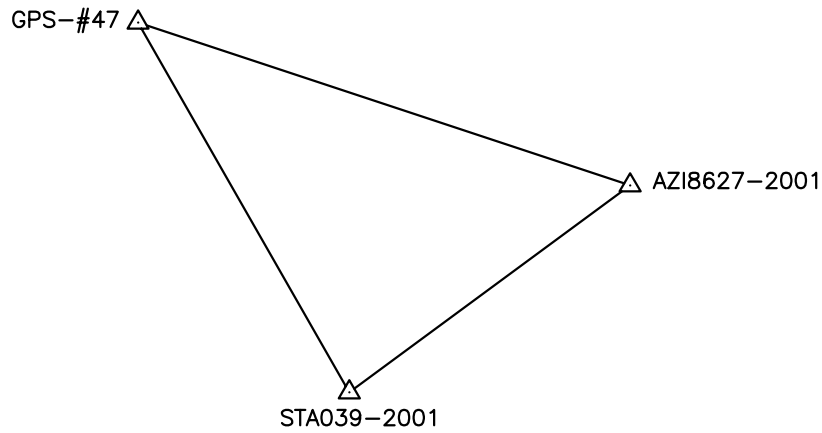
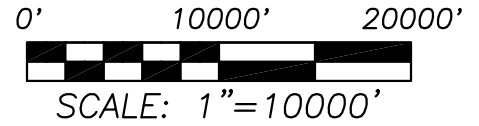
DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

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GPS Loop # 7:				
AZI8627-2001: STA039-2001: GPS-#47: AZI8627-2001				
Observations:				
Baseline ID	Solution ID	From	To	Solution Type
B18	S107	AZI8627-2001	STA039-2001	Iono free fixed
B7	S33	GPS86-3	STA024-2001 RESET	Iono free fixed
B13	S17	GPS86-3	STA023-2001	Iono free fixed
Passed Combination for Loop 7:				
S107-S124-S112				
		Length	Horiz	Vert
		67346.8964sft	0.0507sft	-0.0061sft
				PPM
				0.758

GPS NETWORK RESTORATION FOR
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STATIC NETWORK #3 LOOP #7 CLOSURE

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SCALE: 1" = 10000'

DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

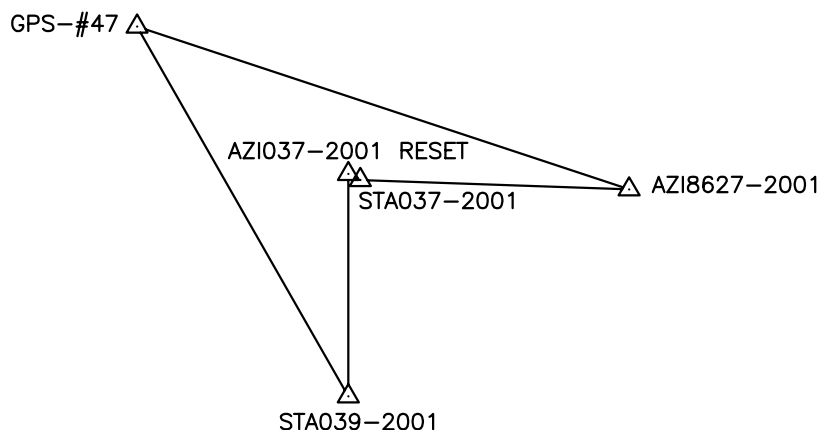
JOB No. 0780



0' 10000' 20000'



SCALE: 1"=10000'



GPS Loop # 8:				
AZI8627-2001: STA037-2001: AZI037-2001 RESET: STA039-2001: GPS-#47				
AZI8627-2001				
Observations:				
Baseline ID	Solution ID	From	To	Solution Type
B11	S96	AZI8627-2001	STA037-2001	L1 fixed
B3	S113	STA037-2001	AZI037-2001 RESET	L1 fixed
B8	S120	STA039-2001	AZI037-2001 RESET	L1 fixed
B17	S124	STA039-2001	GPS-#47	Iono free fixed
B19	S112	GPS-#47	AZI8627-2001	Iono free fixed
Passed Combination for Loop 8:				
S96-S113-S120-S124-S112				
		Length	Horiz	Vert
		75463.5338sft	0.0310sft	0.0859sft
				PPM
				1.210

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STATIC NETWORK #3 LOOP #8 CLOSURE

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SCALE: 1" = 10000'

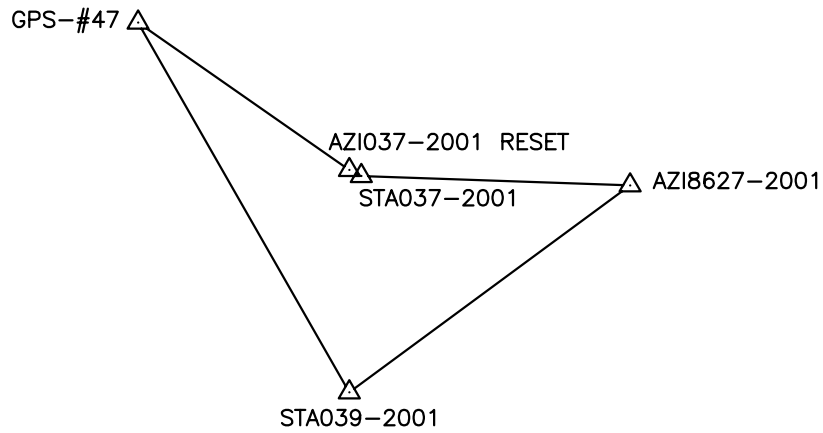
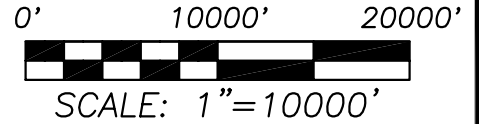
DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

JOB No. 0780



GPS Loop # 9:				
AZI8627-2001: STA037-2001: AZI037-2001 RESET: GPS-#47: STA039-2001				
AZI8627-2001				
Observations:				
Baseline ID	Solution ID	From	To	Solution Type
B11	S96	AZI8627-2001	STA037-2001	L1 fixed
B3	S113	STA037-2001	AZI037-2001 RESET	L1 fixed
B9	S122	GPS-#47	AZI037-2001 RESET	L1 fixed
B17	S124	STA039-2001	GPS-#47	Iono free fixed
B18	S107	AZI8627-2001	STA039-2001	Iono free fixed
Passed Combination for Loop 9:				
S96-S113-S122-S124-S107				
		Length	Horiz	Vert
		68478.6813sft	0.0569sft	0.0933sft
				PPM
				1.596

GPS NETWORK RESTORATION FOR
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SCALE: 1" = 10000'

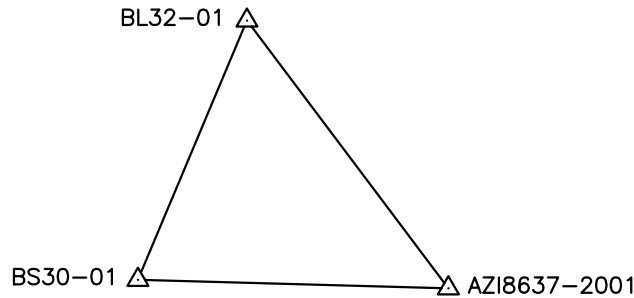
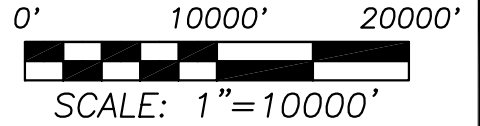
DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

JOB No. 0780



GPS Loop # 10:				
BL32-01: BS30-01: AZI8637-2001: BL32-01				
Observations:				
Baseline ID	Solution ID	From	To	Solution Type
B11	S6	BL32-01	BS30-01	L1 fixed
B10	S13	AZI8637-2001	BS30-01	L1 fixed
B12	S7	AZI8637-2001	BL32-01	Iono free fixed
Passed Combination for Loop 10:				
S6-S13-S7				
		Length	Horiz	Vert
		48271.1336sft	0.0141sft	0.0137sft
				PPM
				0.408

GPS NETWORK RESTORATION FOR
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STATIC NETWORK #4 LOOP #10 CLOSURE

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SHEET

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SCALE: 1" = 10000'

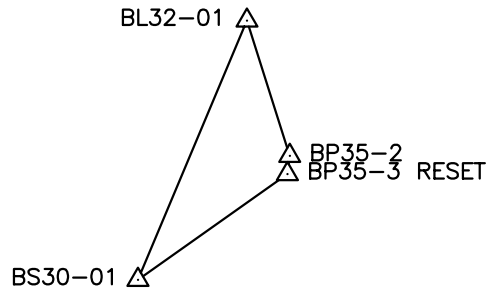
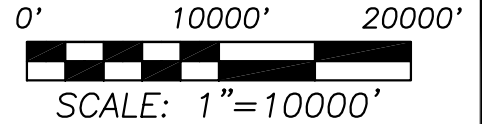
DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

JOB No. 0780



GPS Loop # 11:				
BL32-01: BS30-01: BP35-3 RESET: BP35-2: BL32-01				
Observations:				
Baseline ID	Solution ID	From	To	Solution Type
B11	S6	BL32-01	BS30-01	L1 fixed
B17	S25	BS30-01	BP35-3 RESET	L1 fixed
B9	S21	BP35-2	BP35-3 RESET	L1 fixed
B2	S57	BP35-2	BL32-01	L1 fixed
Passed Combination for Loop 11:				
S6-S25-S21-S57				
		Length	Horiz	Vert
		32526.2561sft	0.0137sft	0.0045sft
				PPM
				0.444

GPS NETWORK RESTORATION FOR
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STATIC NETWORK #4 LOOP #11 CLOSURE

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SCALE: 1" = 10000'

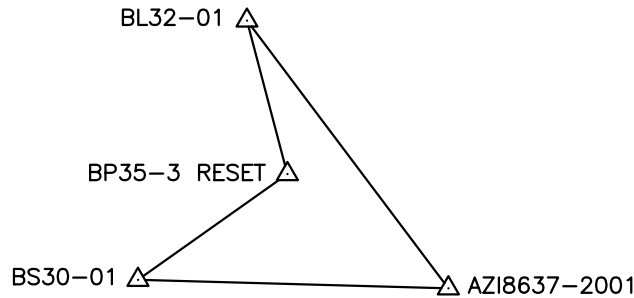
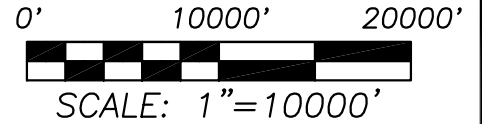
DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

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GPS Loop # 12:				
AZI8637-2001: BL32-01: BP35-03 RESET: BS30-01: AZI8637-2001				
Observations:				
Baseline ID	Solution ID	From	To	Solution Type
B12	S7	AZI8637-2001	BL32-01	Iono free fixed
B6	S56	BL32-01	BP35-3 RESET	L1 fixed
B17	S25	BS30-01	BP35-3 RESET	L1 fixed
B10	S13	AZI8637-2001	BS30-01	L1 fixed
Passed Combination for Loop 12:				
S7-S55-S25-S13				
		Length	Horiz	Vert
		51427.0484sft	0.0139sft	0.0066sft
				PPM
				0.300

GPS NETWORK RESTORATION FOR
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STATIC NETWORK #4 LOOP #12 CLOSURE

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12 of 17

SCALE: 1" = 10000'

DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

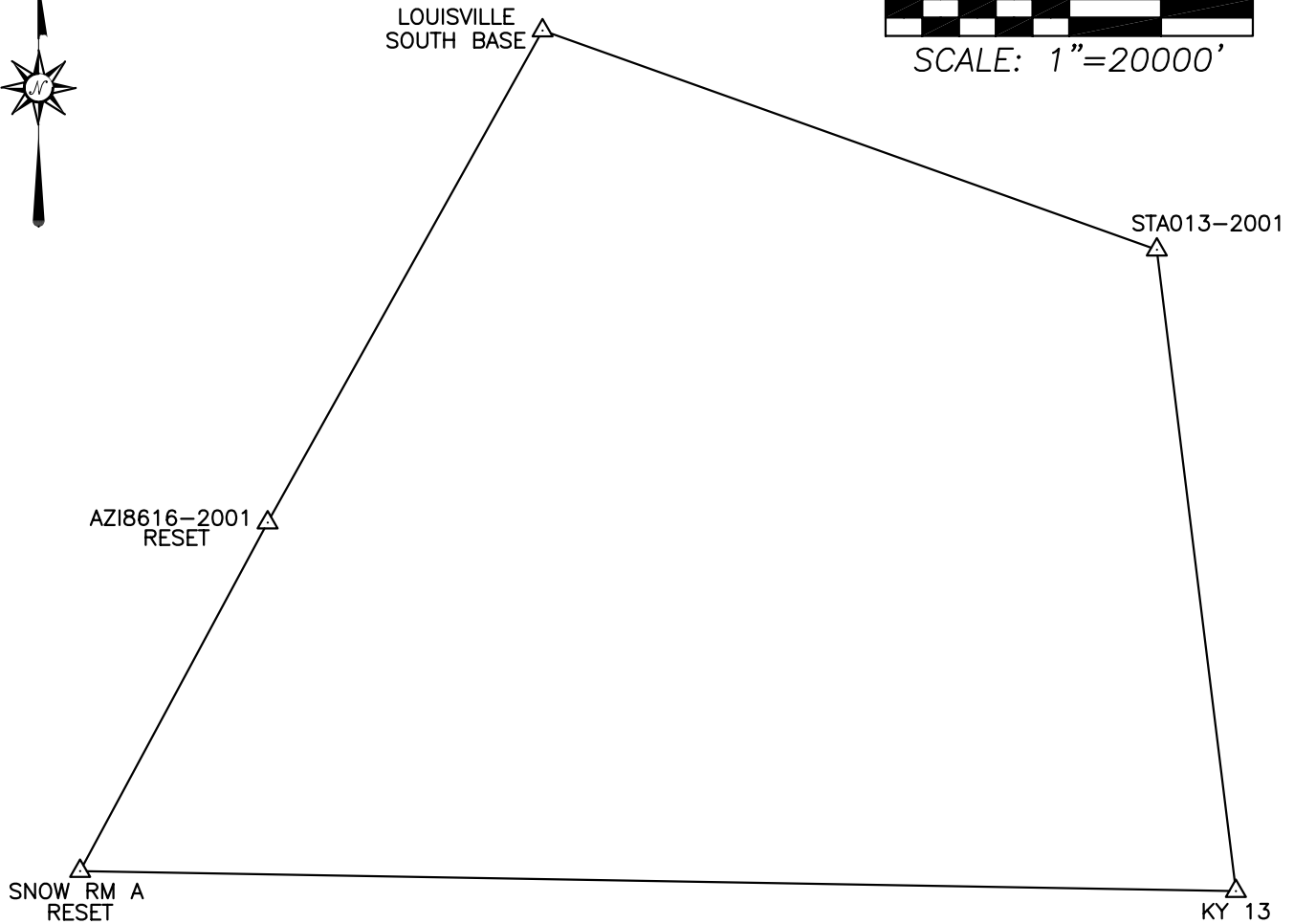
JOB No. 0780



0' 20000' 40000'



SCALE: 1"=20000'



GPS Loop # 13:				
SNOW RM A RESET: KY 13: STA013-2001: LOUISVILLE SOUTH BASE:				
AZI8616-2001 RESET: SNOW RM A RESET				
Observations:				
Baseline ID	Solution ID	From	To	Solution Type
B56	S5	SNOW RM A RESET	KY 13	Iono free fixed
B71	S21	STA013-2001	KY 13	Iono free fixed
B39	S21	STA013-2001	LOUISVILLE SOUTH BASE	Iono free fixed
B5	S52	AZI8616-2001 RESET	BL32-01	Iono free fixed
B10	S54	SNOW RM A RESET	AZI8616-2001 RESET	Iono free fixed
Passed Combination for Loop 13:				
S5-S21-S61-S52-S54				
		Length	Horiz	Vert
		371788.1573sft	0.0483sft	-0.0180sft
				PPM
				0.139

GPS NETWORK RESTORATION FOR
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13 of 17

SCALE: 1" = 20000'

DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

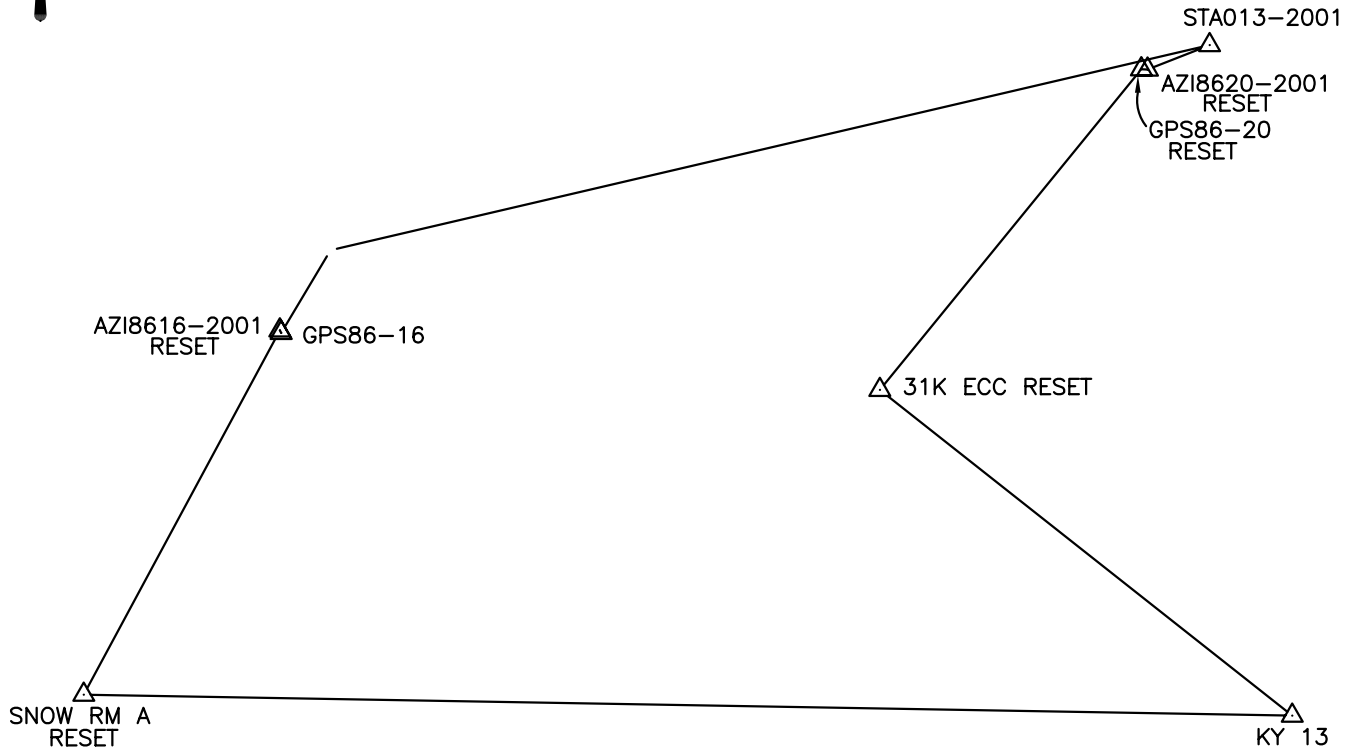
JOB No. 0780



0' 20000' 40000'



SCALE: 1"=20000'



GPS Loop # 14:				
SNOW RM A RESET: KY 13: STA013-2001: LOUISVILLE SOUTH BASE:				
AZI8616-2001 RESET: SNOW RM A RESET				
Observations:				
Baseline ID	Solution ID	From	To	Solution Type
B56	S5	SNOW RM A RESET	KY 13	Iono free fixed
B75	S20	KY 13	31K ECC RESET	Iono free fixed
B69	S120	GPS86-20 RESET	31K ECC RESET	Iono free fixed
B47	S91	AZI8620-2001	GPS86-20 RESET	L1 fixed
B30	S136	STA013-2001	AZI8620-2001 RESET	L1 fixed
B33	S111	STA013-2001	GPS86-15	Iono free fixed
B6	S40	GPS86-15	GPS86-16	L1 fixed
B7	S38	GPS86-16	AZI8616-2001 RESET	L1 fixed
B10	S54	SNOW RM A RESET	AZI8616-2001 RESET	Iono free fixed
Passed Combination for Loop 10:				
S5-S20-S120-S91-S136-S111-S40-S38-S54				
		Length	Horiz	Vert
		378801.8995sft	0.0477sft	0.0307sft
				PPM
				-0.150

GPS NETWORK RESTORATION FOR
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STATIC NETWORK #5 LOOP #14 CLOSURE

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14 of 17

SCALE: 1" = 20000'

DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

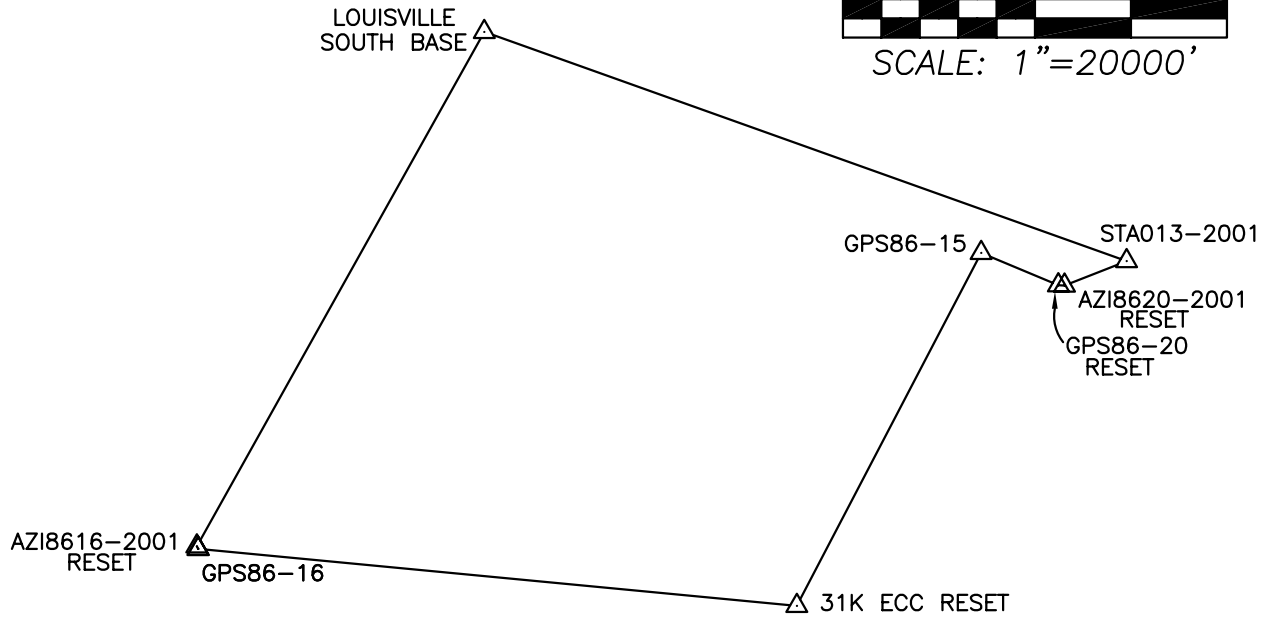
JOB No. 0780



0' 20000' 40000'



SCALE: 1"=20000'



GPS Loop # 15:				
GPS86-16: AZI8616-2001 RESET: LOUISVILLE SOUTH BASE: STA013-2001:				
AZI8616-2001 RESET: GPS86-20 RESET: STA012-2001: 31K ECC RESET: GPS86-16				
Observations:				
Baseline ID	Solution ID	From	To	Solution Type
B7	S38	GPS86-16	AZI8616-2001 RESET	L1 fixed
B5	S52	AZI8616-2001	LOUISVILLE SOUTH BASE	Iono free fixed
B39	S61	STA013-2001	LOUISVILLE SOUTH BASE	Iono free fixed
B67	S104	STA013-2001	AZI8620-2001 RESET	L1 fixed
B47	S91	AZI8620-2001 RESET	GPS86-20 RESET	L1 fixed
B1	S101	STA012-2001	GPS86-20 RESET	L1 fixed
B70	S105	STA012-2001	31K ECC RESET	Iono free fixed
B60	S42	GPS86-16	31K ECC RESET	Iono free fixed
Passed Combination for Loop 15:				
S38-S52-S61-S104-S91-S101-S105-S42				
		Length	Horiz	Vert
		253148.0434sft	0.0270sft	-0.0152sft
				PPM
				0.122

GPS NETWORK RESTORATION FOR
LOUISVILLE/JEFFERSON COUNTY INFORMATION CONSORTIUM

STATIC NETWORK #5 LOOP #15 CLOSURE

JACOBI, TOOMBS & LANZ, INC.
CONSULTING ENGINEERS
120 BELL AVENUE
CLARKSVILLE, INDIANA 47129
(812) 288-6646



SHEET

15 of 17

SCALE: 1" = 20000'

DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

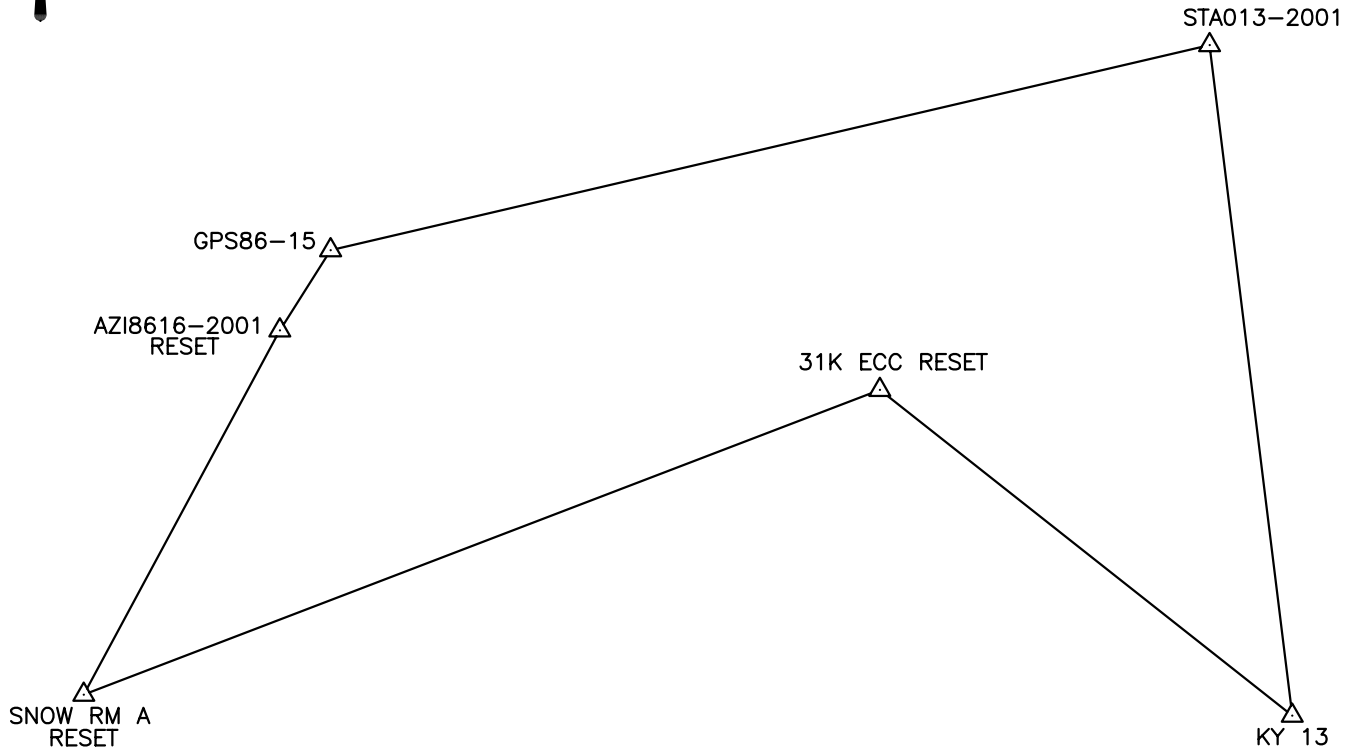
JOB No. 0780



0' 20000' 40000'



SCALE: 1"=20000'



GPS Loop # 16:				
KY 13: 31K ECC RESET: SNOW RM A RESET: AZI8616-2001: GPS86-15: STA013-2001: KY 13				
Observations:				
Baseline ID	Solution ID	From	To	Solution Type
B75	S20	KY 13	31K ECC RESET	Iono free fixed
B36	S26	SNOW RM A RESET	31K ECC RESET	Iono free fixed
B10	S54	SNOW RM A RESET	AZI8616-2001	Iono free fixed
B8	S45	GPS86-15	AZI8616-2001	L1 fixed
B33	S111	STA013-2001	GPS86-15	Iono free fixed
B71	S21	STA013-2001	KY 13	Iono free fixed
Passed Combination for Loop 16:				
S20-S26-S54-S45-S111-S21				
		Length	Horiz	Vert
		360899.5552sft	0.0310sft	0.0801sft
				PPM
				0.238

GPS NETWORK RESTORATION FOR
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STATIC NETWORK #5 LOOP #16 CLOSURE

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SHEET

16 of 17

SCALE: 1" = 20000'

DATE: 10/02/2007

DRAWN: J.A.T.

CHECKED: B.T.B.

APPROVED: S.L.M.

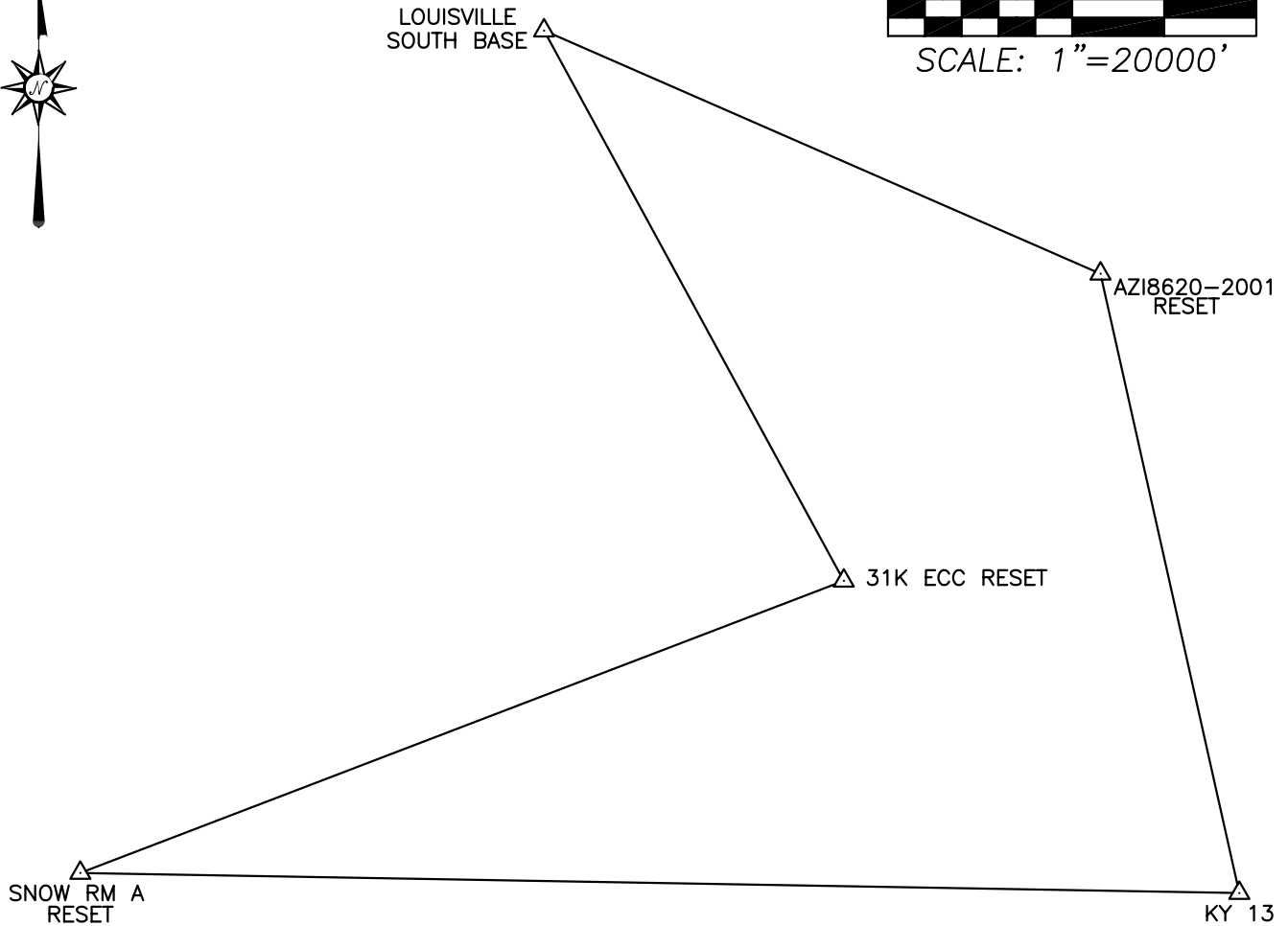
JOB No. 0780



0' 20000' 40000'



SCALE: 1"=20000'



GPS Loop # 17:				
SNOW RM A RESET: KY 13: AZI8620-2001 RESET: LOUISVILLE SOUTH BASE:				
31K ECC RESET: SNOW RM A RESET				
Observations:				
Baseline ID	Solution ID	From	To	Solution Type
B56	S5	SNOW RM A RESET	KY 13	Iono free fixed
B72	S24	KY 13	AZI8620-2001 RESET	Iono free fixed
B2	S85	LOUISVILLE SOUTH BASE	AZI8620-2001 RESET	Iono free fixed
B51	S72	31K ECC RESET	LOUISVILLE SOUTH BASE	Iono free fixed
B36	S26	SNOW RM A RESET	31K ECC RESET	Iono free fixed
Passed Combination for Loop 17:				
S5-S24-S85-S72-S26				
		Length	Horiz	Vert
		417690.0963sft	0.0257sft	-0.0392sft
			PPM	0.112

GPS NETWORK RESTORATION FOR
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SHEET

17 of 17

SCALE: 1" = 20000'

DATE: 10/02/2007

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