

82 monuments

2337-001

Butler County, Ohio
1999 First Order Control Monumentation
Survey Report

10/18/99

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GPS Network/Monument Location Diagram

Digital files for monument reference sheets and coordinate listings

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*200-1952
JASPER*

Introduction:

This project was conducted as a joint venture by GRW Aerial Surveys, Inc. and G.J. Berding Surveying, Inc. for the Butler County Engineers office. In addition, the final GPS network/adjustment includes GPS baselines observed by Arthur C. Balph, Civil Engineer and Surveyor. Said baselines were provided to GRWAS by the Butler County Engineer.

Purpose:

To install and control 47 new first order monuments set as intervisible pairs in the southeastern regions of Butler County, Ohio. Said control to be performed using GPS surveying techniques, in accordance with "GEOMETRIC GEODETIC ACCURACY STANDARDS AND SPECIFICATIONS FOR USING GPS RELATIVE POSITIONING TECHNIQUES by the Federal Geodetic Control Committee Version 5.0, May 11, 1988". The GPS network is to be tied to the Ohio HARN system, final coordinates to be published as NAD 83 Ohio S.P.C.S. South Zone with NAVD 88 elevations (GPS).

Method:

The Butler County Engineers office provided GRWAS/Berding with a map delineating the locations for the new monument pairs, Butler County Brass Disks, and PVC collars. Field survey personnel were dispatched with said materials and instructions to install and control the new monuments.

Monumentation:

The new monuments consist of poured in place concrete monuments, 36" deep x 8" in diameter with a 30" long ½" rebar (#4) placed vertically in the concrete, topped with a Butler County Brass Disk. The top two inches of the monuments were formed with a PVC collar, the top of the monuments are 2" below grade. The brass disks were center punched and stamped with the station's name. In some instances new monuments were paired with existing monuments.

GPS Control:

A GPS network was designed in accordance with the FGCC guidelines, providing a good distribution of horizontal and vertical control throughout the project area. All new stations participated in at least two independent observations. Sessions were scheduled with two to four GPS receivers simultaneously collecting GPS code and carrier data. Sessions were scheduled with observation durations of 15 to 60 minutes, depending on the base line length.

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Personnel:

E. Rinehart	Survey Supervisor/GPS Network Design
W. Ziegler	GPS computations/quality control/report preparation
J. Mickelson	Reference cards/quality control
H. Nichols	Reference Cards
B. Zulauf	Monumentation/GPS observations/field computations
D. Smith	Monumentation/GPS observations
J. Jasper	Monumentation/GPS observations/field computations
J. Poe	Monumentation/GPS observations

Control:**Horizontal:**

BLUEPORT A	NGS B order
BUT 1	NGS B order
HARRISON	NGS B order
HOGAN AZ MK	NGS B order
MWO A	NGS B order
OXFORD	NGS B order
T 347	NGS B order

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Vertical:

B 347	NGS FIRST ORDER CLASS II
HARRISON	NGS THIRD ORDER
HATTEN	NGS FIRST ORDER CLASS 0
HOGAN AZ MK	NGS THIRD ORDER
M 135	NGS SECOND ORDER CLASS 0
OXFORD	NGS SECOND ORDER CLASS 0
PEORIA	NGS SECOND ORDER CLASS 0
T 347	NGS FIRST ORDER CLASS II
V 143	NGS SECOND ORDER CLASS 0
V 135	NGS SECOND ORDER CLASS 0
W 136	NGS SECOND ORDER CLASS 0
Y 139	NGS FIRST ORDER CLASS II

Equipment:

3 Trimble 4000ssi dual frequency GPS receivers collecting code & carrier data.

1 Trimble 4800 dual frequency GPS receiver collecting code & carrier data.

Software:

Trimble's GPSurvey software suite

U.S. Army Corps of Engineers datum transformation software CORPSCON

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Quality Control:

The GPS data was downloaded and preprocessed on site daily. There it was evaluated by the field personnel. After the completion of all observations, the data was returned to GRWAS's home office in Lexington for further evaluation and adjustment. Integer ratios, reference variances, loop closures, error ellipses, and network fit were used to evaluate the data quality.

Conclusion:

A preliminary network adjustment was submitted to the Butler County Engineer for review.

In order to provide a single uniform county wide first order GPS network, the Butler County Engineer desired that the GPS network previously observed by Arthur C. Balph Civil Engineer and Surveyor, covering the northwestern regions of Butler County, be combined with the GRWAS/Berding network. The Butler County Engineer provided GRWAS with a copy of Balph's survey report which included his reduced GPS baselines in digital form (Trimble SSF files). These baselines were read into and incorporated with the GRWAS/Berding network.

The data from Balph's network proved to be fully compatible with and comparable to the GRWAS/Berding data, allowing a virtually seamless blending of the data sets. A few additional GPS observations were made to strengthen the connections between the two networks.

The network was constrained to NAD 83 Ohio High Accuracy Reference Network (HARN) (1996 adjustment), also known as the High Precision Geodetic Network (HPGN), as required by the original scope of work. Because the surrounding counties have control networks in place that are based on adjustments performed prior to the completion of the HARN, the Butler County Engineer requested that GRWAS provide coordinates as pre-HARN (NAD 83/86). GRWAS ran the HARN coordinates through the computer program CORPSCON to make the transformation to the pre-HARN system.

Control Monument Record cards were generated for the new monuments set by GRWAS. GRWAS also updated Balph's Control Monument Record cards to reflect the new combined adjustment. The coordinates on the cards published in this report are from the combined adjustment, transformed to pre-HARN values. Coordinate lists are provided in both HARN (1996 adjustment) and pre-HARN (1986 adjustment).

Control

Monument

Record

The NGS Data Sheet

DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.45
 1 National Geodetic Survey, Retrieval Date = MAY 17, 2001

JZ0188 *****
 JZ0188 DESIGNATION - HATTEN
 JZ0188 PID - JZ0188
 JZ0188 STATE/COUNTY- OH/BUTLER
 JZ0188 USGS QUAD - MIDDLETOWN (1981)

*CURRENT SURVEY CONTROL

JZ0188* NAD 83(1995)- 39 31 33.47902(N) 084 26 03.12243(W) ADJUSTED
 JZ0188* NAVD 88 - 269.553 (meters) 884.36 (feet) ADJUSTED

JZ0188 LAPLACE CORR- -1.77 (seconds) DEFLEC99
 JZ0188 GEOID HEIGHT- -33.46 (meters) GEOID99
 JZ0188 DYNAMIC HT - 269.397 (meters) 883.85 (feet) COMP
 JZ0188 MODELED GRAV- 980,041.8 (mgal) NAVD 88

JZ0188 HORZ ORDER - FIRST
 JZ0188 VERT ORDER - SECOND CLASS 0

JZ0188.The horizontal coordinates were established by classical geodetic methods
 JZ0188.and adjusted by the National Geodetic Survey in April 1998.

JZ0188.The orthometric height was determined by differential leveling
 JZ0188.and adjusted by the National Geodetic Survey in June 1991.

JZ0188.The Laplace correction was computed from DEFLEC99 derived deflections.

JZ0188.The geoid height was determined by GEOID99.

JZ0188.The dynamic height is computed by dividing the NAVD 88
 JZ0188.geopotential number by the normal gravity value computed on the
 JZ0188.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 JZ0188.degrees latitude (g = 980.6199 gals.).

JZ0188.The modeled gravity was interpolated from observed gravity values.

	North	East	Units	Scale	Converg.
JZ0188;SPC OH S	- 171,183.969	433,717.578	MT	0.99993895	-1 13 38.2
JZ0188;UTM 16	- 4,378,290.124	720,536.942	MT	1.00019885	+1 38 01.0

	Primary Azimuth Mark	Grid Az
JZ0188:SPC OH S	- HATTEN AZ MK	235 39 47.6
JZ0188:UTM 16	- HATTEN AZ MK	232 48 08.4

JZ0188	PID	Reference Object	Distance	Geod. Az
JZ0188	JZ3088	BEACON	APPROX.20.5 KM	1005103.8
JZ0188	JZ3163	BEACON WHITE FLASHING	APPROX.22.2 KM	1473358.6
JZ0188	JZ0189	HATTEN RM 1	39.527 METERS	22133
JZ0188		HATTEN AZ MK		2342609.4
JZ0188	JZ0187	HATTEN RM 2	31.017 METERS	29728

SUPERSEDED SURVEY CONTROL

JZ0188

JZ0188 NAD 83(1986)- 39 31 33.48650(N) 084 26 03.13159(W) AD() 1
 JZ0188 NAD 27 - 39 31 33.27900(N) 084 26 03.33300(W) AD() 1
 JZ0188 NGVD 29 - 269.728 (m) 884.93 (f) ADJ UNCH 2 0

JZ0188 Superseded values are not recommended for survey control.
 JZ0188.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 JZ0188.See file dsdata.txt to determine how the superseded data were derived.

JZ0188

JZ0188 MARKER: DS = TRIANGULATION STATION DISK

JZ0188_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

JZ0188_STAMPING: HATTEN 1938

JZ0188_MAGNETIC: N = NO MAGNETIC MATERIAL

JZ0188_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

JZ0188+STABILITY: SURFACE MOTION

JZ0188_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

JZ0188+SATELLITE: SATELLITE OBSERVATIONS - June 24, 1990

JZ0188

JZ0188	HISTORY	- Date	Condition	Report By
JZ0188	HISTORY	- 1938	MONUMENTED	CGS
JZ0188	HISTORY	- 1947	GOOD	CGS
JZ0188	HISTORY	- 1947	GOOD	NGS
JZ0188	HISTORY	- 1980	GOOD	NGS
JZ0188	HISTORY	- 19900624	GOOD	WOOLPT

JZ0188

STATION DESCRIPTION

JZ0188

JZ0188'DESCRIBED BY COAST AND GEODETIC SURVEY 1938 (APR)

JZ0188'STATION IS LOCATED ABOUT 1.9 MILES BY ROAD NW OF MIDDLETOWN, 0.1 MILE

JZ0188'S OF OHIO 122, ON THE PROPERTY BELONGING TO HATTEN AND NAEGELEN, THE

JZ0188'MARK IS SET IN THE NE CORNER OF THE BARNYARD, 35 FEET N OF THE NE

JZ0188'CORNER OF THE BARN, 49 FEET NW OF THE FENCE CORNER, 11 FEET W OF

JZ0188'THE FENCE, 17 FEET E OF A CONCRETE WELL, AND IS FLUSH WITH THE

JZ0188'GROUND.

JZ0188'

JZ0188'SURFACE, UNDERGROUND, REFERENCE NO. 1 AND AZIMUTH, AND REFERENCE NO.

JZ0188'2 MARKS ARE STANDARD BRONZE DISKS IN CONCRETE.

JZ0188'

JZ0188'REFERENCE MARK NO. 1 IS 129.67 FEET (39.523 METERS) SW OF THE

JZ0188'STATION, IS SET ON THE E SIDE OF A SHED, 10 FEET S OF THE N CORNER,

JZ0188'AND IS FLUSH WITH THE GROUND. REFERENCE MARK NO. 2 IS 101.755 FEET

JZ0188'(31.015 METERS) NW OF THE STATION, IS SET AT THE E END OF A GATE OF

JZ0188'FARM ENTRANCE, AT SW CORNER OF A FIELD, AND IS FLUSH WITH THE GROUND.

JZ0188'

JZ0188'AZIMUTH MARK IS APPROXIMATELY 0.65 MI SW OF THE STATION, ON THE E

JZ0188'SIDE OF A GRAVELED ROAD, 45 FEET N OF A FENCE CORNER, 18 FEET E OF

JZ0188'THE CENTER LINE OF THE ROAD, AND PROJECTS 8 INCHES. TO REACH THE

JZ0188'AZIMUTH MARK FROM THE STATION, GO N 0.1 MILE TO U.S. 122, TURN L

JZ0188'AND GO 0.85 MILE TO GRAVEL T-ROAD L, TURN L AND GO 0.45 MILE TO A

JZ0188'GRAVEL ROAD L, TURN L AND GO 0.4 MILE TO THE MARK ON THE L.

JZ0188'

JZ0188'TO REACH THE STATION FROM THE JUNCTION OF OHIO 73 AND U.S. 122 IN

JZ0188'MIDDLETOWN, GO WESTWARD ON 122 FOR 1.8 MILES TO THE CREST OF THE

JZ0188'RIDGE AND FARM ENTRANCE TO THE L, TURN L AND GO 0.1 MILE TO MR.

JZ0188'HATTENS HOUSE AND THE STATION ON THE L.

JZ0188'

JZ0188'A LIGHT AT 100 FEET AT COBLENTZ IS VISIBLE AT 50 FEET HERE.

JZ0188'

JZ0188'A LIGHT AT 100 FEET AT SIEMERING IS VISIBLE FROM THE GROUND.

JZ0188'

JZ0188'A LIGHT AT 100 FEET AT FRANKLIN IS VISIBLE FROM THE GROUND.

JZ0188'

JZ0188'A LIGHT AT 100 FEET AT SCHIRM IS VISIBLE FROM THE GROUND.

JZ0188'

JZ0188'HEIGHT OF LIGHT ABOVE STATION MARK - 30 METERS.

JZ0188

JZ0188 STATION RECOVERY (1947)
JZ0188
JZ0188'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1947 (CTH)
JZ0188'STATION WAS FOUND AS DESCRIBED AND ALL MARKS WERE RECOVERED IN GOOD
JZ0188'CONDITION. ALL MEASUREMENTS WERE CHECKED, BUT THE ANGLES TO THE
JZ0188'AZIMUTH AND REFERENCE MARKS WERE NOT CHECKED AS THE STATION WAS
JZ0188'OCCUPIED ECCENTRIC. A COMPLETE NEW DESCRIPTION FOLLOWS.
JZ0188'
JZ0188'STATION IS LOCATED ABOUT 2 MILES NORTHWEST OF MIDDLETOWN AND 200
JZ0188'YARDS SOUTH OF STATE HIGHWAY 122 ON PROPERTY OWNED BY HATTEN AND
JZ0188'NAEGELEN IN THE NORTHEAST CORNER OF THE BARNYARD, 35 FEET NORTH OF
JZ0188'THE NORTHEAST CORNER OF THE BARN, 49 FEET NORTHWEST OF FENCE
JZ0188'CORNER, 11 FEET WEST OF FENCE AND 17 FEET EAST OF CONCRETE WALL. THE
JZ0188'MARK IS FLUSH WITH THE GROUND AND THE DISC IS STAMPED HATTEN 1938.
JZ0188'
JZ0188'REFERENCE MARK NO. 1 IS 129.67 FEET SOUTHWEST OF THE STATION. THE
JZ0188'SHED TO WHICH THE MARK WAS PREVIOUSLY REFERENCED TO HAS BEEN
JZ0188'REMOVED. THE MARK IS FLUSH WITH THE GROUND AND THE DISC IS STAMPED
JZ0188'HATTEN NO. 1 1938.
JZ0188'
JZ0188'REFERENCE MARK NO. 2 IS 101.76 FEET NORTHWEST OF THE STATION AND 1
JZ0188'FOOT SOUTH OF THE EAST END OF FARM ENTRANCE GATE AT THE SOUTHWEST
JZ0188'CORNER OF FIELD. THE MARK PROJECTS 2 INCHES AND THE DISC IS STAMPED
JZ0188'HATTEN NO. 2 1938.
JZ0188'
JZ0188'THE AZIMUTH MARK IS 0.65 MILE SOUTHWEST OF THE STATION, 45 FEET NORTH
JZ0188'OF A FENCE CORNER AND 18 FEET EAST OF THE CENTERLINE OF
JZ0188'GRAVEL ROAD. THE MARK PROJECTS 8 INCHES AND THE DISC IS STAMPED
JZ0188'HATTEN 1938.
JZ0188'
JZ0188'TO REACH THE STATION FROM THE JUNCTION OF STATE HIGHWAY 122 AND STATE
JZ0188'HIGHWAY 73 IN MIDDLETOWN, GO WEST ON STATE HIGHWAY 122 FOR
JZ0188'1.8 MILES TO THE CREST OF THE RIDGE AND FARM ENTRANCE TO THE LEFT.
JZ0188'TURN LEFT AND GO SOUTH 0.1 MILE TO MR. HATTENS HOUSE AND THE
JZ0188'STATION ON THE LEFT.
JZ0188'
JZ0188'TO REACH THE AZIMUTH MARK FROM THE STATION, GO NORTH 0.1 MILE TO
JZ0188'STATE HIGHWAY 122. TURN LEFT AND GO WEST ON STATE HIGHWAY 122
JZ0188'FOR 0.85 MILE TO A GRVEL T-ROAD LEFT. TURN LEFT AND GO SOUTH FOR
JZ0188'0.45 MILE TO ROAD FORKS. TAKE THE LEFT FORK AND FOLLOW GRAVEL
JZ0188'ROAD FOR 0.4 MILE TO THE AZIMUTH MARK ON THE LEFT.
JZ0188'
JZ0188'OBSERVATIONS WERE TAKEN FROM A FOUR-FOOT WOODEN STAND AT AN ECCENTRIC
JZ0188'POINT FROM THE STATION. TO CLEAR THE LINE TO TRIANGULATION
JZ0188'STATION CLAWSON, A 20-FOOT STAND IS REQUIRED AT THIS STATION.

JZ0188
JZ0188 STATION RECOVERY (1947)
JZ0188

JZ0188'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1947
JZ0188'1.3 MI W FROM WEST MIDDLETOWN.
JZ0188'1.15 MILES WEST ALONG STATE HIGHWAY 122 FROM THE BALTIMORE AND
JZ0188'OHIO RAILROAD STATION AT WEST MIDDLETOWN, THENCE ABOUT 0.15
JZ0188'MILE SOUTH ALONG A PRIVATE ROAD, AT THE HATTEN HATCHERY, 35 FEET
JZ0188'NORTH OF THE NORTHEAST CORNER OF A HATCHERY BUILDING, 25.5 FEET
JZ0188'NORTHEAST OF THE CENTER OF A CONCRETE WELL, 11.5 FEET SOUTHWEST
JZ0188'OF A WIRE FENCE, 101.75 FEET EAST-SOUTHEAST OF R.M. NO. 2, AND
JZ0188'SET IN THE TOP OF A CONCRETE POST ABOUT 2 INCHES BELOW THE
JZ0188'SURFACE OF THE GROUND.

JZ0188
JZ0188 STATION RECOVERY (1980)
JZ0188

JZ0188'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1980 (CLN)
JZ0188'ALL MARKS WERE FOUND IN GOOD CONDITION. THE DISTANCE AND DIRECTION
JZ0188'TO THE REFERENCE MARKS CHECKED. A NEW DESCRIPTION FOLLOWS.
JZ0188'

JZ0188'THE STATION IS LOCATED ABOUT 2 MILES NORTHWEST OF MIDDLETOWN, IN A
 JZ0188'BARN YARD, 35 FEET NORTHWEST OF THE NORTHEAST CORNER OF A BARN, 39
 JZ0188'FEET NORTHEAST OF THE NORTHWEST CORNER OF THE BARN, 30 FEET SOUTHEAST
 JZ0188'OF A TWIN TRUNK LOCUST TREE, 92 FEET EAST OF THE CENTERLINE OF A FARM
 JZ0188'DRIVE, AND 17 FEET EAST OF A CONCRETE WELL COVER. THE MONUMENT IS
 JZ0188'FLUSH, AND THE DISK IS STAMPED---HATTEN 1938---

JZ0188'
 JZ0188'TO REACH THE STATION FROM THE MADISON HIGH SCHOOL, GO EAST ON STATE
 JZ0188'HIGHWAY 122 FOR 0.65 MILE TO A FARM DRIVE SOUTH. TURN RIGHT AND GO
 JZ0188'SOUTH ON THE DRIVE FOR 0.15 MILE TO THE STATION ON THE LEFT. TO
 JZ0188'REACH THE AZIMUTH MARK FROM THE SCHOOL, GO WEST ON HIGHWAY 122 FOR
 JZ0188'0.1 MILE TO A ROAD LEFT. TURN LEFT AND GO SOUTH ON MOSIMAN ROAD FOR
 JZ0188'0.9 MILE TO THE AZIMUTH MARK ON THE LEFT.

JZ0188'
 JZ0188'REFERENCE MARK 1 IS 9 FEET WEST OF THE CENTERLINE OF DRIVE, 35 FEET
 JZ0188'EAST OF A FENCE AND 49 FEET NORTHWEST OF THE NORTHWEST CORNER OF A
 JZ0188'BARN. THE MONUMENT IS FLUSH AND THE DISK IS STAMPED---HATTEN NO 1
 JZ0188'1938---

JZ0188'
 JZ0188'REFERENCE MARK 2 IS 9 FEET WEST OF THE CENTERLINE OF THE DRIVE, 9
 JZ0188'FEET EAST OF A 10 INCH LOCUST TREE, 1 FOOT SOUTH OF A FENCE AND 2
 JZ0188'FEET SOUTHEAST OF A GATE POST. THE MONUMENT IS FLUSH AND THE DISK
 JZ0188'IS STAMPED---HATTEN NO 2 1938---

JZ0188'
 JZ0188'THE AZIMUTH MARK IS 67.5 FEET SOUTH OF A FIRE HYDRANT, 11 FEET
 JZ0188'NORTHWEST OF THE NORTHWEST CORNER OF A STONE GATE PILLAR, 16 FEET
 JZ0188'EAST OF THE CENTERLINE OF MOSIMAN ROAD, 69 FEET NORTHEAST OF A
 JZ0188'CONCRETE SURVEY MARK AND IN FRONT OF HOUSE NO 5184. THE MONUMENT
 JZ0188'PROJECTS 6 INCHES AND THE DISK IS STAMPED---HATTEN 1938---

JZ0188
 JZ0188 STATION RECOVERY (1990)

JZ0188
 JZ0188'RECOVERY NOTE BY WOOLPERT CONSULTANTS 1990 (DT)
 JZ0188'RECOVERED AS DESCRIBED.

1 National Geodetic Survey, Retrieval Date = MAY 17, 2001

JZ0189 *****

JZ0189 DESIGNATION - HATTEN RM 1
 JZ0189 PID - JZ0189
 JZ0189 STATE/COUNTY- OH/BUTLER
 JZ0189 USGS QUAD - MIDDLETOWN (1981)

JZ0189
 JZ0189 *CURRENT SURVEY CONTROL

JZ0189*	NAD 83(1986)-	39 31 34.	(N)	084 26 03.	(W)	SCALED
JZ0189*	NAVD 88	-	270.382	(meters)	887.08	(feet) ADJUSTED

JZ0189	GEOID HEIGHT-	-33.46	(meters)			GEOID99
JZ0189	DYNAMIC HT -	270.226	(meters)	886.57	(feet)	COMP
JZ0189	MODELED GRAV-	980,041.8	(mgal)			NAVD 88

JZ0189
 JZ0189 VERT ORDER - SECOND CLASS 0

JZ0189
 JZ0189.The horizontal coordinates were scaled from a topographic map and have
 JZ0189.an estimated accuracy of +/- 6 seconds.

JZ0189
 JZ0189.The orthometric height was determined by differential leveling
 JZ0189.and adjusted by the National Geodetic Survey in June 1991.

JZ0189
 JZ0189.The geoid height was determined by GEOID99.

JZ0189
 JZ0189.The dynamic height is computed by dividing the NAVD 88
 JZ0189.geopotential number by the normal gravity value computed on the
 JZ0189.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 JZ0189.degrees latitude (g = 980.6199 gals.).

JZ0189

JZ0189.The modeled gravity was interpolated from observed gravity values.
 JZ0189
 JZ0189; North East Units Estimated Accuracy
 JZ0189;SPC OH S - 171,200. 433,720. MT (+/- 180 meters Scaled)
 JZ0189
 JZ0189 SUPERSEDED SURVEY CONTROL
 JZ0189
 JZ0189 NGVD 29 - 270.557 (m) 887.65 (f) ADJ UNCH 2 0
 JZ0189
 JZ0189.Superseded values are not recommended for survey control.
 JZ0189.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 JZ0189.See file dsdata.txt to determine how the superseded data were derived.
 JZ0189
 JZ0189_MARKER: DR = REFERENCE MARK DISK
 JZ0189_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 JZ0189_STAMPING: HATTEN NO 1 1938
 JZ0189_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 JZ0189+STABILITY: SURFACE MOTION

JZ0189 HISTORY - Date Condition Report By
 JZ0189 HISTORY - 1938 MONUMENTED CGS
 JZ0189 HISTORY - 1947 GOOD NGS

JZ0189 STATION DESCRIPTION
 JZ0189
 JZ0189'DESCRIBED BY NATIONAL GEODETIC SURVEY 1947
 JZ0189'1.3 MI W FROM WEST MIDDLETOWN.
 JZ0189'1.15 MILES WEST ALONG STATE HIGHWAY 122 FROM THE BALTIMORE AND
 JZ0189'OHIO RAILROAD STATION AT WEST MIDDLETOWN, THENCE ABOUT 0.15
 JZ0189'MILE SOUTH ALONG A PRIVATE ROAD, AT THE HATTEN HATCHERY, 107
 JZ0189'FEET SOUTHWEST OF THE CENTER OF A CONCRETE WELL, 71 FEET
 JZ0189'NORTHEAST OF THE NORTHEAST CORNER OF AN 8 BY 8-FOOT BRICK
 JZ0189'BUILDING, 129.6 FEET SOUTHWEST OF THE STATION MARK, 49 FEET WEST
 JZ0189'OF THE WEST EDGE OF A CIRCULAR BUILDING, 35 FEET EAST OF A FENCE
 JZ0189'LINE, 144 FEET SOUTH OF R.M. NO. 2, AND SET IN THE TOP OF A
 JZ0189'CONCRETE POST FLUSH WITH THE GROUND.

1 National Geodetic Survey, Retrieval Date = MAY 17, 2001
 JZ0187 *****
 JZ0187 DESIGNATION - HATTEN RM 2
 JZ0187 PID - JZ0187
 JZ0187 STATE/COUNTY- OH/BUTLER
 JZ0187 USGS QUAD - MIDDLETOWN (1981)
 JZ0187
 JZ0187 *CURRENT SURVEY CONTROL
 JZ0187
 JZ0187* NAD 83(1986)- 39 31 33. (N) 084 26 02. (W) SCALED
 JZ0187* NAVD 88 - 270.420 (meters) 887.20 (feet) ADJUSTED
 JZ0187
 JZ0187 GEOID HEIGHT- -33.46 (meters) GEOID99
 JZ0187 DYNAMIC HT - 270.264 (meters) 886.69 (feet) COMP
 JZ0187 MODELED GRAV- 980,041.8 (mgal) NAVD 88
 JZ0187
 JZ0187 VERT ORDER - SECOND CLASS 0
 JZ0187

JZ0187.The horizontal coordinates were scaled from a topographic map and have
 JZ0187.an estimated accuracy of +/- 6 seconds.
 JZ0187
 JZ0187.The orthometric height was determined by differential leveling
 JZ0187.and adjusted by the National Geodetic Survey in June 1991.
 JZ0187
 JZ0187.The geoid height was determined by GEOID99.
 JZ0187
 JZ0187.The dynamic height is computed by dividing the NAVD 88
 JZ0187.geopotential number by the normal gravity value computed on the
 JZ0187.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

JZ0187.degrees latitude (g = 980.6199 gals.).

JZ0187

JZ0187.The modeled gravity was interpolated from observed gravity values.

JZ0187

JZ0187;		North	East	Units	Estimated Accuracy
JZ0187;SPC OH S	-	171,170.	433,740.	MT	(+/- 180 meters Scaled)

JZ0187

JZ0187

SUPERSEDED SURVEY CONTROL

JZ0187

JZ0187	NGVD 29	-	270.596 (m)	887.78	(f) ADJ UNCH	2 0
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JZ0187

JZ0187.Superseded values are not recommended for survey control.

JZ0187.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

JZ0187.See file dsdata.txt to determine how the superseded data were derived.

JZ0187

JZ0187 MARKER: DR = REFERENCE MARK DISK

JZ0187 SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

JZ0187 STAMPING: HATTEN NO 2 1938

JZ0187 STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

JZ0187 STABILITY: SURFACE MOTION

JZ0187

JZ0187	HISTORY	- Date	Condition	Report By
JZ0187	HISTORY	- 1938	MONUMENTED	CGS
JZ0187	HISTORY	- 1947	GOOD	NGS

JZ0187 HISTORY

JZ0187 HISTORY

JZ0187

JZ0187

STATION DESCRIPTION

JZ0187

JZ0187'DESCRIBED BY NATIONAL GEODETIC SURVEY 1947

JZ0187'1.3 MI W FROM WEST MIDDLETOWN.

JZ0187'1.15 MILES WEST ALONG STATE HIGHWAY 122 FROM THE BALTIMORE AND

JZ0187'OHIO RAILROAD STATION AT WEST MIDDLETOWN, THENCE ABOUT 0.15

JZ0187'MILE SOUTH ALONG A PRIVATE ROAD, AT THE HATTEN HATCHERY, 120

JZ0187'FEET SOUTHEAST OF THE SOUTHEAST CORNER OF A WHITE PAINTED

JZ0187'BRICK RESIDENCE, 1.4 FEET SOUTHEAST OF THE EAST GATE POST OF A

JZ0187'GATE TO THE HATCHERY, 88 FEET NORTHWEST OF THE CENTER OF A

JZ0187'CONCRETE WELL, 101.75 FEET WEST-NORTHWEST OF THE STATION MARK,

JZ0187'7 FEET EAST OF THE CENTER LINE OF THE ENTRANCE TO THE HATCHERY

JZ0187'LOT, 144 FEET NORTH OF R.M. NO 1 AND SET IN THE TOP OF A CONCRETE

JZ0187'POST FLUSH WITH THE GROUND.

*** retrieval complete.

Elapsed Time = 00:00:12

CONTROL MONUMENT RECORD

DATE: 4/6/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Morgan

SECTION: 36

TOWN: 3

RANGE: 1

COUNTY: Butler

STATE: Ohio

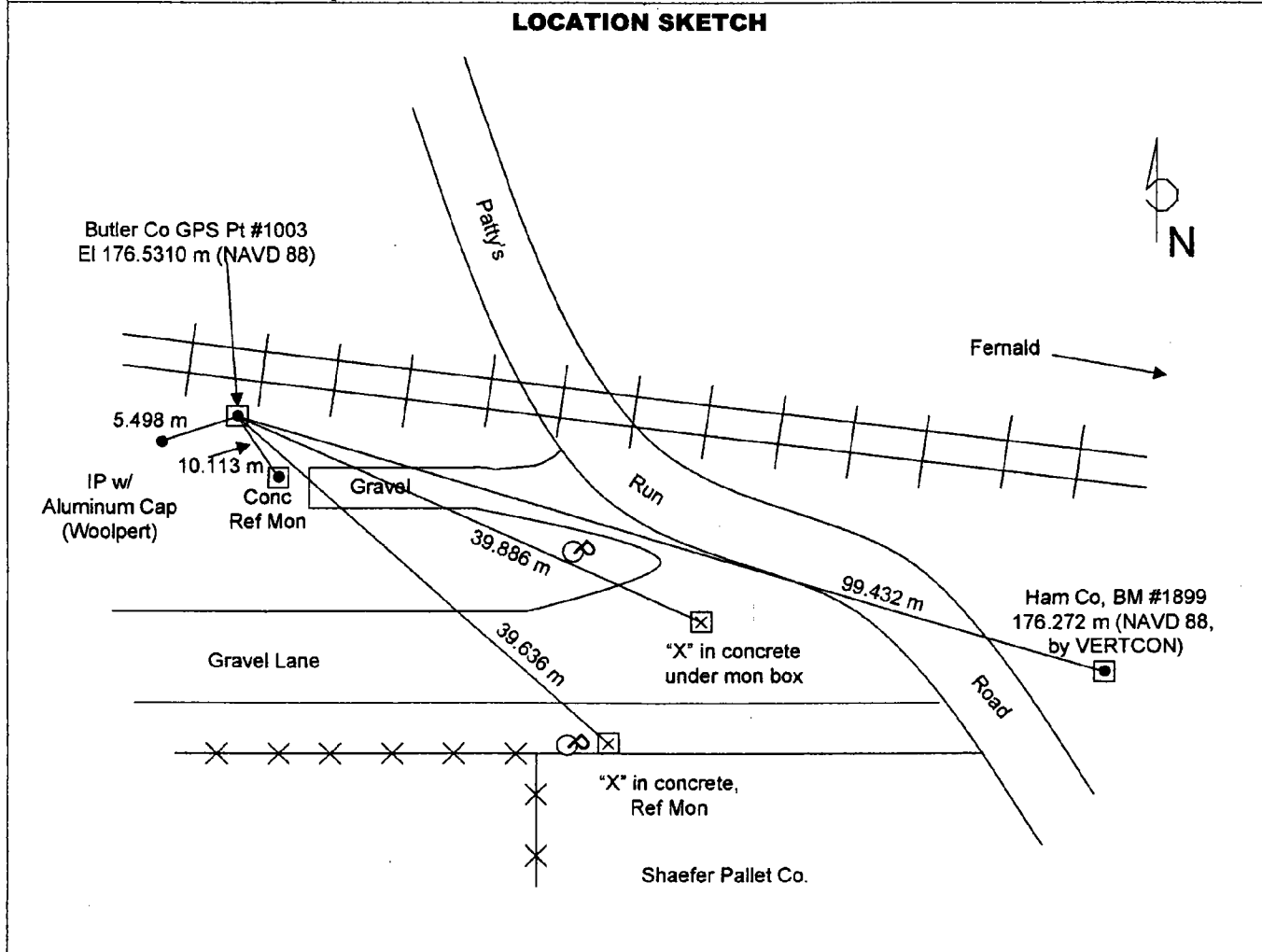
LOCATION: Beginning at intersection of SR 126 (Cincinnati Brookville Rd) and Morgan Ross Rd, thence south 1.5 km (0.95 mi) to intersection of Morgan Ross Rd and Chesapeake and Ohio rail road line. Monument is west of intersection, marked by survey marker.

Monument No: 1003	State Plane Coordinates: Meters (NAD 83/86) NORTH 147184.589 EAST 409957.150	Latitude and Longitude: (NAD 83/86) LAT N 39° 18' 17.78675" LONG W 84° 42' 13.20436"
Elevation: Meters (NAVD 88) GPS 176.549		

Grid Scale Factor: 0.999936864	Convergence: -1° 23' 53.77316"
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Azimuth to N/A	is N/A	Distance is N/A
-----------------------	---------------	------------------------

MONUMENT DESCRIPTION:
Concrete monument with brass cap marked "Butler County Engineer Reference Monument". Disk marked "1003", "1990" and center punched.



DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 1
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CONTROL MONUMENT RECORD

DATE: 4/6/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Reily

SECTION: 36

TOWN: 4

RANGE: 1

COUNTY: Butler

STATE: Ohio

LOCATION: Beginning at intersection of Morgan Ross Road and SR 129 (Hamilton Scipio Rd), thence west 125.6 m (412'), thence north 4.9 m (16.2') off of north edge of pavement. Monument is located in grass in front of Thomas Products Company.

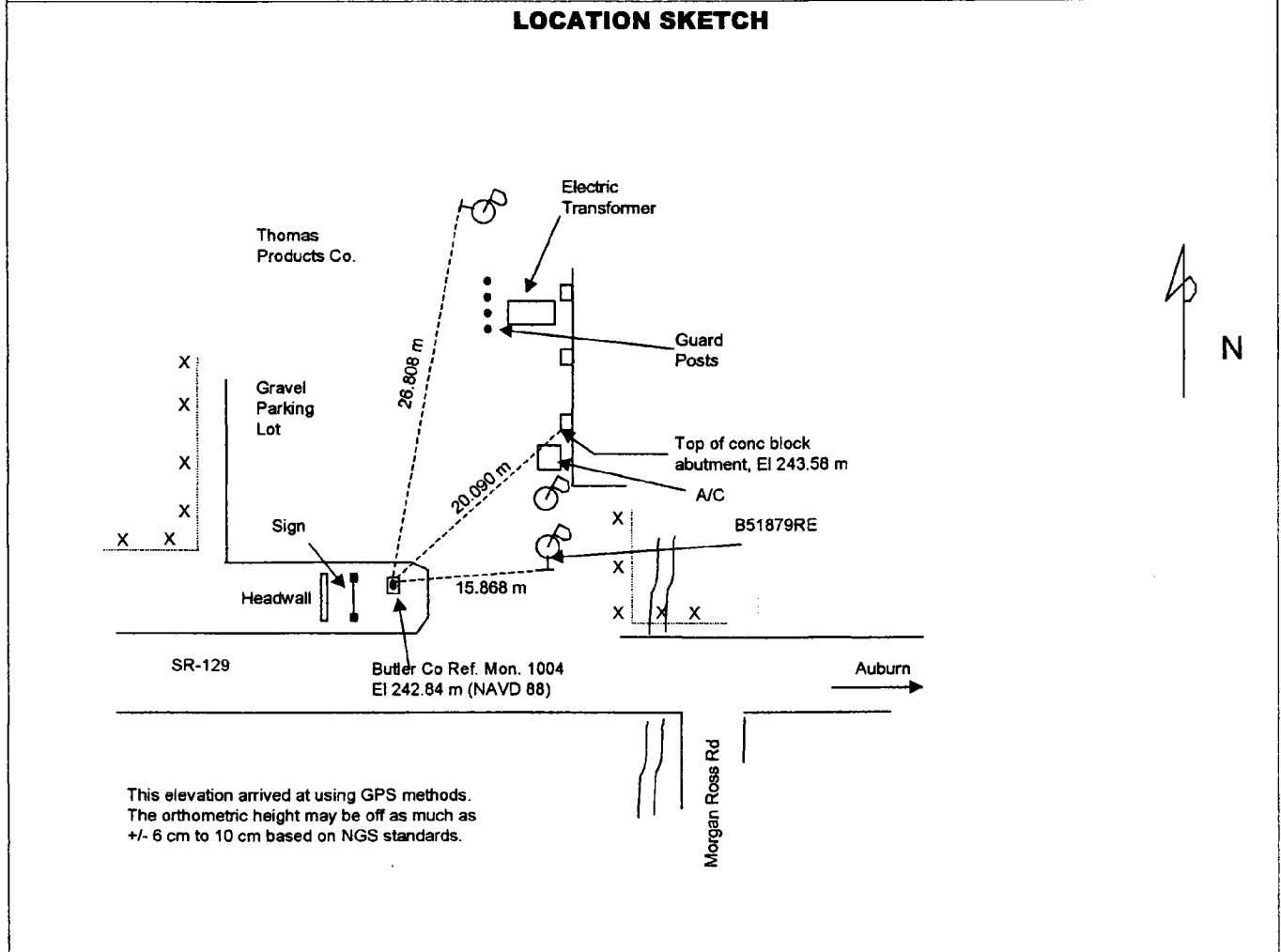
Monument No: 1004	State Plane Coordinates: Meters (NAD 83/86) NORTH 156763.270 <small>.774</small> EAST 410089.709 <small>.685</small>	Latitude and Longitude: (NAD 83/86) LAT N 39° 23' 28.41697" LONG W 84° 42' 17.43445"
Elevation: Meters (NAVD 88) GPS 242.862		

Grid Scale Factor: 0.999935915	Convergence: -1° 23' 56.45723"
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Azimuth to N/A	is N/A	Distance is N/A
-----------------------	---------------	------------------------

MONUMENT DESCRIPTION:

Concrete monument with brass cap marked "Butler County Engineer Reference Monument". Disk marked "1004", "1990" and cross mark "+" in center.



This elevation arrived at using GPS methods.
The orthometric height may be off as much as
+/- 6 cm to 10 cm based on NGS standards.

DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 2
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CONTROL MONUMENT RECORD

DATE: 4/6/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Milford

SECTION: 6

TOWN: 5

RANGE: 2

COUNTY: Butler

STATE: Ohio

LOCATION: Intersection of Somerville Rd and St Rt 177, thence north to Butler County / Preble County Line. Monument is located south of county line, on west side of Rt 177.

Monument No: 2009	State Plane Coordinates: Meters (NAD 83/86) NORTH 176283.592 EAST 411105.173	Latitude and Longitude: (NAD 83/86) LAT N 39° 34' 02.02208" LONG W 84° 41' 54.87002"
Elevation: Meters (NAVD 88) GPS 297.421		

Grid Scale Factor: 0.999940985

Convergence: -1° 23' 42.13966"

Azimuth to N/A

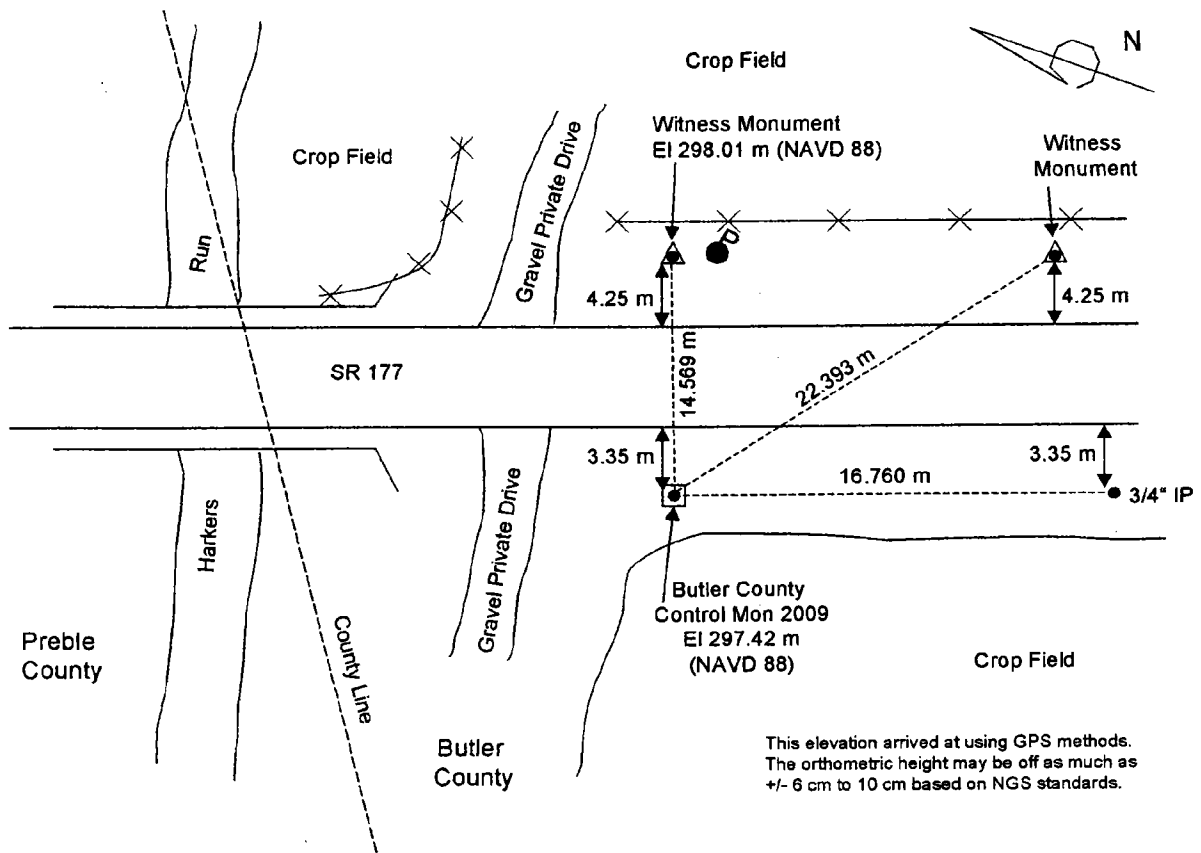
is N/A

Distance is N/A

MONUMENT DESCRIPTION:

Concrete monument with brass cap marked "Butler County Engineer Ref. Monument", "2009", with punch mark in center.

LOCATION SKETCH



DATA BY:
A. C. Balph Engr & Surv
1145 California Rd, Okeana,
OH 45053
513-756-9111

TYPE OF EQUIPMENT USED:

Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas

SHEET NO.
3

CONTROL MONUMENT RECORD

DATE: 4/6/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Oxford

SECTION: 6

TOWN: 5

RANGE: 1

COUNTY: Butler

STATE: Ohio

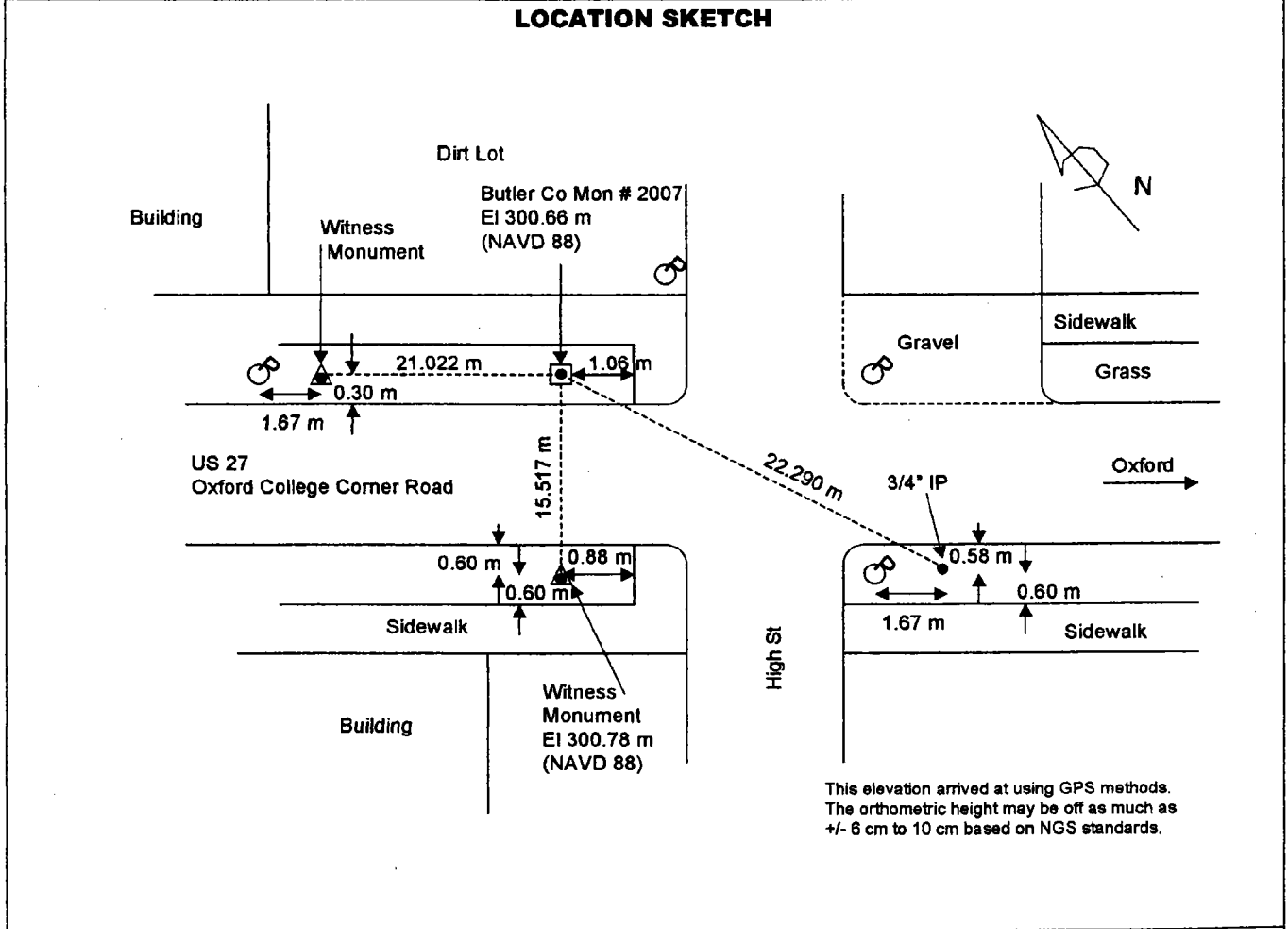
LOCATION: Intersection of US RT 27 and High Street, College Corner. Monument is located in grass between sidewalk and street, north corner of intersection.

Monument No: 2007	State Plane Coordinates: Meters (NAD 83/86) NORTH 176521.948 EAST 401158.462	Latitude and Longitude: (NAD 83/86) LAT N 39° 34' 01.68962" LONG W 84° 48' 51.72447"
Elevation: Meters (NAVD 88) GPS 300.674		

Grid Scale Factor: 0.999940980	Convergence: -1° 28' 06.64195"
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Azimuth to N/A	is N/A	Distance is N/A
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MONUMENT DESCRIPTION:
Concrete Monument with Brass Cap marked "BUTLER COUNTY ENGINEER REF. MONUMENT"
"CONTROL 2007", punch mark in center.



DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 4
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CONTROL MONUMENT RECORD

DATE: 4/6/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Hanover

SECTION: 6

TOWN: 4

RANGE: 2

COUNTY: Butler

STATE: Ohio

LOCATION: Beginning at intersection of US RT 27 and Nichols Rd, thence northeast on Nichols Rd 316 m (1037'), thence northwest 66m (216') to the monument, marked with a survey marker.

Monument No: 1011	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 261.362	NORTH 165931.848 <small>.824</small>	LAT N 39° 28' 25.97164"
	EAST 410504.972 <small>.939</small>	LONG W 84° 42' 09.43078"

Grid Scale Factor: 0.999937124

Convergence: -1° 23' 51.37875"

Azimuth to N/A

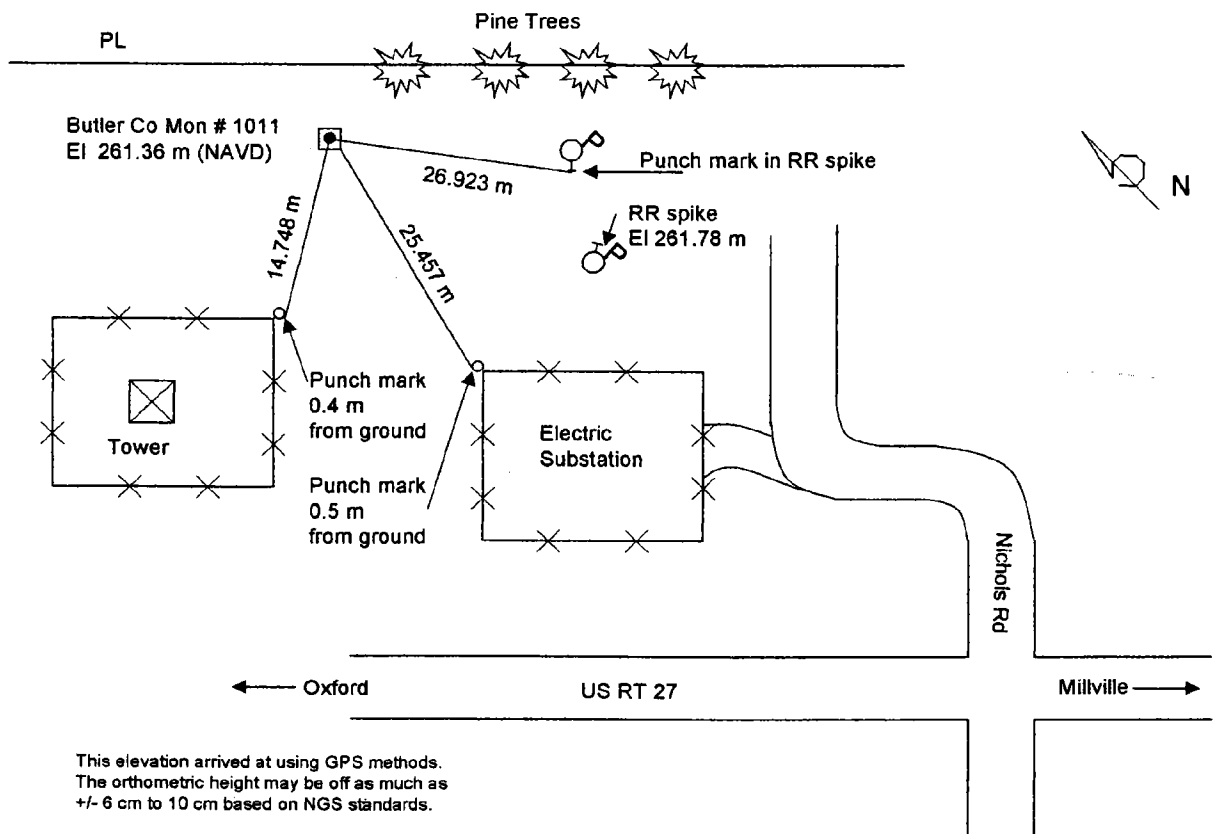
is N/A

Distance is N/A

MONUMENT DESCRIPTION:

Concrete monument with brass cap marked "Butler County Engineer Reference Monument". Disk marked "1011", and punch mark in center.

LOCATION SKETCH



This elevation arrived at using GPS methods.
The orthometric height may be off as much as
+/- 6 cm to 10 cm based on NGS standards.

DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 5
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CONTROL MONUMENT RECORD

DATE: 4/6/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Reily

SECTION: 31

TOWN: 4

RANGE: 1

COUNTY: Butler

STATE: Ohio

LOCATION: Beginning at intersection of SR 129 (Hamilton Scipio Rd) and SR 126 (Cincinnati-Brookville Rd). Monument is north of intersection, approximately 3m (10') off of north edge of pavement of SR 129.

Monument No: 2003	State Plane Coordinates: Meters (NAD 83/86) NORTH 157072.039 EAST 400411.632	Latitude and Longitude: (NAD 83/86) LAT N 39° 23' 30.56886" LONG W 84° 49' 02.09436"
Elevation: Meters (NAVD 88) GPS 255.967		

Grid Scale Factor: 0.999935916

Convergence: -1° 28' 13.22185"

Azimuth to AZI 2004

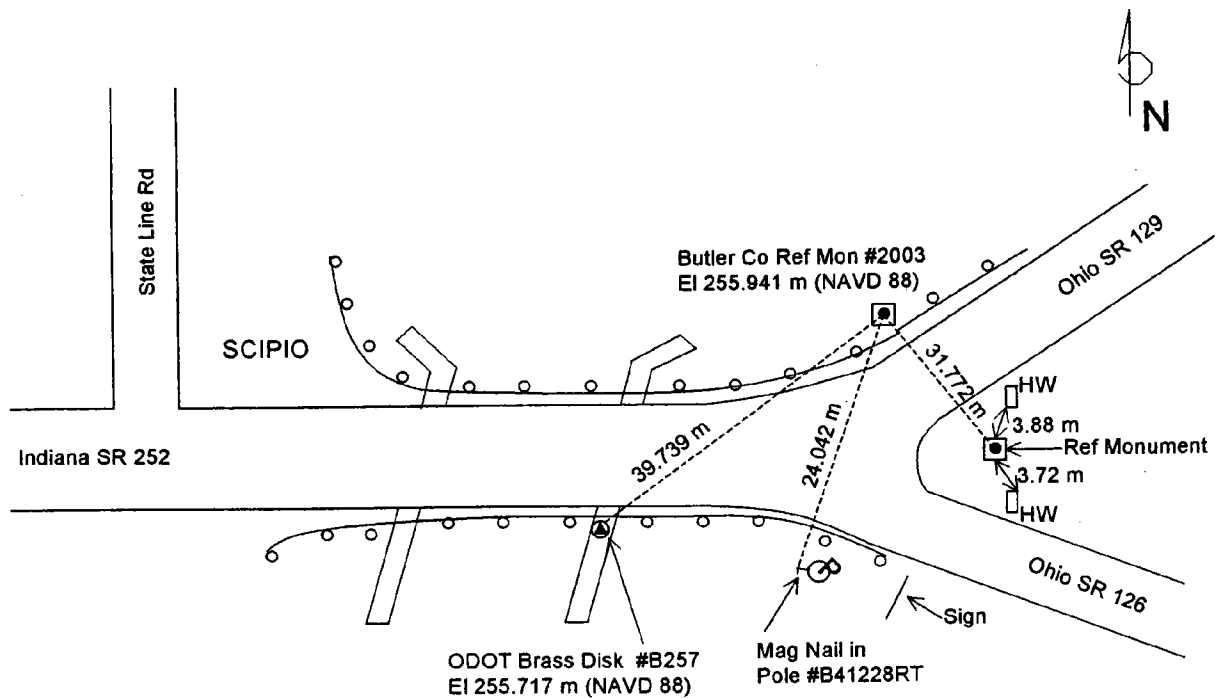
is 134° 46' 40" (grid)

Distance is 238.539 m

MONUMENT DESCRIPTION:

Concrete monument with brass cap marked "Butler County Engineer Reference Monument". Disk marked "2003".

LOCATION SKETCH



DATA BY:
A. C. Balph Engr & Surv
1145 California Rd, Okeana,
OH 45053
513-756-9111

TYPE OF EQUIPMENT USED:
Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas

SHEET NO.
6

CONTROL MONUMENT RECORD

DATE: 4/8/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Milford

SECTION: 1

TOWN: 5 **RANGE:** 2 **COUNTY:** Butler

STATE: Ohio

LOCATION: Wayne Trace Road, south of Butler County / Preble County line.

Monument No: 2011	State Plane Coordinates: Meters (NAD 83/86) NORTH 176009.109 EAST 420784.170	Latitude and Longitude: (NAD 83/86) LAT N 39° 34' 00.56929" LONG W 84° 35' 09.19349"
Elevation: Meters (NAVD 88) GPS 299.636		

Grid Scale Factor: 0.999940962

Convergence: -1° 19' 24.72997"

Azimuth to N/A

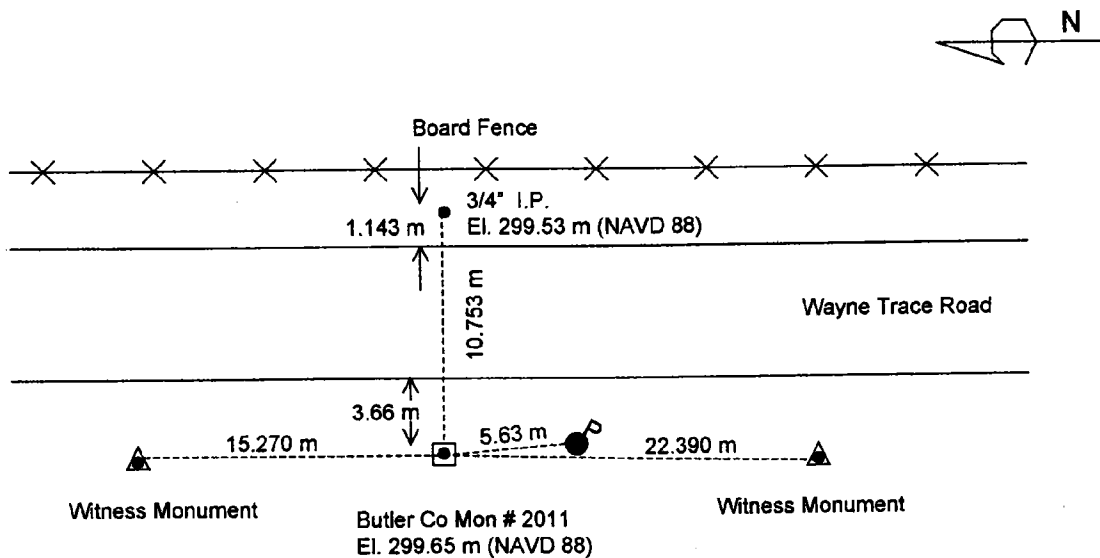
is N/A

Distance is N/A

MONUMENT DESCRIPTION:

Concrete monument with brass disk marked "BUTLER COUNTY ENGINEER REF. MONUMENT", "2011" with center punch mark.

LOCATION SKETCH



Crop Field

This elevation arrived at using GPS methods.
The orthometric height may be off as much as
+/- 6 cm to 10 cm based on NGS standards.

DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 7
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CONTROL MONUMENT RECORD

DATE: 4/9/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Franklin

SECTION: 7

TOWN: 2

RANGE: 5

COUNTY: Warren

STATE: Ohio

LOCATION: Monument located south of Montgomery County / Warren County line on Franklin Madison Rd, on east side of Franklin Madison Rd.

Monument No: 2017	State Plane Coordinates: Meters (NAD 83/86) NORTH 178089.980 EAST 439795.180	Latitude and Longitude: (NAD 83/86) LAT N 39° 35' 21.51458" LONG W 84° 21' 54.66750"
Elevation: Meters (NAVD 88) GPS 267.460		

Grid Scale Factor: 0.999942286

Convergence: -1° 11' 00.58771"

Azimuth to N/A

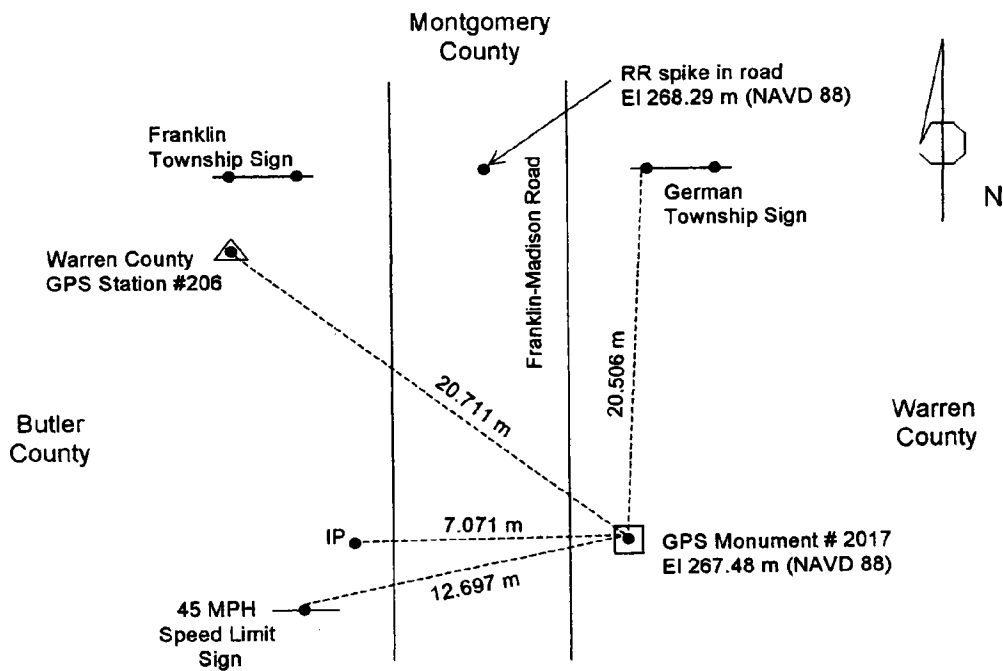
is N/A

Distance is N/A

MONUMENT DESCRIPTION:

Concrete monument with brass disk marked "BUTLER COUNTY ENGINEER REF. MONUMENT", "2017", with punch mark in center.

LOCATION SKETCH



DATA BY:
A. C. Balph Engr & Surv
1145 California Rd, Okeana,
OH 45053
513-756-9111

TYPE OF EQUIPMENT USED:
Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas

SHEET NO.
8

CONTROL MONUMENT RECORD

DATE: 4/8/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Wayne

SECTION: 32

TOWN: 3

RANGE: 3

COUNTY: Butler

STATE: Ohio

LOCATION: Monument is located on north east corner of intersection of Wayne Trace Road and US 127.

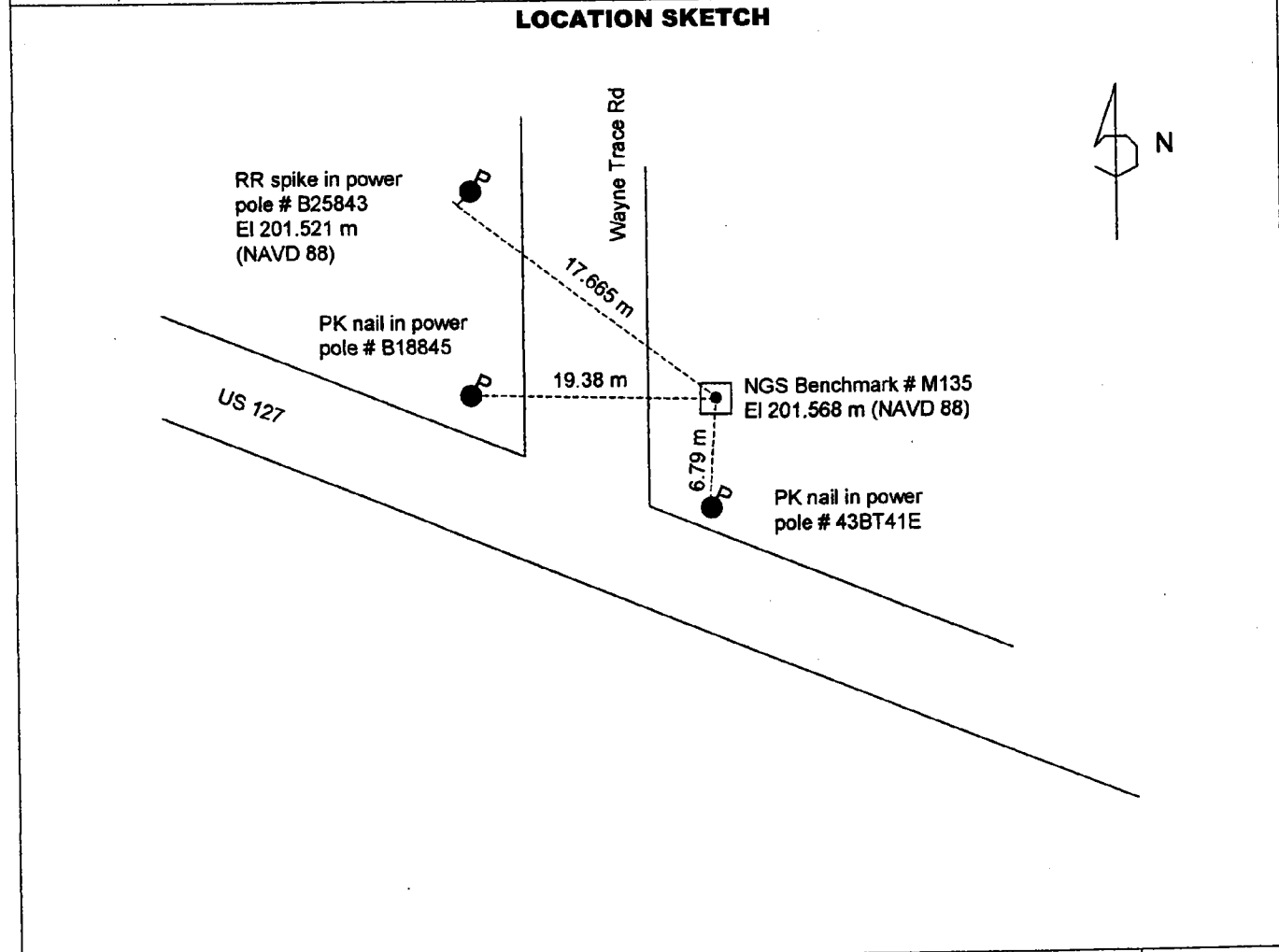
Monument No: M135	State Plane Coordinates: Meters (NAD 83/86) NORTH 167615.747 EAST 422458.201	Latitude and Longitude: (NAD 83/86) LAT N 39° 29' 29.71755" LONG W 84° 33' 51.03772"
Elevation: Meters (NAVD 88) 201.568		

Grid Scale Factor: 0.999937653	Convergence: -1° 18' 35.13861"
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Azimuth to N/A	is N/A	Distance is N/A
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MONUMENT DESCRIPTION:

Concrete monument with brass disk stamped "NATIONAL GEODETIC SURVEY BENCHMARK", "M135", "1947", with "+" mark in center.



DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 9
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CONTROL MONUMENT RECORD

DATE: 4/8/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Wayne

SECTION: 8

TOWN: 5

RANGE: 3

COUNTY: Butler

STATE: Ohio

LOCATION: Monument is located southwest of intersection of SR 503 and SR 744.

Monument No: V135	State Plane Coordinates: Meters (NAD 83/86) NORTH 173750.045 EAST 423516.072	Latitude and Longitude: (NAD 83/86) LAT N 39° 32' 49.36476" LONG W 84° 33' 12.61358"
Elevation: Meters (NAVD 88) 297.037		

Grid Scale Factor: 0.999939926

Convergence: -1° 18' 10.75774

Azimuth to N/A

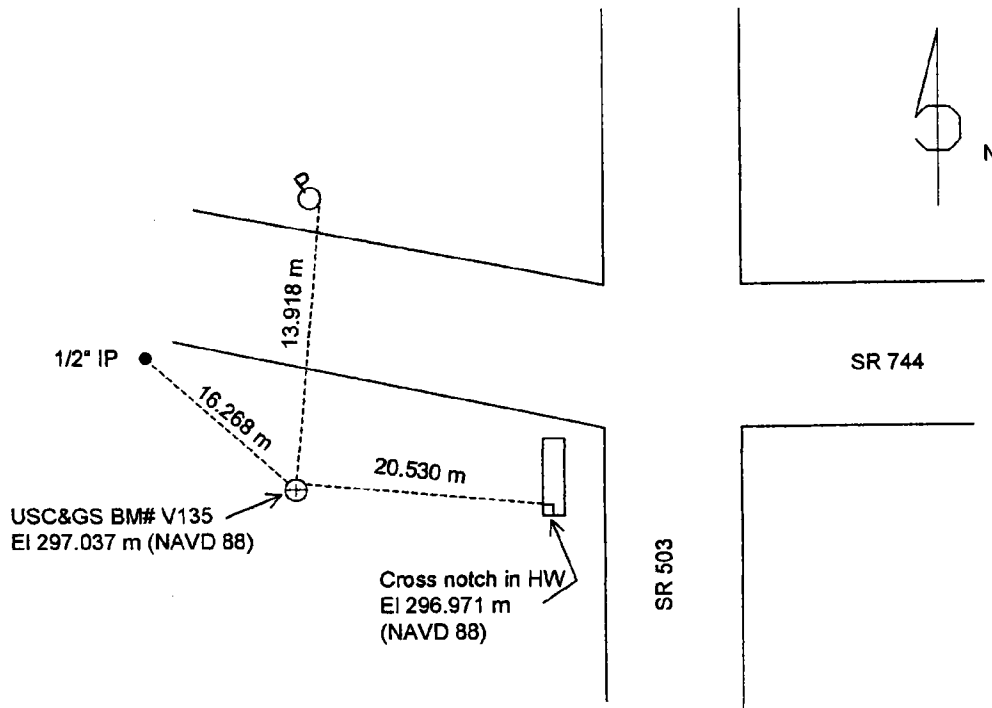
is N/A

Distance is N/A

MONUMENT DESCRIPTION:

Concrete monument with brass disk.. Disk is marked "US COAST & GEODETIC SURVEY BENCH MARK", "V135", "1947", and has cross mark "+" in center.

LOCATION SKETCH



DATA BY:
A. C. Balph Engr & Surv
1145 California Rd, Okeana,
OH 45053
513-756-9111

TYPE OF EQUIPMENT USED:
Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas

SHEET NO.
10

CONTROL MONUMENT RECORD

DATE: 4/8/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Madison

SECTION: 26

TOWN: 1

RANGE: 4

COUNTY: Butler

STATE: Ohio

LOCATION: Middletown Germantown Road, south of Butler County / Montgomery County line. Monument is located on west side of Middletown Germantown Road.

Monument No: W136	State Plane Coordinates: Meters (NAD 83/86) NORTH 178114.713 EAST 438203.422	Latitude and Longitude: (NAD 83/86) LAT N 39° 35' 21.24505" LONG W 84° 23' 01.38523"
Elevation: Meters (NAVD 88) 265.198		

Grid Scale Factor: 0.999942281

Convergence: -1° 11' 42.92141"

Azimuth to N/A

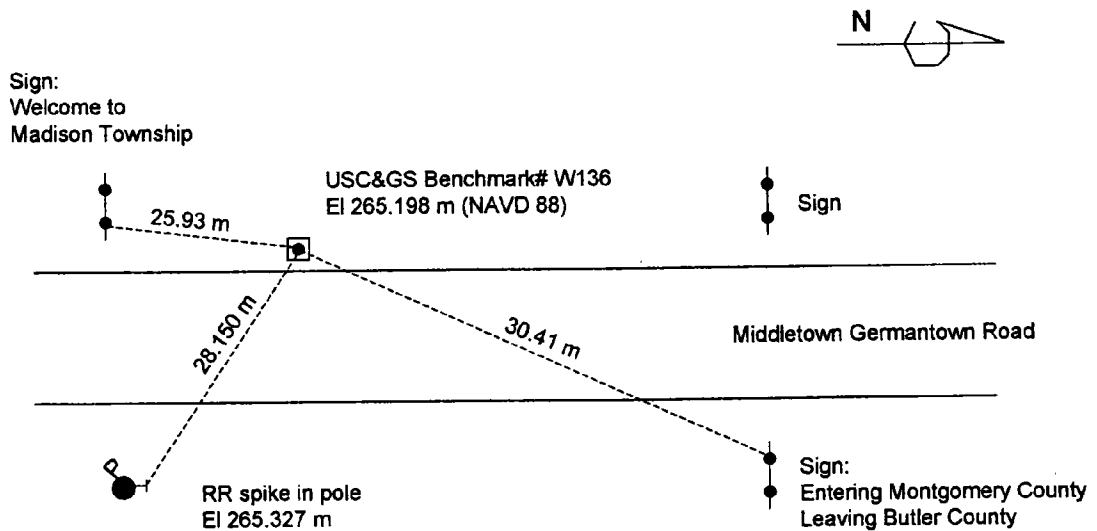
is N/A

Distance is N/A

MONUMENT DESCRIPTION:

Concrete monument with USC&GS disk stamped "U.S. COAST & GEODETIC SURVEY BENCHMARK", "W136", "1947" with "+" mark in center.

LOCATION SKETCH



DATA BY:
A. C. Balph Engr & Surv
1145 California Rd, Okeana,
OH 45053
513-756-9111

TYPE OF EQUIPMENT USED:
Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas

SHEET NO.
11

CONTROL MONUMENT RECORD

DATE: 4/8/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** St. Clair

SECTION: 12

TOWN: 2

RANGE: 3

COUNTY: Butler

STATE: Ohio

LOCATION: Beginning at intersection of Riverside Rd and Trenton Rd, thence northeast on Riverside approximately 129 m. Monument is on east side of Riverside Road, between road and train tracks, marked by survey marker signpost.

Monument No: Y139	State Plane Coordinates: Meters (NAD 83/86) NORTH 164594.127 EAST 429162.487	Latitude and Longitude: (NAD 83/86) LAT N 39° 27' 56.63386" LONG W 84° 29' 07.74071"
Elevation: Meters (NAVD 88) 196.077		

Grid Scale Factor: 0.999936912

Convergence: -1° 15' 35.38112"

Azimuth to N/A

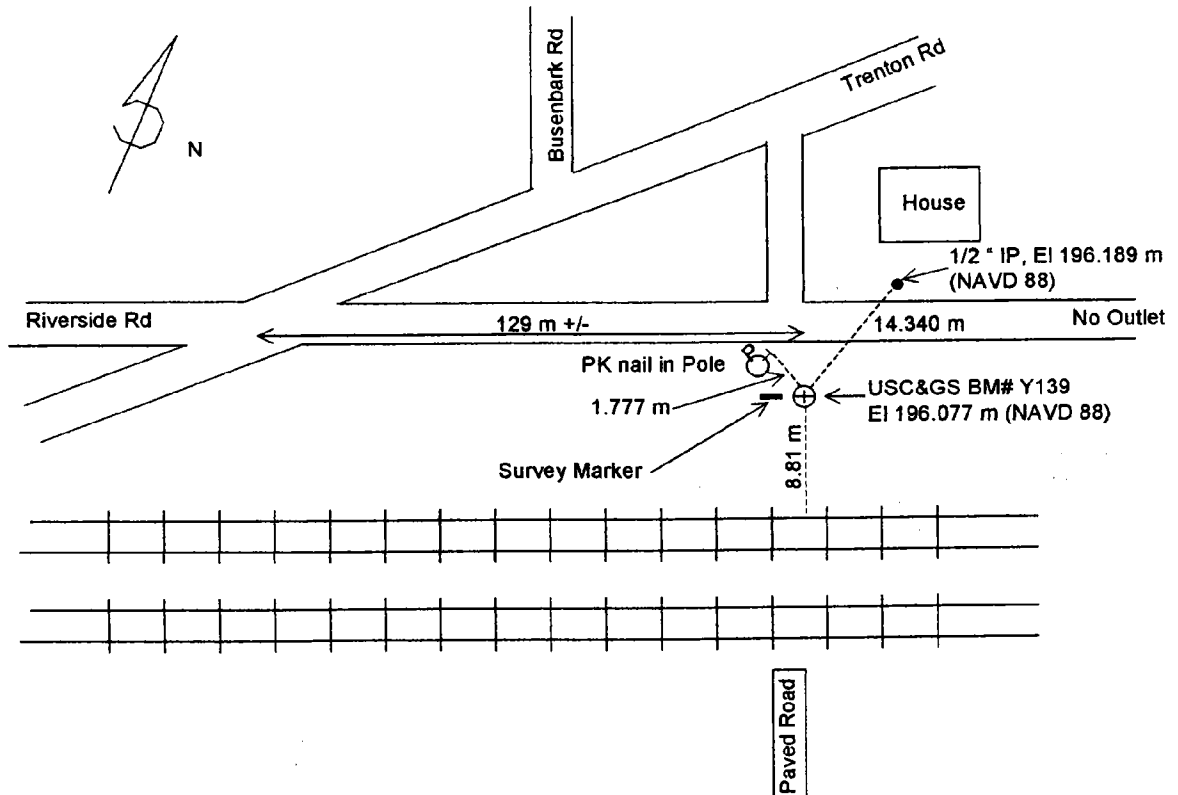
is N/A

Distance is N/A

MONUMENT DESCRIPTION:

Concrete monument with brass disk.. Disk is marked "US COAST & GEODETIC SURVEY BENCH MARK". "ELEV FEET ABOVE MEAN SEA LEVEL". "Y139", "1947", and has cross mark "+" in center.

LOCATION SKETCH



DATA BY:
A. C. Balph Engr & Surv
1145 California Rd, Okeana,
OH 45053
513-756-9111

TYPE OF EQUIPMENT USED:
Trimble 4000SE and 4400 GPS receivers with compact dome and
compact L1/L2 antennas

**SHEET
NO.
12**

CONTROL MONUMENT RECORD

DATE: 4/6/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Morgan

SECTION: 31

TOWN: 3

RANGE: 1

COUNTY: Butler

STATE: Ohio

LOCATION: Monument located near 7938 Bay Rd, north of Butler County/Hamilton County line.

Monument No: 99FC01	State Plane Coordinates: Meters (NAD 83/86) NORTH 147664.827 EAST 400139.882	Latitude and Longitude: (NAD 83/86) LAT N 39° 18' 25.38585" LONG W 84° 49' 03.35814"
Elevation: Meters (NAVD 88) GPS 269.889		

Grid Scale Factor: 0.999936814

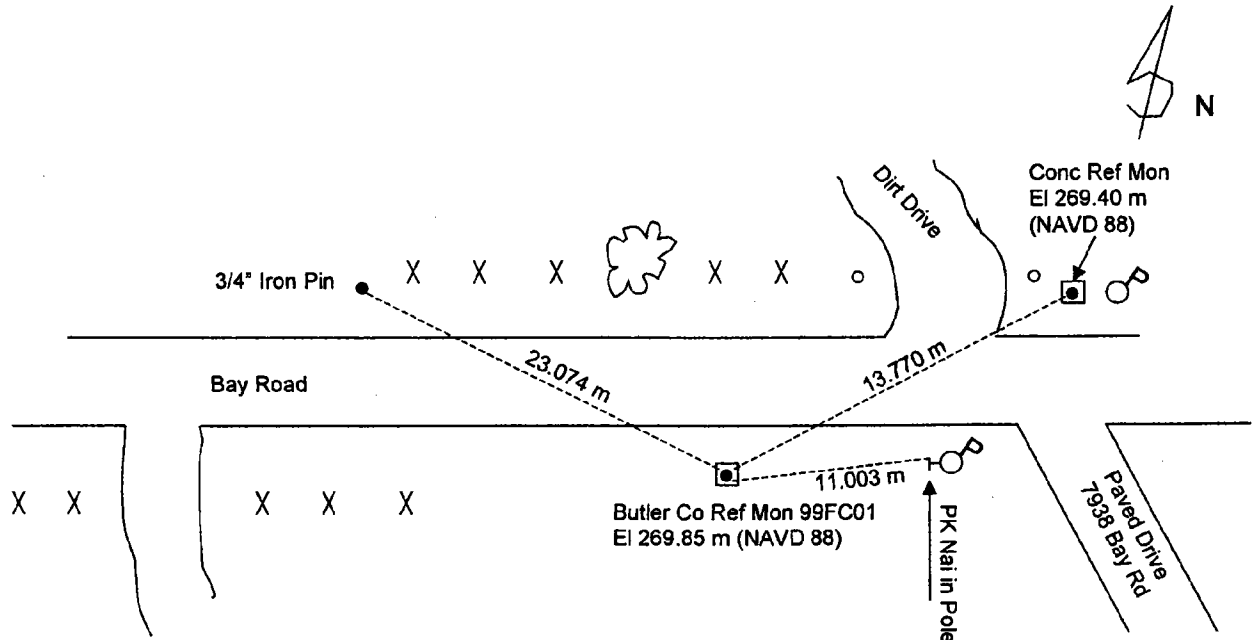
Convergence: -1° 28' 14.02374"

Azimuth to N/A **is** N/A **Distance is** N/A

MONUMENT DESCRIPTION:

Butler County Monument – ½” x 30” rebar in monument (not necessarily centered). Butler County disk marked “99FC01”, with center punch mark.

LOCATION SKETCH



This elevation arrived at using GPS methods.
The orthometric height may be off as much as
+/- 6 cm to 10 cm based on NGS standards.

DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 13
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CONTROL MONUMENT RECORD

DATE: 4/6/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Morgan

SECTION: 22

TOWN: 3

RANGE: 1

COUNTY: Butler

STATE: Ohio

LOCATION: Monument is located northeast of intersection of SR 126 and Chapel Rd.

Monument No: 99FC02	State Plane Coordinates: Meters (NAD 83/86) NORTH 150880.572 EAST 406894.292	Latitude and Longitude: (NAD 83/86) LAT N 39° 20' 15.16071" LONG W 84° 44' 24.83611"
Elevation: Meters (NAVD 88) GPS 226.546		

Grid Scale Factor: 0.999936240

Convergence: -1° 25' 17.29607"

Azimuth to 99FC03

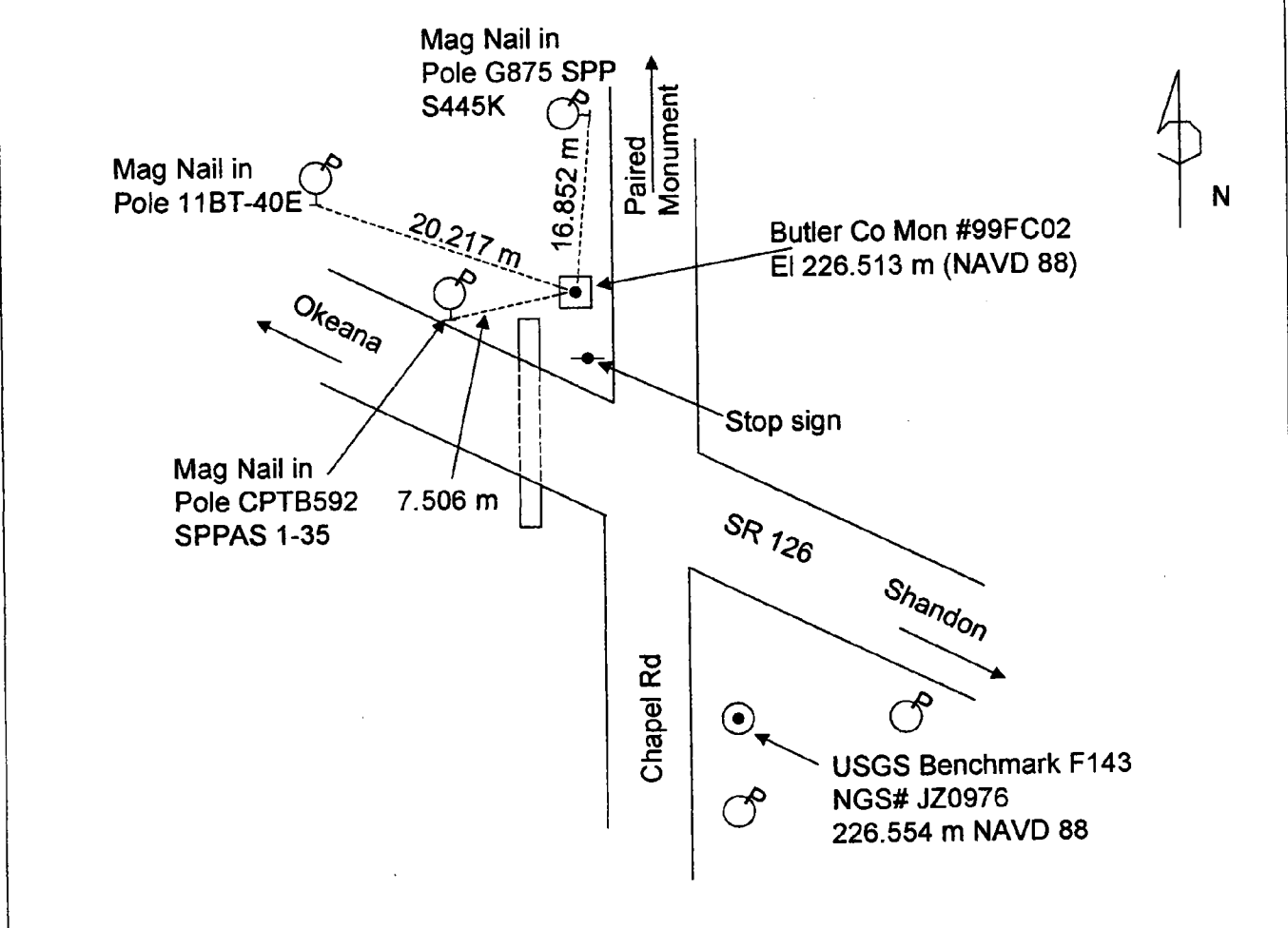
is 3° 42' 17" (grid)

Distance is 488.855 m

MONUMENT DESCRIPTION:

Butler County monument – ½" x 30" rebar in monument (not necessarily centered). Butler County brass disk marked "99FC02" with center punch mark.

LOCATION SKETCH



DATA BY:
A. C. Balph Engr & Surv
1145 California Rd, Okeana,
OH 45053
513-756-9111

TYPE OF EQUIPEMENT USED:
Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas

SHEET NO.
14

CONTROL MONUMENT RECORD

DATE: 4/6/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Morgan

SECTION: 22

TOWN: 3

RANGE: 1

COUNTY: Butler

STATE: Ohio

LOCATION: Beginning at intersection of SR 126 and Chapel Rd, thence north 320 m +/- . Monument is on east side of Chapel Rd.

Monument No: 99FC03	State Plane Coordinates: Meters (NAD 83/86) NORTH 151368.406 EAST 406925.881	Latitude and Longitude: (NAD 83/86) LAT N 39° 20' 31.00076" LONG W 84° 44' 24.02271"
Elevation: Meters (NAVD 88) GPS 233.388		

Grid Scale Factor: 0.999936181

Convergence: -1° 25' 16.77995"

Azimuth to 99FC02

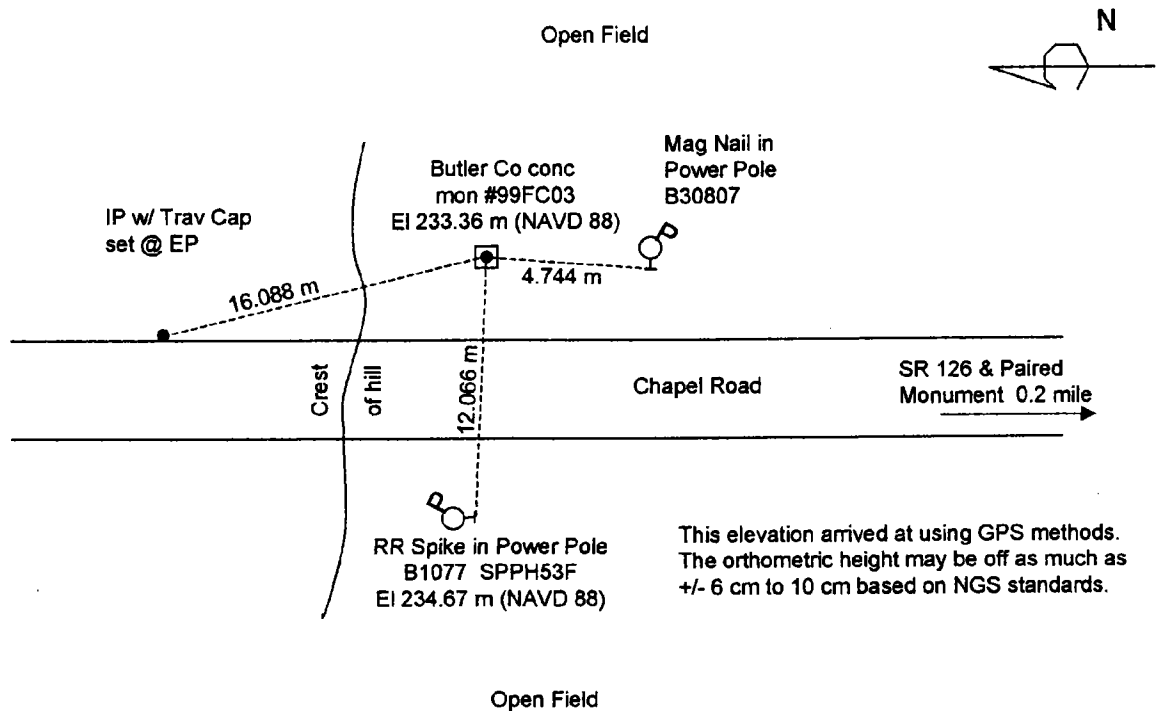
is 183° 42' 17" (grid)

Distance is 488.855 m

MONUMENT DESCRIPTION:

Butler County monument – ½" x 30" rebar in monument (not necessarily centered). Butler County brass disk marked "99FC03", with center punch mark.

LOCATION SKETCH



DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 15
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CONTROL MONUMENT RECORD

DATE: 4/6/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Reily

SECTION: 15

TOWN: 4

RANGE: 1

COUNTY: Butler

STATE: Ohio

LOCATION: Intersection of Stillwell Road and ST RT 732 in Reily, thence east on Stillwell Road to house #6011.

Monument No: 99FC04	State Plane Coordinates: Meters (NAD 83/86) NORTH 161715.004 EAST 405890.276	Latitude and Longitude: (NAD /8683) LAT N 39° 26' 05.57862" LONG W 84° 45' 18.04795"
Elevation: Meters (NAVD 88) GPS 252.380		

Grid Scale Factor: 0.999936295

Convergence: -1° 25' 51.06003"

Azimuth to 99FC05

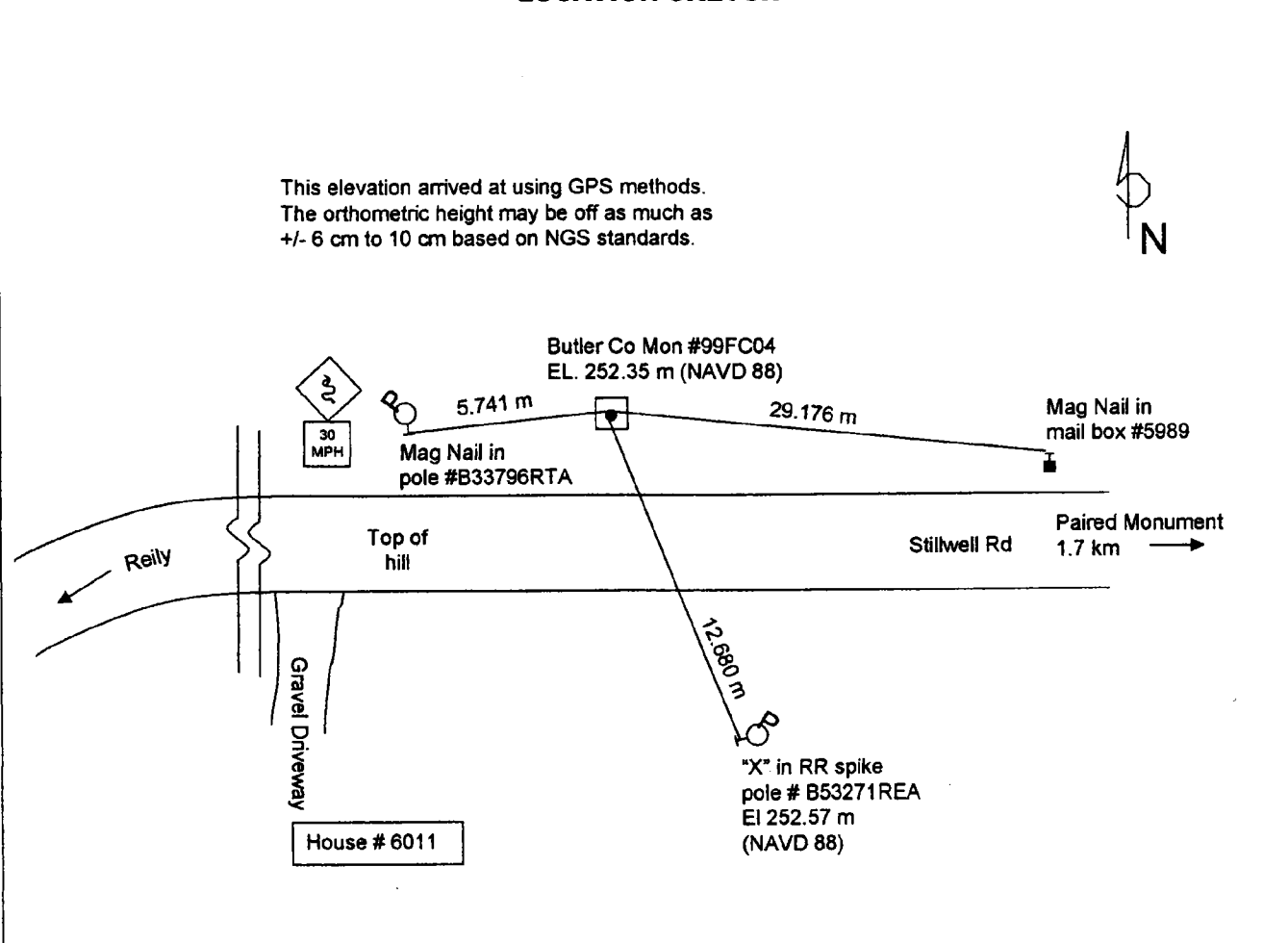
is 91° 34' 10" (grid)

Distance is 1704.335 m

MONUMENT DESCRIPTION:

Butler County monument – ½" x 30" rebar in monument (not necessarily centered). Butler County brass disk marked "99FC04", with center punch mark.

LOCATION SKETCH



DATA BY:
A. C. Balph Engr & Surv
1145 California Rd, Okeana,
OH 45053
513-756-9111

TYPE OF EQUIPMENT USED:
Trimble 4000SE and 4400 GPS receivers with compact dome and
compact L1/L2 antennas

SHEET NO.
16

CONTROL MONUMENT RECORD

DATE: 4/6/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Reily

SECTION: 14

TOWN: 4

RANGE: 1

COUNTY: Butler

STATE: Ohio

LOCATION: Intersection of ST RT 732 and Stillwell Road, Reily. Thence east on Stillwell Road to House #5409, monument is on the north side of Stillwell Road.

Monument No: 99FC05	State Plane Coordinates: Meters (NAD 83/86) NORTH 161668.324 EAST 407593.973	Latitude and Longitude: (NAD 83/86) LAT N 39° 26' 05.43887" LONG W 84° 44' 06.77697"
Elevation: Meters (NAVD 88) GPS 257.980		

Grid Scale Factor: 0.999936294

Convergence: -1° 25' 05.83719"

Azimuth to 99FC04

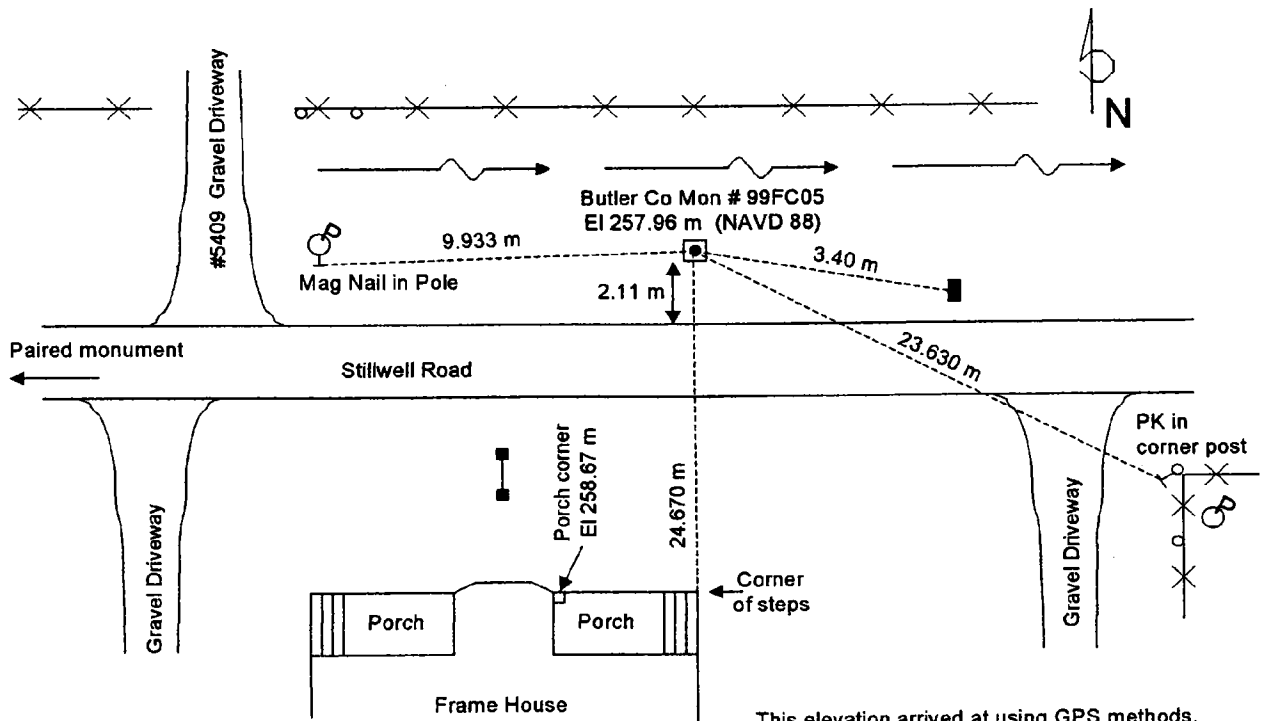
is 271° 34' 10" (grid)

Distance is 1704.335 m

MONUMENT DESCRIPTION:

Butler County monument – ½" x 30" rebar in monument (not necessarily centered). Butler County brass disk marked "99FC05", with center punch mark.

LOCATION SKETCH



DATA BY:
A. C. Balph Engr & Surv
1145 California Rd, Okeana,
OH 45053
513-756-9111

TYPE OF EQUIPMENT USED:
Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas

SHEET NO.
17

CONTROL MONUMENT RECORD

DATE: 4/6/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Oxford

SECTION: 15

TOWN: 5

RANGE: 1

COUNTY: Butler

STATE: Ohio

LOCATION: Brown Road north out of Oxford to house #5775, thence north 51.5 m to monument, located on west side of Brown Road.

Monument No: 99FC06	State Plane Coordinates: Meters (NAD 83/86) NORTH 172488.589 EAST 406412.522	Latitude and Longitude: (NAD 83/86) LAT N 39° 31' 55.25004" LONG W 84° 45' 07.45082"
Elevation: Meters (NAVD 88) GPS 291.935		

Grid Scale Factor: 0.999939217

Convergence: -1° 25' 44.33594"

Azimuth to 99FC07

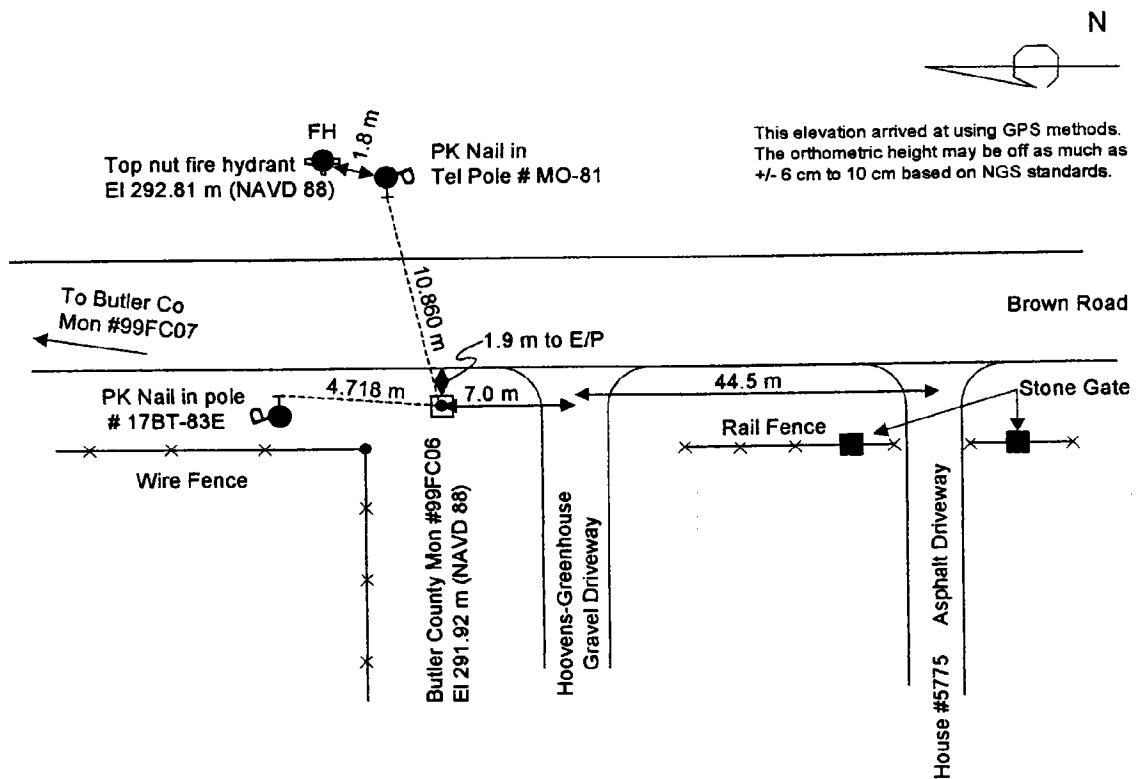
is 3° 56' 52" (grid)

Distance is 396.396 m

MONUMENT DESCRIPTION:

Butler County Monument - ½" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC06", with center punch mark

LOCATION SKETCH



This elevation arrived at using GPS methods. The orthometric height may be off as much as +/- 6 cm to 10 cm based on NGS standards.

DATA BY:
A. C. Balph Engr & Surv
1145 California Rd, Okeana,
OH 45053
513-756-9111

TYPE OF EQUIPMENT USED:
Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas

SHEET NO.
18

CONTROL MONUMENT RECORD

DATE: 4/7/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Oxford

SECTION: 15

TOWN: 5

RANGE: 1

COUNTY: Butler

STATE: Ohio

LOCATION: Brown Road north out of Oxford, to house #5954, thence south 12.5 m to monument, located east of Brown Road.

Monument No: 99FC07	State Plane Coordinates: Meters (NAD 83/86) NORTH 172884.044 EAST 406439.812	Latitude and Longitude: (NAD 83/86) LAT N 39° 32' 08.09150" LONG W 84° 45' 06.72133"
Elevation: Meters (NAVD 88) GPS 293.681		

Grid Scale Factor: 0.999939379

Convergence: -1° 25' 43.87306"

Azimuth to 99FC06

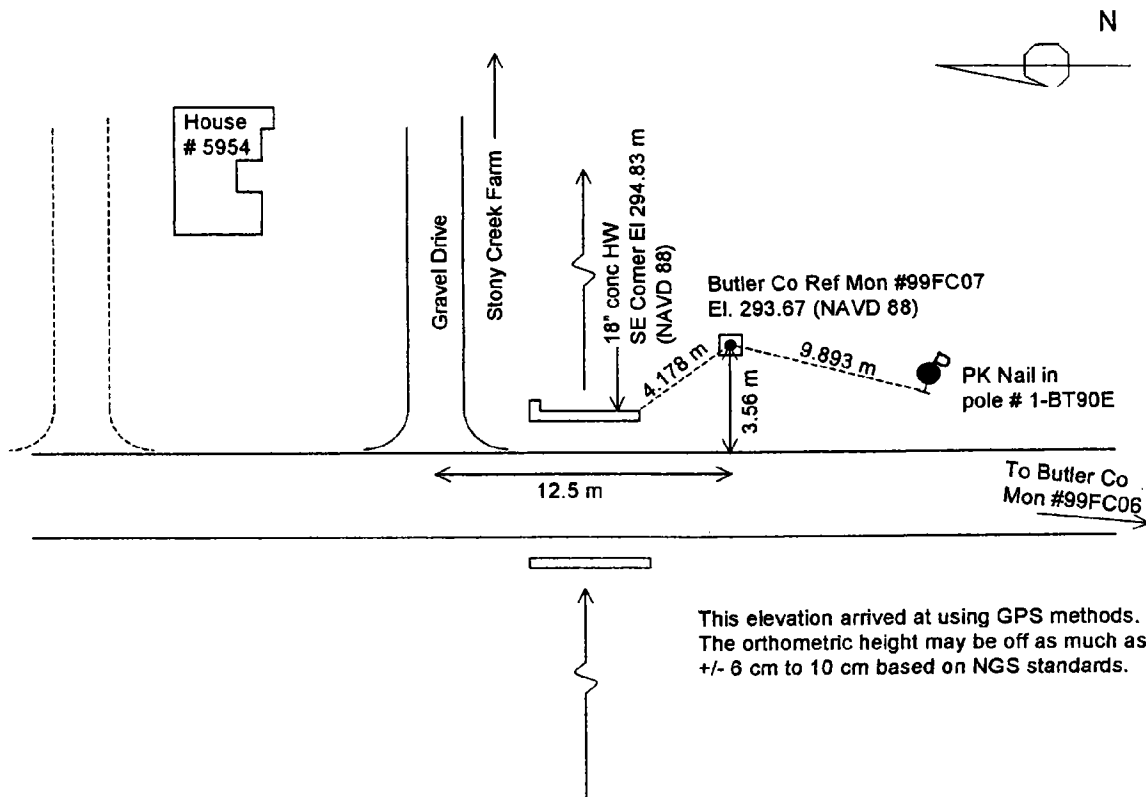
is 183° 56' 52" (grid)

Distance is 396.396 m

MONUMENT DESCRIPTION:

Butler County Monument – ½" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC07", with center punch mark

LOCATION SKETCH



DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 19
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CONTROL MONUMENT RECORD

DATE: 4/7/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Hanover

SECTION: 16

TOWN: 4

RANGE: 2

COUNTY: Butler

STATE: Ohio

LOCATION: Intersection of Morman Road and Old Oxford Road, thence west on Old Oxford Road approximately 1130 m +/- to house #2991. Approximately 28.6 m east from west headwall to monument on south side of Old Oxford Road.

Monument No: 99FC08	State Plane Coordinates: Meters (NAD 83/86) NORTH 162006.778 EAST 414241.387	Latitude and Longitude: (NAD 83/86) LAT N 39° 26' 21.65421" LONG W 84° 39' 29.21573"
Elevation: Meters (NAVD 88) GPS 273.965		

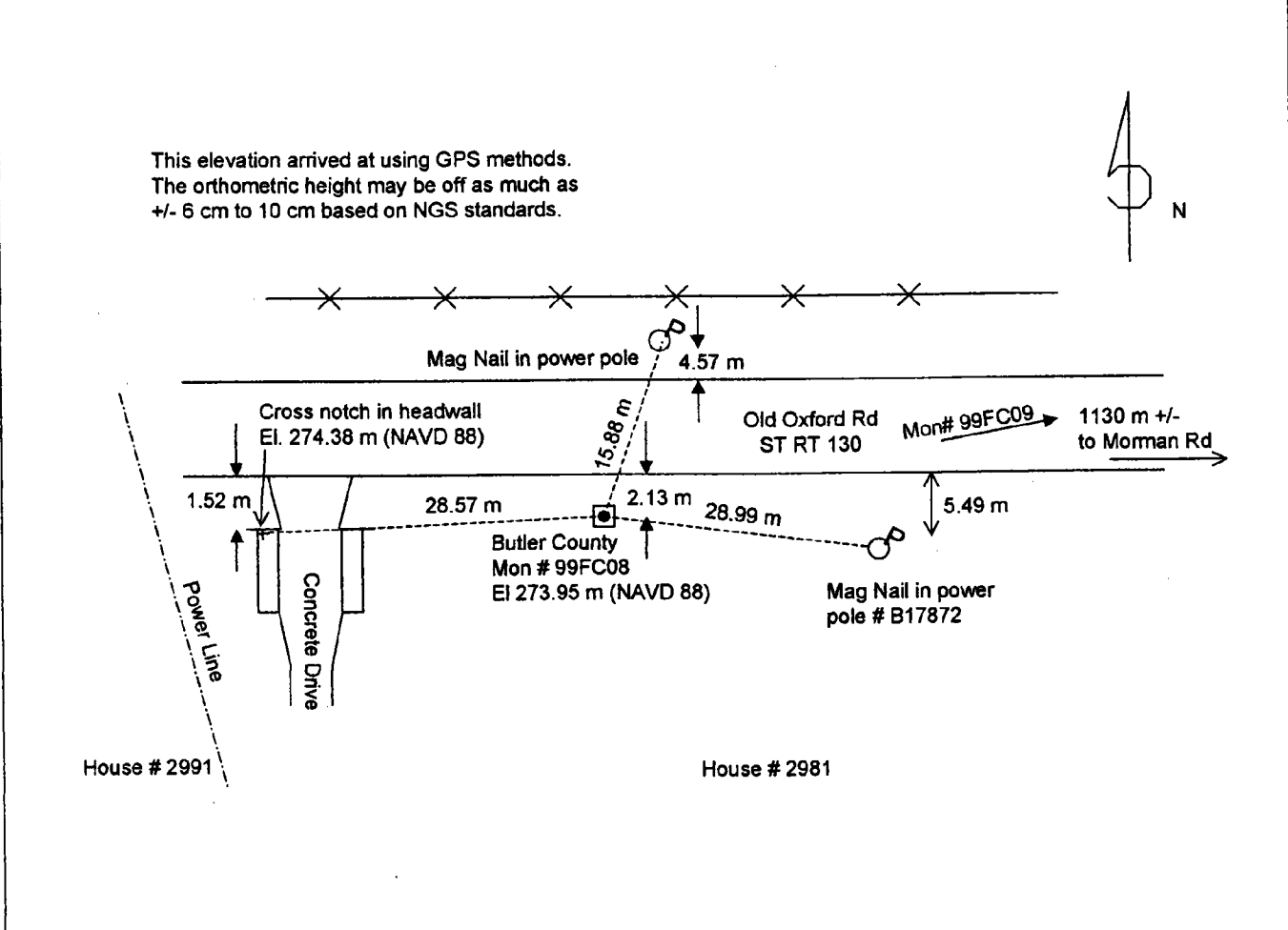
Grid Scale Factor: 0.999936366 **Convergence:** -1° 22' 09.71916"

Azimuth to 99FC09 is 109° 40' 11" (grid) Distance is 425.646 m

MONUMENT DESCRIPTION:

Butler County Monument – ½" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC08", with center punch mark

LOCATION SKETCH



DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 20
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CONTROL MONUMENT RECORD

DATE: 4/7/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Hanover

SECTION: 16

TOWN: 4

RANGE: 2

COUNTY: Butler

STATE: Ohio

LOCATION: Intersection of Morman Road and Old Oxford Road, thence west on Old Oxford Road 666 m +/- . Monument is on the north side of Old Oxford Road.

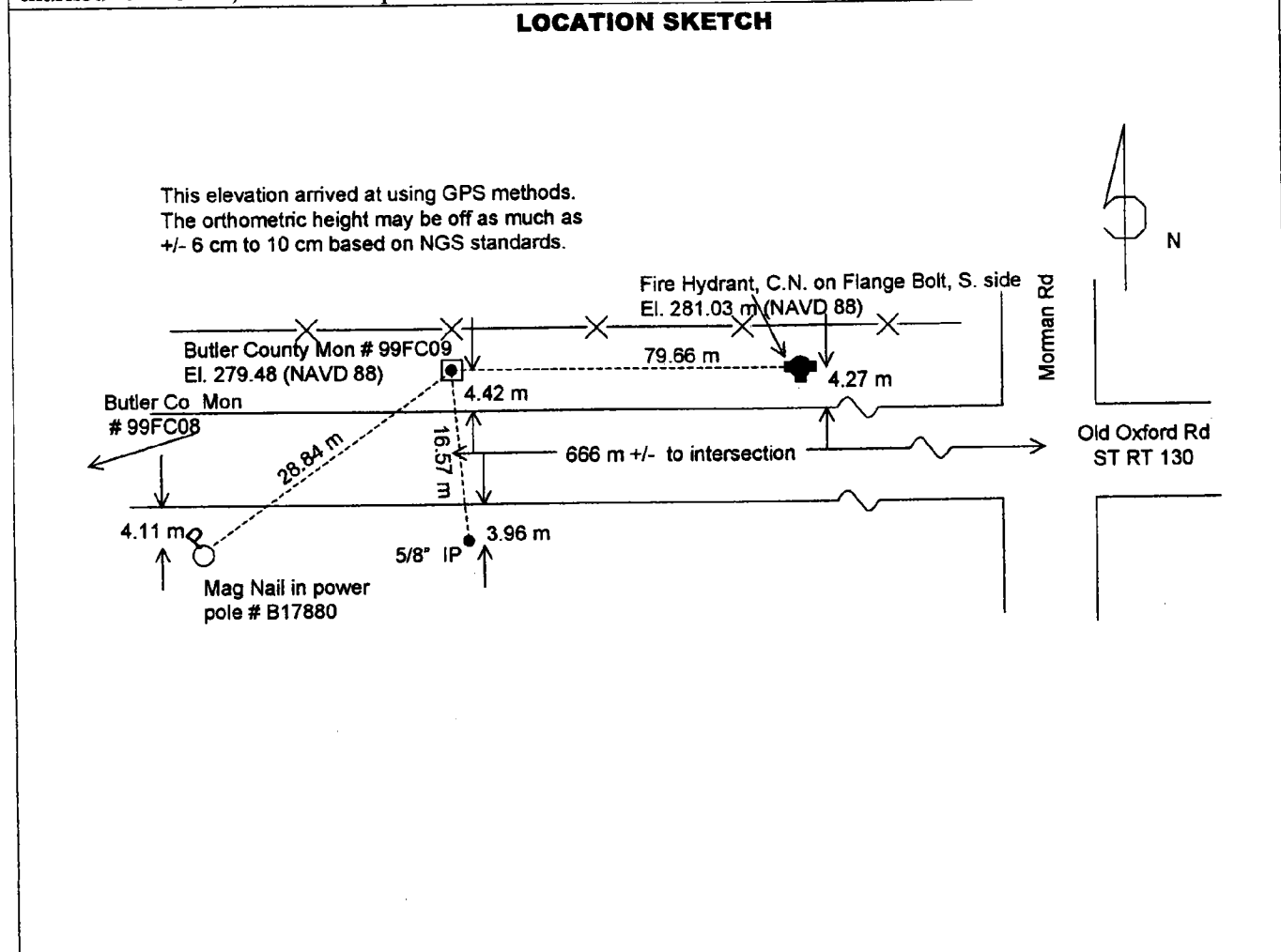
Monument No: 99FC09	State Plane Coordinates: Meters (NAD 83/86) NORTH 161863.506 EAST 414642.196	Latitude and Longitude: (NAD 83/86) LAT N 39° 26' 17.31984" LONG W 84° 39' 12.31569"
Elevation: Meters (NAVD 88) GPS 279.489		

Grid Scale Factor: 0.999936347	Convergence: -1° 21' 58.99576"
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Azimuth to 99FC08	is 289° 40' 11" (grid)	Distance is 425.646 m
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MONUMENT DESCRIPTION:

Butler County Monument – ½" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC09", with center punch mark



DATA BY:
A. C. Balph Engr & Surv
1145 California Rd, Okeana,
OH 45053
513-756-9111

TYPE OF EQUIPMENT USED:

Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas

SHEET NO.
21

CONTROL MONUMENT RECORD

DATE: 4/7/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Milford

SECTION: 21

TOWN: 5

RANGE: 2

COUNTY: Butler

STATE: Ohio

LOCATION: Intersection of SR 177 and Harris Rd, thence east 1.7 km +/- to house # 2322, thence 76 m east to monument located on south side of Harris Rd.

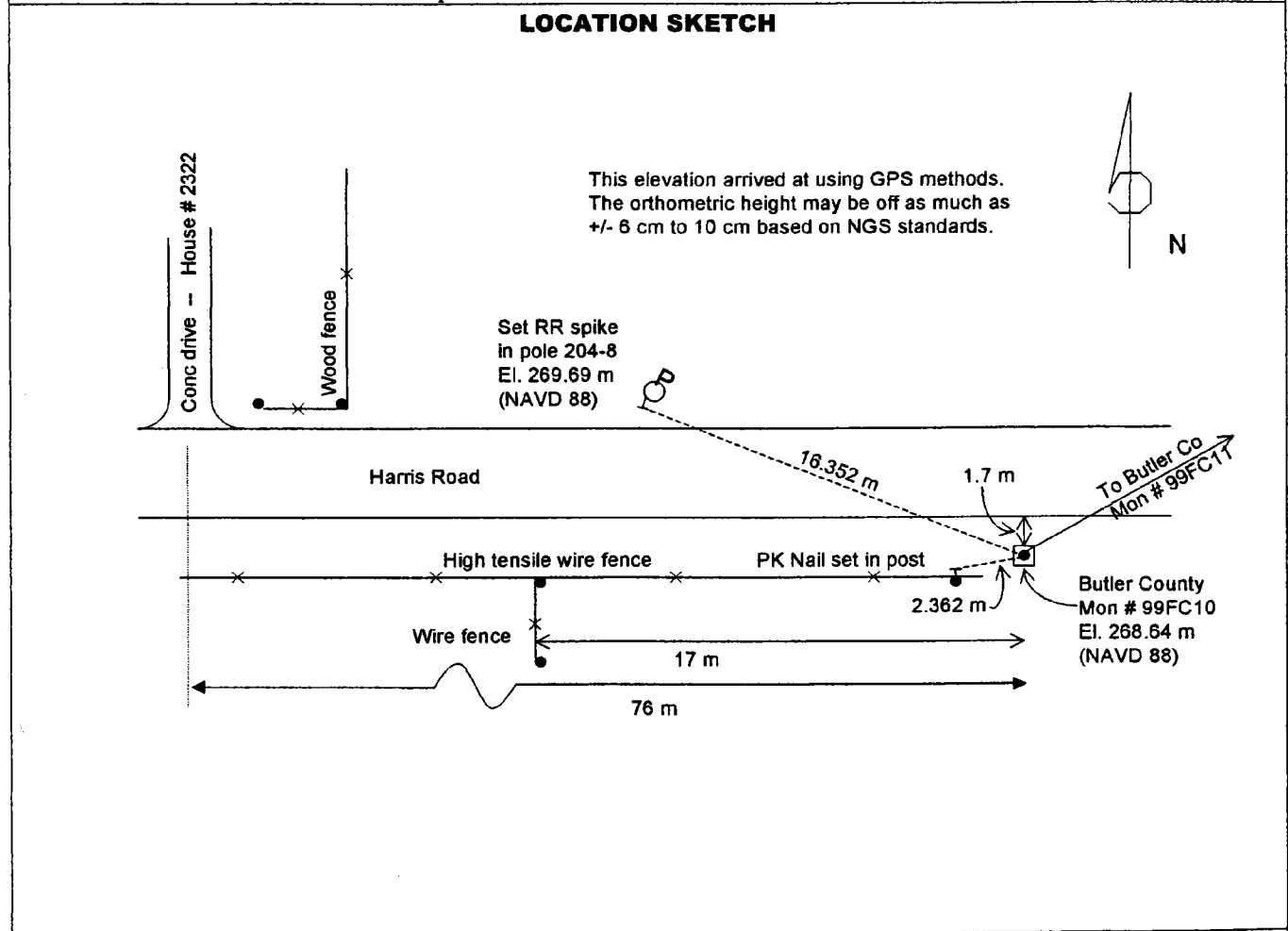
Monument No: 99FC10	State Plane Coordinates: Meters (NAD 83/86) NORTH 171269.906 EAST 416192.331	Latitude and Longitude: (NAD 83/86) LAT N 39° 31' 23.45182" LONG W 84° 38' 16.82100"
Elevation: Meters (NAVD 88) GPS 268.636		

Grid Scale Factor: 0.999938833	Convergence: -1° 21' 23.78330"
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Azimuth to 99FC11 is 90° 24' 35" (grid)	Distance is 556.041 m
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MONUMENT DESCRIPTION:

Butler County monument – ½" x 30" rebar in monument (not necessarily centered). Butler County brass disk marked "99FC10", with center punch mark.



DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 22
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CONTROL MONUMENT RECORD

DATE: 4/8/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Milford

SECTION: 15

TOWN: 5

RANGE: 2

COUNTY: Butler

STATE: Ohio

LOCATION: Intersection of ST RT 177 and Harris Rd., thence east on Harris Rd 2.2 km +/- to house # 2151, thence 63.4 m from center line of driveway to monument, located on north side of Harris Rd.

Monument No: 99FC11	State Plane Coordinates: Meters (NAD 83/86) NORTH 171265.930 EAST 416748.358	Latitude and Longitude: (NAD 83/86) LAT N 39° 31' 23.74915" LONG W 84° 37' 53.54248"
Elevation: Meters (NAVD 88) GPS 258.314		

Grid Scale Factor: 0.999938836

Convergence: -1° 21' 09.01262"

Azimuth to 99FC10

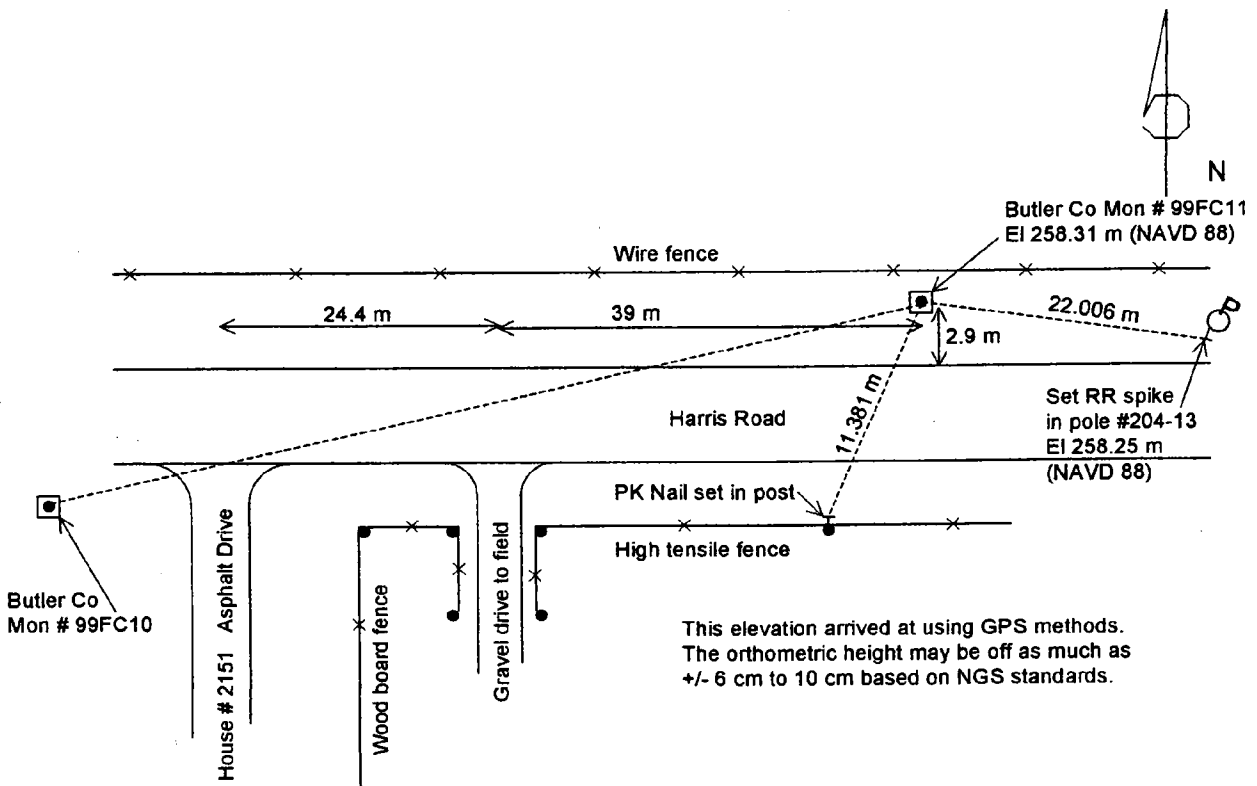
is 270° 24' 35" (grid)

Distance is 556.041 m

MONUMENT DESCRIPTION:

Butler County monument – ½" x 30" rebar in monument (not necessarily centered). Butler County brass disk marked "99FC11", with center punch mark.

LOCATION SKETCH



DATA BY:
A. C. Balph Engr & Surv
1145 California Rd, Okeana,
OH 45053
513-756-9111

TYPE OF EQUIPMENT USED:
Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas

SHEET NO.
23

CONTROL MONUMENT RECORD

DATE: 4/8/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Wayne

SECTION: 16

TOWN: 3

RANGE: 3

COUNTY: Butler

STATE: Ohio

LOCATION: Centerline of intersection of Cotton Run Rd and Tolbert Rd, thence west 247.8 m. Monument is located on north side of Tolbert Rd.

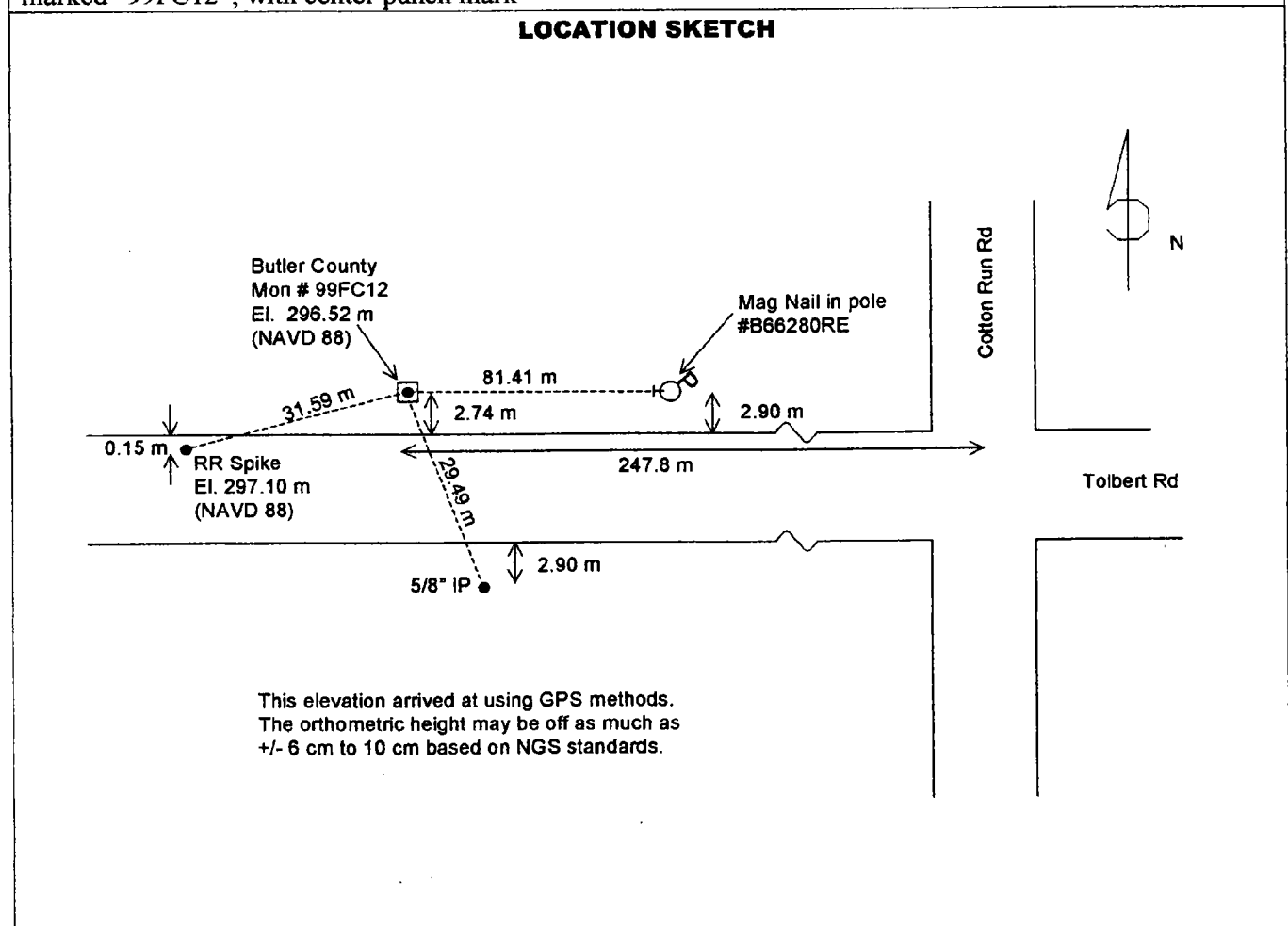
Monument No: 99FC12	State Plane Coordinates: Meters (NAD 83/86) NORTH 171141.481 EAST 424880.671	Latitude and Longitude: (NAD 83/86) LAT N 39° 31' 25.80102" LONG W 84° 32' 13.00787"
Elevation: Meters (NAVD 88) GPS 296.505		

Grid Scale Factor: 0.999938861	Convergence: -1° 17' 32.93676"
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Azimuth to 99FC13	is 90° 48' 42" (grid)	Distance is 443.806 m
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MONUMENT DESCRIPTION:

Butler County Monument – ½" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC12", with center punch mark



DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 24
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CONTROL MONUMENT RECORD

DATE: 4/7/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Wayne

SECTION: 15

TOWN: 3

RANGE: 3

COUNTY: Butler

STATE: Ohio

LOCATION: Centerline of intersection of Cotton Run Rd and Tolbert Rd, thence east on Tolbert Rd for 196.3 m +/- . Monument is on north side of Tolbert Rd.

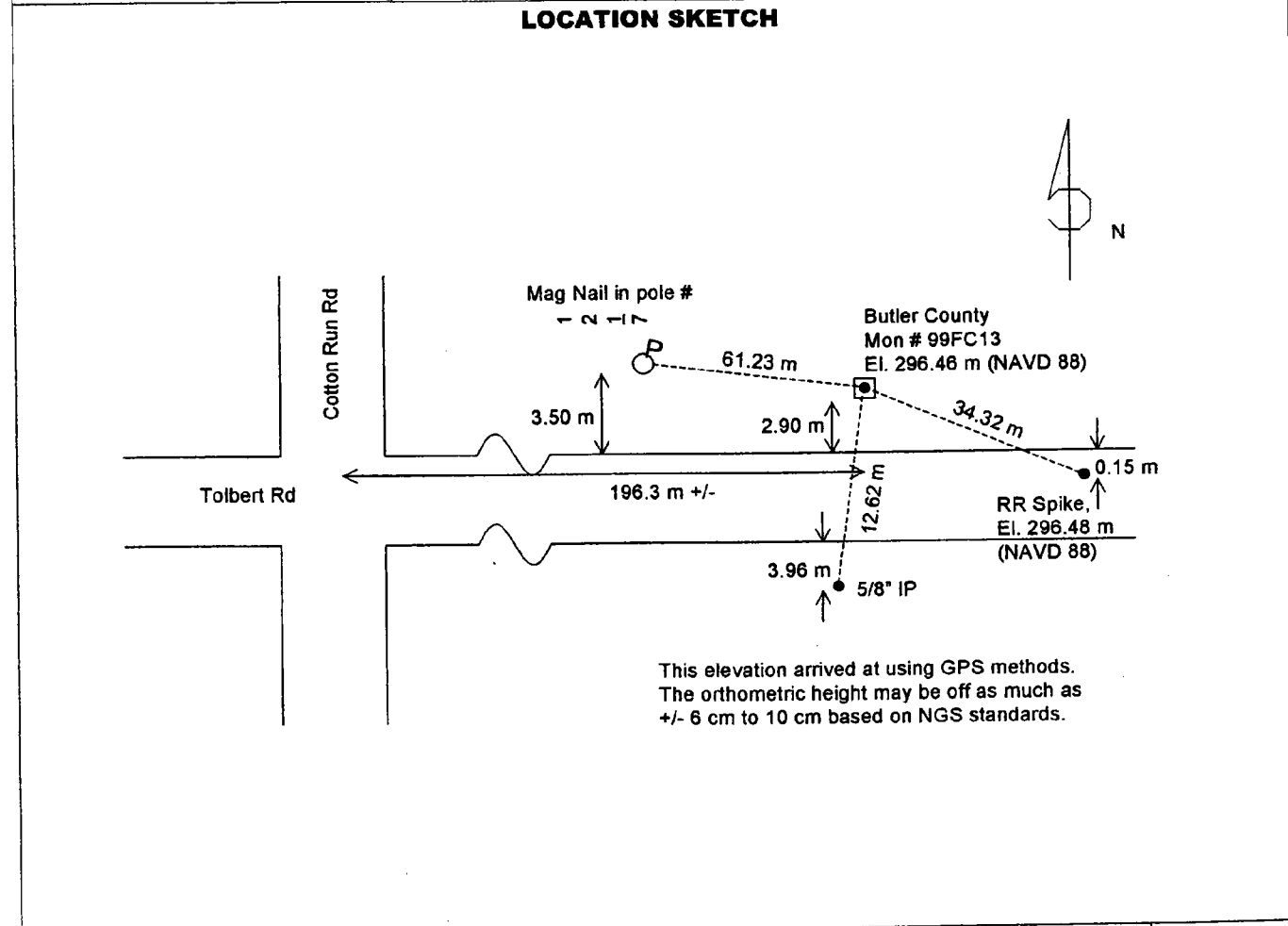
Monument No: 99FC13	State Plane Coordinates: Meters (NAD 83/86) NORTH 171135.194 EAST 425324.432	Latitude and Longitude: (NAD 83/86) LAT N 39° 31' 25.92137" LONG W 84° 31' 54.42601"
Elevation: Meters (NAVD 88) GPS 296.451		

Grid Scale Factor: 0.999938862 **Convergence:** -1° 17' 21.14620"

Azimuth to 99FC12 is 270° 48' 42" (grid) **Distance is** 443.806 m

MONUMENT DESCRIPTION:

Butler County Monument – ½" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC13", with center punch mark



DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 25
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CONTROL MONUMENT RECORD

DATE: 4/8/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Wayne

SECTION: 1

TOWN: 3

RANGE: 3

COUNTY: Butler

STATE: Ohio

LOCATION: Intersection of ST RT 122 and Butler County / Preble County Line, thence south 400 m +/- to monument, located on west side of SR 122.

Monument No: 99FC14	State Plane Coordinates: Meters (NAD 83/86) NORTH 175533.760 EAST 428970.834	Latitude and Longitude: (NAD 83/86) LAT N 39° 33' 51.15081" LONG W 84° 29' 25.84479"
Elevation: Meters (NAVD 88) GPS 244.702		

Grid Scale Factor: 0.999940819

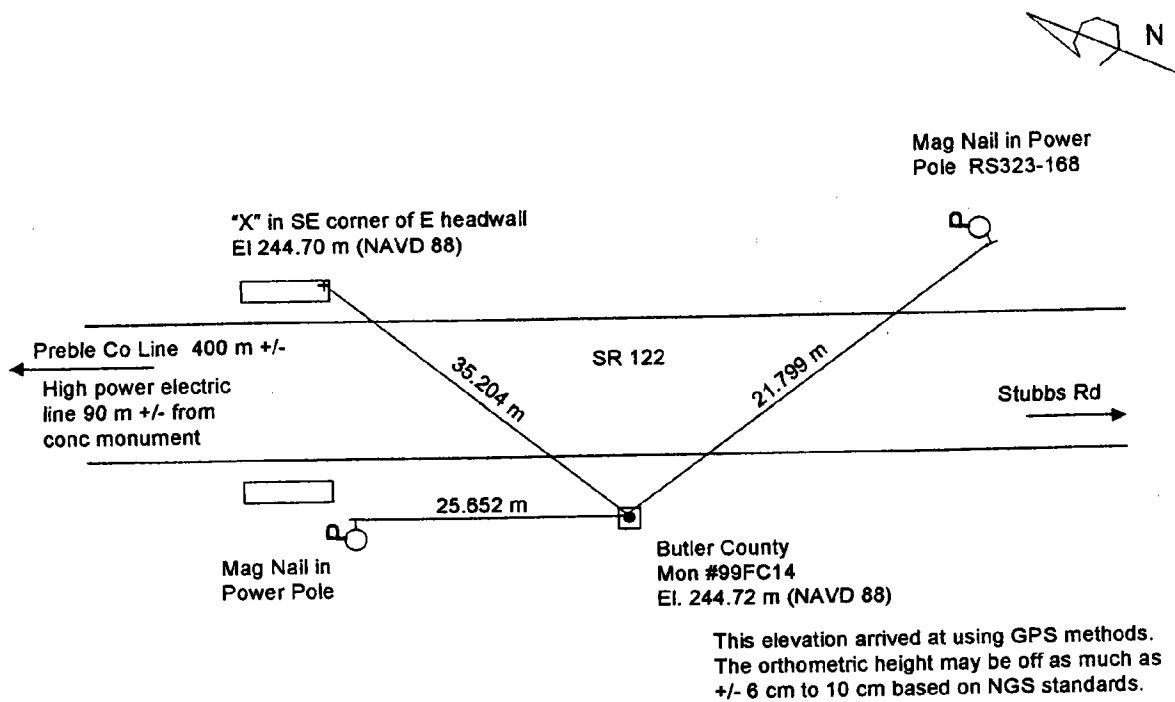
Convergence: -1° 15' 46.86852"

Azimuth to N/A **is** N/A **Distance is** N/A

MONUMENT DESCRIPTION:

Butler County Monument - 1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC14", with center punch mark

LOCATION SKETCH



DATA BY:
A. C. Balph Engr & Surv
1145 California Rd, Okeana,
OH 45053
513-756-9111

TYPE OF EQUIPMENT USED:
Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas

SHEET NO.
26

CONTROL MONUMENT RECORD

DATE: 4/12/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Gratis

SECTION: 25

TOWN: 4

RANGE: 3

COUNTY: Preble

STATE: Ohio

LOCATION: Located along the west side of Preble County Line Road, about 18 meters south of the Butler-Montgomery County Line.

Monument No: 99FC15	State Plane Coordinates: Meters (NAD 83/86) NORTH 178299.278 EAST 430000.903	Latitude and Longitude: (NAD 83/86) LAT N 39° 35' 21.53960" LONG W 84° 28' 45.23978"
Elevation: Meters (NAVD 88) GPS 300.144		

Grid Scale Factor: 0.999942286

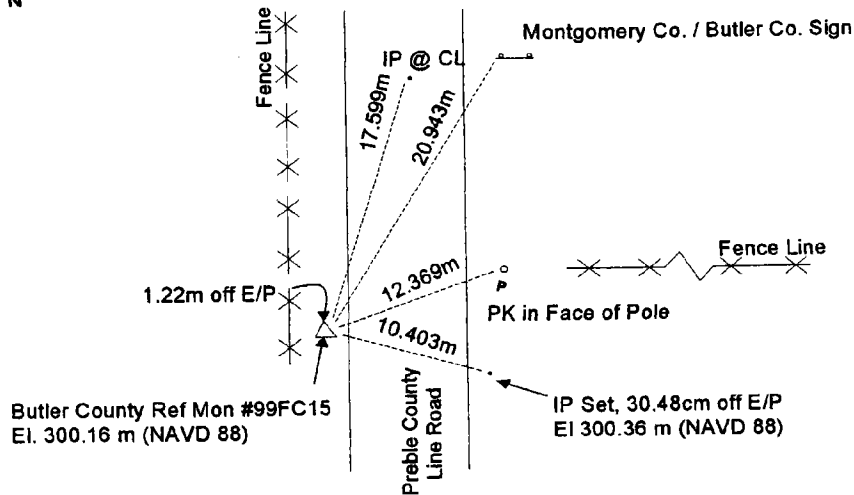
Convergence: -1° 15' 21.10384"

Azimuth to N/A **is** N/A **Distance is** N/A

MONUMENT DESCRIPTION:

Mark is a 8" diameter x 36" long concrete monument with brass disk "Butler County Engineers Ref. Monument" stamped "99FC15", and with 30" rebar in monument.

LOCATION SKETCH



This elevation arrived at using GPS methods.
The orthometric height may be off as much as
+/- 6 cm to 10 cm based on NGS standards.

DATA BY:
A. C. BALPH, ENG & SURV
1145 CALIFORNIA RD.
OKEANA, OH 45053
513-756-9111

TYPE OF EQUIPMENT USED:
Trimble 4400 receivers with compact L1/L2 antennas

**SHEET
NO.
27**

CONTROL MONUMENT RECORD

DATE: 4/12/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Madison

SECTION: 9

TOWN: 2

RANGE: 4

COUNTY: Butler

STATE: Ohio

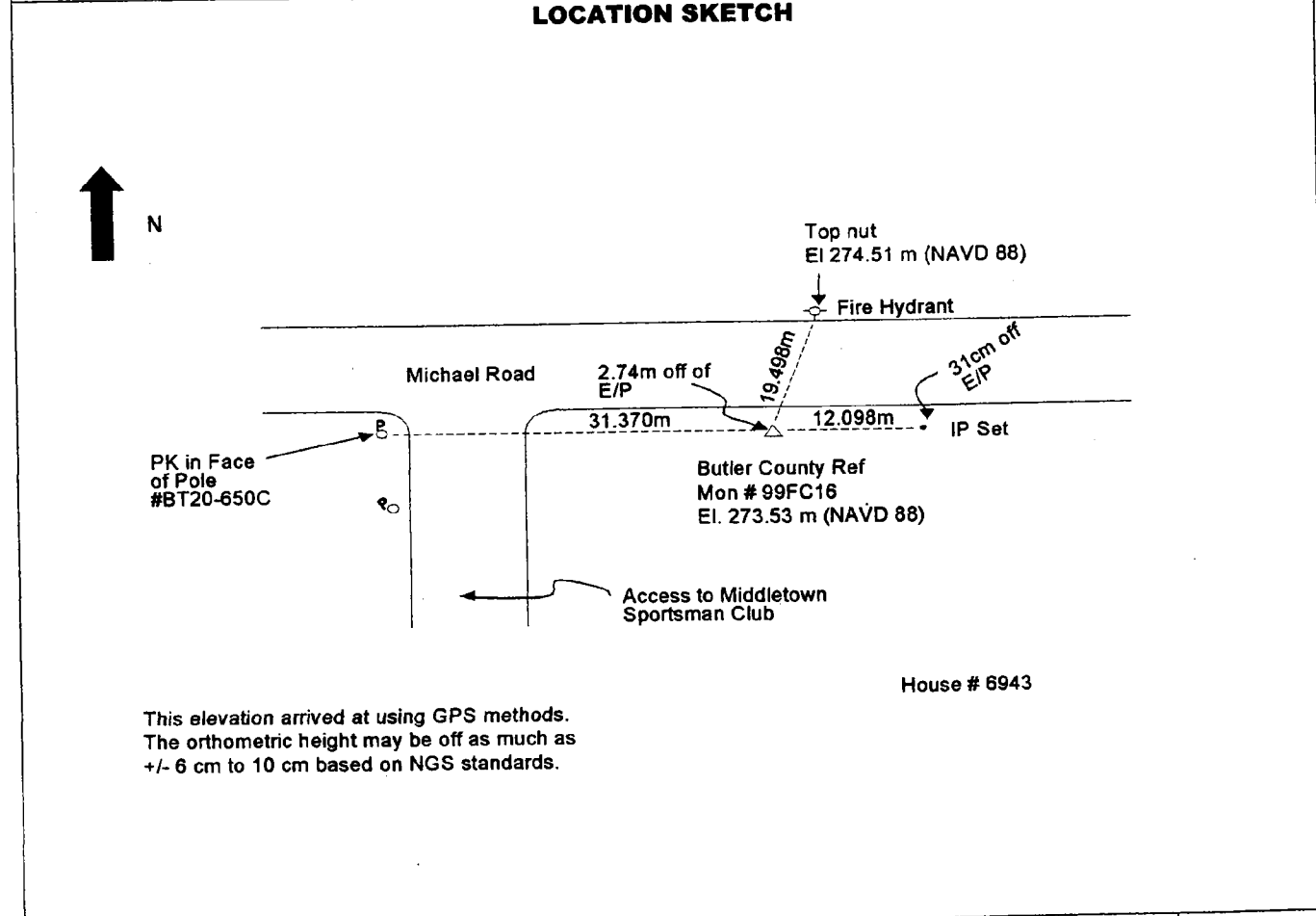
LOCATION: Located along the south side of Michael Road, approximately 1.3 miles west of the intersection of Michael Road and Trenton-Franklin Road.

Monument No: 99FC16	State Plane Coordinates: Meters (NAD 83/86) NORTH 173494.540 EAST 434258.892	Latitude and Longitude: (NAD 83/86) LAT N 39° 32' 48.76188" LONG W 84° 25' 42.52772"
Elevation: Meters (NAVD 88) GPS 273.521		

Grid Scale Factor: 0.999939917	Convergence: -1° 13' 25.16947"
Azimuth to 99FC17 is 89° 49' 27" (grid)	Distance is 212.292 m

MONUMENT DESCRIPTION:

Mark is a 8" diameter x 36" long concrete monument with brass disk "Butler County Engineers Ref. Monument" stamped "99FC16", with 30" rebar in monument.



This elevation arrived at using GPS methods.
The orthometric height may be off as much as
+/- 6 cm to 10 cm based on NGS standards.

DATA BY: A. C. BALPH, ENG & SURV 1145 CALIFORNIA RD. OKEANA, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4400 receivers with compact L1/L2 antennas	SHEET NO. 28
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CONTROL MONUMENT RECORD

DATE: 4/12/99

TOWNSHIP: Madison

SECTION: 9

TOWN: 2

RANGE: 4

COUNTY: Butler

STATE: Ohio

LOCATION: Located along the south side of Michael Road, approximately 1.0 miles west of the intersection of Michael Road and Trenton-Franklin Road.

Monument No: 99FC17	State Plane Coordinates: Meters (NAD 83/86) NORTH 173495.191 EAST 434471.183	Latitude and Longitude: (NAD 83/86) LAT N 39° 32' 48.92990" LONG W 84° 25' 33.63860"
Elevation: Meters (NAVD 88) GPS 276.787		
Grid Scale Factor: 0.999939920		Convergence: -1° 13' 19.52915"
Azimuth to 99FC16 is 269° 49' 27" (grid)		Distance is 212.292 m
MONUMENT DESCRIPTION: Mark is a 8" diameter x 36" long concrete monument with brass disk "Butler County Engineers Ref. Monument" stamped "99FC17", with 30" rebar in concrete.		
LOCATION SKETCH		
<p style="font-size: small;"> This elevation arrived at using GPS methods. The orthometric height may be off as much as +/- 6 cm to 10 cm based on NGS standards. </p>		
DATA BY: A. C. BALPH, ENG & SURV 1145 CALIFORNIA RD. OKEANA, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4400 receivers with compact L1/L2 antennas	SHEET NO. 29

CONTROL MONUMENT RECORD

DATE: 4/8/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Franklin

SECTION: 7

TOWN: 1

RANGE: 5

COUNTY: Warren

STATE: Ohio

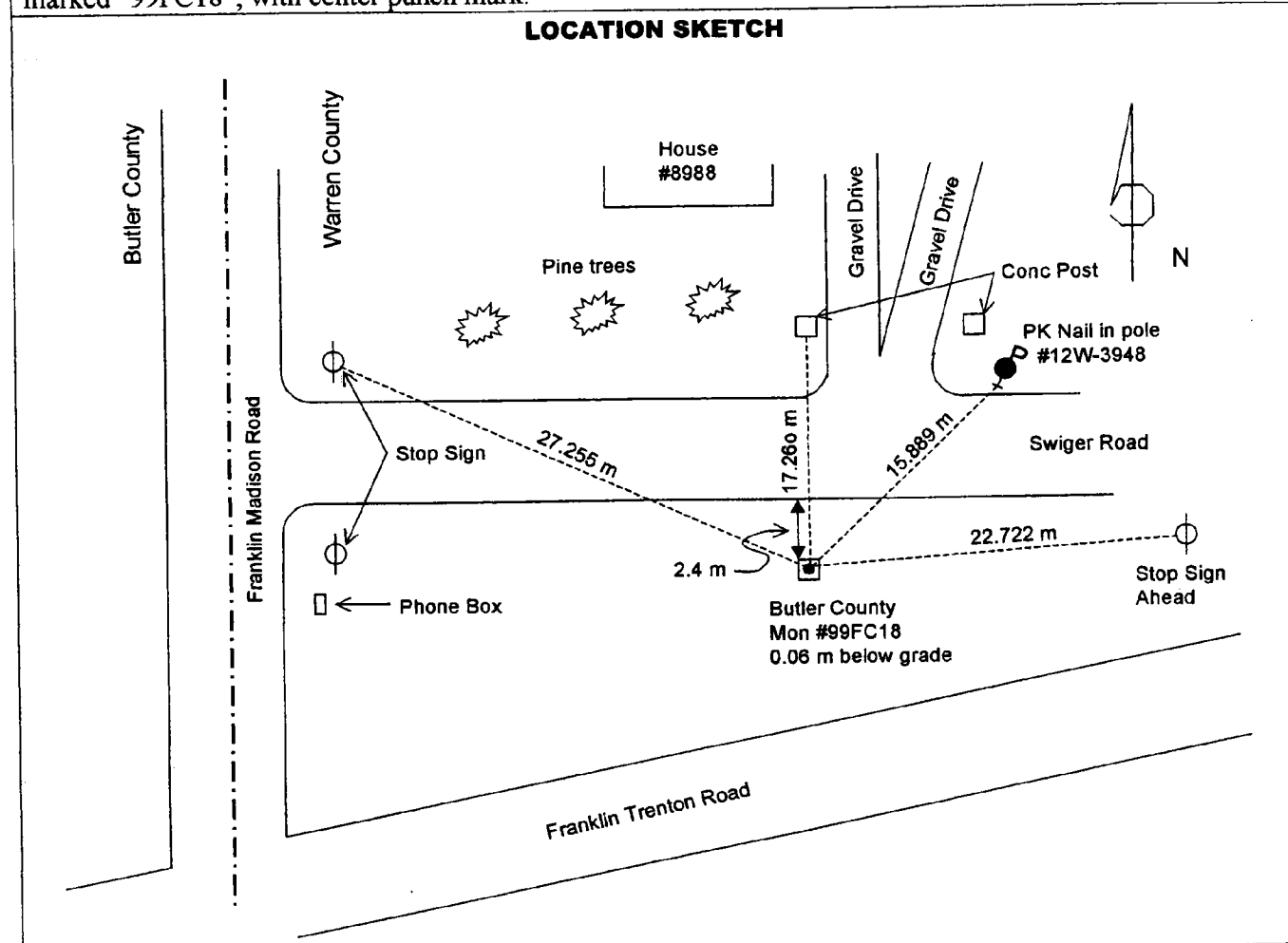
LOCATION: Beginning at intersection of Franklin Trenton Road and Franklin Madison Road, thence north to the intersection of Franklin Madison Rd and Swiger Rd. Monument is east of intersection, south of Swiger Rd.

Monument No: 99FC18	State Plane Coordinates: Meters (NAD 83/86) NORTH 174249.981 EAST 439820.497	Latitude and Longitude: (NAD 83/86) LAT N 39° 33' 17.03989" LONG W 84° 21' 50.28485"
Elevation: Meters (NAVD 88) GPS 202.857		

Grid Scale Factor: 0.999940314	Convergence: -1° 10' 57.80683"
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Azimuth to N/A	is N/A	Distance is N/A
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MONUMENT DESCRIPTION:
Butler County Monument – ½” x 30” rebar in monument (not necessarily centered). Butler County disk marked “99FC18”, with center punch mark.



DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 30
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CONTROL MONUMENT RECORD

DATE: 4/12/99 (Revised 10/99 by GRWAS) **TOWNSHIP:** Morgan

SECTION: 6

TOWN: 3

RANGE: 1

COUNTY: Butler

STATE: Ohio

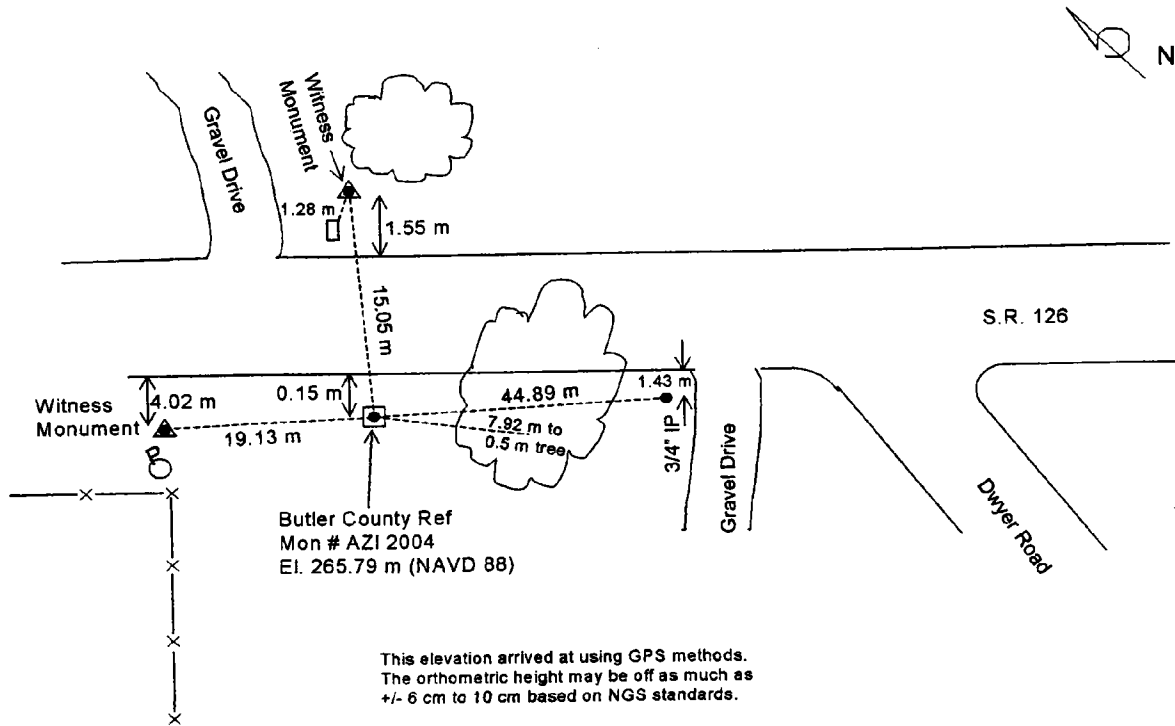
LOCATION: Intersection of SR 126 and Dwyer Road, thence northwest on SR 126. Monument is located on west side of SR 126.

Monument No: AZI 2004	State Plane Coordinates: Meters (NAD 83/86) NORTH 156904.022 EAST 400580.958	Latitude and Longitude: (NAD 83/86) LAT N 39° 23' 25.26306" LONG W 84° 48' 54.84023"
Elevation: Meters (NAVD 88) GPS 265.827		

Grid Scale Factor: 0.999935913	Convergence: -1° 28' 08.61896"
Azimuth to 2003 is 314° 46' 40" (grid)	Distance is 238.539 m

MONUMENT DESCRIPTION:
Concrete monument with brass cap marked "BUTLER COUNTY REF. MONUMENT", "AZI 2004".

LOCATION SKETCH



DATA BY: A. C. Balph Engr & Surv 1145 California Rd, Okeana, OH 45053 513-756-9111	TYPE OF EQUIPMENT USED: Trimble 4000SE and 4400 GPS receivers with compact dome and compact L1/L2 antennas	SHEET NO. 31
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CONTROL MONUMENT RECORD

DATE: 3/11/99

TOWNSHIP: UNION

SECTION: 9

TOWN: 3

RANGE: 2

COUNTY: BUTLER

STATE: OHIO

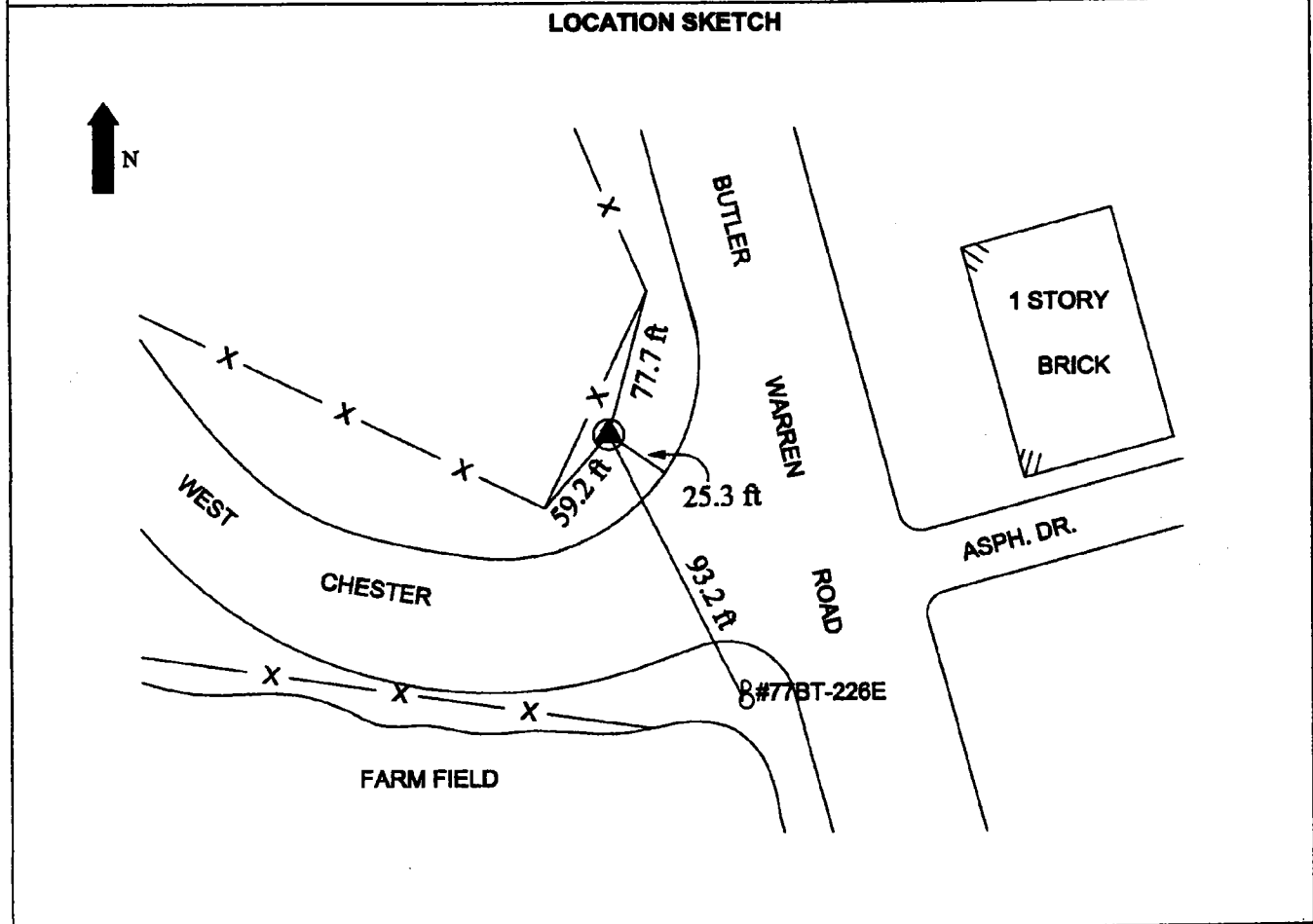
LOCATION: Located on the west side of Butler-Warren County Line Rd. Monument is at the intersection of West Chester Rd.

Monument No: 99FC51	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 284.453	NORTH 147915.628 EAST 440372.025	LAT 39° 19' 03.63082" LONG 84° 21' 04.57204"

Grid Scale Factor: 0.999936582	Convergence: -1° 10' 28.80117"
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Azimuth to 99FC51A	is 271° 07' 49" (grid)	Distance is 620.355 m
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MONUMENT DESCRIPTION:
Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC51", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 32
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CONTROL MONUMENT RECORD

DATE: 3/11/99

TOWNSHIP: UNION

SECTION: 9

TOWN: 3

RANGE: 2

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the north side of West Chester Road 1/4 mile west of the intersection of Butler-Warren County Line Road.

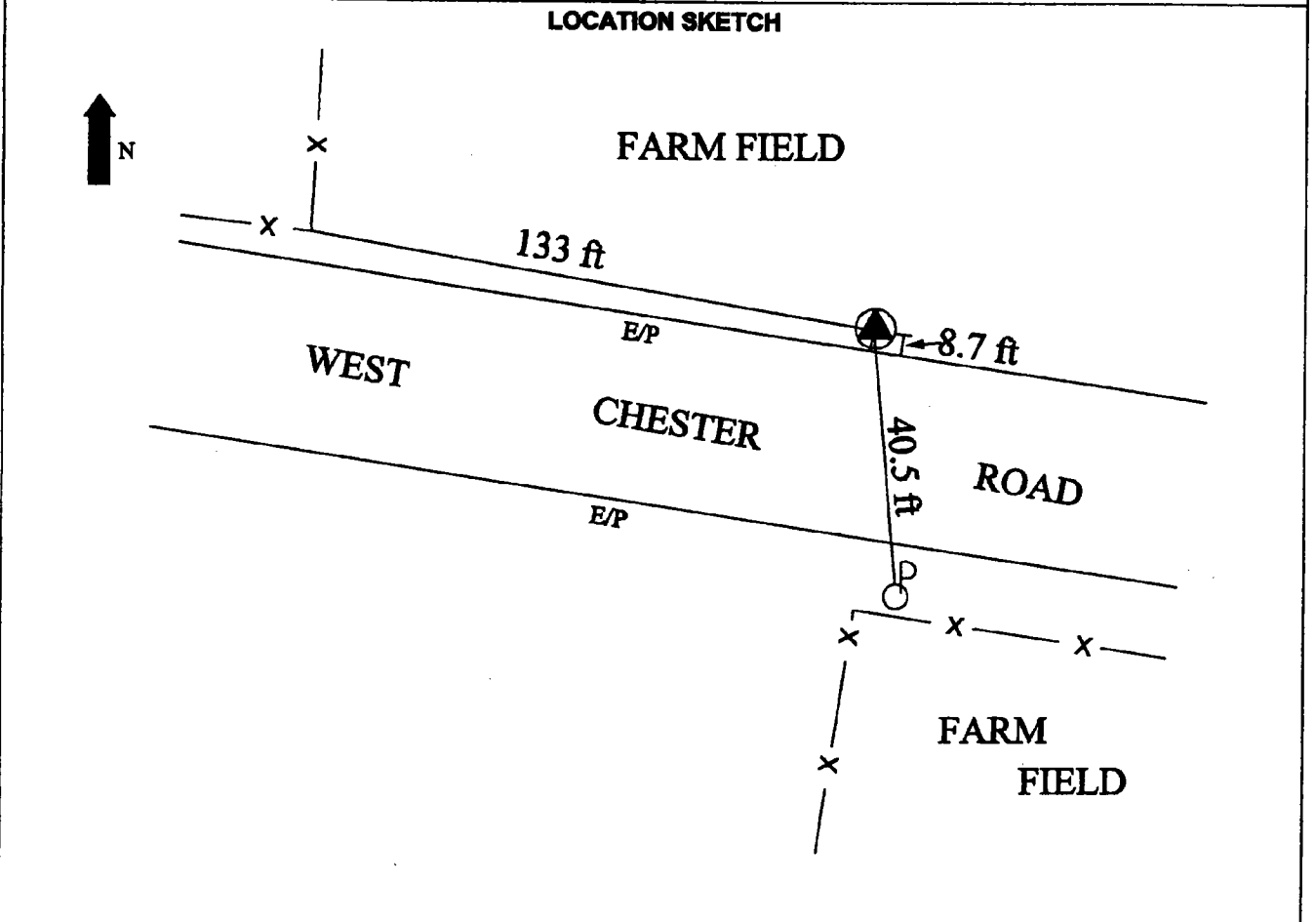
Monument No: 99FC51A	State Plane Coordinates: Meters (NAD 83/86) NORTH 147927.865 EAST 439751.791	Latitude and Longitude: (NAD 83/86) LAT 39° 19' 03.61444" LONG 84° 21' 30.47043"
Elevation: Meters (NAVD 88) GPS 288.523		

Grid Scale Factor: 0.999936582	Convergence: -1° 10' 45.23420"
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Azimuth to 99FC51	is 91° 07' 49' (grid)	Distance is 620.355 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC51A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 33
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CONTROL MONUMENT RECORD

DATE: 3/2/99

TOWNSHIP: UNION

SECTION: 25

TOWN: 3

RANGE: 2

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of Crescentville Road and Mosteller Road on the corner of Transmobile.

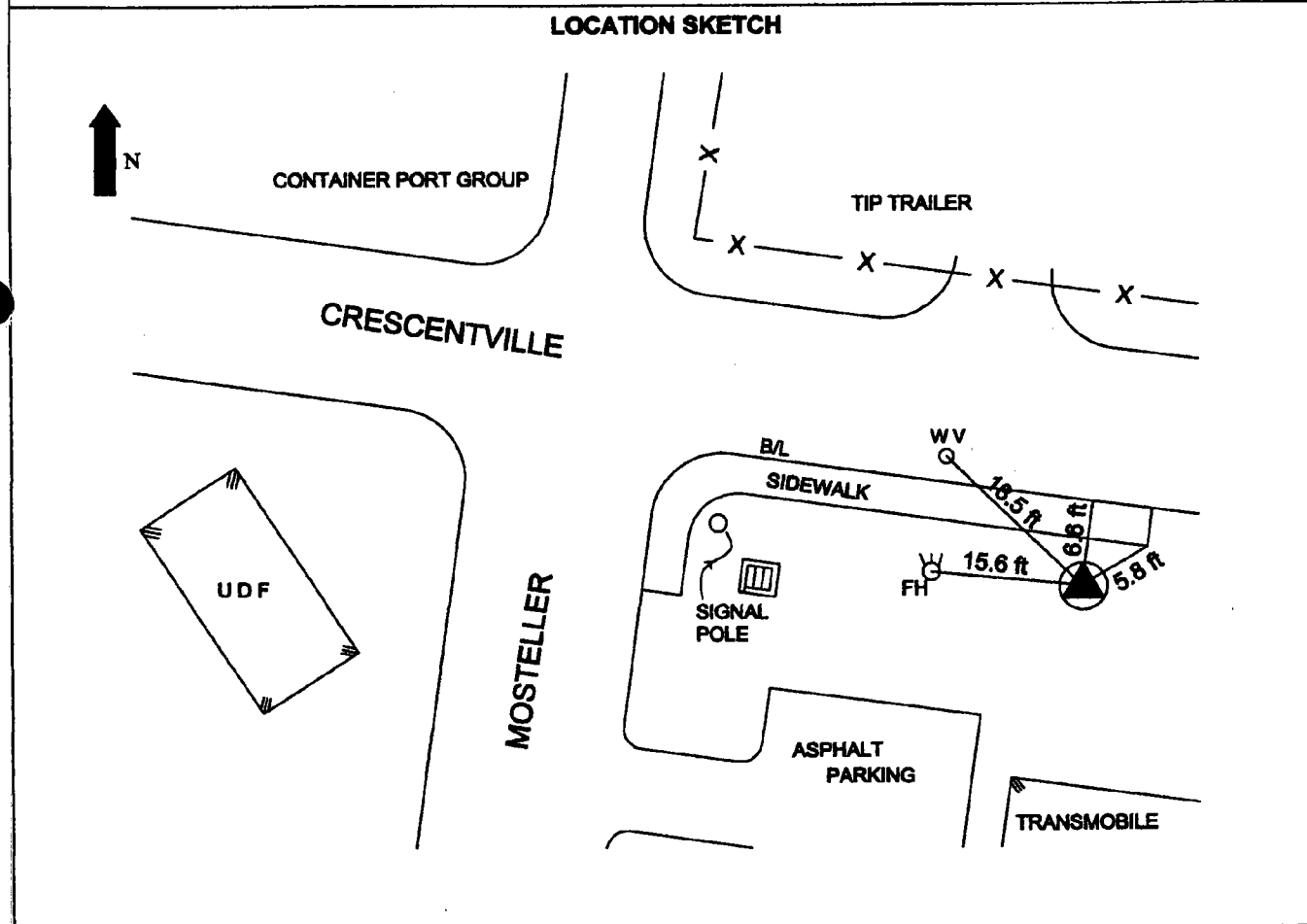
Monument No: 99FC52	State Plane Coordinates: Meters (NAD 83/88)	Latitude and Longitude: (NAD 83/88)
Elevation: Meters (NAVD 88) GPS 178.997	NORTH 145931.883 EAST 433736.434	LAT 39° 17' 54.81321" LONG 84° 25' 39.76195"

Grid Scale Factor: 0.999937024	Convergence: -1° 13' 23.41454"
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Azimuth to 99FC52A	is 91° 20' 38' (grid)	Distance is 487.461 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC52", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 34
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CONTROL MONUMENT RECORD

DATE: 3/2/99

TOWNSHIP: UNION

SECTION: 31

TOWN: 3

RANGE: 2

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the south side of Crescentville Road, 0.20 mi. west of the intersection of Mosteller Road.

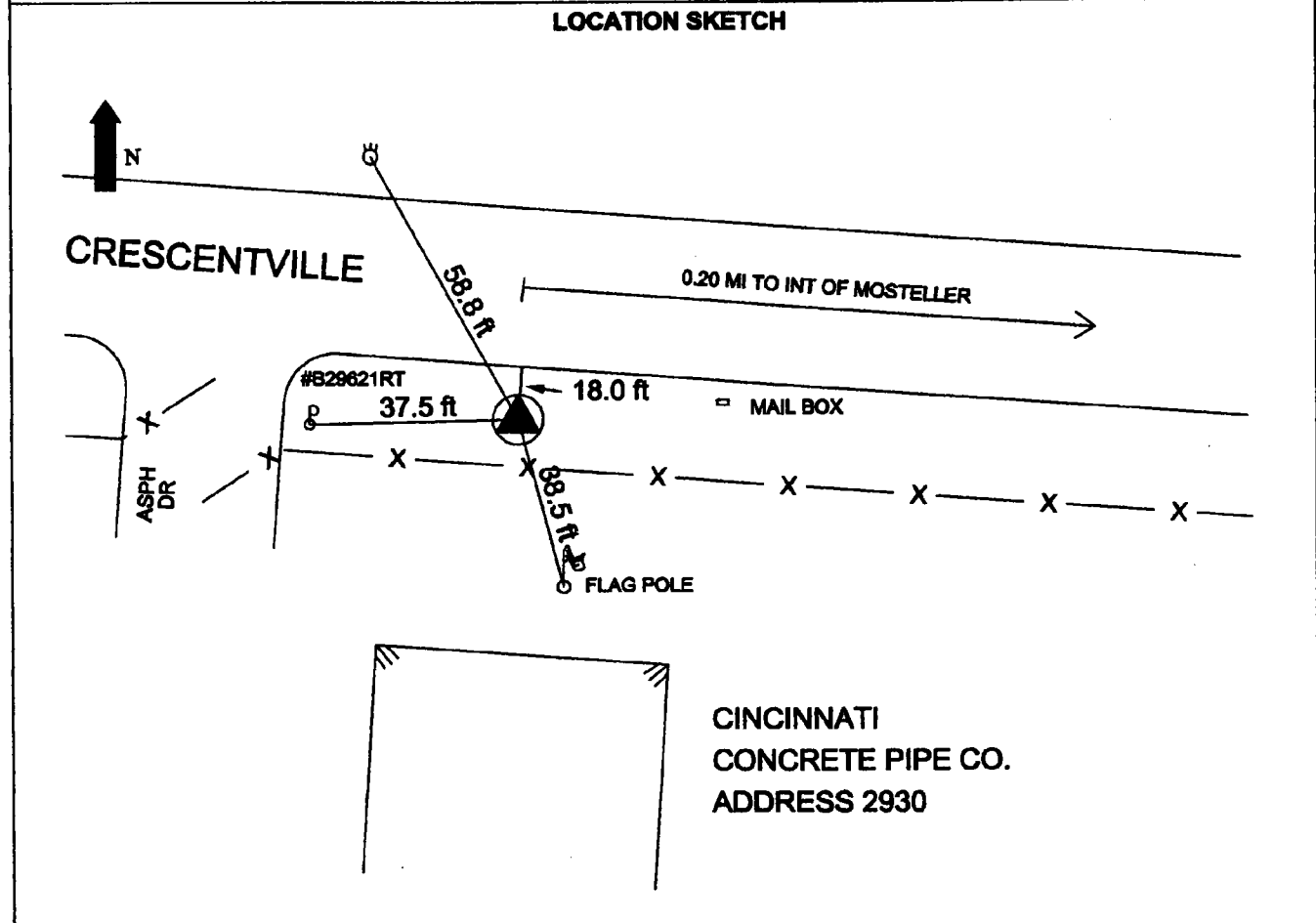
Monument No: 99FC52A	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 182.033	NORTH 145920.451 EAST 434223.761	LAT 39° 17' 54.77943" LONG 84° 25' 19.41714"

Grid Scale Factor: 0.999937024	Convergence: -1° 13' 10.50536"
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Azimuth to 99FC52	is 271° 20' 38" (grid)	Distance is 487.461 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC52A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 35
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CONTROL MONUMENT RECORD

DATE: 3/11/99

TOWNSHIP: UNION

SECTION: 30

TOWN: 3

RANGE: 2

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of Tylersville Road and West Chester Road (Lesourdsville Rd.) on the north side of Tylersville Road.

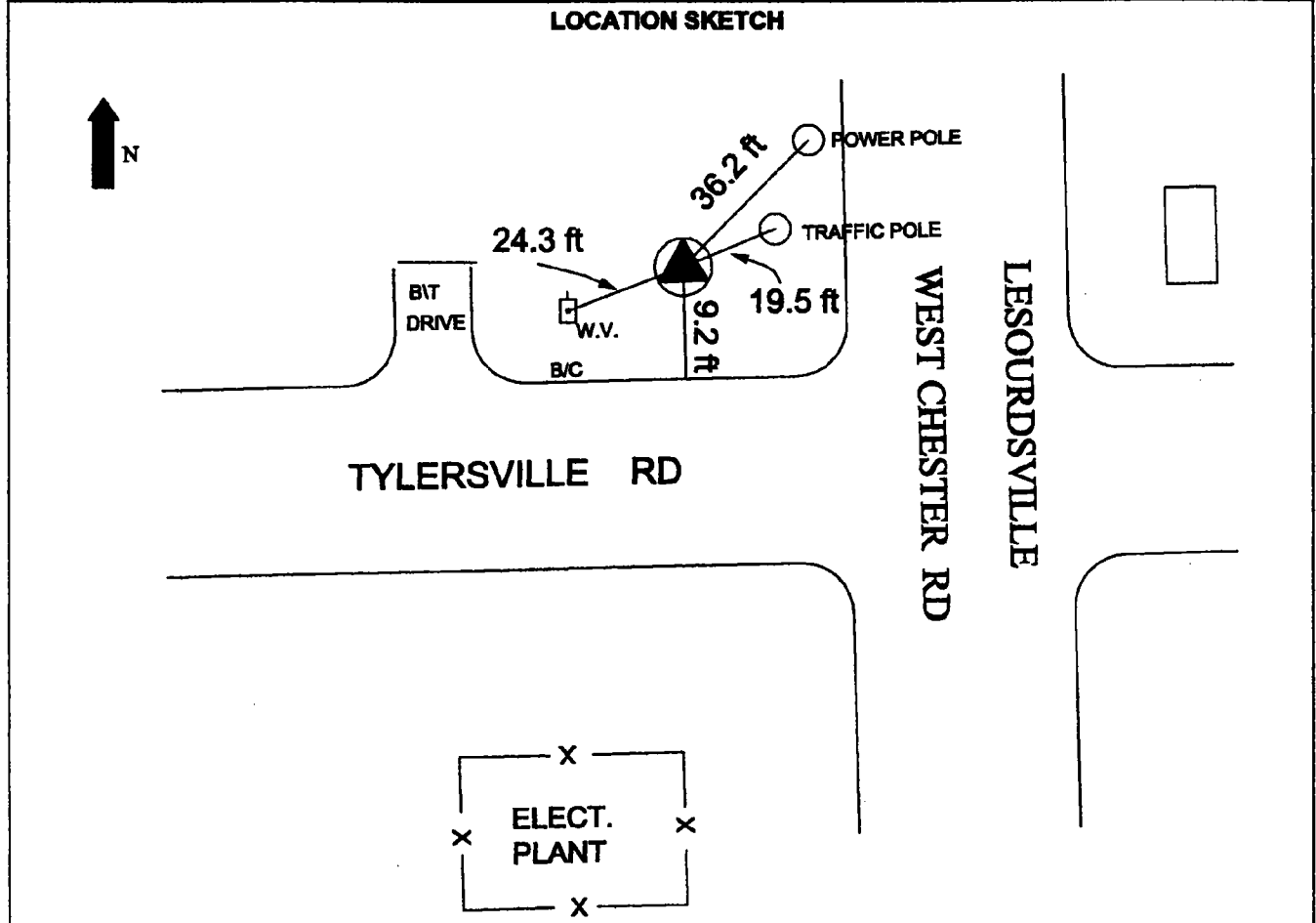
Monument No: 99FC53	State Plane Coordinates: Meters (NAD 83/86) NORTH 152490.208 EAST 434437.615	Latitude and Longitude: (NAD 83/86) LAT 39° 21' 27.92376" LONG 84° 25' 16.32712"
Elevation: Meters (NAVD 88) GPS 262.094		

Grid Scale Factor: 0.999936015	Convergence: -1° 13' 08.54468"
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Azimuth to 99FC53A	is 353° 26' 26" (grid)	Distance is 368.023 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC53", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 36
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CONTROL MONUMENT RECORD

DATE: 3/2/99

TOWNSHIP: UNION

SECTION: 30

TOWN: 3

RANGE: 2

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the east side of Lesourdsville Road, 0.20 mi. north of the intersection of Tylersville Road.

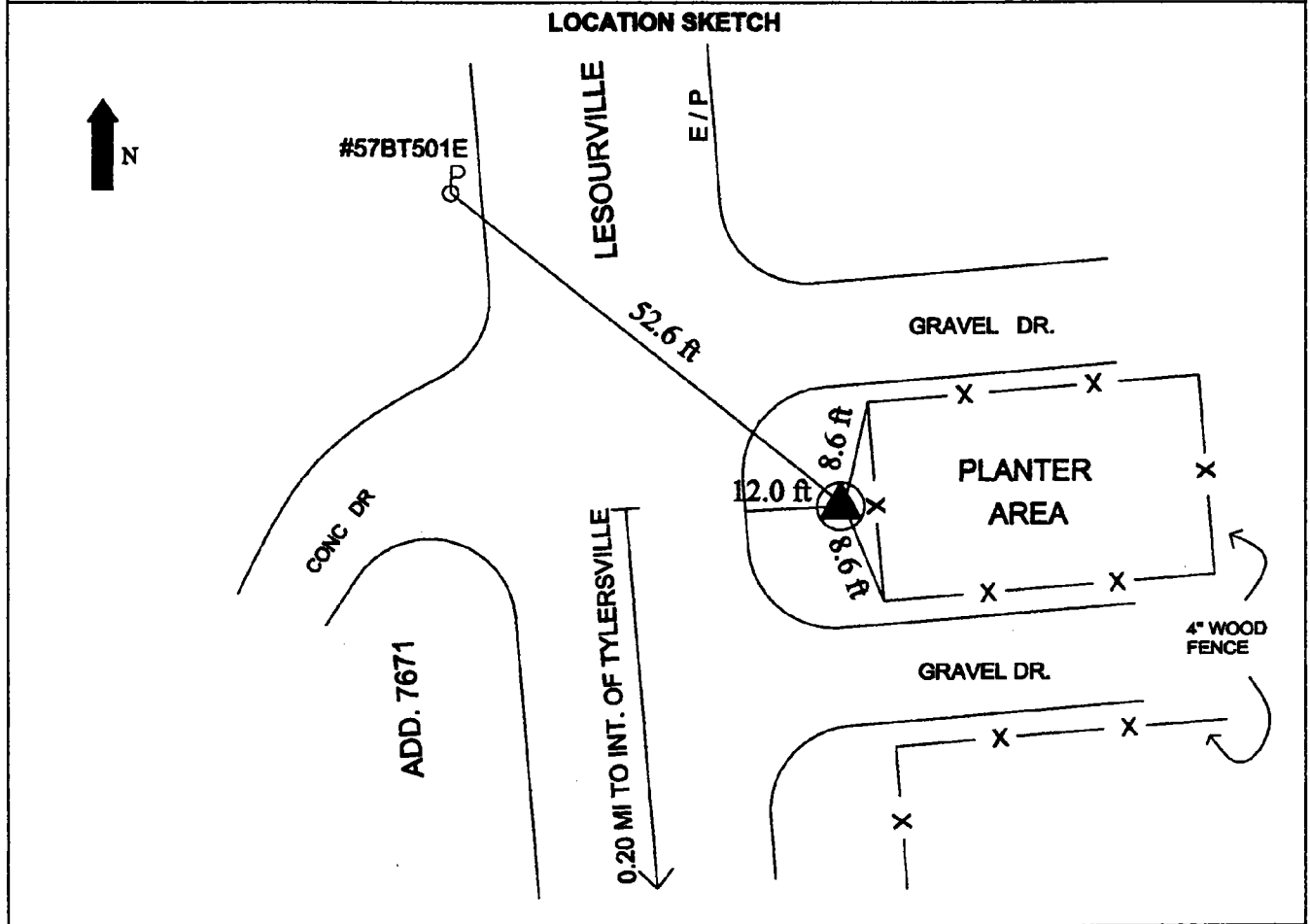
Monument No: 99FC53A	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 249.287	NORTH 152855.822 EAST 434395.575	LAT 39° 21' 39.74819" LONG 84° 25' 18.40782"

Grid Scale Factor: 0.999935990	Convergence: -1° 13' 09.86493"
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Azimuth to 99FC53	is 173° 26' 26" (grid)	Distance is 368.023 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC53A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 37
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CONTROL MONUMENT RECORD

DATE: 3/10/99

TOWNSHIP: FAIRFIELD

SECTION: 21

TOWN: 2

RANGE: 2

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of S.R. 4 and Ross Rd.

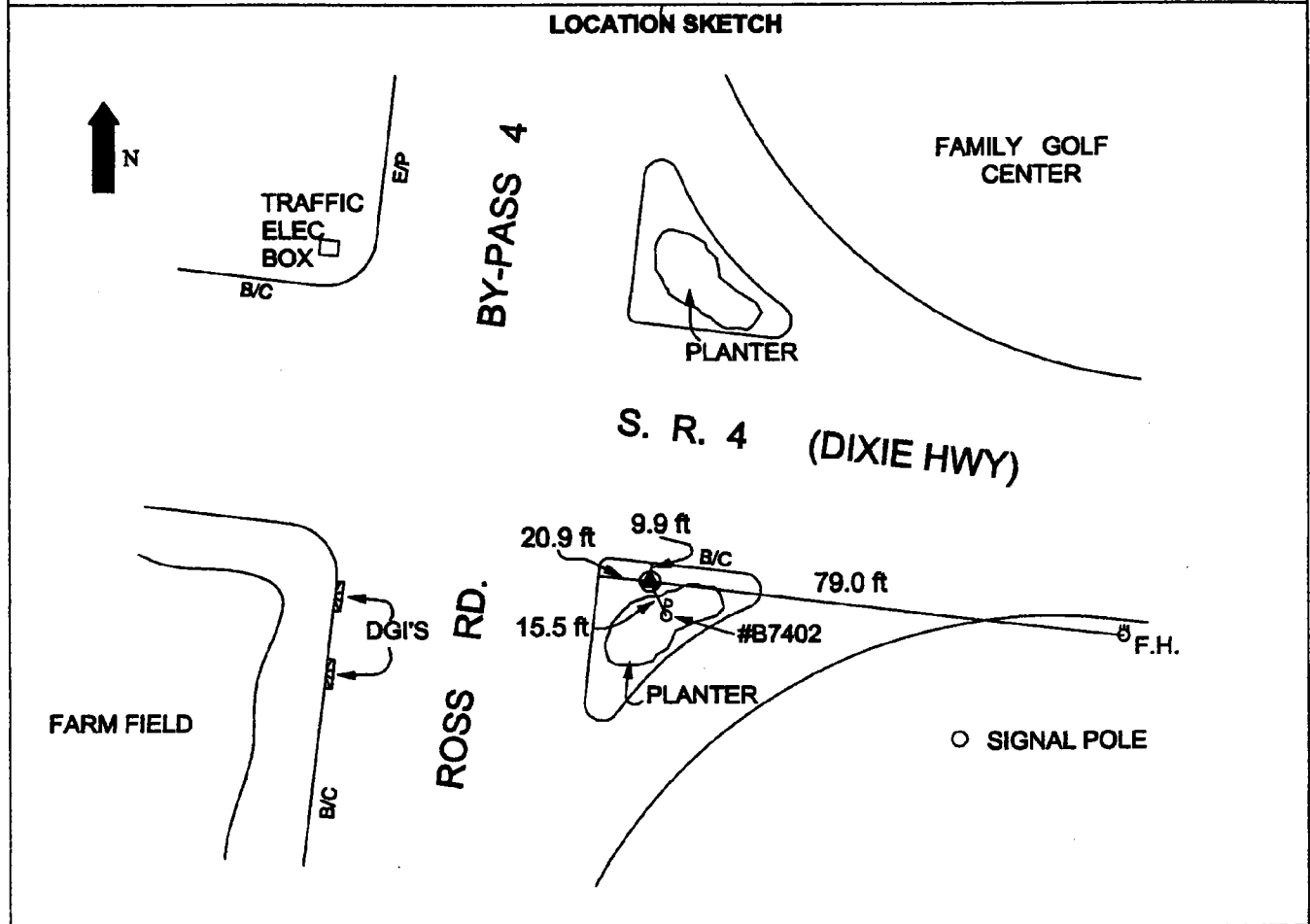
Monument No: 99FC54	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 211.309	NORTH 148781.358 EAST 427155.969	LAT 39° 19' 22.54853" LONG 84° 30' 16.97899"

Grid Scale Factor: 0.999936480	Convergence: -1° 16' 19.31416"
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Azimuth to 99FC54A	is 311° 26' 37" (grid)	Distance is 549.523 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC54", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 38
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CONTROL MONUMENT RECORD

DATE: 3 / 10 / 99

TOWNSHIP: FAIRFIELD

SECTION: 21

TOWN: 2

RANGE: 2

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the north side of S.R. 4, across from Ladders Marine, 1/3 mile northwest of the intersection of Ross Rd.

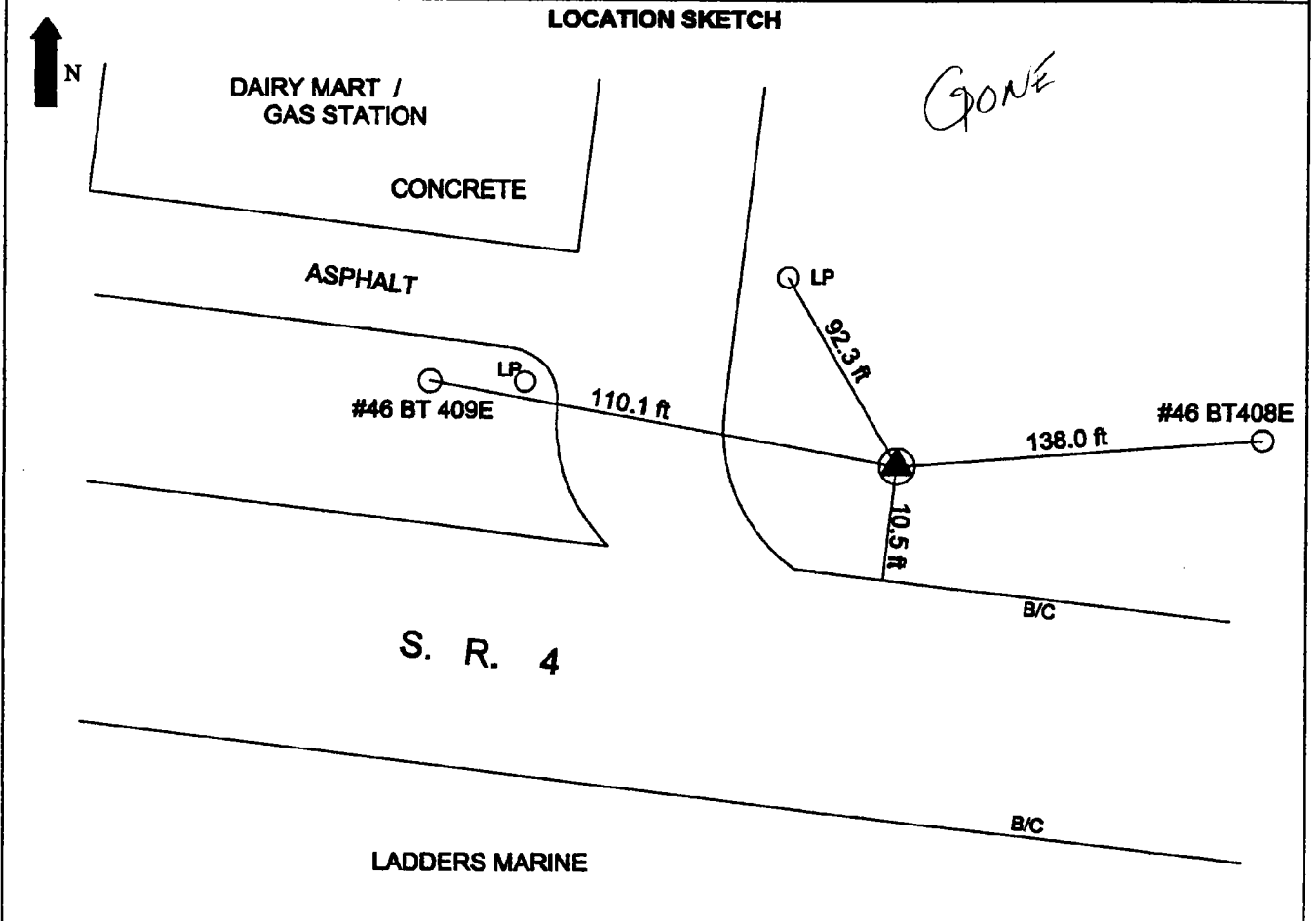
Monument No: 99FC54A	State Plane Coordinates: Meters (NAD 83/86) NORTH 149145.078 EAST 426744.043	Latitude and Longitude: (NAD 83/86) LAT 39° 19' 34.04350" LONG 84° 30' 34.51090"
Elevation: Meters (NAVD 88) GPS 216.151		

Grid Scale Factor: 0.999936422	Convergence: -1° 16' 30.43851"
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Azimuth to 99FC54	is 131° 26' 37" (grid)	Distance is 549.523 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC54A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 39
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CONTROL MONUMENT RECORD

DATE: 3 / 10 / 99

TOWNSHIP: FAIRFIELD

SECTION: 2

TOWN: 1

RANGE: 2

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the north side of John Gray Road, 3/4 mile west of the intersection of U.S. 127.

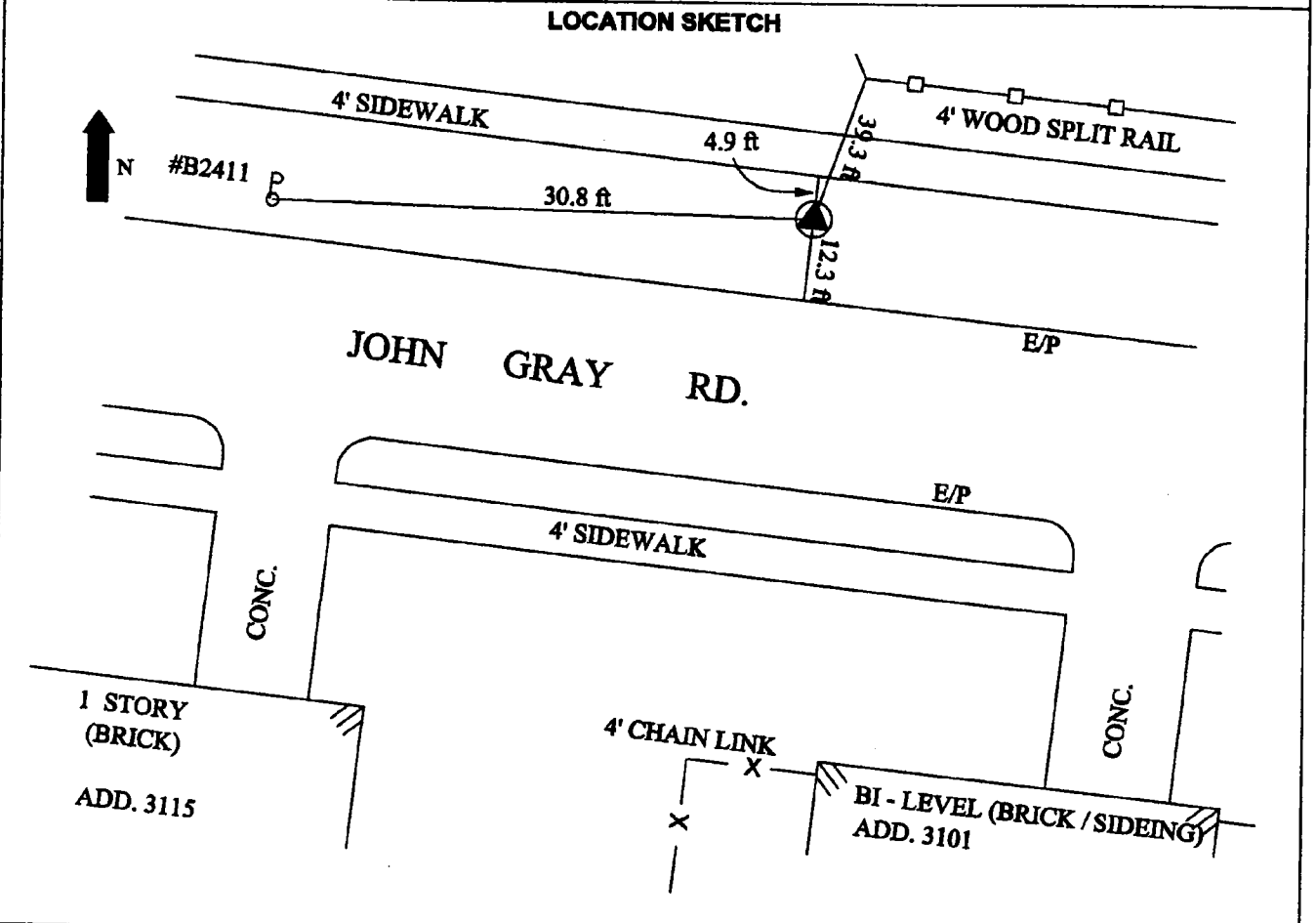
Monument No: 99FC55	State Plane Coordinates: Meters (NAD 83/86) NORTH 147276.010 EAST 420806.463	Latitude and Longitude: (NAD 83/86) LAT 39° 18' 29.091' LONG 84° 34' 40.560"
Elevation: Meters (NAVD 88) GPS 262.608		

Grid Scale Factor: 0.999936790	Convergence: -1° 19' 06.56144"
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Azimuth to 99FC55A	is 90° 52' 27" (grid)	Distance is 399.966 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC55", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 40
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CONTROL MONUMENT RECORD

DATE: 3/10/99

TOWNSHIP: FAIRFIELD

SECTION: 2

TOWN: 1

RANGE: 2

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the south side of John Gray Road, at the intersection of Cody Court, 1/2 mile west of the intersection of U.S. 127.

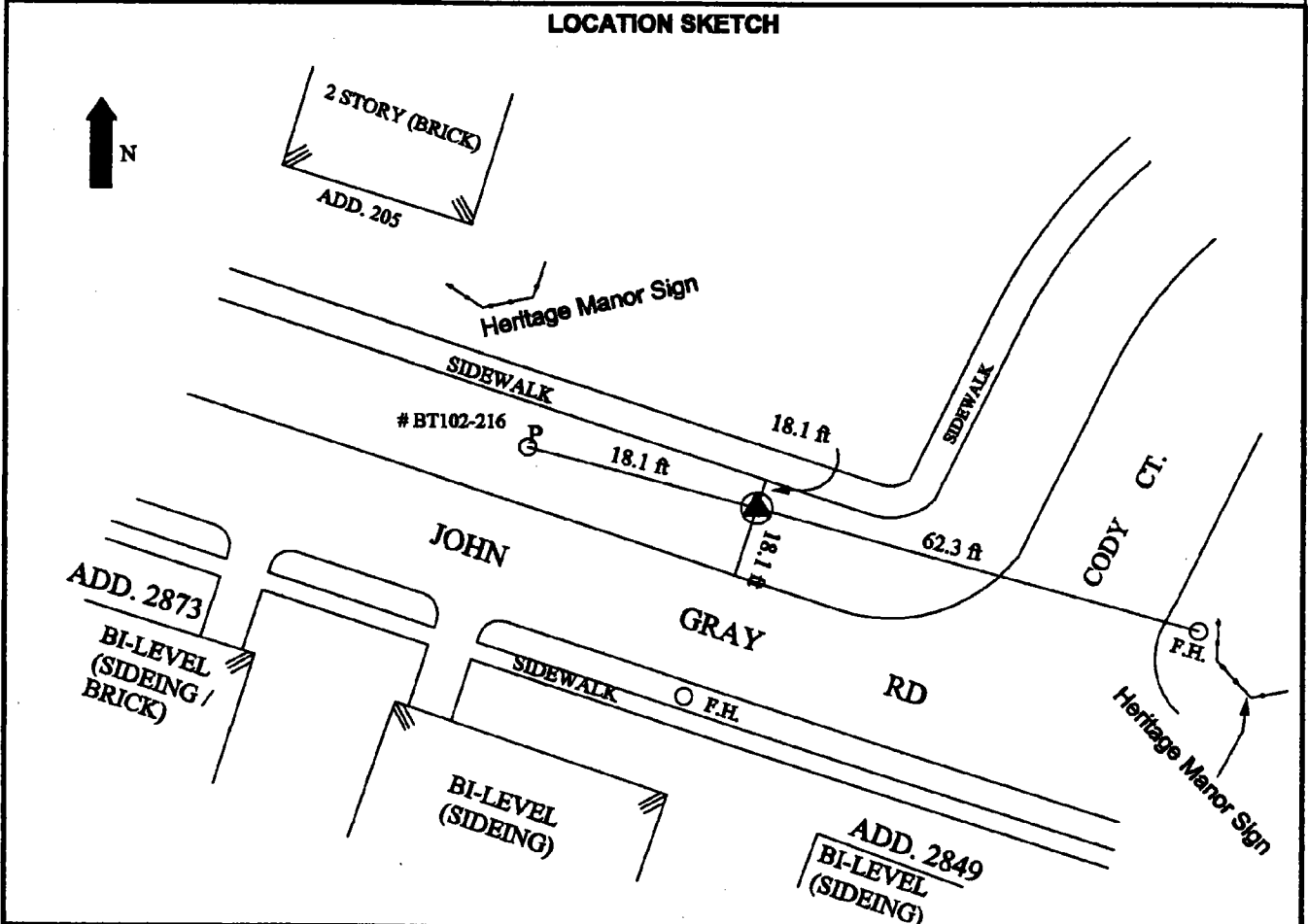
Monument No: 99FC55A	State Plane Coordinates: Meters (NAD 83/86) NORTH 147269.909 EAST 421206.382	Latitude and Longitude: (NAD 83/86) LAT 39° 18' 29.19117" LONG 84° 34' 23.86508"
Elevation: Meters (NAVD 88) GPS 250.411		

Grid Scale Factor: 0.999936789	Convergence: -1° 18' 55.96822"
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Azimuth to 99FC55	is 270° 52' 27" (grid)	Distance is 399.966 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC55A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 41
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CONTROL MONUMENT RECORD

DATE: 3/8/99

TOWNSHIP: FAIRFIELD

SECTION: 5

TOWN: 1

RANGE: 2

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of Symmes Road and McCormick Lane.

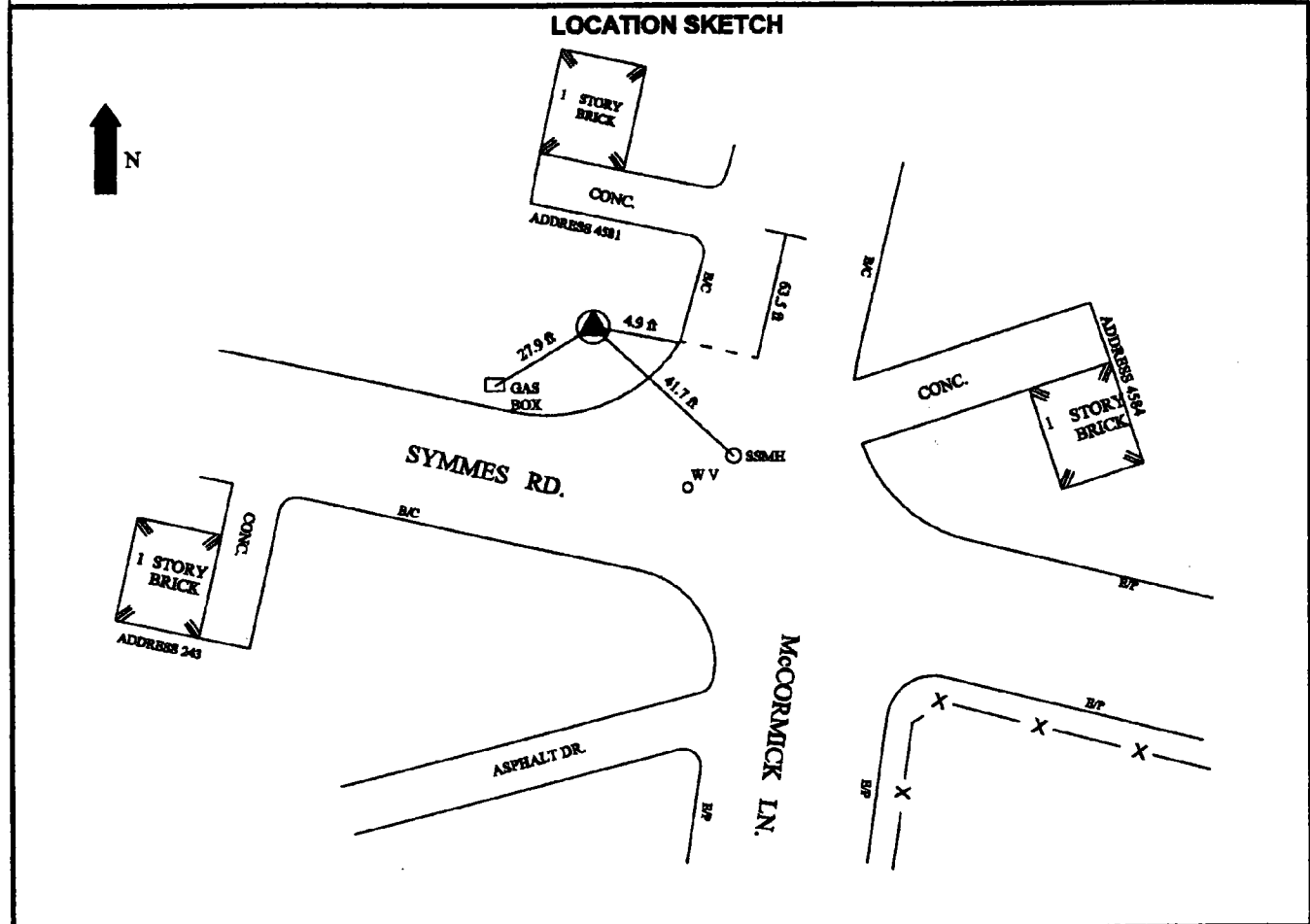
Monument No: 99FC56	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 175.234	NORTH 152245.668 EAST 421587.554	LAT 39° 21' 10.78684" LONG 84° 34' 12.71973"

Grid Scale Factor: 0.999936057	Convergence: -1° 18' 48.89627"
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Azimuth to 99FC56A	is 185° 33' 55" (grid)	Distance is 459.832 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC56", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 42
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CONTROL MONUMENT RECORD

DATE: 3 / 8 / 99

TOWNSHIP: FAIRFIELD

SECTION: 4

TOWN: 1

RANGE: 2

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of Cole Drive and McCormick Lane.

Monument No: 99FC56A	State Plane Coordinates: Meters (NAD 83/88) NORTH 151788.004 EAST 421542.958	Latitude and Longitude: (NAD 83/88) LAT 39° 20' 55.91644 LONG 84° 34' 14.14362"
Elevation: Meters (NAVD 88) GPS 175.239		
Grid Scale Factor: 0.999936099		Convergence: -1° 18' 49.79976"
Azimuth to 99FC56 is 5° 33' 55" (grid) Distance is 459.832 m		
MONUMENT DESCRIPTION: Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC56A", with center punch mark.		
LOCATION SKETCH		
DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 43

CONTROL MONUMENT RECORD

DATE: 10/27/94

TOWNSHIP: ROSS

SECTION: 27

TOWN: 3 N

RANGE: 2 E

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the west side of S.R. 128, 1/4 mile south of Millville Road, near Ross High School.

Monument No: 99FC57 (2089)	State Plane Coordinates: Meters (NAD 83/88)	Latitude and Longitude: (NAD 83/88)
Elevation: Meters (NAVD 88) GPS 176.930	NORTH 150060.634 EAST 416251.995	LAT 39° 19' 55.92448" LONG 84° 37' 53.36321"

Grid Scale Factor: 0.999936320

Convergence: -1° 21' 08.89887"

Azimuth to 99FC57A

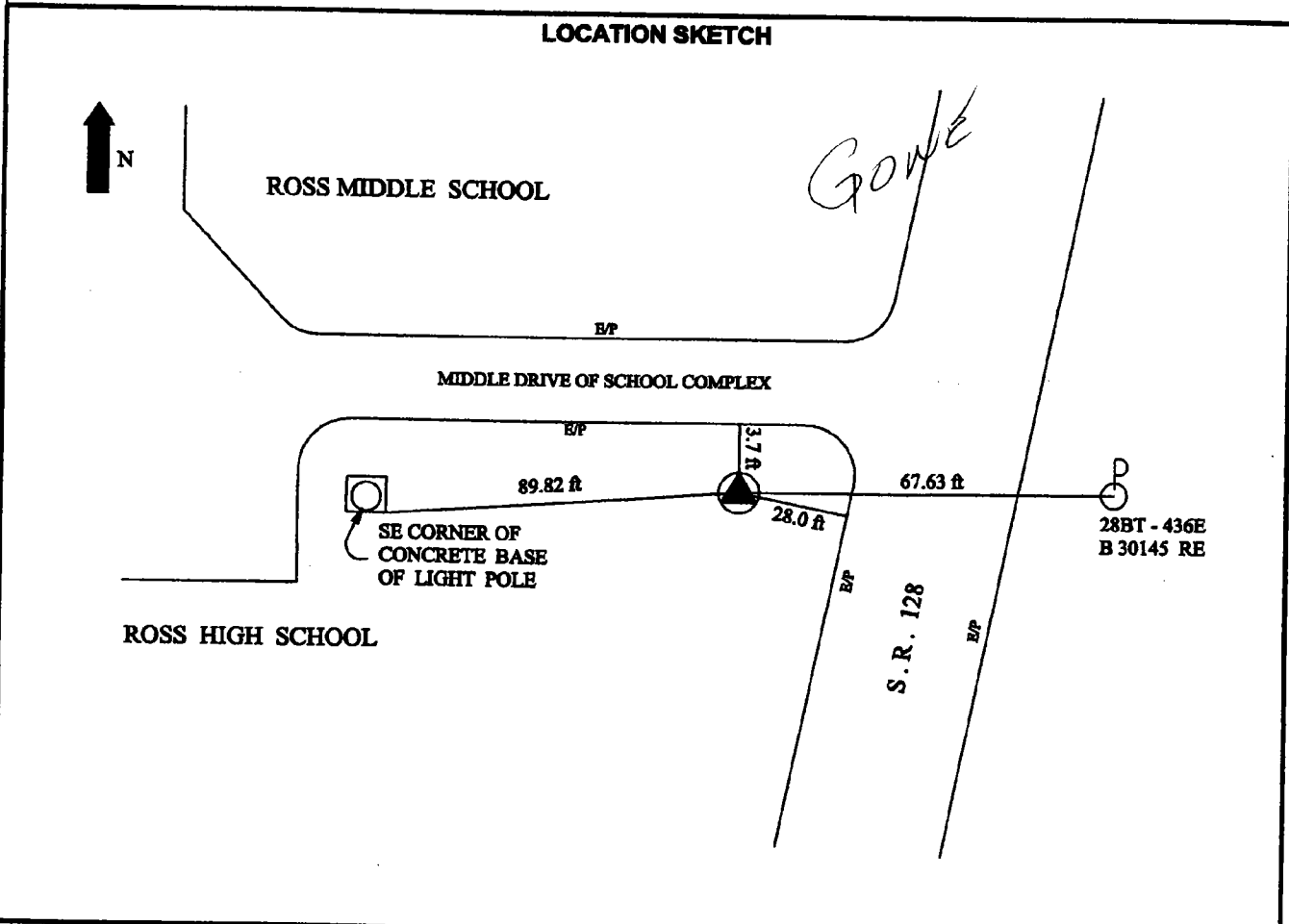
is 203° 59' 37" (grid)

Distance is 798.790 m

MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC57", with center punch mark.

LOCATION SKETCH



DATA BY:
 GRW AERIAL SURVEYS
 801 CORPORATE DR.
 LEXINGTON, KY 40503
 606-223-3999

TYPE OF EQUIPMENT USED:
 Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae
 with ground plane

SHEET NO.
44

CONTROL MONUMENT RECORD

DATE: 3 / 8 / 99

TOWNSHIP: ROSS

SECTION: 27

TOWN: 3 N

RANGE: 2 E

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the southeast side of Hamilton Cleves Road (S.R. 128) 3/4 mile south of Millville Road.

Monument No: 99FC57A	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 175.121	NORTH 149330.867 EAST 415927.179	LAT 39° 19' 32.01726" LONG 84° 38' 06.20210"

Grid Scale Factor: 0.999936432

Convergence: -1° 21' 17.04540"

Azimuth to 99FC57

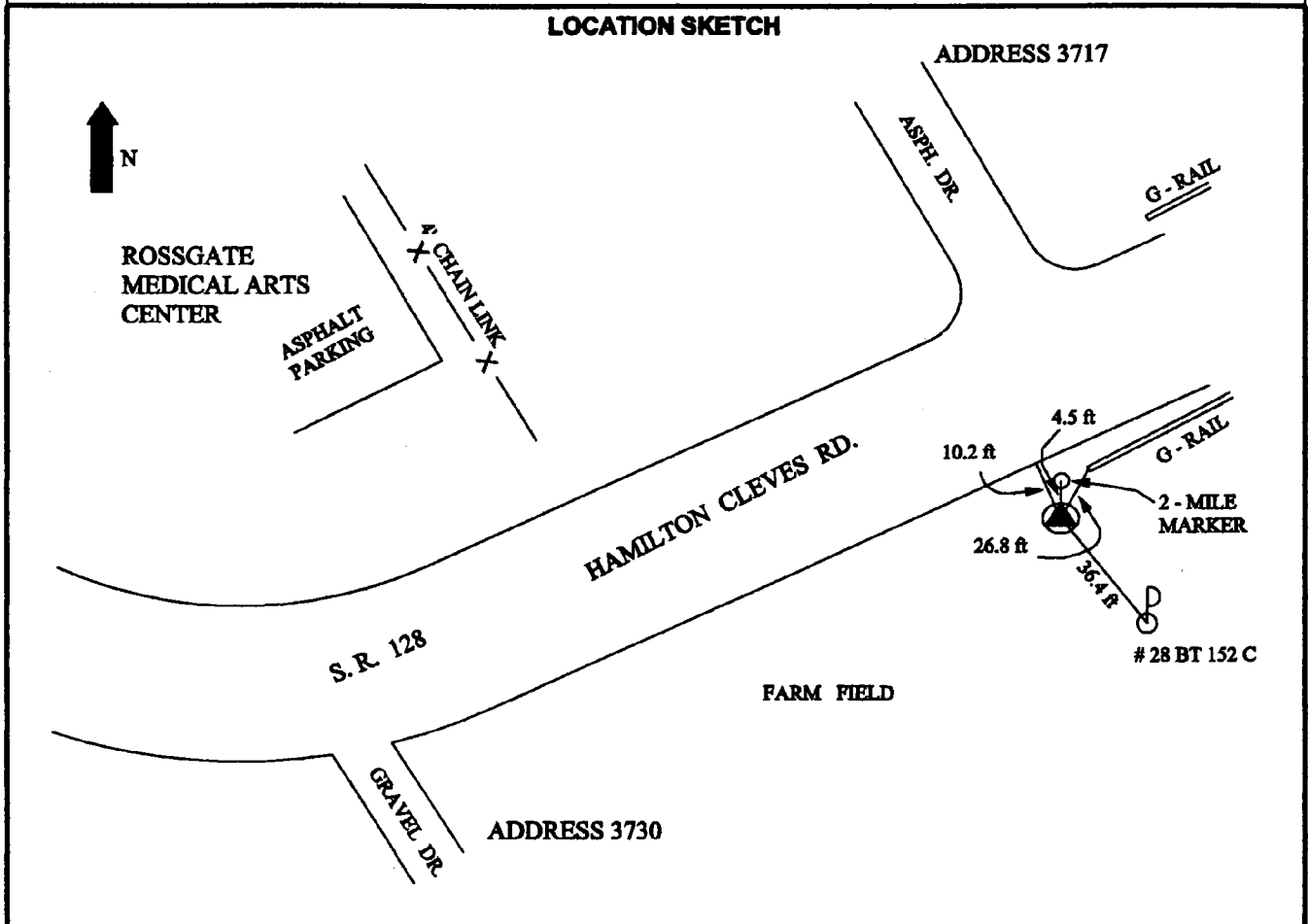
is 23° 59' 37" (grid)

Distance is 798.790 m

MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC57A", with center punch mark.

LOCATION SKETCH



DATA BY:

GRW AERIAL SURVEYS
801 CORPORATE DR.
LEXINGTON, KY 40503
606-223-3999

TYPE OF EQUIPMENT USED:

Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane

SHEET NO.

45

CONTROL MONUMENT RECORD

DATE: 10/27/94

TOWNSHIP: ROSS

SECTION: 15

TOWN: 3 N

RANGE: 2 E

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the southwest side of U.S. 27 (Ross Millville Rd), 1/4 mile northwest of the intersection of Hamilton New London Road.

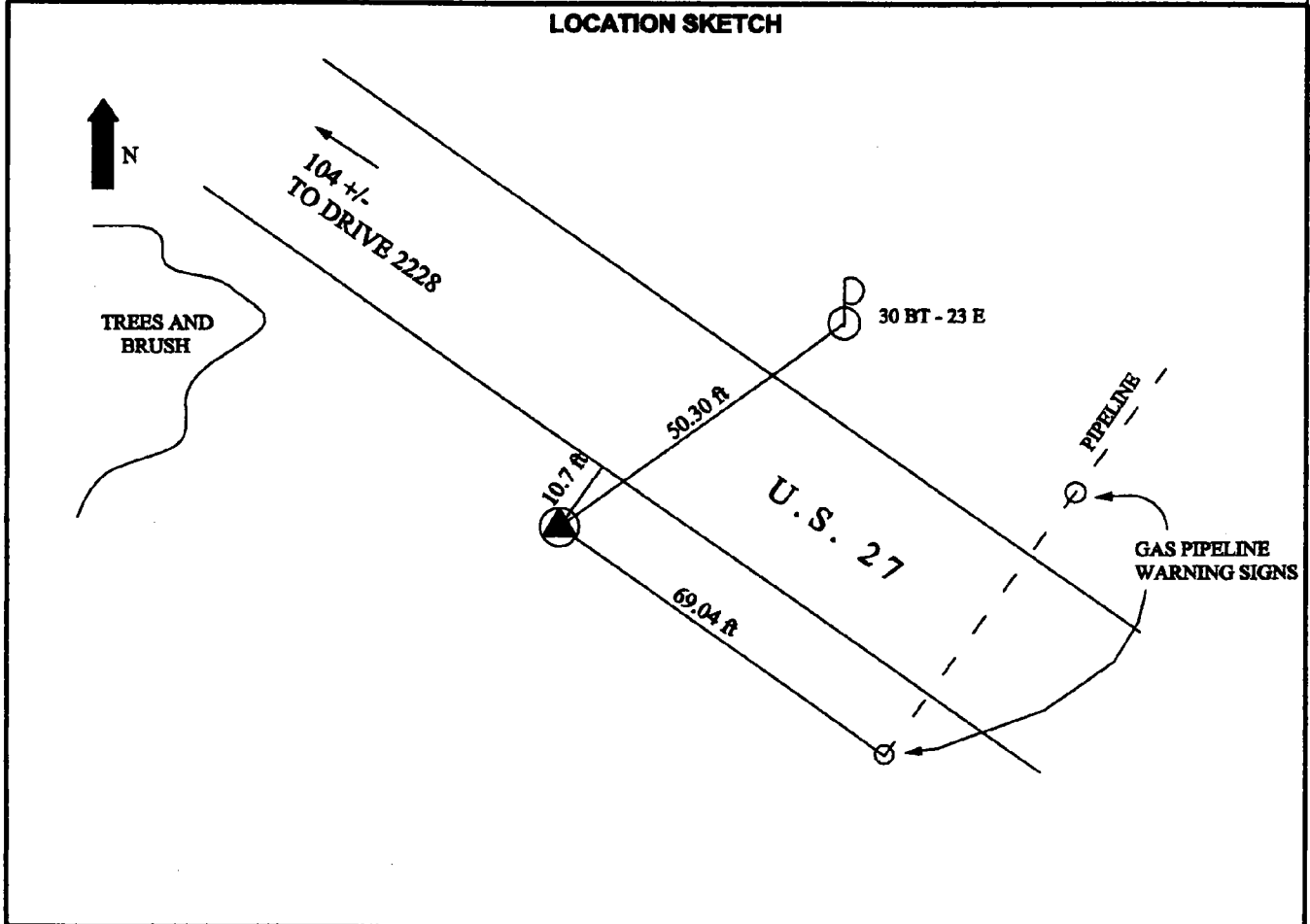
Monument No: 99FC58 (2081)	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 181.579	NORTH 153359.281 EAST 414731.682	LAT 39° 21' 41.69439" LONG 84° 39' 00.10729"

Grid Scale Factor: 0.999935986	Convergence: -1° 21' 51.24929"
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Azimuth to 99FC58A	is 130° 58' 00" (grid)	Distance is 548.308 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC58", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 46
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CONTROL MONUMENT RECORD

DATE: 3/8/99

TOWNSHIP: ROSS

SECTION: 15

TOWN: 3 N

RANGE: 2 E

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the southwest side of U.S. 27 (Ross Millville Road), 1/4 southeast of the intersection of Hamilton New London Road.

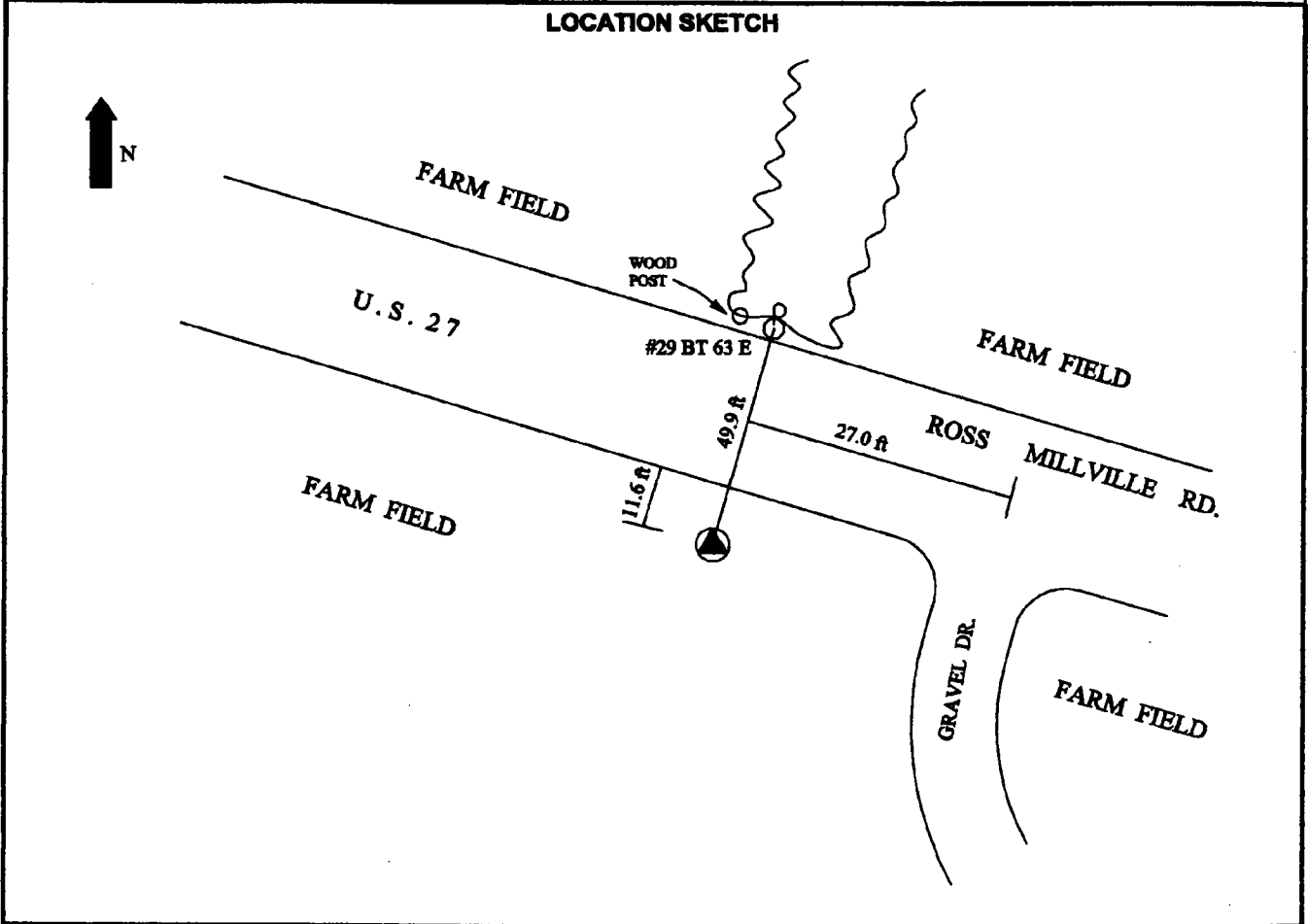
Monument No: 99FC58A	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 180.861	NORTH 152999.799 EAST 415145.705	LAT 39° 21' 30.35970" LONG 84° 38' 42.46012"

Grid Scale Factor: 0.999936010	Convergence: -1° 21' 40.05182"
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Azimuth to 99FC58	Is 310° 58' 00" (grid)	Distance Is 548.308 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC58A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 47
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CONTROL MONUMENT RECORD

DATE: 3 / 19 / 99

TOWNSHIP: FAIRFIELD

SECTION: 6

TOWN: 3

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the south side of Columbia Road, 1 mile west of the interstecion of S.R. 128.

Monument No: 99FC59	State Plane Coordinates: Meters (NAD 83/86) NORTH 156575.992 EAST 419976.025	Latitude and Longitude: (NAD 83/86) LAT 39° 23' 29.96920" LONG 84° 35' 24.19941"
Elevation: Meters (NAVD 88) GPS 222.232		

Grid Scale Factor: 0.999935916

Convergence: -1° 19' 34.25153"

Azimuth to 99FC59A

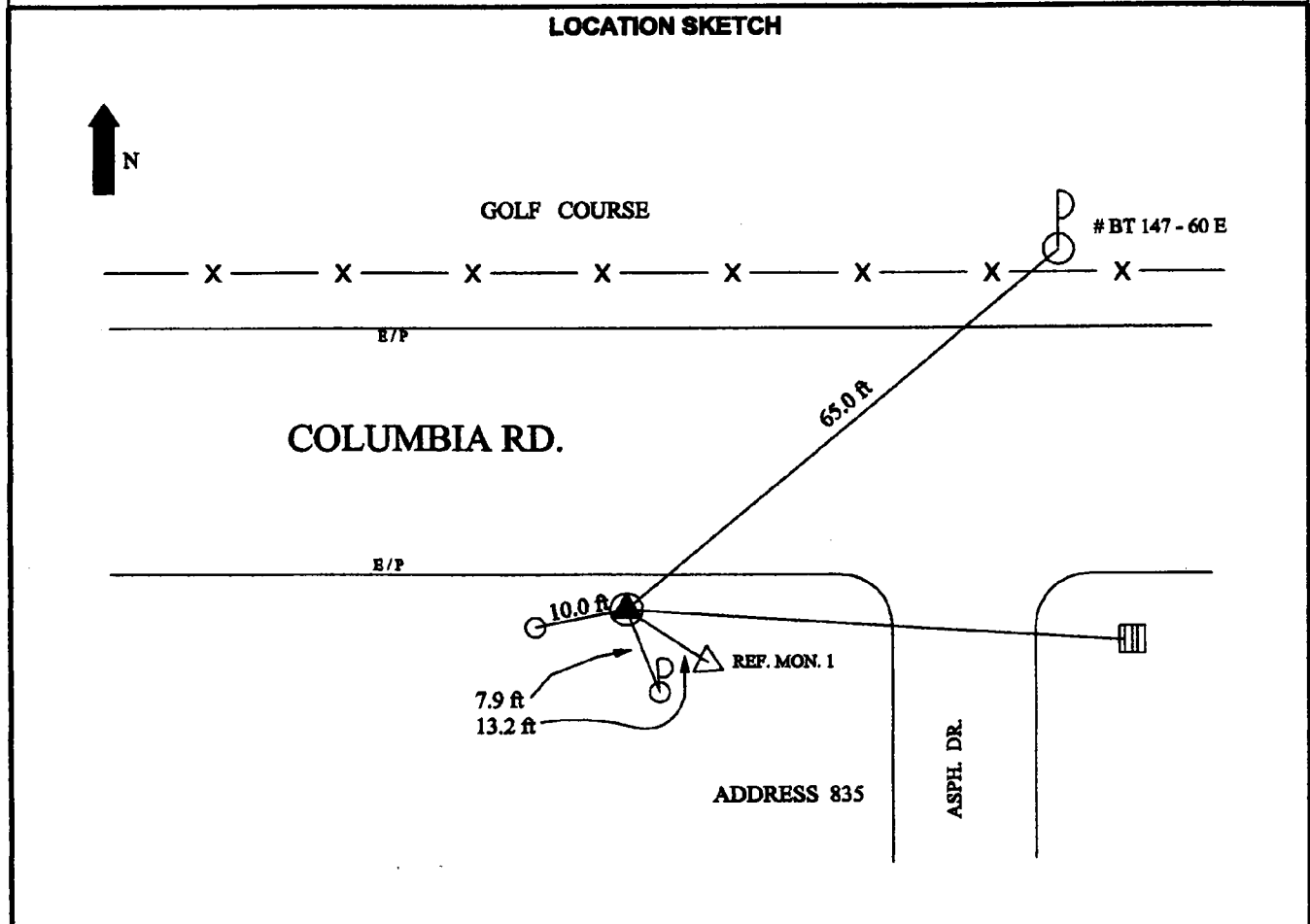
is 90° 41' 41" (grid)

Distance is 225.728 m

MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC59", with center punch mark.

LOCATION SKETCH



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 48
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CONTROL MONUMENT RECORD

DATE: 3/3/99

TOWNSHIP: FAIRFIELD

SECTION: 6

TOWN: 3

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the south side of Columbia Road, 3/4 mile west of the intersection of S.R. 128.

Monument No: 99FC59A	State Plane Coordinates: Meters (NAD 83/88)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 221.061	NORTH 156573.256 EAST 420201.736	LAT 39° 23' 30.04978" LONG 84° 35' 14.76638"

Grid Scale Factor: 0.999935916

Convergence: -1° 19' 28.26609"

Azimuth to 99FC59

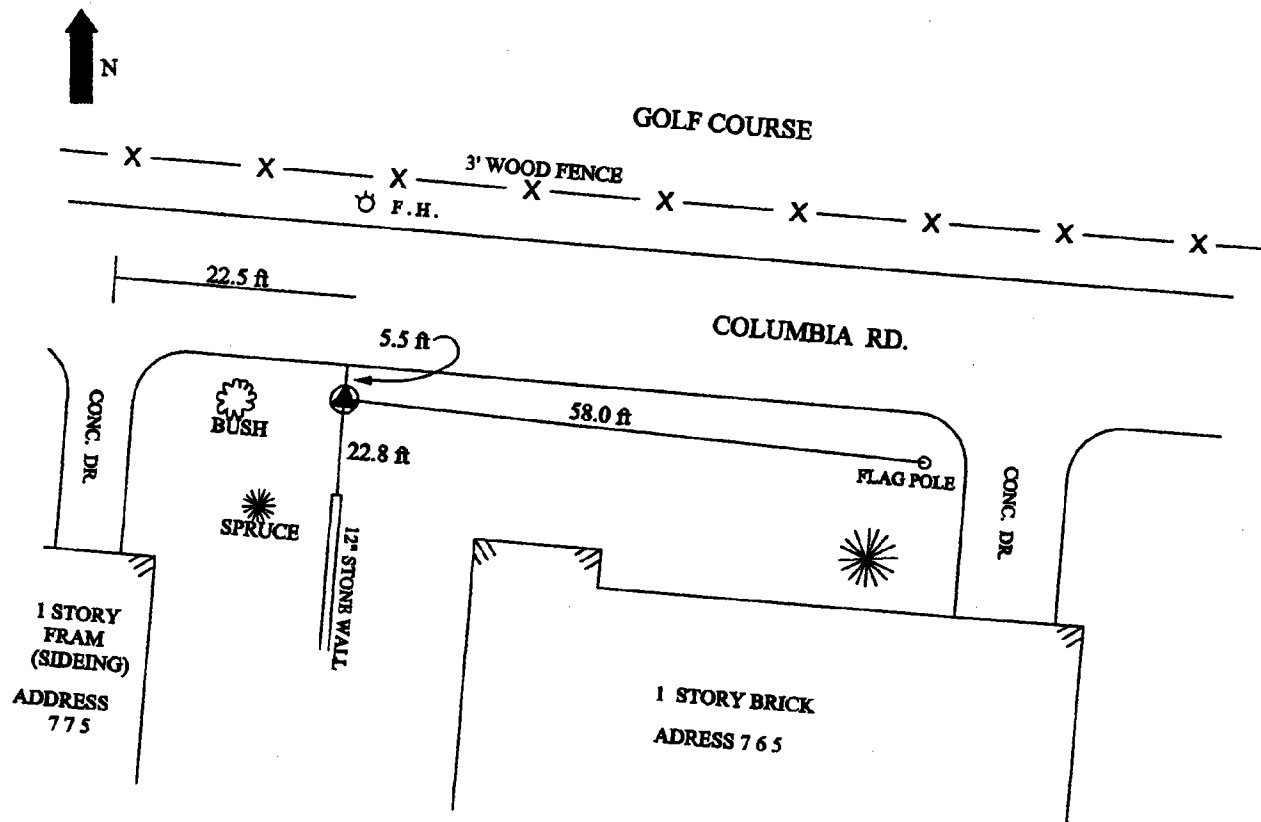
is 270° 41' 41" (grid)

Distance is 225.728 m

MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC59A", with center punch mark.

LOCATION SKETCH



DATA BY:
GRW AERIAL SURVEYS
801 CORPORATE DR.
LEXINGTON, KY 40503
606-223-3999

TYPE OF EQUIPMENT USED:
Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane

SHEET NO.
49

CONTROL MONUMENT RECORD

DATE: 3/19/99

TOWNSHIP: FAIRFIELD

SECTION: 30

TOWN: 2

RANGE: 2

COUNTY: BUTLER

STATE: OHIO

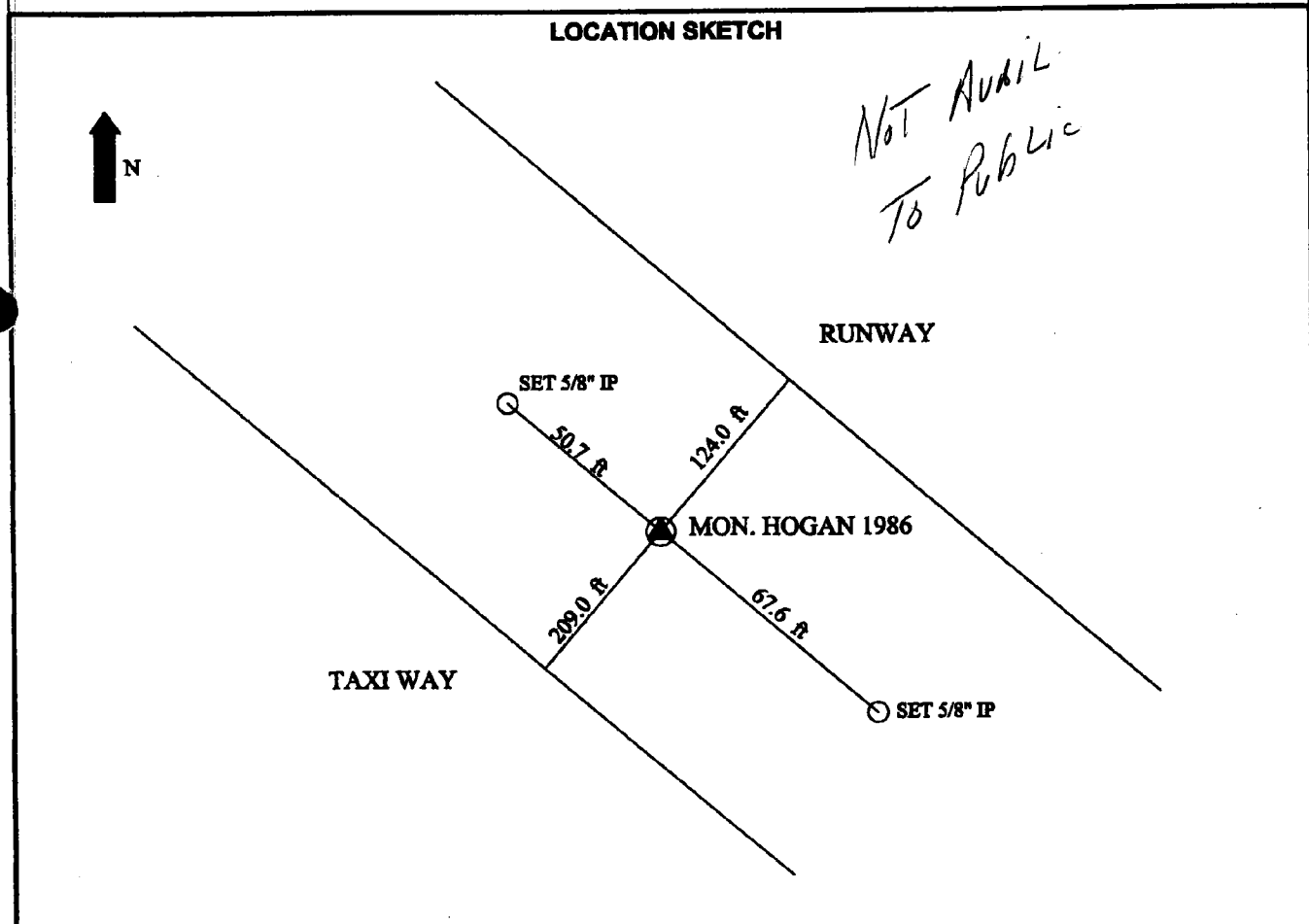
LOCATION: Monument is located between the runway and the taxiway at Hamilton Airport.

Monument No: HOGAN AZI MK	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) 190.479	NORTH 153506.832 EAST 425224.093	LAT 39° 21' 54.34936" LONG 84° 31' 42.04747"

Grid Scale Factor: 0.999935964	Convergence: -1° 17' 13.29178"
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Azimuth to 99FC60A	is 149 27' 19" (grid)	Distance is 675.148 m
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MONUMENT DESCRIPTION:
NGS Standard Azimuth Mark Disk - set in top of concrete monument stamped "HOGAN 1986".



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 50
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CONTROL MONUMENT RECORD

DATE: 3/3/99

TOWNSHIP: FAIRFIELD

SECTION: 29

TOWN: 2

RANGE: 2

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of Bobmeyer Road and East Airport Drive (B.F.I. Drive), 100 +/- north of the Norfolk and Western Rail Line.

Monument No: 99FC60A	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 186.120	NORTH 152925.372 EAST 425567.210	LAT 39° 21' 35.74819" LONG 84° 31' 27.17257"

Grid Scale Factor: 0.999935998

Convergence: -1° 17' 03.85336"

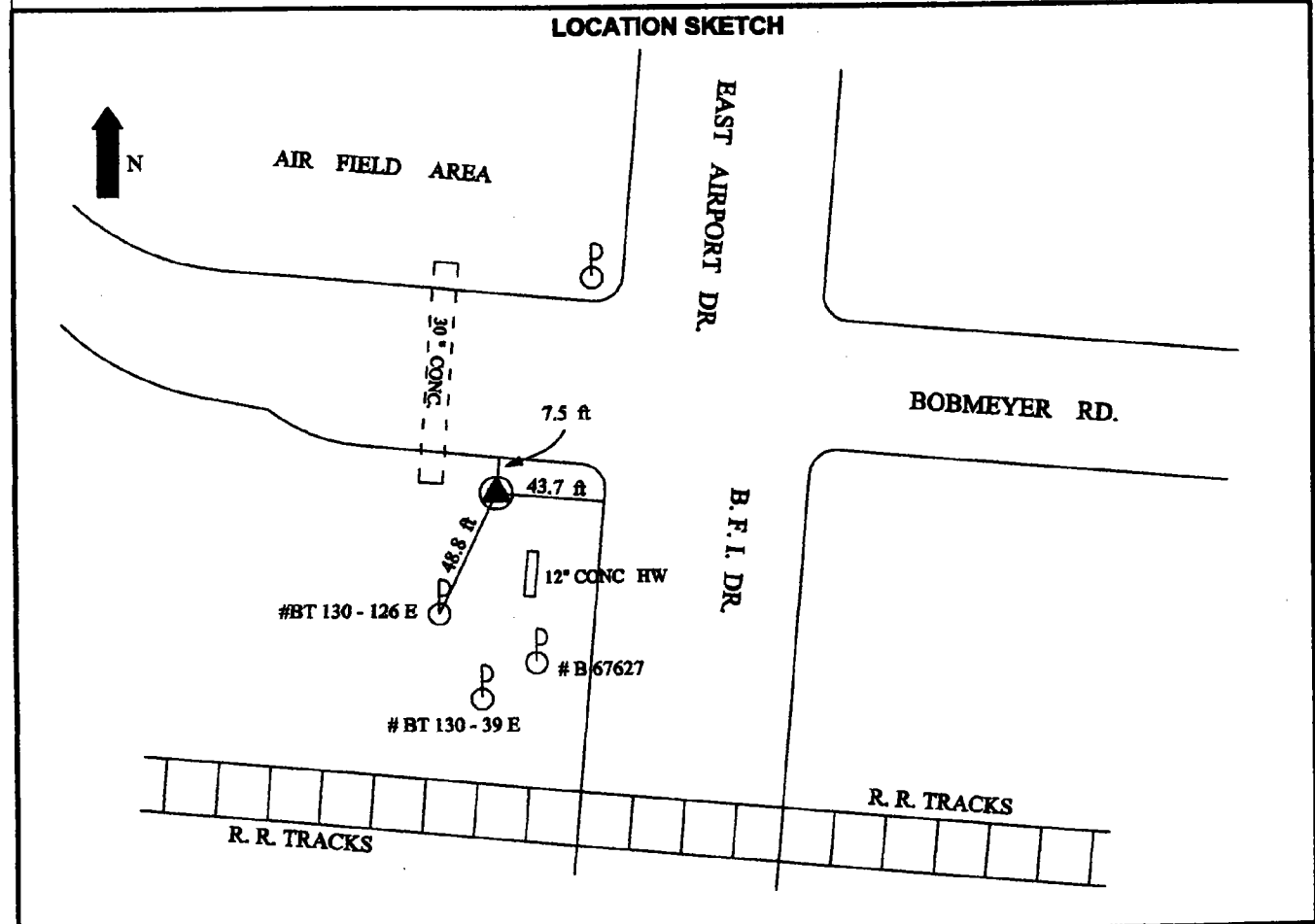
Azimuth to HOGAN AZI MK is 329° 27' 19" (grid)

Distance is 675.148 m

MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC60A", with center punch mark.

LOCATION SKETCH



DATA BY:
GRW AERIAL SURVEYS
801 CORPORATE DR.
LEXINGTON, KY 40503
606-223-3999

TYPE OF EQUIPMENT USED:

Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane

SHEET NO.
51

CONTROL MONUMENT RECORD

DATE: 3/20/99

TOWNSHIP: FAIRFIELD

SECTION: 7

TOWN: 2

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of Hamilton Mason Road and Liberty Fairfield Road.

Monument No: 99FC61 <i>AKA 1007</i>	State Plane Coordinates: Meters (NAD 83/86) NORTH 154489.199 EAST 429539.088	Latitude and Longitude: (NAD 83/86) LAT 39° 22' 29.30194" HARN 39 22 29.29726 LONG 84° 28' 42.72677" HARN 84 28 42.71726
Elevation: Meters (NAVD 88) GPS 219.808		
Grid Scale Factor: 0.999935922		Convergence: -1° 15' 19.50929"
Azimuth to 99FC61A is 1° 53' 45" (grid)		Distance is 320.189 m
MONUMENT DESCRIPTION: Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC61", with center punch mark.		
LOCATION SKETCH		
DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	
		SHEET NO. 52

CONTROL MONUMENT RECORD

DATE: 3/2/99

TOWNSHIP: FAIRFIELD

SECTION: 13

TOWN: 2

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the west side of Liberty Fairfield Road, 0.20 mi. north of the intersection of Hamilton Mason Road.

Monument No: 99FC61A	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 199.858	NORTH 154809.213 EAST 429549.681	LAT 39° 22' 39.68433" LONG 84° 28' 42.57725"

Grid Scale Factor: 0.999935914

Convergence: -1° 15' 19.41442"

Azimuth to 99FC61

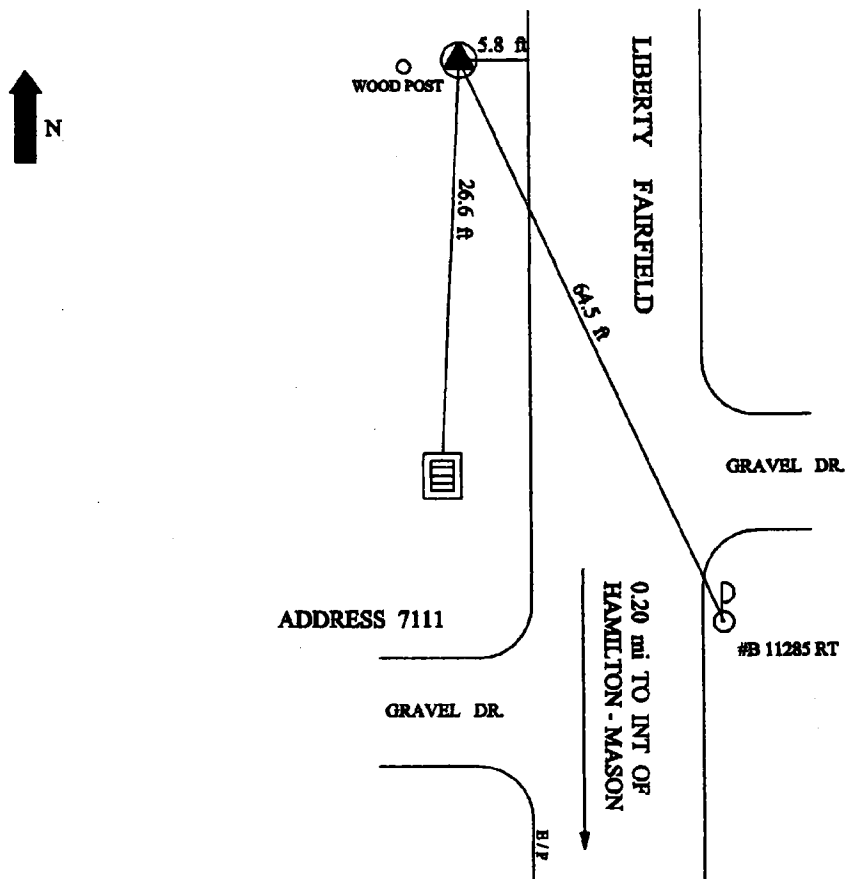
is 181° 43' 45" (grid)

Distance is 320.189 m

MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC61A", with center punch mark.

LOCATION SKETCH



DATA BY:

GRW AERIAL SURVEYS
801 CORPORATE DR.
LEXINGTON, KY 40503
606-223-3999

TYPE OF EQUIPMENT USED:

Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane

SHEET

NO.

53

CONTROL MONUMENT RECORD

DATE: 3/9/99

TOWNSHIP: LIBERTY

SECTION: 8

TOWN: 3

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of Butler Warren County Line Road and Millikin Road (Brewer Road).

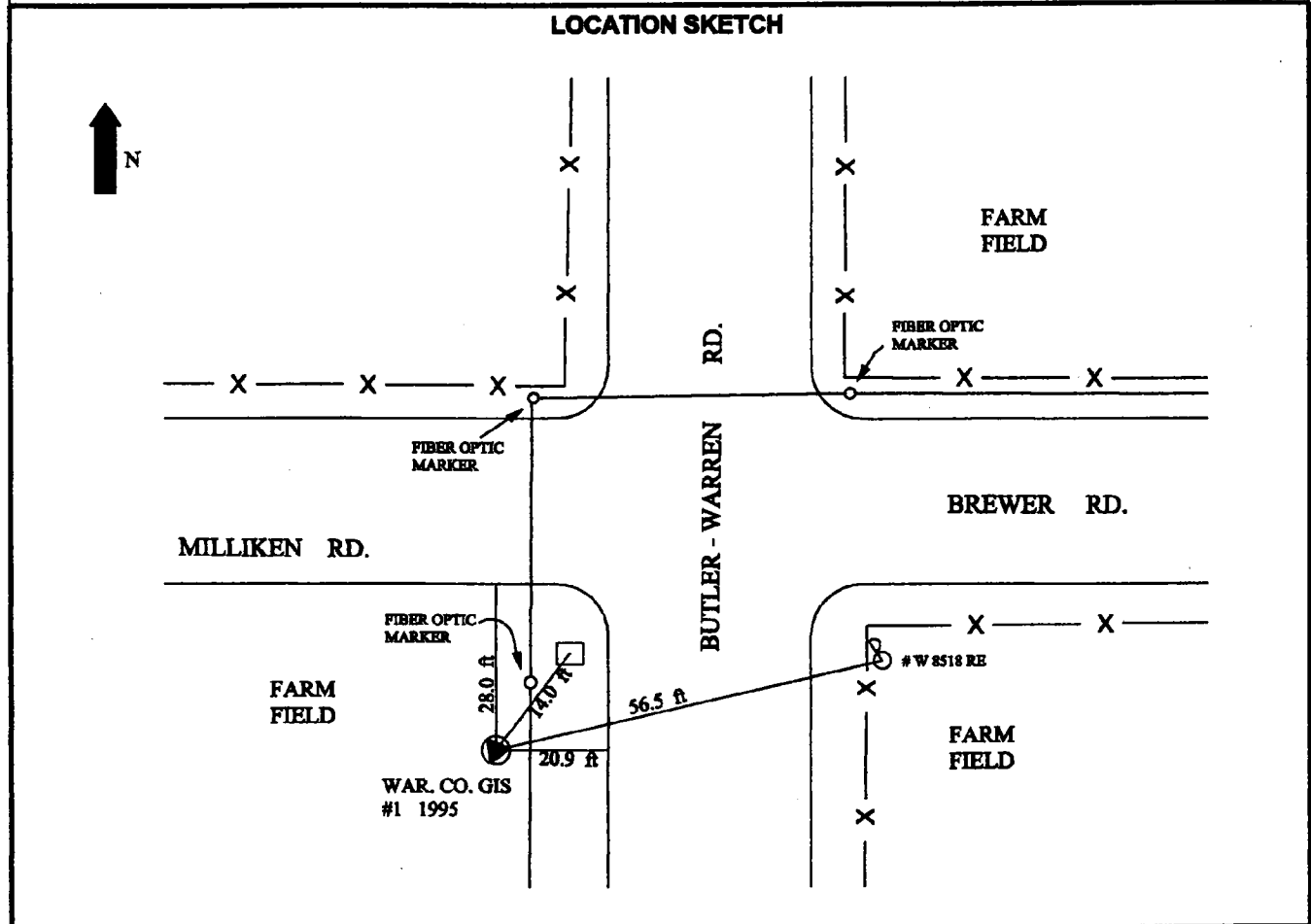
Monument No: 99FC62	State Plane Coordinates: Meters (NAD 83/86) NORTH 156785.215 EAST 441251.236	Latitude and Longitude: (NAD 83/86) LAT 39° 23' 51.77671" LONG 84° 20' 35.43241"
Elevation: Meters (NAVD 88) GPS 265.389		

Grid Scale Factor: 0.999935935	Convergence: -1° 10' 10.31150"
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Azimuth to 99FC62A	is 185° 54' 57" (grid)	Distance is 838.280 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC62", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 54
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CONTROL MONUMENT RECORD

DATE: 3/11/99

TOWNSHIP: LIBERTY

SECTION: 8

TOWN: 3

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of Butler Warren County Line Road and Princeton Road.

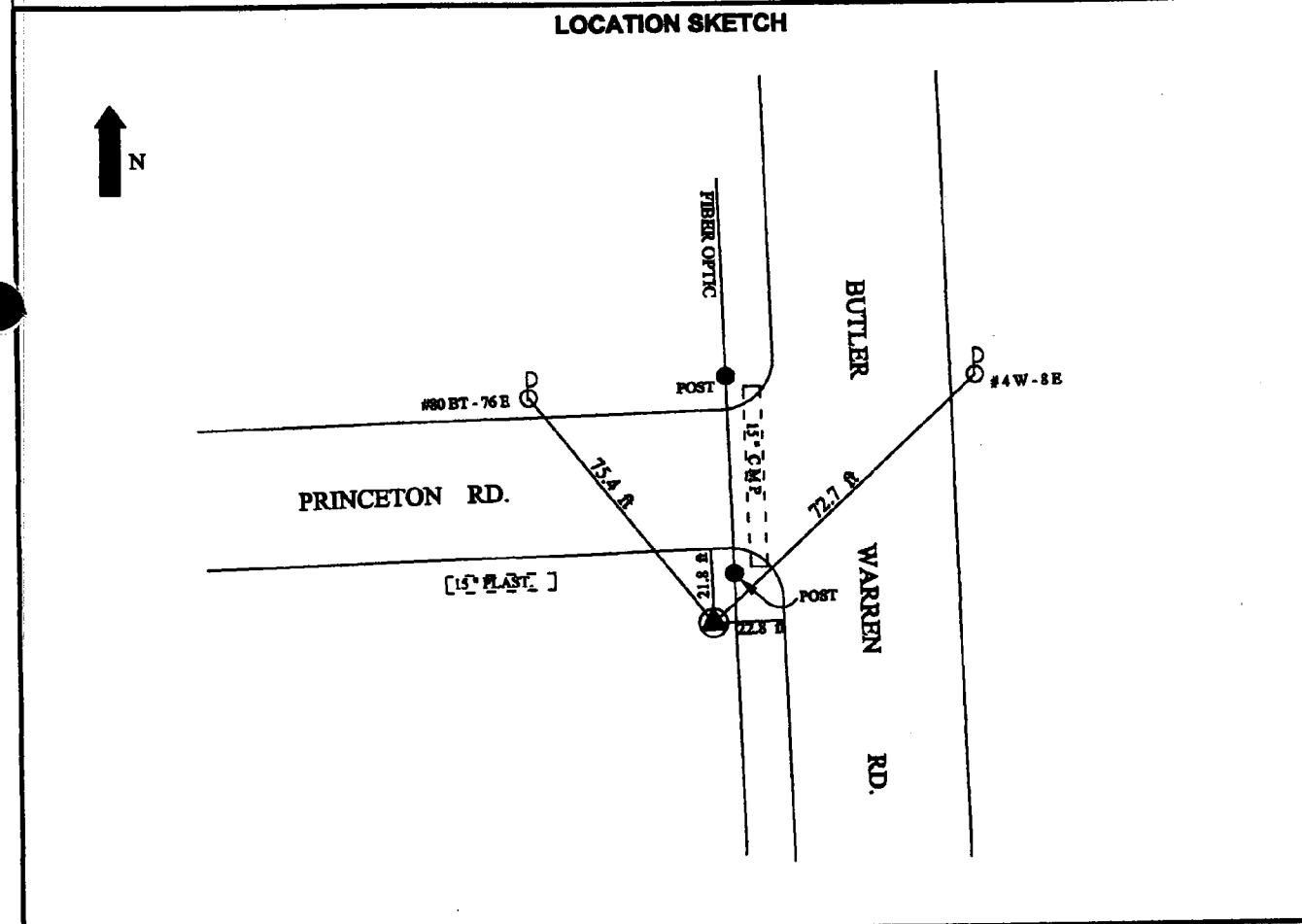
Monument No: 99FC62A	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 263.039	NORTH 155951.176 EAST 441167.022	LAT 39° 23' 24.68054" LONG 84° 20' 38.23964"

Grid Scale Factor: 0.999935913	Convergence: -1° 10' 12.09274"
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Azimuth to 99FC62 is 5° 45' 57" (grid)	Distance is 838.280 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC62A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 55
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CONTROL MONUMENT RECORD

DATE: 3/18/99

TOWNSHIP: FAIRFIELD

SECTION: 15

TOWN: 2

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the south side of S.R. 4, 0.9 mi. west of the intersection of Liberty Fairfield Road.

Monument No: 99FC63	State Plane Coordinates: Meters (NAD 83/86) NORTH 158560.486 EAST 428519.221	Latitude and Longitude: (NAD 83/86) LAT 39° 24' 40.56593" LONG 84° 29' 29.07942"
Elevation: Meters (NAVD 88) GPS 234.458		

Grid Scale Factor: 0.999936018

Convergence: -1° 15' 48.92095"

Azimuth to 99FC63A

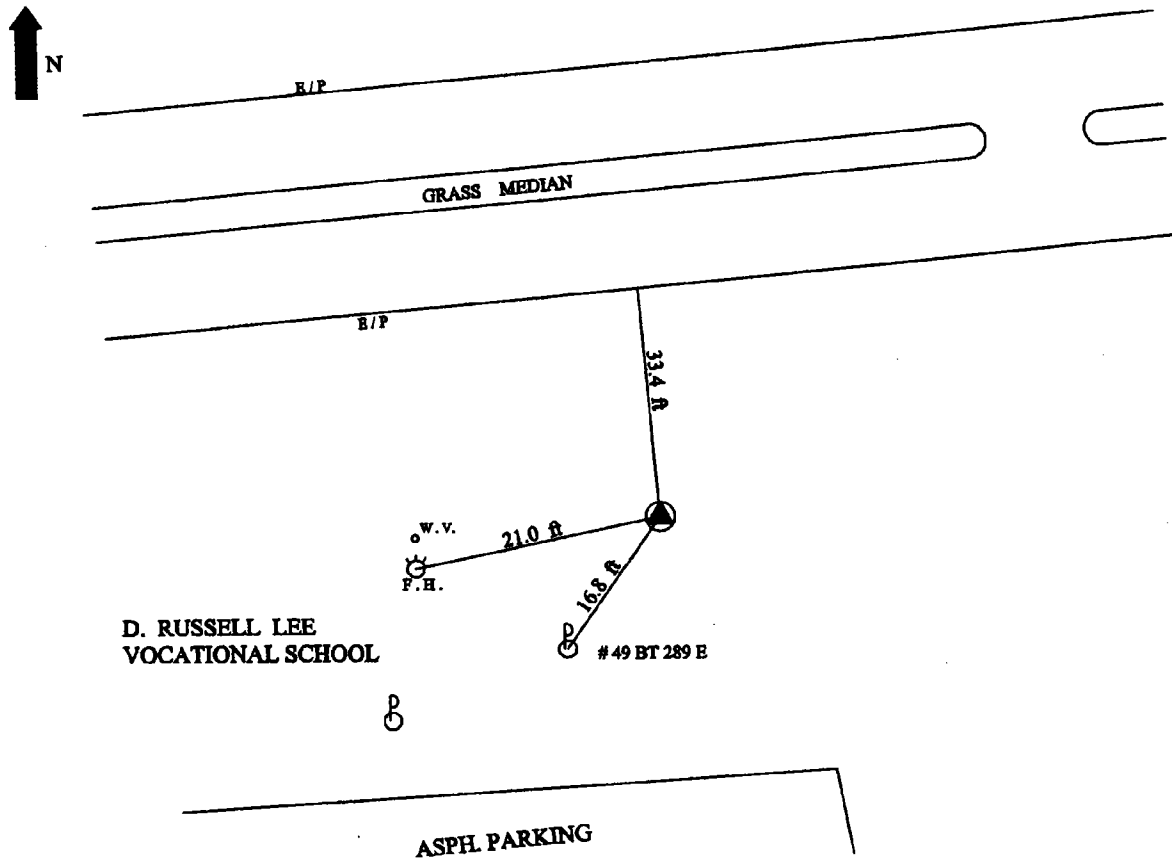
is 69° 08' 06" (grid)

Distance is 881.369 m

MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC63", with center punch mark.

LOCATION SKETCH



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 56
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CONTROL MONUMENT RECORD

DATE: 3 / 18 / 99

TOWNSHIP: FAIRFIELD

SECTION: 15

TOWN: 2

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the north side of S.R. 4, 0.4 mi. west of the intersection of Liberty Fairfield Road.

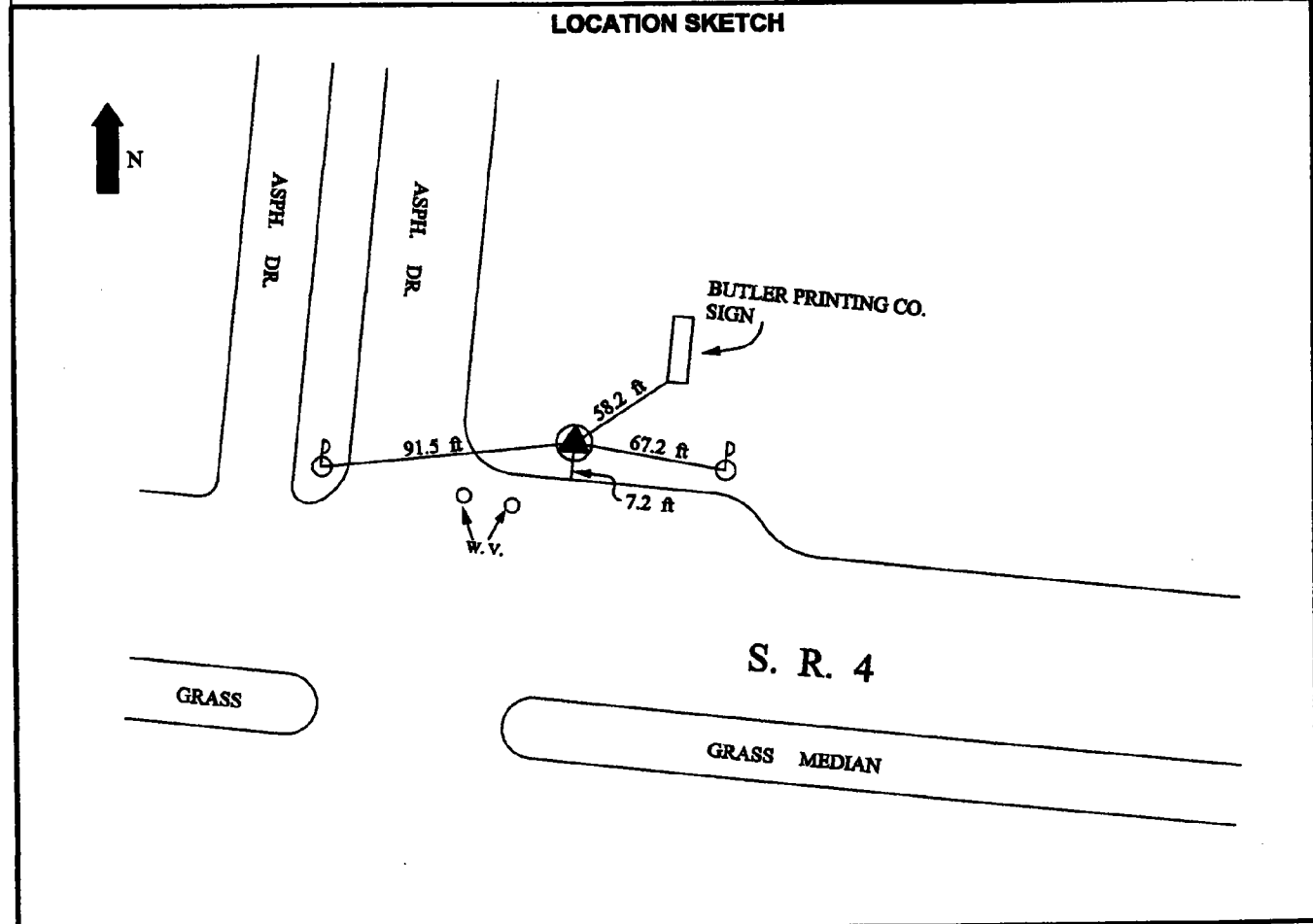
Monument No: 99FC63A	State Plane Coordinates: Meters (NAD 83/86) NORTH 158874.402 EAST 429342.792	Latitude and Longitude: (NAD 83/86) LAT 39° 24' 51.33058" LONG 84° 28' 54.94759"
Elevation: Meters (NAVD 88) GPS 223.017		

Grid Scale Factor: 0.999936043	Convergence: -1° 15' 27.26364"
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Azimuth to 99FC63	is 249° 08' 06" (grid)	Distance is 881.369 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC63A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 57
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CONTROL MONUMENT RECORD

DATE: 3/19/99

TOWNSHIP: ST. CLAIR

SECTION: 19

TOWN: 4

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of Washington Blvd. and North Brookwood Ave.

Monument No: 99FC64	State Plane Coordinates: Meters (NAD 83/86) NORTH 160216.229 EAST 420529.160	Latitude and Longitude: (NAD 83/86) LAT 39° 25' 39.678" LONG 84° 35' 04.60083"
Elevation: Meters (NAVD 88) GPS 194.122		

Grid Scale Factor: 0.999936153

Convergence: -1° 19' 21.81584"

Azimuth to 99FC64A

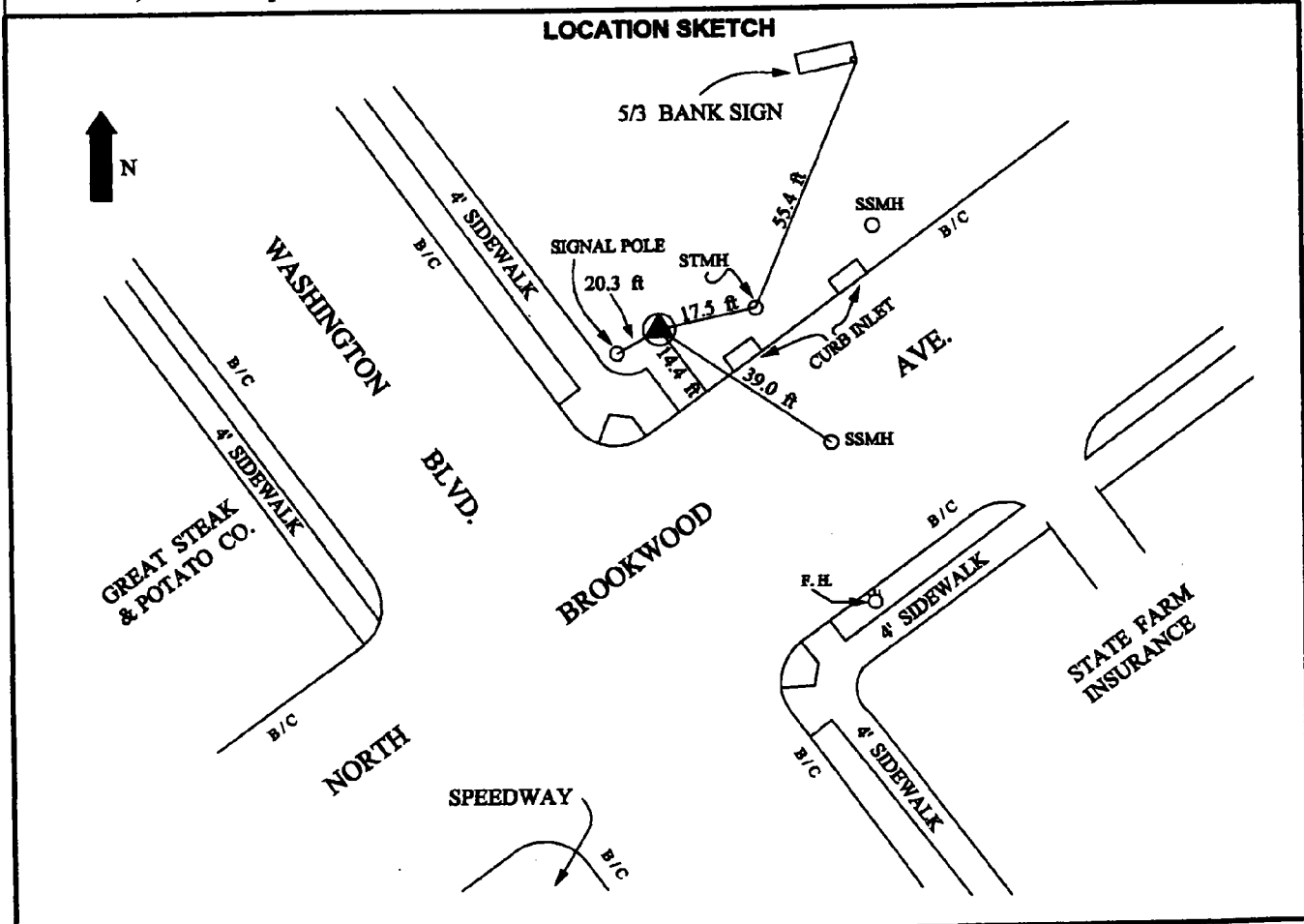
is 220° 23' 25" (grid)

Distance is 631.891 m

MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC64", with center punch mark.

LOCATION SKETCH



DATA BY:

GRW AERIAL SURVEYS
801 CORPORATE DR.
LEXINGTON, KY 40503
606-223-3999

TYPE OF EQUIPMENT USED:

Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane

SHEET

NO.

58

CONTROL MONUMENT RECORD

DATE: 3 / 19 / 99

TOWNSHIP: ST. CLAIR

SECTION: 30

TOWN: 4

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of Main St. and North Brookwood Avenue.

Monument No: 99FC64A	State Plane Coordinates: Meters (NAD 83/86) NORTH 159734.950 EAST 420119.700	Latitude and Longitude: (NAD 83/86) LAT 39° 25' 12.48740" LONG 84° 35' 21.25081"
Elevation: Meters (NAVD 88) GPS 198.054		

Grid Scale Factor: 0.999936102

Convergence: -1° 19' 32.38058"

Azimuth to 99FC64

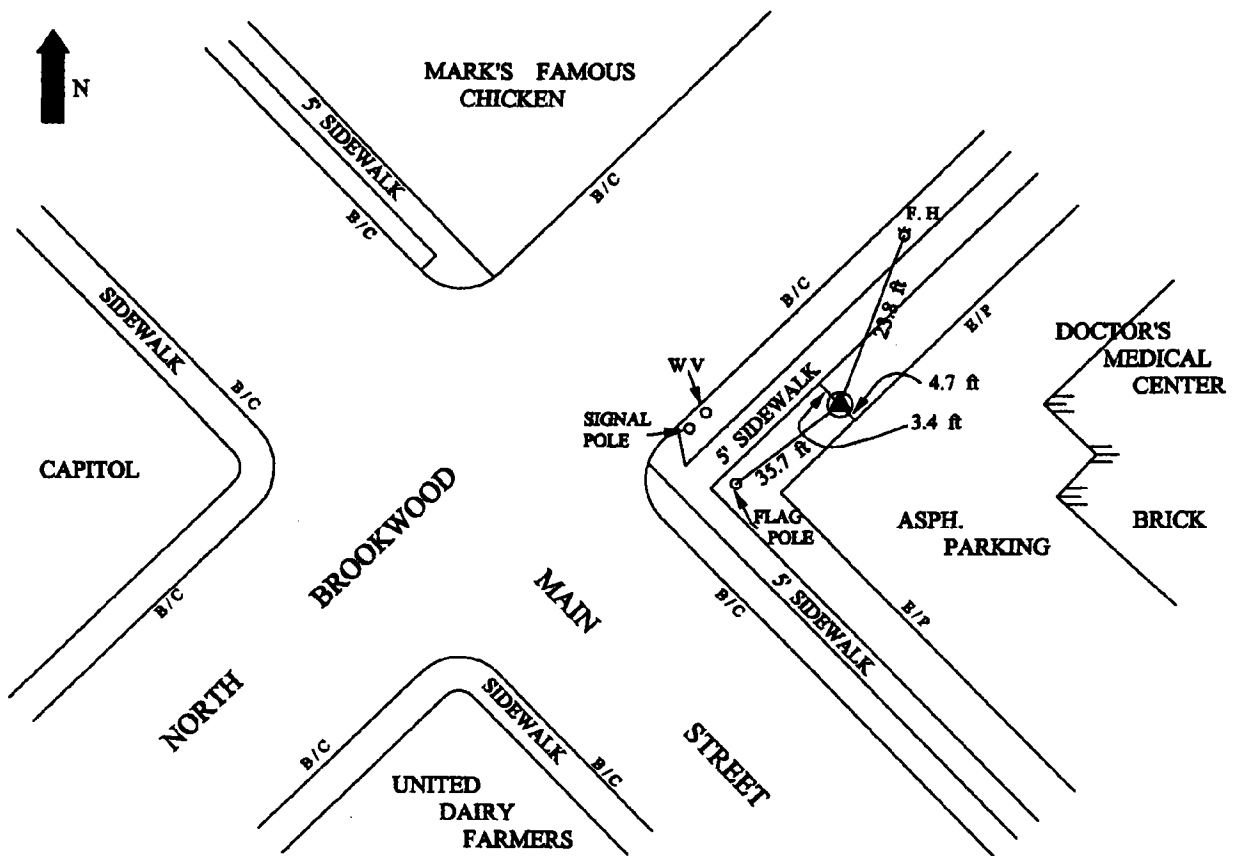
is 40° 23' 25" (grid)

Distance is 631.891 m

MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC64A", with center punch mark.

LOCATION SKETCH



DATA BY:
GRW AERIAL SURVEYS
801 CORPORATE DR.
LEXINGTON, KY 40503
606-223-3999

TYPE OF EQUIPMENT USED:
Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane

SHEET NO.
59

CONTROL MONUMENT RECORD

DATE: 3/17/99

TOWNSHIP: LEMON

SECTION: 6

TOWN: 3

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the east side of the north lane of Interstate 75, 1/4 mi. north of S.R. 63.

Monument No: T 347	State Plane Coordinates: Meters (NAD 83/86) NORTH 161778.325 EAST 442184.546	Latitude and Longitude: (NAD 83/86) LAT 39° 26' 34.27400" LONG 84° 20' 00.66958"
Elevation: Meters (NAVD 88) 202.619		

Grid Scale Factor: 0.999936427

Convergence: -1° 09' 48.25380"

Azimuth to 99FC65A

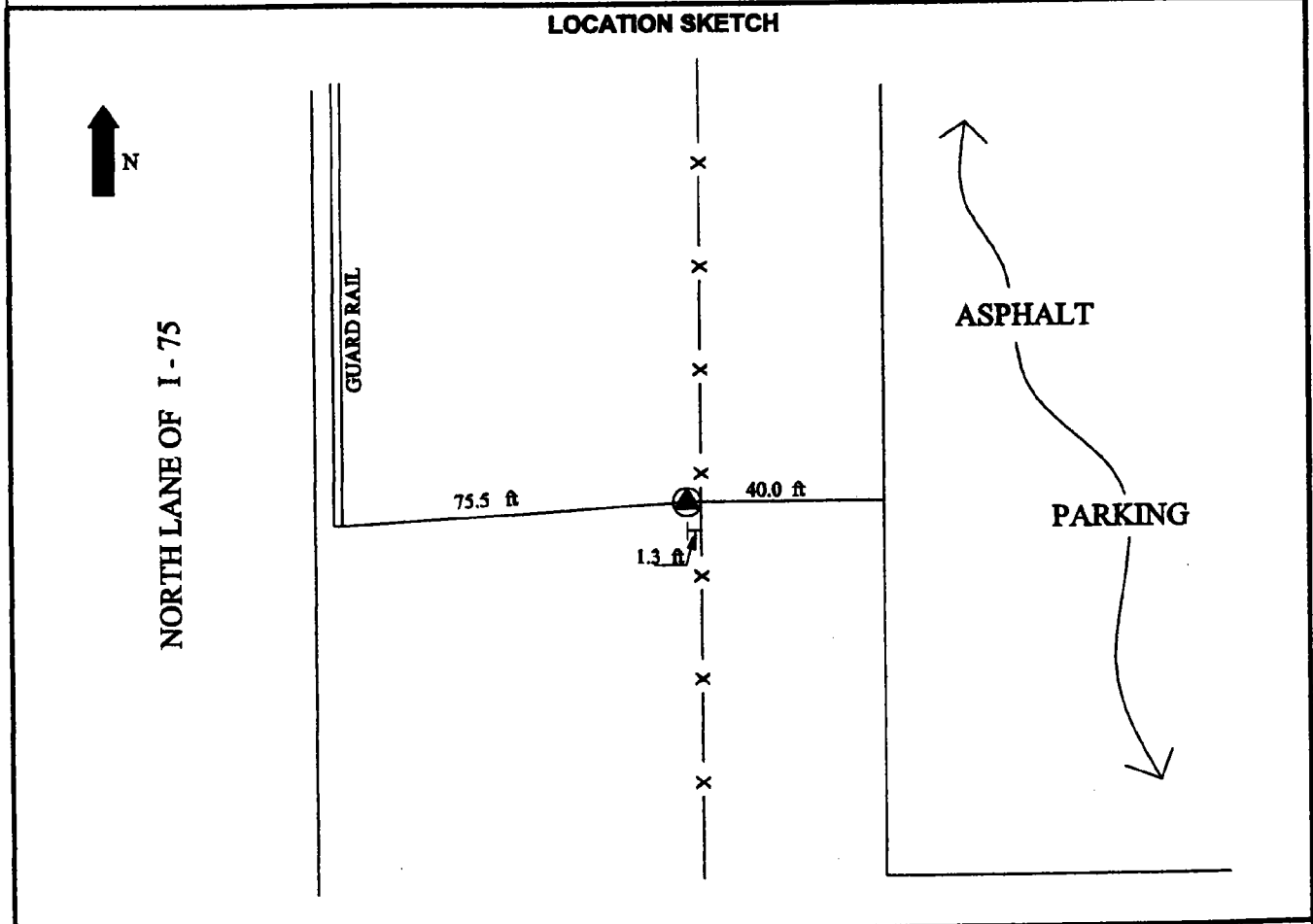
is 230° 19' 41" (grid)

Distance is 503.8745 m

MONUMENT DESCRIPTION:

NGS Stainless steel rod without sleeve - stamped "T 347 1993".

LOCATION SKETCH



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 60
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CONTROL MONUMENT RECORD

DATE: 3/17/99

TOWNSHIP: LEMON

SECTION: 5

TOWN: 3

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is near the ramp to southbound Interstate 75 from Hamilton Lebanon Road (Hwy. 63)

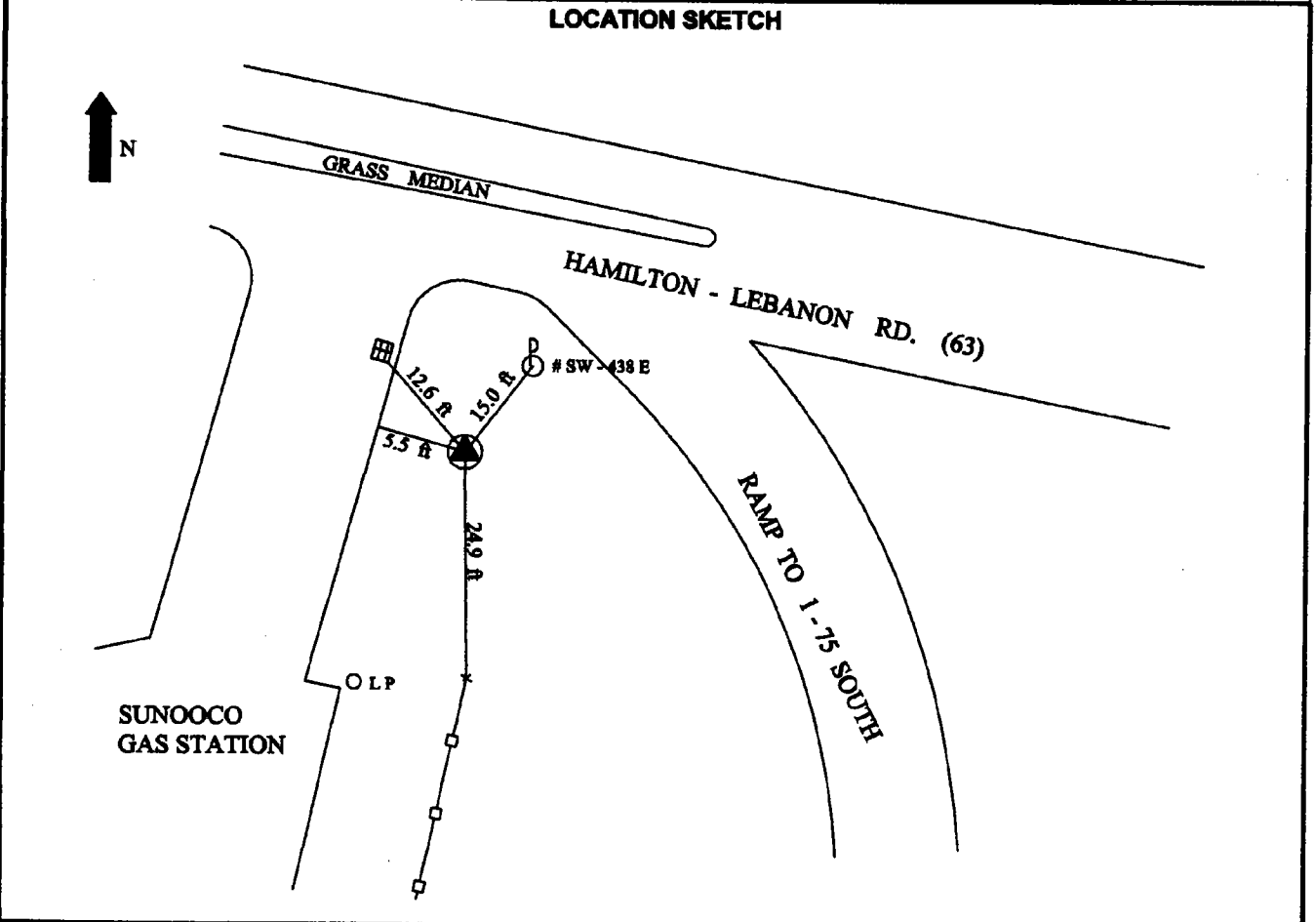
Monument No: 99FC65A	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 216.856	NORTH 161456.655 EAST 441796.707	LAT 39° 26' 23.58955" LONG 84° 20' 16.61275"

Grid Scale Factor: 0.999936376	Convergence: -1° 09' 58.37006"
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Azimuth to T 347	is 50° 19' 41" (grid)	Distance is 503.875 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC65A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 61
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CONTROL MONUMENT RECORD

DATE: 3 / 19 / 99

TOWNSHIP: LIBERTY

SECTION: 28

TOWN: 3

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the north side of Kyles Station Road at the intersection of Liberty Woods Road.

Monument No: 99FC66A	State Plane Coordinates: Meters (NAD 83/86) NORTH 158971.140 EAST 435367.859	Latitude and Longitude: (NAD 83/86) LAT 39° 24' 58.67918" LONG 84° 24' 43.20996"
Elevation: Meters (NAVD 88) GPS 220.158		

Grid Scale Factor: 0.999936062

Convergence: -1° 12' 47.53119"

Azimuth to 99FC66

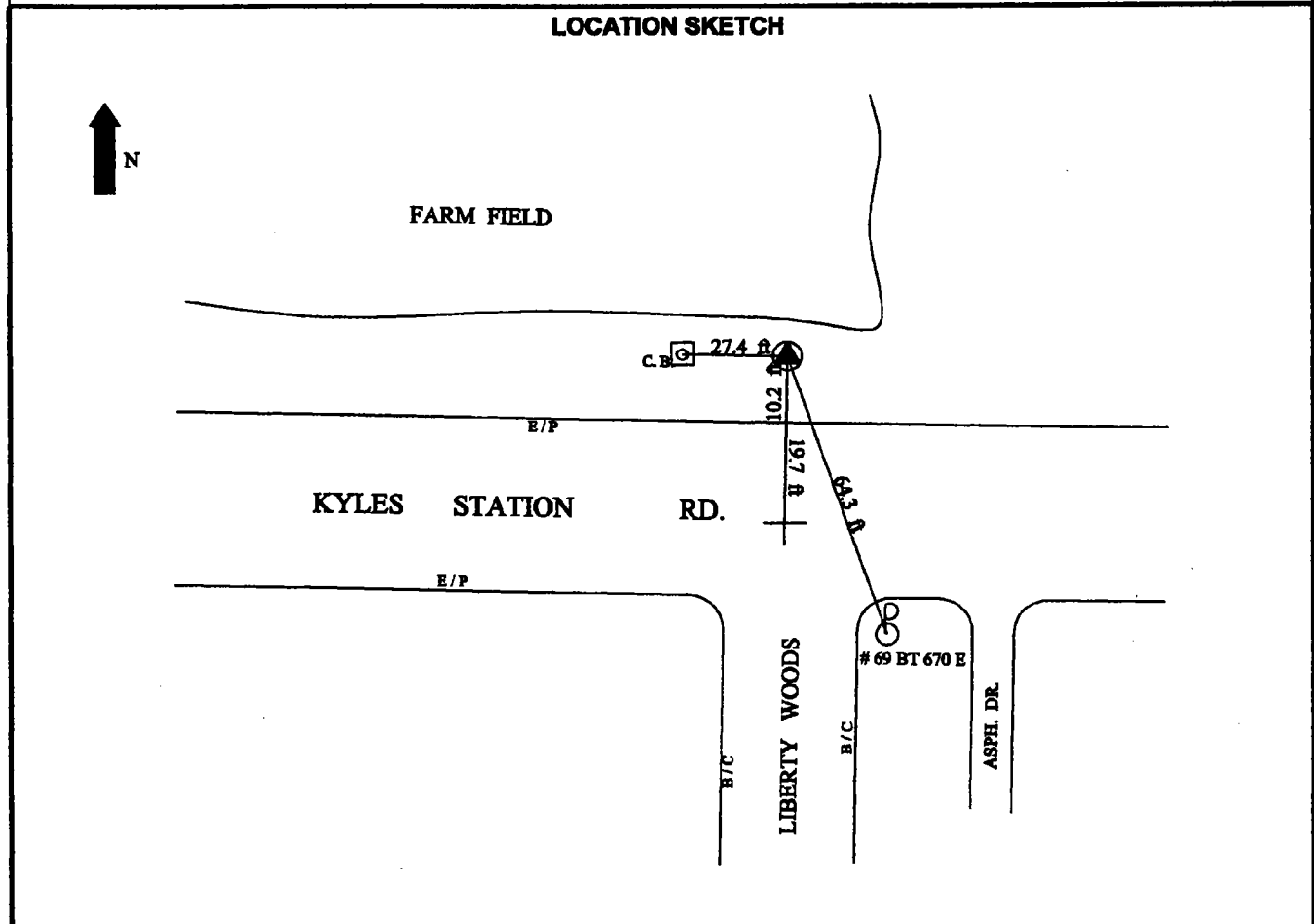
Is 272° 47' 35" (grid)

Distance Is 422.609 m

MONUMENT DESCRIPTION:

Butler County Monument - 1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC66A", with center punch mark.

LOCATION SKETCH



DATA BY:
GRW AERIAL SURVEYS
801 CORPORATE DR.
LEXINGTON, KY 40503
606-223-3999

TYPE OF EQUIPMENT USED:

Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane

SHEET NO.
63

CONTROL MONUMENT RECORD

DATE: 3 / 18 / 99

TOWNSHIP: LIBERTY

SECTION: 27

TOWN: 3

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the south side of Kyles Station Road, 1/4 mile west of the intersection of Hughes Road.

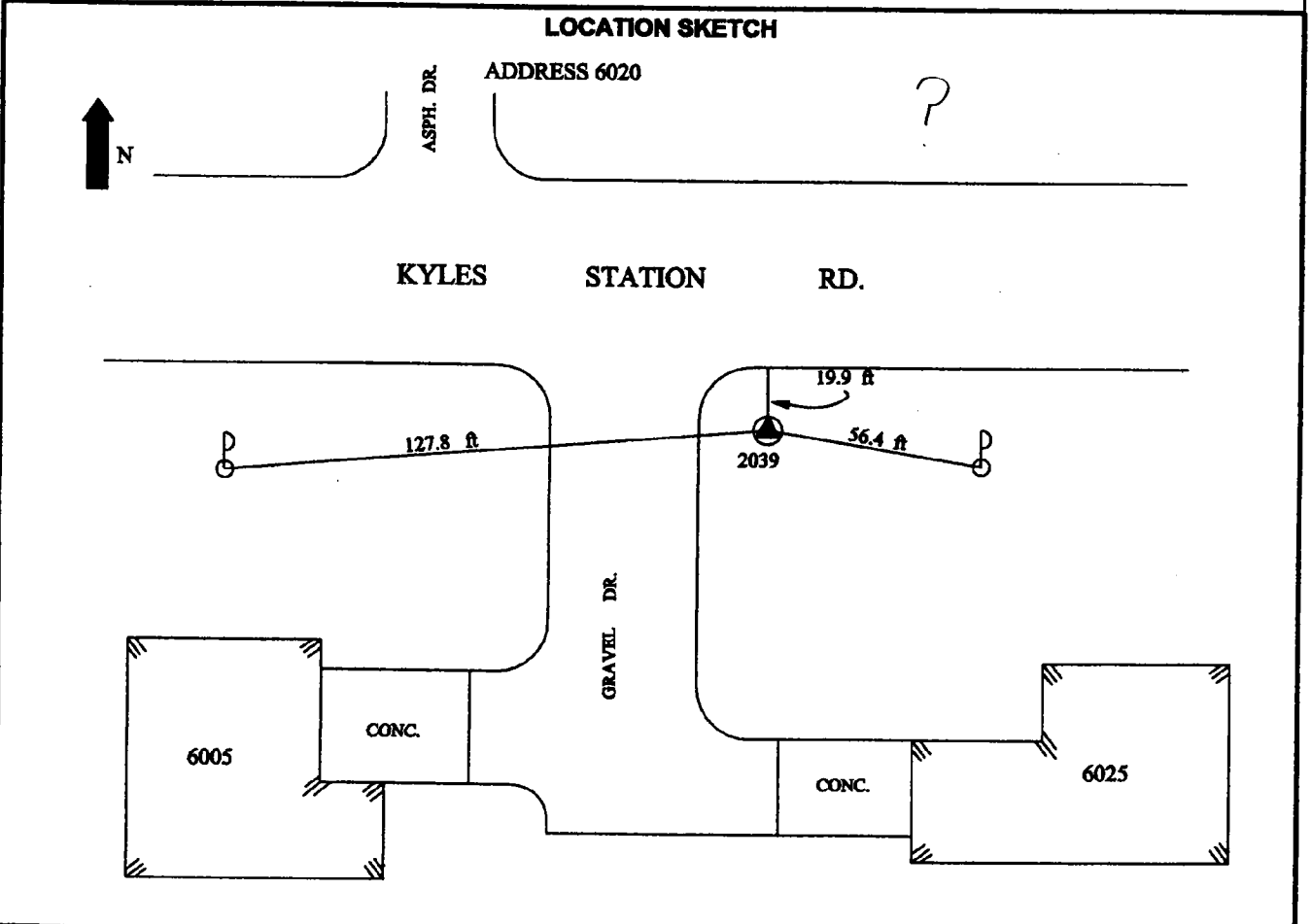
Monument No: 99FC66	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 217.276	NORTH 158991.733 EAST 434945.751	LAT 39° 24' 59.05662" LONG 84° 25' 00.87110"

Grid Scale Factor: 0.999936063	Convergence: -1° 12' 58.73753"
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Azimuth to 99FC66A	is 92° 47' 35" (grid)	Distance is 422.609 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC66", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 62
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CONTROL MONUMENT RECORD

DATE: 3/17/99

TOWNSHIP: MIDDLETOWN

SECTION: 19

TOWN: 2

RANGE: 4

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is near the intersection of Todhunter Road and Yankee Road.

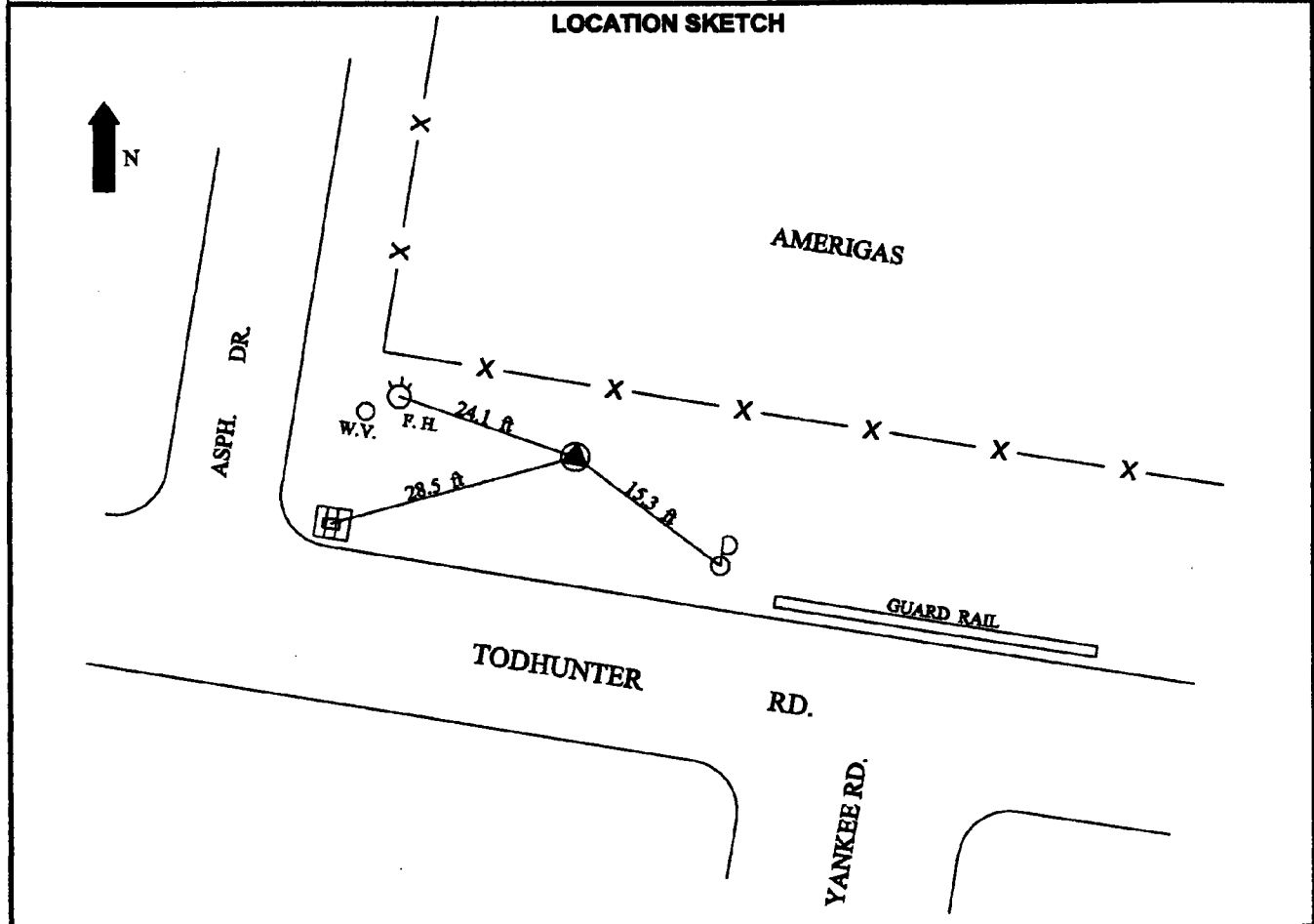
Monument No: 99FC67	State Plane Coordinates: Meters (NAD 83/86) NORTH 163711.790 EAST 437490.319	Latitude and Longitude: (NAD 83/86) LAT 39° 27' 33.82100" LONG 84° 23' 18.64139"
Elevation: Meters (NAVD 88) GPS 199.634		

Grid Scale Factor: 0.999936762	Convergence: -1° 11' 53.87079"
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Azimuth to 99FC67A	is 185° 14' 22" (grid)	Distance is 508.096 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC67", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 64
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CONTROL MONUMENT RECORD

DATE: 3/17/99

TOWNSHIP: LEMON

SECTION: 24

TOWN: 3

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the west side of Yankee Road, 1/4 mile south of the intersection of Todhunter Road.

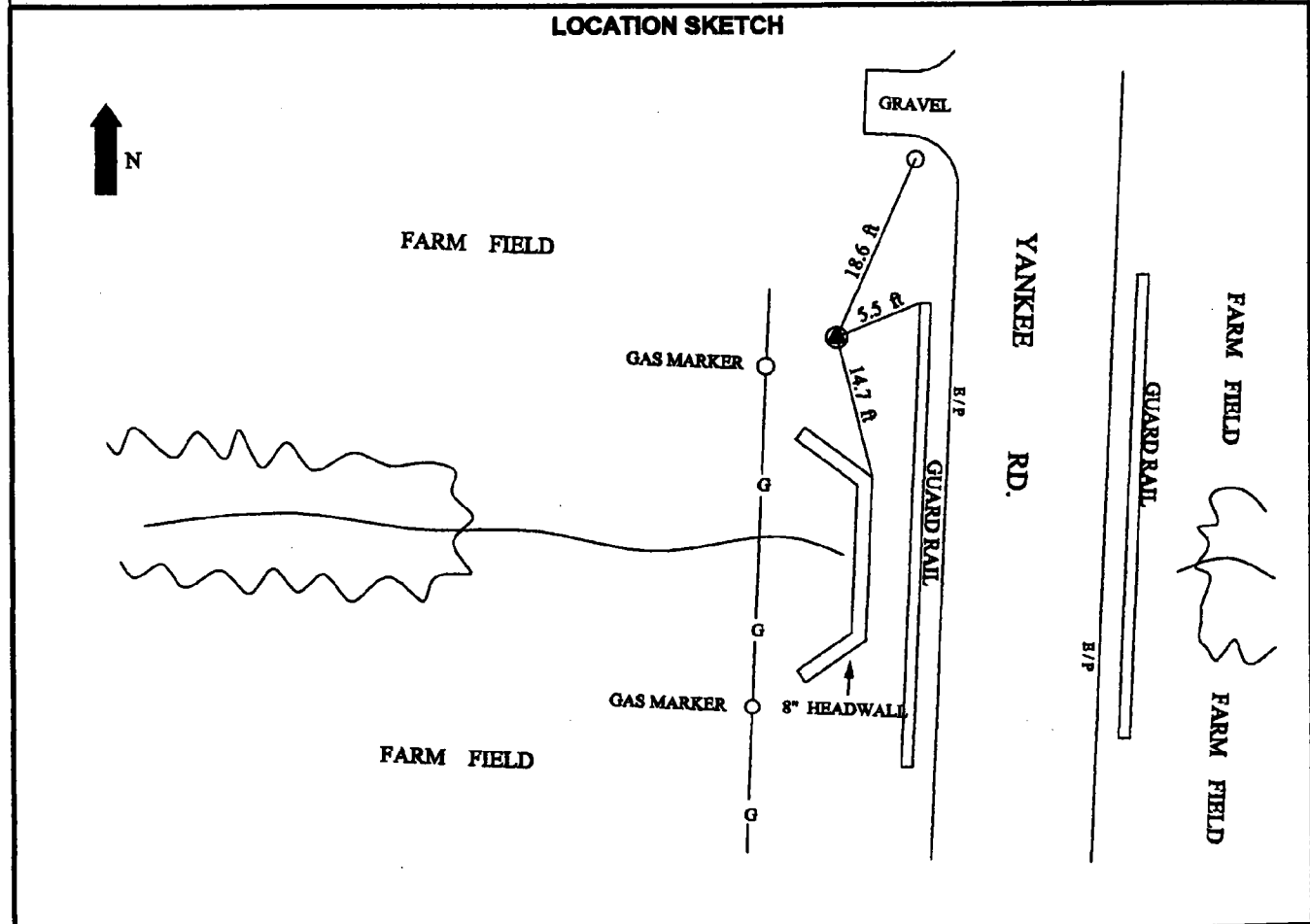
Monument No: 99FC67A	State Plane Coordinates: Meters (NAD 83/86) NORTH 163205.816 EAST 437443.920	Latitude and Longitude: (NAD 83/86) LAT 39° 27' 17.38571" LONG 84° 23' 20.13920"
Elevation: Meters (NAVD 88) GPS 201.284		

Grid Scale Factor: 0.999936661	Convergence: -1° 11' 54.82118"
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Azimuth to 99FC67	is 5° 14' 22" (grid)	Distance is 508.096 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC67A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 65
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CONTROL MONUMENT RECORD

DATE: 3/20/99

TOWNSHIP: MADISON

SECTION: 8

TOWN: 2

RANGE: 4

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of Kennel Road and Woodsdale Road.

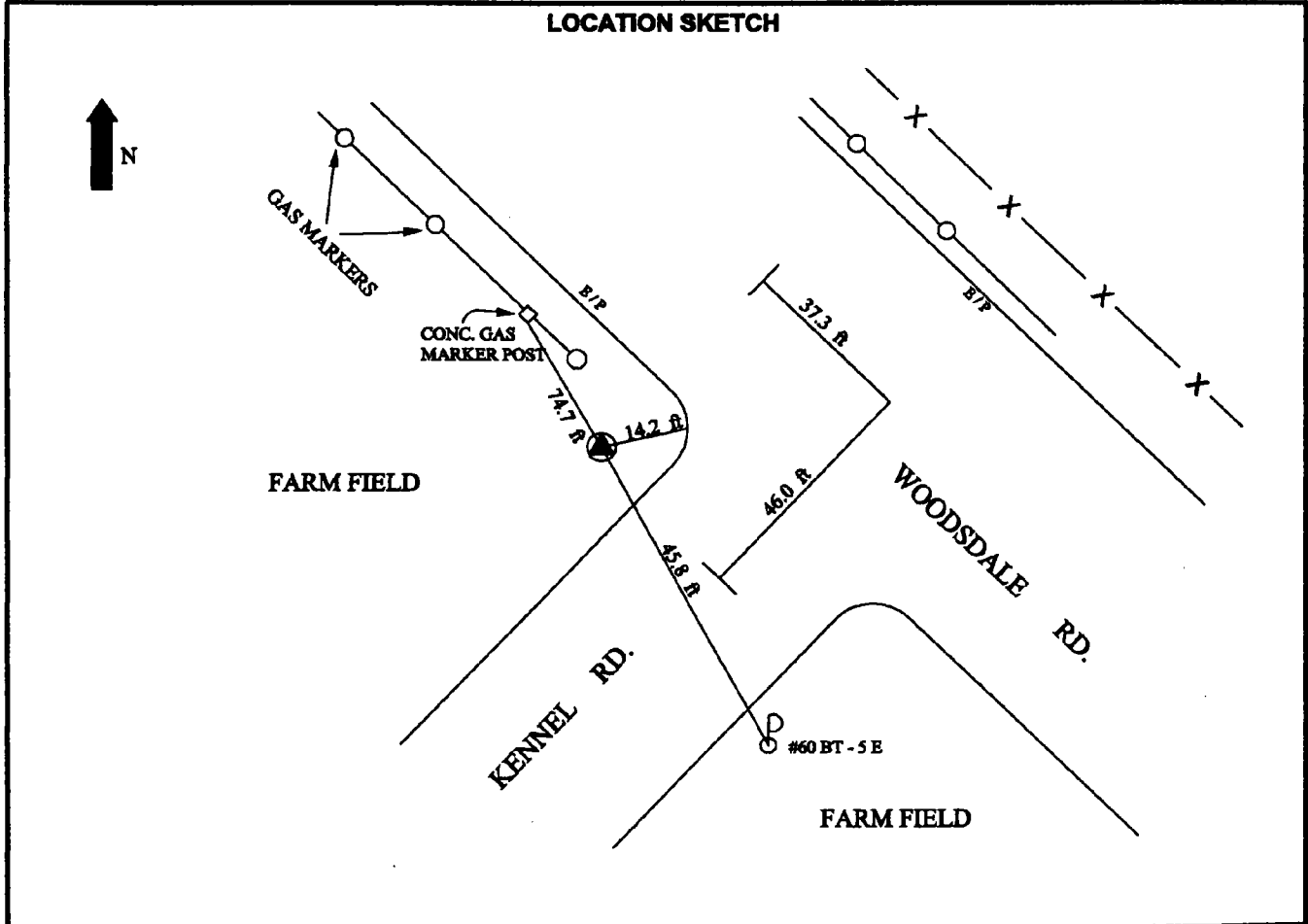
Monument No: 99FC68	State Plane Coordinates: Meters (NAD 83/86) NORTH 164136.560 EAST 432139.797	Latitude and Longitude: (NAD 83/86) LAT 39° 27' 43.90384" LONG 84° 27' 02.79741"
Elevation: Meters (NAVD 88) GPS 190.605		

Grid Scale Factor: 0.999936827	Convergence: -1° 14' 16.10216"
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Azimuth to 99FC68A	is 164° 40' 26" (grid)	Distance is 465.092 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC68", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 66
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CONTROL MONUMENT RECORD

DATE: 3 / 20 / 99

TOWNSHIP: MADISON

SECTION: 8

TOWN: 2

RANGE: 4

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the southwest side of Woodsdale Road, 1/4 mile southeast of the intersection of Kennel Road.

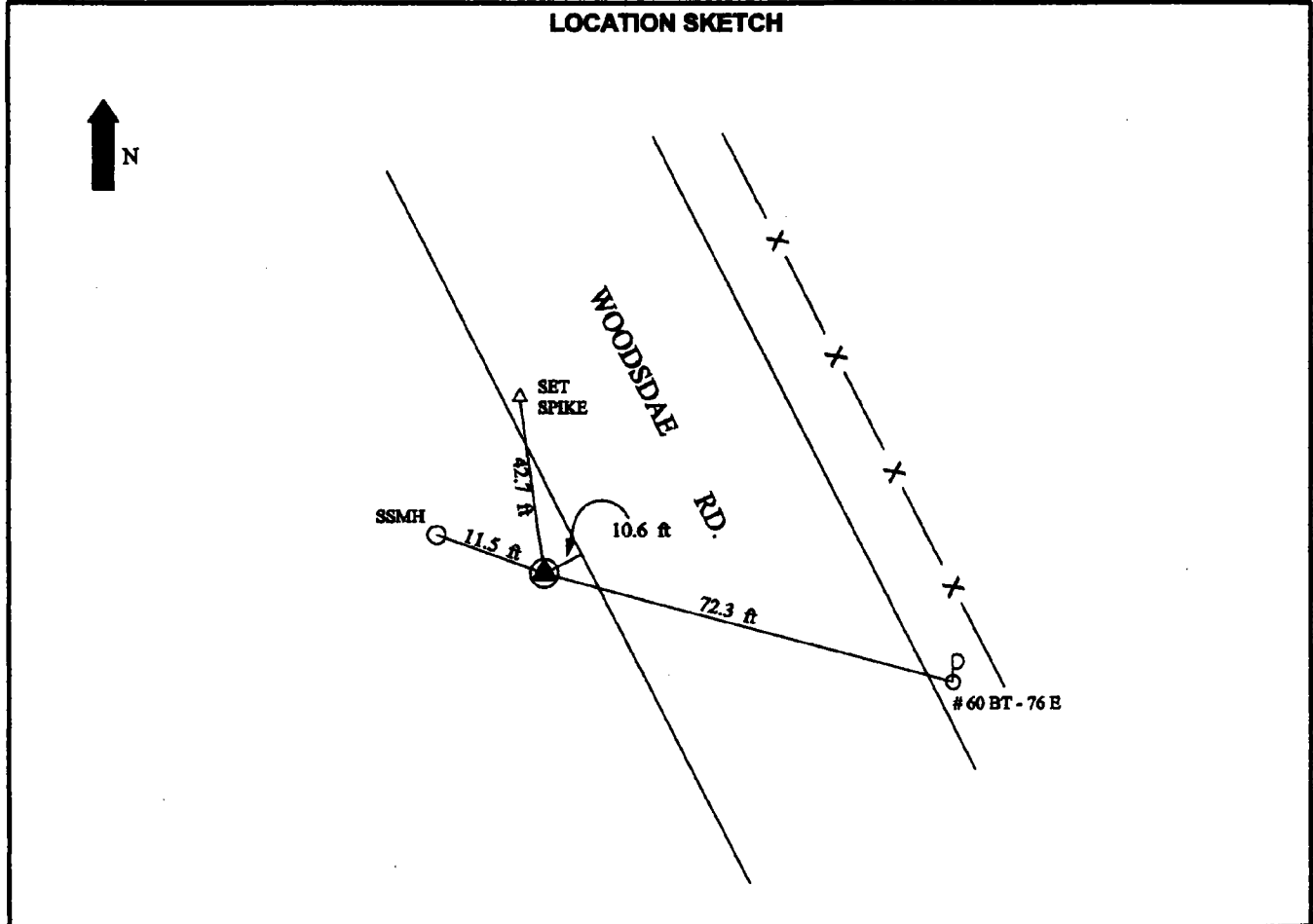
Monument No: 99FC68A	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 190.689	NORTH 163688.008 EAST 432262.727	LAT 39° 27' 29.44794" LONG 84° 26' 57.25090"

Grid Scale Factor: 0.999936735	Convergence: -1° 14' 12.58279"
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Azimuth to 99FC68	Is 344° 40' 26" (grid)	Distance is 465.092 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC68A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 67
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CONTROL MONUMENT RECORD

DATE: 3/18/99

TOWNSHIP: ST. CLAIR

SECTION: 10

TOWN: 2

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of Jacksonburg Road and Morgenthaler Road.

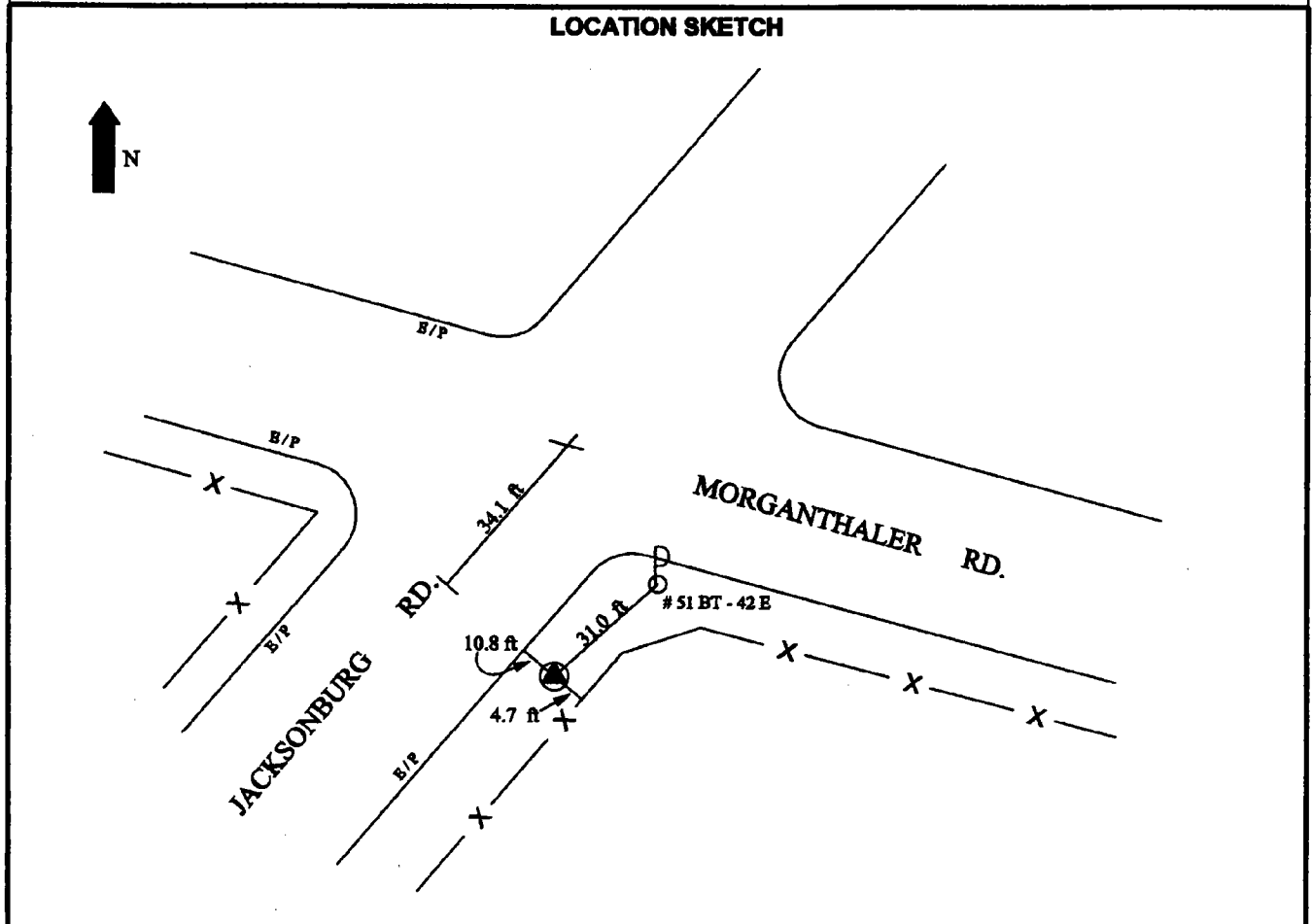
Monument No: 99FC69	State Plane Coordinates: Meters (NAD 83/86) NORTH 164030.291 EAST 425953.602	Latitude and Longitude: (NAD 83/86) LAT 39° 27' 36.04543" LONG 84° 31' 21.42575"
Elevation: Meters (NAVD 88) GPS 192.565		

Grid Scale Factor: 0.999936776	Convergence: -1° 17' 00.20689"
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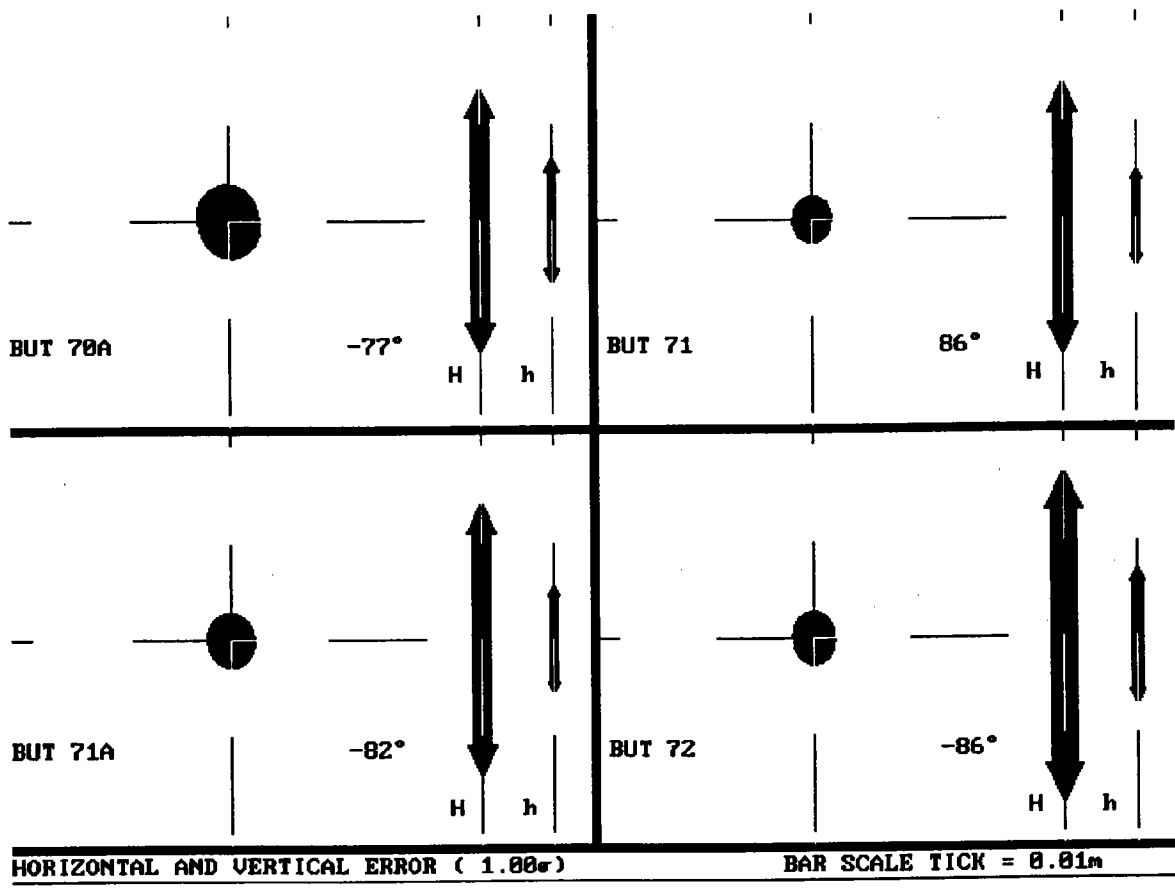
Azimuth to 99FC69A	is 33° 22' 58" (grid)	Distance is 717.809 m
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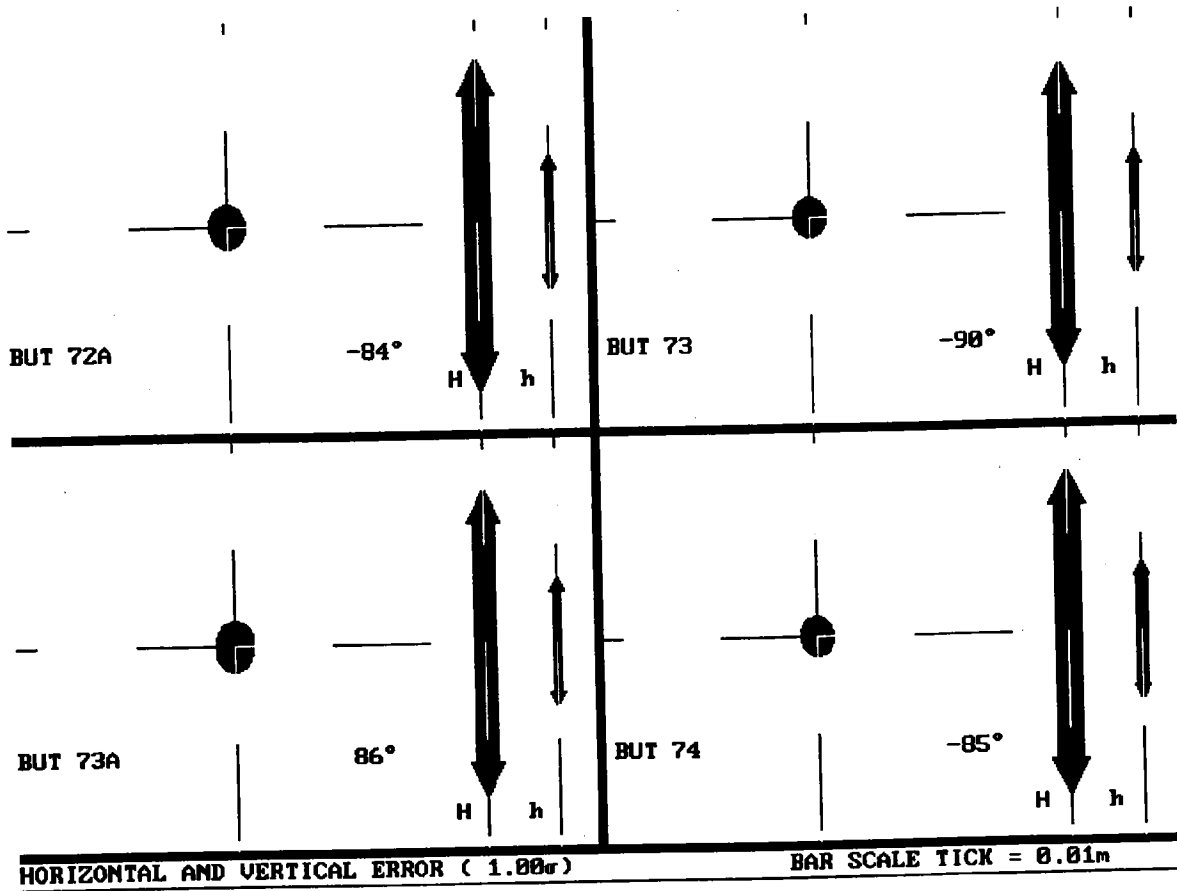
MONUMENT DESCRIPTION:

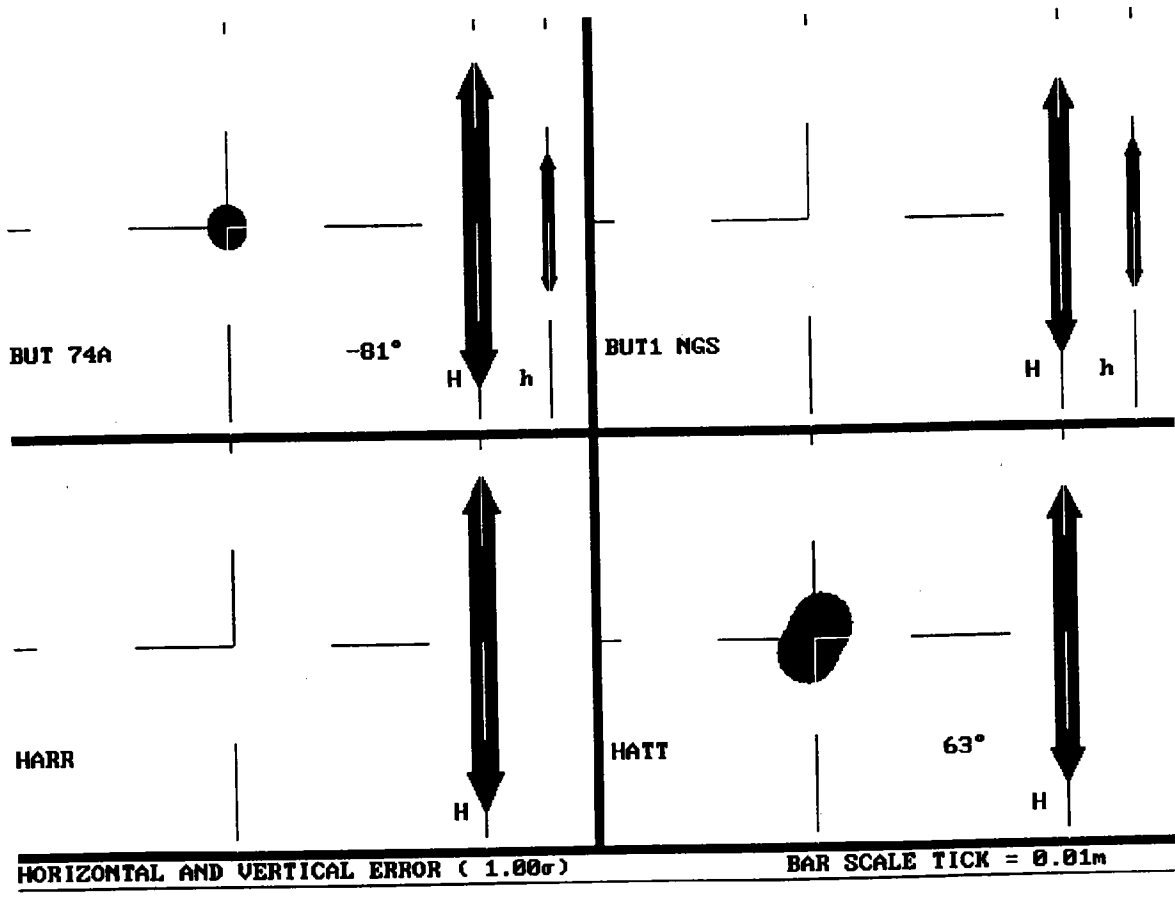
Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC69", with center punch mark.

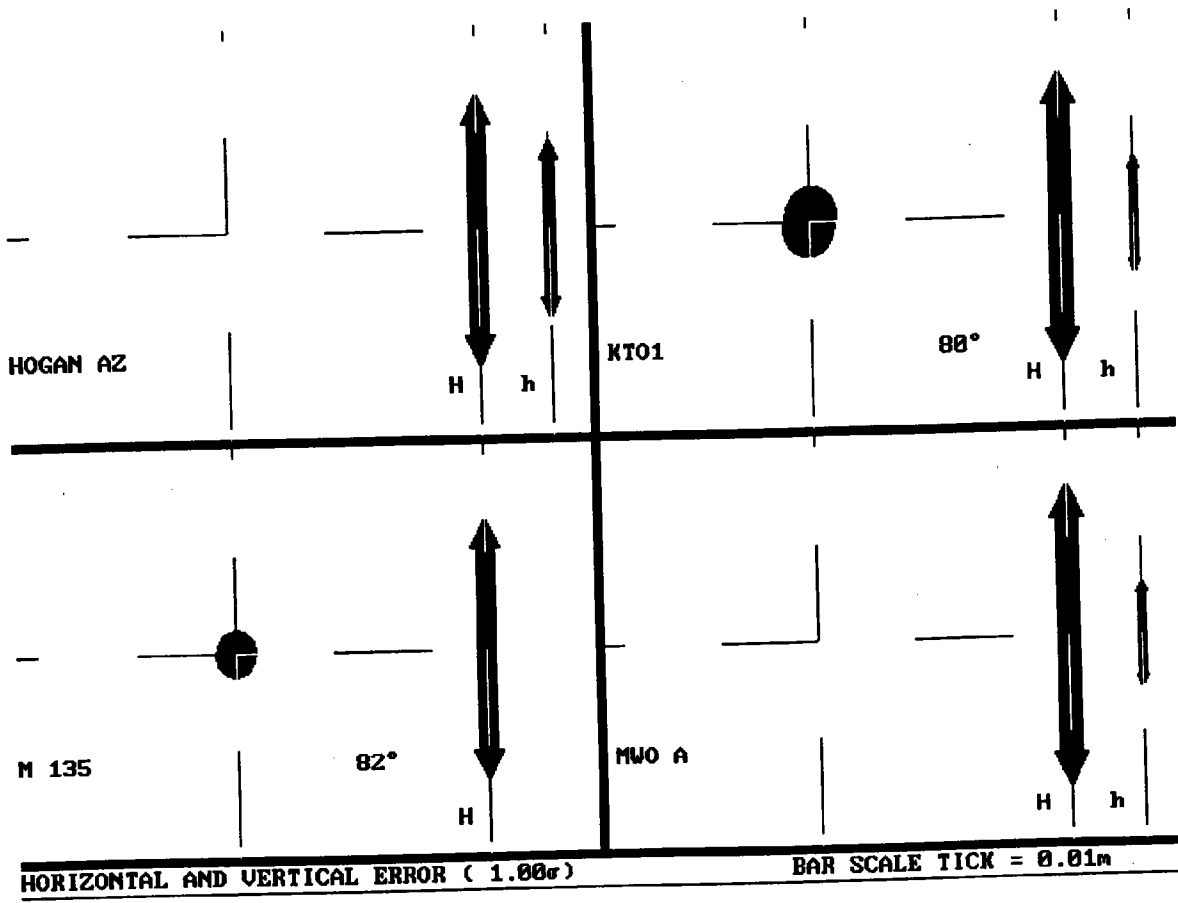


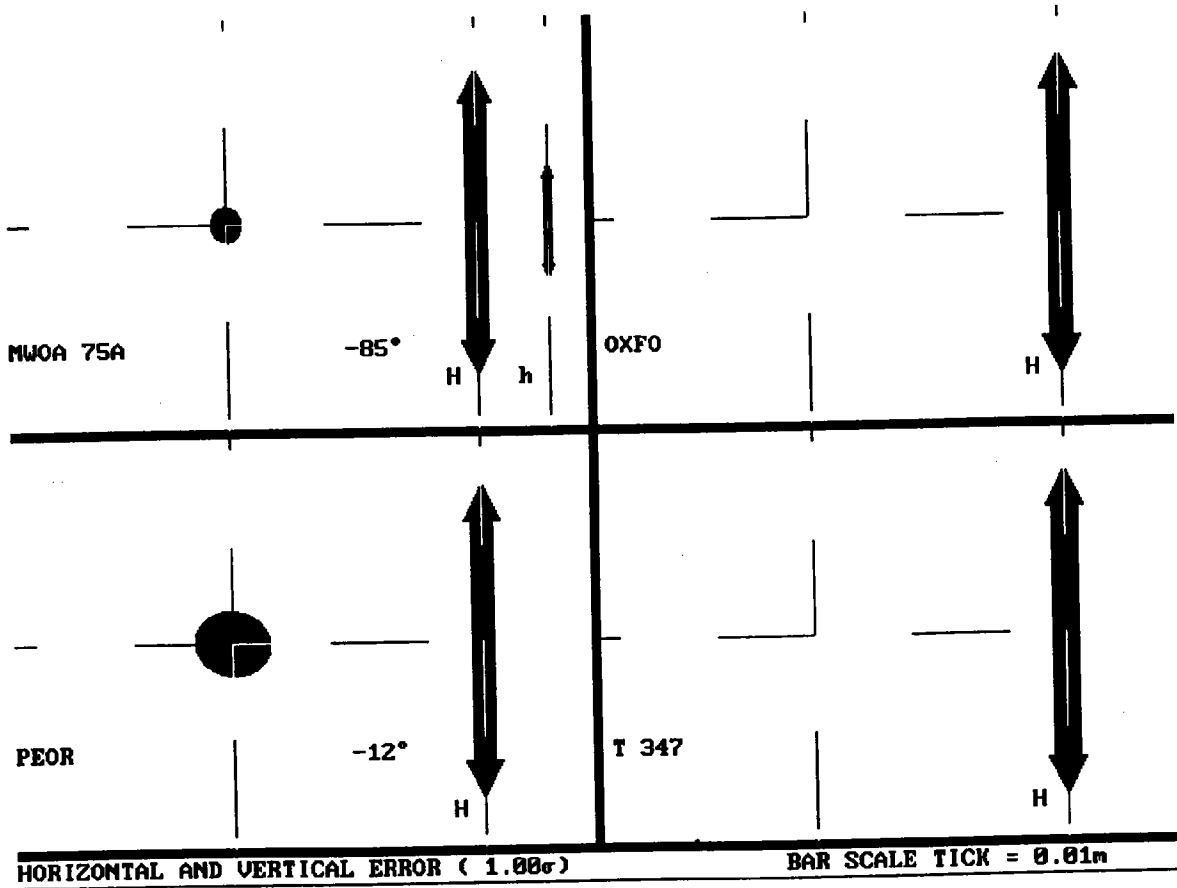
DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 68
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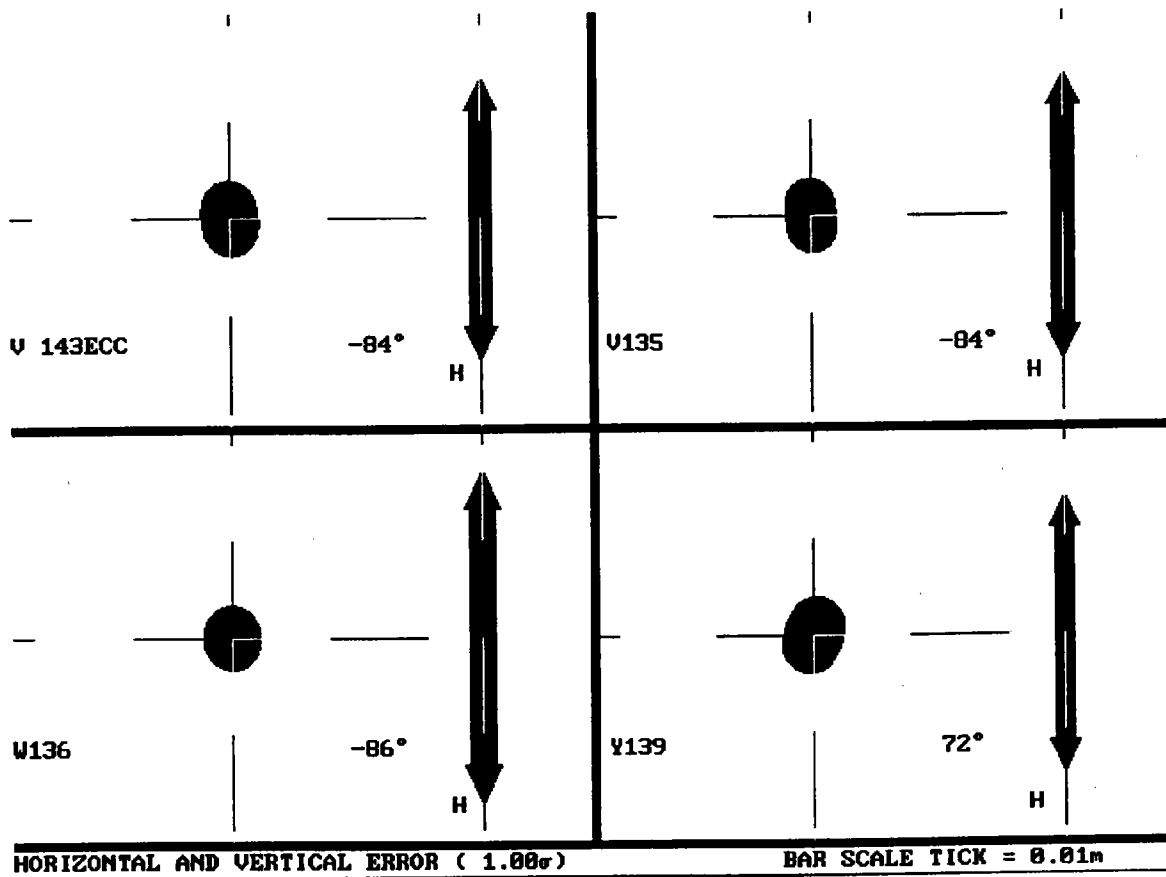












CLOSURE

Log

Closure Log

New Closure

From: HARR

To: BT01	Slope (m): Total (m):	L1 fixed 10650.424 10650.424	3/2/99 16:47:00 39°20'56.93347" N 084°47'44.43172" W 191.1455 m	00088232.SSF HARR0611.DAT BT010612.DAT
To: 2003	Slope (m): Total (m):	L1 fixed 5084.241 15734.665	3/2/99 18:35:15 39°23'30.30761" N 084°49' 2.30905" W 181.2885 m	00088236.SSF 20030613.DAT BT010613.DAT
To: 2004	Slope (m): Total (m):	L1 fixed 238.757 15973.422	10/4/93 17:52:45 39°23'25.00236" N 084°48'55.05464" W 191.1271 m	00088576.SSF 20032770.DAT 20042770.DAT
To: 1004	Slope (m): Total (m):	L1 fixed 9510.754 25484.176	10/11/93 12:43:15 39°23'28.15619" N 084°42'17.64690" W 168.2386 m	00088572.SSF 20042844.DAT AUBR2844.DAT
To: 9902	Slope (m): Total (m):	L1 fixed 6695.185 32179.361	3/4/99 18:04:15 39°20'14.89887" N 084°44'25.04869" W 151.7981 m	00088256.SSF 99020632.DAT 10040633.DAT
To: HARR	Slope (m): Total (m):	Iono free fixed 9637.682 41817.043	3/2/99 15:08:00 39°15'16.96212" N 084°46'26.40975" W 102.0799 m	00088216.SSF HARR0611.DAT 99020611.DAT

Closed

Precision (ppm): 0.5369
 Errors (m) N: -0.0086 E: 0.0032 U: -0.0205

 New Closure

From: MWOA 75A

To: BUT 74A	Slope (m):	L1 fixed	5/4/99 12:25:30	00082204.SSF
	Total (m):	4070.530	39°31'18.83051" N	86981240.DAT
		4070.530	084°21'10.92181" W	60661241.DAT
			236.2880 m	
To: BUT 72A	Slope (m):	L1 fixed	5/5/99 11:51:50	00082440.SSF
	Total (m):	4028.411	39°29'32.94482" N	84051250.DAT
		8098.941	084°19'32.22348" W	60661250.DAT
			177.5700 m	
To: BUT 73A	Slope (m):	Iono free fixed	5/4/99 13:52:40	00082240.SSF
	Total (m):	5255.636	39°30' 7.76588" N	RAW00013.DAT
		13354.577	084°23' 7.53700" W	84051242.DAT
			170.4249 m	
To: MWOA 75A	Slope (m):	L1 fixed	5/4/99 13:17:00	00082216.SSF
	Total (m):	2749.314	39°31'26.70397" N	86981241.DAT
		16103.891	084°24' 1.00813" W	RAW00013.DAT
			161.0960 m	

Closed

Precision (ppm): 0.8682
 Errors (m) N: -0.0064 E: -0.0096 U: 0.0079

Closure Log

New Closure

From: MWO A

To: BUT 74	Slope (m):	L1 fixed 4645.344	5/4/99 12:29:20 39°31'31.52779" N	00082192.SSF 84051240.DAT
	Total (m):	4645.344	084°21' 3.24575" W 233.8323 m	RAW00013.DAT
To: BUT 72A	Slope (m):	L1 fixed 4255.270	5/4/99 13:52:40 39°29'32.94501" N	00082252.SSF 60661241.DAT
	Total (m):	8900.614	084°19'32.22344" W 177.5777 m	84051242.DAT
To: BUT 72	Slope (m):	L1 fixed 419.609	5/4/99 14:05:10 39°29'34.92034" N	00082256.SSF 84051242.DAT
	Total (m):	9320.223	084°19'49.59230" W 187.5657 m	86981242.DAT
To: BUT 73	Slope (m):	Iono free fixed 5465.268	5/4/99 13:07:40 39°30'10.33608" N	00082228.SSF 84051241.DAT
	Total (m):	14785.491	084°23'33.70689" W 174.5057 m	60661241.DAT
To: MWO A	Slope (m):	L1 fixed 2784.760	5/6/99 11:47:40 39°31'33.95544" N	00082664.SSF 60661260.DAT
	Total (m):	17570.251	084°24'17.68917" W 161.3599 m	RAW00015.DAT

Closed

Precision (ppm): 2.0088
 Errors (m) N: 0.0111 E: -0.0152 U: 0.0299

Closure Log

New Closure

From: BUT 73

To: BUT 72		Iono free fixed	5/4/99 13:07:40	00082228.SSF
	Slope (m):	5465.268	39°29'34.91998" N	84051241.DAT
	Total (m):	5465.268	084°19'49.59166" W	60661241.DAT
			187.5359 m	
To: BUT 72A		L1 fixed	5/4/99 14:05:10	00082256.SSF
	Slope (m):	419.609	39°29'32.94465" N	84051242.DAT
	Total (m):	5884.876	084°19'32.22280" W	86981242.DAT
			177.5479 m	
To: BUT 65A		Iono free fixed	5/5/99 11:41:50	00082448.SSF
	Slope (m):	5935.666	39°26'23.58370" N	84051250.DAT
	Total (m):	11820.542	084°20'16.60445" W	86981250.DAT
			183.2228 m	
To: BUT 67		L1 fixed	5/4/99 15:30:00	00082264.SSF
	Slope (m):	4861.598	39°27'33.81506" N	86981244.DAT
	Total (m):	16682.141	084°23'18.63286" W	RAW00013.DAT
			166.0493 m	
To: BUT 68		Iono free fixed	5/6/99 12:54:20	00082692.SSF
	Slope (m):	5367.821	39°27'43.89857" N	84051261.DAT
	Total (m):	22049.962	084°27' 2.78809" W	60661262.DAT
			157.0726 m	
To: BUT 71A		L1 fixed	5/5/99 19:34:00	00082652.SSF
	Slope (m):	2646.282	39°28'50.38504" N	84051258.DAT
	Total (m):	24696.244	084°28'12.76899" W	60661259.DAT
			168.7666 m	
To: BUT 73		Iono free fixed	5/6/99 11:55:10	00082672.SSF
	Slope (m):	7109.795	39°30'10.33591" N	RAW00015.DAT
	Total (m):	31806.040	084°23'33.70567" W	84051260.DAT
			174.4811 m	

Closed

Precision (ppm): 0.4958
 Errors (m) N: 0.0056 E: 0.0138 U: 0.0052

Closure Log

New Closure

From: BUT 74A

To: T 347		Iono free fixed	5/5/99 11:51:50	00082460.SSF
	Slope (m):	8935.685	39°26'34.26851" N	RAW00014.DAT
	Total (m):	8935.685	084°20' 0.66179" W	60661250.DAT
			169.0092 m	
To: BUT 67A		L1 fixed	5/4/99 16:16:20	00082304.SSF
	Slope (m):	4951.319	39°27'17.38038" N	60661242.DAT
	Total (m):	13887.004	084°23'20.13086" W	RAW00013.DAT
			167.7029 m	
To: BUT 67		L1 fixed	5/4/99 15:30:00	00082276.SSF
	Slope (m):	508.146	39°27'33.81572" N	60661241.DAT
	Total (m):	14395.149	084°23'18.63327" W	RAW00013.DAT
			166.0473 m	
To: BUT 68A		Iono free fixed	5/6/99 12:54:20	00082680.SSF
	Slope (m):	5228.106	39°27'29.44314" N	86981261.DAT
	Total (m):	19623.255	084°26'57.24235" W	60661262.DAT
			157.1456 m	
To: BUT 68		L1 fixed	5/6/99 12:53:30	00082684.SSF
	Slope (m):	465.132	39°27'43.89901" N	86981261.DAT
	Total (m):	20088.387	084°27' 2.78884" W	84051261.DAT
			157.0696 m	
To: BUT 71A		L1 fixed	5/5/99 19:34:00	00082652.SSF
	Slope (m):	2646.282	39°28'50.38547" N	84051258.DAT
	Total (m):	22734.669	084°28'12.76974" W	60661259.DAT
			168.7636 m	
To: MWO A		Iono free fixed	5/6/99 11:55:10	00082660.SSF
	Slope (m):	7549.490	39°31'33.95579" N	60661260.DAT
	Total (m):	30284.159	084°24'17.68886" W	84051260.DAT
			161.3487 m	
To: BUT 74A		L1 fixed	5/4/99 12:25:30	00082196.SSF
	Slope (m):	4485.896	39°31'18.83128" N	84051240.DAT
	Total (m):	34770.055	084°21'10.92220" W	60661241.DAT
			236.3089 m	

Closed

Precision (ppm): 0.8669
 Errors (m) N: 0.0133 E: -0.0144 U: 0.0229

Closure Log

New Closure

From: BUT 67A

To: BUT 65A	Slope (m):	L1 fixed 4691.531	5/4/99 15:29:40 39°26'23.93164" N	00082268.SSF 86981244.DAT
	Total (m):	4691.531	084°20'17.00720" W 156.1646 m	60661241.DAT
To: T 347	Slope (m):	L1 fixed 504.120	5/5/99 11:51:10 39°26'34.61614" N	00082456.SSF 86981250.DAT
	Total (m):	5195.651	084°20' 1.06405" W 141.9288 m	RAW00014.DAT
To: BUT 62	Slope (m):	Iono free fixed 5080.440	5/4/99 16:16:50 39°23'52.11872" N	00082312.SSF RAW00013.DAT
	Total (m):	10276.090	084°20'35.82658" W 204.6186 m	84051245.DAT
To: BUT 66A	Slope (m):	Iono free fixed 6277.101	5/4/99 17:05:40 39°24'59.02126" N	00082324.SSF 84051246.DAT
	Total (m):	16553.191	084°24'43.60535" W 159.4572 m	60661243.DAT
To: BUT 67A	Slope (m):	L1 fixed 4716.643	5/4/99 15:23:20 39°27'17.72778" N	00082272.SSF 60661241.DAT
	Total (m):	21269.834	084°23'20.53475" W 140.6311 m	84051244.DAT

Closed

Precision (ppm): 1.2622
 Errors (m) N: 0.0021 E: -0.0101 U: -0.0248

Closure Log

New Closure

From: BUT 66

To: BUT 62

	Iono free fixed	5/4/99 17:11:30	00082328.SSF
Slope (m):	6681.219	39°23'52.23524" N	84051246.DAT
Total (m):	6681.219	084°20'35.46501" W	RAW00013.DAT
		231.4788 m	

To: BUT 62A

	L1 fixed	5/4/99 16:27:00	00082316.SSF
Slope (m):	838.366	39°23'25.13911" N	84051245.DAT
Total (m):	7519.585	084°20'38.27220" W	86981245.DAT
		229.1143 m	

To: BUT 51

	Iono free fixed	5/4/99 17:55:50	00082344.SSF
Slope (m):	8075.608	39°19' 4.08998" N	84051247.DAT
Total (m):	15595.193	084°21' 4.60408" W	60661244.DAT
		250.3807 m	

To: BUT 53

	Iono free fixed	5/4/99 17:55:50	00082356.SSF
Slope (m):	7493.714	39°21'28.38260" N	86981247.DAT
Total (m):	23088.907	084°25'16.35952" W	60661244.DAT
		228.1271 m	

To: BUT 53A

	L1 fixed	5/6/99 17:22:50	00082788.SSF
Slope (m):	368.279	39°21'40.20694" N	RAW00015.DAT
Total (m):	23457.186	084°25'18.44018" W	86981267.DAT
		215.3212 m	

To: BUT 66

	Iono free fixed	5/4/99 17:14:50	00082340.SSF
Slope (m):	6161.179	39°24'59.51480" N	RAW00013.DAT
Total (m):	29618.365	084°25' 0.90385" W	86981246.DAT
		183.4093 m	

Closed

Precision (ppm): 1.1786

Errors (m) N: -0.0065 E: 0.0011 U: -0.0343

Closure Log

New Closure

From: BUT 63A

To: BUT 61A	Slope (m):	L1 fixed 4070.886	5/6/99 13:46:50 39°22'40.14293" N	00082720.SSF 86981262.DAT
	Total (m):	4070.886	084°28'42.61009" W 166.0094 m	RAW00015.DAT
To: BUT 61	Slope (m):	L1 fixed 320.843	5/6/99 14:39:20 39°22'29.76045" N	00082736.SSF RAW00015.DAT
	Total (m):	4391.729	084°28'42.75949" W 185.9746 m	60661264.DAT
To: BUT 53A	Slope (m):	Iono free fixed 5124.365	5/6/99 17:27:10 39°21'40.20702" N	00082784.SSF 6066126A.DAT
	Total (m):	9516.093	084°25'18.44066" W 215.3824 m	RAW00015.DAT
To: BUT 66A	Slope (m):	Iono free fixed 6192.772	5/4/99 17:14:50 39°24'59.13753" N	00082332.SSF 60661243.DAT
	Total (m):	15708.865	084°24'43.24311" W 186.3365 m	86981246.DAT
To: BUT 66	Slope (m):	L1 fixed 422.660	5/4/99 17:11:30 39°24'59.51496" N	00082336.SSF 60661243.DAT
	Total (m):	16131.525	084°25' 0.90433" W 183.4592 m	RAW00013.DAT
To: BUT 63A	Slope (m):	Iono free fixed 5604.709	5/6/99 13:39:00 39°24'51.78893" N	00082708.SSF 60661263.DAT
	Total (m):	21736.234	084°28'54.98108" W 189.2675 m	86981262.DAT

Closed

Precision (ppm): 0.8655
 Errors (m) N: -0.0016 E: -0.0103 U: 0.0157

Closure Log

New Closure

From: BUT 53

To: BUT 51A		Iono free fixed	5/4/99 17:59:50	00082360.SSF
	Slope (m):	7004.709	39°19' 4.07392" N	86981247.DAT
	Total (m):	7004.709	084°21'30.50287" W	RAW00013.DAT
			254.5159 m	
To: BUT 52A		Iono free fixed	5/6/99 19:20:50	00082824.SSF
	Slope (m):	5882.734	39°17'55.23932" N	RAW00015.DAT
	Total (m):	12887.444	084°25'19.44957" W	84051268.DAT
			148.0014 m	
To: BUT 52		L1 fixed	5/4/99 18:42:10	00082380.SSF
	Slope (m):	487.514	39°17'55.27313" N	84051248.DAT
	Total (m):	13374.957	084°25'39.79446" W	86981248.DAT
			144.9701 m	
To: BUT 54		Iono free fixed	5/4/99 20:00:10	00082392.SSF
	Slope (m):	7171.613	39°19'23.00811" N	86981249.DAT
	Total (m):	20546.570	084°30'17.01171" W	60661246.DAT
			177.4342 m	
To: BUT 53		Iono free fixed	5/6/99 17:00:30	00082796.SSF
	Slope (m):	8172.703	39°21'28.38294" N	86981267.DAT
	Total (m):	28719.273	084°25'16.35960" W	84051266.DAT
			228.2165 m	

Closed

Precision (ppm): 1.0751
 Errors (m) N: 0.0082 E: 0.0095 U: 0.0282

Closure Log

 New Closure

From: BUT 55A

To: BUT 54		Iono free fixed	5/4/99 19:49:30	00082412.SSF
	Slope (m):	6139.272	39°19'22.80409" N	60661246.DAT
	Total (m):	6139.272	084°30'16.85131" W	84051249.DAT
			175.5478 m	
To: BUT 54A		L1 fixed	5/4/99 20:00:10	00082404.SSF
	Slope (m):	549.594	39°19'34.29901" N	RAW00013.DAT
	Total (m):	6688.866	084°30'34.38326" W	60661246.DAT
			180.4083 m	
To: HOGAN AZ		L1 fixed	5/4/99 20:34:20	00082420.SSF
	Slope (m):	4619.478	39°21'54.60463" N	RAW00013.DAT
	Total (m):	11308.344	084°31'41.91984" W	60661247.DAT
			154.8567 m	
To: BUT 59A		Iono free fixed	5/6/99 14:40:30	00082748.SSF
	Slope (m):	5885.090	39°23'30.30515" N	86981263.DAT
	Total (m):	17193.433	084°35'14.63903" W	84051263.DAT
			185.5493 m	
To: BUT 59		L1 fixed	5/6/99 16:18:40	00082760.SSF
	Slope (m):	225.753	39°23'30.22432" N	84051265.DAT
	Total (m):	17419.186	084°35'24.07209" W	RAW00015.DAT
			186.7242 m	
To: BUT 56		L1 fixed	5/6/99 16:15:30	00082768.SSF
	Slope (m):	4621.107	39°21'11.04245" N	RAW00015.DAT
	Total (m):	22040.293	084°34'12.59263" W	86981265.DAT
			139.5811 m	
To: BUT 56A		L1 fixed	5/5/99 15:15:30	00082520.SSF
	Slope (m):	459.863	39°20'56.17233" N	RAW00014.DAT
	Total (m):	22500.156	084°34'14.01670" W	60661254.DAT
			139.5568 m	
To: BUT 55A		L1 fixed	5/5/99 12:59:10	00082468.SSF
	Slope (m):	4531.641	39°18'29.44736" N	RAW00014.DAT
	Total (m):	27031.798	084°34'23.73823" W	86981251.DAT
			214.6174 m	

Closed

Precision (ppm): 2.8926
 Errors (m) N: 0.0183 E: -0.0143 U: -0.0747

Closure Log

New Closure

From: BUT 55

To: BUT 56A		L1 fixed	5/5/99 12:59:10	00082480.SSF
	Slope (m):	4572.957	39°20'56.17182" N	84051251.DAT
	Total (m):	4572.957	084°34'14.01611" W	86981251.DAT
			139.6332 m	
To: BUT 56		L1 fixed	5/5/99 15:15:30	00082520.SSF
	Slope (m):	459.863	39°21'11.04194" N	RAW00014.DAT
	Total (m):	5032.820	084°34'12.59205" W	60661254.DAT
			139.6575 m	
To: BUT 59		L1 fixed	5/6/99 16:15:30	00082768.SSF
	Slope (m):	4621.107	39°23'30.22380" N	RAW00015.DAT
	Total (m):	9653.927	084°35'24.07150" W	86981265.DAT
			186.8005 m	
To: BUT 58		Iono free fixed	5/5/99 16:16:10	00082548.SSF
	Slope (m):	6152.952	39°21'41.94872" N	86981254.DAT
	Total (m):	15806.878	084°38'59.97927" W	60661255.DAT
			146.1303 m	
To: BUT 57A		L1 fixed	5/5/99 13:46:30	00082496.SSF
	Slope (m):	4202.423	39°19'32.27182" N	60661253.DAT
	Total (m):	20009.302	084°38'6.07415" W	RAW00014.DAT
			139.5603 m	
To: BUT 55		Iono free fixed	5/5/99 13:03:50	00082476.SSF
	Slope (m):	5295.530	39°18'29.34556" N	84051251.DAT
	Total (m):	25304.831	084°34'40.43181" W	60661251.DAT
			226.9442 m	

Closed

Precision (ppm): 2.3803
 Errors (m) N: -0.0288 E: 0.0182 U: 0.0497

Closure Log

 New Closure

From: BUT 54				
To: BUT 61		Iono free fixed	5/6/99 16:56:00	00082800.SSF
	Slope (m):	6185.929	39°22'29.76090" N	84051266.DAT
	Total (m):	6185.929	084°28'42.75979" W	60661267.DAT
			186.0010 m	
To: BUT 61A		L1 fixed	5/6/99 14:39:20	00082736.SSF
	Slope (m):	320.843	39°22'40.14338" N	RAW00015.DAT
	Total (m):	6506.772	084°28'42.61039" W	60661264.DAT
			166.0358 m	
To: BUT 64		Iono free fixed	5/6/99 13:52:00	00082724.SSF
	Slope (m):	10517.851	39°25'28.85546" N	RAW00015.DAT
	Total (m):	17024.623	084°35' 4.63435" W	84051262.DAT
			160.5269 m	
To: BUT 64A		L1 fixed	5/5/99 17:06:00	00082568.SSF
	Slope (m):	631.959	39°25'12.94608" N	RAW00014.DAT
	Total (m):	17656.581	084°35'21.28429" W	84051255.DAT
			164.4609 m	
To: BUT 58A		Iono free fixed	5/5/99 16:21:10	00082544.SSF
	Slope (m):	8373.493	39°21'30.81853" N	84051254.DAT
	Total (m):	26030.075	084°38'42.49336" W	RAW00014.DAT
			147.1886 m	
To: BUT 57		L1 fixed	5/5/99 15:34:40	00082532.SSF
	Slope (m):	3140.738	39°19'56.38369" N	84051253.DAT
	Total (m):	29170.812	084°37'53.39623" W	86981253.DAT
			143.1712 m	
To: BUT 57A		L1 fixed	5/5/99 14:08:40	00082492.SSF
	Slope (m):	798.858	39°19'32.47656" N	60661253.DAT
	Total (m):	29969.670	084°38' 6.23510" W	86981252.DAT
			141.3457 m	
To: BUT 55A		Iono free fixed	5/5/99 13:03:50	00082464.SSF
	Slope (m):	5668.244	39°18'29.65085" N	RAW00014.DAT
	Total (m):	35637.914	084°34'23.89778" W	60661251.DAT
			216.5369 m	
To: BUT 54A		Iono free fixed	5/4/99 19:49:30	00082408.SSF
	Slope (m):	5847.185	39°19'34.50326" N	RAW00013.DAT
	Total (m):	41485.100	084°30'34.54329" W	84051249.DAT
			182.2467 m	
To: BUT 54		L1 fixed	5/4/99 20:00:10	00082404.SSF
	Slope (m):	549.594	39°19'23.00835" N	RAW00013.DAT

Total (m):

42034.693

084°30'17.01133" W
177.3856 m

60661246.DAT

Closed

Precision (ppm): 0.7578

Errors (m) N: 0.0158 E: 0.0187 U: -0.0204

Closure Log

New Closure

From: BUT 63A

To: BUT 69		Iono free fixed	5/5/99 18:03:10	00082600.SSF
	Slope (m):	6170.699	39°27'36.50325" N	84051256.DAT
	Total (m):	6170.699	084°31'21.45949" W	RAW00014.DAT
			158.9309 m	
To: BUT 70A		Iono free fixed	5/5/99 17:44:40	00082604.SSF
	Slope (m):	5969.794	39°28'44.27430" N	RAW00014.DAT
	Total (m):	12140.493	084°35'15.39275" W	60661257.DAT
			188.0665 m	
To: BUT 70		L1 fixed	5/5/99 18:52:20	00082608.SSF
	Slope (m):	512.043	39°28'45.10434" N	60661258.DAT
	Total (m):	12652.537	084°35'36.78773" W	86981257.DAT
			180.6976 m	
To: BUT 64		Iono free fixed	5/5/99 17:12:30	00082576.SSF
	Slope (m):	6101.179	39°25'28.85439" N	84051255.DAT
	Total (m):	18753.716	084°35' 4.63442" W	60661256.DAT
			160.5213 m	
To: BUT 63A		Iono free fixed	5/6/99 13:52:00	00082716.SSF
	Slope (m):	8916.030	39°24'51.78819" N	86981262.DAT
	Total (m):	27669.746	084°28'54.98131" W	84051262.DAT
			189.2585 m	

Closed

Precision (ppm): 1.0810
Errors (m) N: -0.0245 E: -0.0158 U: 0.0066

Closure Log

New Closure

From: BUT 70A

To: BUT 63A	Slope (m): Total (m):	Iono free fixed 11582.378 11582.378	5/5/99 17:44:40 39°24'51.58636" N 084°28'54.82070" W 187.4166 m	00082596.SSF 84051256.DAT 60661257.DAT
To: BUT 66	Slope (m): Total (m):	Iono free fixed 5604.709 17187.087	5/6/99 13:39:00 39°24'59.31230" N 084°25' 0.74407" W 181.6114 m	00082708.SSF 60661263.DAT 86981262.DAT
To: BUT 66A	Slope (m): Total (m):	L1 fixed 422.660 17609.747	5/4/99 17:11:30 39°24'58.93486" N 084°24'43.08285" W 184.4890 m	00082336.SSF 60661243.DAT RAW00013.DAT
To: BUT 67	Slope (m): Total (m):	Iono free fixed 5194.600 22804.346	5/4/99 15:23:20 39°27'34.07659" N 084°23'18.51461" W 164.0042 m	00082280.SSF RAW00013.DAT 84051244.DAT
To: BUT 68	Slope (m): Total (m):	Iono free fixed 5367.821 28172.168	5/6/99 12:54:20 39°27'44.16018" N 084°27' 2.67014" W 155.0256 m	00082692.SSF 84051261.DAT 60661262.DAT
To: BUT 69A	Slope (m): Total (m):	Iono free fixed 5812.693 33984.860	5/5/99 19:34:00 39°27'56.01990" N 084°31' 5.34063" W 158.5572 m	00082632.SSF RAW00014.DAT 60661259.DAT
To: BUT 70A	Slope (m): Total (m):	Iono free fixed 6154.249 40139.109	5/5/99 18:43:20 39°28'44.07310" N 084°35'15.23136" W 186.2071 m	00082616.SSF 60661258.DAT RAW00014.DAT

Closed

Precision (ppm): 1.1599
 Errors (m) N: 0.0368 E: 0.0266 U: -0.0101

Closure Log

New Closure

From: BUT 64

To: BUT 66		Iono free fixed	5/6/99 13:52:00	00082704.SSF
	Slope (m):	14469.807	39°24'59.51485" N	60661263.DAT
	Total (m):	14469.807	084°25' 0.90413" W	84051262.DAT
			183.4315 m	
To: BUT 66A		L1 fixed	5/4/99 17:11:30	00082336.SSF
	Slope (m):	422.660	39°24'59.13741" N	60661243.DAT
	Total (m):	14892.467	084°24'43.24291" W	RAW00013.DAT
			186.3088 m	
To: BUT 67		Iono free fixed	5/4/99 15:23:20	00082280.SSF
	Slope (m):	5194.600	39°27'34.27914" N	RAW00013.DAT
	Total (m):	20087.066	084°23'18.67473" W	84051244.DAT
			165.8275 m	
To: BUT 68		Iono free fixed	5/6/99 12:54:20	00082692.SSF
	Slope (m):	5367.821	39°27'44.36263" N	84051261.DAT
	Total (m):	25454.888	084°27' 2.83038" W	60661262.DAT
			156.8524 m	
To: BUT 71A		L1 fixed	5/5/99 19:34:00	00082652.SSF
	Slope (m):	2646.282	39°28'50.84909" N	84051258.DAT
	Total (m):	28101.170	084°28'12.81142" W	60661259.DAT
			168.5513 m	
To: BUT 71		L1 fixed	5/6/99 12:00:40	00082676.SSF
	Slope (m):	635.144	39°28'50.40193" N	84051260.DAT
	Total (m):	28736.314	084°28'39.38034" W	86981260.DAT
			167.4112 m	
To: BUT 70A		Iono free fixed	5/5/99 18:49:50	00082612.SSF
	Slope (m):	9466.645	39°28'44.27541" N	60661258.DAT
	Total (m):	38202.959	084°35'15.39134" W	84051257.DAT
			188.0658 m	
To: BUT 70		L1 fixed	5/5/99 18:52:20	00082608.SSF
	Slope (m):	512.043	39°28'45.10546" N	60661258.DAT
	Total (m):	38715.002	084°35'36.78632" W	86981257.DAT
			180.6969 m	
To: BUT 64		Iono free fixed	5/5/99 17:12:30	00082576.SSF
	Slope (m):	6101.179	39°25'28.85550" N	84051255.DAT
	Total (m):	44816.182	084°35' 4.63302" W	60661256.DAT
			160.5206 m	

Closed

Precision (ppm): 0.7358
Errors (m) N: 0.0150 E: 0.0248 U: 0.0201

Closure Log

New Closure

From: 1003

To: 1004		L1 fixed	03/16/99 14:10:30	00088440.SSF
	Slope (m):	9580.680	39°23'28.27999" N	10040751.DAT
	Total (m):	9580.680	084°42'17.14798" W	10030751.DAT
			216.2548 m	

To: 9909		Iono free fixed	03/16/99 17:54:30	00088488.SSF
	Slope (m):	6837.246	39°26'17.18222" N	10040753.DAT
	Total (m):	16417.925	084°39'12.03010" W	99090753.DAT
			252.9684 m	

To: 9908		L1 fixed	03/16/99 17:54:30	00088492.SSF
	Slope (m):	425.727	39°26'21.51658" N	99080753.DAT
	Total (m):	16843.652	084°39'28.93020" W	99090753.DAT
			247.4471 m	

To: BUT 59		L1 fixed	03/16/99 15:45:15	00088436.SSF
	Slope (m):	7898.992	39°23'29.83220" N	10050752.DAT
	Total (m):	24742.644	084°35'23.91478" W	99090752.DAT
			195.5702 m	

To: BUT 58		Iono free fixed	05/05/99 16:16:10	00082548.SSF
	Slope (m):	6152.952	39°21'41.55734" N	86981254.DAT
	Total (m):	30895.596	084°38'59.82199" W	60661255.DAT
			154.9033 m	

To: V 143ECC		L1 fixed	05/05/99 14:24:00	00082508.SSF
	Slope (m):	3408.450	39°20'41.64534" N	RAW00014.DAT
	Total (m):	34304.046	084°40'59.42750" W	84051252.DAT
			203.1504 m	

To: 1003		L1 fixed	08/27/99 15:31:40	00096008.SSF
	Slope (m):	4777.312	39°18'17.65031" N	84052390.DAT
	Total (m):	39081.357	084°42'12.91880" W	86982390.DAT
			149.7245 m	

Closed

Precision (ppm): 0.8098
 Errors (m) N: -0.0196 E: -0.0058 U: 0.0242

New Closure

From: 9911

To: 2011

Slope (m):	L1 fixed	3/23/99 17:53:45	00088540.SSF
Total (m):	6228.532	39°34' 0.49547" N	20110821.DAT
	6228.532	084°35' 9.03852" W	99110823.DAT
		266.0658 m	

To: BUT 70

Slope (m):	L1 fixed	10/25/93 15:13:45	00088640.SSF
Total (m):	9766.088	39°28'44.57361" N	20112982.DAT
	15994.620	084°35'36.59899" W	0TAY2982.DAT
		180.5932 m	

To: BT03

Slope (m):	Iono free fixed	3/19/99 20:09:30	00088520.SSF
Total (m):	5840.569	39°30'28.36059" N	10100784.DAT
	21835.190	084°39' 1.03837" W	BT030784.DAT
		215.3362 m	

To: 9910

Slope (m):	L1 fixed	3/23/99 19:41:00	00088536.SSF
Total (m):	2000.785	39°31'23.37813" N	99100823.DAT
	23835.975	084°38'16.66590" W	BT030824.DAT
		235.0879 m	

To: 9911

Slope (m):	L1 fixed	3/23/99 17:53:45	00088532.SSF
Total (m):	556.186	39°31'23.67600" N	99100823.DAT
	24392.161	084°37'53.38762" W	99110823.DAT
		224.7610 m	

Closed

Precision (ppm): 1.2010
 Errors (m) N: -0.0060 E: -0.0071 U: 0.0278

New Closure

From: HARR

To: 9901	Slope (m): Total (m):	L1 fixed 6918.898 6918.898	3/4/99 14:27:45 39°18'25.12347" N 084°49' 3.57244" W 195.0329 m	00088260.SSF 99010631.DAT HARR0631.DAT
To: BT01	Slope (m): Total (m):	L1 fixed 5051.049 11969.947	3/5/99 17:52:00 39°20'56.93316" N 084°47'44.43127" W 191.1459 m	00088264.SSF 99010641.DAT BT010641.DAT
To: 9902	Slope (m): Total (m):	L1 fixed 4947.578 16917.526	3/4/99 16:02:00 39°20'14.89841" N 084°44'25.04942" W 151.8372 m	00088240.SSF 99020632.DAT BT010632.DAT
To: 1003	Slope (m): Total (m):	L1 fixed 4800.829 21718.355	3/2/99 15:08:00 39°18'17.52404" N 084°42'13.41698" W 101.7624 m	00088212.SSF 10030611.DAT 99020611.DAT
To: HARR	Slope (m): Total (m):	L1 fixed 8232.706 29951.061	3/2/99 15:08:00 39°15'16.96212" N 084°46'26.41052" W 102.1132 m	00088220.SSF HARR0611.DAT 10030611.DAT

Closed

Precision (ppm): 0.7248
 Errors (m) N: -0.0088 E: -0.0152 U: 0.0128

Closure Log

New Closure

From: 9901

To: 2003		Iono free fixed	3/4/99 14:29:00	00088268.SSF
	Slope (m):	9412.061	39°23'30.30767" N	99010631.DAT
	Total (m):	9412.061	084°49' 2.30858" W	20030631.DAT
			181.2811 m	
To: 2004		L1 fixed	10/4/93 17:52:45	00088576.SSF
	Slope (m):	238.757	39°23'25.00243" N	20032770.DAT
	Total (m):	9650.818	084°48'55.05417" W	20042770.DAT
			191.1196 m	
To: 1004		L1 fixed	10/11/93 12:43:15	00088572.SSF
	Slope (m):	9510.754	39°23'28.15626" N	20042844.DAT
	Total (m):	19161.572	084°42'17.64643" W	AUBR2844.DAT
			168.2312 m	
To: 9903		L1 fixed	3/4/99 18:04:15	00088252.SSF
	Slope (m):	6254.742	39°20'30.73922" N	99030632.DAT
	Total (m):	25416.314	084°44'24.23484" W	10040633.DAT
			158.6300 m	
To: BT01		L1 fixed	3/4/99 16:02:00	00088244.SSF
	Slope (m):	4861.591	39°20'56.93397" N	99030632.DAT
	Total (m):	30277.905	084°47'44.43007" W	BT010632.DAT
			191.0902 m	
To: 9901		L1 fixed	3/5/99 17:52:00	00088264.SSF
	Slope (m):	5051.049	39°18'25.12428" N	99010641.DAT
	Total (m):	35328.954	084°49' 3.57125" W	BT010641.DAT
			194.9772 m	

Closed

Precision (ppm): 1.9074
 Errors (m) N: 0.0249 E: 0.0286 U: -0.0557

Closure Log

New Closure

From: 2003

To: 9905		L1 fixed	3/4/99 19:58:45	00088288.SSF
	Slope (m):	8527.907	39°26' 5.37145" N	99050634.DAT
	Total (m):	8527.907	084°44' 6.70160" W	20030634.DAT
			238.6066 m	
To: 9908		Iono free fixed	3/19/99 14:09:15	00088460.SSF
	Slope (m):	6656.709	39°26'21.58669" N	99050781.DAT
	Total (m):	15184.616	084°39'29.14110" W	99080781.DAT
			254.6054 m	
To: 1004		L1 fixed	3/16/99 17:32:30	00088484.SSF
	Slope (m):	6688.808	39°23'28.35077" N	10040753.DAT
	Total (m):	21873.424	084°42'17.35842" W	99080753.DAT
			223.4180 m	
To: 2004		L1 fixed	10/11/93 12:43:15	00088572.SSF
	Slope (m):	9510.754	39°23'25.19724" N	20042844.DAT
	Total (m):	31384.178	084°48'54.76303" W	AUBR2844.DAT
			246.2961 m	
To: 2003		L1 fixed	10/4/93 17:52:45	00088576.SSF
	Slope (m):	238.757	39°23'30.50244" N	20032770.DAT
	Total (m):	31622.935	084°49' 2.01738" W	20042770.DAT
			236.4575 m	

Closed

Precision (ppm): 2.0812

Errors (m) N: -0.0349 E: -0.0149 U: 0.0538

Closure Log

New Closure

From: HARR

To: BT01		L1 fixed	03/02/99 16:47:00	00088232.SSF
	Slope (m):	10650.424	39°20'56.93347" N	HARR0611.DAT
	Total (m):	10650.424	084°47'44.43172" W	BT010612.DAT
			191.1455 m	
To: 2003		L1 fixed	03/02/99 18:35:15	00088236.SSF
	Slope (m):	5084.241	39°23'30.30761" N	20030613.DAT
	Total (m):	15734.665	084°49' 2.30905" W	BT010613.DAT
			181.2885 m	
To: 2004		L1 fixed	10/04/93 17:52:45	00088576.SSF
	Slope (m):	238.757	39°23'25.00236" N	20032770.DAT
	Total (m):	15973.422	084°48'55.05464" W	20042770.DAT
			191.1271 m	
To: 1004		L1 fixed	10/11/93 12:43:15	00088572.SSF
	Slope (m):	9510.754	39°23'28.15619" N	20042844.DAT
	Total (m):	25484.176	084°42'17.64690" W	AUBR2844.DAT
			168.2386 m	
To: 9902		L1 fixed	03/04/99 18:04:15	00088256.SSF
	Slope (m):	6695.185	39°20'14.89887" N	99020632.DAT
	Total (m):	32179.361	084°44'25.04869" W	10040633.DAT
			151.7981 m	
To: HARR		Iono free fixed	03/02/99 15:08:00	00088216.SSF
	Slope (m):	9637.682	39°15'16.96212" N	HARR0611.DAT
	Total (m):	41817.043	084°46'26.40975" W	99020611.DAT
			102.0799 m	

Closed

Precision (ppm): 0.5369
 Errors (m) N: -0.0086 E: 0.0032 U: -0.0205

Closure Log

New Closure

From: 2003

To: PEOR		Iono free fixed	03/05/99 20:13:30	00088272.SSF
	Slope (m):	6138.939	39°26'49.53427" N	20030642.DAT
	Total (m):	6138.939	084°48'59.26162" W	PEOR0642.DAT
			292.0187 m	

To: 1011		Iono free fixed	03/26/99 18:25:45	00088512.SSF
	Slope (m):	10240.658	39°28'25.90480" N	10110851.DAT
	Total (m):	16379.597	084°42' 9.35368" W	PEOR0853.DAT
			242.0501 m	

To: 9905		L1 fixed	03/19/99 14:08:00	00088464.SSF
	Slope (m):	5163.018	39°26' 5.37254" N	99050781.DAT
	Total (m):	21542.615	084°44' 6.69933" W	10110781.DAT
			238.5914 m	

To: 2003		L1 fixed	03/04/99 19:58:45	00088288.SSF
	Slope (m):	8527.907	39°23'30.50467" N	99050634.DAT
	Total (m):	30070.522	084°49' 2.01449" W	20030634.DAT
			236.3884 m	

Closed

Precision (ppm): 2.1854
 Errors (m) N: 0.0337 E: 0.0543 U: -0.0153

Closure Log

New Closure

From: PEOR

To: 2005	L1 fixed	03/19/99 18:00:00	00088476.SSF
Slope (m):	3502.721	39°28'43.32802" N	PEOR0783.DAT
Total (m):	3502.721	084°48'58.00095" W	20050783.DAT
		258.2172 m	
To: 1011	Iono free fixed	03/26/99 14:41:00	00088508.SSF
Slope (m):	9777.702	39°28'26.13159" N	10110851.DAT
Total (m):	13280.422	084°42' 9.52623" W	20050851.DAT
		212.3427 m	
To: 9904	L1 fixed	03/19/99 15:30:30	00088468.SSF
Slope (m):	6251.779	39°26' 5.73865" N	99040782.DAT
Total (m):	19532.202	084°45'18.14349" W	10110782.DAT
		203.2714 m	
To: PEOR	L1 fixed	03/05/99 20:14:15	00088276.SSF
Slope (m):	5463.608	39°26'49.76129" N	PEOR0642.DAT
Total (m):	24995.809	084°48'59.43523" W	99040642.DAT
		262.3324 m	

Closed

Precision (ppm): 1.5387
Errors (m) N: -0.0015 E: 0.0284 U: 0.0259

Closure Log

New Closure

From: 2005

To: OXFO

	L1 fixed	03/30/99 14:18:00	00088560.SSF
Slope (m):	6717.031	39°31'48.63074" N	OXFO0891.DAT
Total (m):	6717.031	084°46'29.27670" W	20050891.DAT
		303.4824 m	

To: 9906

	L1 fixed	03/30/99 15:52:00	00088600.SSF
Slope (m):	1970.789	39°31'55.76233" N	99060892.DAT
Total (m):	8687.820	084°45' 7.28024" W	OXFO0892.DAT
		279.0584 m	

To: 1011

	Iono free fixed	03/30/99 15:52:00	00088604.SSF
Slope (m):	7729.926	39°28'26.48490" N	99060892.DAT
Total (m):	16417.746	084°42' 9.26051" W	10110892.DAT
		248.4613 m	

To: 2005

	Iono free fixed	03/26/99 14:41:00	00088508.SSF
Slope (m):	9777.702	39°28'43.68149" N	10110851.DAT
Total (m):	26195.447	084°48'57.73347" W	20050851.DAT
		294.3270 m	

Closed

Precision (ppm): 1.0246
Errors (m) N: -0.0039 E: 0.0157 U: -0.0214

Closure Log

New Closure

From: 2005

To: 2007		L1 fixed	03/30/99 14:18:00	00088616.SSF
	Slope (m):	9824.853	39°34' 2.20179" N	20050891.DAT
	Total (m):	9824.853	084°48'51.55344" W	20070891.DAT
			287.7523 m	
To: 2009		L1 fixed	03/30/99 14:18:00	00088612.SSF
	Slope (m):	9950.560	39°34' 2.53375" N	20090891.DAT
	Total (m):	19775.413	084°41'54.69975" W	20070891.DAT
			284.5829 m	
To: 9907		L1 fixed	03/30/99 17:15:30	00088584.SSF
	Slope (m):	5773.136	39°32' 8.60370" N	20090893.DAT
	Total (m):	25548.549	084°45' 6.55031" W	99070893.DAT
			280.8155 m	
To: 9906		L1 fixed	03/30/99 16:00:15	00088588.SSF
	Slope (m):	396.443	39°31'55.76217" N	99060892.DAT
	Total (m):	25944.992	084°45' 7.27985" W	99070892.DAT
			279.0652 m	
To: 1011		Iono free fixed	03/30/99 15:52:00	00088604.SSF
	Slope (m):	7729.926	39°28'26.48474" N	99060892.DAT
	Total (m):	33674.918	084°42' 9.26013" W	10110892.DAT
			248.4680 m	
To: 2005		Iono free fixed	03/26/99 14:41:00	00088508.SSF
	Slope (m):	9777.702	39°28'43.68133" N	10110851.DAT
	Total (m):	43452.620	084°48'57.73309" W	20050851.DAT
			294.3337 m	

Closed

Precision (ppm): 0.6954
 Errors (m) N: -0.0088 E: 0.0249 U: -0.0147

Closure Log

New Closure

From: 9907

To: 2009		L1 fixed	03/30/99 17:15:30	00088584.SSF
	Slope (m):	5773.136	39°34' 2.19745" N	20090893.DAT
	Total (m):	5773.136	084°41'54.92685" W	99070893.DAT
			265.0014 m	

To: BT03		Iono free fixed	03/30/99 19:42:45	00088632.SSF
	Slope (m):	7784.459	39°30'28.61005" N	20090893.DAT
	Total (m):	13557.595	084°39' 1.25056" W	BT030894.DAT
			216.4477 m	

To: 1011		L1 fixed	03/19/99 20:10:15	00088524.SSF
	Slope (m):	5873.589	39°28'26.14786" N	BT030784.DAT
	Total (m):	19431.184	084°42' 9.48765" W	28350780.DAT
			228.8881 m	

To: 9906		Iono free fixed	03/30/99 15:52:00	00088604.SSF
	Slope (m):	7729.926	39°31'55.42585" N	99060892.DAT
	Total (m):	27161.110	084°45' 7.50786" W	10110892.DAT
			259.4783 m	

To: 9907		L1 fixed	03/30/99 16:00:15	00088588.SSF
	Slope (m):	396.443	39°32' 8.26741" N	99060892.DAT
	Total (m):	27557.553	084°45' 6.77833" W	99070892.DAT
			261.2280 m	

Closed

Precision (ppm): 0.9799
 Errors (m) N: 0.0144 E: -0.0167 U: -0.0156

Closure Log

New Closure

From: 1011

To: BT03		L1 fixed	03/19/99 20:10:15	00088524.SSF
	Slope (m):	5873.589	39°30'28.71850" N	BT030784.DAT
	Total (m):	5873.589	084°39' 1.08498" W	28350780.DAT
			223.0638 m	

To: BUT 70		Iono free fixed	03/19/99 20:09:30	00088520.SSF
	Slope (m):	5840.569	39°28'44.93167" N	10100784.DAT
	Total (m):	11714.159	084°35'36.64554" W	BT030784.DAT
			188.3144 m	

To: 9908		L1 fixed	03/16/99 19:27:30	00088504.SSF
	Slope (m):	7094.945	39°26'21.93957" N	10100754.DAT
	Total (m):	18809.103	084°39'29.10695" W	99080754.DAT
			248.0548 m	

To: BT02		L1 fixed	03/19/99 14:09:15	00088448.SSF
	Slope (m):	1816.212	39°26'35.59386" N	BT020781.DAT
	Total (m):	20625.316	084°40'42.98588" W	99080781.DAT
			251.7892 m	

To: 1011		L1 fixed	03/19/99 14:08:00	00088452.SSF
	Slope (m):	3988.632	39°28'26.25671" N	BT020781.DAT
	Total (m):	24613.948	084°42' 9.32181" W	10110781.DAT
			235.5205 m	

Closed

Precision (ppm): 0.9174
 Errors (m) N: 0.0062 E: 0.0054 U: 0.0210

Closure Log

New Closure

From: BT03

To: 2009		Iono free fixed	03/30/99 19:42:45	00088632.SSF
	Slope (m):	7784.459	39°34' 1.97156" N	20090893.DAT
	Total (m):	7784.459	084°41'54.84129" W	BT030894.DAT
			261.6190 m	
To: 2011		L1 fixed	03/23/99 16:26:30	00088620.SSF
	Slope (m):	9683.833	39°34' 0.51853" N	20110821.DAT
	Total (m):	17468.292	084°35' 9.16589" W	20090822.DAT
			263.7843 m	
To: BUT 70		L1 fixed	10/25/93 15:13:45	00088640.SSF
	Slope (m):	9766.088	39°28'44.59654" N	20112982.DAT
	Total (m):	27234.380	084°35'36.72621" W	0TAY2982.DAT
			178.3110 m	
To: BT03		Iono free fixed	03/19/99 20:09:30	00088520.SSF
	Slope (m):	5840.569	39°30'28.38349" N	10100784.DAT
	Total (m):	33074.950	084°39' 1.16573" W	BT030784.DAT
			213.0566 m	

Closed

Precision (ppm): 0.8221
 Errors (m) N: -0.0157 E: -0.0141 U: -0.0172

Closure Log

New Closure

From: BUT 70

To: 2011
L1 fixed 10/25/93 15:13:45 00088640.SSF
Slope (m): 9766.088 39°34' 1.14880" N 20112982.DAT
Total (m): 9766.088 084°35' 8.96312" W 0TAY2982.DAT
263.4176 m

To: 9914
Iono free fixed 03/23/99 14:47:00 00088624.SSF
Slope (m): 8201.406 39°33'51.72994" N 20110821.DAT
Total (m): 17967.495 084°29'25.61438" W 99140821.DAT
208.3742 m

To: 9913
Iono free fixed 03/05/99 19:37:15 00088368.SSF
Slope (m): 5714.233 39°31'26.50117" N 99130645.DAT
Total (m): 23681.728 084°31'54.19599" W 99140644.DAT
260.1402 m

To: M 135
L1 fixed 03/05/99 21:13:30 00088344.SSF
Slope (m): 4540.336 39°29'30.29755" N 99130645.DAT
Total (m): 28222.064 084°33'50.80788" W M1350646.DAT
165.2420 m

To: BUT 70
L1 fixed 03/05/99 13:21:30 00088324.SSF
Slope (m): 2883.608 39°28'45.22702" N 10100641.DAT
Total (m): 31105.672 084°35'36.52431" W M1350641.DAT
177.9061 m

Closed

Precision (ppm): 0.5237
Errors (m) N: 0.0060 E: -0.0129 U: -0.0079

Closure Log

New Closure

From: M 135

To: 9912		L1 fixed	03/05/99 21:13:30	00088348.SSF
	Slope (m):	4279.206	39°31'25.84895" N	99120645.DAT
	Total (m):	4279.206	084°32'13.09858" W	M1350646.DAT
			263.9774 m	
To: 9914		Iono free fixed	03/05/99 19:37:15	00088372.SSF
	Slope (m):	6002.587	39°33'51.19812" N	99120645.DAT
	Total (m):	10281.793	084°29'25.93565" W	99140644.DAT
			212.1413 m	
To: KTO1		L1 fixed	03/05/99 18:14:15	00088364.SSF
	Slope (m):	3056.417	39°32'21.57498" N	KTO10644.DAT
	Total (m):	13338.210	084°28'31.30842" W	99140644.DAT
			226.3331 m	
To: BUT 71		Iono free fixed	03/05/99 16:28:45	00088332.SSF
	Slope (m):	6528.645	39°28'49.99185" N	KTO10644.DAT
	Total (m):	19866.855	084°28'39.43879" W	99780642.DAT
			168.4134 m	
To: BUT 69A		L1 fixed	05/05/99 18:49:50	00082628.SSF
	Slope (m):	3871.752	39°27'55.81232" N	RAW00014.DAT
	Total (m):	23738.607	084°31' 5.55818" W	84051257.DAT
			161.4157 m	
To: BUT 70		Iono free fixed	05/05/99 18:43:20	00082624.SSF
	Slope (m):	6657.447	39°28'44.69543" N	86981257.DAT
	Total (m):	30396.054	084°35'36.84374" W	RAW00014.DAT
			181.7102 m	
To: M 135		L1 fixed	03/05/99 13:21:30	00088324.SSF
	Slope (m):	2883.608	39°29'29.76602" N	10100641.DAT
	Total (m):	33279.663	084°33'51.12765" W	M1350641.DAT
			169.0395 m	

Closed

Precision (ppm): 0.5527
 Errors (m) N: 0.0104 E: 0.0132 U: 0.0075

Closure Log

New Closure

From: 2011

To: V135		L1 fixed	03/23/99 14:48:00	00088544.SSF
	Slope (m):	3545.303	39°32'49.47210" N	20110821.DAT
	Total (m):	3545.303	084°33'12.37837" W	V1350821.DAT
			227.0537 m	

To: 9912		L1 fixed	03/08/99 19:12:45	00088296.SSF
	Slope (m):	2944.227	39°31'25.90802" N	99120673.DAT
	Total (m):	6489.530	084°32'12.77236" W	V1350673.DAT
			226.4914 m	

To: 9914		Iono free fixed	03/05/99 19:37:15	00088372.SSF
	Slope (m):	6002.587	39°33'51.25792" N	99120645.DAT
	Total (m):	12492.117	084°29'25.60822" W	99140644.DAT
			174.6615 m	

To: 2011		Iono free fixed	03/23/99 14:47:00	00088624.SSF
	Slope (m):	8201.406	39°34' 0.67683" N	20110821.DAT
	Total (m):	20693.524	084°35' 8.95813" W	99140821.DAT
			229.7041 m	

Closed

Precision (ppm): 0.9774
 Errors (m) N: -0.0146 E: 0.0080 U: 0.0115

Closure Log

New Closure

From: 9914

To: 9915		L1 fixed	03/05/99 18:00:45	00088356.SSF
	Slope (m):	2951.911	39°35'21.54679" N	99140644.DAT
	Total (m):	2951.911	084°28'45.39496" W	99150644.DAT
			254.7351 m	
To: W136		Iono free fixed	03/02/99 15:19:15	00088388.SSF
	Slope (m):	8205.428	39°35'21.25159" N	W1360611.DAT
	Total (m):	11157.339	084°23' 1.54125" W	99150612.DAT
			219.7352 m	
To: 2017		L1 fixed	03/02/99 13:45:00	00088380.SSF
	Slope (m):	1592.096	39°35'21.52107" N	W1360611.DAT
	Total (m):	12749.435	084°21'54.82362" W	20170611.DAT
			221.9870 m	
To: 9918		L1 fixed	03/08/99 15:34:45	00088304.SSF
	Slope (m):	3840.944	39°33'17.04711" N	20170671.DAT
	Total (m):	16590.379	084°21'50.44080" W	99180671.DAT
			157.3420 m	
To: 9917		Iono free fixed	03/02/99 20:37:45	00088396.SSF
	Slope (m):	5403.290	39°32'48.93769" N	99170611.DAT
	Total (m):	21993.669	084°25'33.79444" W	99180615.DAT
			231.2960 m	
To: HATT		L1 fixed	03/02/99 16:45:00	00088416.SSF
	Slope (m):	2431.062	39°31'33.49385" N	99170611.DAT
	Total (m):	24424.731	084°26' 3.28464" W	HATT0613.DAT
			224.0364 m	
To: KTO1		L1 fixed	03/05/99 16:44:15	00088340.SSF
	Slope (m):	3834.518	39°32'21.53554" N	KTO10644.DAT
	Total (m):	28259.249	084°28'31.37248" W	HATT0643.DAT
			213.4867 m	
To: 9914		L1 fixed	03/05/99 18:14:15	00088364.SSF
	Slope (m):	3056.417	39°33'51.15885" N	KTO10644.DAT
	Total (m):	31315.665	084°29'25.99984" W	99140644.DAT
			199.2947 m	

Closed

Precision (ppm): 0.5036
 Errors (m) N: 0.0157 E: -0.0010 U: 0.0004

Closure Log

New Closure

From: 9918

To: MWO A	L1 fixed	03/02/99 20:37:45	00088400.SSF
Slope (m):	4743.148	39°31'33.75316" N	MWOA0614.DAT
Total (m):	4743.148	084°24'18.57281" W	99180615.DAT
		170.2068 m	

To: BUT 71	Iono free fixed	05/06/99 12:00:40	00082656.SSF
Slope (m):	8041.638	39°28'49.73511" N	60661260.DAT
Total (m):	12784.786	084°28'40.22175" W	86981260.DAT
		176.5050 m	

To: HATT	Iono free fixed	03/05/99 16:44:15	00088336.SSF
Slope (m):	6275.013	39°31'33.27668" N	99780642.DAT
Total (m):	19059.799	084°26' 4.00421" W	HATT0643.DAT
		244.9581 m	

To: 9916	L1 fixed	03/02/99 16:45:00	00088420.SSF
Slope (m):	2373.185	39°32'48.55235" N	99160613.DAT
Total (m):	21432.984	084°25'43.40341" W	HATT0613.DAT
		248.9479 m	

To: 9917	L1 fixed	03/02/99 16:41:15	00088412.SSF
Slope (m):	212.337	39°32'48.72038" N	99170611.DAT
Total (m):	21645.321	084°25'34.51433" W	99160613.DAT
		252.2114 m	

To: 2017	Iono free fixed	03/02/99 13:45:00	00088384.SSF
Slope (m):	7033.207	39°35'21.30390" N	99170611.DAT
Total (m):	28678.529	084°21'55.54516" W	20170611.DAT
		242.8991 m	

To: 9918	L1 fixed	03/08/99 15:34:45	00088304.SSF
Slope (m):	3840.944	39°33'16.83035" N	20170671.DAT
Total (m):	32519.473	084°21'51.16201" W	99180671.DAT
		178.2579 m	

Closed

Precision (ppm): 0.4850
 Errors (m) N: -0.0151 E: 0.0018 U: -0.0043

Closure Log

New Closure

From: BUT 59A

To: BUT 61A		Iono free fixed	05/06/99 14:40:30	00082732.SSF
	Slope (m):	9513.811	39°22'40.14333" N	RAW00015.DAT
	Total (m):	9513.811	084°28'42.61022" W	84051263.DAT
			166.0186 m	
To: BUT 61		L1 fixed	05/06/99 14:39:20	00082736.SSF
	Slope (m):	320.843	39°22'29.76084" N	RAW00015.DAT
	Total (m):	9834.654	084°28'42.75962" W	60661264.DAT
			185.9838 m	
To: BUT 54		Iono free fixed	05/06/99 16:56:00	00082800.SSF
	Slope (m):	6185.929	39°19'23.00779" N	84051266.DAT
	Total (m):	16020.583	084°30'17.01195" W	60661267.DAT
			177.3888 m	
To: BUT 55A		Iono free fixed	05/04/99 19:49:30	00082412.SSF
	Slope (m):	6139.272	39°18'29.65039" N	60661246.DAT
	Total (m):	22159.855	084°34'23.89836" W	84051249.DAT
			216.5349 m	
To: BUT 55		L1 fixed	05/05/99 12:51:20	00082472.SSF
	Slope (m):	400.192	39°18'29.55010" N	RAW00014.DAT
	Total (m):	22560.047	084°34'40.59331" W	84051251.DAT
			228.7377 m	
To: BUT 57A		Iono free fixed	05/05/99 13:03:50	00082476.SSF
	Slope (m):	5295.530	39°19'32.47627" N	84051251.DAT
	Total (m):	27855.576	084°38' 6.23579" W	60661251.DAT
			141.3587 m	
To: V 143ECC		L1 fixed	05/05/99 14:24:00	00082488.SSF
	Slope (m):	4679.790	39°20'42.24105" N	60661253.DAT
	Total (m):	32535.367	084°40'59.74680" W	84051252.DAT
			196.1765 m	
To: BUT 58		L1 fixed	05/05/99 14:24:00	00082508.SSF
	Slope (m):	3408.450	39°21'42.15321" N	RAW00014.DAT
	Total (m):	35943.817	084°39' 0.14095" W	84051252.DAT
			147.9313 m	
To: BUT 58A		L1 fixed	05/05/99 16:08:10	00082540.SSF
	Slope (m):	548.353	39°21'30.81871" N	84051254.DAT
	Total (m):	36492.170	084°38'42.49373" W	86981254.DAT
			147.1989 m	
To: BUT 59		Iono free fixed	05/05/99 16:16:10	00082536.SSF
	Slope (m):	6010.757	39°23'30.42806" N	84051254.DAT

Summary of Covariations

SUMMARY OF COVARIANCES
 NETWORK = BUTLER OHIO
 TIME = Wed Oct 13 09:14:31 1999

Definition of precision $(E \times S)^2 = C^2 + P^2$:

Horizontal:

Precision (P) expressed as: ratio
 Propagated linear error (E): U.S.
 (standard error of adjusted horizontal distance
 Scalar (S) on propagated linear error: 1.0000
 Constant error term (C): 0.0000

3-Dimensional:

Precision (P) expressed as: ratio
 Propagated linear error (E): U.S.
 (standard error of adjusted slope distance)
 Scalar (S) on propagated linear error: 1.0000
 Constant error term (C): 0.0000
 Using orthometric height errors

FROM/ TO	AZIMUTH/ DELTA H	1.00σ 1.00σ	DISTANCE/ DELTA h	1.00σ 1.00σ	HOR PREC/ 3-D PREC
1003	0°47'34"	0.05"	9579.579m	0.0027m	1: 3525911
1004	+66.5298m	0.0120m	+66.3133m	0.0184m	1: 3525911
1003	320°21'05"	0.10"	4800.136m	0.0023m	1: 2094961
9902	+50.0716m	0.0083m	+49.9967m	0.0152m	1: 2094961
1003	228°51'32"	0.05"	8232.010m	0.0023m	1: 3653248
HARR	+0.3484m	0.0097m	+0.5112m	0.0129m	1: 3653248
1003	67°30'18"	0.03"	16524.223m	0.0020m	1: 8239708
HOGAN AZ	+13.9758m	0.0170m	+13.9301m	0.0211m	1: 8239708
1003	23°00'54"	0.13"	4776.583m	0.0035m	1: 1374711
V 143ECC	+53.4206m	0.0083m	+53.3042m	0.0129m	1: 1374711
1004	270°50'53"	0.09"	9509.787m	0.0028m	1: 3416368
2004	+22.8458m	0.0131m	+22.9644m	0.0194m	1: 3416368
1004	208°30'37"	0.06"	6694.527m	0.0023m	1: 2933961
9902	-16.4582m	0.0086m	-16.3166m	0.0163m	1: 2933961
1004	210°23'23"	0.07"	6254.140m	0.0024m	1: 2574456
9903	-9.6041m	0.0083m	-9.4739m	0.0160m	1: 2574456
1004	41°45'08"	0.10"	6836.478m	0.0035m	1: 1951738
9909	+36.6995m	0.0105m	+36.6270m	0.0169m	1: 1951738
1004	102°08'35"	0.04"	15480.743m	0.0023m	1: 6850153
HOGAN AZ	-52.5540m	0.0177m	-52.3832m	0.0223m	1: 6850153
1011	274°32'35"	0.06"	9776.594m	0.0029m	1: 3396363
2005	+45.8651m	0.0113m	+45.9880m	0.0180m	1: 3396363
1011	227°34'46"	0.07"	6251.168m	0.0021m	1: 2950353
9904	-9.0623m	0.0075m	-8.9818m	0.0150m	1: 2950353
1011	214°19'27"	0.07"	5162.508m	0.0020m	1: 2613817
9905	-3.4425m	0.0068m	-3.3821m	0.0142m	1: 2613817
1011	328°01'46"	0.10"	7729.084m	0.0033m	1: 2312593
9906	+30.5699m	0.0126m	+30.5735m	0.0172m	1: 2312593
1011	150°13'31"	0.11"	3988.194m	0.0022m	1: 1819616

BT02	+16.2946m	0.0070m	+16.3211m	0.0133m	1: 1819616
1011	51°21'46"	0.08"	5873.009m	0.0023m	1: 2533099
BT03	-12.4540m	0.0072m	-12.4686m	0.0149m	1: 2533099
1011	87°51'05"	0.05"	9402.286m	0.0018m	1: 5218183
BUT 70	-47.1887m	0.0102m	-47.1442m	0.0156m	1: 5218183
1011	254°33'42"	0.07"	10239.473m	0.0031m	1: 3355953
PEOR	+49.9699m	0.0115m	+50.1282m	0.0147m	1: 3355953
2003	134°46'40"	3.94"	238.539m	0.0033m	1: 73315
2004	+9.8612m	0.0085m	+9.8595m	0.0091m	1: 73315
2003	181°39'17"	0.06"	9411.113m	0.0037m	1: 2528988
9901	+13.7552m	0.0135m	+13.9220m	0.0181m	1: 2528988
2003	49°43'12"	0.08"	7181.399m	0.0036m	1: 1993203
9904	-3.4372m	0.0088m	-3.5869m	0.0175m	1: 1993203
2003	159°57'13"	0.09"	5083.732m	0.0032m	1: 1608244
BT01	+9.8626m	0.0085m	+9.9092m	0.0145m	1: 1608244
2003	2°05'07"	0.13"	6138.071m	0.0044m	1: 1390813
PEOR	+55.5950m	0.0101m	+55.5230m	0.0154m	1: 1390813
2005	2°19'48"	0.08"	9823.841m	0.0025m	1: 3862911
2007	-6.6361m	0.0126m	-6.6758m	0.0191m	1: 3862911
2005	33°19'51"	0.08"	6716.314m	0.0032m	1: 2123251
OXFO	+9.1207m	0.0085m	+9.0232m	0.0113m	1: 2123251
2005	182°01'52"	0.17"	3502.351m	0.0027m	1: 1290919
PEOR	+4.1047m	0.0070m	+4.1402m	0.0113m	1: 1290919
2007	91°22'22"	0.05"	9949.557m	0.0039m	1: 2538307
2009	-3.1488m	0.0120m	-3.2530m	0.0201m	1: 2538307
2007	141°56'45"	0.16"	5339.089m	0.0028m	1: 1916452
OXFO	+15.7568m	0.0094m	+15.6990m	0.0175m	1: 1916452
2009	91°37'28"	0.06"	9682.868m	0.0022m	1: 4344534
2011	+2.1864m	0.0110m	+2.2147m	0.0163m	1: 4344534
2009	233°55'12"	0.11"	5772.557m	0.0027m	1: 2160714
9907	-3.7648m	0.0082m	-3.7406m	0.0154m	1: 2160714
2009	149°11'05"	0.06"	7783.546m	0.0028m	1: 2733866
BT03	-48.5342m	0.0103m	-48.5278m	0.0175m	1: 2733866
2009	136°53'28"	0.14"	2967.945m	0.0020m	1: 1480883
BT04	-4.7131m	0.0056m	-4.7195m	0.0120m	1: 1480883
2009	239°12'41"	0.06"	7747.599m	0.0025m	1: 3092575
OXFO	+18.9057m	0.0089m	+18.9520m	0.0159m	1: 3092575
2011	224°05'43"	0.11"	6598.852m	0.0025m	1: 2625098
9910	-30.9761m	0.0094m	-31.0001m	0.0161m	1: 2625098
2011	220°23'36"	0.10"	6227.789m	0.0022m	1: 2784011
9911	-41.3011m	0.0084m	-41.3223m	0.0154m	1: 2784011
2011	93°19'23"	0.09"	8200.434m	0.0024m	1: 3424496
9914	-55.0321m	0.0099m	-54.9337m	0.0167m	1: 3424496
2011	256°06'27"	0.08"	7881.264m	0.0023m	1: 3421063

BT04	-6.8995m	0.0097m	-6.9342m	0.0159m 1: 3421063
2011	185°11'28"	0.05"	9764.764m	0.0031m 1: 3115862
BUT 70	-85.4553m	0.0116m	-85.4182m	0.0162m 1: 3115862
2011	129°35'17"	0.19"	3544.939m	0.0031m 1: 1128093
V135	-2.6199m	0.0069m	-2.5987m	0.0127m 1: 1128093
2017	229°12'17"	0.08"	7032.527m	0.0028m 1: 2537309
9917	+9.2976m	0.0094m	+9.3275m	0.0143m 1: 2537309
2017	179°37'20"	0.12"	3840.061m	0.0035m 1: 1084734
9918	-64.6406m	0.0067m	-64.6029m	0.0127m 1: 1084734
2017	270°53'25"	0.34"	1591.944m	0.0023m 1: 681921
W136	-2.2635m	0.0081m	-2.2619m	0.0113m 1: 681921
9901	23°30'21"	0.11"	5050.549m	0.0029m 1: 1770181
BT01	-3.8925m	0.0095m	-4.0128m	0.0156m 1: 1770181
9901	148°28'03"	0.09"	6917.639m	0.0031m 1: 2236613
HARR	-92.9212m	0.0113m	-92.8290m	0.0169m 1: 2236613
9902	3°42'18"	0.66"	488.854m	0.0021m 1: 236108
9903	+6.8542m	0.0055m	+6.8427m	0.0072m 1: 236108
9902	286°37'46"	0.14"	4946.948m	0.0021m 1: 2317024
BT01	+39.3055m	0.0073m	+39.3307m	0.0145m 1: 2317024
9902	198°59'42"	0.05"	9636.683m	0.0029m 1: 3356721
HARR	-49.7232m	0.0119m	-49.4855m	0.0139m 1: 3356721
9903	281°00'16"	0.15"	4861.014m	0.0021m 1: 2337301
BT01	+32.4513m	0.0074m	+32.4881m	0.0144m 1: 2337301
9904	91°34'10"	0.24"	1704.333m	0.0017m 1: 992953
9905	+5.6198m	0.0039m	+5.5997m	0.0091m 1: 992953
9904	285°50'24"	0.12"	5462.743m	0.0034m 1: 1605411
PEOR	+59.0322m	0.0084m	+59.1100m	0.0136m 1: 1605411
9905	87°05'07"	0.08"	6656.016m	0.0022m 1: 3074864
9908	+16.0116m	0.0086m	+15.9856m	0.0157m 1: 3074864
9905	80°41'27"	0.10"	4956.774m	0.0020m 1: 2536737
BT02	+19.7371m	0.0072m	+19.7032m	0.0143m 1: 2536737
9906	3°56'52"	1.19"	396.395m	0.0026m 1: 153275
9907	+1.7455m	0.0071m	+1.7451m	0.0082m 1: 153275
9906	265°01'39"	0.34"	1970.432m	0.0031m 1: 630388
OXFO	+24.4160m	0.0088m	+24.4377m	0.0122m 1: 630388
9907	254°07'08"	0.29"	2069.288m	0.0031m 1: 675581
OXFO	+22.6704m	0.0070m	+22.6925m	0.0112m 1: 675581
9908	109°40'11"	1.02"	425.645m	0.0022m 1: 192873
9909	+5.5207m	0.0047m	+5.5237m	0.0064m 1: 192873
9908	284°46'58"	0.26"	1816.022m	0.0019m 1: 931791
BT02	+3.7255m	0.0055m	+3.7175m	0.0101m 1: 931791
9908	133°26'28"	0.08"	7898.054m	0.0028m 1: 2852415
BUT 59	-51.8580m	0.0109m	-51.7337m	0.0179m 1: 2852415
9908	52°54'58"	0.06"	7094.016m	0.0021m 1: 3372164

BUT 70	-59.7578m	0.0080m	-59.7478m	0.0149m 1: 3372164
9908	127°44'16"	0.04"	13887.702m	0.0022m 1: 6250850
HOGAN AZ	-83.7328m	0.0163m	-83.4865m	0.0216m 1: 6250850
9909	49°56'45"	0.09"	6869.891m	0.0026m 1: 2674498
BUT 70	-65.2785m	0.0088m	-65.2715m	0.0153m 1: 2674498
9910	90°24'35"	0.76"	556.040m	0.0025m 1: 218665
9911	-10.3250m	0.0052m	-10.3222m	0.0071m 1: 218665
9910	213°21'10"	0.28"	2000.495m	0.0019m 1: 1040863
BT03	-19.7445m	0.0057m	-19.7424m	0.0105m 1: 1040863
9911	224°48'27"	0.17"	2349.675m	0.0018m 1: 1319996
BT03	-9.4195m	0.0044m	-9.4202m	0.0104m 1: 1319996
9912	90°48'42"	1.01"	443.805m	0.0019m 1: 239382
9913	-0.0606m	0.0065m	-0.0545m	0.0078m 1: 239382
9912	42°57'37"	0.11"	6001.775m	0.0027m 1: 2235125
9914	-51.8489m	0.0085m	-51.8033m	0.0149m 1: 2235125
9912	214°29'32"	0.10"	4277.741m	0.0023m 1: 1834910
M 135	-94.9411m	0.0064m	-94.9373m	0.0101m 1: 1834910
9912	332°23'06"	0.16"	2943.921m	0.0032m 1: 907159
V135	+0.5632m	0.0070m	+0.5317m	0.0101m 1: 907159
9913	39°39'31"	0.12"	5713.440m	0.0029m 1: 1945405
9914	-51.7883m	0.0090m	-51.7488m	0.0151m 1: 1945405
9913	219°09'34"	0.10"	4538.909m	0.0025m 1: 1830886
M 135	-94.8804m	0.0072m	-94.8828m	0.0111m 1: 1830886
9913	149°35'50"	0.11"	7583.928m	0.0041m 1: 1853400
Y139	-100.4880m	0.0129m	-100.3738m	0.0111m 1: 1853400
9914	20°25'44"	0.14"	2951.109m	0.0024m 1: 1231695
9915	+55.4381m	0.0062m	+55.4416m	0.0121m 1: 1231695
9914	155°59'52"	0.15"	3056.099m	0.0025m 1: 1223298
KTO1	+14.2019m	0.0068m	+14.2289m	0.0121m 1: 1223298
9914	251°53'32"	0.13"	5738.980m	0.0021m 1: 2735150
V135	+52.4122m	0.0074m	+52.3350m	0.0128m 1: 2735150
9915	137°03'41"	0.10"	6562.198m	0.0030m 1: 2158313
9917	-23.4245m	0.0102m	-23.3563m	0.0161m 1: 2158313
9915	177°48'16"	0.09"	5561.423m	0.0031m 1: 1801718
KTO1	-41.2363m	0.0090m	-41.2127m	0.0156m 1: 1801718
9915	91°17'21"	0.10"	8204.567m	0.0031m 1: 2628043
W136	-34.9856m	0.0118m	-34.9456m	0.0148m 1: 2628043
9916	89°49'28"	1.80"	212.291m	0.0016m 1: 136591
9917	+3.2646m	0.0032m	+3.2664m	0.0044m 1: 136591
9916	193°11'24"	0.26"	2372.951m	0.0046m 1: 514153
HATT	-3.9847m	0.0071m	-3.9680m	0.0105m 1: 514153
9916	139°55'42"	0.12"	3069.895m	0.0023m 1: 1337968
MWO A	-78.7386m	0.0058m	-78.7038m	0.0119m 1: 1337968
9917	81°58'07"	0.12"	5402.282m	0.0024m 1: 2272791

9918	-73.9382m	0.0078m	-73.9303m	0.0145m	1: 2272791
9917 HATT	198°03'51" -7.2494m	0.25" 0.0070m	2430.816m -7.2344m	0.0046m 0.0104m	1: 530160 1: 530160
9917 MWO A	143°06'22" -82.0033m	0.12" 0.0055m	2938.250m -81.9702m	0.0022m 0.0116m	1: 1344501 1: 1344501
9917 W136	38°56'09" -11.5611m	0.09" 0.0095m	5938.785m -11.5894m	0.0028m 0.0104m	1: 2087862 1: 2087862
9918 BU 74	162°08'11" +64.4228m	0.44" 0.0142m	3441.974m +64.4481m	0.0065m 0.0177m	1: 532345 1: 532345
9918 MWO A	229°06'36" -8.0651m	0.14" 0.0071m	4742.735m -8.0399m	0.0024m 0.0134m	1: 1952332 1: 1952332
BLUEPT A BUT 51	26°50'28" +27.2529m	0.09" 0.0161m	8192.877m +27.1300m	0.0036m 0.0230m	1: 2295306 1: 2295306
BLUEPT A BUT 52	331°07'59" -78.2406m	0.12" 0.0153m	6082.210m -78.3264m	0.0043m 0.0219m	1: 1420206 1: 1420206
BLUEPT A BUT 52A	335°15'39" -75.2060m	0.16" 0.0175m	5852.110m -75.2903m	0.0053m 0.0233m	1: 1111352 1: 1111352
BM B 347 BUT 52A	53°44'38" -1.7438m	0.86" 0.0256m	2202.844m -1.7593m	0.0101m 0.0256m	1: 218097 1: 218097
BT03 BT04	336°33'28" +43.8210m	0.10" 0.0083m	4924.373m +43.8083m	0.0030m 0.0150m	1: 1645821 1: 1645821
BT03 BUT 70	124°34'49" -34.7347m	0.09" 0.0082m	5839.910m -34.6757m	0.0022m 0.0146m	1: 2613466 1: 2613466
BUT 51 BUT 51A	271°07'49" +4.0697m	1.09" 0.0068m	620.354m +4.0699m	0.0025m 0.0086m	1: 245763 1: 245763
BUT 51 BUT 52	253°21'21" -105.4935m	0.15" 0.0133m	6925.765m -105.4564m	0.0039m 0.0200m	1: 1772406 1: 1772406
BUT 51 BUT 52A	252°01'16" -102.4589m	0.18" 0.0147m	6463.884m -102.4203m	0.0048m 0.0205m	1: 1355649 1: 1355649
BUT 51 BUT 53	307°37'37" -22.2781m	0.13" 0.0143m	7492.925m -22.3593m	0.0049m 0.0218m	1: 1520921 1: 1520921
BUT 51 BUT 62A	5°39'00" -21.3074m	0.08" 0.0125m	8074.753m -21.4142m	0.0040m 0.0206m	1: 2015283 1: 2015283
BUT 51A BUT 52A	250°02'32" -106.5286m	0.20" 0.0144m	5881.221m -106.4902m	0.0048m 0.0199m	1: 1219942 1: 1219942
BUT 51A BUT 53	310°38'48" -26.3478m	0.13" 0.0139m	7003.954m -26.4292m	0.0049m 0.0212m	1: 1415129 1: 1415129
BUT 51A BUT 62A	10°00'12" -25.3771m	0.08" 0.0121m	8147.144m -25.4841m	0.0038m 0.0202m	1: 2119481 1: 2119481
BUT 51A BUT 68A	334°35'00" -97.5923m	0.04" 0.0217m	17448.991m -97.8342m	0.0041m 0.0268m	1: 4292793 1: 4292793
BUT 51A M 135	318°42'15" -86.5447m	0.03" 0.0304m	26204.567m -86.9548m	0.0039m 0.0249m	1: 6705399 1: 6705399
BUT 52	91°20'37"	2.18"	487.461m	0.0042m	1: 115841

BUT 52A	+3.0346m	0.0124m	+3.0361m	0.0133m	1: 115841
BUT 52	293°24'49"	0.17"	7170.912m	0.0050m	1: 1421089
BUT 54	+32.4271m	0.0159m	+32.3120m	0.0220m	1: 1421089
BUT 52	294°40'48"	0.13"	7695.329m	0.0041m	1: 1876774
BUT 54A	+37.2820m	0.0146m	+37.1548m	0.0212m	1: 1876774
BUT 52	276°05'43"	0.09"	12601.285m	0.0044m	1: 2870809
BUT 55A	+71.5705m	0.0179m	+71.4144m	0.0240m	1: 2870809
BUT 52A	353°42'06"	0.06"	17875.415m	0.0059m	1: 3041765
BUT 68A	+8.9363m	0.0237m	+8.6560m	0.0274m	1: 3041765
BUT 52A	331°31'43"	0.04"	24680.205m	0.0056m	1: 4431690
M 135	+19.9839m	0.0304m	+19.5353m	0.0256m	1: 4431690
BUT 53	353°26'26"	2.28"	368.022m	0.0060m	1: 61004
BUT 53A	-12.7998m	0.0124m	-12.8063m	0.0130m	1: 61004
BUT 53	243°00'30"	0.17"	8171.766m	0.0051m	1: 1611915
BUT 54	-50.7883m	0.0161m	-50.7851m	0.0219m	1: 1611915
BUT 53	292°11'58"	0.22"	5290.698m	0.0055m	1: 966208
BUT 61	-42.2107m	0.0163m	-42.2854m	0.0210m	1: 966208
BUT 53	62°46'59"	0.14"	7567.229m	0.0038m	1: 1973123
BUT 62A	+0.9707m	0.0130m	+0.9450m	0.0195m	1: 1973123
BUT 53A	240°37'45"	0.18"	8307.403m	0.0055m	1: 1521251
BUT 54	-37.9885m	0.0173m	-37.9788m	0.0228m	1: 1521251
BUT 53A	288°35'21"	0.26"	5123.802m	0.0058m	1: 884631
BUT 61	-29.4109m	0.0171m	-29.4791m	0.0215m	1: 884631
BUT 53A	60°10'49"	0.16"	7901.893m	0.0045m	1: 1744358
BUT 62	+16.1302m	0.0149m	+16.1015m	0.0208m	1: 1744358
BUT 53A	5°07'25"	0.16"	6160.512m	0.0066m	1: 930594
BUT 66	-31.9310m	0.0154m	-32.0119m	0.0211m	1: 930594
BUT 53A	9°02'02"	0.16"	6192.111m	0.0062m	1: 993938
BUT 66A	-29.0527m	0.0150m	-29.1299m	0.0207m	1: 993938
BUT 54	311°26'37"	1.59"	549.522m	0.0039m	1: 141110
BUT 54A	+4.8549m	0.0093m	+4.8428m	0.0105m	1: 141110
BUT 54	255°44'45"	0.20"	6138.568m	0.0046m	1: 1321387
BUT 55A	+39.1434m	0.0131m	+39.1024m	0.0190m	1: 1321387
BUT 54	22°39'41"	0.18"	6185.351m	0.0060m	1: 1031907
BUT 61	+8.5775m	0.0163m	+8.4997m	0.0216m	1: 1031907
BUT 54A	252°31'36"	0.13"	6224.807m	0.0028m	1: 2258982
BUT 55	+46.4892m	0.0095m	+46.4568m	0.0168m	1: 2258982
BUT 54A	251°17'34"	0.16"	5846.529m	0.0034m	1: 1703643
BUT 55A	+34.2885m	0.0102m	+34.2596m	0.0171m	1: 1703643
BUT 54A	342°42'30"	0.15"	3959.231m	0.0044m	1: 908652
BUT 60A	-29.9431m	0.0090m	-30.0310m	0.0151m	1: 908652
BUT 54A	340°47'17"	0.10"	4618.991m	0.0033m	1: 1389585
HOGAN AZ	-25.5695m	0.0081m	-25.6725m	0.0152m	1: 1389585
BUT 55	90°52'26"	1.87"	399.966m	0.0027m	1: 145656

BUT 55A	-12.2007m	0.0064m	-12.1972m	0.0076m 1:	145656
BUT 55	9°16'14"	0.18"	4571.700m	0.0050m 1:	907879
BUT 56A	-87.2873m	0.0112m	-87.3690m	0.0170m 1:	907879
BUT 55	292°50'16"	0.18"	5294.318m	0.0042m 1:	1264886
BUT 57A	-87.4124m	0.0112m	-87.4868m	0.0171m 1:	1264886
BUT 55	40°07'16"	0.11"	7387.818m	0.0041m 1:	1819171
BUT 60A	-76.4323m	0.0112m	-76.4878m	0.0185m 1:	1819171
BUT 55	35°20'11"	0.08"	7637.961m	0.0034m 1:	2224290
HOGAN AZ	-72.0587m	0.0104m	-72.1293m	0.0180m 1:	2224290
BUT 55A	4°15'37"	0.20"	4530.607m	0.0055m 1:	818333
BUT 56A	-75.0866m	0.0118m	-75.1718m	0.0174m 1:	818333
BUT 55A	291°19'31"	0.19"	5667.229m	0.0047m 1:	1214409
BUT 57A	-75.2117m	0.0121m	-75.2896m	0.0179m 1:	1214409
BUT 56	185°33'55"	1.88"	459.831m	0.0046m 1:	100531
BUT 56A	-0.0035m	0.0100m	+0.0054m	0.0110m 1:	100531
BUT 56	247°43'47"	0.18"	5765.632m	0.0045m 1:	1272265
BUT 57	+1.6943m	0.0116m	+1.6963m	0.0174m 1:	1272265
BUT 56	276°40'37"	0.16"	6485.835m	0.0049m 1:	1337085
BUT 58A	+5.6971m	0.0125m	+5.6272m	0.0184m 1:	1337085
BUT 56	339°35'14"	0.20"	4620.461m	0.0049m 1:	945173
BUT 59	+47.0998m	0.0112m	+46.9979m	0.0169m 1:	945173
BUT 56	342°14'36"	0.23"	4544.055m	0.0058m 1:	787819
BUT 59A	+45.9265m	0.0133m	+45.8274m	0.0183m 1:	787819
BUT 56	80°18'28"	0.27"	4037.280m	0.0043m 1:	931443
BUT 60A	+10.8514m	0.0110m	+10.8866m	0.0161m 1:	931443
BUT 56A	251°55'10"	0.19"	5565.793m	0.0045m 1:	1250412
BUT 57	+1.6978m	0.0119m	+1.6909m	0.0175m 1:	1250412
BUT 56A	246°22'07"	0.18"	6129.799m	0.0045m 1:	1347401
BUT 57A	-0.1252m	0.0123m	-0.1178m	0.0181m 1:	1347401
BUT 56A	280°43'34"	0.16"	6511.008m	0.0048m 1:	1350727
BUT 58A	+5.7006m	0.0129m	+5.6218m	0.0188m 1:	1350727
BUT 57	203°59'37"	0.66"	798.789m	0.0022m 1:	366500
BUT 57A	-1.8230m	0.0051m	-1.8087m	0.0078m 1:	366500
BUT 57	335°15'20"	0.12"	3632.130m	0.0025m 1:	1452587
BUT 58	+4.7313m	0.0063m	+4.6484m	0.0132m 1:	1452587
BUT 57	339°22'26"	0.20"	3140.467m	0.0035m 1:	886037
BUT 58A	+4.0028m	0.0076m	+3.9309m	0.0133m 1:	886037
BUT 57	288°57'08"	0.11"	4681.090m	0.0027m 1:	1702892
V 143ECC	+52.9755m	0.0078m	+52.9229m	0.0144m 1:	1702892
BUT 57A	343°28'15"	0.11"	4202.055m	0.0026m 1:	1635977
BUT 58	+6.5543m	0.0068m	+6.4571m	0.0140m 1:	1635977
BUT 57A	298°44'36"	0.11"	4679.051m	0.0030m 1:	1566648
V 143ECC	+54.7985m	0.0081m	+54.7316m	0.0146m 1:	1566648
BUT 58	130°58'00"	1.06"	548.308m	0.0031m 1:	175930

BUT 58A	-0.7286m	0.0060m	-0.7175m	0.0077m 1:	175930
BUT 58	58°28'35"	0.15"	6152.258m	0.0041m 1:	1493831
BUT 59	+40.6742m	0.0106m	+40.6532m	0.0161m 1:	1493831
BUT 58	40°12'03"	0.11"	8347.438m	0.0044m 1:	1915936
BUT 64A	+16.5438m	0.0121m	+16.4760m	0.0169m 1:	1915936
BUT 58	238°32'41"	0.17"	3407.799m	0.0024m 1:	1428221
V 143ECC	+48.2442m	0.0067m	+48.2745m	0.0125m 1:	1428221
BUT 58A	53°29'06"	0.16"	6010.080m	0.0045m 1:	1334177
BUT 59	+41.4027m	0.0110m	+41.3707m	0.0165m 1:	1334177
BUT 58A	36°26'47"	0.11"	8372.736m	0.0047m 1:	1788352
BUT 64A	+17.2723m	0.0125m	+17.1935m	0.0174m 1:	1788352
BUT 59	90°41'40"	4.39"	225.728m	0.0042m 1:	54095
BUT 59A	-1.1733m	0.0106m	-1.1704m	0.0110m 1:	54095
BUT 59	123°08'29"	0.14"	6677.444m	0.0038m 1:	1738646
BUT 60A	-36.2484m	0.0115m	-36.1112m	0.0183m 1:	1738646
BUT 59	2°36'15"	0.23"	3162.219m	0.0044m 1:	715829
BUT 64A	-24.1304m	0.0093m	-24.1772m	0.0141m 1:	715829
BUT 59	120°19'11"	0.11"	6079.628m	0.0028m 1:	2162195
HOGAN AZ	-31.8748m	0.0096m	-31.7528m	0.0168m 1:	2162195
BUT 59A	124°12'40"	0.16"	6488.085m	0.0050m 1:	1290494
BUT 60A	-35.0751m	0.0139m	-34.9408m	0.0198m 1:	1290494
BUT 59A	102°34'55"	0.12"	9567.091m	0.0050m 1:	1895728
BUT 61	-1.4094m	0.0184m	-1.2529m	0.0236m 1:	1895728
BUT 59A	100°41'12"	0.11"	9512.923m	0.0047m 1:	2038924
BUT 61A	-21.3545m	0.0163m	-21.2037m	0.0219m 1:	2038924
BUT 59A	121°24'23"	0.14"	5884.466m	0.0044m 1:	1341982
HOGAN AZ	-30.7015m	0.0126m	-30.5823m	0.0186m 1:	1341982
BUT 60A	329°27'19"	0.81"	675.147m	0.0035m 1:	190399
HOGAN AZ	+4.3736m	0.0068m	+4.3585m	0.0087m 1:	190399
BUT 61	1°53'45"	2.35"	320.188m	0.0046m 1:	69244
BUT 61A	-19.9452m	0.0135m	-19.9507m	0.0140m 1:	69244
BUT 61	257°10'28"	0.22"	4425.402m	0.0032m 1:	1383922
HOGAN AZ	-29.2922m	0.0137m	-29.3294m	0.0184m 1:	1383922
BUT 61A	357°05'11"	0.17"	4070.444m	0.0045m 1:	901499
BUT 63A	+23.2272m	0.0109m	+23.1597m	0.0162m 1:	901499
BUT 61A	300°56'20"	0.08"	10516.906m	0.0045m 1:	2362491
BUT 64	-5.5343m	0.0158m	-5.7358m	0.0215m 1:	2362491
BUT 61A	52°13'14"	0.16"	6827.211m	0.0038m 1:	1797467
BUT 66	+17.4251m	0.0134m	+17.4180m	0.0194m 1:	1797467
BUT 61A	253°14'37"	0.19"	4517.394m	0.0029m 1:	1532271
HOGAN AZ	-9.3470m	0.0110m	-9.3787m	0.0166m 1:	1532271
BUT 62	185°45'56"	0.57"	838.278m	0.0026m 1:	318692
BUT 62A	-2.3596m	0.0049m	-2.3502m	0.0077m 1:	318692
BUT 62	289°17'12"	0.13"	6680.403m	0.0036m 1:	1846212

BUT 66	-48.0611m	0.0114m	-48.1134m	0.0179m 1: 1846212
BUT 62	290°22'56"	0.12"	6276.331m	0.0033m 1: 1903477
BUT 66A	-45.1829m	0.0101m	-45.2314m	0.0171m 1: 1903477
BUT 62	329°19'57"	0.09"	7464.558m	0.0036m 1: 2063457
BUT 67A	-64.0267m	0.0112m	-64.1041m	0.0187m 1: 2063457
BUT 62	10°35'15"	0.11"	5079.569m	0.0031m 1: 1647366
T 347	-62.7144m	0.0085m	-62.7699m	0.0159m 1: 1647366
BUT 62A	332°49'58"	0.09"	8154.208m	0.0038m 1: 2169561
BUT 67A	-61.6671m	0.0121m	-61.7539m	0.0197m 1: 2169561
BUT 62A	9°54'18"	0.10"	5915.300m	0.0032m 1: 1838255
T 347	-60.3548m	0.0094m	-60.4197m	0.0170m 1: 1838255
BUT 63	69°08'06"	0.93"	881.367m	0.0030m 1: 297915
BUT 63A	-11.4482m	0.0081m	-11.4410m	0.0101m 1: 297915
BUT 63	281°42'27"	0.11"	8159.802m	0.0033m 1: 2463075
BUT 64	-40.2096m	0.0122m	-40.3365m	0.0185m 1: 2463075
BUT 63	277°57'35"	0.11"	8481.222m	0.0035m 1: 2453350
BUT 64A	-36.2780m	0.0127m	-36.4038m	0.0189m 1: 2453350
BUT 63	334°52'16"	0.14"	6041.611m	0.0050m 1: 1201157
BUT 69	-41.7991m	0.0126m	-41.8932m	0.0181m 1: 1201157
BUT 63	311°51'59"	0.06"	11573.136m	0.0038m 1: 3060631
BUT 70	-20.0474m	0.0153m	-20.2407m	0.0192m 1: 3060631
BUT 63	313°28'16"	0.07"	11172.314m	0.0042m 1: 2674751
BUT 70A	-12.6808m	0.0156m	-12.8680m	0.0195m 1: 2674751
BUT 63A	278°39'23"	0.10"	8915.176m	0.0033m 1: 2662834
BUT 64	-28.7615m	0.0129m	-28.8955m	0.0190m 1: 2662834
BUT 63A	88°48'01"	0.18"	5604.179m	0.0036m 1: 1543920
BUT 66	-5.8021m	0.0119m	-5.7417m	0.0173m 1: 1543920
BUT 63A	326°40'53"	0.15"	6170.065m	0.0050m 1: 1224052
BUT 69	-30.3509m	0.0130m	-30.4522m	0.0184m 1: 1224052
BUT 63A	309°32'16"	0.07"	11581.303m	0.0043m 1: 2676661
BUT 70A	-1.2327m	0.0162m	-1.4270m	0.0197m 1: 2676661
BUT 64	220°23'25"	1.02"	631.890m	0.0029m 1: 218423
BUT 64A	+3.9316m	0.0068m	+3.9327m	0.0086m 1: 218423
BUT 64	94°51'18"	0.07"	14468.479m	0.0039m 1: 3755966
BUT 66	+22.9594m	0.0178m	+23.1538m	0.0211m 1: 3755966
BUT 64	354°05'12"	0.09"	6100.591m	0.0038m 1: 1596264
BUT 70	+20.1623m	0.0102m	+20.0958m	0.0161m 1: 1596264
BUT 64A	358°05'04"	0.09"	6553.070m	0.0039m 1: 1676981
BUT 70	+16.2306m	0.0104m	+16.1631m	0.0163m 1: 1676981
BUT 65A	248°51'45"	0.12"	6892.576m	0.0030m 1: 2300044
BUT 66A	+3.2987m	0.0103m	+3.3013m	0.0162m 1: 2300044
BUT 65A	297°38'23"	0.13"	4861.129m	0.0042m 1: 1156743
BUT 67	-17.1920m	0.0101m	-17.2227m	0.0146m 1: 1156743
BUT 65A	291°53'34"	0.12"	4691.085m	0.0034m 1: 1363507

BUT 67A	-15.5451m	0.0085m	-15.5713m	0.0138m 1: 1363507
BUT 65A	11°27'31"	0.09"	5935.119m	0.0028m 1: 2137669
BUT 72A	-5.6878m	0.0090m	-5.7560m	0.0153m 1: 2137669
BUT 65A	353°03'26"	0.06"	9196.954m	0.0030m 1: 3099417
BUT 74A	+53.0226m	0.0123m	+52.9310m	0.0156m 1: 3099417
BUT 65A	50°19'41"	0.88"	503.873m	0.0020m 1: 254065
T 347	-14.2328m	0.0049m	-14.2372m	0.0067m 1: 254065
BUT 66	92°47'35"	1.69"	422.609m	0.0026m 1: 163209
BUT 66A	+2.8782m	0.0070m	+2.8819m	0.0081m 1: 163209
BUT 66A	24°07'07"	0.19"	5194.075m	0.0034m 1: 1511868
BUT 67	-20.4907m	0.0111m	-20.5240m	0.0173m 1: 1511868
BUT 66A	26°06'59"	0.17"	4716.181m	0.0028m 1: 1687555
BUT 67A	-18.8438m	0.0091m	-18.8726m	0.0157m 1: 1687555
BUT 67	185°14'22"	1.66"	508.095m	0.0036m 1: 142296
BUT 67A	+1.6469m	0.0089m	+1.6514m	0.0101m 1: 142296
BUT 67	274°32'21"	0.17"	5367.346m	0.0037m 1: 1443094
BUT 68	-8.9790m	0.0113m	-9.0284m	0.0157m 1: 1443094
BUT 67	269°44'22"	0.17"	5227.634m	0.0037m 1: 1416127
BUT 68A	-8.9012m	0.0112m	-8.9448m	0.0157m 1: 1416127
BUT 67	237°01'35"	0.10"	7890.360m	0.0030m 1: 2621640
BUT1 NGS	+43.5353m	0.0124m	+43.5177m	0.0183m 1: 2621640
BUT 67A	106°45'29"	0.11"	4950.879m	0.0029m 1: 1687279
T 347	+1.3123m	0.0079m	+1.3342m	0.0132m 1: 1687279
BUT 68	164°40'25"	0.94"	465.092m	0.0024m 1: 190432
BUT 68A	+0.0778m	0.0049m	+0.0836m	0.0066m 1: 190432
BUT 68	269°00'57"	0.19"	6187.095m	0.0043m 1: 1455342
BUT 69	+2.0426m	0.0132m	+1.9600m	0.0182m 1: 1455342
BUT 68	274°52'01"	0.18"	5812.181m	0.0042m 1: 1387038
BUT 69A	+3.5108m	0.0131m	+3.4272m	0.0180m 1: 1387038
BUT 68	322°02'13"	0.29"	2646.030m	0.0036m 1: 745232
BUT 71A	+11.6606m	0.0093m	+11.6207m	0.0135m 1: 745232
BUT 68	195°02'59"	0.10"	4886.733m	0.0033m 1: 1488481
BUT1 NGS	+52.5143m	0.0087m	+52.5461m	0.0155m 1: 1488481
BUT 68A	198°03'04"	0.10"	4491.648m	0.0032m 1: 1413094
BUT1 NGS	+52.4365m	0.0084m	+52.4625m	0.0150m 1: 1413094
BUT 68A	291°49'53"	0.07"	10561.984m	0.0028m 1: 3812906
M 135	+11.0476m	0.0136m	+10.8793m	0.0136m 1: 3812906
BUT 69	33°22'57"	1.35"	717.808m	0.0054m 1: 132157
BUT 69A	+1.4682m	0.0125m	+1.4672m	0.0136m 1: 132157
BUT 69	291°47'55"	0.18"	5969.189m	0.0042m 1: 1437730
BUT 70A	+29.1182m	0.0125m	+29.0252m	0.0171m 1: 1437730
BUT 69	64°18'52"	0.20"	5058.296m	0.0044m 1: 1146921
BUT 71A	+9.6179m	0.0119m	+9.6608m	0.0168m 1: 1146921
BUT 69A	284°23'35"	0.14"	6656.819m	0.0039m 1: 1709720

BUT 70	+20.2836m	0.0126m	+20.1853m	0.0172m	1: 1709720
BUT 69A	285°14'14"	0.16"	6153.636m	0.0043m	1: 1418069
BUT 70A	+27.6501m	0.0134m	+27.5580m	0.0177m	1: 1418069
BUT 69A	65°42'01"	0.24"	3871.415m	0.0039m	1: 994362
BUT 71	+7.0048m	0.0112m	+7.0394m	0.0157m	1: 994362
BUT 69A	69°03'44"	0.21"	4457.871m	0.0040m	1: 1115863
BUT 71A	+8.1498m	0.0116m	+8.1935m	0.0163m	1: 1115863
BUT 70	94°11'33"	1.46"	511.943m	0.0030m	1: 172473
BUT 70A	+7.3665m	0.0084m	+7.3727m	0.0096m	1: 172473
BUT 70	90°21'13"	0.06"	9976.502m	0.0024m	1: 4207644
BUT 71	-13.2787m	0.0118m	-13.1459m	0.0151m	1: 4207644
BUT 70	122°02'42"	0.03"	12942.200m	0.0018m	1: 7223680
BUT1 NGS	+28.7200m	0.0155m	+28.9336m	0.0183m	1: 7223680
BUT 70	62°29'59"	0.15"	2883.321m	0.0019m	1: 1543389
M 135	-12.6690m	0.0058m	-12.6496m	0.0112m	1: 1543389
BUT 70A	90°08'46"	0.09"	9465.771m	0.0034m	1: 2797002
BUT 71	-20.6453m	0.0133m	-20.5185m	0.0164m	1: 2797002
BUT 71	90°00'31"	0.91"	635.089m	0.0024m	1: 267720
BUT 71A	+1.1450m	0.0061m	+1.1541m	0.0080m	1: 267720
BUT 71	72°28'31"	0.08"	7712.171m	0.0026m	1: 3020467
BUT 73	+6.8718m	0.0101m	+6.9274m	0.0152m	1: 3020467
BUT 71	171°41'27"	0.06"	6877.563m	0.0025m	1: 2776380
BUT1 NGS	+41.9987m	0.0104m	+42.0795m	0.0170m	1: 2776380
BUT 71	37°44'32"	0.12"	6274.054m	0.0051m	1: 1221499
HATT	+68.4662m	0.0101m	+68.4813m	0.0104m	1: 1221499
BUT 71	2°57'33"	0.09"	6527.787m	0.0039m	1: 1656706
KTO1	+57.9038m	0.0101m	+57.8592m	0.0146m	1: 1656706
BUT 71	52°15'10"	0.06"	8040.922m	0.0023m	1: 3571304
MWO A	-6.2877m	0.0098m	-6.2546m	0.0143m	1: 3571304
BUT 71	203°41'14"	0.32"	1778.511m	0.0038m	1: 467875
Y139	-4.9978m	0.0084m	-4.9947m	0.0104m	1: 467875
BUT 71A	70°55'59"	0.09"	7109.162m	0.0027m	1: 2595044
BUT 73	+5.7268m	0.0099m	+5.7733m	0.0155m	1: 2595044
BUT 71A	49°18'00"	0.08"	7548.826m	0.0026m	1: 2951654
MWO A	-7.4327m	0.0098m	-7.4087m	0.0148m	1: 2951654
BUT 72	99°30'38"	1.16"	419.452m	0.0019m	1: 217878
BUT 72A	-9.9892m	0.0050m	-9.9905m	0.0066m	1: 217878
BUT 72	282°42'35"	0.12"	5464.756m	0.0023m	1: 2356333
BUT 73	-13.0850m	0.0087m	-13.0915m	0.0151m	1: 2356333
BUT 72	283°16'04"	0.12"	4836.541m	0.0022m	1: 2233523
BUT 73A	-17.1480m	0.0081m	-17.1522m	0.0146m	1: 2233523
BUT 72	335°05'47"	0.11"	4003.347m	0.0027m	1: 1477015
BUT 74	+46.2600m	0.0073m	+46.2311m	0.0131m	1: 1477015
BUT 72	301°02'19"	0.08"	6924.883m	0.0024m	1: 2861486

MWOA 75A	-26.4861m	0.0098m	-26.5117m	0.0153m 1: 2861486
BUT 72A	282°58'05"	0.11"	5255.164m	0.0022m 1: 2427275
BUT 73A	-7.1588m	0.0082m	-7.1617m	0.0149m 1: 2427275
BUT 72A	330°25'52"	0.09"	4254.504m	0.0023m 1: 1824095
BUT 74	+56.2492m	0.0070m	+56.2216m	0.0130m 1: 1824095
BUT 72A	325°20'08"	0.11"	4027.607m	0.0025m 1: 1632828
BUT 74A	+58.7104m	0.0070m	+58.6870m	0.0130m 1: 1632828
BUT 72A	188°11'37"	0.07"	5551.826m	0.0022m 1: 2483443
T 347	-8.5451m	0.0084m	-8.4812m	0.0142m 1: 2483443
BUT 73	98°25'23"	0.88"	630.207m	0.0019m 1: 340004
BUT 73A	-4.0630m	0.0058m	-4.0606m	0.0077m 1: 340004
BUT 73	339°02'19"	0.13"	2784.479m	0.0020m 1: 1359394
MWO A	-13.1595m	0.0054m	-13.1820m	0.0111m 1: 1359394
BUT 73	345°43'32"	0.15"	2443.703m	0.0021m 1: 1172353
MWOA 75A	-13.4011m	0.0052m	-13.4202m	0.0107m 1: 1172353
BUT 73A	50°09'37"	0.13"	3935.290m	0.0022m 1: 1775893
BUT 74	+63.4080m	0.0067m	+63.3832m	0.0136m 1: 1775893
BUT 73A	333°30'57"	0.16"	2749.060m	0.0024m 1: 1152547
MWOA 75A	-9.3381m	0.0064m	-9.3596m	0.0115m 1: 1152547
BUT 74	206°15'50"	1.03"	432.355m	0.0023m 1: 189084
BUT 74A	+2.4612m	0.0048m	+2.4654m	0.0064m 1: 189084
BUT 74	272°06'54"	0.09"	4644.358m	0.0018m 1: 2651447
MWO A	-72.5045m	0.0062m	-72.5046m	0.0134m 1: 2651447
BUT 74	269°11'00"	0.11"	4248.042m	0.0018m 1: 2312055
MWOA 75A	-72.7460m	0.0061m	-72.7428m	0.0132m 1: 2312055
BUT 74A	277°09'42"	0.10"	4484.864m	0.0020m 1: 2244270
MWO A	-74.9657m	0.0066m	-74.9700m	0.0133m 1: 2244270
BUT 74A	274°36'41"	0.13"	4069.465m	0.0022m 1: 1884514
MWOA 75A	-75.2073m	0.0065m	-75.2082m	0.0131m 1: 1884514
BUT 74A	170°20'17"	0.05"	8934.586m	0.0023m 1: 3897576
T 347	-67.2554m	0.0117m	-67.1682m	0.0143m 1: 3897576
BUT1 NGS	314°15'38"	0.04"	11746.727m	0.0022m 1: 5367044
M 135	-41.3889m	0.0148m	-41.5832m	0.0154m 1: 5367044
BUT1 NGS	341°44'10"	0.13"	5451.313m	0.0037m 1: 1466128
Y139	-46.9965m	0.0113m	-47.0742m	0.0154m 1: 1466128
HATT	293°58'17"	0.28"	3834.139m	0.0032m 1: 1209372
KTO1	-10.5624m	0.0090m	-10.6221m	0.0121m 1: 1209372
MWO A	120°30'44"	0.79"	456.846m	0.0017m 1: 275685
MWOA 75A	-0.2415m	0.0035m	-0.2382m	0.0056m 1: 275685

Graphs +

ERROR

Ellipses

Closure Log

New Closure

From: BUT 70

To: BUT1 NGS	Slope (m): Total (m):	Iono free fixed 12943.452 12943.452	03/05/99 13:14:15 39°25'10.59803" N 084°27'51.34242" W 206.5912 m	00088320.SSF BUT10641.DAT 10100641.DAT
To: BUT 67	Slope (m): Total (m):	Iono free fixed 7891.195 20834.647	05/06/99 13:07:30 39°27'34.39955" N 084°23'18.41079" W 163.0824 m	00082700.SSF 60661262.DAT RAW00015.DAT
To: BUT 65A	Slope (m): Total (m):	L1 fixed 4861.598 25696.246	05/04/99 15:30:00 39°26'24.16806" N 084°20'16.38193" W 180.2534 m	00082264.SSF 86981244.DAT RAW00013.DAT
To: T 347	Slope (m): Total (m):	L1 fixed 504.120 26200.366	05/05/99 11:51:10 39°26'34.85249" N 084°20' 0.43880" W 166.0189 m	00082456.SSF 86981250.DAT RAW00014.DAT
To: BUT 74A	Slope (m): Total (m):	Iono free fixed 8935.685 35136.051	05/05/99 11:51:50 39°31'19.41499" N 084°21'10.69855" W 233.3191 m	00082460.SSF RAW00014.DAT 60661250.DAT
To: BUT 74	Slope (m): Total (m):	L1 fixed 432.406 35568.457	05/04/99 12:25:30 39°31'32.11225" N 084°21' 3.02240" W 230.8607 m	00082208.SSF RAW00013.DAT 60661241.DAT
To: BUT 73A	Slope (m): Total (m):	L1 fixed 3936.167 39504.624	05/04/99 13:52:10 39°30' 8.35055" N 084°23' 7.31389" W 167.4441 m	00082244.SSF RAW00013.DAT 60661241.DAT
To: BUT 73	Slope (m): Total (m):	L1 fixed 630.276 40134.900	05/04/99 13:17:00 39°30'10.92045" N 084°23'33.48376" W 171.5102 m	00082224.SSF 84051241.DAT RAW00013.DAT
To: BUT 71	Slope (m): Total (m):	Iono free fixed 7712.866 47847.766	05/06/99 12:00:40 39°28'50.52233" N 084°28'39.11722" W 164.6394 m	00082668.SSF RAW00015.DAT 86981260.DAT
To: BUT 70	Slope (m):	Iono free fixed 9977.404	05/05/99 18:49:50 39°28'45.22615" N	00082620.SSF 86981257.DAT

combined

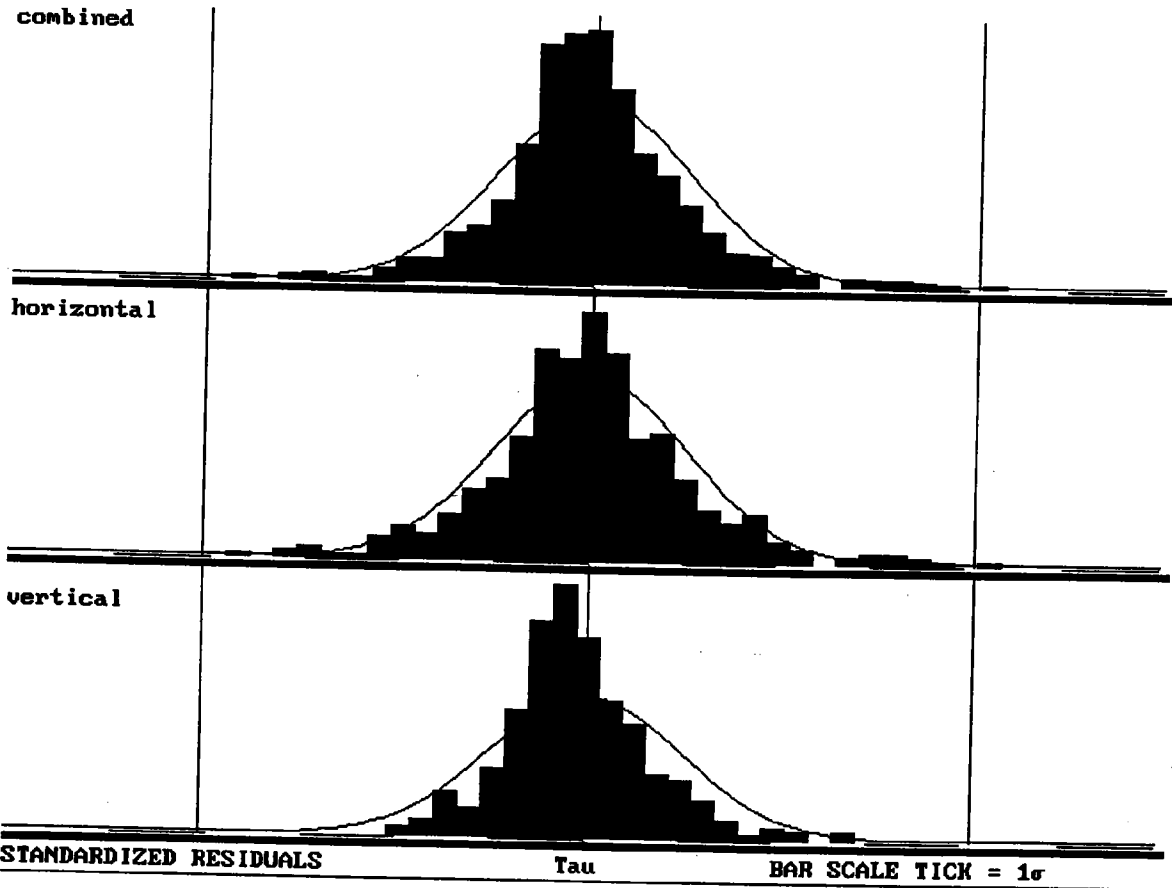
horizontal

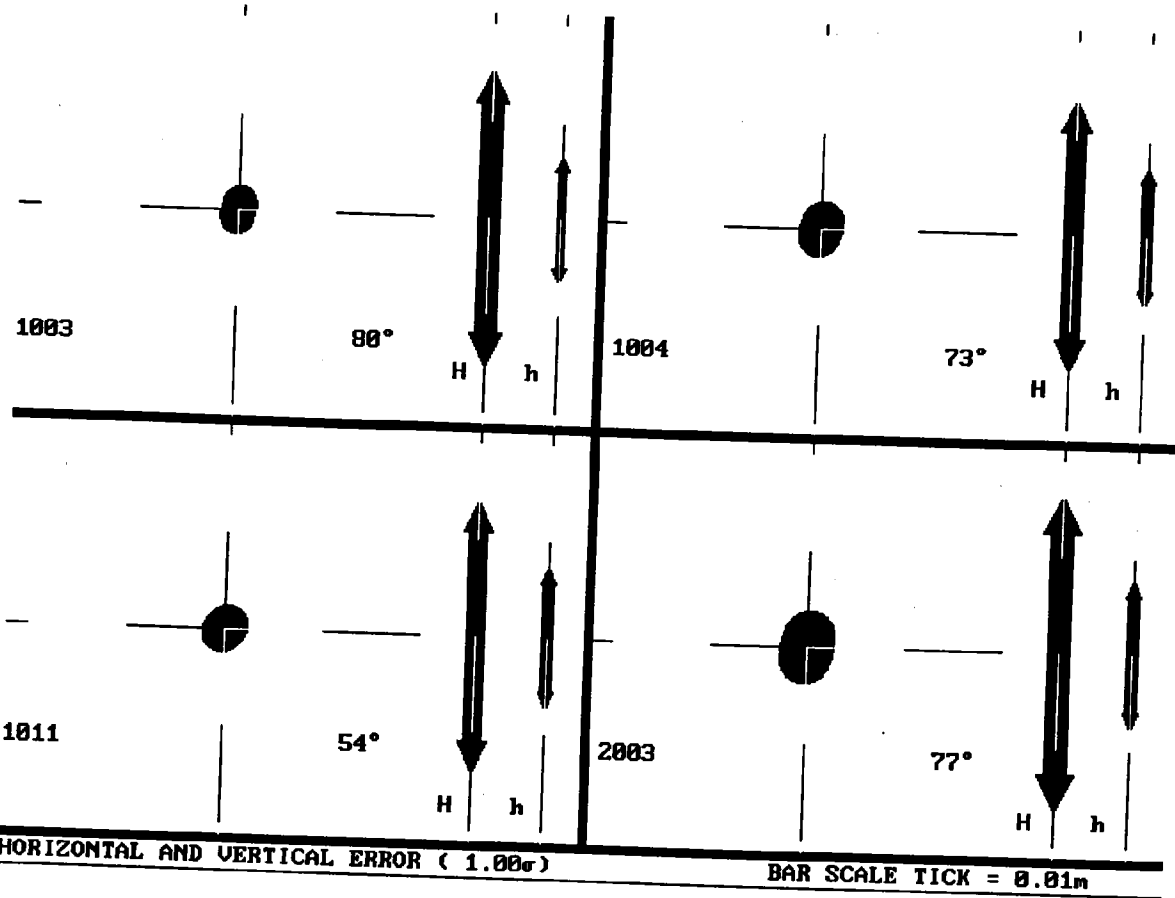
vertical

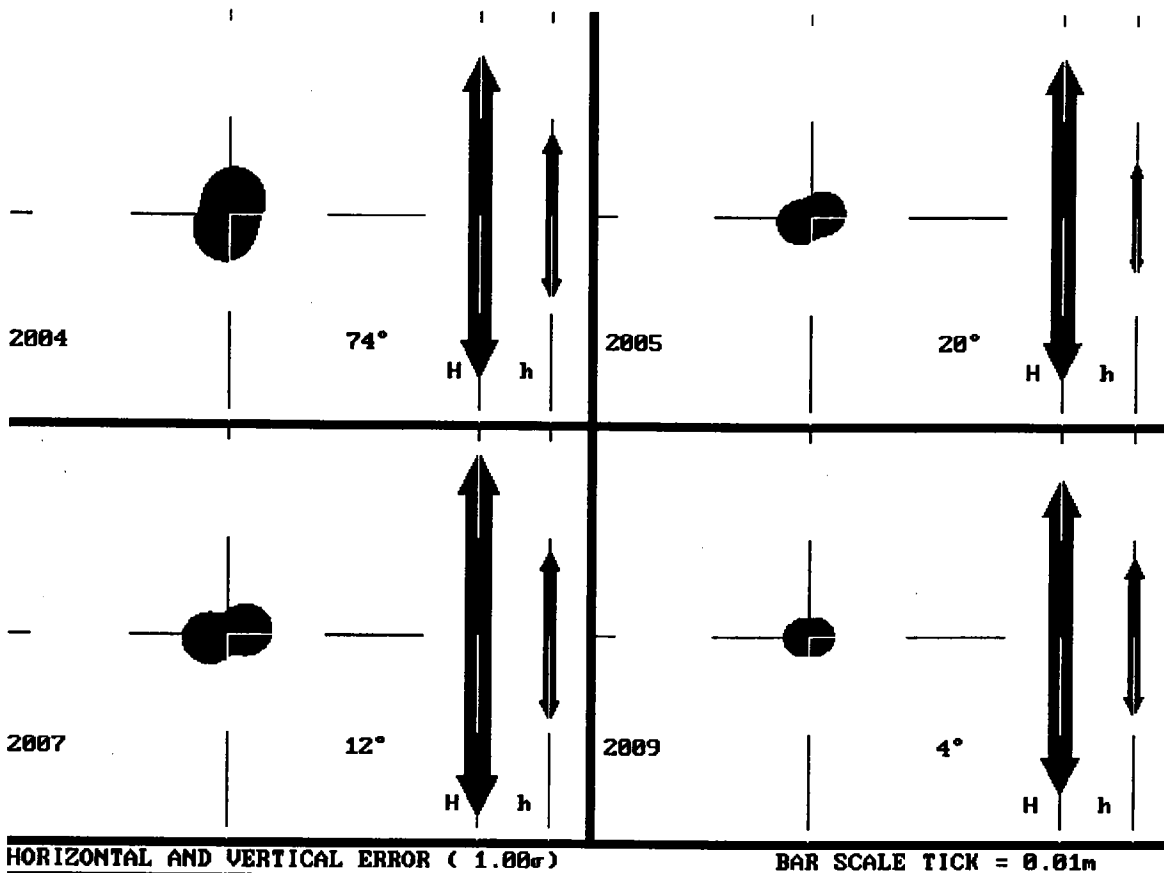
STANDARDIZED RESIDUALS

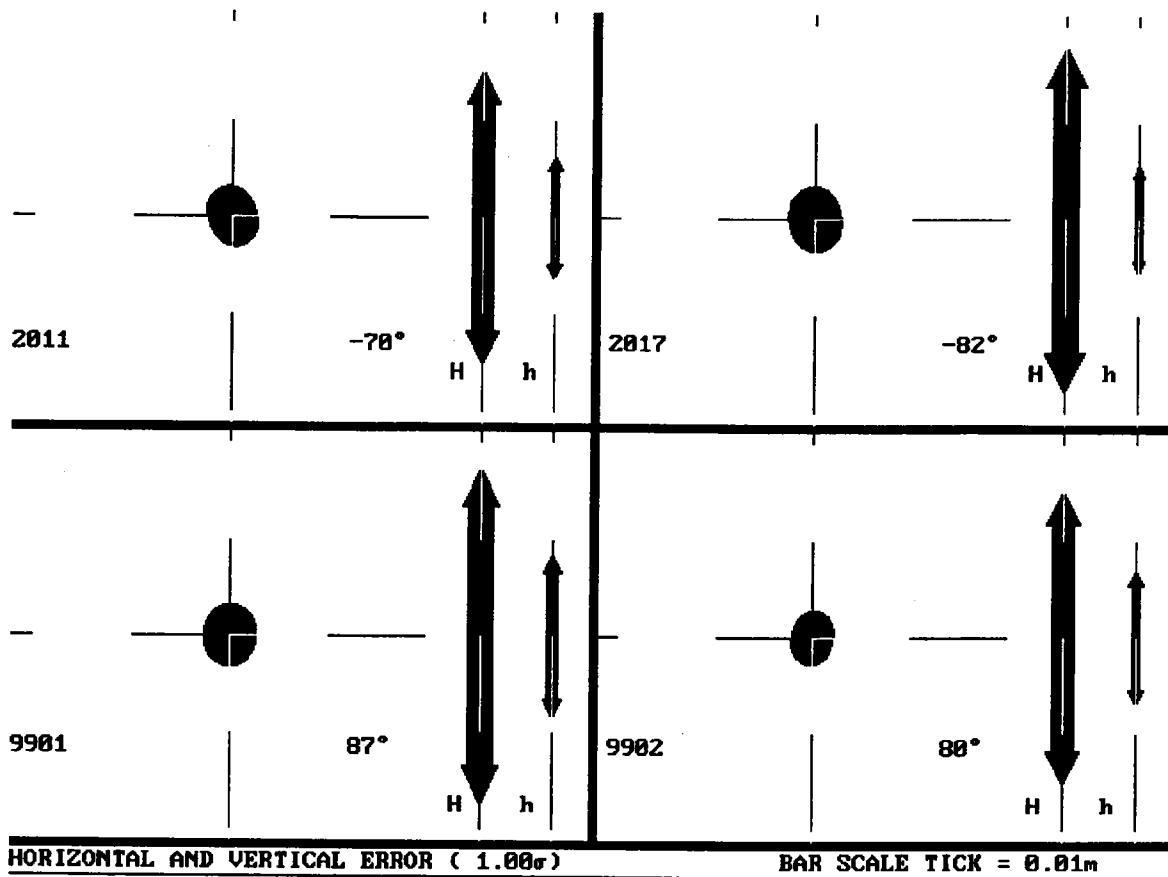
Tau

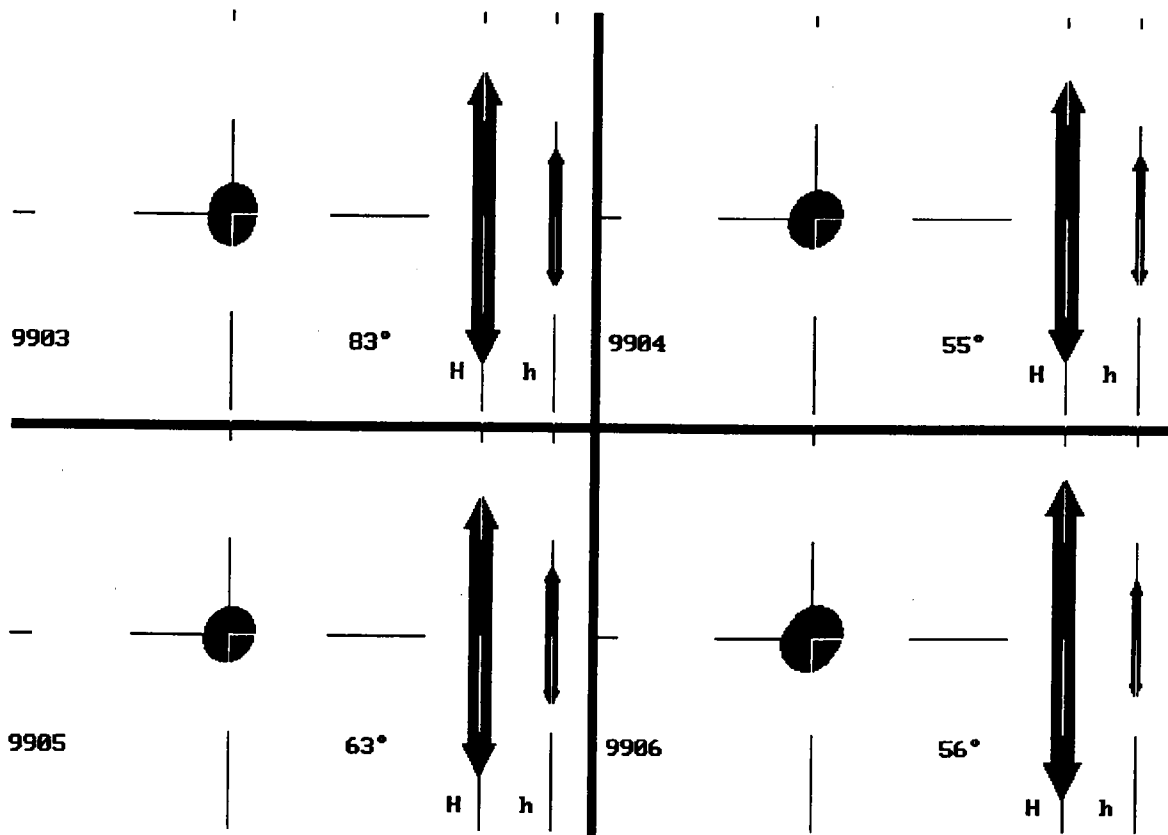
BAR SCALE TICK = 1σ



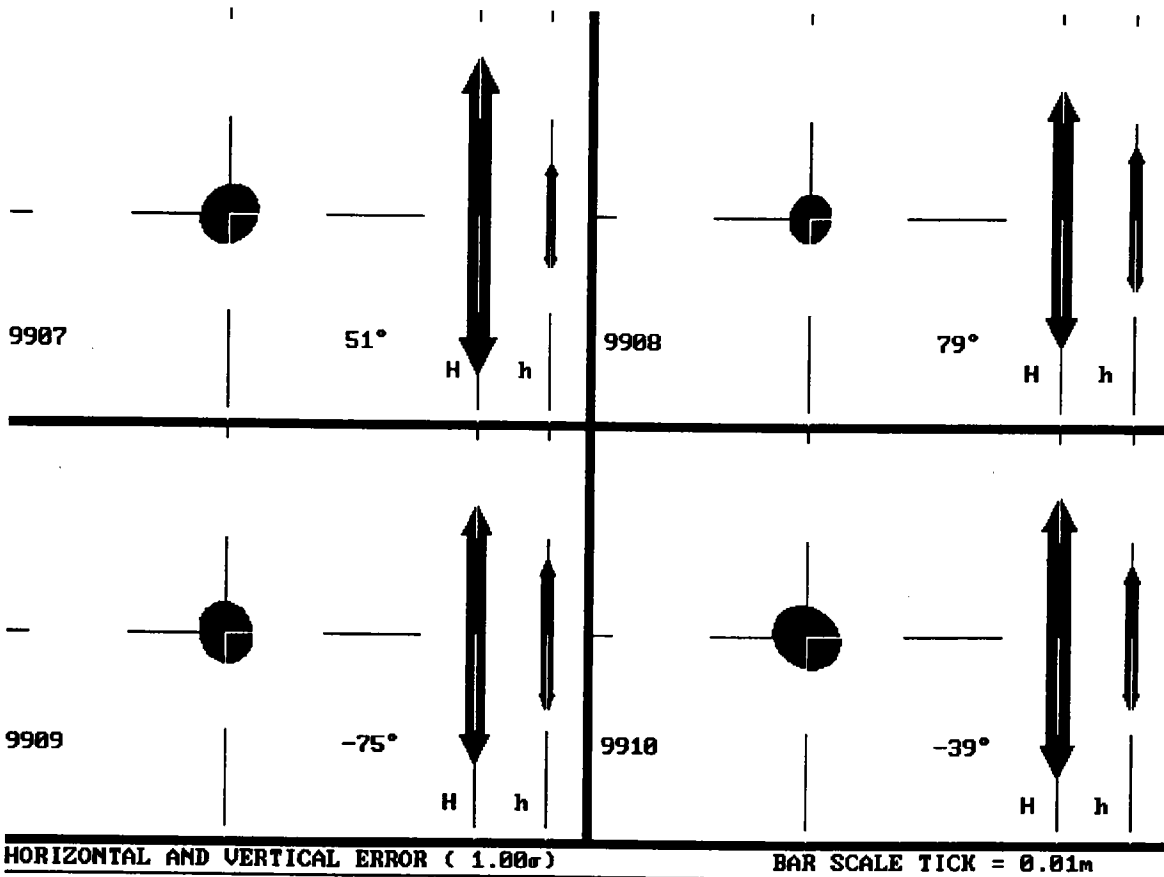


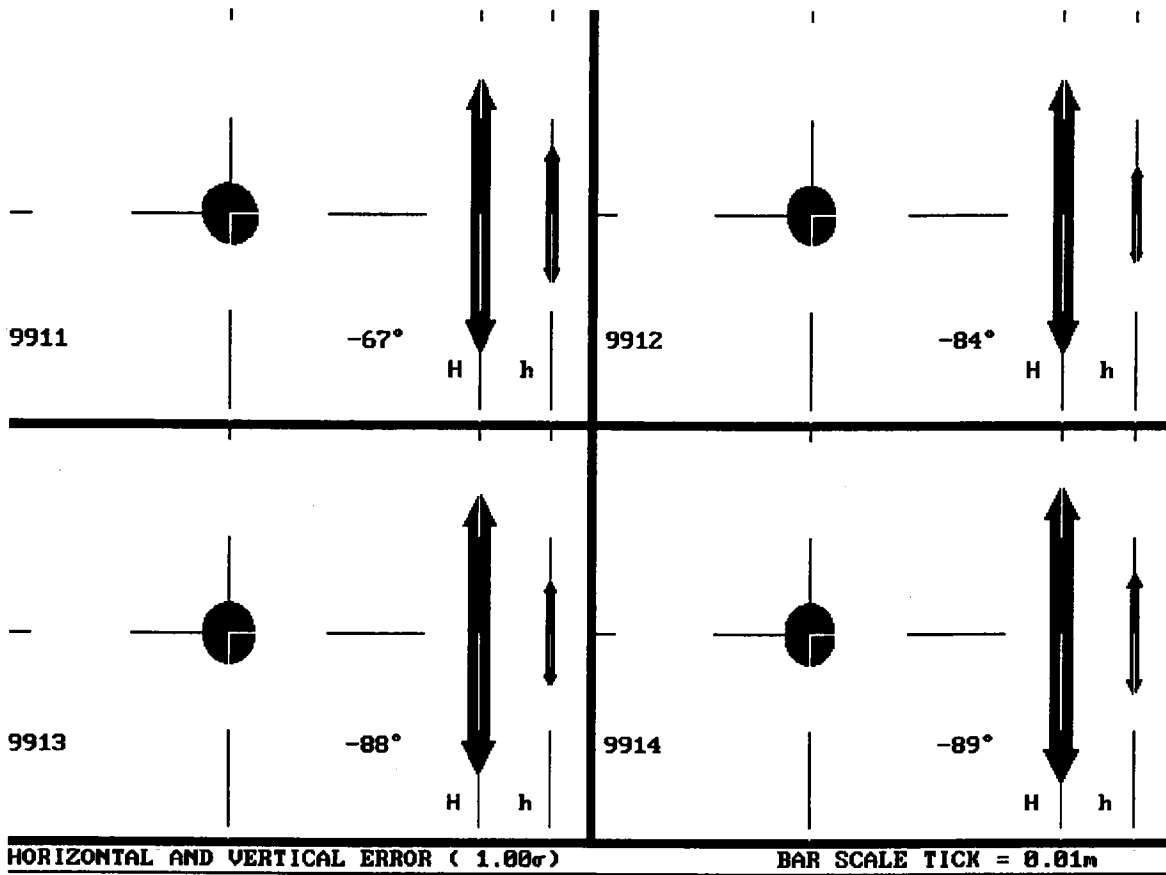


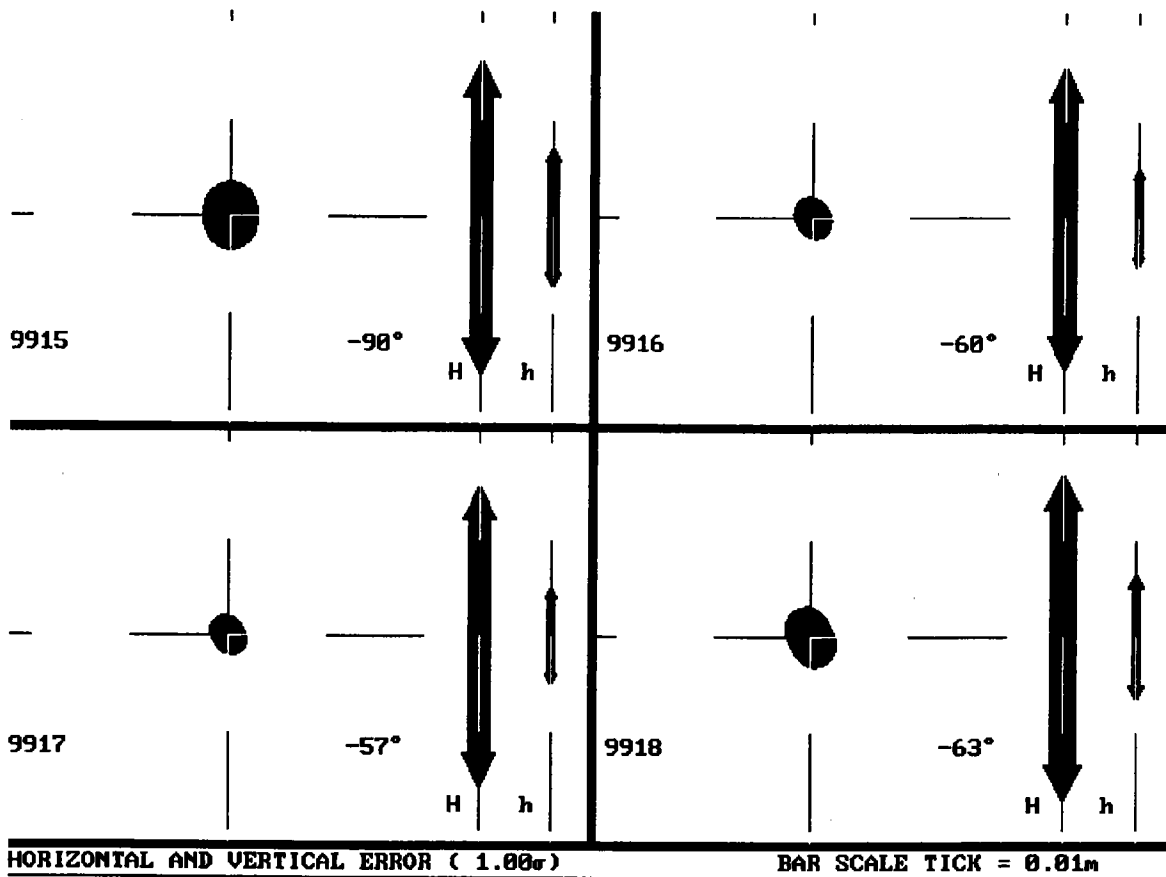


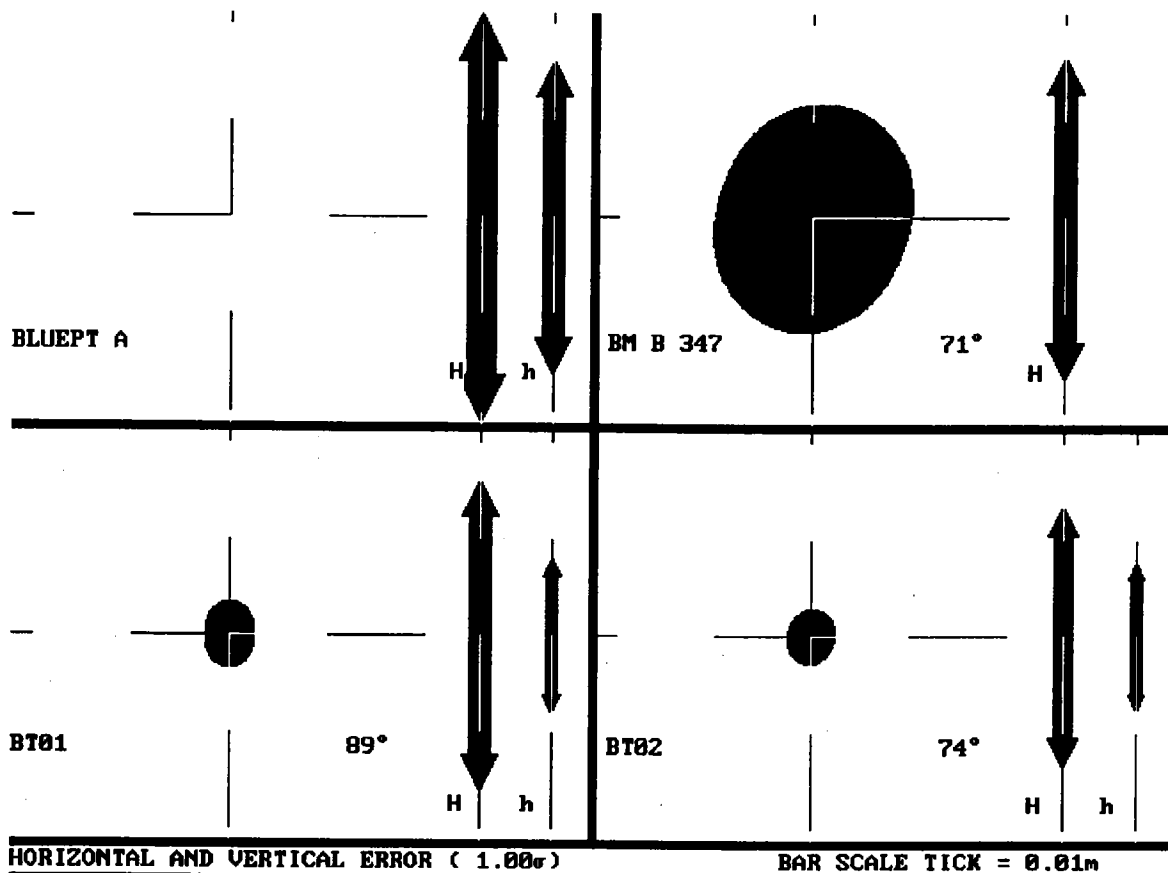


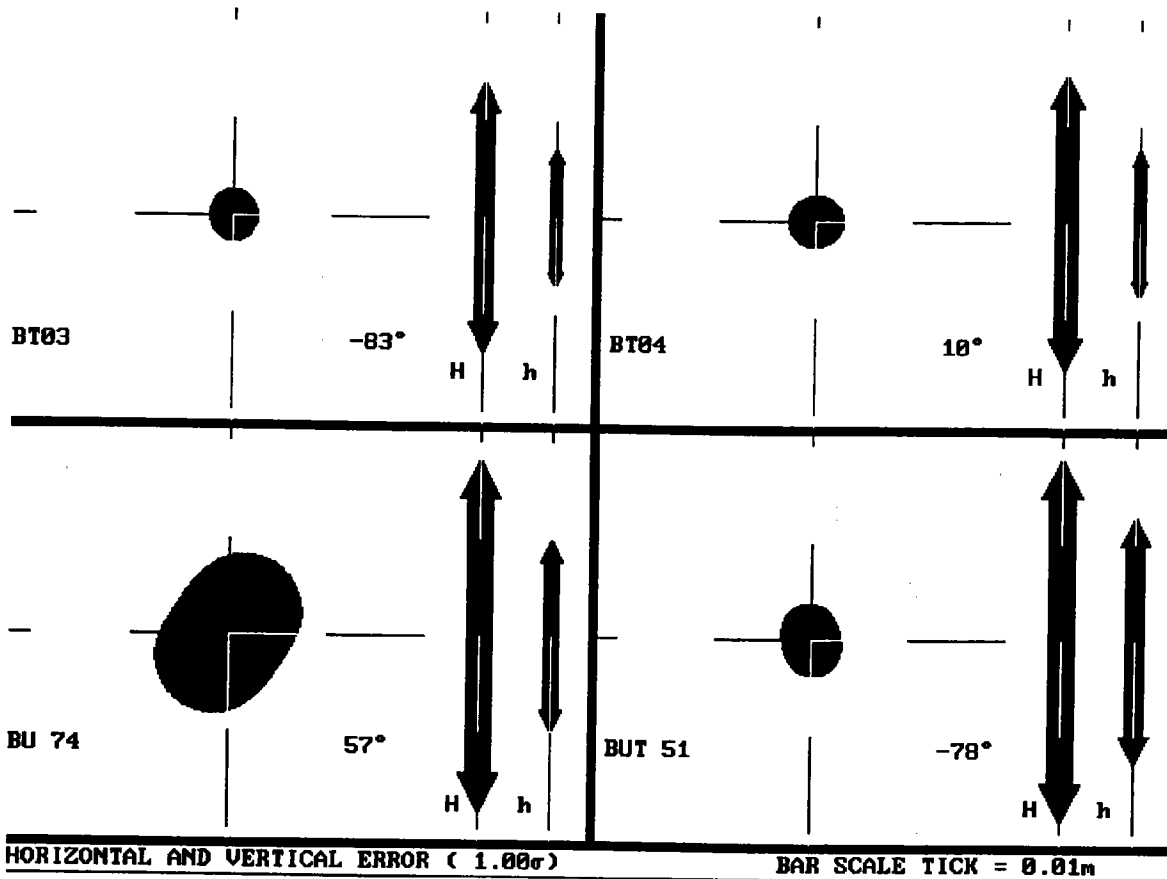
HORIZONTAL AND VERTICAL ERROR (1.00σ) BAR SCALE TICK = 0.01m

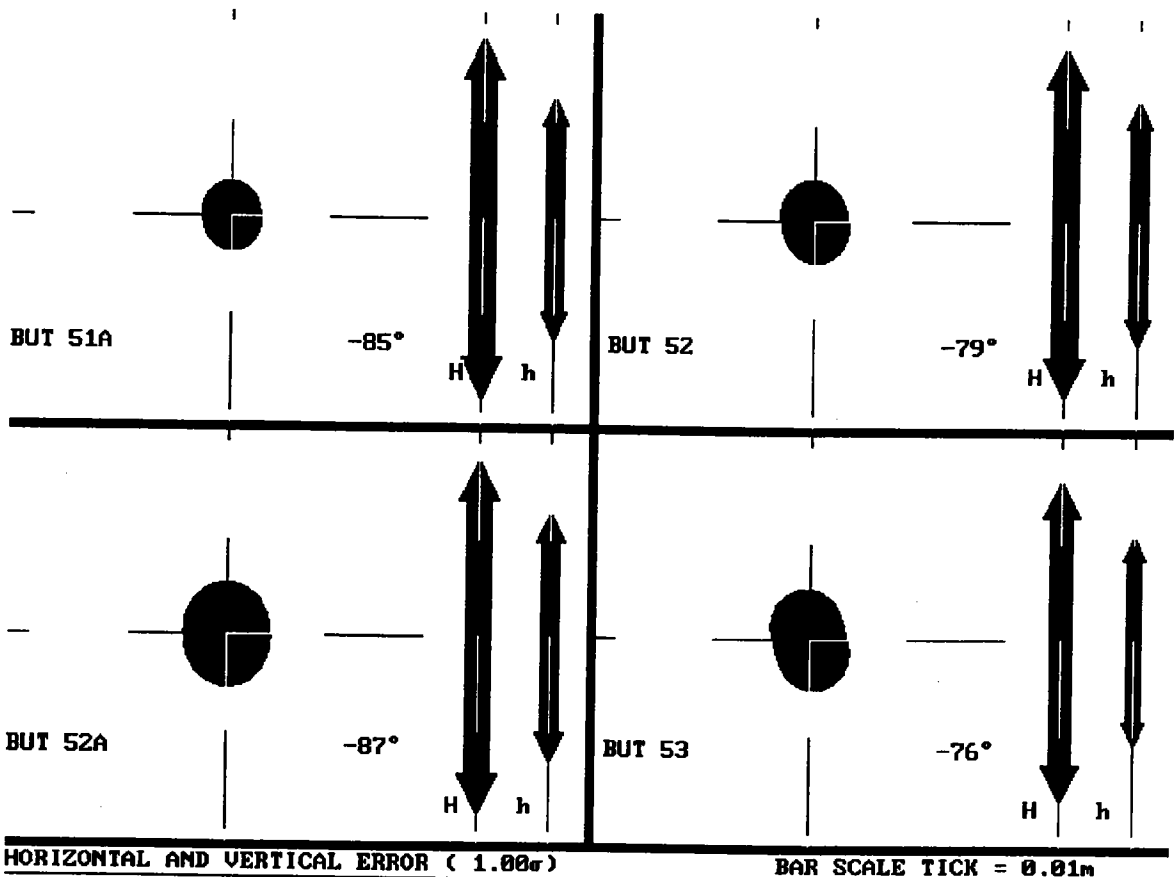


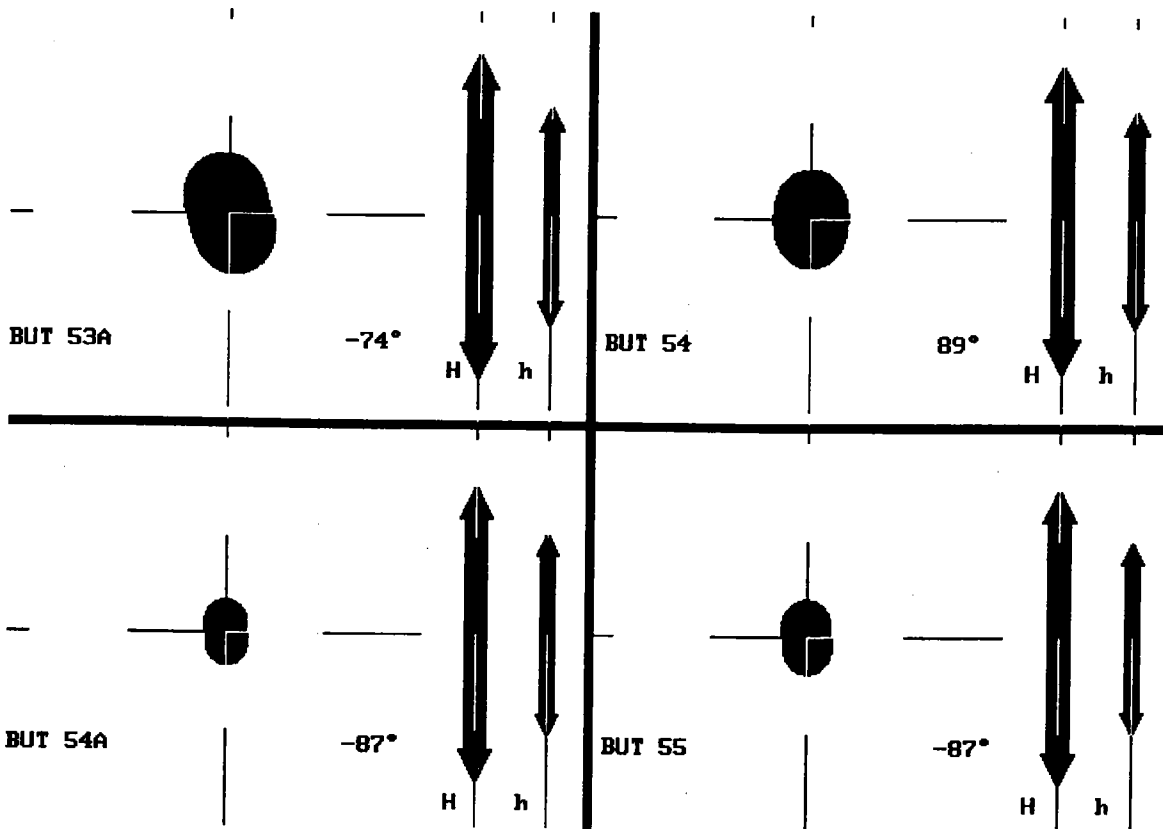






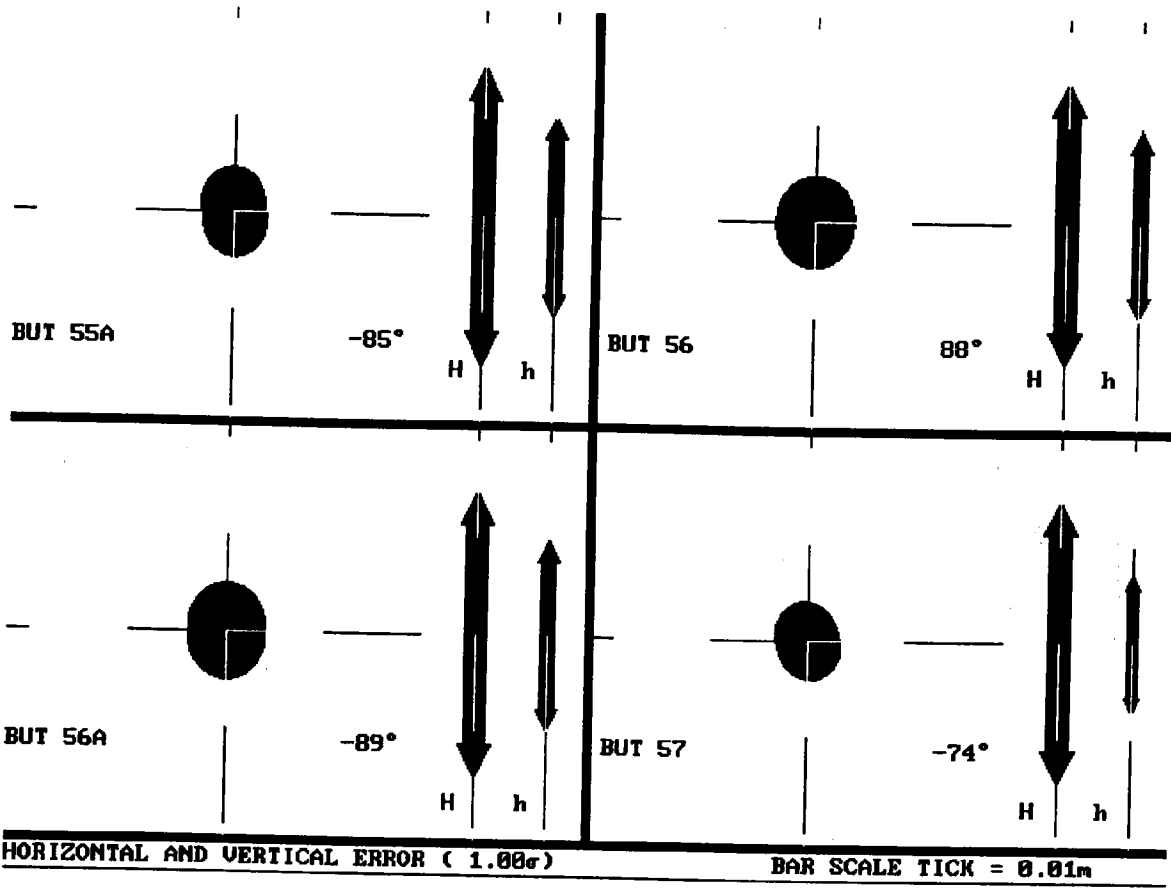


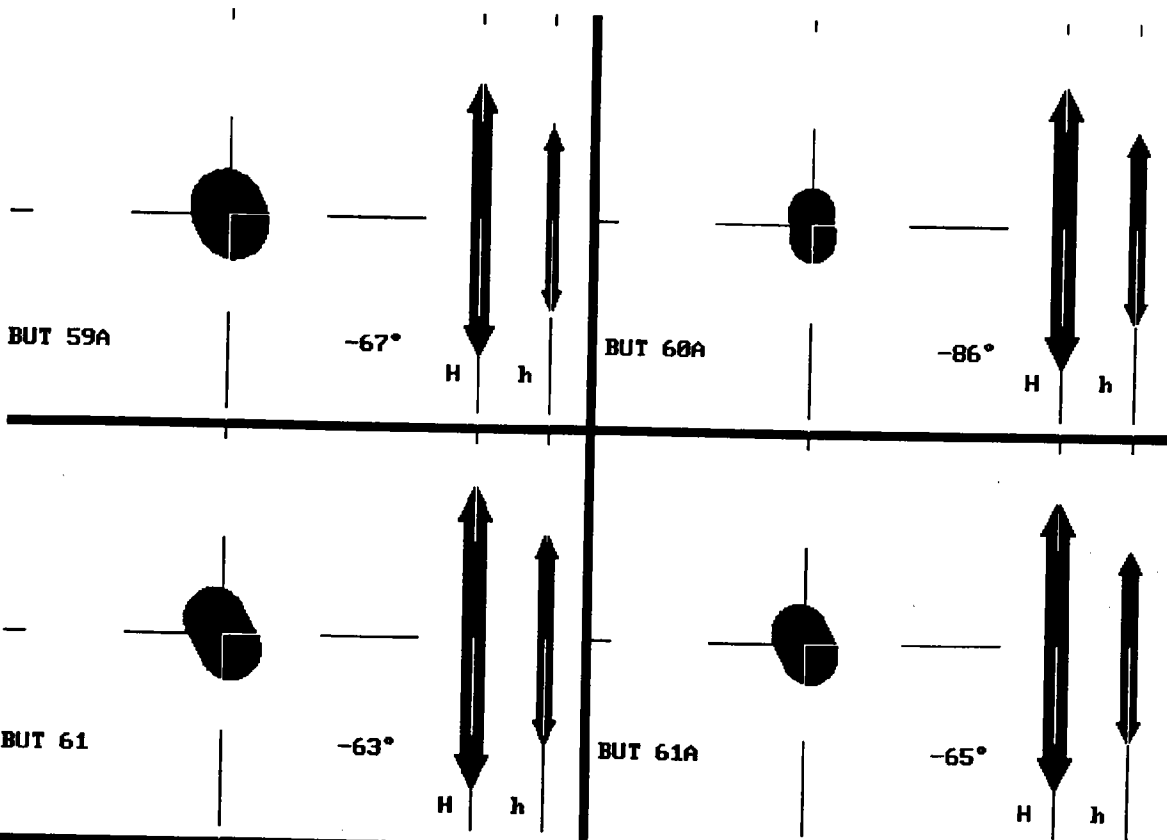




HORIZONTAL AND VERTICAL ERROR (1.00σ)

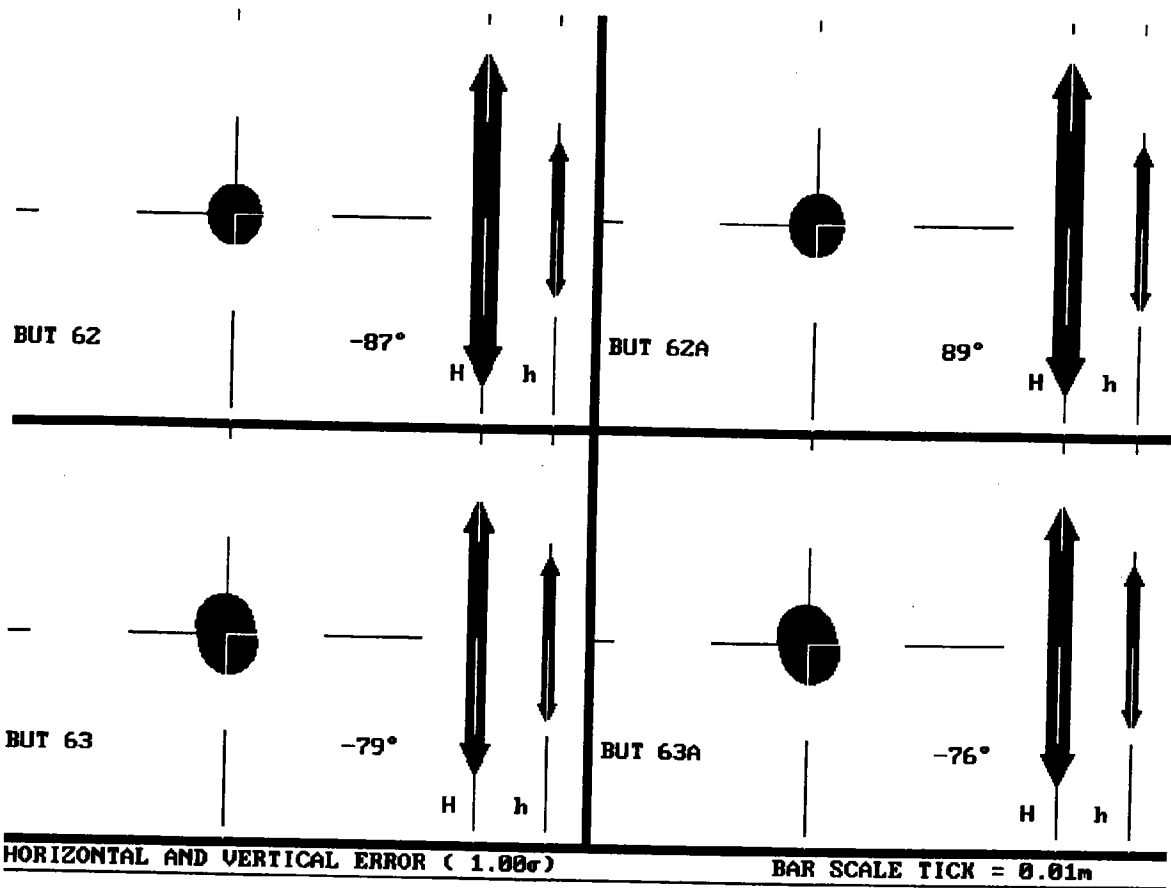
BAR SCALE TICK = 0.01m

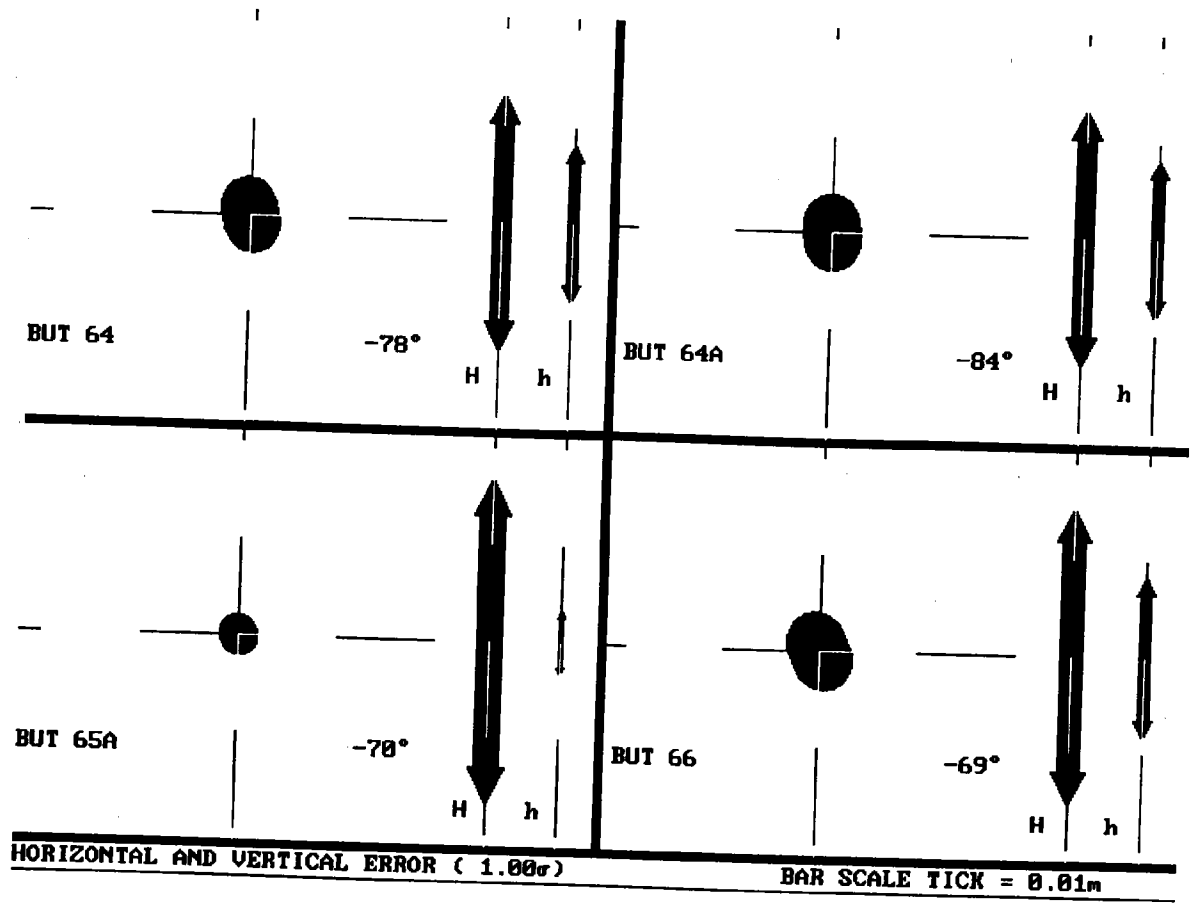


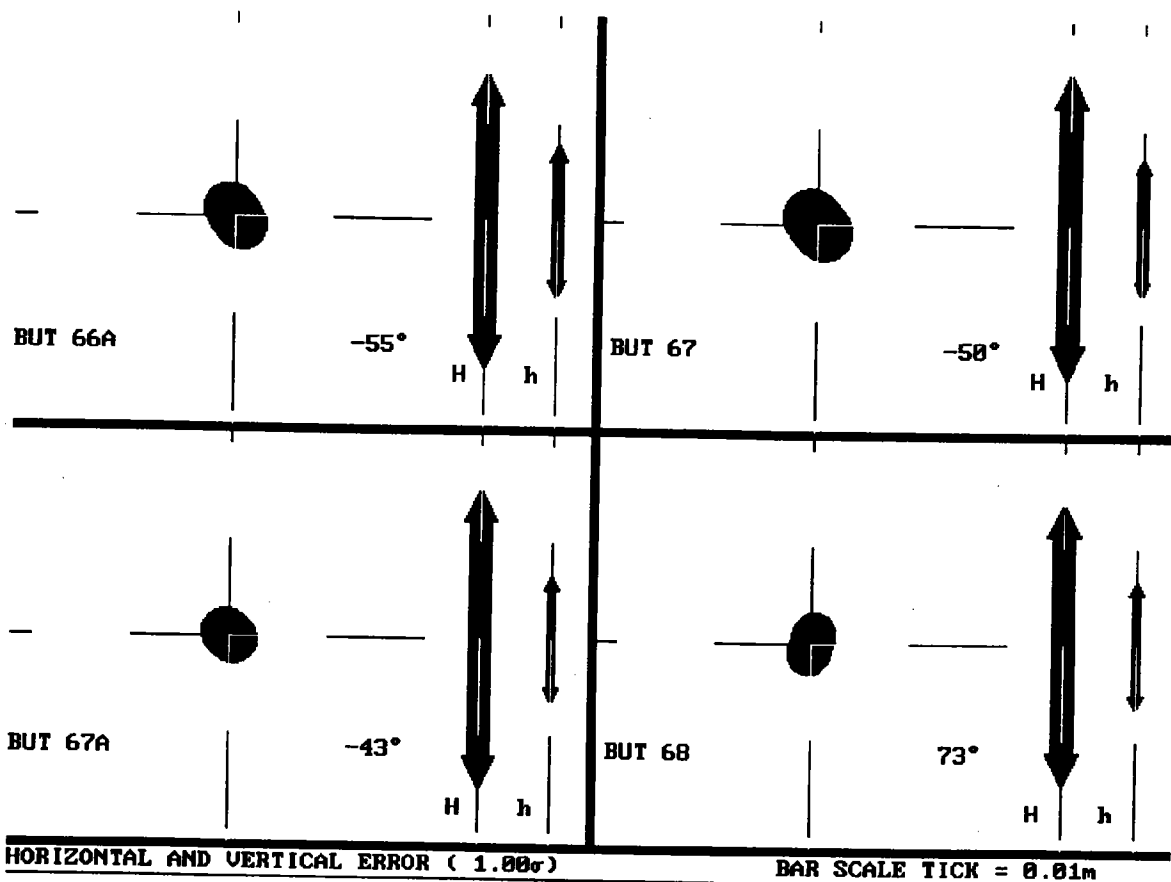


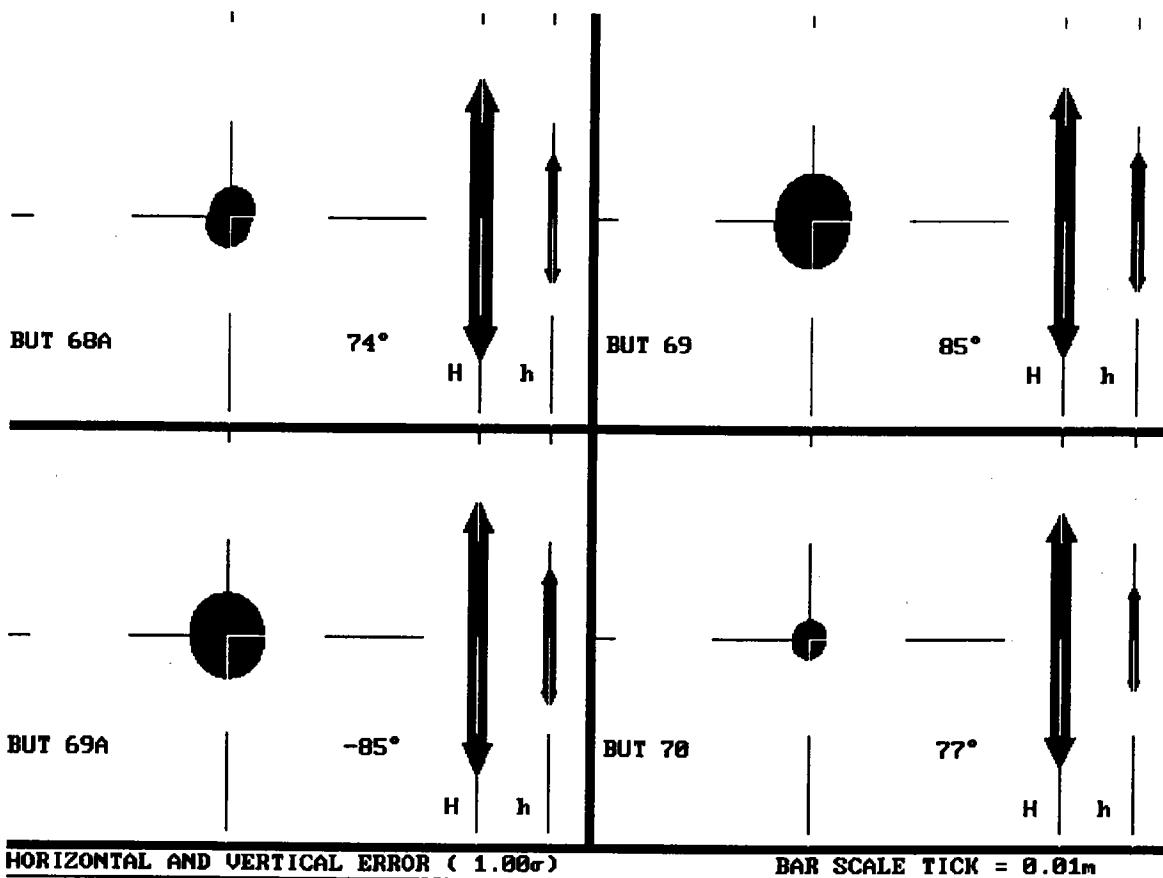
HORIZONTAL AND VERTICAL ERROR (1.00σ)

BAR SCALE TICK = 0.01m









128	11	gpsht	---	---			
	1		BUT 58A	---	+0.7318m	0.0071m	0.11
			BUT 58	1	+0.7300m	0.0059m	
					-0.001751m	0.0040m	
129	11	gpsds	---	---			
	1		BUT 58A	---	548.3061m	0.0037m	0.28
			BUT 58	1	548.3083m	0.0031m	
					+0.002160m	0.0020m	
130	12	gpsaz	---	---			
	1		BUT 70A	---	90°08'45.9606"	0.2117"	0.02
			BUT 71	1	90°08'45.9751"	0.0899"	
					+0.014510"	0.1916"	
131	12	gpsht	---	---			
	1		BUT 70A	---	-20.6457m	0.0247m	0.06
			BUT 71	1	-20.6510m	0.0096m	
					-0.005334m	0.0228m	
132	12	gpsds	---	---			
	1		BUT 70A	---	9465.7830m	0.0082m	0.02
			BUT 71	1	9465.7837m	0.0034m	
					+0.000703m	0.0075m	
133	13	gpsaz	---	---			
	1		BUT 63A	---	177°05'11.5382"	0.2366"	0.08
			BUT 61A	1	177°05'11.5919"	0.1672"	
					+0.053722"	0.1673"	
134	13	gpsht	---	---			
	1		BUT 63A	---	-23.2403m	0.0139m	0.10
			BUT 61A	1	-23.2441m	0.0100m	
					-0.003829m	0.0096m	
135	13	gpsds	---	---			
	1		BUT 63A	---	4070.4525m	0.0065m	0.15
			BUT 61A	1	4070.4496m	0.0045m	
					-0.002866m	0.0047m	
136	14	gpsaz	---	---			
	1		BUT 72A	---	188°11'37.2525"	0.2467"	0.31
			T 347	1	188°11'36.9630"	0.0731"	
					-0.289493"	0.2356"	
137	14	gpsht	---	---			
	1		BUT 72A	---	-8.5555m	0.0240m	0.13
			T 347	1	-8.5672m	0.0062m	
					-0.011724m	0.0232m	
138	14	gpsds	---	---			
	1		BUT 72A	---	5551.8396m	0.0086m	0.16
			T 347	1	5551.8342m	0.0022m	
					-0.005431m	0.0083m	
139	15	gpsaz	---	---			
	1		BUT 52	---	276°05'42.8932"	0.1835"	0.03
			BUT 55A	1	276°05'42.9125"	0.0917"	
					+0.019242"	0.1589"	
140	15	gpsht	---	---			
	1		BUT 52	---	+71.5975m	0.0238m	0.18
			BUT 55A	1	+71.5830m	0.0128m	
					-0.014523m	0.0201m	
141	15	gpsds	---	---			
	1		BUT 52	---	12601.3014m	0.0090m	0.03
			BUT 55A	1	12601.3022m	0.0044m	
					+0.000830m	0.0079m	
142	16	gpsaz	---	---			
	1		BUT 55A	---	4°15'37.5500"	0.4244"	0.04
			BUT 56A	1	4°15'37.4929"	0.1976"	
					-0.057125"	0.3756"	
143	16	gpsht	---	---			
	1		BUT 55A	---	-75.0582m	0.0218m	0.14
			BUT 56A	1	-75.0686m	0.0107m	
					-0.010390m	0.0190m	
144	16	gpsds	---	---			
	1		BUT 55A	---	4530.6121m	0.0117m	0.02
					4530.6130m	0.0055m	

			BUT 56A	1	+0.000922m	0.0103m	
145	17	gpsaz	---	---	354°05'12.4692"	0.1622"	0.03
	1		BUT 64	---	354°05'12.4869"	0.0911"	
			BUT 70	1	+0.017711"	0.1342"	
146	17	gpsht	---	---	+20.1726m	0.0145m	0.30
	1		BUT 64	---	+20.1871m	0.0078m	
			BUT 70	1	+0.014432m	0.0122m	
147	17	gpsds	---	---	6100.6066m	0.0072m	0.27
	1		BUT 64	---	6100.5999m	0.0038m	
			BUT 70	1	-0.006659m	0.0062m	
148	18	gpsaz	---	---	213°22'56.3141"	2.2227"	0.17
	1		BUT 69A	---	213°22'57.5464"	1.3472"	
			BUT 69	1	+1.232371"	1.7679"	
149	18	gpsht	---	---	-1.4640m	0.0228m	0.09
	1		BUT 69A	---	-1.4706m	0.0125m	
			BUT 69	1	-0.006569m	0.0191m	
150	18	gpsds	---	---	717.7929m	0.0112m	0.42
	1		BUT 69A	---	717.8093m	0.0054m	
			BUT 69	1	+0.016409m	0.0098m	
151	19	gpsaz	---	---	64°18'52.3121"	0.4020"	0.19
	1		BUT 69	---	64°18'52.5761"	0.2003"	
			BUT 71A	1	+0.263954"	0.3485"	
152	19	gpsht	---	---	+9.6321m	0.0240m	0.10
	1		BUT 69	---	+9.6240m	0.0111m	
			BUT 71A	1	-0.008114m	0.0213m	
153	19	gpsds	---	---	5058.3035m	0.0104m	0.01
	1		BUT 69	---	5058.3031m	0.0044m	
			BUT 71A	1	-0.000400m	0.0095m	
154	20	gpsaz	---	---	344°40'25.7897"	1.0658"	0.13
	1		BUT 68A	---	344°40'25.5148"	0.9353"	
			BUT 68	1	-0.274873"	0.5111"	
155	20	gpsht	---	---	-0.0753m	0.0054m	0.09
	1		BUT 68A	---	-0.0761m	0.0049m	
			BUT 68	1	-0.000800m	0.0022m	
156	20	gpsds	---	---	465.0918m	0.0028m	0.10
	1		BUT 68A	---	465.0923m	0.0024m	
			BUT 68	1	+0.000490m	0.0013m	
157	21	gpsaz	---	---	162°14'36.6171"	0.5274"	0.09
	1		BUT 59A	---	162°14'36.4425"	0.2332"	
			BUT 56	1	-0.174595"	0.4731"	
158	21	gpsht	---	---	-45.9693m	0.0241m	0.29
	1		BUT 59A	---	-45.9451m	0.0124m	
			BUT 56	1	+0.024197m	0.0207m	
159	21	gpsds	---	---	4544.0578m	0.0118m	0.08
	1		BUT 59A	---	4544.0610m	0.0058m	
			BUT 56	1	+0.003167m	0.0103m	
160	22	gpsaz	---	---	240°37'44.9155"	0.4858"	0.02
	1		BUT 53A	---	240°37'44.9555"	0.1813"	
			BUT 54	1	+0.039995"	0.4507"	

161	22	gpsht	---	---	-37.9729m	0.0401m	0.19
	1		BUT 53A	---	-38.0011m	0.0156m	
			BUT 54	1	-0.028140m	0.0370m	
162	22	gpsds	---	---	8307.4198m	0.0128m	0.11
	1		BUT 53A	---	8307.4148m	0.0055m	
			BUT 54	1	-0.005002m	0.0116m	
163	23	gpsaz	---	---	103°16'04.0240"	0.3401"	0.01
	1		BUT 73A	---	103°16'04.0317"	0.1227"	
			BUT 72	1	+0.007713"	0.3172"	
164	23	gpsht	---	---	+17.1416m	0.0168m	0.02
	1		BUT 73A	---	+17.1405m	0.0065m	
			BUT 72	1	-0.001087m	0.0155m	
165	23	gpsds	---	---	4836.5434m	0.0045m	0.28
	1		BUT 73A	---	4836.5479m	0.0021m	
			BUT 72	1	+0.004512m	0.0040m	
166	24	gpsaz	---	---	106°45'29.4047"	0.1805"	0.31
	1		BUT 67A	---	106°45'29.2290"	0.1110"	
			T 347	1	-0.175662"	0.1423"	
167	24	gpsht	---	---	+1.3078m	0.0084m	0.19
	1		BUT 67A	---	+1.3035m	0.0062m	
			T 347	1	-0.004373m	0.0057m	
168	24	gpsds	---	---	4950.8828m	0.0041m	0.32
	1		BUT 67A	---	4950.8863m	0.0029m	
			T 347	1	+0.003570m	0.0028m	
169	25	gpsaz	---	---	185°07'25.2553"	0.4035"	0.00
	1		BUT 66	---	185°07'25.2605"	0.1638"	
			BUT 53A	1	+0.005213"	0.3688"	
170	25	gpsht	---	---	+31.9145m	0.0348m	0.07
	1		BUT 66	---	+31.9060m	0.0139m	
			BUT 53A	1	-0.008462m	0.0319m	
171	25	gpsds	---	---	6160.5195m	0.0171m	0.01
	1		BUT 66	---	6160.5202m	0.0066m	
			BUT 53A	1	+0.000687m	0.0157m	
172	26	gpsaz	---	---	255°44'45.5276"	0.5224"	0.01
	1		BUT 54	---	255°44'45.5557"	0.1981"	
			BUT 55A	1	+0.028129"	0.4834"	
173	26	gpsht	---	---	+39.1413m	0.0342m	0.01
	1		BUT 54	---	+39.1404m	0.0117m	
			BUT 55A	1	-0.000943m	0.0322m	
174	26	gpsds	---	---	6138.5795m	0.0139m	0.06
	1		BUT 54	---	6138.5762m	0.0046m	
			BUT 55A	1	-0.003370m	0.0131m	
175	27	gpsaz	---	---	5°33'57.5333"	2.5276"	0.29
	1		BUT 56A	---	5°33'55.5411"	1.8775"	
			BUT 56	1	-1.992275"	1.6923"	
176	27	gpsht	---	---	+0.0245m	0.0140m	0.50
	1		BUT 56A	---	+0.0052m	0.0100m	
			BUT 56	1	-0.019371m	0.0098m	
177	27	gpsds	---	---	459.8241m	0.0061m	0.46
	1		BUT 56A	---	459.8317m	0.0046m	

			BUT 56	1	+0.007539m	0.0041m	
178	28	gpsaz	---	---	237°01'35.6258"	0.2960"	0.24
	1		BUT 67	---	237°01'35.3555"	0.1043"	
			BUT1 NGS	1	-0.270336"	0.2771"	
179	28	gpsht	---	---	+43.5138m	0.0308m	0.07
	1		BUT 67	---	+43.5214m	0.0101m	
			BUT1 NGS	1	+0.007636m	0.0291m	
180	28	gpsds	---	---	7890.3552m	0.0131m	0.30
	1		BUT 67	---	7890.3706m	0.0030m	
			BUT1 NGS	1	+0.015383m	0.0128m	
181	29	gpsaz	---	---	97°09'42.2841"	0.1860"	0.09
	1		MWO A	---	97°09'42.2273"	0.1039"	
			BUT 74A	1	-0.056766"	0.1543"	
182	29	gpsht	---	---	+74.9630m	0.0078m	0.10
	1		MWO A	---	+74.9605m	0.0048m	
			BUT 74A	1	-0.002422m	0.0062m	
183	29	gpsds	---	---	4484.8634m	0.0035m	0.56
	1		MWO A	---	4484.8698m	0.0020m	
			BUT 74A	1	+0.006405m	0.0029m	
184	30	gpsaz	---	---	291°53'33.6818"	0.2728"	0.14
	1		BUT 65A	---	291°53'33.8203"	0.1219"	
			BUT 67A	1	+0.138481"	0.2441"	
185	30	gpsht	---	---	-15.5188m	0.0206m	0.22
	1		BUT 65A	---	-15.5356m	0.0069m	
			BUT 67A	1	-0.016861m	0.0195m	
186	30	gpsds	---	---	4691.0864m	0.0127m	0.10
	1		BUT 65A	---	4691.0913m	0.0034m	
			BUT 67A	1	+0.004910m	0.0122m	
187	31	gpsaz	---	---	206°50'28.1605"	0.2102"	0.10
	1		BUT 51	---	206°50'28.0839"	0.0891"	
			BLUEPT A	1	-0.076602"	0.1904"	
188	31	gpsht	---	---	-27.2755m	0.0220m	0.08
	1		BUT 51	---	-27.2808m	0.0139m	
			BLUEPT A	1	-0.005310m	0.0171m	
189	31	gpsds	---	---	8192.9019m	0.0076m	0.50
	1		BUT 51	---	8192.8887m	0.0037m	
			BLUEPT A	1	-0.013227m	0.0067m	
190	32	gpsaz	---	---	191°27'31.2708"	0.2453"	0.14
	1		BUT 72A	---	191°27'31.1436"	0.0880"	
			BUT 65A	1	-0.127227"	0.2289"	
191	32	gpsht	---	---	+5.6638m	0.0185m	0.01
	1		BUT 72A	---	+5.6645m	0.0067m	
			BUT 65A	1	+0.000710m	0.0172m	
192	32	gpsds	---	---	5935.1314m	0.0075m	0.14
	1		BUT 72A	---	5935.1275m	0.0028m	
			BUT 65A	1	-0.003936m	0.0069m	
193	33	gpsaz	---	---	246°22'07.0159"	0.9127"	0.05
	1		BUT 56A	---	246°22'07.1870"	0.1770"	
			BUT 57A	1	+0.171141"	0.8954"	

194	33	gpsht	---	---	-0.1364m	0.0483m	0.02
	1		BUT 56A	---	-0.1321m	0.0108m	
			BUT 57A	1	+0.004223m	0.0471m	
195	33	gpsds	---	---	6129.8143m	0.0179m	0.09
	1		BUT 56A	---	6129.8080m	0.0046m	
			BUT 57A	1	-0.006373m	0.0173m	
196	34	gpsaz	---	---	2°36'14.9545"	0.4716"	0.01
	1		BUT 59	---	2°36'14.9767"	0.2278"	
			BUT 64A	1	+0.022201"	0.4129"	
197	34	gpsht	---	---	-24.1355m	0.0155m	0.34
	1		BUT 59	---	-24.1179m	0.0086m	
			BUT 64A	1	+0.017642m	0.0128m	
198	34	gpsds	---	---	3162.2305m	0.0086m	0.25
	1		BUT 59	---	3162.2230m	0.0044m	
			BUT 64A	1	-0.007484m	0.0074m	
199	35	gpsaz	---	---	334°52'15.6749"	0.2403"	0.02
	1		BUT 63	---	334°52'15.6590"	0.1414"	
			BUT 69	1	-0.015920"	0.1943"	
200	35	gpsht	---	---	-41.7704m	0.0183m	0.09
	1		BUT 63	---	-41.7755m	0.0105m	
			BUT 69	1	-0.005176m	0.0150m	
201	35	gpsds	---	---	6041.6245m	0.0090m	0.17
	1		BUT 63	---	6041.6195m	0.0050m	
			BUT 69	1	-0.004995m	0.0075m	
202	36	gpsaz	---	---	65°42'00.7819"	0.5307"	0.03
	1		BUT 69A	---	65°42'00.8425"	0.2366"	
			BUT 71	1	+0.060639"	0.4751"	
203	36	gpsht	---	---	+7.0043m	0.0242m	0.05
	1		BUT 69A	---	+7.0090m	0.0107m	
			BUT 71	1	+0.004729m	0.0217m	
204	36	gpsds	---	---	3871.4098m	0.0074m	0.41
	1		BUT 69A	---	3871.4202m	0.0039m	
			BUT 71	1	+0.010347m	0.0063m	
205	37	gpsaz	---	---	159°02'19.3357"	0.2184"	0.04
	1		MWO A	---	159°02'19.3076"	0.1327"	
			BUT 73	1	-0.028116"	0.1734"	
206	37	gpsht	---	---	+13.1421m	0.0077m	0.24
	1		MWO A	---	+13.1481m	0.0044m	
			BUT 73	1	+0.006022m	0.0063m	
207	37	gpsds	---	---	2784.4891m	0.0036m	0.50
	1		MWO A	---	2784.4831m	0.0021m	
			BUT 73	1	-0.005998m	0.0030m	
208	38	gpsaz	---	---	181°53'43.1212"	3.2587"	0.18
	1		BUT 61A	---	181°53'44.7152"	2.3545"	
			BUT 61	1	+1.593990"	2.2529"	
209	38	gpsht	---	---	+19.9654m	0.0201m	0.37
	1		BUT 61A	---	+19.9436m	0.0135m	
			BUT 61	1	-0.021753m	0.0149m	
210	38	gpsds	---	---	320.1919m	0.0063m	0.20
	1		BUT 61A	---	320.1886m	0.0046m	

			BUT 61	1	-0.003392m	0.0043m	
211	39	gpsaz	---	---	80°18'27.9211"	0.4688"	0.07
	1		BUT 56	---	80°18'27.8171"	0.2660"	
			BUT 60A	1	-0.104045"	0.3860"	
212	39	gpsht	---	---	+10.8617m	0.0181m	0.17
	1		BUT 56	---	+10.8517m	0.0103m	
			BUT 60A	1	-0.010039m	0.0149m	
213	39	gpsds	---	---	4037.2893m	0.0085m	0.14
	1		BUT 56	---	4037.2853m	0.0043m	
			BUT 60A	1	-0.003978m	0.0073m	
214	40	gpsaz	---	---	291°49'52.6356"	0.1658"	0.19
	1		BUT 68A	---	291°49'52.7477"	0.0704"	
			M 135	1	+0.112078"	0.1501"	
215	40	gpsht	---	---	+11.0554m	0.0197m	0.19
	1		BUT 68A	---	+11.0690m	0.0079m	
			M 135	1	+0.013661m	0.0181m	
216	40	gpsds	---	---	10562.0058m	0.0075m	0.26
	1		BUT 68A	---	10561.9985m	0.0027m	
			M 135	1	-0.007290m	0.0070m	
217	41	gpsaz	---	---	165°43'32.4976"	0.2163"	0.05
	1		MWOA 75A	---	165°43'32.5301"	0.1479"	
			BUT 73	1	+0.032433"	0.1578"	
218	41	gpsht	---	---	+13.3922m	0.0065m	0.07
	1		MWOA 75A	---	+13.3908m	0.0044m	
			BUT 73	1	-0.001349m	0.0048m	
219	41	gpsds	---	---	2443.7048m	0.0031m	0.17
	1		MWOA 75A	---	2443.7064m	0.0021m	
			BUT 73	1	+0.001539m	0.0022m	
220	42	gpsaz	---	---	240°10'49.5494"	0.3712"	0.03
	1		BUT 62	---	240°10'49.5931"	0.1624"	
			BUT 53A	1	+0.043729"	0.3338"	
221	42	gpsht	---	---	-16.1312m	0.0288m	0.11
	1		BUT 62	---	-16.1424m	0.0130m	
			BUT 53A	1	-0.011234m	0.0257m	
222	42	gpsds	---	---	7901.9048m	0.0102m	0.02
	1		BUT 62	---	7901.9039m	0.0045m	
			BUT 53A	1	-0.000900m	0.0091m	
223	43	gpsaz	---	---	288°57'08.6357"	0.1687"	0.05
	1		BUT 57	---	288°57'08.6127"	0.1101"	
			V 143ECC	1	-0.022999"	0.1278"	
224	43	gpsht	---	---	+52.9834m	0.0091m	0.02
	1		BUT 57	---	+52.9840m	0.0059m	
			V 143ECC	1	+0.000527m	0.0070m	
225	43	gpsds	---	---	4681.0974m	0.0040m	0.06
	1		BUT 57	---	4681.0967m	0.0027m	
			V 143ECC	1	-0.000754m	0.0029m	
226	44	gpsaz	---	---	155°05'47.5069"	0.1906"	0.01
	1		BUT 74	---	155°05'47.5030"	0.1072"	
			BUT 72	1	-0.003852"	0.1576"	

227	44	gpsht	---	---	-46.2658m	0.0111m	0.27
	1		BUT 74	---	-46.2760m	0.0059m	
			BUT 72	1	-0.010208m	0.0095m	
228	44	gpsds	---	---	4003.3494m	0.0054m	0.20
	1		BUT 74	---	4003.3530m	0.0027m	
			BUT 72	1	+0.003658m	0.0047m	
229	45	gpsaz	---	---	191°27'31.5098"	0.3323"	0.29
	1		BUT 72A	---	191°27'31.1436"	0.0880"	
			BUT 65A	1	-0.366284"	0.3205"	
230	45	gpsht	---	---	+5.6949m	0.0305m	0.26
	1		BUT 72A	---	+5.6645m	0.0067m	
			BUT 65A	1	-0.030375m	0.0297m	
231	45	gpsds	---	---	5935.1303m	0.0109m	0.07
	1		BUT 72A	---	5935.1275m	0.0028m	
			BUT 65A	1	-0.002855m	0.0105m	
232	46	gpsaz	---	---	127°37'37.4667"	0.2514"	0.21
	1		BUT 53	---	127°37'37.2890"	0.1272"	
			BUT 51	1	-0.177779"	0.2169"	
233	46	gpsht	---	---	+22.2616m	0.0223m	0.08
	1		BUT 53	---	+22.2557m	0.0116m	
			BUT 51	1	-0.005865m	0.0191m	
234	46	gpsds	---	---	7492.9357m	0.0095m	0.00
	1		BUT 53	---	7492.9357m	0.0049m	
			BUT 51	1	+0.000012m	0.0082m	
235	47	gpsaz	---	---	293°24'48.8860"	0.5284"	0.02
	1		BUT 52	---	293°24'48.8526"	0.1718"	
			BUT 54	1	-0.033466"	0.4997"	
236	47	gpsht	---	---	+32.4564m	0.0383m	0.10
	1		BUT 52	---	+32.4423m	0.0141m	
			BUT 54	1	-0.014097m	0.0357m	
237	47	gpsds	---	---	7170.9174m	0.0144m	0.08
	1		BUT 52	---	7170.9217m	0.0051m	
			BUT 54	1	+0.004352m	0.0135m	
238	48	gpsaz	---	---	149°27'19.0308"	1.0581"	0.14
	1		HOGAN AZ	---	149°27'19.4171"	0.8138"	
			BUT 60A	1	+0.386307"	0.6763"	
239	48	gpsht	---	---	-4.3800m	0.0088m	0.16
	1		HOGAN AZ	---	-4.3764m	0.0067m	
			BUT 60A	1	+0.003627m	0.0057m	
240	48	gpsds	---	---	675.1444m	0.0048m	0.26
	1		HOGAN AZ	---	675.1478m	0.0035m	
			BUT 60A	1	+0.003339m	0.0033m	
241	49	gpsaz	---	---	291°19'30.7594"	0.6337"	0.08
	1		BUT 55A	---	291°19'30.9630"	0.1898"	
			BUT 57A	1	+0.203607"	0.6046"	
242	49	gpsht	---	---	-75.1973m	0.0352m	0.02
	1		BUT 55A	---	-75.2005m	0.0104m	
			BUT 57A	1	-0.003236m	0.0337m	
243	49	gpsds	---	---	5667.2369m	0.0158m	0.00
	1		BUT 55A	---	5667.2367m	0.0047m	

			BUT 57A	1	-0.000209m	0.0151m	
244	50	gpsaz	---	---	53°29'06.3253"	0.4412"	0.12
	1		BUT 58A	---	53°29'06.5147"	0.1592"	
			BUT 59	1	+0.189382"	0.4114"	
245	50	gpsht	---	---	+41.4003m	0.0275m	0.14
	1		BUT 58A	---	+41.4143m	0.0095m	
			BUT 59	1	+0.013945m	0.0258m	
246	50	gpsds	---	---	6010.0822m	0.0152m	0.11
	1		BUT 58A	---	6010.0887m	0.0045m	
			BUT 59	1	+0.006526m	0.0145m	
247	51	gpsaz	---	---	101°42'26.6465"	0.1988"	0.18
	1		BUT 64	---	101°42'26.7689"	0.1049"	
			BUT 63	1	+0.122375"	0.1689"	
248	51	gpsht	---	---	+40.2031m	0.0166m	0.09
	1		BUT 64	---	+40.1980m	0.0088m	
			BUT 63	1	-0.005027m	0.0141m	
249	51	gpsds	---	---	8159.8117m	0.0061m	0.09
	1		BUT 64	---	8159.8136m	0.0032m	
			BUT 63	1	+0.001877m	0.0051m	
250	52	gpsaz	---	---	274°11'33.1461"	2.1245"	0.07
	1		BUT 70A	---	274°11'33.5716"	1.4562"	
			BUT 70	1	+0.425536"	1.5469"	
251	52	gpsht	---	---	-7.3694m	0.0134m	0.07
	1		BUT 70A	---	-7.3663m	0.0084m	
			BUT 70	1	+0.003091m	0.0104m	
252	52	gpsds	---	---	511.9443m	0.0047m	0.07
	1		BUT 70A	---	511.9433m	0.0030m	
			BUT 70	1	-0.001044m	0.0036m	
253	53	gpsaz	---	---	89°00'57.1397"	0.5155"	0.10
	1		BUT 69	---	89°00'57.3252"	0.1849"	
			BUT 68	1	+0.185518"	0.4812"	
254	53	gpsht	---	---	-2.0643m	0.0337m	0.14
	1		BUT 69	---	-2.0460m	0.0117m	
			BUT 68	1	+0.018265m	0.0316m	
255	53	gpsds	---	---	6187.0935m	0.0130m	0.20
	1		BUT 69	---	6187.1035m	0.0042m	
			BUT 68	1	+0.009982m	0.0123m	
256	54	gpsaz	---	---	89°44'22.3619"	0.4703"	0.16
	1		BUT 68A	---	89°44'22.0750"	0.1739"	
			BUT 67	1	-0.286898"	0.4370"	
257	54	gpsht	---	---	+8.9061m	0.0245m	0.09
	1		BUT 68A	---	+8.8980m	0.0101m	
			BUT 67	1	-0.008108m	0.0224m	
258	54	gpsds	---	---	5227.6443m	0.0085m	0.09
	1		BUT 68A	---	5227.6415m	0.0037m	
			BUT 67	1	-0.002782m	0.0076m	
259	55	gpsaz	---	---	278°39'23.5775"	0.1764"	0.27
	1		BUT 63A	---	278°39'23.4169"	0.0973"	
			BUT 64	1	-0.160522"	0.1472"	

260	55	gpsht	---	---	-28.7462m	0.0171m	0.08
	1		BUT 63A	---	-28.7511m	0.0091m	
			BUT 64	1	-0.004890m	0.0146m	
261	55	gpsds	---	---	8915.1855m	0.0061m	0.16
	1		BUT 63A	---	8915.1888m	0.0033m	
			BUT 64	1	+0.003339m	0.0052m	
262	56	gpsaz	---	---	124°12'39.6527"	0.5781"	0.03
	1		BUT 59A	---	124°12'39.7281"	0.1577"	
			BUT 60A	1	+0.075427"	0.5562"	
263	56	gpsht	---	---	-35.0900m	0.0347m	0.03
	1		BUT 59A	---	-35.0932m	0.0119m	
			BUT 60A	1	-0.003273m	0.0326m	
264	56	gpsds	---	---	6488.0998m	0.0154m	0.10
	1		BUT 59A	---	6488.0941m	0.0050m	
			BUT 60A	1	-0.005686m	0.0145m	
265	57	gpsaz	---	---	250°02'32.8576"	0.4351"	0.19
	1		BUT 51A	---	250°02'32.5691"	0.1975"	
			BUT 52A	1	-0.288507"	0.3877"	
266	57	gpsht	---	---	-106.5187m	0.0292m	0.14
	1		BUT 51A	---	-106.5337m	0.0133m	
			BUT 52A	1	-0.015057m	0.0261m	
267	57	gpsds	---	---	5881.2229m	0.0126m	0.12
	1		BUT 51A	---	5881.2287m	0.0048m	
			BUT 52A	1	+0.005823m	0.0117m	
268	58	gpsaz	---	---	173°26'26.7328"	2.9457"	0.09
	1		BUT 53A	---	173°26'26.0935"	2.2814"	
			BUT 53	1	-0.639396"	1.8634"	
269	58	gpsht	---	---	+12.8061m	0.0161m	0.20
	1		BUT 53A	---	+12.7980m	0.0124m	
			BUT 53	1	-0.008136m	0.0104m	
270	58	gpsds	---	---	368.0209m	0.0079m	0.09
	1		BUT 53A	---	368.0227m	0.0060m	
			BUT 53	1	+0.001875m	0.0050m	
271	59	gpsaz	---	---	149°19'57.5708"	0.2126"	0.03
	1		BUT 67A	---	149°19'57.5944"	0.0895"	
			BUT 62	1	+0.023633"	0.1928"	
272	59	gpsht	---	---	+64.0026m	0.0152m	0.08
	1		BUT 67A	---	+63.9980m	0.0073m	
			BUT 62	1	-0.004521m	0.0133m	
273	59	gpsds	---	---	7464.5761m	0.0072m	0.29
	1		BUT 67A	---	7464.5688m	0.0036m	
			BUT 62	1	-0.007284m	0.0063m	
274	60	gpsaz	---	---	92°06'54.3481"	0.1521"	0.03
	1		MWO A	---	92°06'54.3632"	0.0920"	
			BUT 74	1	+0.015150"	0.1211"	
275	60	gpsht	---	---	+72.5060m	0.0064m	0.27
	1		MWO A	---	+72.5008m	0.0042m	
			BUT 74	1	-0.005181m	0.0048m	
276	60	gpsds	---	---	4644.3590m	0.0029m	0.54
	1		MWO A	---	4644.3640m	0.0017m	

			BUT 74	1	+0.005000m	0.0023m	
277	61 gpsaz		---	---	102°42'35.1528"	0.4063"	0.08
	1		BUT 73	---	102°42'35.0340"	0.1156"	
			BUT 72	1	-0.118788"	0.3895"	
278	61 gpsht		---	---	+13.0625m	0.0227m	0.16
	1		BUT 73	---	+13.0767m	0.0067m	
			BUT 72	1	+0.014267m	0.0217m	
279	61 gpsds		---	---	5464.7675m	0.0061m	0.19
	1		BUT 73	---	5464.7632m	0.0023m	
			BUT 72	1	-0.004290m	0.0056m	
280	62 gpsaz		---	---	297°38'23.3746"	0.2077"	0.10
	1		BUT 65A	---	297°38'23.4368"	0.1308"	
			BUT 67	1	+0.062248"	0.1614"	
281	62 gpsht		---	---	-17.1733m	0.0175m	0.12
	1		BUT 65A	---	-17.1805m	0.0088m	
			BUT 67	1	-0.007259m	0.0152m	
282	62 gpsds		---	---	4861.1353m	0.0110m	0.00
	1		BUT 65A	---	4861.1354m	0.0042m	
			BUT 67	1	+0.000150m	0.0102m	
283	63 gpsaz		---	---	272°47'34.8029"	1.9926"	0.08
	1		BUT 66A	---	272°47'35.1482"	1.6891"	
			BUT 66	1	+0.345276"	1.0572"	
284	63 gpsht		---	---	-2.8777m	0.0079m	0.03
	1		BUT 66A	---	-2.8782m	0.0069m	
			BUT 66	1	-0.000452m	0.0038m	
285	63 gpsds		---	---	422.6114m	0.0030m	0.33
	1		BUT 66A	---	422.6095m	0.0026m	
			BUT 66	1	-0.001934m	0.0015m	
286	64 gpsaz		---	---	253°21'20.3981"	0.2599"	0.26
	1		BUT 51	---	253°21'20.6211"	0.1465"	
			BUT 52	1	+0.222966"	0.2147"	
287	64 gpsht		---	---	-105.4836m	0.0210m	0.20
	1		BUT 51	---	-105.4979m	0.0117m	
			BUT 52	1	-0.014299m	0.0175m	
288	64 gpsds		---	---	6925.7794m	0.0065m	0.21
	1		BUT 51	---	6925.7750m	0.0039m	
			BUT 52	1	-0.004446m	0.0052m	
289	65 gpsaz		---	---	251°17'34.1439"	0.3845"	0.06
	1		BUT 54A	---	251°17'34.2331"	0.1621"	
			BUT 55A	1	+0.089207"	0.3487"	
290	65 gpsht		---	---	+34.2859m	0.0244m	0.02
	1		BUT 54A	---	+34.2838m	0.0085m	
			BUT 55A	1	-0.002107m	0.0229m	
291	65 gpsds		---	---	5846.5417m	0.0101m	0.12
	1		BUT 54A	---	5846.5372m	0.0034m	
			BUT 55A	1	-0.004505m	0.0095m	
292	66 gpsaz		---	---	188°11'37.1661"	0.2141"	0.25
	1		BUT 72A	---	188°11'36.9630"	0.0731"	
			T 347	1	-0.203152"	0.2012"	

293	66	gpsht	---	---	-8.5699m	0.0149m	0.05
	1		BUT 72A	---	-8.5672m	0.0062m	
			T 347	1	+0.002666m	0.0136m	
294	66	gpsds	---	---	5551.8352m	0.0062m	0.05
	1		BUT 72A	---	5551.8342m	0.0022m	
			T 347	1	-0.001058m	0.0058m	
295	67	gpsaz	---	---	9°16'14.5961"	0.2741"	0.11
	1		BUT 55	---	9°16'14.5051"	0.1779"	
			BUT 56A	1	-0.091029"	0.2085"	
296	67	gpsht	---	---	-87.2588m	0.0168m	0.20
	1		BUT 55	---	-87.2695m	0.0100m	
			BUT 56A	1	-0.010681m	0.0135m	
297	67	gpsds	---	---	4571.7085m	0.0084m	0.06
	1		BUT 55	---	4571.7068m	0.0050m	
			BUT 56A	1	-0.001739m	0.0067m	
298	68	gpsaz	---	---	280°43'34.1014"	0.4230"	0.01
	1		BUT 56A	---	280°43'34.0808"	0.1632"	
			BUT 58A	1	-0.020578"	0.3903"	
299	68	gpsht	---	---	+5.7074m	0.0310m	0.01
	1		BUT 56A	---	+5.7090m	0.0110m	
			BUT 58A	1	+0.001661m	0.0290m	
300	68	gpsds	---	---	6511.0170m	0.0123m	0.00
	1		BUT 56A	---	6511.0169m	0.0048m	
			BUT 58A	1	-0.000098m	0.0114m	
301	69	gpsaz	---	---	40°12'02.8711"	0.3044"	0.27
	1		BUT 58	---	40°12'03.1803"	0.1092"	
			BUT 64A	1	+0.309219"	0.2841"	
302	69	gpsht	---	---	+16.5506m	0.0226m	0.19
	1		BUT 58	---	+16.5664m	0.0093m	
			BUT 64A	1	+0.015843m	0.0206m	
303	69	gpsds	---	---	8347.4635m	0.0106m	0.36
	1		BUT 58	---	8347.4497m	0.0044m	
			BUT 64A	1	-0.013792m	0.0096m	
304	70	gpsaz	---	---	104°23'34.6767"	0.2989"	0.07
	1		BUT 70	---	104°23'34.7511"	0.1367"	
			BUT 69A	1	+0.074442"	0.2658"	
305	70	gpsht	---	---	-20.2892m	0.0259m	0.05
	1		BUT 70	---	-20.2942m	0.0108m	
			BUT 69A	1	-0.004994m	0.0235m	
306	70	gpsds	---	---	6656.8314m	0.0092m	0.08
	1		BUT 70	---	6656.8286m	0.0039m	
			BUT 69A	1	-0.002809m	0.0083m	
307	71	gpsaz	---	---	229°17'59.7299"	0.1669"	0.49
	1		MWO A	---	229°18'00.0183"	0.0773"	
			BUT 71A	1	+0.288400"	0.1480"	
308	71	gpsht	---	---	+7.4014m	0.0136m	0.31
	1		MWO A	---	+7.4158m	0.0069m	
			BUT 71A	1	+0.014331m	0.0117m	
309	71	gpsds	---	---	7548.8372m	0.0049m	0.07
	1		MWO A	---	7548.8360m	0.0026m	

			BUT 71A	1	-0.001124m	0.0041m	
310	72	gpsaz	----	----	280°41'11.5583"	0.2158"	0.17
			BUT 61A		280°41'11.6839"	0.1081"	
			BUT 59A	1	+0.125591"	0.1867"	
311	72	gpsht	----	----	+21.3799m	0.0296m	0.12
			BUT 61A		+21.3668m	0.0130m	
			BUT 59A	1	-0.013047m	0.0266m	
312	72	gpsds	----	----	9512.9316m	0.0096m	0.14
			BUT 61A		9512.9364m	0.0046m	
			BUT 59A	1	+0.004815m	0.0084m	
313	73	gpsaz	----	----	173°42'05.9591"	0.1466"	0.19
			BUT 68A		173°42'05.8555"	0.0551"	
			BUT 52A	1	-0.103659"	0.1358"	
314	73	gpsht	----	----	-9.0099m	0.0319m	OPEN
			BUT 68A		-9.0099m	0.0139m	
			BUT 52A	1	-0.000011m	0.0287m	
315	73	gpsds	----	----	17875.4371m	0.0144m	0.06
			BUT 68A		17875.4401m	0.0058m	
			BUT 52A	1	+0.002949m	0.0132m	
316	74	gpsaz	----	----	313°28'16.5287"	0.1223"	0.21
			BUT 63		313°28'16.4434"	0.0691"	
			BUT 70A	1	-0.085291"	0.1009"	
317	74	gpsht	----	----	-12.6356m	0.0162m	0.18
			BUT 63		-12.6451m	0.0093m	
			BUT 70A	1	-0.009530m	0.0133m	
318	74	gpsds	----	----	11172.3329m	0.0072m	0.15
			BUT 63		11172.3294m	0.0041m	
			BUT 70A	1	-0.003489m	0.0060m	
319	75	gpsaz	----	----	195°02'59.4748"	0.1488"	0.13
			BUT 68		195°02'59.5352"	0.0938"	
			BUT1 NGS	1	+0.060375"	0.1155"	
320	75	gpsht	----	----	+52.4857m	0.0122m	0.25
			BUT 68		+52.4956m	0.0070m	
			BUT1 NGS	1	+0.009838m	0.0099m	
321	75	gpsds	----	----	4886.7314m	0.0061m	0.39
			BUT 68		4886.7394m	0.0033m	
			BUT1 NGS	1	+0.008070m	0.0052m	
322	76	gpsaz	----	----	159°35'14.2392"	0.4386"	0.05
			BUT 59		159°35'14.1602"	0.2047"	
			BUT 56	1	-0.079075"	0.3879"	
323	76	gpsht	----	----	-47.1446m	0.0201m	0.37
			BUT 59		-47.1186m	0.0100m	
			BUT 56	1	+0.026009m	0.0174m	
324	76	gpsds	----	----	4620.4587m	0.0097m	0.26
			BUT 59		4620.4673m	0.0049m	
			BUT 56	1	+0.008639m	0.0084m	
325	77	gpsaz	----	----	206°15'50.2773"	1.6298"	0.03
			BUT 74		206°15'50.1105"	1.0296"	
			BUT 74A	1	-0.166812"	1.2634"	

326	77	gpsht	---	---	+2.4588m	0.0073m	0.03
	1		BUT 74	---	+2.4594m	0.0047m	
			BUT 74A	1	+0.000644m	0.0056m	
327	77	gpsds	---	---	432.3577m	0.0038m	0.21
	1		BUT 74	---	432.3552m	0.0023m	
			BUT 74A	1	-0.002471m	0.0030m	
328	78	gpsaz	---	---	50°09'37.1624"	0.2300"	0.13
	1		BUT 73A	---	50°09'37.0613"	0.1256"	
			BUT 74	1	-0.101133"	0.1926"	
329	78	gpsht	---	---	+63.4138m	0.0097m	0.07
	1		BUT 73A	---	+63.4161m	0.0056m	
			BUT 74	1	+0.002339m	0.0080m	
330	78	gpsds	---	---	3935.2961m	0.0035m	0.08
	1		BUT 73A	---	3935.2951m	0.0022m	
			BUT 74	1	-0.000909m	0.0027m	
331	79	gpsaz	---	---	204°07'07.3430"	0.5580"	0.10
	1		BUT 67	---	204°07'07.5540"	0.1907"	
			BUT 66A	1	+0.211059"	0.5244"	
332	79	gpsht	---	---	+20.4816m	0.0244m	0.10
	1		BUT 67	---	+20.4724m	0.0098m	
			BUT 66A	1	-0.009235m	0.0223m	
333	79	gpsds	---	---	5194.0941m	0.0065m	0.54
	1		BUT 67	---	5194.0823m	0.0034m	
			BUT 66A	1	-0.011851m	0.0055m	
334	80	gpsaz	---	---	185°45'56.4227"	0.6665"	0.11
	1		BUT 62	---	185°45'56.2649"	0.5704"	
			BUT 62A	1	-0.157759"	0.3447"	
335	80	gpsht	---	---	-2.3642m	0.0053m	0.10
	1		BUT 62	---	-2.3633m	0.0048m	
			BUT 62A	1	+0.000882m	0.0023m	
336	80	gpsds	---	---	838.2804m	0.0030m	0.26
	1		BUT 62	---	838.2789m	0.0026m	
			BUT 62A	1	-0.001527m	0.0015m	
337	81	gpsaz	---	---	190°00'12.3737"	0.1374"	0.05
	1		BUT 62A	---	190°00'12.3955"	0.0776"	
			BUT 51A	1	+0.021781"	0.1133"	
338	81	gpsht	---	---	+25.3389m	0.0146m	0.13
	1		BUT 62A	---	+25.3449m	0.0084m	
			BUT 51A	1	+0.006072m	0.0120m	
339	81	gpsds	---	---	8147.1593m	0.0069m	0.17
	1		BUT 62A	---	8147.1555m	0.0038m	
			BUT 51A	1	-0.003866m	0.0057m	
340	82	gpsaz	---	---	252°31'36.4196"	0.2179"	0.17
	1		BUT 54A	---	252°31'36.3003"	0.1318"	
			BUT 55	1	-0.119372"	0.1735"	
341	82	gpsht	---	---	+46.4868m	0.0118m	0.06
	1		BUT 54A	---	+46.4847m	0.0073m	
			BUT 55	1	-0.002115m	0.0093m	
342	82	gpsds	---	---	6224.8146m	0.0043m	0.08
	1		BUT 54A	---	6224.8157m	0.0027m	

			BUT 55	1	+0.001097m	0.0033m	
343	83	gpsaz	---	---	350°20'17.0478"	0.1798"	0.37
	1		T 347	---	350°20'16.7919"	0.0479"	
			BUT 74A	1	-0.255930"	0.1733"	
344	83	gpsht	---	---	+67.2909m	0.0224m	0.01
	1		T 347	---	+67.2918m	0.0070m	
			BUT 74A	1	+0.000946m	0.0212m	
345	83	gpsds	---	---	8934.6044m	0.0098m	0.15
	1		T 347	---	8934.5987m	0.0024m	
			BUT 74A	1	-0.005694m	0.0095m	
346	84	gpsaz	---	---	159°22'25.5893"	0.4701"	0.23
	1		BUT 58A	---	159°22'25.9789"	0.2044"	
			BUT 57	1	+0.389577"	0.4234"	
347	84	gpsht	---	---	-4.0148m	0.0168m	0.01
	1		BUT 58A	---	-4.0156m	0.0068m	
			BUT 57	1	-0.000736m	0.0154m	
348	84	gpsds	---	---	3140.4685m	0.0101m	0.07
	1		BUT 58A	---	3140.4710m	0.0035m	
			BUT 57	1	+0.002472m	0.0094m	
349	85	gpsaz	---	---	291°47'55.5119"	0.3407"	0.07
	1		BUT 69	---	291°47'55.5885"	0.1751"	
			BUT 70A	1	+0.076682"	0.2922"	
350	85	gpsht	---	---	+29.1292m	0.0206m	0.01
	1		BUT 69	---	+29.1302m	0.0108m	
			BUT 70A	1	+0.000971m	0.0176m	
351	85	gpsds	---	---	5969.1955m	0.0082m	0.07
	1		BUT 69	---	5969.1975m	0.0041m	
			BUT 70A	1	+0.001962m	0.0070m	
352	86	gpsaz	---	---	69°03'44.0650"	0.3914"	0.09
	1		BUT 69A	---	69°03'44.1850"	0.2113"	
			BUT 71A	1	+0.119990"	0.3294"	
353	86	gpsht	---	---	+8.1724m	0.0202m	0.27
	1		BUT 69A	---	+8.1536m	0.0109m	
			BUT 71A	1	-0.018725m	0.0171m	
354	86	gpsds	---	---	4457.8837m	0.0086m	0.21
	1		BUT 69A	---	4457.8774m	0.0040m	
			BUT 71A	1	-0.006346m	0.0076m	
355	87	gpsaz	---	---	232°13'14.1842"	0.3832"	0.02
	1		BUT 66	---	232°13'14.2180"	0.1573"	
			BUT 61A	1	+0.033842"	0.3494"	
356	87	gpsht	---	---	-17.4268m	0.0280m	0.12
	1		BUT 66	---	-17.4392m	0.0120m	
			BUT 61A	1	-0.012391m	0.0253m	
357	87	gpsds	---	---	6827.2210m	0.0093m	0.00
	1		BUT 66	---	6827.2209m	0.0038m	
			BUT 61A	1	-0.000139m	0.0084m	
358	88	gpsaz	---	---	138°42'15.5262"	0.0469"	0.09
	1		M 135	---	138°42'15.5394"	0.0271"	
			BUT 51A	1	+0.013203"	0.0383"	

			BUT 59A	1	-0.010609m	0.0136m	
376	94	gpsaz	----	----	108°35'21.3421"	0.6102"	0.08
		1	BUT 61	----	108°35'21.5173"	0.2596"	
			BUT 53A	1	+0.175270"	0.5522"	
377	94	gpsht	----	----	+29.4132m	0.0347m	0.10
		1	BUT 61	----	+29.4012m	0.0163m	
			BUT 53A	1	-0.012050m	0.0306m	
378	94	gpsds	----	----	5123.8002m	0.0133m	0.18
		1	BUT 61	----	5123.8087m	0.0058m	
			BUT 53A	1	+0.008528m	0.0120m	
379	95	gpsaz	----	----	98°25'22.7022"	1.3946"	0.02
		1	BUT 73	----	98°25'22.7721"	0.8841"	
			BUT 73A	1	+0.069922"	1.0785"	
380	95	gpsht	----	----	-4.0660m	0.0087m	0.08
		1	BUT 73	----	-4.0640m	0.0058m	
			BUT 73A	1	+0.002063m	0.0066m	
381	95	gpsds	----	----	630.2078m	0.0027m	0.00
		1	BUT 73	----	630.2078m	0.0019m	
			BUT 73A	1	-0.000019m	0.0019m	
382	96	gpsaz	----	----	248°51'45.3924"	0.3411"	0.10
		1	BUT 65A	----	248°51'45.5182"	0.1168"	
			BUT 66A	1	+0.125856"	0.3205"	
383	96	gpsht	----	----	+3.3039m	0.0227m	0.14
		1	BUT 65A	----	+3.2921m	0.0081m	
			BUT 66A	1	-0.011730m	0.0212m	
384	96	gpsds	----	----	6892.5910m	0.0081m	0.17
		1	BUT 65A	----	6892.5858m	0.0030m	
			BUT 66A	1	-0.005124m	0.0075m	
385	97	gpsaz	----	----	189°02'02.0712"	0.3829"	0.03
		1	BUT 66A	----	189°02'02.0237"	0.1637"	
			BUT 53A	1	-0.047524"	0.3462"	
386	97	gpsht	----	----	+29.0481m	0.0325m	0.17
		1	BUT 66A	----	+29.0281m	0.0135m	
			BUT 53A	1	-0.019944m	0.0296m	
387	97	gpsds	----	----	6192.1228m	0.0157m	0.05
		1	BUT 66A	----	6192.1201m	0.0062m	
			BUT 53A	1	-0.002734m	0.0144m	
388	98	gpsaz	----	----	131°26'36.9504"	1.9513"	0.07
		1	BUT 54A	----	131°26'37.2631"	1.5935"	
			BUT 54	1	+0.312705"	1.1263"	
389	98	gpsht	----	----	-4.8606m	0.0110m	0.16
		1	BUT 54A	----	-4.8568m	0.0093m	
			BUT 54	1	+0.003743m	0.0060m	
390	98	gpsds	----	----	549.5228m	0.0046m	0.01
		1	BUT 54A	----	549.5229m	0.0039m	
			BUT 54	1	+0.000137m	0.0024m	
391	99	gpsaz	----	----	251°55'10.8542"	0.6057"	0.37
		1	BUT 56A	----	251°55'10.0150"	0.1912"	
			BUT 57	1	-0.839172"	0.5748"	

392	99	gpsht	1	----	----	+1.6548m	0.0347m	0.29
				BUT 56A	----	+1.6936m	0.0106m	
				BUT 57	1	+0.038861m	0.0330m	
393	99	gpsds	1	----	----	5565.7867m	0.0127m	0.30
				BUT 56A	----	5565.8011m	0.0045m	
				BUT 57	1	+0.014377m	0.0119m	
394	100	gpsaz	1	----	----	90°21'12.8814"	0.1994"	0.01
				BUT 70	----	90°21'12.8894"	0.0614"	
				BUT 71	1	+0.007982"	0.1897"	
395	100	gpsht	1	----	----	-13.2778m	0.0243m	0.08
				BUT 70	----	-13.2849m	0.0069m	
				BUT 71	1	-0.007157m	0.0233m	
396	100	gpsds	1	----	----	9976.5160m	0.0080m	0.00
				BUT 70	----	9976.5162m	0.0024m	
				BUT 71	1	+0.000141m	0.0077m	
397	101	gpsaz	1	----	----	325°20'08.2685"	0.1797"	0.53
				BUT 72A	----	325°20'07.9682"	0.1113"	
				BUT 74A	1	-0.300312"	0.1411"	
398	101	gpsht	1	----	----	+58.7219m	0.0098m	0.09
				BUT 72A	----	+58.7249m	0.0055m	
				BUT 74A	1	+0.002972m	0.0082m	
399	101	gpsds	1	----	----	4027.6101m	0.0045m	0.16
				BUT 72A	----	4027.6125m	0.0025m	
				BUT 74A	1	+0.002389m	0.0038m	
400	102	gpsaz	1	----	----	22°39'41.1181"	0.8027"	0.06
				BUT 54	----	22°39'40.9273"	0.1802"	
				BUT 61	1	-0.190863"	0.7822"	
401	102	gpsht	1	----	----	+8.5944m	0.0660m	0.02
				BUT 54	----	+8.5991m	0.0151m	
				BUT 61	1	+0.004734m	0.0643m	
402	102	gpsds	1	----	----	6185.3627m	0.0310m	0.02
				BUT 54	----	6185.3599m	0.0060m	
				BUT 61	1	-0.002794m	0.0305m	
403	103	gpsaz	1	----	----	152°49'58.5786"	0.2449"	0.09
				BUT 67A	----	152°49'58.4925"	0.0866"	
				BUT 62A	1	-0.086170"	0.2291"	
404	103	gpsht	1	----	----	+61.6370m	0.0190m	0.03
				BUT 67A	----	+61.6351m	0.0076m	
				BUT 62A	1	-0.001873m	0.0174m	
405	103	gpsds	1	----	----	8154.2268m	0.0091m	0.22
				BUT 67A	----	8154.2194m	0.0037m	
				BUT 62A	1	-0.007403m	0.0083m	
406	104	gpsaz	1	----	----	252°01'16.1833"	0.6092"	0.14
				BUT 51	----	252°01'16.4974"	0.1831"	
				BUT 52A	1	+0.314098"	0.5810"	
407	104	gpsht	1	----	----	-102.4456m	0.0464m	0.10
				BUT 51	----	-102.4636m	0.0133m	
				BUT 52A	1	-0.018030m	0.0444m	
408	104	gpsds	1	----	----	6463.9008m	0.0141m	0.15
				BUT 51	----	6463.8931m	0.0048m	

			BUT 52A	1	-0.007736m	0.0132m	
409	105	gpsaz	---	---	120°30'44.5653"	1.0671"	0.10
	1		MWO A	---	120°30'44.2823"	0.7906"	
			MWOA 75A	1	-0.282963"	0.7167"	
410	105	gpsht	---	---	-0.2420m	0.0044m	0.09
	1		MWO A	---	-0.2429m	0.0035m	
			MWOA 75A	1	-0.000964m	0.0027m	
411	105	gpsds	---	---	456.8455m	0.0024m	0.21
	1		MWO A	---	456.8470m	0.0017m	
			MWOA 75A	1	+0.001469m	0.0017m	
412	106	gpsaz	---	---	292°50'16.2352"	0.5188"	0.02
	1		BUT 55	---	292°50'16.2782"	0.1827"	
			BUT 57A	1	+0.043039"	0.4856"	
413	106	gpsht	---	---	-87.3846m	0.0271m	0.17
	1		BUT 55	---	-87.4015m	0.0095m	
			BUT 57A	1	-0.016854m	0.0253m	
414	106	gpsds	---	---	5294.3287m	0.0124m	0.07
	1		BUT 55	---	5294.3253m	0.0042m	
			BUT 57A	1	-0.003398m	0.0117m	
415	107	gpsaz	---	---	58°28'34.6772"	0.6380"	0.18
	1		BUT 58	---	58°28'35.1322"	0.1499"	
			BUT 59	1	+0.455016"	0.6201"	
416	107	gpsht	---	---	+40.6737m	0.0369m	0.07
	1		BUT 58	---	+40.6840m	0.0090m	
			BUT 59	1	+0.010287m	0.0358m	
417	107	gpsds	---	---	6152.2715m	0.0186m	0.07
	1		BUT 58	---	6152.2667m	0.0042m	
			BUT 59	1	-0.004791m	0.0182m	
418	108	gpsaz	---	---	69°08'05.6944"	1.2802"	0.06
	1		BUT 63	---	69°08'05.8895"	0.9318"	
			BUT 63A	1	+0.195054"	0.8780"	
419	108	gpsht	---	---	-11.4433m	0.0108m	0.15
	1		BUT 63	---	-11.4476m	0.0081m	
			BUT 63A	1	-0.004343m	0.0072m	
420	108	gpsds	---	---	881.3693m	0.0043m	0.07
	1		BUT 63	---	881.3684m	0.0030m	
			BUT 63A	1	-0.000829m	0.0031m	
421	109	gpsaz	---	---	94°32'21.7649"	0.3939"	0.38
	1		BUT 68	---	94°32'21.2178"	0.1697"	
			BUT 67	1	-0.547085"	0.3555"	
422	109	gpsht	---	---	+8.9804m	0.0208m	0.09
	1		BUT 68	---	+8.9739m	0.0101m	
			BUT 67	1	-0.006455m	0.0182m	
423	109	gpsds	---	---	5367.3483m	0.0071m	0.22
	1		BUT 68	---	5367.3536m	0.0037m	
			BUT 67	1	+0.005261m	0.0060m	
424	110	gpsaz	---	---	253°14'36.7029"	0.5325"	0.20
	1		BUT 61A	---	253°14'37.0982"	0.1933"	
			HOGAN AZ	1	+0.395314"	0.4962"	

425	110	gpsht	---	---	-9.3313m	0.0276m	0.18
	1		BUT 61A	---	-9.3500m	0.0103m	
			HOGAN AZ	1	-0.018742m	0.0256m	
426	110	gpsds	---	---	4517.3949m	0.0072m	0.21
	1		BUT 61A	---	4517.4003m	0.0030m	
			HOGAN AZ	1	+0.005435m	0.0066m	
427	111	gpsaz	---	---	123°08'29.2823"	0.5799"	0.03
	1		BUT 59	---	123°08'29.3475"	0.1359"	
			BUT 60A	1	+0.065180"	0.5637"	
428	111	gpsht	---	---	-36.2655m	0.0349m	0.01
	1		BUT 59	---	-36.2667m	0.0090m	
			BUT 60A	1	-0.001137m	0.0337m	
429	111	gpsds	---	---	6677.4595m	0.0148m	0.10
	1		BUT 59	---	6677.4536m	0.0038m	
			BUT 60A	1	-0.005930m	0.0143m	
430	112	gpsaz	---	---	232°15'09.6644"	0.2283"	0.42
	1		MWO A	---	232°15'10.0370"	0.0624"	
			BUT 71	1	+0.372577"	0.2196"	
431	112	gpsht	---	---	+6.2586m	0.0199m	0.17
	1		MWO A	---	+6.2712m	0.0066m	
			BUT 71	1	+0.012586m	0.0187m	
432	112	gpsds	---	---	8040.9446m	0.0070m	0.43
	1		MWO A	---	8040.9333m	0.0023m	
			BUT 71	1	-0.011373m	0.0066m	
433	113	gpsaz	---	---	94°36'41.4413"	0.2717"	0.15
	1		MWOA 75A	---	94°36'41.2944"	0.1278"	
			BUT 74A	1	-0.146938"	0.2398"	
434	113	gpsht	---	---	+75.2028m	0.0105m	0.01
	1		MWOA 75A	---	+75.2032m	0.0050m	
			BUT 74A	1	+0.000481m	0.0092m	
435	113	gpsds	---	---	4069.4674m	0.0045m	0.20
	1		MWOA 75A	---	4069.4705m	0.0021m	
			BUT 74A	1	+0.003124m	0.0040m	
436	114	gpsaz	---	---	102°58'05.1491"	0.2517"	0.02
	1		BUT 73A	---	102°58'05.1706"	0.1073"	
			BUT 72A	1	+0.021462"	0.2276"	
437	114	gpsht	---	---	+7.1473m	0.0150m	0.06
	1		BUT 73A	---	+7.1508m	0.0063m	
			BUT 72A	1	+0.003470m	0.0136m	
438	114	gpsds	---	---	5255.1711m	0.0053m	0.01
	1		BUT 73A	---	5255.1709m	0.0022m	
			BUT 72A	1	-0.000147m	0.0048m	
439	115	gpsaz	---	---	190°35'15.1047"	0.2115"	0.36
	1		T 347	---	190°35'14.8442"	0.1125"	
			BUT 62	1	-0.260515"	0.1791"	
440	115	gpsht	---	---	+62.6875m	0.0108m	0.20
	1		T 347	---	+62.6943m	0.0066m	
			BUT 62	1	+0.006878m	0.0086m	
441	115	gpsds	---	---	5079.5776m	0.0055m	0.08
	1		T 347	---	5079.5761m	0.0031m	

			BUT 63A	1	-0.007174m	0.0051m	
475	127	gpsaz	---	---	282°34'54.8012"	0.2500"	0.26
	1		BUT 61	---	282°34'55.0350"	0.1151"	
			BUT 59A	1	+0.233806"	0.2219"	
476	127	gpsht	---	---	+1.4022m	0.0428m	0.13
	1		BUT 61	---	+1.4230m	0.0155m	
			BUT 59A	1	+0.020800m	0.0399m	
477	127	gpsds	---	---	9567.0995m	0.0110m	0.12
	1		BUT 61	---	9567.1043m	0.0050m	
			BUT 59A	1	+0.004835m	0.0098m	
478	128	gpsaz	---	---	202°39'41.3053"	0.5859"	0.17
	1		BUT 61	---	202°39'40.9268"	0.1802"	
			BUT 54	1	-0.378454"	0.5575"	
479	128	gpsht	---	---	-8.5637m	0.0446m	0.21
	1		BUT 61	---	-8.5996m	0.0151m	
			BUT 54	1	-0.035893m	0.0420m	
480	128	gpsds	---	---	6185.3624m	0.0190m	0.03
	1		BUT 61	---	6185.3599m	0.0060m	
			BUT 54	1	-0.002485m	0.0181m	
481	129	gpsaz	---	---	151°31'42.8844"	0.1355"	0.13
	1		M 135	---	151°31'42.9520"	0.0412"	
			BUT 52A	1	+0.067576"	0.1291"	
482	129	gpsht	---	---	-20.0759m	0.0361m	0.02
	1		M 135	---	-20.0791m	0.0135m	
			BUT 52A	1	-0.003260m	0.0335m	
483	129	gpsds	---	---	24680.2395m	0.0146m	0.01
	1		M 135	---	24680.2391m	0.0055m	
			BUT 52A	1	-0.000322m	0.0136m	
484	130	gpsaz	---	---	121°02'18.7134"	0.3485"	0.02
	1		MWOA 75A	---	121°02'18.6835"	0.0820"	
			BUT 72	1	-0.029858"	0.3387"	
485	130	gpsht	---	---	+26.4616m	0.0245m	0.07
	1		MWOA 75A	---	+26.4678m	0.0063m	
			BUT 72	1	+0.006167m	0.0237m	
486	130	gpsds	---	---	6924.9002m	0.0070m	0.30
	1		MWOA 75A	---	6924.8923m	0.0024m	
			BUT 72	1	-0.007896m	0.0065m	
487	131	gpsaz	---	---	294°40'48.3350"	0.3391"	0.11
	1		BUT 52	---	294°40'48.2006"	0.1284"	
			BUT 54A	1	-0.134398"	0.3138"	
488	131	gpsht	---	---	+37.3182m	0.0265m	0.21
	1		BUT 52	---	+37.2989m	0.0122m	
			BUT 54A	1	-0.019341m	0.0235m	
489	131	gpsds	---	---	7695.3350m	0.0100m	0.13
	1		BUT 52	---	7695.3396m	0.0041m	
			BUT 54A	1	+0.004637m	0.0091m	
490	132	gpsaz	---	---	279°30'37.4839"	1.4442"	0.07
	1		BUT 72A	---	279°30'37.7407"	1.1597"	
			BUT 72	1	+0.256763"	0.8607"	

491	132	gpsht	---	---	+9.9878m	0.0060m	0.12
	1		BUT 72A	---	+9.9894m	0.0050m	
			BUT 72	1	+0.001620m	0.0033m	
492	132	gpsds	---	---	419.4524m	0.0025m	0.05
	1		BUT 72A	---	419.4527m	0.0019m	
			BUT 72	1	+0.000347m	0.0016m	
493	133	gpsaz	---	---	50°19'41.0531"	2.9383"	0.00
	1		BUT 65A	---	50°19'41.0490"	0.8835"	
			T 347	1	-0.004112"	2.8023"	
494	133	gpsht	---	---	-14.2296m	0.0191m	0.03
	1		BUT 65A	---	-14.2320m	0.0049m	
			T 347	1	-0.002351m	0.0185m	
495	133	gpsds	---	---	503.8729m	0.0050m	0.06
	1		BUT 65A	---	503.8740m	0.0020m	
			T 347	1	+0.001113m	0.0046m	
496	134	gpsaz	---	---	289°17'12.5388"	0.3221"	0.05
	1		BUT 62	---	289°17'12.5961"	0.1290"	
			BUT 66	1	+0.057277"	0.2951"	
497	134	gpsht	---	---	-48.0423m	0.0223m	0.08
	1		BUT 62	---	-48.0487m	0.0091m	
			BUT 66	1	-0.006361m	0.0204m	
498	134	gpsds	---	---	6680.4129m	0.0085m	0.02
	1		BUT 62	---	6680.4124m	0.0036m	
			BUT 66	1	-0.000511m	0.0077m	
499	135	gpsaz	---	---	271°07'49.5744"	1.3219"	0.13
	1		BUT 51	---	271°07'49.1815"	1.0866"	
			BUT 51A	1	-0.392831"	0.7530"	
500	135	gpsht	---	---	+4.0659m	0.0080m	0.23
	1		BUT 51	---	+4.0698m	0.0068m	
			BUT 51A	1	+0.003823m	0.0042m	
501	135	gpsds	---	---	620.3537m	0.0031m	0.20
	1		BUT 51	---	620.3552m	0.0025m	
			BUT 51A	1	+0.001425m	0.0018m	
502	136	gpsaz	---	---	220°07'15.8950"	0.2678"	0.11
	1		BUT 60A	---	220°07'15.7898"	0.1098"	
			BUT 55	1	-0.105211"	0.2443"	
503	136	gpsht	---	---	+76.4171m	0.0208m	0.07
	1		BUT 60A	---	+76.4117m	0.0086m	
			BUT 55	1	-0.005329m	0.0189m	
504	136	gpsds	---	---	7387.8281m	0.0095m	0.02
	1		BUT 60A	---	7387.8287m	0.0040m	
			BUT 55	1	+0.000567m	0.0086m	
505	137	gpsaz	---	---	270°52'26.6183"	2.2049"	0.00
	1		BUT 55A	---	270°52'26.6056"	1.8739"	
			BUT 55	1	-0.012655"	1.1620"	
506	137	gpsht	---	---	+12.2024m	0.0073m	0.12
	1		BUT 55A	---	+12.2006m	0.0064m	
			BUT 55	1	-0.001728m	0.0036m	
507	137	gpsds	---	---	399.9674m	0.0033m	0.17
	1		BUT 55A	---	399.9661m	0.0027m	

			BUT 55	1	-0.001297m	0.0019m	
508	138	gpsaz	----	----	238°32'40.5465"	0.2847"	0.23
	1		BUT 58	----	238°32'40.7535"	0.1740"	
			V 143ECC	1	+0.206991"	0.2254"	
509	138	gpsht	----	----	+48.2433m	0.0102m	0.15
	1		BUT 58	----	+48.2383m	0.0059m	
			V 143ECC	1	-0.005015m	0.0083m	
510	138	gpsds	----	----	3407.8049m	0.0041m	0.05
	1		BUT 58	----	3407.8042m	0.0024m	
			V 143ECC	1	-0.000718m	0.0034m	
511	139	gpsaz	----	----	36°26'46.7700"	0.2007"	0.34
	1		BUT 58A	----	36°26'46.9988"	0.1116"	
			BUT 64A	1	+0.228754"	0.1668"	
512	139	gpsht	----	----	+17.2736m	0.0185m	0.37
	1		BUT 58A	----	+17.2967m	0.0097m	
			BUT 64A	1	+0.023076m	0.0157m	
513	139	gpsds	----	----	8372.7493m	0.0105m	0.05
	1		BUT 58A	----	8372.7475m	0.0047m	
			BUT 64A	1	-0.001834m	0.0094m	
514	140	gpsaz	----	----	131°51'59.2433"	0.1254"	0.03
	1		BUT 70	----	131°51'59.2287"	0.0596"	
			BUT 63	1	-0.014600"	0.1104"	
515	140	gpsht	----	----	+20.0327m	0.0181m	0.34
	1		BUT 70	----	+20.0107m	0.0084m	
			BUT 63	1	-0.021950m	0.0161m	
516	140	gpsds	----	----	11573.1535m	0.0084m	0.05
	1		BUT 70	----	11573.1522m	0.0037m	
			BUT 63	1	-0.001356m	0.0075m	
517	141	gpsaz	----	----	105°14'13.6844"	0.3209"	0.03
	1		BUT 70A	----	105°14'13.7129"	0.1622"	
			BUT 69A	1	+0.028498"	0.2769"	
518	141	gpsht	----	----	-27.6486m	0.0251m	0.13
	1		BUT 70A	----	-27.6603m	0.0118m	
			BUT 69A	1	-0.011701m	0.0222m	
519	141	gpsds	----	----	6153.6428m	0.0091m	0.06
	1		BUT 70A	----	6153.6446m	0.0043m	
			BUT 69A	1	+0.001824m	0.0080m	
520	142	gpsaz	----	----	142°02'14.0583"	0.7647"	0.20
	1		BUT 71A	----	142°02'13.4789"	0.2870"	
			BUT 68	1	-0.579350"	0.7087"	
521	142	gpsht	----	----	-11.6963m	0.0214m	0.33
	1		BUT 71A	----	-11.6702m	0.0088m	
			BUT 68	1	+0.026020m	0.0195m	
522	142	gpsds	----	----	2646.0269m	0.0084m	0.22
	1		BUT 71A	----	2646.0335m	0.0036m	
			BUT 68	1	+0.006647m	0.0076m	
523	143	gpsaz	----	----	300°56'20.4901"	0.1965"	0.04
	1		BUT 61A	----	300°56'20.4605"	0.0808"	
			BUT 64	1	-0.029609"	0.1791"	

524	143	gpsht	---	---	-5.5202m	0.0261m	0.14
	1		BUT 61A	---	-5.5072m	0.0108m	
			BUT 64	1	+0.012915m	0.0238m	
525	143	gpsds	---	---	10516.9264m	0.0108m	0.14
	1		BUT 61A	---	10516.9210m	0.0044m	
			BUT 64	1	-0.005417m	0.0098m	
526	144	gpsaz	---	---	270°41'33.5212"	7.1679"	0.31
	1		BUT 59A	---	270°41'40.5247"	4.3912"	
			BUT 59	1	+7.003461"	5.6654"	
527	144	gpsht	---	---	+1.1748m	0.0150m	0.04
	1		BUT 59A	---	+1.1732m	0.0106m	
			BUT 59	1	-0.001603m	0.0106m	
528	144	gpsds	---	---	225.7293m	0.0068m	0.04
	1		BUT 59A	---	225.7285m	0.0042m	
			BUT 59	1	-0.000825m	0.0054m	
529	145	gpsaz	---	---	198°03'04.5251"	0.1608"	0.15
	1		BUT 68A	---	198°03'04.6012"	0.1003"	
			BUT1 NGS	1	+0.076056"	0.1257"	
530	145	gpsht	---	---	+52.4114m	0.0121m	0.21
	1		BUT 68A	---	+52.4197m	0.0070m	
			BUT1 NGS	1	+0.008281m	0.0100m	
531	145	gpsds	---	---	4491.6479m	0.0061m	0.31
	1		BUT 68A	---	4491.6543m	0.0032m	
			BUT1 NGS	1	+0.006430m	0.0052m	
532	146	gpsaz	---	---	243°00'30.3437"	0.4499"	0.11
	1		BUT 53	---	243°00'30.1675"	0.1672"	
			BUT 54	1	-0.176224"	0.4177"	
533	146	gpsht	---	---	-50.7874m	0.0364m	0.09
	1		BUT 53	---	-50.7994m	0.0144m	
			BUT 54	1	-0.012012m	0.0335m	
534	146	gpsds	---	---	8171.7793m	0.0115m	0.05
	1		BUT 53	---	8171.7771m	0.0051m	
			BUT 54	1	-0.002240m	0.0104m	
535	147	gpsaz	---	---	89°11'00.3099"	0.1954"	0.05
	1		MWOA 75A	---	89°11'00.2767"	0.1090"	
			BUT 74	1	-0.033156"	0.1622"	
536	147	gpsht	---	---	+72.7459m	0.0076m	0.09
	1		MWOA 75A	---	+72.7435m	0.0044m	
			BUT 74	1	-0.002382m	0.0063m	
537	147	gpsds	---	---	4248.0460m	0.0034m	0.20
	1		MWOA 75A	---	4248.0483m	0.0018m	
			BUT 74	1	+0.002304m	0.0029m	
538	148	gpsaz	---	---	103°16'03.9906"	0.2751"	0.04
	1		BUT 73A	---	103°16'04.0317"	0.1227"	
			BUT 72	1	+0.041134"	0.2462"	
539	148	gpsht	---	---	+17.1409m	0.0146m	0.01
	1		BUT 73A	---	+17.1405m	0.0065m	
			BUT 72	1	-0.000429m	0.0131m	
540	148	gpsds	---	---	4836.5473m	0.0055m	0.03
	1		BUT 73A	---	4836.5479m	0.0021m	

			BUT 72	1	+0.000573m	0.0050m	
541	149	gpsaz	---	---	206°06'59.6407"	0.3797"	0.13
	1		BUT 67A	---	206°06'59.4626"	0.1742"	
			BUT 66A	1	-0.178104"	0.3374"	
542	149	gpsht	---	---	+18.8211m	0.0144m	0.13
	1		BUT 67A	---	+18.8275m	0.0078m	
			BUT 66A	1	+0.006393m	0.0121m	
543	149	gpsds	---	---	4716.1827m	0.0040m	0.43
	1		BUT 67A	---	4716.1876m	0.0028m	
			BUT 66A	1	+0.004975m	0.0029m	
544	150	gpsaz	---	---	189°54'18.0189"	0.2261"	0.34
	1		T 347	---	189°54'17.7441"	0.0978"	
			BUT 62A	1	-0.274808"	0.2038"	
545	150	gpsht	---	---	+60.3227m	0.0143m	0.18
	1		T 347	---	+60.3314m	0.0069m	
			BUT 62A	1	+0.008729m	0.0125m	
546	150	gpsds	---	---	5915.3119m	0.0076m	0.14
	1		T 347	---	5915.3080m	0.0032m	
			BUT 62A	1	-0.003981m	0.0069m	
547	151	gpsaz	---	---	185°39'00.4696"	0.1524"	0.17
	1		BUT 62A	---	185°39'00.3821"	0.0814"	
			BUT 51	1	-0.087540"	0.1289"	
548	151	gpsht	---	---	+21.2697m	0.0166m	0.09
	1		BUT 62A	---	+21.2748m	0.0090m	
			BUT 51	1	+0.005158m	0.0139m	
549	151	gpsds	---	---	8074.7739m	0.0078m	0.36
	1		BUT 62A	---	8074.7642m	0.0040m	
			BUT 51	1	-0.009724m	0.0067m	
550	152	gpsaz	---	---	271°20'38.3076"	2.8250"	0.10
	1		BUT 52A	---	271°20'37.5935"	2.1840"	
			BUT 52	1	-0.714080"	1.7918"	
551	152	gpsht	---	---	-3.0318m	0.0165m	0.06
	1		BUT 52A	---	-3.0345m	0.0124m	
			BUT 52	1	-0.002719m	0.0109m	
552	152	gpsds	---	---	487.4633m	0.0054m	0.11
	1		BUT 52A	---	487.4617m	0.0042m	
			BUT 52	1	-0.001578m	0.0034m	
553	153	gpsaz	---	---	342°42'29.4833"	0.2370"	0.20
	1		BUT 54A	---	342°42'29.6370"	0.1443"	
			BUT 60A	1	+0.153724"	0.1880"	
554	153	gpsht	---	---	-29.9212m	0.0138m	0.13
	1		BUT 54A	---	-29.9272m	0.0078m	
			BUT 60A	1	-0.006006m	0.0113m	
555	153	gpsds	---	---	3959.2337m	0.0078m	0.11
	1		BUT 54A	---	3959.2367m	0.0043m	
			BUT 60A	1	+0.002908m	0.0065m	
556	154	gpsaz	---	---	353°03'26.3152"	0.1935"	0.27
	1		BUT 65A	---	353°03'26.1156"	0.0595"	
			BUT 74A	1	-0.199601"	0.1841"	

557	154	gpsht	1	----	----	+53.0629m	0.0246m	0.03
				BUT 65A	----	+53.0601m	0.0075m	
				BUT 74A	1	-0.002739m	0.0235m	
558	154	gpsds	1	----	----	9196.9733m	0.0107m	0.15
				BUT 65A	----	9196.9672m	0.0030m	
				BUT 74A	1	-0.006043m	0.0102m	
559	155	gpsaz	1	----	----	247°43'48.3979"	0.6191"	0.45
				BUT 56	----	247°43'47.3322"	0.1813"	
				BUT 57	1	-1.065675"	0.5919"	
560	155	gpsht	1	----	----	+1.6394m	0.0329m	0.39
				BUT 56	----	+1.6883m	0.0103m	
				BUT 57	1	+0.048923m	0.0313m	
561	155	gpsds	1	----	----	5765.6394m	0.0123m	0.01
				BUT 56	----	5765.6398m	0.0045m	
				BUT 57	1	+0.000409m	0.0115m	
562	156	gpsaz	1	----	----	97°57'35.0037"	0.2402"	0.29
				BUT 64A	----	97°57'35.2529"	0.1098"	
				BUT 63	1	+0.249163"	0.2137"	
563	156	gpsht	1	----	----	+36.2680m	0.0206m	0.00
				BUT 64A	----	+36.2681m	0.0093m	
				BUT 63	1	+0.000103m	0.0184m	
564	156	gpsds	1	----	----	8481.2323m	0.0071m	0.05
				BUT 64A	----	8481.2336m	0.0034m	
				BUT 63	1	+0.001287m	0.0063m	
565	157	gpsaz	1	----	----	94°52'00.9522"	0.5092"	0.07
				BUT 69A	----	94°52'01.0832"	0.1823"	
				BUT 68	1	+0.131043"	0.4755"	
566	157	gpsht	1	----	----	-3.5296m	0.0307m	0.12
				BUT 69A	----	-3.5164m	0.0117m	
				BUT 68	1	+0.013290m	0.0284m	
567	157	gpsds	1	----	----	5812.1903m	0.0116m	0.04
				BUT 69A	----	5812.1888m	0.0042m	
				BUT 68	1	-0.001560m	0.0108m	
568	158	gpsaz	1	----	----	274°51'17.6578"	0.1524"	0.06
				BUT 66	----	274°51'17.6278"	0.0698"	
				BUT 64	1	-0.029987"	0.1355"	
569	158	gpsht	1	----	----	-22.9452m	0.0238m	0.01
				BUT 66	----	-22.9462m	0.0108m	
				BUT 64	1	-0.000989m	0.0211m	
570	158	gpsds	1	----	----	14468.5029m	0.0082m	0.15
				BUT 66	----	14468.4987m	0.0038m	
				BUT 64	1	-0.004212m	0.0072m	
571	159	gpsaz	1	----	----	257°10'28.0642"	0.4107"	0.03
				BUT 61	----	257°10'28.1089"	0.2241"	
				HOGAN AZ	1	+0.044630"	0.3442"	
572	159	gpsht	1	----	----	-29.2685m	0.0289m	0.25
				BUT 61	----	-29.2939m	0.0131m	
				HOGAN AZ	1	-0.025347m	0.0257m	
573	159	gpsds	1	----	----	4425.4026m	0.0057m	0.28
				BUT 61	----	4425.4078m	0.0032m	

			HOGAN AZ	1		+0.005244m	0.0047m	
574	160	gpsaz	----	----	154°35'00.1066"	0.0808"	0.28	
	1		BUT 68A	----	154°35'00.0302"	0.0417"		
			BUT 51A	1	-0.076403"	0.0692"		
575	160	gpsht	----	----	+97.5162m	0.0166m	0.13	
	1		BUT 68A	----	+97.5235m	0.0092m		
			BUT 51A	1	+0.007254m	0.0139m		
576	160	gpsds	----	----	17449.0139m	0.0068m	0.08	
	1		BUT 68A	----	17449.0156m	0.0039m		
			BUT 51A	1	+0.001694m	0.0056m		
577	161	gpsaz	----	----	320°21'05.3791"	0.1559"	0.11	
	1		1003	----	320°21'05.4286"	0.1020"		
			9902	1	+0.049558"	0.1178"		
578	161	gpsht	----	----	+50.0806m	0.0104m	0.23	
	1		1003	----	+50.0881m	0.0064m		
			9902	1	+0.007516m	0.0083m		
579	161	gpsds	----	----	4800.1452m	0.0033m	0.29	
	1		1003	----	4800.1424m	0.0023m		
			9902	1	-0.002821m	0.0025m		
580	162	gpsaz	----	----	18°59'42.2384"	0.1118"	0.41	
	1		HARR	----	18°59'42.4036"	0.0484"		
			9902	1	+0.165201"	0.1007"		
581	162	gpsht	----	----	+49.7507m	0.0188m	0.11	
	1		HARR	----	+49.7583m	0.0077m		
			9902	1	+0.007607m	0.0172m		
582	162	gpsds	----	----	9636.7111m	0.0069m	0.58	
	1		HARR	----	9636.6968m	0.0030m		
			9902	1	-0.014256m	0.0062m		
583	163	gpsaz	----	----	48°51'32.5232"	0.0820"	0.00	
	1		HARR	----	48°51'32.5237"	0.0567"		
			1003	1	+0.000531"	0.0592"		
584	163	gpsht	----	----	-0.3241m	0.0084m	0.28	
	1		HARR	----	-0.3300m	0.0066m		
			1003	1	-0.005956m	0.0052m		
585	163	gpsds	----	----	8232.0225m	0.0036m	0.09	
	1		HARR	----	8232.0216m	0.0024m		
			1003	1	-0.000964m	0.0026m		
589	165	gpsaz	----	----	159°57'13.0230"	0.1053"	0.29	
	1		2003	----	159°57'12.9567"	0.0887"		
			BT01	1	-0.066308"	0.0568"		
590	165	gpsht	----	----	+9.8458m	0.0086m	0.17	
	1		2003	----	+9.8419m	0.0066m		
			BT01	1	-0.003884m	0.0056m		
591	165	gpsds	----	----	5083.7336m	0.0042m	0.49	
	1		2003	----	5083.7390m	0.0032m		
			BT01	1	+0.005305m	0.0027m		
592	166	gpsaz	----	----	286°37'46.3848"	0.2828"	0.10	
	1		9902	----	286°37'46.4850"	0.1404"		
			BT01	1	+0.100120"	0.2455"		

593	166	gpsht	----	----	+39.3048m	0.0082m	0.35
	1		9902	----	+39.3136m	0.0052m	
			BT01	1	+0.008837m	0.0063m	
594	166	gpsds	----	----	4946.9505m	0.0038m	0.35
	1		9902	----	4946.9548m	0.0021m	
			BT01	1	+0.004307m	0.0031m	
595	167	gpsaz	----	----	281°00'16.2400"	0.2973"	0.03
	1		9903	----	281°00'16.2069"	0.1515"	
			BT01	1	-0.033174"	0.2559"	
596	167	gpsht	----	----	+32.4549m	0.0083m	0.10
	1		9903	----	+32.4575m	0.0054m	
			BT01	1	+0.002647m	0.0063m	
597	167	gpsds	----	----	4861.0167m	0.0034m	0.39
	1		9903	----	4861.0208m	0.0020m	
			BT01	1	+0.004106m	0.0027m	
598	168	gpsaz	----	----	183°42'17.0948"	0.8324"	0.35
	1		9903	----	183°42'17.8061"	0.6586"	
			9902	1	+0.711294"	0.5091"	
599	168	gpsht	----	----	-6.8522m	0.0105m	0.12
	1		9903	----	-6.8564m	0.0055m	
			9902	1	-0.004204m	0.0090m	
600	168	gpsds	----	----	488.8561m	0.0025m	0.22
	1		9903	----	488.8550m	0.0021m	
			9902	1	-0.001171m	0.0014m	
601	169	gpsaz	----	----	30°23'22.5261"	0.0931"	0.95
	1		9903	----	30°23'22.7751"	0.0662"	
			1004	1	+0.248966"	0.0654"	
602	169	gpsht	----	----	+9.6226m	0.0084m	0.05
	1		9903	----	+9.6239m	0.0056m	
			1004	1	+0.001342m	0.0063m	
603	169	gpsds	----	----	6254.1442m	0.0041m	0.33
	1		9903	----	6254.1486m	0.0024m	
			1004	1	+0.004318m	0.0033m	
604	170	gpsaz	----	----	28°30'37.1515"	0.1160"	0.82
	1		9902	----	28°30'37.4787"	0.0584"	
			1004	1	+0.327229"	0.1002"	
605	170	gpsht	----	----	+16.4635m	0.0104m	0.47
	1		9902	----	+16.4801m	0.0055m	
			1004	1	+0.016622m	0.0088m	
606	170	gpsds	----	----	6694.5371m	0.0037m	0.03
	1		9902	----	6694.5368m	0.0023m	
			1004	1	-0.000302m	0.0029m	

607	171	gpsaz	----	----	148°28'02.9957"	0.1113"	1.04
	1		9901	----	148°28'03.2948"	0.0847"	
			HARR	1	+0.299068"	0.0722"	

608	171	gpsht	----	----	-92.9439m	0.0112m	0.12
	1		9901	----	-92.9475m	0.0085m	
			HARR	1	-0.003588m	0.0072m	

609	171	gpsds	---	---	6917.6486m	0.0039m	0.02
	1		9901	---	6917.6487m	0.0031m	
			HARR	1	+0.000151m	0.0024m	
610	172	gpsaz	---	---	23°30'20.7856"	0.1355"	0.40
	1		9901	---	23°30'20.9177"	0.1071"	
			BT01	1	+0.132185"	0.0831"	
611	172	gpsht	---	---	-3.8698m	0.0107m	0.19
	1		9901	---	-3.8751m	0.0082m	
			BT01	1	-0.005329m	0.0069m	
612	172	gpsds	---	---	5050.5497m	0.0035m	0.83
	1		9901	---	5050.5561m	0.0029m	
			BT01	1	+0.006388m	0.0019m	
613	173	gpsaz	---	---	1°39'17.1028"	0.1629"	0.05
	1		9901	---	1°39'17.1329"	0.0637"	
			2003	1	+0.030150"	0.1499"	
614	173	gpsht	---	---	-13.7233m	0.0285m	0.06
	1		9901	---	-13.7173m	0.0097m	
			2003	1	+0.006051m	0.0268m	
615	173	gpsds	---	---	9411.1283m	0.0092m	0.07
	1		9901	---	9411.1260m	0.0038m	
			2003	1	-0.002292m	0.0085m	
616	174	gpsaz	---	---	2°05'06.9715"	0.4490"	0.12
	1		2003	---	2°05'06.7689"	0.1281"	
			PEOR	1	-0.202670"	0.4304"	
617	174	gpsht	---	---	+55.6277m	0.0293m	0.07
	1		2003	---	+55.6194m	0.0082m	
			PEOR	1	-0.008259m	0.0282m	
618	174	gpsds	---	---	6138.0647m	0.0145m	0.27
	1		2003	---	6138.0797m	0.0045m	
			PEOR	1	+0.014995m	0.0137m	
619	175	gpsaz	---	---	105°50'24.1043"	0.1847"	0.20
	1		PEOR	---	105°50'23.9917"	0.1170"	
			9904	1	-0.112600"	0.1428"	
620	175	gpsht	---	---	-59.0560m	0.0109m	0.42
	1		PEOR	---	-59.0415m	0.0066m	
			9904	1	+0.014521m	0.0087m	
621	175	gpsds	---	---	5462.7385m	0.0057m	0.68
	1		PEOR	---	5462.7508m	0.0034m	
			9904	1	+0.012358m	0.0045m	
622	176	gpsaz	---	---	49°43'12.1569"	0.1170"	0.16
	1		2003	---	49°43'12.1037"	0.0815"	
			9904	1	-0.053166"	0.0839"	
623	176	gpsht	---	---	-3.4213m	0.0076m	0.02
	1		2003	---	-3.4217m	0.0058m	
			9904	1	-0.000392m	0.0049m	
624	176	gpsds	---	---	7181.4071m	0.0081m	0.07
	1		2003	---	7181.4089m	0.0037m	
			9904	1	+0.001873m	0.0072m	
625	177	gpsaz	---	---	91°34'10.3590"	0.4199"	0.15
	1		9904	---	91°34'10.1525"	0.2401"	

			9905	1	-0.206541"	0.3445"	
626	177	gpsht	---	---	+5.6182m	0.0054m	0.01
	1		9904	---	+5.6183m	0.0036m	
			9905	1	+0.000111m	0.0040m	
627	177	gpsds	---	---	1704.3293m	0.0029m	0.67
	1		9904	---	1704.3357m	0.0017m	
			9905	1	+0.006408m	0.0024m	
631	179	gpsaz	---	---	229°43'12.2266"	0.2843"	0.11
	1		9904	---	229°43'12.1029"	0.0815"	
			2003	1	-0.123697"	0.2724"	
632	179	gpsht	---	---	+3.4148m	0.0176m	0.09
	1		9904	---	+3.4211m	0.0058m	
			2003	1	+0.006309m	0.0166m	
633	179	gpsds	---	---	7181.4007m	0.0102m	0.22
	1		9904	---	7181.4089m	0.0037m	
			2003	1	+0.008275m	0.0095m	
634	180	gpsaz	---	---	332°23'05.6539"	0.2853"	0.13
	1		9912	---	332°23'05.7776"	0.1599"	
			V135	1	+0.123716"	0.2363"	
635	180	gpsht	---	---	+0.5655m	0.0166m	0.14
	1		9912	---	+0.5743m	0.0064m	
			V135	1	+0.008784m	0.0153m	
636	180	gpsds	---	---	2943.9319m	0.0071m	0.26
	1		9912	---	2943.9254m	0.0032m	
			V135	1	-0.006509m	0.0064m	
637	181	gpsaz	---	---	149°35'49.9496"	0.2607"	0.09
	1		9913	---	149°35'49.8603"	0.1113"	
			Y139	1	-0.089338"	0.2357"	
638	181	gpsht	---	---	-100.5282m	0.0278m	0.11
	1		9913	---	-100.5171m	0.0099m	
			Y139	1	+0.011175m	0.0260m	
639	181	gpsds	---	---	7583.9211m	0.0070m	0.76
	1		9913	---	7583.9385m	0.0040m	
			Y139	1	+0.017351m	0.0057m	
640	182	gpsaz	---	---	179°37'20.1109"	0.1426"	0.12
	1		2017	---	179°37'20.0752"	0.1204"	
			9918	1	-0.035660"	0.0763"	
641	182	gpsht	---	---	-64.6513m	0.0079m	0.23
	1		2017	---	-64.6565m	0.0054m	
			9918	1	-0.005165m	0.0057m	
642	182	gpsds	---	---	3840.0596m	0.0064m	0.31
	1		2017	---	3840.0663m	0.0035m	
			9918	1	+0.006676m	0.0054m	
643	183	gpsaz	---	---	351°41'27.1297"	0.1334"	0.42
	1		BUT1 NGS	---	351°41'26.9302"	0.0620"	
			BUT 71	1	-0.199492"	0.1182"	
644	183	gpsht	---	---	-41.9719m	0.0144m	0.03
	1		BUT1 NGS	---	-41.9707m	0.0071m	
			BUT 71	1	+0.001253m	0.0125m	

645	183	gpsds	1	---	---	6877.5807m	0.0066m	0.33
				BUT1	NGS	---	6877.5727m	0.0025m
				BUT	71	1	-0.008008m	0.0061m
646	184	gpsaz	1	---	---	341°44'09.7712"	0.2835"	0.04
				BUT1	NGS	---	341°44'09.7295"	0.1293"
				Y139	1	-0.041670"	0.2523"	
647	184	gpsht	1	---	---	-47.0020m	0.0265m	0.28
				BUT1	NGS	---	-46.9747m	0.0094m
				Y139	1	+0.027385m	0.0248m	
648	184	gpsds	1	---	---	5451.3174m	0.0085m	0.11
				BUT1	NGS	---	5451.3210m	0.0037m
				Y139	1	+0.003508m	0.0076m	
649	185	gpsaz	1	---	---	314°15'38.2867"	0.0953"	0.51
				BUT1	NGS	---	314°15'38.1079"	0.0388"
				M	135	1	-0.178795"	0.0870"
650	185	gpsht	1	---	---	-41.3530m	0.0151m	0.04
				BUT1	NGS	---	-41.3509m	0.0069m
				M	135	1	+0.002088m	0.0135m
651	185	gpsds	1	---	---	11746.7544m	0.0042m	0.80
				BUT1	NGS	---	11746.7429m	0.0021m
				M	135	1	-0.011466m	0.0036m
652	186	gpsaz	1	---	---	302°02'41.9122"	0.0725"	0.13
				BUT1	NGS	---	302°02'41.8780"	0.0317"
				BUT	70	1	-0.034204"	0.0652"
653	186	gpsht	1	---	---	-28.6840m	0.0119m	0.05
				BUT1	NGS	---	-28.6859m	0.0067m
				BUT	70	1	-0.001881m	0.0099m
654	186	gpsds	1	---	---	12942.2284m	0.0033m	0.92
				BUT1	NGS	---	12942.2181m	0.0017m
				BUT	70	1	-0.010319m	0.0028m
655	187	gpsaz	1	---	---	62°29'59.5415"	0.1903"	0.05
				BUT	70	---	62°29'59.5198"	0.1499"
				M	135	1	-0.021669"	0.1173"
656	187	gpsht	1	---	---	-12.6656m	0.0072m	0.02
				BUT	70	---	-12.6652m	0.0052m
				M	135	1	+0.000413m	0.0049m
657	187	gpsds	1	---	---	2883.3263m	0.0024m	0.24
				BUT	70	---	2883.3249m	0.0019m
				M	135	1	-0.001452m	0.0015m
658	188	gpsaz	1	---	---	203°41'13.9260"	0.4223"	0.11
				BUT	71	---	203°41'14.0404"	0.3240"
				Y139	1	+0.114474"	0.2708"	
659	188	gpsht	1	---	---	-5.0002m	0.0119m	0.12
				BUT	71	---	-5.0042m	0.0083m
				Y139	1	-0.004026m	0.0086m	
660	188	gpsds	1	---	---	1778.5175m	0.0048m	0.33
				BUT	71	---	1778.5137m	0.0038m
				Y139	1	-0.003715m	0.0029m	
661	189	gpsaz	1	---	---	182°57'32.7220"	0.1574"	0.04
				KTO1	---	182°57'32.6998"	0.0905"	

			BUT 71	1	-0.022204"	0.1287"	
662	189	gpsht	----	----	-57.9297m	0.0129m	0.01
	1		KTO1	----	-57.9303m	0.0076m	
			BUT 71	1	-0.000610m	0.0105m	
663	189	gpsds	----	----	6527.7958m	0.0077m	0.02
	1		KTO1	----	6527.7964m	0.0039m	
			BUT 71	1	+0.000658m	0.0066m	
664	190	gpsaz	----	----	37°44'32.5521"	0.4952"	0.10
	1		BUT 71	----	37°44'32.3559"	0.1183"	
			HATT	1	-0.196165"	0.4809"	
665	190	gpsht	----	----	+68.4823m	0.0456m	0.01
	1		BUT 71	----	+68.4838m	0.0083m	
			HATT	1	+0.001546m	0.0448m	
666	190	gpsds	----	----	6274.0633m	0.0236m	0.01
	1		BUT 71	----	6274.0627m	0.0051m	
			HATT	1	-0.000677m	0.0230m	
667	191	gpsaz	----	----	113°58'17.4696"	0.4911"	0.14
	1		KTO1	----	113°58'17.2463"	0.2823"	
			HATT	1	-0.223217"	0.4019"	
668	191	gpsht	----	----	+10.5523m	0.0128m	0.04
	1		KTO1	----	+10.5537m	0.0081m	
			HATT	1	+0.001466m	0.0100m	
669	191	gpsds	----	----	3834.1386m	0.0045m	0.45
	1		KTO1	----	3834.1444m	0.0032m	
			HATT	1	+0.005733m	0.0032m	
670	192	gpsaz	----	----	219°09'33.5790"	0.1342"	0.34
	1		9913	----	219°09'33.7010"	0.0986"	
			M 135	1	+0.121996"	0.0910"	
671	192	gpsht	----	----	-94.8942m	0.0073m	0.05
	1		9913	----	-94.8934m	0.0057m	
			M 135	1	+0.000883m	0.0045m	
672	192	gpsds	----	----	4538.9181m	0.0041m	0.25
	1		9913	----	4538.9148m	0.0025m	
			M 135	1	-0.003246m	0.0032m	
673	193	gpsaz	----	----	214°29'32.2872"	0.1240"	0.31
	1		9912	----	214°29'32.3832"	0.0966"	
			M 135	1	+0.095990"	0.0778"	
674	193	gpsht	----	----	-94.9535m	0.0061m	0.05
	1		9912	----	-94.9542m	0.0049m	
			M 135	1	-0.000696m	0.0036m	
675	193	gpsds	----	----	4277.7505m	0.0032m	0.39
	1		9912	----	4277.7470m	0.0023m	
			M 135	1	-0.003439m	0.0022m	
676	194	gpsaz	----	----	90°48'41.5312"	1.2390"	0.17
	1		9912	----	90°48'42.0056"	1.0119"	
			9913	1	+0.474370"	0.7150"	
677	194	gpsht	----	----	-0.0672m	0.0120m	0.15
	1		9912	----	-0.0612m	0.0065m	
			9913	1	+0.005996m	0.0102m	

678	194	gpsds	---	---	443.8047m	0.0024m	0.16
	1		9912	---	443.8056m	0.0019m	
			9913	1	+0.000953m	0.0015m	
679	195	gpsaz	---	---	20°25'43.8463"	0.1581"	0.30
	1		9914	---	20°25'43.9453"	0.1356"	
			9915	1	+0.099028"	0.0814"	
680	195	gpsht	---	---	+55.4468m	0.0068m	0.10
	1		9914	---	+55.4484m	0.0055m	
			9915	1	+0.001607m	0.0040m	
681	195	gpsds	---	---	2951.1118m	0.0029m	0.16
	1		9914	---	2951.1129m	0.0024m	
			9915	1	+0.001110m	0.0017m	
682	196	gpsaz	---	---	357°48'15.7369"	0.1639"	0.11
	1		KTO1	---	357°48'15.6782"	0.0881"	
			9915	1	-0.058740"	0.1383"	
683	196	gpsht	---	---	+41.2671m	0.0127m	0.20
	1		KTO1	---	+41.2587m	0.0068m	
			9915	1	-0.008401m	0.0108m	
684	196	gpsds	---	---	5561.4330m	0.0058m	0.14
	1		KTO1	---	5561.4303m	0.0031m	
			9915	1	-0.002699m	0.0049m	
685	197	gpsaz	---	---	335°59'51.9913"	0.1784"	0.05
	1		KTO1	---	335°59'51.9701"	0.1470"	
			9914	1	-0.021258"	0.1011"	
686	197	gpsht	---	---	-14.1891m	0.0076m	0.05
	1		KTO1	---	-14.1901m	0.0059m	
			9914	1	-0.000933m	0.0048m	
687	197	gpsds	---	---	3056.1013m	0.0031m	0.30
	1		KTO1	---	3056.1035m	0.0025m	
			9914	1	+0.002167m	0.0018m	
688	198	gpsaz	---	---	39°39'31.6596"	0.4453"	0.05
	1		9913	---	39°39'31.5679"	0.1167"	
			9914	1	-0.091723"	0.4297"	
689	198	gpsht	---	---	-51.7709m	0.0174m	0.03
	1		9913	---	-51.7728m	0.0073m	
			9914	1	-0.001955m	0.0158m	
690	198	gpsds	---	---	5713.4522m	0.0066m	0.18
	1		9913	---	5713.4480m	0.0029m	
			9914	1	-0.004244m	0.0059m	
691	199	gpsaz	---	---	42°57'37.1765"	0.2189"	0.18
	1		9912	---	42°57'37.0412"	0.1061"	
			9914	1	-0.135272"	0.1915"	
692	199	gpsht	---	---	-51.8247m	0.0118m	0.23
	1		9912	---	-51.8337m	0.0064m	
			9914	1	-0.009040m	0.0099m	
693	199	gpsds	---	---	6001.7895m	0.0053m	0.31
	1		9912	---	6001.7837m	0.0027m	
			9914	1	-0.005814m	0.0046m	
694	200	gpsaz	---	---	38°56'08.9957"	0.1195"	0.05
	1		9917	---	38°56'09.0137"	0.0832"	

			W136	1	+0.018003"	0.0858"	
695	200	gpsht	---	---	-11.5531m	0.0319m	0.07
	1		9917	---	-11.5448m	0.0084m	
			W136	1	+0.008278m	0.0307m	
696	200	gpsds	---	---	5938.7953m	0.0040m	0.22
	1		9917	---	5938.7928m	0.0028m	
			W136	1	-0.002526m	0.0028m	
697	201	gpsaz	---	---	90°53'25.2064"	0.4432"	0.34
	1		W136	---	90°53'25.5909"	0.3392"	
			2017	1	+0.384511"	0.2851"	
698	201	gpsht	---	---	+2.2541m	0.0109m	0.27
	1		W136	---	+2.2622m	0.0079m	
			2017	1	+0.008066m	0.0075m	
699	201	gpsds	---	---	1591.9473m	0.0031m	0.11
	1		W136	---	1591.9465m	0.0023m	
			2017	1	-0.000882m	0.0021m	
700	202	gpsaz	---	---	49°12'17.5747"	0.1120"	0.07
	1		9917	---	49°12'17.5520"	0.0734"	
			2017	1	-0.022696"	0.0846"	
701	202	gpsht	---	---	-9.2779m	0.0141m	0.09
	1		9917	---	-9.2823m	0.0070m	
			2017	1	-0.004391m	0.0122m	
702	202	gpsds	---	---	7032.5361m	0.0050m	0.06
	1		9917	---	7032.5371m	0.0027m	
			2017	1	+0.000956m	0.0042m	
703	203	gpsaz	---	---	271°17'21.1153"	0.2065"	0.08
	1		W136	---	271°17'21.1705"	0.0989"	
			9915	1	+0.055215"	0.1813"	
704	203	gpsht	---	---	+34.9883m	0.0161m	0.05
	1		W136	---	+34.9908m	0.0090m	
			9915	1	+0.002497m	0.0133m	
705	203	gpsds	---	---	8204.5743m	0.0051m	0.29
	1		W136	---	8204.5789m	0.0031m	
			9915	1	+0.004612m	0.0040m	
706	204	gpsaz	---	---	317°03'41.1213"	0.2128"	0.14
	1		9917	---	317°03'41.0162"	0.0988"	
			9915	1	-0.105149"	0.1885"	
707	204	gpsht	---	---	+23.4472m	0.0160m	0.02
	1		9917	---	+23.4463m	0.0074m	
			9915	1	-0.000930m	0.0142m	
708	204	gpsds	---	---	6562.2078m	0.0066m	0.03
	1		9917	---	6562.2071m	0.0030m	
			9915	1	-0.000670m	0.0059m	
709	205	gpsaz	---	---	81°58'07.7246"	0.2557"	0.15
	1		9917	---	81°58'07.5912"	0.1191"	
			9918	1	-0.133407"	0.2263"	
710	205	gpsht	---	---	-73.9449m	0.0128m	0.14
	1		9917	---	-73.9385m	0.0058m	
			9918	1	+0.006469m	0.0114m	

711	205	gpsds	---	---	5402.2955m	0.0058m	0.27
	1		9917	---	5402.2898m	0.0023m	
			9918	1	-0.005728m	0.0053m	
712	206	gpsaz	---	---	49°06'36.4975"	0.2239"	0.04
	1		MWO A	---	49°06'36.4708"	0.1363"	
			9918	1	-0.026737"	0.1777"	
713	206	gpsht	---	---	+8.0786m	0.0081m	0.14
	1		MWO A	---	+8.0754m	0.0056m	
			9918	1	-0.003208m	0.0058m	
714	206	gpsds	---	---	4742.7404m	0.0029m	0.18
	1		MWO A	---	4742.7416m	0.0024m	
			9918	1	+0.001172m	0.0016m	
715	207	gpsaz	---	---	143°06'22.0601"	0.1629"	0.40
	1		9917	---	143°06'21.8808"	0.1175"	
			MWO A	1	-0.179293"	0.1128"	
716	207	gpsht	---	---	-82.0144m	0.0070m	0.01
	1		9917	---	-82.0141m	0.0045m	
			MWO A	1	+0.000280m	0.0054m	
717	207	gpsds	---	---	2938.2511m	0.0035m	0.27
	1		9917	---	2938.2540m	0.0022m	
			MWO A	1	+0.002980m	0.0027m	
718	208	gpsaz	---	---	139°55'42.4562"	0.1609"	0.10
	1		9916	---	139°55'42.4165"	0.1229"	
			MWO A	1	-0.039687"	0.1038"	
719	208	gpsht	---	---	-78.7473m	0.0077m	0.10
	1		9916	---	-78.7496m	0.0048m	
			MWO A	1	-0.002304m	0.0060m	
720	208	gpsds	---	---	3069.8997m	0.0036m	0.01
	1		9916	---	3069.8995m	0.0023m	
			MWO A	1	-0.000121m	0.0027m	
721	209	gpsaz	---	---	269°49'27.6872"	2.1703"	0.08
	1		9917	---	269°49'28.0537"	1.7958"	
			9916	1	+0.366529"	1.2188"	
722	209	gpsht	---	---	-3.2644m	0.0036m	0.07
	1		9917	---	-3.2649m	0.0032m	
			9916	1	-0.000479m	0.0016m	
723	209	gpsds	---	---	212.2918m	0.0018m	0.01
	1		9917	---	212.2917m	0.0016m	
			9916	1	-0.000036m	0.0010m	
724	210	gpsaz	---	---	198°03'51.3071"	0.4964"	0.13
	1		9917	---	198°03'51.5317"	0.2493"	
			HATT	1	+0.224530"	0.4292"	
725	210	gpsht	---	---	-7.2645m	0.0127m	0.13
	1		9917	---	-7.2587m	0.0066m	
			HATT	1	+0.005860m	0.0109m	
726	210	gpsds	---	---	2430.8164m	0.0069m	0.14
	1		9917	---	2430.8194m	0.0046m	
			HATT	1	+0.003002m	0.0052m	
727	211	gpsaz	---	---	193°11'24.2257"	0.4090"	0.20
	1		9916	---	193°11'24.4791"	0.2621"	

			HATT	1	+0.253415"	0.3140"	
728	211	gpsht	---	---	-3.9983m	0.0114m	0.11
	1		9916	---	-3.9941m	0.0067m	
			HATT	1	+0.004130m	0.0092m	
729	211	gpsds	---	---	2372.9532m	0.0084m	0.04
	1		9916	---	2372.9544m	0.0046m	
			HATT	1	+0.001178m	0.0070m	
730	212	gpsaz	---	---	307°44'15.6049"	0.0763"	0.24
	1		HOGAN AZ	---	307°44'15.6706"	0.0347"	
			9908	1	+0.065741"	0.0680"	
731	212	gpsht	---	---	+83.7635m	0.0121m	0.23
	1		HOGAN AZ	---	+83.7735m	0.0059m	
			9908	1	+0.009937m	0.0106m	
732	212	gpsds	---	---	13887.7095m	0.0062m	0.51
	1		HOGAN AZ	---	13887.7214m	0.0021m	
			9908	1	+0.011980m	0.0059m	
733	213	gpsaz	---	---	300°19'11.2558"	0.4568"	0.04
	1		HOGAN AZ	---	300°19'11.3354"	0.1098"	
			BUT 59	1	+0.079622"	0.4434"	
734	213	gpsht	---	---	+31.8708m	0.0201m	0.26
	1		HOGAN AZ	---	+31.8901m	0.0070m	
			BUT 59	1	+0.019300m	0.0188m	
735	213	gpsds	---	---	6079.6347m	0.0124m	0.03
	1		HOGAN AZ	---	6079.6363m	0.0028m	
			BUT 59	1	+0.001665m	0.0121m	
736	214	gpsaz	---	---	247°30'17.7629"	0.0701"	0.19
	1		HOGAN AZ	---	247°30'17.8107"	0.0318"	
			1003	1	+0.047833"	0.0625"	
737	214	gpsht	---	---	-14.0017m	0.0128m	0.21
	1		HOGAN AZ	---	-13.9929m	0.0071m	
			1003	1	+0.008758m	0.0106m	
738	214	gpsds	---	---	16524.2464m	0.0047m	0.05
	1		HOGAN AZ	---	16524.2457m	0.0022m	
			1003	1	-0.000743m	0.0041m	
739	215	gpsaz	---	---	313°26'28.0777"	0.1047"	0.39
	1		BUT 59	---	313°26'28.1902"	0.0763"	
			9908	1	+0.112476"	0.0717"	
740	215	gpsht	---	---	+51.8910m	0.0094m	0.29
	1		BUT 59	---	+51.8831m	0.0065m	
			9908	1	-0.007852m	0.0068m	
741	215	gpsds	---	---	7898.0649m	0.0035m	0.01
	1		BUT 59	---	7898.0650m	0.0027m	
			9908	1	+0.000098m	0.0021m	
742	216	gpsaz	---	---	180°47'34.6076"	0.0727"	0.19
	1		1004	---	180°47'34.5630"	0.0444"	
			1003	1	-0.044568"	0.0576"	
743	216	gpsht	---	---	-66.5775m	0.0107m	0.25
	1		1004	---	-66.5689m	0.0063m	
			1003	1	+0.008561m	0.0087m	

744	216	gpsds	----	----	9579.5895m	0.0042m	0.25
	1		1004	----	9579.5927m	0.0026m	
			1003	1	+0.003191m	0.0032m	
745	217	gpsaz	----	----	282°08'35.0743"	0.1067"	0.12
	1		HOGAN AZ	----	282°08'35.1235"	0.0397"	
			1004	1	+0.049211"	0.0990"	
746	217	gpsht	----	----	+52.5546m	0.0192m	0.30
	1		HOGAN AZ	----	+52.5757m	0.0075m	
			1004	1	+0.021096m	0.0177m	
747	217	gpsds	----	----	15480.7475m	0.0059m	0.80
	1		HOGAN AZ	----	15480.7648m	0.0023m	
			1004	1	+0.017328m	0.0054m	
748	218	gpsaz	----	----	104°46'57.9615"	0.3366"	0.25
	1		BT02	----	104°46'57.7553"	0.2654"	
			9908	1	-0.206153"	0.2071"	
749	218	gpsht	----	----	-3.7338m	0.0066m	0.31
	1		BT02	----	-3.7288m	0.0052m	
			9908	1	+0.005022m	0.0041m	
750	218	gpsds	----	----	1816.0274m	0.0025m	0.40
	1		BT02	----	1816.0248m	0.0020m	
			9908	1	-0.002575m	0.0016m	
751	219	gpsaz	----	----	330°13'31.4790"	0.1622"	0.15
	1		BT02	----	330°13'31.5532"	0.1054"	
			1011	1	+0.074215"	0.1233"	
752	219	gpsht	----	----	-16.2684m	0.0091m	0.39
	1		BT02	----	-16.2797m	0.0054m	
			1011	1	-0.011289m	0.0073m	
753	219	gpsds	----	----	3988.2054m	0.0034m	0.51
	1		BT02	----	3988.2000m	0.0022m	
			1011	1	-0.005442m	0.0026m	
754	220	gpsaz	----	----	80°41'26.8788"	0.1308"	0.06
	1		9905	----	80°41'26.9001"	0.0951"	
			BT02	1	+0.021326"	0.0898"	
755	220	gpsht	----	----	+19.7394m	0.0078m	0.10
	1		9905	----	+19.7373m	0.0055m	
			BT02	1	-0.002188m	0.0055m	
756	220	gpsds	----	----	4956.7805m	0.0027m	0.11
	1		9905	----	4956.7813m	0.0019m	
			BT02	1	+0.000838m	0.0018m	
757	221	gpsaz	----	----	87°05'07.2174"	0.2025"	0.20
	1		9905	----	87°05'07.0671"	0.0805"	
			9908	1	-0.150355"	0.1858"	
758	221	gpsht	----	----	+16.0034m	0.0193m	0.07
	1		9905	----	+16.0088m	0.0057m	
			9908	1	+0.005405m	0.0184m	
759	221	gpsds	----	----	6656.0355m	0.0052m	0.55
	1		9905	----	6656.0252m	0.0021m	
			9908	1	-0.010351m	0.0047m	
760	222	gpsaz	----	----	34°19'26.5147"	0.1241"	0.49
	1		9905	----	34°19'26.7102"	0.0743"	

			1011	1	+0.195536"	0.0994"	
761	222	gpsht	---	---	+3.4691m	0.0092m	0.35
	1		9905	---	+3.4579m	0.0046m	
			1011	1	-0.011259m	0.0080m	
762	222	gpsds	---	---	5162.5152m	0.0033m	0.03
	1		9905	---	5162.5149m	0.0019m	
			1011	1	-0.000296m	0.0027m	
763	223	gpsaz	---	---	47°34'45.9612"	0.1191"	0.10
	1		9904	---	47°34'45.9221"	0.0700"	
			1011	1	-0.039154"	0.0963"	
764	223	gpsht	---	---	+9.0808m	0.0103m	0.12
	1		9904	---	+9.0765m	0.0046m	
			1011	1	-0.004259m	0.0091m	
765	223	gpsds	---	---	6251.1687m	0.0048m	0.45
	1		9904	---	6251.1765m	0.0021m	
			1011	1	+0.007776m	0.0043m	
766	224	gpsaz	---	---	271°34'10.0856"	0.3843"	0.06
	1		9905	---	271°34'10.1523"	0.2401"	
			9904	1	+0.066699"	0.3000"	
767	224	gpsht	---	---	-5.6229m	0.0060m	0.21
	1		9905	---	-5.6190m	0.0036m	
			9904	1	+0.003982m	0.0048m	
768	224	gpsds	---	---	1704.3386m	0.0029m	0.31
	1		9905	---	1704.3357m	0.0017m	
			9904	1	-0.002840m	0.0023m	
769	225	gpsaz	---	---	2°01'52.0622"	0.1943"	0.72
	1		PEOR	---	2°01'51.7674"	0.1652"	
			2005	1	-0.294772"	0.1022"	
770	225	gpsht	---	---	-4.0859m	0.0072m	0.32
	1		PEOR	---	-4.0909m	0.0060m	
			2005	1	-0.005056m	0.0040m	
771	225	gpsds	---	---	3502.3515m	0.0032m	0.75
	1		PEOR	---	3502.3563m	0.0027m	
			2005	1	+0.004839m	0.0016m	
775	227	gpsaz	---	---	41°45'07.8464"	0.2860"	0.26
	1		1004	---	41°45'08.1226"	0.1061"	
			9909	1	+0.276108"	0.2656"	
776	227	gpsht	---	---	+36.7251m	0.0262m	0.08
	1		1004	---	+36.7173m	0.0087m	
			9909	1	-0.007780m	0.0247m	
777	227	gpsds	---	---	6836.4779m	0.0076m	0.35
	1		1004	---	6836.4872m	0.0036m	
			9909	1	+0.009281m	0.0067m	
778	228	gpsaz	---	---	109°40'10.9900"	1.7239"	0.06
	1		9908	---	109°40'11.3146"	1.0181"	
			9909	1	+0.324631"	1.3911"	
779	228	gpsht	---	---	+5.5209m	0.0095m	0.04
	1		9908	---	+5.5195m	0.0047m	
			9909	1	-0.001391m	0.0083m	

780	228	gpsds	---	---	425.6486m	0.0032m	0.32
	1		9908	---	425.6455m	0.0022m	
			9909	1	-0.003029m	0.0023m	
781	229	gpsaz	---	---	289°40'12.4593"	1.5885"	0.23
	1		9909	---	289°40'11.3145"	1.0181"	
			9908	1	-1.144749"	1.2194"	
782	229	gpsht	---	---	-5.5252m	0.0069m	0.25
	1		9909	---	-5.5202m	0.0047m	
			9908	1	+0.005022m	0.0050m	
783	229	gpsds	---	---	425.6524m	0.0042m	0.48
	1		9909	---	425.6455m	0.0022m	
			9908	1	-0.006865m	0.0036m	
784	230	gpsaz	---	---	232°54'57.8865"	0.0990"	0.72
	1		BUT 70	---	232°54'57.6617"	0.0611"	
			9908	1	-0.224724"	0.0780"	
785	230	gpsht	---	---	+59.7365m	0.0064m	0.38
	1		BUT 70	---	+59.7433m	0.0045m	
			9908	1	+0.006861m	0.0045m	
786	230	gpsds	---	---	7094.0232m	0.0036m	0.26
	1		BUT 70	---	7094.0262m	0.0021m	
			9908	1	+0.002997m	0.0029m	
787	231	gpsaz	---	---	274°32'34.9613"	0.1313"	0.11
	1		1011	---	274°32'34.9090"	0.0582"	
			2005	1	-0.052339"	0.1176"	
788	231	gpsht	---	---	+45.8634m	0.0130m	0.22
	1		1011	---	+45.8735m	0.0062m	
			2005	1	+0.010045m	0.0114m	
789	231	gpsds	---	---	9776.6138m	0.0054m	0.33
	1		1011	---	9776.6078m	0.0029m	
			2005	1	-0.006047m	0.0046m	
790	232	gpsaz	---	---	254°33'41.4571"	0.2217"	0.39
	1		1011	---	254°33'41.7868"	0.0713"	
			PEOR	1	+0.329691"	0.2099"	
791	232	gpsht	---	---	+49.9572m	0.0179m	0.10
	1		1011	---	+49.9640m	0.0067m	
			PEOR	1	+0.006810m	0.0166m	
792	232	gpsds	---	---	10239.5024m	0.0086m	0.48
	1		1011	---	10239.4869m	0.0030m	
			PEOR	1	-0.015515m	0.0081m	
793	233	gpsaz	---	---	87°51'04.5220"	0.1423"	0.20
	1		1011	---	87°51'04.6267"	0.0489"	
			BUT 70	1	+0.104688"	0.1336"	
794	233	gpsht	---	---	-47.2201m	0.0149m	0.48
	1		1011	---	-47.1929m	0.0046m	
			BUT 70	1	+0.027215m	0.0141m	
795	233	gpsds	---	---	9402.3088m	0.0046m	0.59
	1		1011	---	9402.2987m	0.0018m	
			BUT 70	1	-0.010124m	0.0043m	
796	234	gpsaz	---	---	304°34'49.1714"	0.1895"	0.18
	1		BUT 70	---	304°34'49.2926"	0.0902"	

			BT03	1	+0.121252"	0.1667"	
797	234	gpsht	---	---	+34.7485m	0.0112m	0.06
	1		BUT 70	---	+34.7507m	0.0054m	
			BT03	1	+0.002209m	0.0098m	
798	234	gpsds	---	---	5839.9314m	0.0045m	0.84
	1		BUT 70	---	5839.9181m	0.0023m	
			BT03	1	-0.013263m	0.0039m	
799	235	gpsaz	---	---	231°21'46.1222"	0.0932"	0.53
	1		BT03	---	231°21'46.0056"	0.0752"	
			1011	1	-0.116606"	0.0550"	
800	235	gpsht	---	---	+12.4323m	0.0058m	0.67
	1		BT03	---	+12.4414m	0.0047m	
			1011	1	+0.009100m	0.0034m	
801	235	gpsds	---	---	5873.0159m	0.0031m	0.19
	1		BT03	---	5873.0175m	0.0023m	
			1011	1	+0.001604m	0.0021m	
802	236	gpsaz	---	---	90°24'35.5490"	0.9445"	0.28
	1		9910	---	90°24'34.9273"	0.7588"	
			9911	1	-0.621647"	0.5624"	
803	236	gpsht	---	---	-10.3245m	0.0068m	0.07
	1		9910	---	-10.3257m	0.0052m	
			9911	1	-0.001174m	0.0044m	
804	236	gpsds	---	---	556.0412m	0.0034m	0.02
	1		9910	---	556.0410m	0.0025m	
			9911	1	-0.000168m	0.0022m	
808	238	gpsaz	---	---	213°21'10.3075"	0.4170"	0.20
	1		9910	---	213°21'10.0649"	0.2834"	
			BT03	1	-0.242557"	0.3059"	
809	238	gpsht	---	---	-19.7555m	0.0079m	0.20
	1		9910	---	-19.7509m	0.0053m	
			BT03	1	+0.004609m	0.0059m	
810	238	gpsds	---	---	2000.4975m	0.0026m	0.08
	1		9910	---	2000.4980m	0.0019m	
			BT03	1	+0.000524m	0.0017m	
811	239	gpsaz	---	---	220°23'36.5610"	0.1840"	0.43
	1		2011	---	220°23'36.2967"	0.1008"	
			9911	1	-0.264336"	0.1540"	
812	239	gpsht	---	---	-41.3437m	0.0111m	0.68
	1		2011	---	-41.3184m	0.0061m	
			9911	1	+0.025291m	0.0094m	
813	239	gpsds	---	---	6227.7910m	0.0030m	0.88
	1		2011	---	6227.7981m	0.0022m	
			9911	1	+0.007095m	0.0020m	
814	240	gpsaz	---	---	129°35'17.7121"	0.4160"	0.51
	1		2011	---	129°35'16.9539"	0.1870"	
			V135	1	-0.758251"	0.3715"	
815	240	gpsht	---	---	-2.6417m	0.0110m	0.28
	1		2011	---	-2.6311m	0.0056m	
			V135	1	+0.010629m	0.0095m	

816	240	gpsds	----	----	3544.9497m	0.0067m	0.25
	1		2011	----	3544.9438m	0.0031m	
			V135	1	-0.005877m	0.0059m	
817	241	gpsaz	----	----	251°53'32.2108"	0.3069"	0.02
	1		9914	----	251°53'32.1845"	0.1265"	
			V135	1	-0.026293"	0.2796"	
818	241	gpsht	----	----	+52.4089m	0.0103m	0.04
	1		9914	----	+52.4077m	0.0051m	
			V135	1	-0.001256m	0.0089m	
819	241	gpsds	----	----	5738.9838m	0.0032m	0.46
	1		9914	----	5738.9883m	0.0021m	
			V135	1	+0.004521m	0.0025m	
820	242	gpsaz	----	----	256°06'27.3121"	0.1604"	0.42
	1		2011	----	256°06'27.5393"	0.0854"	
			BT04	1	+0.227239"	0.1358"	
821	242	gpsht	----	----	-6.8941m	0.0121m	0.22
	1		2011	----	-6.9032m	0.0064m	
			BT04	1	-0.009106m	0.0103m	
822	242	gpsds	----	----	7881.2844m	0.0038m	0.76
	1		2011	----	7881.2753m	0.0023m	
			BT04	1	-0.009085m	0.0030m	
823	243	gpsaz	----	----	316°53'28.5943"	0.2368"	0.23
	1		BT04	----	316°53'28.4200"	0.1412"	
			2009	1	-0.174219"	0.1901"	
824	243	gpsht	----	----	+4.7175m	0.0090m	0.17
	1		BT04	----	+4.7228m	0.0046m	
			2009	1	+0.005252m	0.0077m	
825	243	gpsds	----	----	2967.9532m	0.0027m	0.60
	1		BT04	----	2967.9488m	0.0020m	
			2009	1	-0.004442m	0.0019m	
826	244	gpsaz	----	----	213°19'50.9461"	0.2682"	0.06
	1		OXFO	----	213°19'50.8847"	0.0881"	
			2005	1	-0.061384"	0.2533"	
827	244	gpsht	----	----	-9.1305m	0.0147m	0.21
	1		OXFO	----	-9.1418m	0.0058m	
			2005	1	-0.011368m	0.0136m	
828	244	gpsds	----	----	6716.3277m	0.0092m	0.13
	1		OXFO	----	6716.3233m	0.0030m	
			2005	1	-0.004448m	0.0087m	
829	245	gpsaz	----	----	321°56'45.6616"	0.4870"	0.11
	1		OXFO	----	321°56'45.4613"	0.1584"	
			2007	1	-0.200320"	0.4605"	
830	245	gpsht	----	----	-15.7486m	0.0158m	0.18
	1		OXFO	----	-15.7382m	0.0069m	
			2007	1	+0.010393m	0.0142m	
831	245	gpsds	----	----	5339.0999m	0.0069m	0.15
	1		OXFO	----	5339.0963m	0.0027m	
			2007	1	-0.003681m	0.0063m	
832	246	gpsaz	----	----	59°12'41.0005"	0.0839"	0.41
	1		OXFO	----	59°12'40.8948"	0.0536"	

			2009	1	-0.105706"	0.0645"	
833	246	gpsht	---	---	-18.9009m	0.0092m	0.23
	1		OXFO	---	-18.8936m	0.0050m	
			2009	1	+0.007259m	0.0077m	
834	246	gpsds	---	---	7747.6132m	0.0051m	0.22
	1		OXFO	---	7747.6094m	0.0027m	
			2009	1	-0.003750m	0.0043m	
835	247	gpsaz	---	---	90°50'53.3054"	0.0952"	0.02
	1		2004	---	90°50'53.3023"	0.0856"	
			1004	1	-0.003047"	0.0416"	
836	247	gpsht	---	---	-22.8727m	0.0126m	0.58
	1		2004	---	-22.8520m	0.0090m	
			1004	1	+0.020651m	0.0088m	
837	247	gpsds	---	---	9509.8055m	0.0036m	0.58
	1		2004	---	9509.7999m	0.0027m	
			1004	1	-0.005574m	0.0024m	
838	248	gpsaz	---	---	134°46'25.2848"	7.9305"	0.54
	1		2003	---	134°46'40.1771"	3.9369"	
			2004	1	+14.892312"	6.8843"	
839	248	gpsht	---	---	+9.8383m	0.0128m	0.57
	1		2003	---	+9.8601m	0.0085m	
			2004	1	+0.021740m	0.0096m	
840	248	gpsds	---	---	238.5312m	0.0057m	0.43
	1		2003	---	238.5391m	0.0033m	
			2004	1	+0.007907m	0.0046m	
841	249	gpsaz	---	---	136°53'27.4056"	0.3754"	0.73
	1		2009	---	136°53'28.4203"	0.1412"	
			BT04	1	+1.014696"	0.3479"	
842	249	gpsht	---	---	-4.7185m	0.0088m	0.17
	1		2009	---	-4.7235m	0.0046m	
			BT04	1	-0.004976m	0.0075m	
843	249	gpsds	---	---	2967.9379m	0.0052m	0.57
	1		2009	---	2967.9488m	0.0020m	
			BT04	1	+0.010889m	0.0048m	
844	250	gpsaz	---	---	233°55'11.8381"	0.2198"	0.27
	1		2009	---	233°55'12.0440"	0.1092"	
			9907	1	+0.205969"	0.1908"	
845	250	gpsht	---	---	-3.7657m	0.0100m	0.34
	1		2009	---	-3.7763m	0.0061m	
			9907	1	-0.010648m	0.0079m	
846	250	gpsds	---	---	5772.5626m	0.0032m	0.39
	1		2009	---	5772.5654m	0.0027m	
			9907	1	+0.002773m	0.0018m	
847	251	gpsaz	---	---	3°56'52.1131"	1.9709"	0.05
	1		9906	---	3°56'51.8148"	1.1883"	
			9907	1	-0.298341"	1.5724"	
848	251	gpsht	---	---	+1.7501m	0.0117m	0.09
	1		9906	---	+1.7468m	0.0071m	
			9907	1	-0.003333m	0.0093m	

849	251	gpsds	---	---	396.3997m	0.0048m	0.23
	1		9906	---	396.3959m	0.0026m	
			9907	1	-0.003794m	0.0041m	
850	252	gpsaz	---	---	3°56'51.8418"	2.6819"	0.00
	1		9906	---	3°56'51.8418"	1.1883"	
			9907	1	-0.027094"	2.4043"	
851	252	gpsht	---	---	+1.7434m	0.0129m	0.08
	1		9906	---	+1.7468m	0.0071m	
			9907	1	+0.003383m	0.0108m	
852	252	gpsds	---	---	396.3927m	0.0048m	0.20
	1		9906	---	396.3959m	0.0026m	
			9907	1	+0.003181m	0.0041m	
853	253	gpsaz	---	---	336°33'28.1818"	0.2474"	0.13
	1		BT03	---	336°33'28.0655"	0.0987"	
			BT04	1	-0.116239"	0.2269"	
854	253	gpsht	---	---	+43.8350m	0.0252m	0.05
	1		BT03	---	+43.8402m	0.0065m	
			BT04	1	+0.005196m	0.0244m	
855	253	gpsds	---	---	4924.3876m	0.0118m	0.16
	1		BT03	---	4924.3802m	0.0030m	
			BT04	1	-0.007317m	0.0114m	
856	254	gpsaz	---	---	265°01'40.1671"	0.6698"	0.31
	1		9906	---	265°01'39.4658"	0.3454"	
			OXFO	1	-0.701328"	0.5739"	
857	254	gpsht	---	---	+24.4238m	0.0205m	0.10
	1		9906	---	+24.4160m	0.0086m	
			OXFO	1	-0.007790m	0.0186m	
858	254	gpsds	---	---	1970.4375m	0.0056m	0.12
	1		9906	---	1970.4352m	0.0032m	
			OXFO	1	-0.002246m	0.0046m	
859	255	gpsaz	---	---	148°01'45.3431"	0.2867"	0.26
	1		9906	---	148°01'45.6253"	0.1014"	
			1011	1	+0.282211"	0.2682"	
860	255	gpsht	---	---	-30.5915m	0.0227m	0.09
	1		9906	---	-30.5992m	0.0096m	
			1011	1	-0.007710m	0.0206m	
861	255	gpsds	---	---	7729.1056m	0.0074m	0.40
	1		9906	---	7729.0951m	0.0035m	
			1011	1	-0.010510m	0.0066m	
862	256	gpsaz	---	---	74°07'08.3750"	0.6210"	0.09
	1		OXFO	---	74°07'08.1867"	0.2918"	
			9907	1	-0.188389"	0.5481"	
863	256	gpsht	---	---	-22.6692m	0.0195m	0.01
	1		OXFO	---	-22.6696m	0.0068m	
			9907	1	-0.000382m	0.0183m	
864	256	gpsds	---	---	2069.2889m	0.0123m	0.05
	1		OXFO	---	2069.2912m	0.0031m	
			9907	1	+0.002225m	0.0119m	
865	257	gpsaz	---	---	271°22'22.1927"	0.0619"	0.18
	1		2009	---	271°22'22.2210"	0.0474"	

			2007	1	+0.028278"	0.0398"	
866	257	gpsht	---	---	+3.1674m	0.0092m	0.48
	1		2009	---	+3.1551m	0.0067m	
			2007	1	-0.012334m	0.0064m	
867	257	gpsds	---	---	9949.5765m	0.0051m	0.44
	1		2009	---	9949.5706m	0.0039m	
			2007	1	-0.005862m	0.0033m	
868	258	gpsaz	---	---	2°19'48.1341"	0.1167"	0.35
	1		2005	---	2°19'48.0213"	0.0836"	
			2007	1	-0.112823"	0.0814"	
869	258	gpsht	---	---	-6.6034m	0.0102m	0.22
	1		2005	---	-6.5968m	0.0070m	
			2007	1	+0.006621m	0.0075m	
870	258	gpsds	---	---	9823.8511m	0.0033m	0.38
	1		2005	---	9823.8544m	0.0024m	
			2007	1	+0.003293m	0.0022m	
871	259	gpsaz	---	---	271°37'28.0967"	0.1453"	0.17
	1		2011	---	271°37'28.0101"	0.0646"	
			2009	1	-0.086542"	0.1302"	
872	259	gpsht	---	---	-2.1724m	0.0095m	0.26
	1		2011	---	-2.1800m	0.0058m	
			2009	1	-0.007689m	0.0075m	
873	259	gpsds	---	---	9682.8770m	0.0047m	0.27
	1		2011	---	9682.8813m	0.0023m	
			2009	1	+0.004378m	0.0041m	
874	260	gpsaz	---	---	93°19'23.3922"	0.1677"	0.10
	1		2011	---	93°19'23.3329"	0.0895"	
			9914	1	-0.059269"	0.1418"	
875	260	gpsht	---	---	-55.0433m	0.0142m	0.08
	1		2011	---	-55.0390m	0.0060m	
			9914	1	+0.004285m	0.0129m	
876	260	gpsds	---	---	8200.4452m	0.0060m	0.00
	1		2011	---	8200.4451m	0.0024m	
			9914	1	-0.000094m	0.0055m	
877	261	gpsaz	---	---	224°48'27.5069"	0.2116"	0.00
	1		9911	---	224°48'27.5074"	0.1679"	
			BT03	1	+0.000462"	0.1288"	
878	261	gpsht	---	---	-9.4283m	0.0047m	0.24
	1		9911	---	-9.4256m	0.0037m	
			BT03	1	+0.002740m	0.0029m	
879	261	gpsds	---	---	2349.6757m	0.0024m	0.42
	1		9911	---	2349.6784m	0.0018m	
			BT03	1	+0.002725m	0.0016m	
880	262	gpsaz	---	---	149°11'05.1480"	0.1510"	0.19
	1		2009	---	149°11'05.2512"	0.0589"	
			BT03	1	+0.103148"	0.1390"	
881	262	gpsht	---	---	-48.5552m	0.0194m	0.12
	1		2009	---	-48.5640m	0.0060m	
			BT03	1	-0.008763m	0.0184m	

882	262	gpsds	---	---	7783.5574m	0.0114m	0.02
	1		2009	---	7783.5564m	0.0029m	
			BTO3	1	-0.001041m	0.0110m	
883	263	gpsaz	---	---	224°05'43.0370"	0.3068"	0.03
	1		2011	---	224°05'42.9973"	0.1144"	
			9910	1	-0.039665"	0.2847"	
884	263	gpsht	---	---	-31.0011m	0.0170m	0.13
	1		2011	---	-30.9931m	0.0071m	
			9910	1	+0.008008m	0.0154m	
885	263	gpsds	---	---	6598.8649m	0.0052m	0.18
	1		2011	---	6598.8616m	0.0025m	
			9910	1	-0.003244m	0.0045m	
886	264	gpsaz	---	---	185°11'28.1940"	0.1021"	0.47
	1		2011	---	185°11'28.3628"	0.0482"	
			BUT 70	1	+0.168750"	0.0900"	
887	264	gpsht	---	---	-85.4931m	0.0118m	0.04
	1		2011	---	-85.4946m	0.0057m	
			BUT 70	1	-0.001449m	0.0103m	
888	264	gpsds	---	---	9764.7924m	0.0076m	0.51
	1		2011	---	9764.7781m	0.0031m	
			BUT 70	1	-0.014287m	0.0070m	
889	265	gpsaz	---	---	267°51'04.4482"	0.0975"	0.53
	1		BUT 70	---	267°51'04.6255"	0.0489"	
			1011	1	+0.177250"	0.0844"	
890	265	gpsht	---	---	+47.1794m	0.0083m	0.47
	1		BUT 70	---	+47.1924m	0.0046m	
			1011	1	+0.012960m	0.0069m	
891	265	gpsds	---	---	9402.2890m	0.0033m	0.88
	1		BUT 70	---	9402.2986m	0.0018m	
			1011	1	+0.009625m	0.0027m	
892	266	gpsaz	---	---	229°56'45.2928"	0.1748"	0.70
	1		BUT 70	---	229°56'44.8706"	0.0885"	
			9909	1	-0.422267"	0.1508"	
893	266	gpsht	---	---	+65.2706m	0.0117m	0.18
	1		BUT 70	---	+65.2632m	0.0060m	
			9909	1	-0.007377m	0.0100m	
894	266	gpsds	---	---	6869.9107m	0.0062m	0.47
	1		BUT 70	---	6869.9002m	0.0026m	
			9909	1	-0.010519m	0.0056m	
895	267	gpsaz	---	---	342°08'11.1680"	0.4393"	OPEN
	1		BU 74	---	342°08'11.1680"	0.4393"	
			9918	1	+0.000000"	0.0000"	
896	267	gpsht	---	---	-64.4091m	0.0136m	OPEN
	1		BU 74	---	-64.4091m	0.0136m	
			9918	1	+0.000000m	0.0000m	
897	267	gpsds	---	---	3441.9789m	0.0065m	OPEN
	1		BU 74	---	3441.9789m	0.0065m	
			9918	1	+0.000000m	0.0000m	
898	268	gpsaz	---	---	233°44'38.2087"	0.8714"	0.27
	1		BUT 52A	---	233°44'38.3546"	0.8609"	

		BM B 347	1	+0.145896"	0.1351"	
899	268	gpsht				
	1	---	---	+1.7920m	0.0551m	0.27
		BUT 52A	---	+1.7393m	0.0256m	
		BM B 347	1	-0.052680m	0.0488m	
900	268	gpsds				
	1	---	---	2202.8517m	0.0109m	0.27
		BUT 52A	---	2202.8473m	0.0101m	
		BM B 347	1	-0.004426m	0.0041m	
901	269	gpsaz				
	1	---	---	203°00'54.4726"	0.1560"	0.15
		V 143ECC	---	203°00'54.5254"	0.1292"	
		1003	1	+0.052749"	0.0874"	
902	269	gpsht				
	1	---	---	-53.4361m	0.0088m	0.07
		V 143ECC	---	-53.4376m	0.0069m	
		1003	1	-0.001507m	0.0055m	
903	269	gpsds				
	1	---	---	4776.5904m	0.0044m	0.11
		V 143ECC	---	4776.5892m	0.0035m	
		1003	1	-0.001141m	0.0027m	

The following observations were excluded from the adjustment:

- 586 type= gpsaz
- 587 type= gpsht
- 588 type= gpsds
- 628 type= gpsaz
- 629 type= gpsht
- 630 type= gpsds
- 772 type= gpsaz
- 773 type= gpsht
- 774 type= gpsds
- 805 type= gpsaz
- 806 type= gpsht
- 807 type= gpsds

CONTROL MONUMENT RECORD

DATE: 3/18/99

TOWNSHIP: ST. CLAIR

SECTION: 10

TOWN: 2

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

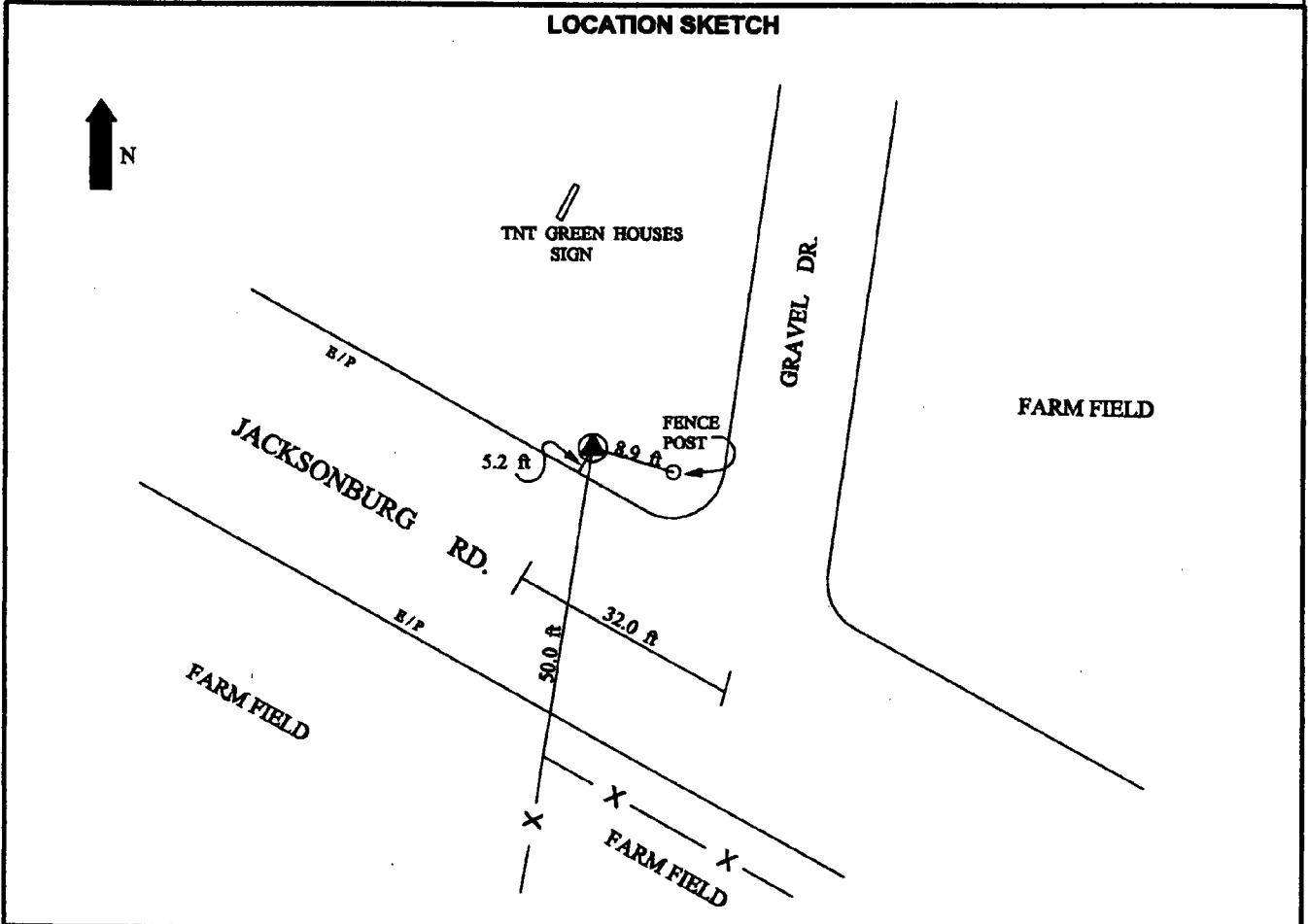
LOCATION: Monument is on the east side of Jacksonburg Road, 1/2 mile north of the intersection of Morgenthaler Road.

Monument No: 99FC69A	State Plane Coordinates: Meters (NAD 83/86) NORTH 164629.672 EAST 426348.561	Latitude and Longitude: (NAD 83/86) LAT 39° 27' 55.76346" LONG 84° 31' 05.46807"
Elevation: Meters (NAVD 88) GPS 194.032		

Grid Scale Factor: 0.999936907	Convergence: -1° 16' 50.08144"
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Azimuth to 99FC69	is 213° 22' 58" (grid)	Distance is 717.809 m
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MONUMENT DESCRIPTION:
Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC69A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 69
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CONTROL MONUMENT RECORD

DATE: 3/18/99

TOWNSHIP: MILFORD

SECTION: 31

TOWN: 3

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the north side of Taylor School Road, 1/3 mile west of the intersection of Eaton Road.

Monument No: 99FC70	State Plane Coordinates: Meters (NAD 83/86) NORTH 166284.370 EAST 419900.663	Latitude and Longitude: (NAD 83/86) LAT 39° 28' 44.64696" LONG 84° 35' 36.75401"
Elevation: Meters (NAVD 88) GPS 214.218	NORTH 166284.370 EAST 419900.663	LAT 39° 28' 44.64696" LONG 84° 35' 36.75401"
Grid Scale Factor: 0.999937269		Convergence: -1° 19' 42.21766"
Azimuth to 99FC70A is 94 11' 34" (grid)		Distance is 511.944 m
<p style="text-align: center;">MONUMENT DESCRIPTION:</p> Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC70", with center punch mark.		
<p style="text-align: center;">LOCATION SKETCH</p> <p>The sketch shows a plan view of the monument location. A north arrow points upwards. A road labeled 'TAYLOR SCHOOL RD.' runs horizontally across the bottom. A road labeled 'GRAVEL DR.' runs vertically, crossing Taylor School Rd. The monument, labeled '1010 (T-13)', is located on the north side of Taylor School Rd. A distance of 33.0 ft is shown from a point labeled 'STMH' on Taylor School Rd to the monument. A distance of 17.0 ft is shown from a point on Taylor School Rd to the monument. A distance of 50.0 ft is shown from a point on Gravel Dr to the monument. The area is divided into 'FARM FIELD' sections.</p>		
DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 70

CONTROL MONUMENT RECORD

DATE: 3 / 18 / 99

TOWNSHIP: WAYNE

SECTION: 6

TOWN: 2

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of Taylor School Road and Eaton Road.

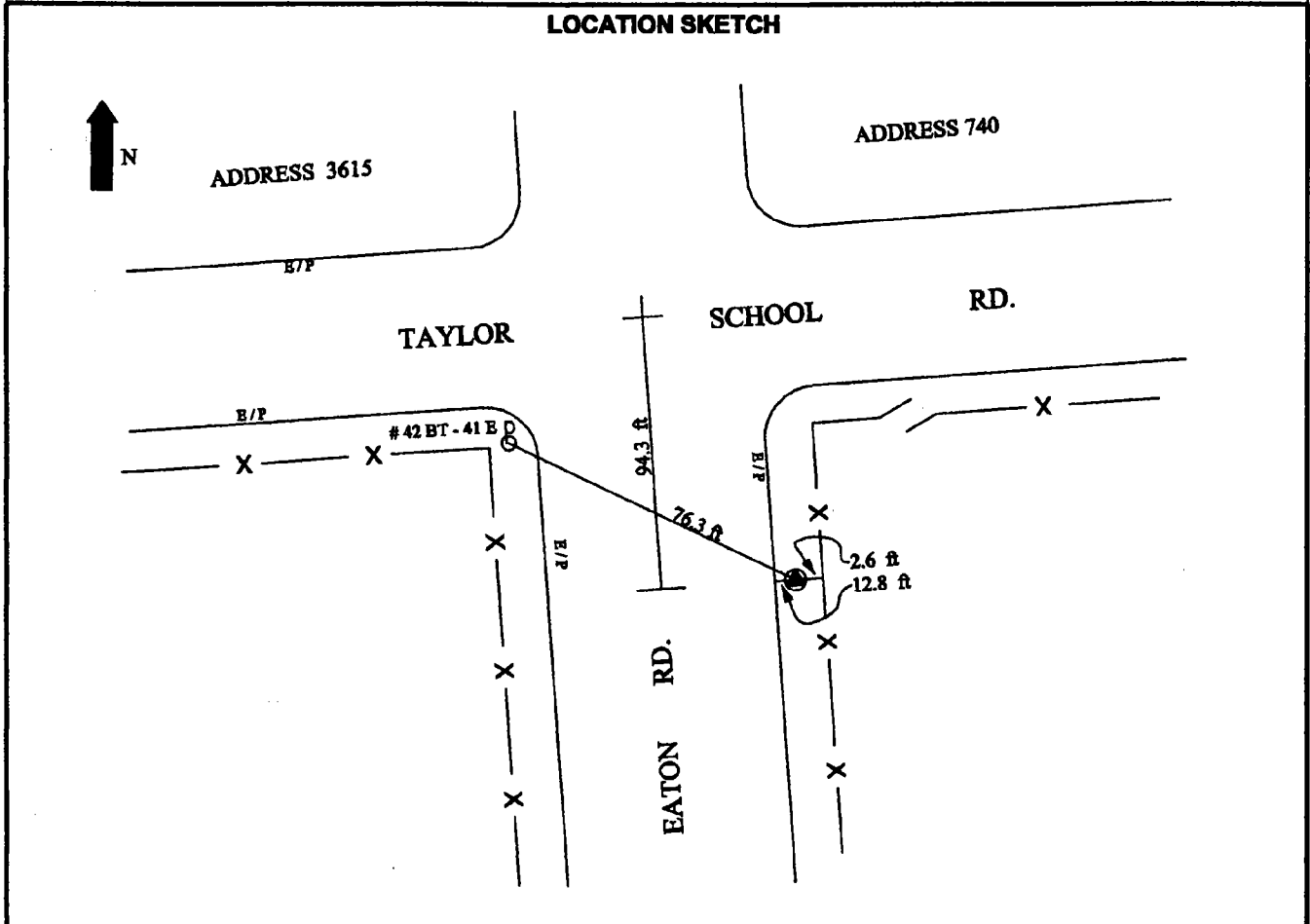
Monument No: 99FC70A	State Plane Coordinates: Meters (NAD 83/88)	Latitude and Longitude: (NAD 83/88)
Elevation: Meters (NAVD 88) GPS 221.590	NORTH 166246.942 EAST 420411.237	LAT 39° 28' 43.81687" LONG 84° 35' 15.35907"

Grid Scale Factor: 0.999937262	Convergence: -1° 19' 28.64216"
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Azimuth to 99FC70	is 274° 11' 34" (grid)	Distance is 511.944 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC70A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 71
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CONTROL MONUMENT RECORD

DATE: 3/3/99

TOWNSHIP: ST. CLAIR

SECTION: 1

TOWN: 2

RANGE: 3

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of S.R. 73 (West State Street) and Wayne - Trenton Road.

Monument No: 99FC71	State Plane Coordinates: Meters (NAD 83/88)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 201.072	NORTH 166222.807 EAST 429876.995	LAT 39° 28' 49.94325" LONG 84° 28' 39.34785"

Grid Scale Factor: 0.999937312

Convergence: -1° 15' 17.36530"

Azimuth to 99FC71A

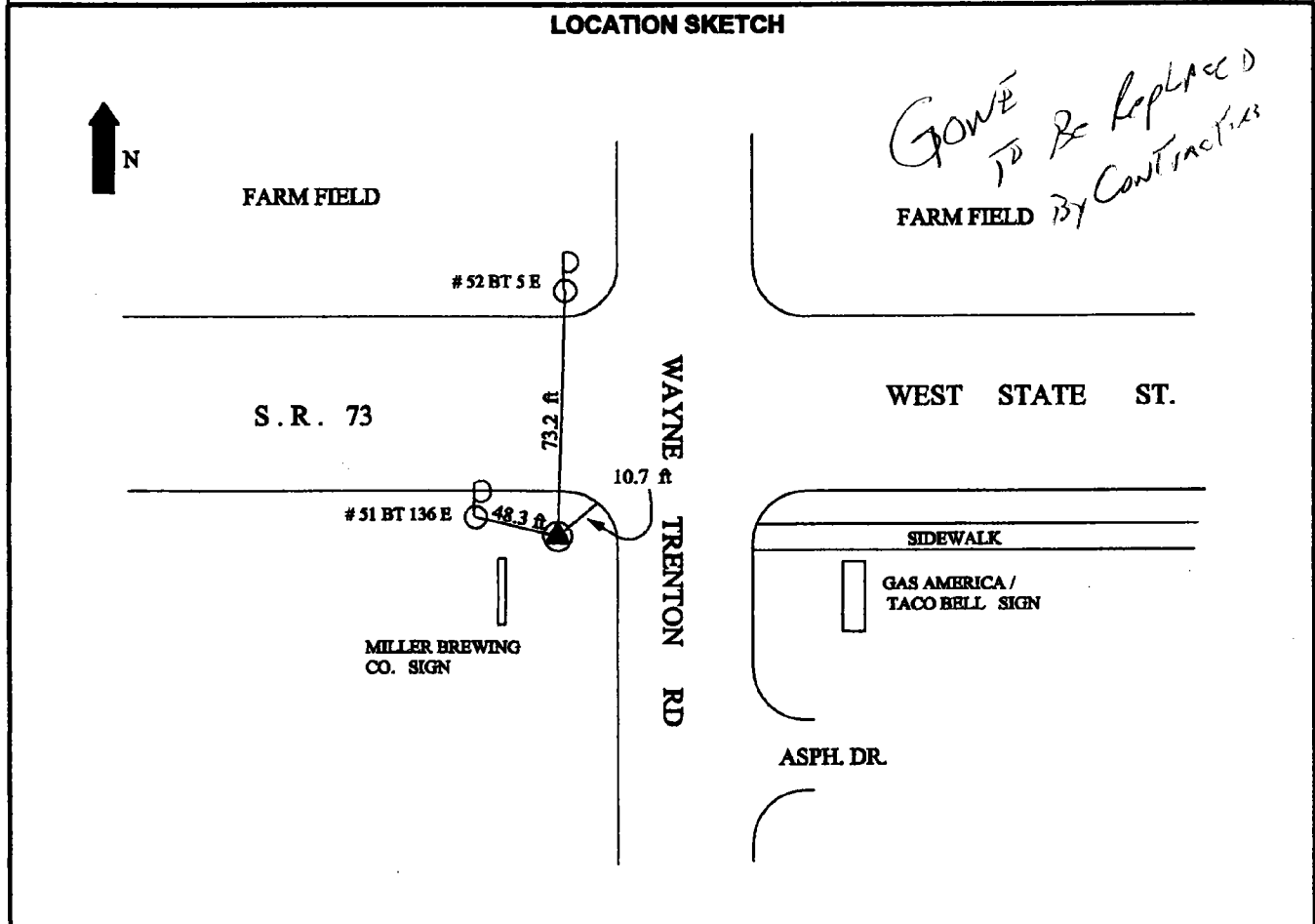
is 90° 00' 30" (grid)

Distance is 635.090 m

MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC71", with center punch mark.

LOCATION SKETCH



DATA BY:
GRW AERIAL SURVEYS
801 CORPORATE DR.
LEXINGTON, KY 40503
606-223-3999

TYPE OF EQUIPMENT USED:
Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane

SHEET NO.
72

CONTROL MONUMENT RECORD

DATE: 3/17/99

TOWNSHIP: MADISON

SECTION: 6

TOWN: 1

RANGE: 4

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of Edgewood Drive and S.R. 73 (West State Street).

Monument No: 99FC71A	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 202.226	NORTH 166222.714 EAST 430512.085	LAT 39° 28' 50.39039" LONG 84° 28' 12.77882"

Grid Scale Factor: 0.999937315

Convergence: -1° 15' 00.50673"

Azimuth to 99FC71

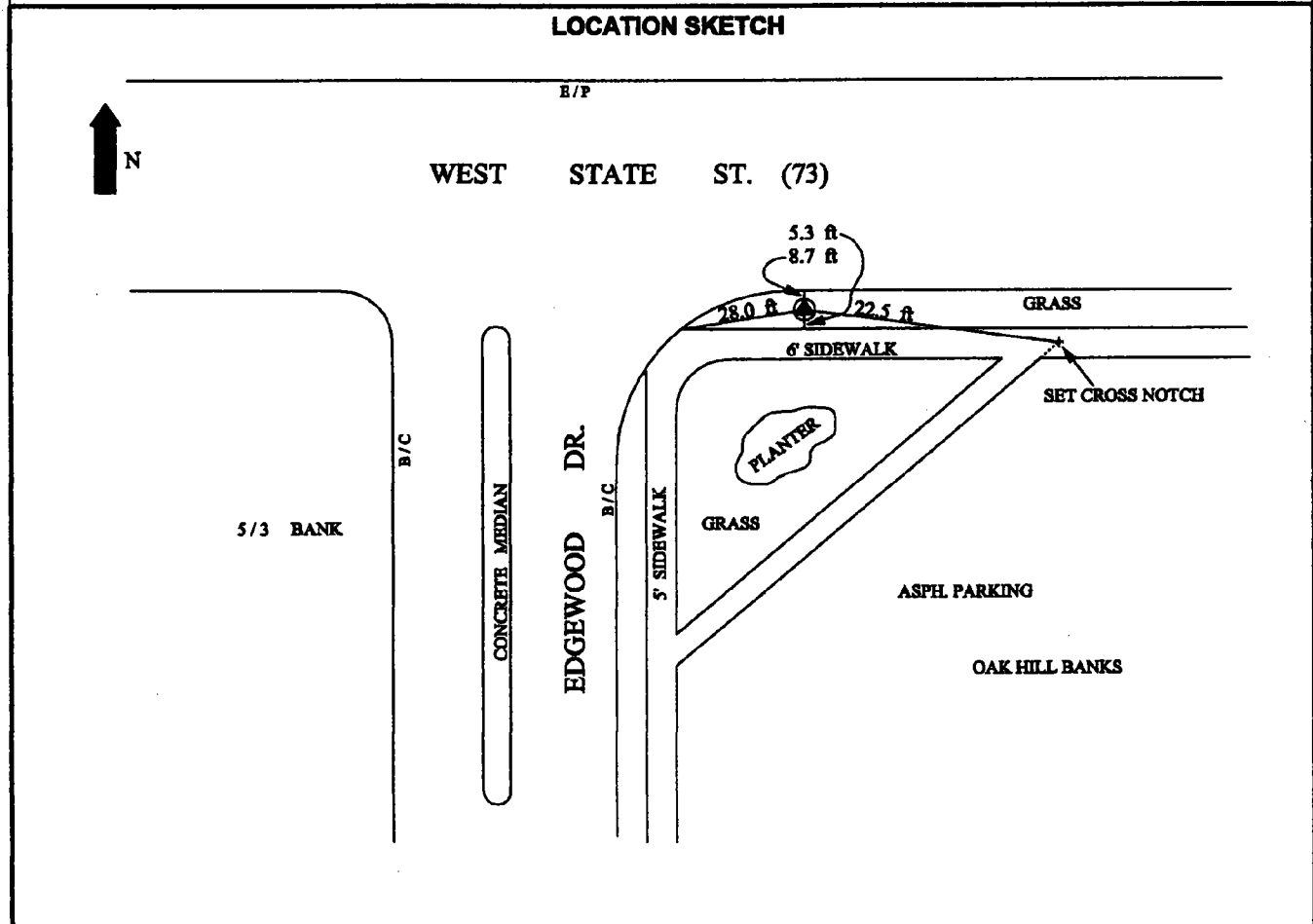
is 270° 00' 30" (grid)

Distance is 635.090 m

MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC71A", with center punch mark.

LOCATION SKETCH



DATA BY:
GRW AERIAL SURVEYS
801 CORPORATE DR.
LEXINGTON, KY 40503
606-223-3999

TYPE OF EQUIPMENT USED:
Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane

SHEET NO.
73

CONTROL MONUMENT RECORD

DATE: 3/16/99

TOWNSHIP: MIDDLETOWN

SECTION: 3

TOWN: 2

RANGE: 4

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the west side of Towne Blvd., between Roosevelt Blvd. and Roosevelt Avenue.

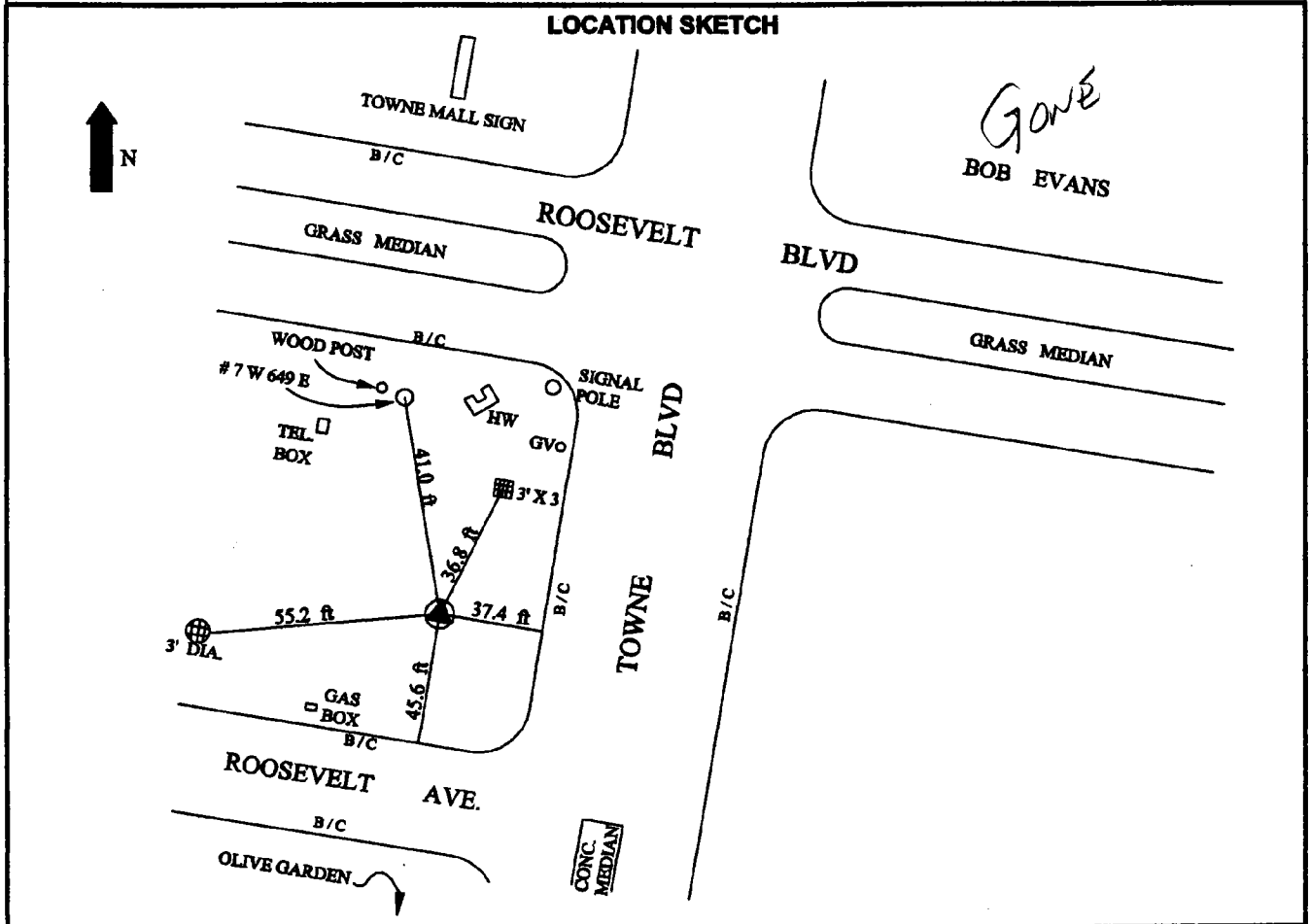
Monument No: 99FC72	State Plane Coordinates: Meters (NAD 83/86) NORTH 167342.803 EAST 442562.105	Latitude and Longitude: (NAD 83/86) LAT 39° 29' 34.92647" LONG 84° 19' 49.59957"
Elevation: Meters (NAVD 88) GPS 221.091		

Grid Scale Factor: 0.999937700	Convergence: -1° 09' 41.22966"
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Azimuth to 99FC72A	is 99° 30' 37" (grid)	Distance is 419.453 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC72", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 74
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CONTROL MONUMENT RECORD

DATE: 3/16/99

TOWNSHIP: MIDDLETOWN

SECTION: 3

TOWN: 2

RANGE: 4

COUNTY: BUTLER

STATE: OHIO

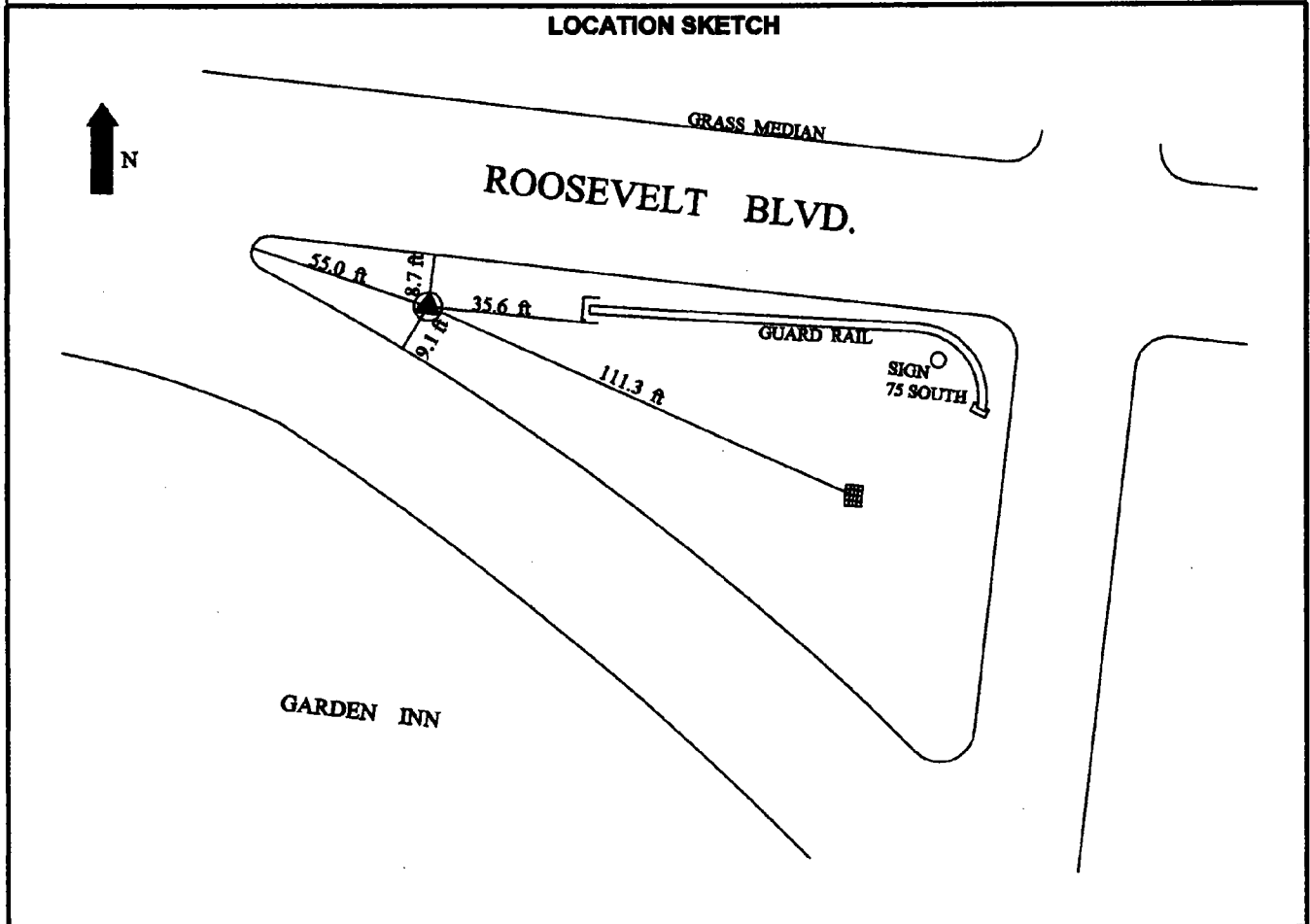
LOCATION: Monument is near the ramp to southbound Interstate 75 from Roosevelt Avenue.

Monument No: 99FC72A	State Plane Coordinates: Meters (NAD 83/86) NORTH 167273.498 EAST 442975.793	Latitude and Longitude: (NAD 83/86) LAT 39° 29' 32.95113" LONG 84° 19' 32.23065"
Elevation: Meters (NAVD 88) GPS 211.100		

Grid Scale Factor: 0.999937682	Convergence: -1° 09' 30.20875"
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Azimuth to 99FC72	is 279° 30' 37" (grid)	Distance is 419.453 m
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MONUMENT DESCRIPTION:
 Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC72A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 75
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CONTROL MONUMENT RECORD

DATE: 3/16/99

TOWNSHIP: MIDDLETOWN

SECTION: 21

TOWN: 2

RANGE: 4

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of S.R. 122 and University Blvd.

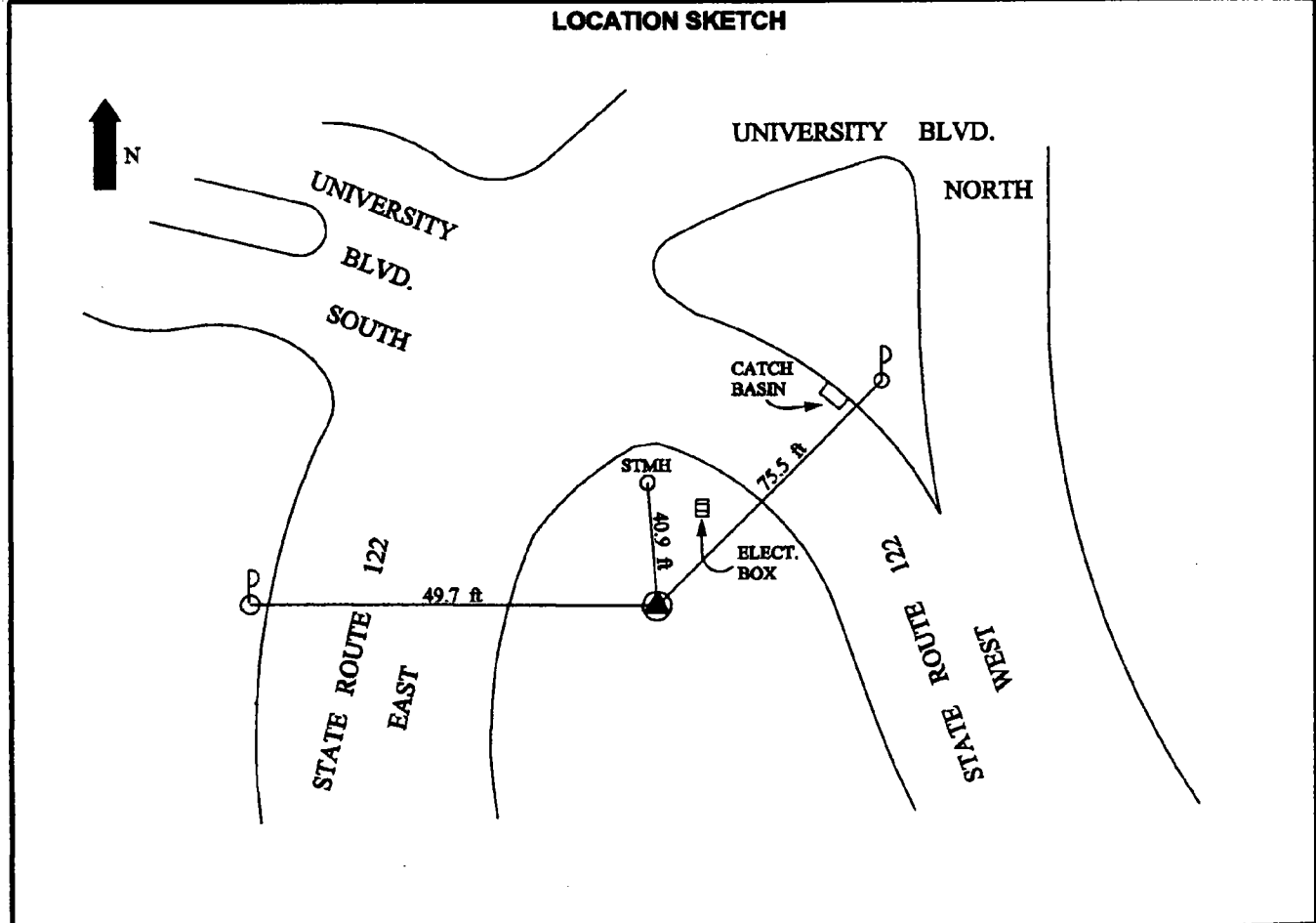
Monument No: 99FC73	State Plane Coordinates: Meters (NAD 83/86) NORTH 168545.105 EAST 437231.239	Latitude and Longitude: (NAD 83/86) LAT 39° 30' 10.34189" LONG 84° 23' 33.71458"
Elevation: Meters (NAVD 88) GPS 207.999		

Grid Scale Factor: 0.999938039	Convergence: -1° 12' 03.43502"
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Azimuth to 99FC73A	is 98° 25' 22" (grid)	Distance is 630.208 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC73", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 76
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CONTROL MONUMENT RECORD

DATE: 3/16/99

TOWNSHIP: MIDDLETOWN

SECTION: 21

TOWN: 2

RANGE: 4

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is on the south side of Roosevelt Blvd., 1/5 mile east of the intersection of Yankee Road.

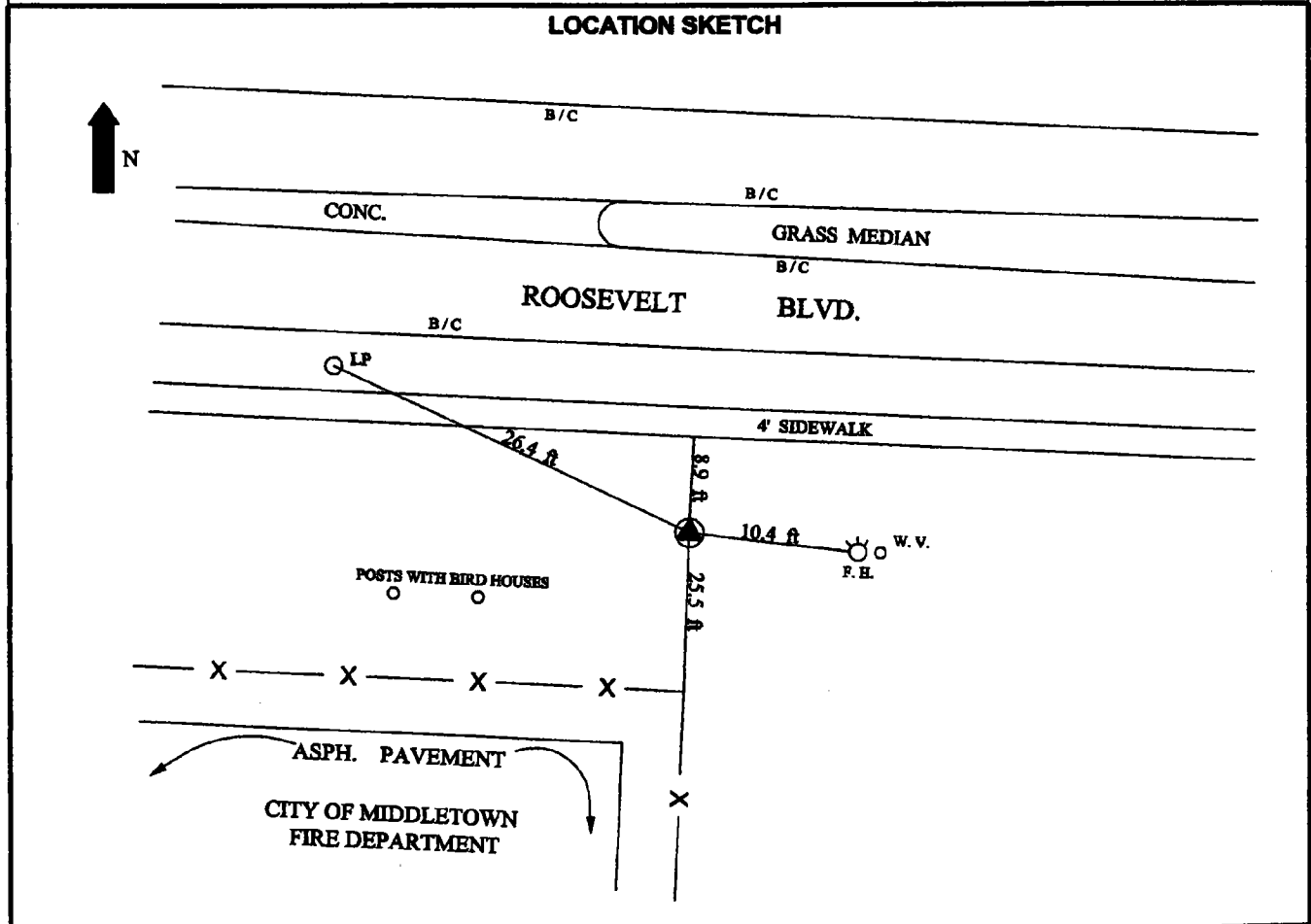
Monument No: 99FC73A	State Plane Coordinates: Meters (NAD 83/86) NORTH 168452.793 EAST 437854.650	Latitude and Longitude: (NAD 83/86) LAT 39° 30' 07.77203" LONG 84° 23' 07.54470"
Elevation: Meters (NAVD 88) GPS 203.939		

Grid Scale Factor: 0.999938014	Convergence: -1° 11' 46.82972"
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Azimuth to 99FC73	is 278° 25' 22" (grid)	Distance is 630.208 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC73A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 77
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CONTROL MONUMENT RECORD

DATE: 3/16/99

TOWNSHIP: MIDDLETOWN

SECTION: 11

TOWN: 2

RANGE: 4

COUNTY: BUTLER

STATE: OHIO

LOCATION: Monument is at the intersection of University Blvd. (Manchester Road) and Breiel Blvd.

Monument No: 99FC74	State Plane Coordinates: Meters (NAD 83/86) NORTH 170973.927 EAST 440876.331	Latitude and Longitude: (NAD 83/86) LAT 39° 31' 31.53449 LONG 84° 21' 03.25326"
Elevation: Meters (NAVD 88) GPS 267.322		

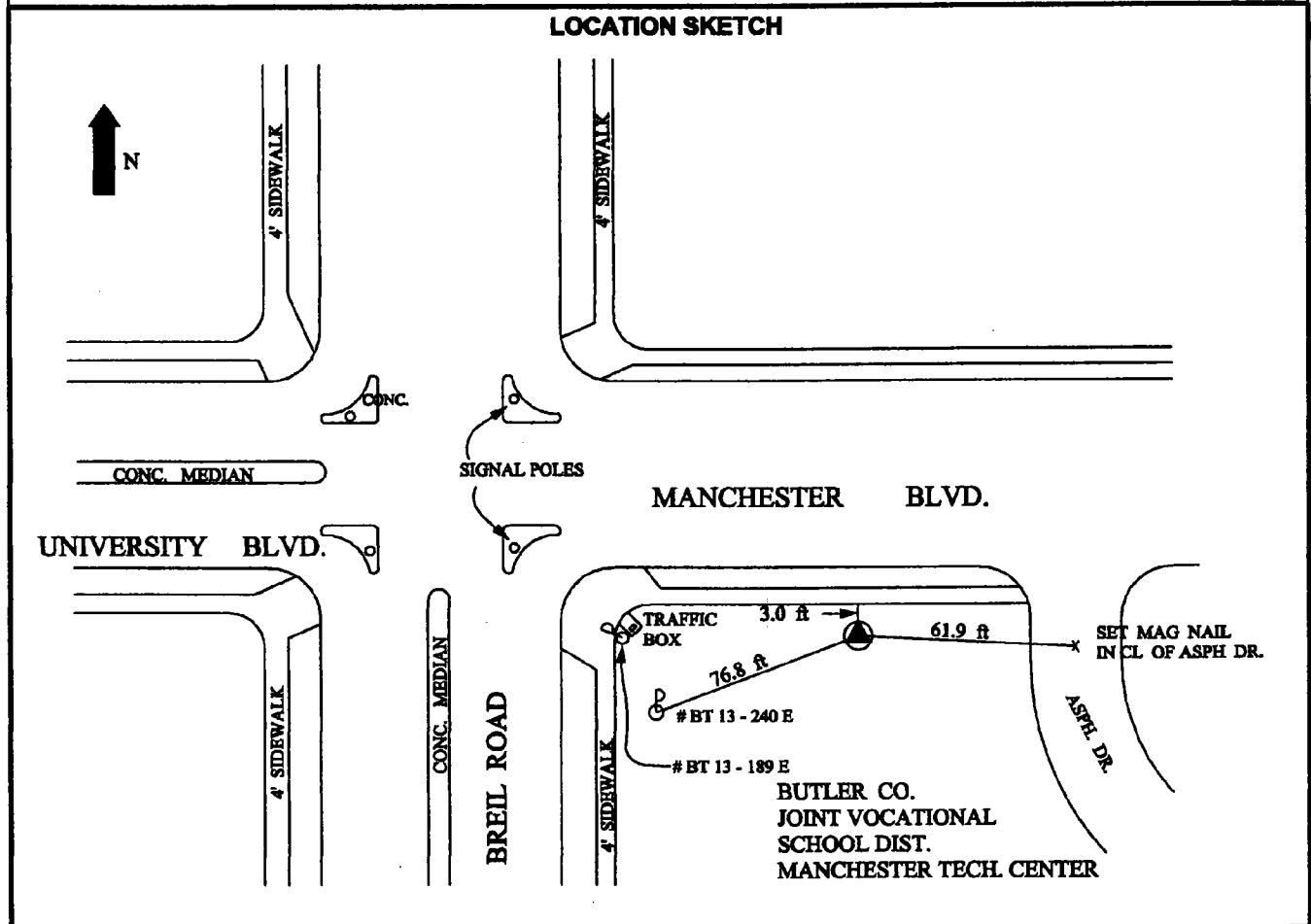
Grid Scale Factor: 0.999938928	Convergence: -1° 10' 27.96437"
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Azimuth to 99FC74A	is 206° 15' 50" (grid)	Distance is 432.357 m
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MONUMENT DESCRIPTION:

Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC74", with center punch mark.

LOCATION SKETCH



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 78
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CONTROL MONUMENT RECORD

DATE: 3 / 16 / 99

TOWNSHIP: MIDDLETOWN

SECTION: 29

TOWN: 2

RANGE: 4

COUNTY: BUTLER

STATE: OHIO

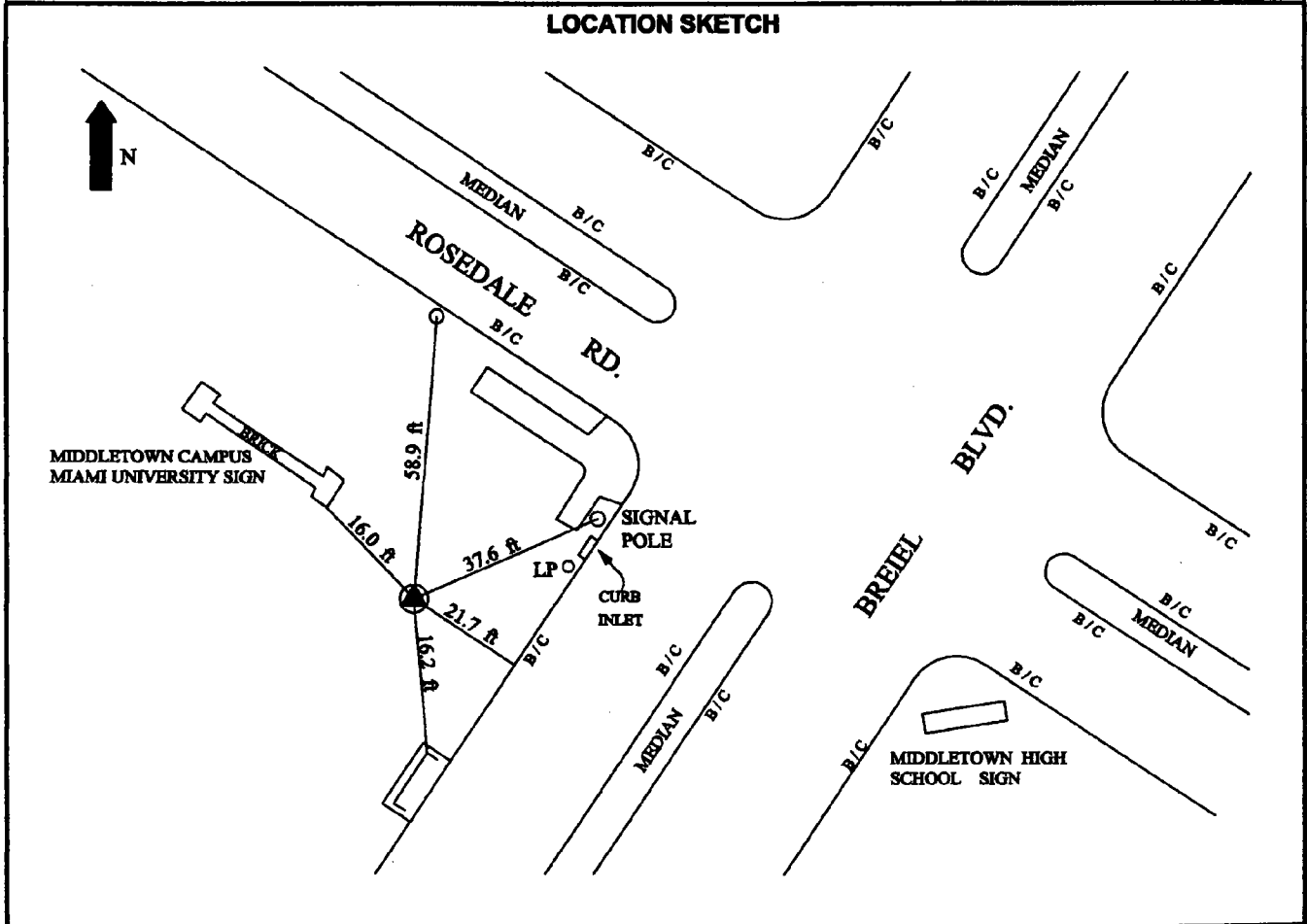
LOCATION: Monument is at the intersection of Rosedale Road and Breiel Blvd.

Monument No: 99FC74A	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 269.787	NORTH 170586.204 EAST 440685.010	LAT 39° 31' 18.83721" LONG 84° 21' 10.92935"

Grid Scale Factor: 0.999938779	Convergence: -1° 10' 32.83500"
---------------------------------------	---------------------------------------

Azimuth to 99FC74	Is 26° 15' 50" (grid)	Distance Is 432.357 m
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MONUMENT DESCRIPTION:
Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC74A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 79
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The NGS Data Sheet

DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.45
 1 National Geodetic Survey, Retrieval Date = MAY 17, 2001
 AB6076 *****
 AB6076 CBN - This is a Cooperative Base Network Control Station.
 AB6076 PACS - This is a Primary Airport Control Station.
 AB6076 DESIGNATION - MWO A
 AB6076 PID - AB6076
 AB6076 STATE/COUNTY- OH/BUTLER
 AB6076 USGS QUAD - MIDDLETOWN (1981)
 AB6076
 AB6076 *CURRENT SURVEY CONTROL
 AB6076

AB6076*	NAD 83(1995)-	39 31 33.95508(N)	084 24 17.68853(W)	ADJUSTED
AB6076*	NAVD 88	- 194.84 (meters)	639.2 (feet)	GPS OBS

AB6076	X	- 480,320.396 (meters)	COMP
AB6076	Y	- 4,903,015.776 (meters)	COMP
AB6076	Z	- 4,037,641.641 (meters)	COMP
AB6076	LAPLACE CORR-	-1.23 (seconds)	DEFLEC99
AB6076	ELLIP HEIGHT-	161.33 (meters)	GPS OBS
AB6076	GEOID HEIGHT-	-33.48 (meters)	GEOID99

 AB6076
 AB6076 HORZ ORDER - B
 AB6076 ELLP ORDER - FOURTH CLASS II
 AB6076
 AB6076.This mark is at Hook Fld Municipal Airport (MWO)
 AB6076
 AB6076.The horizontal coordinates were established by GPS observations
 AB6076.and adjusted by the National Geodetic Survey in August 1996.
 AB6076
 AB6076.The orthometric height was determined by GPS observations and a
 AB6076.high-resolution geoid model.
 AB6076
 AB6076.GPS derived orthometric heights for airport stations designated as
 AB6076.PACS or SACS are published to 2 decimal places. This maintains
 AB6076.centimeter relative accuracy between the PACS and SACS. It does
 AB6076.not indicate centimeter accuracy relative to other marks which are
 AB6076.part of the NAVD 88 network.
 AB6076
 AB6076.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AB6076
 AB6076.The Laplace correction was computed from DEFLEC99 derived deflections.
 AB6076
 AB6076.The ellipsoidal height was determined by GPS observations
 AB6076.and is referenced to NAD 83.
 AB6076
 AB6076.The geoid height was determined by GEOID99.
 AB6076

AB6076;		North	East	Units	Scale	Converg.
AB6076;SPC OH S	-	171,145.123	436,235.319	MT	0.99993896	-1 12 31.3
AB6076;UTM 16	-	4,378,377.015	723,054.156	MT	1.00021260	+1 39 08.2

 AB6076
 AB6076 SUPERSEDED SURVEY CONTROL
 AB6076
 AB6076.No superseded survey control is available for this station.
 AB6076
 AB6076_MARKER: DH = HORIZONTAL CONTROL DISK
 AB6076_SETTING: 40 = LARGE CONCRETE STRUCTURE

AB6076_STAMPING: MWO A 1995
 AB6076_PROJECTION: FLUSH
 AB6076_MAGNETIC: O = OTHER; SEE DESCRIPTION
 AB6076_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD
 AB6076+STABILITY: POSITION/ELEVATION WELL
 AB6076_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 AB6076+SATELLITE: SATELLITE OBSERVATIONS - June 25, 1998

AB6076	HISTORY	- Date	Condition	Report By
AB6076	HISTORY	- 1995	MONUMENTED	NGS
AB6076	HISTORY	- 19980625	GOOD	WOOLPT

AB6076

AB6076

STATION DESCRIPTION

AB6076

AB6076'DESCRIBED BY NATIONAL GEODETIC SURVEY 1995 (AJL)
 AB6076'THE STATION IS LOCATED NEAR THE NORTH SIDE OF MIDDLETOWN, AT THE HOOK
 AB6076'FIELD MUNICIPAL AIRPORT. NEAR AND NORTHWEST OF THE NORTHWEST CORNER
 AB6076'OF RUNWAY END 5, IN TOP OF AND NEAR THE SOUTHEAST CONCRETE CORNER OF A
 AB6076'3 X 3-FOOT, DEEP WELL HEAD PAD, SURROUNDED BY 3 CONCRETE FILLED YELLOW
 AB6076'PIPES PROJECTING 3-FEET ABOVE THE GROUND SURFACE. OWNERSHIP--CITY OF
 AB6076'MIDDLETOWN, 1707 RUN WAY, MIDDLETOWN, OH. 45042. AIRPORT MANAGER
 AB6076'TERRENCE HOGAN, PHONE 513-423-5757. NOTE--CONTACT ASSISTANT AIRPORT
 AB6076'MANAGER JACK ALFPAUGH ON ARRIVAL. THIS STATION WAS SELECTED AS A
 AB6076'(PACS) . TO REACH THE STATION FROM THE JUNCTION OF STATE HIGHWAYS 73
 AB6076'AND 4 NEAR THE NORTH SIDE OF MIDDLETOWN, GO SOUTH, 0.45 KM (0.25 MI)
 AB6076'ALONG HIGHWAY 4 TO ELWOOD STREET ON THE RIGHT. TURN RIGHT, NORTH, 0.25
 AB6076'KM (0.15 MI) ALONG ELWOOD STREET TO WILBRAHAM ROAD. TURN LEFT, WEST,
 AB6076'0.20 KM (0.10 MI) TO RUN WAY. BEAR RIGHT, NORTH, 0.04 KM (0.00 MI) TO
 AB6076'A PARKING LOT ON THE LEFT. TURN LEFT, WEST, 0.04 KM (0.00 MI) TO THE
 AB6076'AIRPORT OFFICE IN THE NORTHWEST CORNER OF THE BUILDING. FROM THE
 AB6076'JUNCTION OF RUN WAY AND WILBRAHAM ROAD, GO SOUTHWEST, 0.12 KM (0.05
 AB6076'MI) ALONG RUN WAY AND PASSING THROUGH A GATE TO A ROAD JUST BEFOR A
 AB6076'HANGAR. TURN RIGHT, NORTHWEST, 0.06 KM (0.05 MI) ALONG THE ROAD TO
 AB6076'THE APRON. BEAR LEFT, WEST, 0.08 KM (0.05 MI) ACROSS APRON TO THE
 AB6076'CENTER RAMP. BEAR RIGHT, NORTH-NORTHWEST, 0.03 KM (0.00 MI) TO THE
 AB6076'TAXI. TURN LEFT, WEST-SOUTHWEST, THEN NORTH-NORTHWEST, 0.66 KM (0.40
 AB6076'MI) ALONG TAXI TO ITS END AT THE HOLD BAR. BEAR LEFT, NORTHWEST, 0.26
 AB6076'KM (0.15 MI) ALONG RAMP, PAST THE NORTHWEST CORNER OF THE RUNWAY, AND
 AB6076'ACROSS GRASS AND ASPHALT SERVICE ROAD, TO THE DEEP WELL AND THE
 AB6076'STATION. STATION IS 119.1 M (390.7 FT) NORTH-NORTHWEST OF THE
 AB6076'NORTHWEST CORNER OF THE RUNWAY, 93.0 M (305.1 FT) NORTHWEST OF THE
 AB6076'NORTHWEST SIDE OF A FENCED IN PUMPING STATION WITH RED LIGHTS ON THE 4
 AB6076'COURNERS, 36.5 M (119.8 FT) NORTH OF AN ACCESS ROAD CENTER, AND THE
 AB6076'STATION IS 0.1 M (0.3 FT) ABOVE THE GROUND SURFACE. BY R.G. HAYES

AB6076

STATION RECOVERY (1998)

AB6076

AB6076'RECOVERY NOTE BY WOOLPERT CONSULTANTS 1998 (GTF)
 AB6076'RECOVERED AS DESCRIBED.

*** retrieval complete.

Elapsed Time = 00:00:07

CONTROL MONUMENT RECORD

DATE: 3 / 15 / 99

TOWNSHIP: MIDDLETOWN

SECTION: 29

TOWN: 2

RANGE: 4

COUNTY: BUTLER

STATE: OHIO

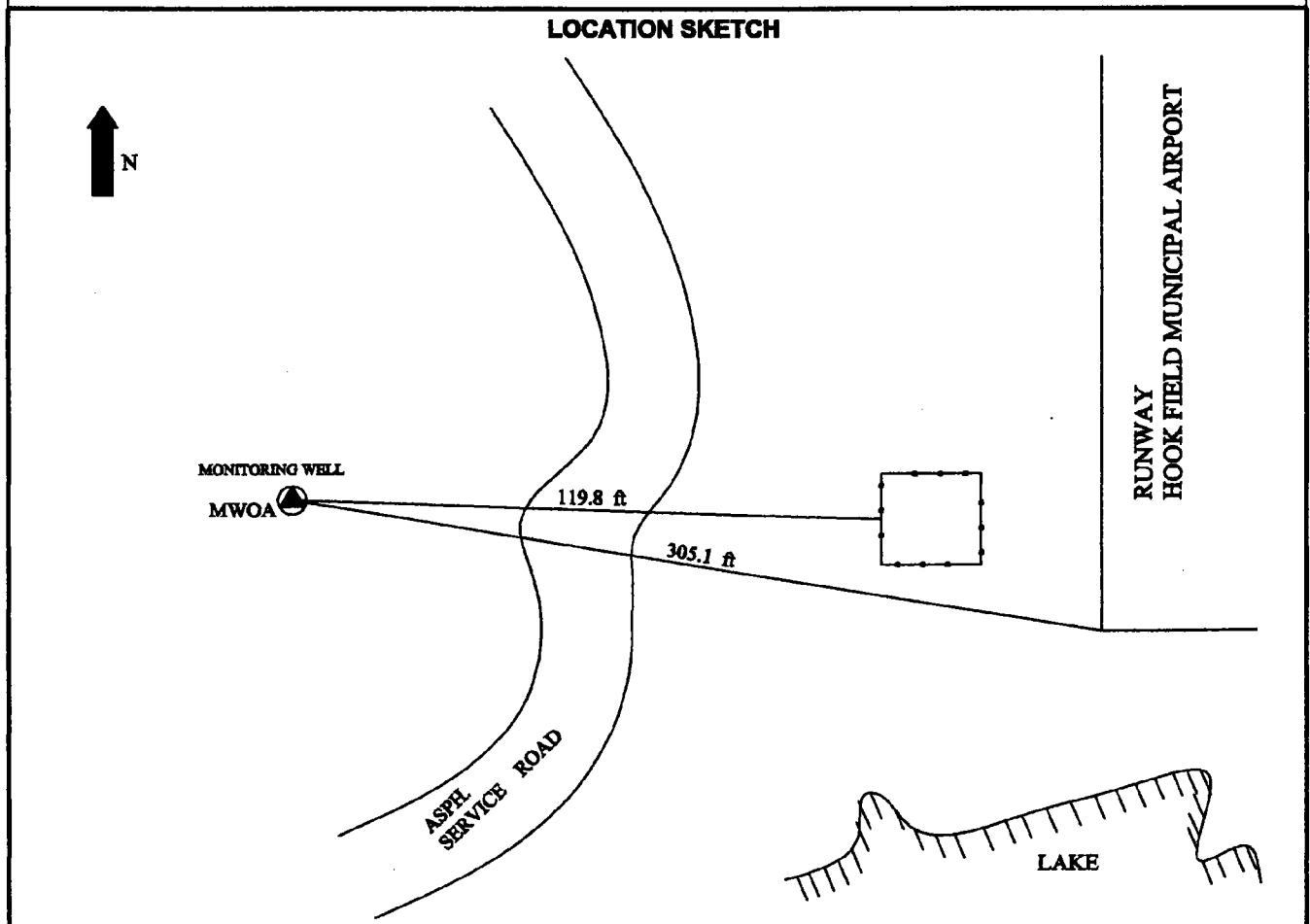
LOCATION: Monument is in Hook Field Municipal Airport, 305 feet from the southwest corner of the runway.

Monument No: MWO A	State Plane Coordinates: Meters (NAD 83/86)	Latitude and Longitude: (NAD 83/86)
Elevation: Meters (NAVD 88) GPS 194.817	NORTH 171145.324 EAST 436235.124	LAT 39° 31' 33.96146" LONG 84° 24' 17.69685"

Grid Scale Factor: 0.999938957	Convergence: -1° 12' 31.34263"
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Azimuth to 99FC75A	is 120° 30' 44" (grid)	Distance is 456.847 m
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MONUMENT DESCRIPTION:
NGS Standard Control Disk - set in large structure, stamped "MWO A 1995".



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 80
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CONTROL MONUMENT RECORD

DATE: 3/15/99

TOWNSHIP: MIDDLETOWN

SECTION: 29

TOWN: 2

RANGE: 4

COUNTY: BUTLER

STATE: OHIO

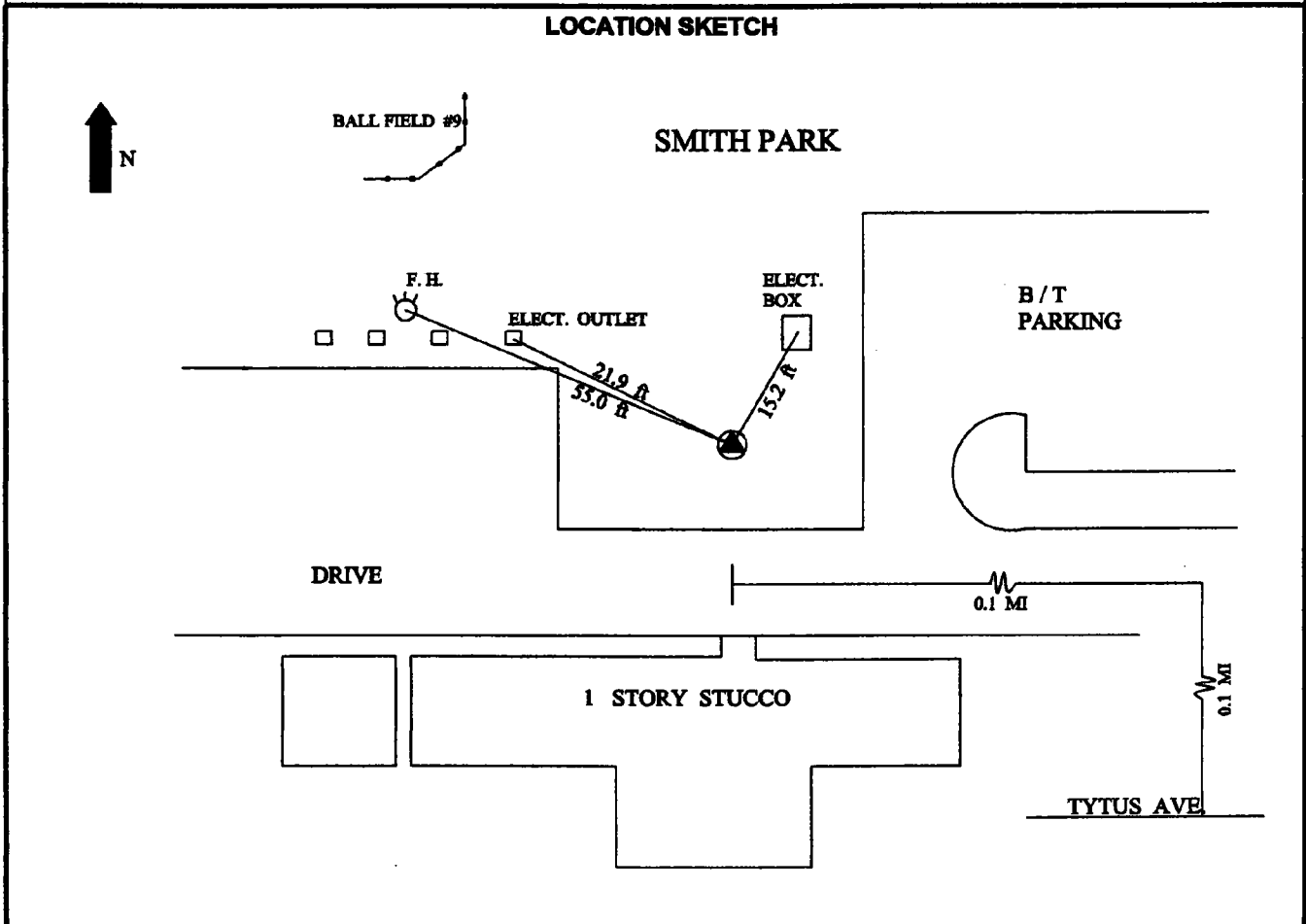
LOCATION: Monument is near Smith Park, south of Hook Field Municipal Airport, on the east side of a parking lot, 0.1 mi. west of a connector to Tytus Road.

Monument No: 99FC75A	State Plane Coordinates: Meters (NAD 83/86) NORTH 170913.373 EAST 436628.708	Latitude and Longitude: (NAD 83/86) LAT 39° 31' 26.71054" LONG 84° 24' 01.01593"
Elevation: Meters (NAVD 88) GPS 194.579		

Grid Scale Factor: 0.999938871	Convergence: -1° 12' 20.75826"
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Azimuth to MWO A	Is 300° 30' 44" (grid)	Distance Is 456.847 m
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MONUMENT DESCRIPTION:
Butler County Monument -1/2" x 30" rebar in monument (not necessarily centered). Butler County disk marked "99FC75A", with center punch mark.



DATA BY: GRW AERIAL SURVEYS 801 CORPORATE DR. LEXINGTON, KY 40503 606-223-3999	TYPE OF EQUIPMENT USED: Trimble 4000SSI dual frequency receivers with compact L1/L2 antennae with ground plane	SHEET NO. 81
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PRE HORN VALUES

2337-001

Butler County, Ohio
First Order Control Monumentation
Coordinate List

10/13/99

Horizontal = NAD 83/1986 Ohio S.P.C.S. South Zone - Meters
Vertical = NAVD 88 - Meters

Station	North (Y)	East (X)	Elev (Z)	AKA
1003	147184.589	409957.150	176.549g	
1004	156763.270	410089.709	242.862g	
1011	165931.848	410504.972	261.362g	
2003	157072.039	400411.632	255.967g	
2004	156904.022	400580.957	265.827g	
2005	166706.220	400759.083	307.350g	
2007	176521.948	401158.462	300.674g	
2009	176283.592	411105.173	297.421g	
2011	176009.109	420784.170	299.636g	
2017	178089.980	439795.180	267.460g	
99FC01	147664.827	400139.882	269.889g	9901
99FC02	150880.572	406894.292	226.546g	9902
99FC03	151368.406	406925.881	233.388g	9903
99FC04	161715.004	405890.276	252.380g	9904
99FC05	161668.324	407593.973	257.980g	9905
99FC06	172488.589	406412.522	291.935g	9906
99FC07	172884.044	406439.812	293.681g	9907
99FC08	162006.778	414241.387	273.965g	9908
99FC09	161863.506	414642.196	279.489g	9909
99FC10	171269.906	416192.331	268.636g	9910
99FC11	171265.930	416748.358	258.313g	9911
99FC12	171141.481	424880.671	296.505g	9912
99FC13	171135.194	425324.432	296.451g	9913
99FC14	175533.760	428970.834	244.702g	9914
99FC15	178299.278	430000.903	300.144g	9915
99FC16	173494.540	434258.892	273.521g	9916

2337-001

Butler County, Ohio
 First Order Control Monumentation
 Coordinate List

10/13/99

Horizontal = NAD 83/1986 Ohio S.P.C.S. South Zone - Meters
 Vertical = NAVD 88 - Meters

Station	North (Y)	East (X)	Elev (Z)	AKA
99FC17	173495.191	434471.183	276.787g	9917
99FC18	174249.981	439820.497	202.857g	9918
BLUEPORT A	140605.415	436672.782	257.323g	BLUEPT A
B 347	144617.699	432447.424	183.792p	
BT01	152296.297	402154.247	265.876g	
BT02	162470.144	412485.472	277.683g	
BT03	169598.886	415092.473	248.893g	
BT04	174116.819	413133.430	292.702g	
99FC51	147915.628	440372.025	284.453g	BUT 51
99FC51A	147927.865	439751.791	288.523g	BUT 51A
99FC52	145931.883	433736.434	178.997g	BUT 52
99FC52A	145920.451	434223.761	182.033g	BUT 52A
99FC53	152490.208	434437.615	262.094g	BUT 53
99FC53A	152855.822	434395.575	249.287g	BUT 53A
99FC54	148781.358	427155.969	211.309g	BUT 54
99FC54A	149145.078	426744.043	216.151g	BUT 54A
99FC55	147276.010	420806.463	262.608g	BUT 55
99FC55A	147269.909	421206.382	250.411g	BUT 55A
99FC56	152245.668	421587.554	175.234g	BUT 56
99FC56A	151788.004	421542.958	175.239g	BUT 56A
99FC57	150060.634	416251.995	176.930g	BUT 57/2089
99FC57A	149330.867	415927.179	175.121g	BUT 57A
99FC58	153359.281	414731.682	181.578g	BUT 58/2081
99FC58A	152999.799	415145.705	180.861g	BUT 58A
99FC59	156575.992	419976.025	222.232g	BUT 59

2337-001

Butler County, Ohio
First Order Control Monumentation
Coordinate List

10/13/99

Horizontal = NAD 83/1986 Ohio S.P.C.S. South Zone - Meters
Vertical = NAVD 88 - Meters

Station	North(Y)	East(X)	Elev(Z)	AKA
99FC59A	156573.256	420201.736	221.061g	BUT 59A
99FC60A	152925.372	425567.209	186.120g	BUT 60A
99FC61	154489.199	429539.088	219.808g	BUT 61
99FC61A	154809.213	429549.681	199.858g	BUT 61A
99FC62	156785.215	441251.236	265.389g	BUT 62
99FC62A	155951.176	441167.022	263.039g	BUT 62A
99FC63	158560.486	428519.221	234.458g	BUT 63
99FC63A	158874.402	429342.792	223.017g	BUT 63A
99FC64	160216.229	420529.160	194.122g	BUT 64
99FC64A	159734.950	420119.700	198.054g	BUT 64A
99FC65A	161456.655	441796.707	216.856g	BUT 65
99FC66	158991.733	434945.751	217.276g	BUT 66
99FC66A	158971.140	435367.859	220.157g	BUT 66A
99FC67	163711.790	437490.319	199.634g	BUT 67
99FC67A	163205.816	437443.920	201.285g	BUT 67A
99FC68	164136.560	432139.797	190.605g	BUT 68
99FC68A	163688.008	432262.727	190.689g	BUT 68A
99FC69	164030.291	425953.602	192.565g	BUT 69
99FC69A	164629.672	426348.561	194.032g	BUT 69A
99FC70	166284.370	419900.663	214.218g	BUT 70
99FC70A	166246.942	420411.237	221.590g	BUT 70A
99FC71	166222.807	429876.995	201.072g	BUT 71
99FC71A	166222.714	430512.085	202.226g	BUT 71A
99FC72	167342.803	442562.105	221.091g	BUT 72
99FC72A	167273.498	442975.793	211.100g	BUT 72A
99FC73	168545.105	437231.239	207.999g	BUT 73

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Butler County, Ohio
First Order Control Monumentation
Coordinate List

10/13/99

Horizontal = NAD 83/1986 Ohio S.P.C.S. South Zone - Meters
Vertical = NAVD 88 - Meters

Station	North(Y)	East(X)	Elev(Z)	AKA
99FC73A	168452.793	437854.650	203.939g	BUT 73A
99FC74	170973.927	440876.331	267.322g	BUT 74
99FC74A	170586.204	440685.010	269.787g	BUT 74A
99FC75A	170913.373	436628.708	194.579g	MWO 75A
BUT 1	159417.430	430870.905	243.151g	BUT1 NGS
HARRISON	141768.615	403757.685	177.060p	HARR
HATTEN	171184.178	433717.424	269.553p	HATT
HOGAN AZ MK	153506.832	425224.093	190.479g	HOGAN AZ
KTO1	172741.915	430213.976	258.931g	
M 135	167615.747	422458.201	201.568p	
MWO A	171145.324	436235.124	194.817g	
OXFORD	172317.797	404449.505	316.373p	OXFO
PEORIA	163206.061	400634.961	311.490p	PEOR
T 347	161778.325	442184.546	202.619p	
V 143 ECC	151580.972	411824.668	229.853d	
V 135	173750.045	423516.072	297.037p	
W 136	178114.713	438203.422	265.198p	
Y 139	164594.127	429162.487	196.077p	

Note: Elevation Codes p = published NGS Bench Mark
 d = differential from
 a published NGS Bench Mark
 g = GPS derived elevation

HARN Values

2337-001

Butler County, Ohio
 First Order Control Monumentation
 Coordinate List

10/13/99

Horizontal = NAD 83/1996(HARN) Ohio S.P.C.S. South Zone - Meters
 Vertical = NAVD 88 - Meters

Station	North(Y)	East(X)	Elev(Z)	AKA
1003	147184.447	409957.390	176.549g	
1004	156763.109	410089.955	242.862g	
1011	165931.669	410505.222	261.362g	
2003	157071.887	400411.884	255.967g	
2004	156903.870	400581.210	265.827g	
2005	166706.045	400759.344	307.350g	
2007	176521.764	401158.728	300.674g	
2009	176283.396	411105.429	297.421g	
2011	176008.910	420784.405	299.636g	
2017	178089.731	439795.359	267.460g	
99FC01	147664.699	400140.125	269.889g	9901
99FC02	150880.423	406894.537	226.546g	9902
99FC03	151368.255	406926.125	233.388g	9903
99FC04	161714.831	405890.531	252.380g	9904
99FC05	161668.152	407594.225	257.980g	9905
99FC06	172488.398	406412.785	291.935g	9906
99FC07	172883.853	406440.075	293.681g	9907
99FC08	162006.609	414241.630	273.965g	9908
99FC09	161863.337	414642.438	279.489g	9909
99FC10	171269.719	416192.573	268.636g	9910
99FC11	171265.744	416748.599	258.313g	9911
99FC12	171141.299	424880.895	296.505g	9912
99FC13	171135.012	425324.655	296.451g	9913
99FC14	175533.557	428971.050	244.702g	9914
99FC15	178299.060	430001.116	300.144g	9915
99FC16	173494.332	434259.092	273.521g	9916

2337-001

Butler County, Ohio
First Order Control Monumentation
Coordinate List

10/13/99

Horizontal = NAD 83/1996(HARN) Ohio S.P.C.S. South Zone - Meters
Vertical = NAVD 88 - Meters

Station	North (Y)	East (X)	Elev (Z)	AKA
99FC17	173494.982	434471.382	276.787g	9917
99FC18	174249.753	439820.679	202.857g	9918
BLUEPORT A	140605.299	436673.020	257.323g	BLUEPT A
B 347	144617.569	432447.657	183.792p	
BT01	152296.153	402154.494	265.876g	
BT02	162469.973	412485.717	277.683	
BT03	169598.703	415092.716	248.893g	
BT04	174116.626	413133.680	292.702g	
99FC51	147915.493	440372.249	284.453g	BUT 51
99FC51A	147927.731	439752.016	288.523g	BUT 51A
99FC52	145931.751	433736.664	178.997g	BUT 52
99FC52A	145920.320	434223.991	182.033g	BUT 52A
99FC53	152490.062	434437.836	262.094g	BUT 53
99FC53A	152855.675	434395.796	249.287g	BUT 53A
99FC54	148781.218	427156.200	211.309g	BUT 54
99FC54A	149144.938	426744.274	216.151g	BUT 54A
99FC55	147275.871	420806.698	262.608g	BUT 55
99FC55A	147269.770	421206.617	250.411g	BUT 55A
99FC56	152245.521	421587.787	175.234g	BUT 56
99FC56A	151787.857	421543.192	175.239g	BUT 56A
99FC57	150060.489	416252.232	176.930g	BUT 57/2089
99FC57A	149330.723	415927.417	175.121g	BUT 57A
99FC58	153359.129	414731.921	181.578g	BUT 58/2081
99FC58A	152999.648	415145.944	180.861g	BUT 58A
99FC59	156575.836	419976.259	222.232g	BUT 59

2337-001

Butler County, Ohio
 First Order Control Monumentation
 Coordinate List

10/13/99

Horizontal = NAD 83/1996(HARN) Ohio S.P.C.S. South Zone - Meters
 Vertical = NAVD 88 - Meters

Station	North(Y)	East(X)	Elev(Z)	AKA
99FC59A	156573.100	420201.970	221.061g	BUT 59A
99FC60A	152925.225	425567.439	186.120g	BUT 60A
99FC61	154489.050	429539.313	219.808g	BUT 61
99FC61A	154809.063	429549.905	199.858g	BUT 61A
99FC62	156785.054	441251.442	265.389g	BUT 62
99FC62A	155951.017	441167.230	263.039g	BUT 62A
99FC63	158560.330	428519.444	234.458g	BUT 63
99FC63A	158874.246	429343.013	223.017g	BUT 63A
99FC64	160216.067	420529.393	194.122g	BUT 64
99FC64A	159734.789	420119.934	198.054g	BUT 64A
99FC65A	161456.479	441796.903	216.856g	BUT 65
99FC66	158991.571	434945.963	217.276g	BUT 66
99FC66A	158970.978	435368.070	220.157g	BUT 66A
99FC67	163711.613	437490.519	199.634g	BUT 67
99FC67A	163205.641	437444.121	201.285g	BUT 67A
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99FC68A	163687.839	432262.939	190.689g	BUT 68A
99FC69	164030.126	425953.825	192.565g	BUT 69
99FC69A	164629.507	426348.783	194.032g	BUT 69A
99FC70	166284.197	419900.897	214.218g	BUT 70
99FC70A	166246.769	420411.469	221.590g	BUT 70A
99FC71	166222.637	429877.209	201.072g	BUT 71
99FC71A	166222.543	430512.298	202.226g	BUT 71A
99FC72	167342.607	442562.287	221.091g	BUT 72
99FC72A	167273.302	442975.974	211.100g	BUT 72A
99FC73	168544.915	437231.433	207.999g	BUT 73

2337-001

Butler County, Ohio
 First Order Control Monumentation
 Coordinate List

10/13/99

Horizontal = NAD 83/1996(HARN) Ohio S.P.C.S. South Zone - Meters
 Vertical = NAVD 88 - Meters

Station	North(Y)	East(X)	Elev(Z)	AKA
99FC73A	168452.603	437854.842	203.939g	BUT 73A
99FC74	170973.716	440876.512	267.322g	BUT 74
99FC74A	170585.995	440685.193	269.787g	BUT 74A
99FC75A	170913.172	436628.902	194.579g	MWOA 75A
BUT 1	159417.271	430871.123	243.151g	BUT1 NGS
HARRISON	141768.490	403757.922	177.060p	HARR
HATTEN	171183.983	433717.626	269.553p	HATT
HOGAN AZ MK	153506.684	425224.323	190.479g	HOGAN AZ
KTO1	172741.721	430214.188	258.931g	
M 135	167615.574	422458.430	201.568p	
MWO A	171145.123	436235.319	194.817g	
OXFORD	172317.609	404449.768	316.373p	OXFO
PEORIA	163205.894	400635.220	311.490p	PEOR
T 347	161778.147	442184.740	202.619p	
V 143 ECC	151580.822	411824.909	229.853d	
V 135	173749.853	423516.300	297.037p	
W 136	178114.470	438203.607	265.198p	
Y 139	164593.961	429162.704	196.077p	

Note: Elevation Codes

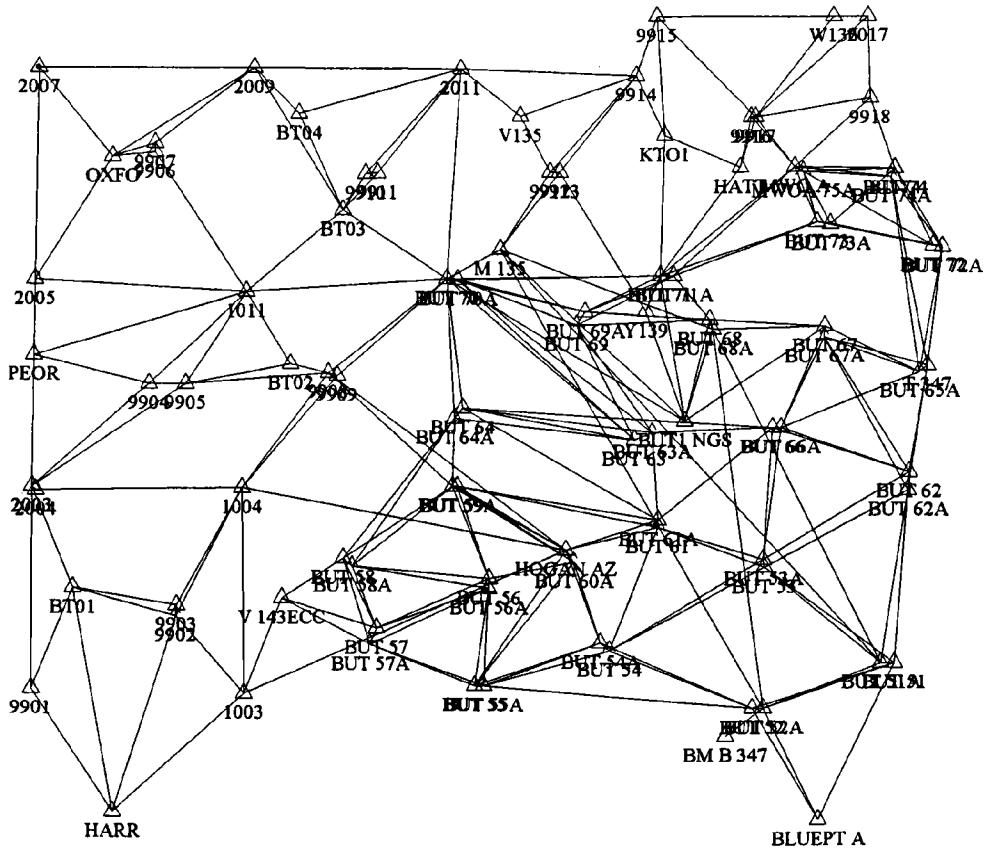
p = published NGS Bench Mark

d = differential from
a published NGS Bench Mark

g = GPS derived elevation

Network Map

Network Map: BUTLER_OHIO



5000m

Statistics Summary

ADJUSTMENT STATISTICS SUMMARY
NETWORK = BUTLER OHIO
TIME = Wed Oct 13 09:14:22 1999

ADJUSTMENT SUMMARY

Network Reference Factor = 1.01
Chi-Square Test ($\alpha = 95\%$) = PASS
Degrees of Freedom = 528.00

GPS OBSERVATIONS

Reference Factor = 1.01
r = 522.26

GPS Solution	1	Reference Factor =	0.40	r =	1.99
GPS Solution	2	Reference Factor =	1.09	r =	2.48
GPS Solution	3	Reference Factor =	1.00	r =	2.53
GPS Solution	4	Reference Factor =	0.61	r =	2.45
GPS Solution	5	Reference Factor =	0.24	r =	2.18
GPS Solution	6	Reference Factor =	1.04	r =	2.17
GPS Solution	7	Reference Factor =	0.45	r =	1.94
GPS Solution	8	Reference Factor =	0.26	r =	2.37
GPS Solution	9	Reference Factor =	0.66	r =	1.94
GPS Solution	10	Reference Factor =	0.64	r =	1.54
GPS Solution	11	Reference Factor =	1.30	r =	1.06
GPS Solution	12	Reference Factor =	0.21	r =	2.43
GPS Solution	13	Reference Factor =	0.44	r =	1.49
GPS Solution	14	Reference Factor =	1.13	r =	2.56
GPS Solution	15	Reference Factor =	0.44	r =	2.17
GPS Solution	16	Reference Factor =	0.36	r =	2.28
GPS Solution	17	Reference Factor =	0.98	r =	2.11
GPS Solution	18	Reference Factor =	1.10	r =	2.09
GPS Solution	19	Reference Factor =	0.54	r =	2.28
GPS Solution	20	Reference Factor =	0.49	r =	0.63
GPS Solution	21	Reference Factor =	0.71	r =	2.30
GPS Solution	22	Reference Factor =	0.50	r =	2.52
GPS Solution	23	Reference Factor =	0.64	r =	2.48
GPS Solution	24	Reference Factor =	1.16	r =	1.57
GPS Solution	25	Reference Factor =	0.16	r =	2.52
GPS Solution	26	Reference Factor =	0.18	r =	2.59
GPS Solution	27	Reference Factor =	1.36	r =	1.15
GPS Solution	28	Reference Factor =	0.76	r =	2.62
GPS Solution	29	Reference Factor =	1.35	r =	1.98
GPS Solution	30	Reference Factor =	0.57	r =	2.48
GPS Solution	31	Reference Factor =	1.36	r =	2.08
GPS Solution	32	Reference Factor =	0.58	r =	2.44
GPS Solution	33	Reference Factor =	0.25	r =	2.83
GPS Solution	34	Reference Factor =	0.93	r =	2.16
GPS Solution	35	Reference Factor =	0.42	r =	1.99
GPS Solution	36	Reference Factor =	0.94	r =	2.27
GPS Solution	37	Reference Factor =	1.23	r =	1.85
GPS Solution	38	Reference Factor =	0.93	r =	1.37
GPS Solution	39	Reference Factor =	0.52	r =	2.08
GPS Solution	40	Reference Factor =	0.78	r =	2.50
GPS Solution	41	Reference Factor =	0.46	r =	1.55
GPS Solution	42	Reference Factor =	0.27	r =	2.40
GPS Solution	43	Reference Factor =	0.16	r =	1.67
GPS Solution	44	Reference Factor =	0.79	r =	2.16
GPS Solution	45	Reference Factor =	1.29	r =	2.70
GPS Solution	46	Reference Factor =	0.54	r =	2.20
GPS Solution	47	Reference Factor =	0.25	r =	2.62
GPS Solution	48	Reference Factor =	0.69	r =	1.26

GPS Solution	49	Reference Factor =	0.21	r =	2.71
GPS Solution	50	Reference Factor =	0.49	r =	2.66
GPS Solution	51	Reference Factor =	0.47	r =	2.14
GPS Solution	52	Reference Factor =	0.33	r =	1.61
GPS Solution	53	Reference Factor =	0.60	r =	2.60
GPS Solution	54	Reference Factor =	0.51	r =	2.47
GPS Solution	55	Reference Factor =	0.92	r =	2.11
GPS Solution	56	Reference Factor =	0.25	r =	2.71
GPS Solution	57	Reference Factor =	0.56	r =	2.41
GPS Solution	58	Reference Factor =	0.49	r =	1.21
GPS Solution	59	Reference Factor =	0.68	r =	2.35
GPS Solution	60	Reference Factor =	1.34	r =	1.85
GPS Solution	61	Reference Factor =	0.61	r =	2.68
GPS Solution	62	Reference Factor =	0.42	r =	2.04
GPS Solution	63	Reference Factor =	0.82	r =	0.75
GPS Solution	64	Reference Factor =	0.90	r =	1.98
GPS Solution	65	Reference Factor =	0.34	r =	2.52
GPS Solution	66	Reference Factor =	0.87	r =	2.41
GPS Solution	67	Reference Factor =	0.60	r =	1.86
GPS Solution	68	Reference Factor =	0.04	r =	2.41
GPS Solution	69	Reference Factor =	0.96	r =	2.44
GPS Solution	70	Reference Factor =	0.31	r =	2.38
GPS Solution	71	Reference Factor =	1.19	r =	2.17
GPS Solution	72	Reference Factor =	0.44	r =	2.05
GPS Solution	73	Reference Factor =	0.56	r =	2.47
GPS Solution	74	Reference Factor =	0.65	r =	1.99
GPS Solution	75	Reference Factor =	1.01	r =	1.94
GPS Solution	76	Reference Factor =	1.04	r =	2.26
GPS Solution	77	Reference Factor =	0.55	r =	1.81
GPS Solution	78	Reference Factor =	0.43	r =	1.98
GPS Solution	79	Reference Factor =	1.23	r =	2.33
GPS Solution	80	Reference Factor =	0.68	r =	0.69
GPS Solution	81	Reference Factor =	0.47	r =	2.01
GPS Solution	82	Reference Factor =	0.43	r =	1.83
GPS Solution	83	Reference Factor =	1.04	r =	2.69
GPS Solution	84	Reference Factor =	0.88	r =	2.24
GPS Solution	85	Reference Factor =	0.20	r =	2.17
GPS Solution	86	Reference Factor =	0.71	r =	2.14
GPS Solution	87	Reference Factor =	0.29	r =	2.47
GPS Solution	88	Reference Factor =	0.95	r =	1.97
GPS Solution	89	Reference Factor =	0.95	r =	1.70
GPS Solution	90	Reference Factor =	0.23	r =	1.40
GPS Solution	91	Reference Factor =	0.64	r =	0.90
GPS Solution	92	Reference Factor =	1.15	r =	1.23
GPS Solution	93	Reference Factor =	0.50	r =	2.42
GPS Solution	94	Reference Factor =	0.44	r =	2.39
GPS Solution	95	Reference Factor =	0.19	r =	1.67
GPS Solution	96	Reference Factor =	0.92	r =	2.37
GPS Solution	97	Reference Factor =	0.41	r =	2.49
GPS Solution	98	Reference Factor =	0.49	r =	0.85
GPS Solution	99	Reference Factor =	1.17	r =	2.54
GPS Solution	100	Reference Factor =	0.22	r =	2.68
GPS Solution	101	Reference Factor =	1.36	r =	1.83
GPS Solution	102	Reference Factor =	0.18	r =	2.86
GPS Solution	103	Reference Factor =	0.53	r =	2.54
GPS Solution	104	Reference Factor =	0.52	r =	2.70
GPS Solution	105	Reference Factor =	0.62	r =	1.35
GPS Solution	106	Reference Factor =	0.40	r =	2.61
GPS Solution	107	Reference Factor =	0.44	r =	2.82
GPS Solution	108	Reference Factor =	0.40	r =	1.42
GPS Solution	109	Reference Factor =	1.00	r =	2.27
GPS Solution	110	Reference Factor =	0.59	r =	2.29
GPS Solution	111	Reference Factor =	0.25	r =	2.81
GPS Solution	112	Reference Factor =	1.38	r =	2.67
GPS Solution	113	Reference Factor =	0.64	r =	2.32
GPS Solution	114	Reference Factor =	0.15	r =	2.46

GPS Solution	115	Reference Factor =	0.94	r =	2.02
GPS Solution	116	Reference Factor =	0.31	r =	1.42
GPS Solution	117	Reference Factor =	1.18	r =	2.26
GPS Solution	118	Reference Factor =	0.46	r =	1.88
GPS Solution	119	Reference Factor =	0.41	r =	1.92
GPS Solution	120	Reference Factor =	0.29	r =	2.55
GPS Solution	121	Reference Factor =	0.59	r =	1.65
GPS Solution	122	Reference Factor =	0.46	r =	1.42
GPS Solution	123	Reference Factor =	0.99	r =	2.39
GPS Solution	124	Reference Factor =	1.06	r =	2.44
GPS Solution	125	Reference Factor =	0.51	r =	2.19
GPS Solution	126	Reference Factor =	0.95	r =	2.03
GPS Solution	127	Reference Factor =	0.78	r =	2.38
GPS Solution	128	Reference Factor =	0.64	r =	2.66
GPS Solution	129	Reference Factor =	0.34	r =	2.61
GPS Solution	130	Reference Factor =	0.70	r =	2.75
GPS Solution	131	Reference Factor =	0.53	r =	2.45
GPS Solution	132	Reference Factor =	0.34	r =	1.05
GPS Solution	133	Reference Factor =	0.17	r =	2.43
GPS Solution	134	Reference Factor =	0.22	r =	2.48
GPS Solution	135	Reference Factor =	0.77	r =	0.91
GPS Solution	136	Reference Factor =	0.32	r =	2.45
GPS Solution	137	Reference Factor =	0.48	r =	0.80
GPS Solution	138	Reference Factor =	0.65	r =	1.87
GPS Solution	139	Reference Factor =	1.05	r =	2.22
GPS Solution	140	Reference Factor =	0.82	r =	2.35
GPS Solution	141	Reference Factor =	0.45	r =	2.23
GPS Solution	142	Reference Factor =	0.94	r =	2.44
GPS Solution	143	Reference Factor =	0.46	r =	2.49
GPS Solution	144	Reference Factor =	0.75	r =	1.73
GPS Solution	145	Reference Factor =	0.85	r =	1.97
GPS Solution	146	Reference Factor =	0.33	r =	2.50
GPS Solution	147	Reference Factor =	0.50	r =	2.07
GPS Solution	148	Reference Factor =	0.11	r =	2.43
GPS Solution	149	Reference Factor =	0.93	r =	1.83
GPS Solution	150	Reference Factor =	0.89	r =	2.39
GPS Solution	151	Reference Factor =	1.04	r =	2.13
GPS Solution	152	Reference Factor =	0.46	r =	1.19
GPS Solution	153	Reference Factor =	0.54	r =	1.98
GPS Solution	154	Reference Factor =	0.84	r =	2.65
GPS Solution	155	Reference Factor =	1.09	r =	2.54
GPS Solution	156	Reference Factor =	0.69	r =	2.35
GPS Solution	157	Reference Factor =	0.39	r =	2.56
GPS Solution	158	Reference Factor =	0.34	r =	2.36
GPS Solution	159	Reference Factor =	0.81	r =	2.06
GPS Solution	160	Reference Factor =	0.71	r =	2.06
GPS Solution	161	Reference Factor =	0.96	r =	1.62
GPS Solution	162	Reference Factor =	2.27	r =	2.35
GPS Solution	163	Reference Factor =	0.72	r =	1.28
GPS Solution	164	Reference Factor =	1.00	r =	0.00
GPS Solution	165	Reference Factor =	1.57	r =	1.08
GPS Solution	166	Reference Factor =	1.18	r =	1.61
GPS Solution	167	Reference Factor =	1.29	r =	1.55
GPS Solution	168	Reference Factor =	0.93	r =	1.39
GPS Solution	169	Reference Factor =	2.48	r =	1.51
GPS Solution	170	Reference Factor =	2.16	r =	1.85
GPS Solution	171	Reference Factor =	2.50	r =	1.20
GPS Solution	172	Reference Factor =	2.28	r =	1.10
GPS Solution	173	Reference Factor =	0.28	r =	2.49
GPS Solution	174	Reference Factor =	0.71	r =	2.59
GPS Solution	175	Reference Factor =	2.30	r =	1.54
GPS Solution	176	Reference Factor =	0.37	r =	1.56
GPS Solution	177	Reference Factor =	1.64	r =	1.86
GPS Solution	178	Reference Factor =	1.00	r =	0.00
GPS Solution	179	Reference Factor =	0.56	r =	2.68
GPS Solution	180	Reference Factor =	0.80	r =	1.51

GPS Solution 181	Reference Factor =	1.74	r =	2.20
GPS Solution 182	Reference Factor =	1.01	r =	1.11
GPS Solution 183	Reference Factor =	1.43	r =	2.18
GPS Solution 184	Reference Factor =	0.91	r =	2.36
GPS Solution 185	Reference Factor =	2.12	r =	2.29
GPS Solution 186	Reference Factor =	2.17	r =	2.15
GPS Solution 187	Reference Factor =	0.64	r =	1.14
GPS Solution 188	Reference Factor =	1.18	r =	1.11
GPS Solution 189	Reference Factor =	0.16	r =	1.95
GPS Solution 190	Reference Factor =	0.27	r =	2.84
GPS Solution 191	Reference Factor =	1.05	r =	1.70
GPS Solution 192	Reference Factor =	0.92	r =	1.42
GPS Solution 193	Reference Factor =	1.14	r =	1.15
GPS Solution 194	Reference Factor =	0.52	r =	1.33
GPS Solution 195	Reference Factor =	0.97	r =	0.83
GPS Solution 196	Reference Factor =	0.71	r =	2.14
GPS Solution 197	Reference Factor =	0.82	r =	0.97
GPS Solution 198	Reference Factor =	0.42	r =	2.40
GPS Solution 199	Reference Factor =	0.87	r =	2.15
GPS Solution 200	Reference Factor =	0.51	r =	1.95
GPS Solution 201	Reference Factor =	0.99	r =	0.93
GPS Solution 202	Reference Factor =	0.25	r =	1.85
GPS Solution 203	Reference Factor =	0.72	r =	1.86
GPS Solution 204	Reference Factor =	0.36	r =	2.14
GPS Solution 205	Reference Factor =	0.95	r =	2.37
GPS Solution 206	Reference Factor =	0.61	r =	1.18
GPS Solution 207	Reference Factor =	1.16	r =	1.58
GPS Solution 208	Reference Factor =	0.34	r =	1.51
GPS Solution 209	Reference Factor =	0.23	r =	0.79
GPS Solution 210	Reference Factor =	0.63	r =	1.94
GPS Solution 211	Reference Factor =	0.50	r =	1.79
GPS Solution 212	Reference Factor =	1.51	r =	2.05
GPS Solution 213	Reference Factor =	0.74	r =	2.54
GPS Solution 214	Reference Factor =	0.55	r =	2.08
GPS Solution 215	Reference Factor =	1.06	r =	1.14
GPS Solution 216	Reference Factor =	1.54	r =	1.75
GPS Solution 217	Reference Factor =	1.99	r =	2.38
GPS Solution 218	Reference Factor =	1.12	r =	1.06
GPS Solution 219	Reference Factor =	1.37	r =	1.71
GPS Solution 220	Reference Factor =	0.34	r =	1.36
GPS Solution 221	Reference Factor =	1.48	r =	2.52
GPS Solution 222	Reference Factor =	1.64	r =	1.90
GPS Solution 223	Reference Factor =	1.38	r =	1.97
GPS Solution 224	Reference Factor =	0.99	r =	1.85
GPS Solution 225	Reference Factor =	2.16	r =	0.71
GPS Solution 226	Reference Factor =	1.00	r =	0.00
GPS Solution 227	Reference Factor =	1.40	r =	2.30
GPS Solution 228	Reference Factor =	0.81	r =	1.85
GPS Solution 229	Reference Factor =	1.33	r =	1.64
GPS Solution 230	Reference Factor =	1.98	r =	1.77
GPS Solution 231	Reference Factor =	1.09	r =	2.25
GPS Solution 232	Reference Factor =	2.41	r =	2.50
GPS Solution 233	Reference Factor =	1.63	r =	2.53
GPS Solution 234	Reference Factor =	2.25	r =	2.25
GPS Solution 235	Reference Factor =	1.95	r =	1.11
GPS Solution 236	Reference Factor =	0.67	r =	1.10
GPS Solution 237	Reference Factor =	1.00	r =	0.00
GPS Solution 238	Reference Factor =	0.65	r =	1.36
GPS Solution 239	Reference Factor =	2.53	r =	1.77
GPS Solution 240	Reference Factor =	1.98	r =	1.39
GPS Solution 241	Reference Factor =	1.51	r =	1.42
GPS Solution 242	Reference Factor =	1.99	r =	2.07
GPS Solution 243	Reference Factor =	1.67	r =	1.69
GPS Solution 244	Reference Factor =	0.92	r =	1.85
GPS Solution 245	Reference Factor =	1.41	r =	2.12
GPS Solution 246	Reference Factor =	1.00	r =	1.71

GPS Solution 247	Reference Factor =	1.90	r =	0.99
GPS Solution 248	Reference Factor =	1.81	r =	1.36
GPS Solution 249	Reference Factor =	2.36	r =	2.05
GPS Solution 250	Reference Factor =	1.12	r =	1.39
GPS Solution 251	Reference Factor =	0.72	r =	1.74
GPS Solution 252	Reference Factor =	0.76	r =	1.80
GPS Solution 253	Reference Factor =	1.30	r =	1.86
GPS Solution 254	Reference Factor =	1.05	r =	2.00
GPS Solution 255	Reference Factor =	1.73	r =	2.36
GPS Solution 256	Reference Factor =	0.34	r =	1.99
GPS Solution 257	Reference Factor =	1.23	r =	1.21
GPS Solution 258	Reference Factor =	1.52	r =	1.31
GPS Solution 259	Reference Factor =	1.47	r =	1.97
GPS Solution 260	Reference Factor =	0.30	r =	2.34
GPS Solution 261	Reference Factor =	1.34	r =	1.11
GPS Solution 262	Reference Factor =	0.69	r =	2.56
GPS Solution 263	Reference Factor =	0.51	r =	2.43
GPS Solution 264	Reference Factor =	1.70	r =	2.28
GPS Solution 265	Reference Factor =	2.96	r =	2.11
GPS Solution 266	Reference Factor =	2.10	r =	2.31
GPS Solution 267	Reference Factor =	1.00	r =	0.00
GPS Solution 268	Reference Factor =	1.09	r =	0.78
GPS Solution 269	Reference Factor =	0.51	r =	0.91

GEOID MODEL

Reference Factor = 0.93
r = 5.74

Geoid Heights: Reference Factor = 0.93 r = 5.74
Delta Geoid Heights: Reference Factor = 1.00 r = 0.00

WEIGHTING STRATEGIES:

GPS OBSERVATIONS:

Scalar Weighting Strategy:
User-Defined Scalar Set Applied Globally = 4.74

No summation weighting strategy was used

Station Error Strategy:

H.I. error = 0.0010
Tribrach error = 0.0010

GEOID MODEL:

Scalar Weighting Strategy:
User-Defined Scalar Set Applied Globally = 0.25

No summation weighting strategy was used

Results of adjusted Geoid model:

Noise in vertical GPS observations: 0.00040804
Variance of geoid model: 0.00125525
Use of correlated Residual Geoid Model may improve geoid heights

Coordinate
Adjustment
Summary

COORDINATE ADJUSTMENT SUMMARY
 NETWORK = BUTLER OHIO
 TIME = Wed Oct 13 09:14:22 1999

Datum = NAD-83
 Coordinate System = 1983 State Plane Lambert
 Zone = Ohio South

Network Adjustment Constraints:

7 fixed coordinates in y
 7 fixed coordinates in x
 11 fixed coordinates in h

POINT	NAME	OLD COORDS	ADJUST	NEW COORDS	1.00σ
1	1003				
	Y=	147184.4472	+0.0000	147184.4472	0.002501m
	X=	409957.3896	+0.0000	409957.3896	0.001776m
	ELL HT=	142.9453	+0.0014	142.9467	0.030454m
	ORTHO HT=	176.5484	+0.0004	176.5488	0.012873m
	GEOID HT=	-33.6031	+0.0010	-33.6021	0.032457m
2	1004				
	Y=	156763.1093	+0.0000	156763.1093	0.002856m
	X=	410089.9546	+0.0000	410089.9546	0.002317m
	ELL HT=	209.4757	+0.0008	209.4765	0.027848m
	ORTHO HT=	242.8622	-0.0001	242.8621	0.014506m
	GEOID HT=	-33.3865	+0.0009	-33.3856	0.031188m
3	1011				
	Y=	165931.6687	+0.0000	165931.6687	0.002420m
	X=	410505.2223	+0.0000	410505.2223	0.002294m
	ELL HT=	228.0859	+0.0003	228.0863	0.027986m
	ORTHO HT=	261.3617	+0.0001	261.3618	0.014727m
	GEOID HT=	-33.2758	+0.0002	-33.2755	0.032313m
4	2003				
	Y=	157071.8873	+0.0000	157071.8873	0.003775m
	X=	400411.8845	+0.0000	400411.8844	0.002825m
	ELL HT=	222.4607	+0.0005	222.4612	0.032179m
	ORTHO HT=	255.9675	-0.0005	255.9670	0.015386m
	GEOID HT=	-33.5067	+0.0009	-33.5058	0.033369m
5	2004				
	Y=	156903.8703	+0.0000	156903.8703	0.004735m
	X=	400581.2097	+0.0000	400581.2097	0.003345m
	ELL HT=	232.3220	+0.0004	232.3224	0.032829m
	ORTHO HT=	265.8271	-0.0005	265.8265	0.016964m
	GEOID HT=	-33.5051	+0.0009	-33.5042	0.033374m
6	2005				
	Y=	166706.0454	+0.0000	166706.0453	0.002394m
	X=	400759.3446	-0.0001	400759.3444	0.003448m
	ELL HT=	273.9516	-0.0002	273.9514	0.032806m
	ORTHO HT=	307.3501	-0.0003	307.3498	0.011348m
	GEOID HT=	-33.3985	+0.0001	-33.3984	0.033299m
7	2007				
	Y=	176521.7644	+0.0000	176521.7644	0.002338m
	X=	401158.7277	+0.0000	401158.7276	0.004505m
	ELL HT=	267.3164	-0.0011	267.3152	0.037127m
	ORTHO HT=	300.6744	-0.0004	300.6740	0.017539m
	GEOID HT=	-33.3581	-0.0007	-33.3588	0.033633m

8 2009					
	Y=	176283.3960	+0.0000	176283.3960	0.001993m
	X=	411105.4287	+0.0000	411105.4286	0.002619m
	ELL HT=	264.1671	-0.0007	264.1664	0.032109m
	ORTHO HT=	297.4211	+0.0000	297.4210	0.015880m
	GEOID HT=	-33.2540	-0.0006	-33.2546	0.033023m
9 2011					
	Y=	176008.9101	+0.0001	176008.9102	0.003113m
	X=	420784.4053	+0.0000	420784.4052	0.002569m
	ELL HT=	266.3530	-0.0002	266.3528	0.030142m
	ORTHO HT=	299.6355	+0.0002	299.6357	0.012732m
	GEOID HT=	-33.2825	-0.0005	-33.2830	0.030906m
10 2017					
	Y=	178089.7309	+0.0000	178089.7309	0.003393m
	X=	439795.3589	+0.0000	439795.3589	0.002761m
	ELL HT=	234.0354	+0.0014	234.0368	0.035395m
	ORTHO HT=	267.4596	+0.0003	267.4599	0.011334m
	GEOID HT=	-33.4242	+0.0011	-33.4231	0.034278m
11 9901					
	Y=	147664.6988	+0.0000	147664.6988	0.003248m
	X=	400140.1254	+0.0000	400140.1254	0.002724m
	ELL HT=	236.2155	+0.0009	236.2163	0.034444m
	ORTHO HT=	269.8894	-0.0004	269.8890	0.016913m
	GEOID HT=	-33.6739	+0.0012	-33.6727	0.034648m
12 9902					
	Y=	150880.4226	+0.0000	150880.4226	0.002868m
	X=	406894.5366	+0.0000	406894.5366	0.002168m
	ELL HT=	193.0173	+0.0010	193.0183	0.030150m
	ORTHO HT=	226.5456	-0.0001	226.5455	0.013895m
	GEOID HT=	-33.5284	+0.0012	-33.5272	0.032485m
13 9903					
	Y=	151368.2552	+0.0000	151368.2553	0.003194m
	X=	406926.1253	+0.0000	406926.1253	0.002410m
	ELL HT=	199.8714	+0.0010	199.8725	0.030154m
	ORTHO HT=	233.3883	-0.0001	233.3882	0.014264m
	GEOID HT=	-33.5169	+0.0012	-33.5157	0.032373m
14 9904					
	Y=	161714.8310	+0.0000	161714.8310	0.002923m
	X=	405890.5307	+0.0000	405890.5306	0.002753m
	ELL HT=	219.0235	+0.0005	219.0240	0.029221m
	ORTHO HT=	252.3802	-0.0001	252.3800	0.013624m
	GEOID HT=	-33.3567	+0.0006	-33.3561	0.032628m
15 9905					
	Y=	161668.1516	+0.0000	161668.1515	0.002858m
	X=	407594.2247	+0.0000	407594.2246	0.002600m
	ELL HT=	224.6432	+0.0006	224.6438	0.028518m
	ORTHO HT=	257.9797	+0.0000	257.9797	0.014500m
	GEOID HT=	-33.3365	+0.0006	-33.3359	0.032420m
16 9906					
	Y=	172488.3980	+0.0000	172488.3981	0.003349m
	X=	406412.7849	+0.0000	406412.7849	0.003059m
	ELL HT=	258.6568	-0.0006	258.6561	0.032806m
	ORTHO HT=	291.9353	+0.0000	291.9353	0.012210m
	GEOID HT=	-33.2785	-0.0007	-33.2792	0.032930m
17 9907					
	Y=	172883.8528	+0.0000	172883.8528	0.003032m
	X=	406440.0750	+0.0000	406440.0750	0.002949m

ELL HT=	260.4024	-0.0007	260.4017	0.032533m
ORTHO HT=	293.6804	+0.0000	293.6805	0.011178m
GEOID HT=	-33.2781	-0.0007	-33.2788	0.032935m
18 9908				
Y=	162006.6088	+0.0000	162006.6088	0.002508m
X=	414241.6298	+0.0000	414241.6297	0.002154m
ELL HT=	240.6546	+0.0008	240.6553	0.026409m
ORTHO HT=	273.9652	+0.0002	273.9654	0.015243m
GEOID HT=	-33.3106	+0.0006	-33.3100	0.030978m
19 9909				
Y=	161863.3373	+0.0000	161863.3373	0.003190m
X=	414642.4376	+0.0000	414642.4376	0.002714m
ELL HT=	246.1752	+0.0008	246.1760	0.026649m
ORTHO HT=	279.4889	+0.0002	279.4891	0.015791m
GEOID HT=	-33.3137	+0.0006	-33.3131	0.030868m
20 9910				
Y=	171269.7195	+0.0000	171269.7195	0.003297m
X=	416192.5728	+0.0000	416192.5728	0.003440m
ELL HT=	235.3766	+0.0001	235.3767	0.028812m
ORTHO HT=	268.6355	+0.0001	268.6357	0.015155m
GEOID HT=	-33.2589	-0.0001	-33.2590	0.031208m
21 9911				
Y=	171265.7438	+0.0000	171265.7438	0.003122m
X=	416748.5988	+0.0000	416748.5988	0.002846m
ELL HT=	225.0516	+0.0001	225.0517	0.028473m
ORTHO HT=	258.3133	+0.0001	258.3135	0.014456m
GEOID HT=	-33.2618	+0.0000	-33.2618	0.031003m
22 9912				
Y=	171141.2987	-0.0001	171141.2985	0.003061m
X=	424880.8947	+0.0001	424880.8948	0.002506m
ELL HT=	263.1689	+0.0007	263.1696	0.028344m
ORTHO HT=	296.5051	+0.0002	296.5053	0.010150m
GEOID HT=	-33.3362	+0.0005	-33.3357	0.029415m
23 9913				
Y=	171135.0120	-0.0001	171135.0119	0.003160m
X=	425324.6552	+0.0001	425324.6553	0.002660m
ELL HT=	263.1082	+0.0008	263.1090	0.028629m
ORTHO HT=	296.4505	+0.0003	296.4508	0.011051m
GEOID HT=	-33.3424	+0.0006	-33.3418	0.029550m
24 9914				
Y=	175533.5574	+0.0001	175533.5575	0.003208m
X=	428971.0500	+0.0000	428971.0500	0.002545m
ELL HT=	211.3203	+0.0004	211.3207	0.030586m
ORTHO HT=	244.7026	-0.0006	244.7020	0.012753m
GEOID HT=	-33.3823	+0.0009	-33.3813	0.031911m
25 9915				
Y=	178299.0605	+0.0000	178299.0604	0.003516m
X=	430001.1162	+0.0000	430001.1162	0.002828m
ELL HT=	266.7583	+0.0005	266.7588	0.032265m
ORTHO HT=	300.1438	-0.0002	300.1436	0.014841m
GEOID HT=	-33.3855	+0.0007	-33.3848	0.032931m
26 9916				
Y=	173494.3320	+0.0000	173494.3320	0.002201m
X=	434259.0917	+0.0000	434259.0918	0.001959m
ELL HT=	240.0679	+0.0018	240.0697	0.031242m
ORTHO HT=	273.5216	-0.0006	273.5210	0.010485m
GEOID HT=	-33.4538	+0.0025	-33.4513	0.032359m

27 9917	Y=	173494.9826	+0.0000	173494.9825	0.002054m
	X=	434471.3822	+0.0000	434471.3822	0.001851m
	ELL HT=	243.3326	+0.0018	243.3343	0.031237m
	ORTHO HT=	276.7881	-0.0007	276.7874	0.010386m
	GEOID HT=	-33.4555	+0.0025	-33.4530	0.032437m
28 9918	Y=	174249.7534	+0.0000	174249.7534	0.003072m
	X=	439820.6789	+0.0000	439820.6789	0.002565m
	ELL HT=	169.3944	+0.0017	169.3961	0.033958m
	ORTHO HT=	202.8572	-0.0002	202.8570	0.013221m
	GEOID HT=	-33.4628	+0.0019	-33.4609	0.034300m
29 BLUEPT A	Y=	140605.2990	+0.0000	140605.2990	FIXED
	X=	436673.0200	+0.0000	436673.0200	FIXED
	ELL HT=	223.4472	+0.0035	223.4506	0.041677m
	ORTHO HT=	257.3179	+0.0051	257.3230	0.032055m
	GEOID HT=	-33.8708	-0.0016	-33.8723	0.033922m
30 BM B 347	Y=	144617.5690	+0.0004	144617.5693	0.011640m
	X=	432447.6564	+0.0002	432447.6566	0.010000m
	ELL HT=	149.9906	-0.0021	149.9885	0.033251m
	ORTHO HT=	183.7920	+0.0000	183.7920	FIXED
	GEOID HT=	-33.8014	-0.0021	-33.8035	0.033251m
31 BT01	Y=	152296.1526	+0.0000	152296.1526	0.003452m
	X=	402154.4941	+0.0000	402154.4941	0.002485m
	ELL HT=	232.3231	+0.0007	232.3238	0.031821m
	ORTHO HT=	265.8766	-0.0004	265.8762	0.016017m
	GEOID HT=	-33.5536	+0.0011	-33.5524	0.033775m
32 BT02	Y=	162469.9731	+0.0000	162469.9731	0.002864m
	X=	412485.7168	+0.0000	412485.7168	0.002512m
	ELL HT=	244.3802	+0.0007	244.3809	0.027043m
	ORTHO HT=	277.6827	+0.0001	277.6829	0.015633m
	GEOID HT=	-33.3026	+0.0006	-33.3020	0.031468m
33 BT03	Y=	169598.7030	+0.0000	169598.7030	0.002716m
	X=	415092.7160	+0.0000	415092.7160	0.002458m
	ELL HT=	215.6320	+0.0002	215.6322	0.027949m
	ORTHO HT=	248.8931	+0.0001	248.8932	0.014615m
	GEOID HT=	-33.2611	+0.0001	-33.2610	0.031330m
34 BT04	Y=	174116.6265	+0.0000	174116.6265	0.002695m
	X=	413133.6804	+0.0000	413133.6804	0.002895m
	ELL HT=	259.4537	-0.0004	259.4533	0.030520m
	ORTHO HT=	292.7015	+0.0001	292.7015	0.015630m
	GEOID HT=	-33.2478	-0.0004	-33.2482	0.032493m
35 BU 74	Y=	170973.7186	+0.0000	170973.7186	0.007965m
	X=	440876.5112	+0.0000	440876.5112	0.006928m
	ELL HT=	233.8169	+0.0020	233.8189	0.036254m
	ORTHO HT=	267.3054	-0.0003	267.3052	0.019889m
	GEOID HT=	-33.4885	+0.0023	-33.4862	0.034300m
36 BUT 51	Y=	147915.4934	+0.0000	147915.4933	0.003817m

X=	440372.2493	+0.0000	440372.2493	0.003118m
ELL HT=	250.7003	+0.0033	250.7036	0.037581m
ORTHO HT=	284.4491	+0.0038	284.4529	0.025421m
GEOID HT=	-33.7488	-0.0006	-33.7494	0.033828m
37 BUT 51A				
Y=	147927.7305	+0.0000	147927.7305	0.003647m
X=	439752.0157	+0.0000	439752.0157	0.003005m
ELL HT=	254.7700	+0.0033	254.7733	0.037056m
ORTHO HT=	288.5189	+0.0039	288.5228	0.024917m
GEOID HT=	-33.7490	-0.0006	-33.7496	0.033782m
38 BUT 52				
Y=	145931.7511	+0.0000	145931.7511	0.004332m
X=	433736.6640	+0.0000	433736.6640	0.003500m
ELL HT=	145.2071	+0.0029	145.2100	0.035891m
ORTHO HT=	178.9919	+0.0046	178.9966	0.025314m
GEOID HT=	-33.7848	-0.0017	-33.7865	0.033323m
39 BUT 52A				
Y=	145920.3198	+0.0000	145920.3198	0.005394m
X=	434223.9910	+0.0000	434223.9910	0.004387m
ELL HT=	148.2418	+0.0028	148.2447	0.036393m
ORTHO HT=	182.0282	+0.0045	182.0327	0.025642m
GEOID HT=	-33.7864	-0.0017	-33.7880	0.033372m
40 BUT 53				
Y=	152490.0616	+0.0000	152490.0616	0.005202m
X=	434437.8365	+0.0000	434437.8365	0.003864m
ELL HT=	228.4228	+0.0026	228.4254	0.032967m
ORTHO HT=	262.0908	+0.0029	262.0937	0.021756m
GEOID HT=	-33.6680	-0.0003	-33.6683	0.032981m
41 BUT 53A				
Y=	152855.6747	+0.0000	152855.6747	0.006130m
X=	434395.7958	+0.0000	434395.7958	0.004421m
ELL HT=	215.6230	+0.0026	215.6256	0.033428m
ORTHO HT=	249.2846	+0.0028	249.2874	0.022494m
GEOID HT=	-33.6616	-0.0002	-33.6618	0.032943m
42 BUT 54				
Y=	148781.2183	+0.0000	148781.2183	0.005122m
X=	427156.1996	+0.0000	427156.1996	0.003848m
ELL HT=	177.6348	+0.0024	177.6371	0.031821m
ORTHO HT=	211.3054	+0.0032	211.3086	0.022631m
GEOID HT=	-33.6706	-0.0008	-33.6714	0.032518m
43 BUT 54A				
Y=	149144.9378	+0.0000	149144.9378	0.003405m
X=	426744.2740	+0.0000	426744.2740	0.002183m
ELL HT=	182.4897	+0.0023	182.4920	0.030580m
ORTHO HT=	216.1484	+0.0030	216.1514	0.021021m
GEOID HT=	-33.6587	-0.0007	-33.6594	0.032424m
44 BUT 55				
Y=	147275.8707	+0.0000	147275.8707	0.003875m
X=	420806.6978	+0.0000	420806.6978	0.002544m
ELL HT=	228.9791	+0.0021	228.9812	0.030487m
ORTHO HT=	262.6059	+0.0023	262.6082	0.019911m
GEOID HT=	-33.6268	-0.0002	-33.6270	0.032173m
45 BUT 55A				
Y=	147269.7696	+0.0000	147269.7696	0.004591m
X=	421206.6168	+0.0000	421206.6168	0.003296m
ELL HT=	216.7784	+0.0021	216.7805	0.030821m
ORTHO HT=	250.4086	+0.0023	250.4110	0.020523m

GEOID HT=	-33.6302	-0.0002	-33.6304	0.032213m
46 BUT 56				
Y=	152245.5206	+0.0000	152245.5206	0.004727m
X=	421587.7871	+0.0000	421587.7871	0.004074m
ELL HT=	141.6957	+0.0017	141.6975	0.028943m
ORTHO HT=	175.2321	+0.0016	175.2338	0.019168m
GEOID HT=	-33.5364	+0.0001	-33.5363	0.031262m
47 BUT 56A				
Y=	151787.8571	+0.0000	151787.8571	0.005008m
X=	421543.1919	+0.0000	421543.1919	0.004011m
ELL HT=	141.6922	+0.0018	141.6940	0.029297m
ORTHO HT=	175.2375	+0.0017	175.2392	0.019527m
GEOID HT=	-33.5453	+0.0001	-33.5452	0.031338m
48 BUT 57				
Y=	150060.4891	+0.0000	150060.4891	0.004076m
X=	416252.2321	+0.0000	416252.2321	0.003345m
ELL HT=	143.3903	+0.0015	143.3918	0.028983m
ORTHO HT=	176.9291	+0.0010	176.9301	0.014441m
GEOID HT=	-33.5388	+0.0006	-33.5383	0.030771m
49 BUT 57A				
Y=	149330.7227	+0.0000	149330.7227	0.004183m
X=	415927.4166	+0.0000	415927.4166	0.003409m
ELL HT=	141.5672	+0.0016	141.5688	0.029355m
ORTHO HT=	175.1204	+0.0010	175.1214	0.014602m
GEOID HT=	-33.5531	+0.0006	-33.5526	0.030946m
50 BUT 58				
Y=	153359.1292	+0.0000	153359.1292	0.004009m
X=	414731.9212	+0.0000	414731.9212	0.003301m
ELL HT=	148.1219	+0.0012	148.1231	0.027962m
ORTHO HT=	181.5781	+0.0004	181.5785	0.012542m
GEOID HT=	-33.4562	+0.0008	-33.4554	0.029916m
51 BUT 58A				
Y=	152999.6482	+0.0000	152999.6482	0.004344m
X=	415145.9436	+0.0000	415145.9436	0.003816m
ELL HT=	147.3933	+0.0013	147.3946	0.028258m
ORTHO HT=	180.8604	+0.0005	180.8610	0.013650m
GEOID HT=	-33.4672	+0.0008	-33.4664	0.029994m
52 BUT 59				
Y=	156575.8364	+0.0000	156575.8364	0.003331m
X=	419976.2587	+0.0000	419976.2587	0.002705m
ELL HT=	188.7959	+0.0014	188.7973	0.026698m
ORTHO HT=	222.2307	+0.0009	222.2317	0.016658m
GEOID HT=	-33.4348	+0.0005	-33.4343	0.030450m
53 BUT 59A				
Y=	156573.1001	+0.0000	156573.1001	0.004548m
X=	420201.9703	+0.0000	420201.9703	0.003909m
ELL HT=	187.6226	+0.0014	187.6240	0.028049m
ORTHO HT=	221.0603	+0.0009	221.0612	0.018814m
GEOID HT=	-33.4377	+0.0005	-33.4372	0.030461m
54 BUT 60A				
Y=	152925.2249	+0.0000	152925.2249	0.003785m
X=	425567.4391	+0.0000	425567.4391	0.002312m
ELL HT=	152.5470	+0.0019	152.5489	0.028838m
ORTHO HT=	186.1183	+0.0021	186.1204	0.019498m
GEOID HT=	-33.5713	-0.0002	-33.5715	0.031646m
55 BUT 61				

Y=	154489.0500	+0.0000	154489.0500	0.004574m
X=	429539.3128	+0.0000	429539.3128	0.003519m
ELL HT=	186.2126	+0.0021	186.2147	0.031149m
ORTHO HT=	219.8061	+0.0022	219.8083	0.021779m
GEOID HT=	-33.5935	-0.0001	-33.5936	0.031932m
56 BUT 61A				
Y=	154809.0629	+0.0000	154809.0629	0.004039m
X=	429549.9048	+0.0000	429549.9048	0.003197m
ELL HT=	166.2674	+0.0021	166.2695	0.029912m
ORTHO HT=	199.8554	+0.0021	199.8575	0.019932m
GEOID HT=	-33.5880	+0.0000	-33.5880	0.031874m
57 BUT 62				
Y=	156785.0540	+0.0000	156785.0540	0.003101m
X=	441251.4424	+0.0000	441251.4424	0.002752m
ELL HT=	231.7531	+0.0027	231.7558	0.034060m
ORTHO HT=	265.3874	+0.0015	265.3889	0.015852m
GEOID HT=	-33.6344	+0.0012	-33.6331	0.033499m
58 BUT 62A				
Y=	155951.0170	+0.0000	155951.0170	0.003227m
X=	441167.2299	+0.0000	441167.2299	0.002791m
ELL HT=	229.3934	+0.0027	229.3962	0.034275m
ORTHO HT=	263.0370	+0.0017	263.0387	0.016969m
GEOID HT=	-33.6436	+0.0010	-33.6426	0.033535m
59 BUT 63				
Y=	158560.3304	+0.0000	158560.3304	0.004107m
X=	428519.4439	+0.0000	428519.4439	0.003029m
ELL HT=	200.9431	+0.0018	200.9449	0.028301m
ORTHO HT=	234.4569	+0.0014	234.4583	0.017155m
GEOID HT=	-33.5138	+0.0004	-33.5134	0.030794m
60 BUT 63A				
Y=	158874.2455	+0.0000	158874.2455	0.004062m
X=	429343.0127	+0.0000	429343.0127	0.003081m
ELL HT=	189.4949	+0.0018	189.4967	0.028554m
ORTHO HT=	223.0159	+0.0014	223.0172	0.017086m
GEOID HT=	-33.5210	+0.0005	-33.5205	0.030881m
61 BUT 64				
Y=	160216.0669	+0.0000	160216.0669	0.003863m
X=	420529.3933	+0.0000	420529.3933	0.002894m
ELL HT=	160.7340	+0.0012	160.7353	0.026537m
ORTHO HT=	194.1211	+0.0006	194.1217	0.016218m
GEOID HT=	-33.3871	+0.0006	-33.3865	0.029887m
62 BUT 64A				
Y=	159734.7894	+0.0000	159734.7893	0.003954m
X=	420119.9339	+0.0000	420119.9339	0.003013m
ELL HT=	164.6657	+0.0012	164.6669	0.026548m
ORTHO HT=	198.0539	+0.0006	198.0544	0.016282m
GEOID HT=	-33.3882	+0.0006	-33.3876	0.030007m
63 BUT 65A				
Y=	161456.4787	+0.0000	161456.4787	0.002159m
X=	441796.9026	+0.0000	441796.9026	0.001982m
ELL HT=	183.2717	+0.0024	183.2741	0.033344m
ORTHO HT=	216.8560	+0.0001	216.8562	0.006719m
GEOID HT=	-33.5843	+0.0023	-33.5820	0.033298m
64 BUT 66				
Y=	158991.5707	+0.0000	158991.5707	0.004059m
X=	434945.9630	+0.0000	434945.9630	0.003226m
ELL HT=	183.6925	+0.0022	183.6946	0.030651m

ORTHO HT=	217.2744	+0.0012	217.2755	0.016683m
GEOID HT=	-33.5819	+0.0010	-33.5809	0.032459m
65 BUT 66A				
Y=	158970.9775	+0.0000	158970.9775	0.003385m
X=	435368.0699	+0.0000	435368.0698	0.003066m
ELL HT=	186.5707	+0.0022	186.5729	0.030540m
ORTHO HT=	220.1563	+0.0011	220.1575	0.016022m
GEOID HT=	-33.5856	+0.0011	-33.5846	0.032570m
66 BUT 67				
Y=	163711.6130	+0.0000	163711.6130	0.003609m
X=	437490.5189	+0.0000	437490.5189	0.003445m
ELL HT=	166.0802	+0.0020	166.0822	0.031545m
ORTHO HT=	199.6336	-0.0001	199.6335	0.014411m
GEOID HT=	-33.5534	+0.0021	-33.5513	0.033019m
67 BUT 67A				
Y=	163205.6410	+0.0000	163205.6410	0.002784m
X=	437444.1210	+0.0000	437444.1210	0.002815m
ELL HT=	167.7270	+0.0020	167.7291	0.030956m
ORTHO HT=	201.2848	+0.0000	201.2848	0.013212m
GEOID HT=	-33.5578	+0.0020	-33.5558	0.032995m
68 BUT 68				
Y=	164136.3903	+0.0000	164136.3903	0.003213m
X=	432140.0078	+0.0000	432140.0078	0.002354m
ELL HT=	157.1015	+0.0017	157.1032	0.028968m
ORTHO HT=	190.6047	+0.0004	190.6051	0.013391m
GEOID HT=	-33.5032	+0.0013	-33.5019	0.030688m
69 BUT 68A				
Y=	163687.8390	+0.0000	163687.8390	0.003114m
X=	432262.9387	+0.0000	432262.9387	0.002307m
ELL HT=	157.1793	+0.0017	157.1810	0.028963m
ORTHO HT=	190.6882	+0.0004	190.6887	0.013554m
GEOID HT=	-33.5090	+0.0013	-33.5077	0.030802m
70 BUT 69				
Y=	164030.1263	+0.0000	164030.1263	0.004927m
X=	425953.8255	+0.0000	425953.8255	0.003834m
ELL HT=	159.1445	+0.0013	159.1458	0.028032m
ORTHO HT=	192.5645	+0.0006	192.5650	0.014896m
GEOID HT=	-33.4200	+0.0008	-33.4192	0.028804m
71 BUT 69A				
Y=	164629.5068	+0.0000	164629.5068	0.004423m
X=	426348.7833	+0.0000	426348.7833	0.003786m
ELL HT=	160.6126	+0.0013	160.6140	0.028244m
ORTHO HT=	194.0317	+0.0006	194.0323	0.014569m
GEOID HT=	-33.4191	+0.0008	-33.4183	0.028740m
72 BUT 70				
Y=	166284.1974	+0.0000	166284.1974	0.002038m
X=	419900.8967	+0.0000	419900.8967	0.001775m
ELL HT=	180.8967	+0.0008	180.8975	0.026245m
ORTHO HT=	214.2176	+0.0000	214.2176	0.011209m
GEOID HT=	-33.3209	+0.0008	-33.3201	0.028722m
73 BUT 70A				
Y=	166246.7694	+0.0000	166246.7694	0.003859m
X=	420411.4693	+0.0000	420411.4693	0.003193m
ELL HT=	188.2632	+0.0009	188.2640	0.027305m
ORTHO HT=	221.5903	+0.0000	221.5903	0.013219m
GEOID HT=	-33.3271	+0.0009	-33.3262	0.028452m

74 BUT 71				
Y=	166222.6373	+0.0000	166222.6373	0.002494m
X=	429877.2091	+0.0000	429877.2091	0.002042m
ELL HT=	167.6174	+0.0014	167.6188	0.027987m
ORTHO HT=	201.0715	+0.0002	201.0717	0.010366m
GEOID HT=	-33.4541	+0.0012	-33.4529	0.029555m
75 BUT 71A				
Y=	166222.5431	+0.0000	166222.5431	0.002878m
X=	430512.2976	+0.0000	430512.2976	0.002419m
ELL HT=	168.7622	+0.0016	168.7637	0.028331m
ORTHO HT=	202.2256	+0.0002	202.2258	0.011569m
GEOID HT=	-33.4634	+0.0013	-33.4621	0.029860m
76 BUT 72				
Y=	167342.6068	+0.0000	167342.6068	0.002803m
X=	442562.2872	+0.0000	442562.2872	0.002194m
ELL HT=	187.5733	+0.0022	187.5756	0.034145m
ORTHO HT=	221.0908	-0.0001	221.0907	0.014588m
GEOID HT=	-33.5175	+0.0024	-33.5151	0.034302m
77 BUT 72A				
Y=	167273.3017	+0.0000	167273.3017	0.002251m
X=	442975.9742	+0.0000	442975.9742	0.001901m
ELL HT=	177.5842	+0.0022	177.5864	0.034176m
ORTHO HT=	211.1003	-0.0001	211.1002	0.014234m
GEOID HT=	-33.5162	+0.0024	-33.5138	0.034345m
78 BUT 73				
Y=	168544.9149	+0.0000	168544.9149	0.002089m
X=	437231.4327	+0.0000	437231.4327	0.001743m
ELL HT=	174.4886	+0.0020	174.4906	0.031245m
ORTHO HT=	207.9998	-0.0007	207.9992	0.012796m
GEOID HT=	-33.5112	+0.0026	-33.5086	0.032968m
79 BUT 73A				
Y=	168452.6025	+0.0000	168452.6025	0.002628m
X=	437854.8420	+0.0000	437854.8420	0.001985m
ELL HT=	170.4256	+0.0020	170.4276	0.031679m
ORTHO HT=	203.9392	-0.0006	203.9385	0.013453m
GEOID HT=	-33.5136	+0.0026	-33.5110	0.033226m
80 BUT 74				
Y=	170973.7160	+0.0000	170973.7160	0.002095m
X=	440876.5124	+0.0000	440876.5124	0.001748m
ELL HT=	233.8336	+0.0020	233.8355	0.033588m
ORTHO HT=	267.3221	-0.0003	267.3218	0.014393m
GEOID HT=	-33.4885	+0.0023	-33.4862	0.034300m
81 BUT 74A				
Y=	170585.9952	+0.0000	170585.9953	0.002285m
X=	440685.1929	+0.0000	440685.1929	0.001980m
ELL HT=	236.2948	+0.0020	236.2968	0.033413m
ORTHO HT=	269.7876	-0.0004	269.7872	0.014338m
GEOID HT=	-33.4928	+0.0024	-33.4904	0.034232m
82 BUT1 NGS				
Y=	159417.2710	+0.0000	159417.2710	FIXED
X=	430871.1230	+0.0000	430871.1230	FIXED
ELL HT=	209.6156	+0.0019	209.6175	0.028458m
ORTHO HT=	243.1499	+0.0013	243.1512	0.015357m
GEOID HT=	-33.5343	+0.0006	-33.5337	0.031146m
83 HARR				
Y=	141768.4900	+0.0000	141768.4900	FIXED
X=	403757.9220	+0.0000	403757.9220	FIXED

ELL HT=	143.2938	+0.0013	143.2951	0.034546m
ORTHO HT=	177.0600	+0.0000	177.0600	FIXED
GEOID HT=	-33.7662	+0.0013	-33.7649	0.034546m
84 HATT				
Y=	171183.9836	-0.0003	171183.9833	0.004467m
X=	433717.6256	-0.0001	433717.6255	0.003519m
ELL HT=	236.0817	+0.0033	236.0850	0.030665m
ORTHO HT=	269.5530	+0.0000	269.5530	FIXED
GEOID HT=	-33.4713	+0.0033	-33.4680	0.030665m
85 HOGAN AZ				
Y=	153506.6840	+0.0000	153506.6840	FIXED
X=	425224.3230	+0.0000	425224.3230	FIXED
ELL HT=	156.9206	+0.0019	156.9225	0.027906m
ORTHO HT=	190.4769	+0.0019	190.4789	0.018307m
GEOID HT=	-33.5563	-0.0001	-33.5564	0.031492m
86 KTO1				
Y=	172741.7210	+0.0000	172741.7210	0.003614m
X=	430214.1879	+0.0000	430214.1879	0.002717m
ELL HT=	225.5214	+0.0012	225.5225	0.029932m
ORTHO HT=	258.9315	-0.0006	258.9309	0.012074m
GEOID HT=	-33.4101	+0.0017	-33.4084	0.031299m
87 M 135				
Y=	167615.5744	-0.0001	167615.5743	0.002429m
X=	422458.4296	+0.0000	422458.4297	0.002051m
ELL HT=	168.2274	+0.0012	168.2286	0.026881m
ORTHO HT=	201.5680	+0.0000	201.5680	FIXED
GEOID HT=	-33.3406	+0.0012	-33.3394	0.026881m
88 MWO A				
Y=	171145.1230	+0.0000	171145.1230	FIXED
X=	436235.3190	+0.0000	436235.3190	FIXED
ELL HT=	161.3293	+0.0018	161.3310	0.031156m
ORTHO HT=	194.8182	-0.0010	194.8172	0.010946m
GEOID HT=	-33.4889	+0.0028	-33.4861	0.032563m
89 MWOA 75A				
Y=	170913.1717	+0.0000	170913.1717	0.001841m
X=	436628.9015	+0.0000	436628.9015	0.001556m
ELL HT=	161.0877	+0.0018	161.0895	0.031390m
ORTHO HT=	194.5800	-0.0010	194.5790	0.011721m
GEOID HT=	-33.4922	+0.0028	-33.4895	0.032759m
90 OXFO				
Y=	172317.6090	+0.0000	172317.6090	FIXED
X=	404449.7680	+0.0000	404449.7680	FIXED
ELL HT=	283.0729	-0.0008	283.0721	0.032707m
ORTHO HT=	316.3730	+0.0000	316.3730	FIXED
GEOID HT=	-33.3001	-0.0008	-33.3009	0.032707m
91 PEOR				
Y=	163205.8942	-0.0001	163205.8941	0.003382m
X=	400635.2195	+0.0001	400635.2196	0.003816m
ELL HT=	278.0555	+0.0006	278.0561	0.032082m
ORTHO HT=	311.4900	+0.0000	311.4900	FIXED
GEOID HT=	-33.4345	+0.0006	-33.4339	0.032082m
92 T 347				
Y=	161778.1470	+0.0000	161778.1470	FIXED
X=	442184.7400	+0.0000	442184.7400	FIXED
ELL HT=	169.0390	+0.0024	169.0413	0.033273m
ORTHO HT=	202.6190	+0.0000	202.6190	FIXED
GEOID HT=	-33.5800	+0.0024	-33.5777	0.033273m

93 V 143ECC				
Y=	151580.8222	+0.0000	151580.8222	0.003841m
X=	411824.9088	+0.0000	411824.9088	0.002922m
ELL HT=	196.3662	+0.0011	196.3673	0.028847m
ORTHO HT=	229.8530	+0.0000	229.8530	FIXED
GEOID HT=	-33.4868	+0.0011	-33.4857	0.028847m
94 V135				
Y=	173749.8529	-0.0002	173749.8528	0.003810m
X=	423516.3004	+0.0000	423516.3004	0.002634m
ELL HT=	263.7333	-0.0005	263.7328	0.029015m
ORTHO HT=	297.0370	+0.0000	297.0370	FIXED
GEOID HT=	-33.3037	-0.0005	-33.3042	0.029015m
95 W136				
Y=	178114.4696	+0.0000	178114.4696	0.003362m
X=	438203.6069	+0.0000	438203.6069	0.002913m
ELL HT=	231.7723	+0.0009	231.7732	0.034017m
ORTHO HT=	265.1980	+0.0000	265.1980	FIXED
GEOID HT=	-33.4257	+0.0009	-33.4248	0.034017m
96 Y139				
Y=	164593.9615	-0.0002	164593.9613	0.003953m
X=	429162.7042	+0.0000	429162.7042	0.003141m
ELL HT=	162.6204	+0.0007	162.6210	0.028510m
ORTHO HT=	196.0770	+0.0000	196.0770	FIXED
GEOID HT=	-33.4566	+0.0007	-33.4560	0.028510m

Observation

Adjustment

Summary

OBSERVATION ADJUSTMENT SUMMARY
 NETWORK = BUTLER OHIO
 TIME = Wed Oct 13 09:14:31 1999

OBSERVATION ADJUSTMENT (Tau = 4.00)

GPS Parameter Group 1 GPS Observations
 Azimuth rotation = +0.1200 seconds
 Deflection in latitude = +0.8367 seconds
 Deflection in longitude = +0.1377 seconds
 Network scale = 1.000001390052

1.00 σ = 0.0172 seconds
 1.00 σ = 0.2244 seconds
 1.00 σ = 0.2084 seconds
 1.00 σ = 0.000000080939

OBS#	BLK#/ REF#	TYPE	BACKSIGHT/ INSTRUMENT/ FORESIGHT	UDVC/ UDPG/ SBNT	OBSERVED/ ADJUSTED/ RESIDUAL	1.00 σ / 1.00 σ / 1.00 σ	TAU
1	1 1	hgoid	--- 1003 ---	--- --- 1	-33.5991m -33.6021m -0.003021m	0.0354m 0.0325m 0.0142m	0.05
2	1 2	hgoid	--- 1004 ---	--- --- 1	-33.3784m -33.3856m -0.007179m	0.0354m 0.0312m 0.0168m	0.11
3	1 3	hgoid	--- 1011 ---	--- --- 1	-33.2708m -33.2755m -0.004761m	0.0354m 0.0323m 0.0145m	0.08
4	1 4	hgoid	--- 2003 ---	--- --- 1	-33.4946m -33.5058m -0.011177m	0.0354m 0.0334m 0.0119m	0.23
5	1 5	hgoid	--- 2004 ---	--- --- 1	-33.4931m -33.5042m -0.011045m	0.0354m 0.0334m 0.0119m	0.23
6	1 6	hgoid	--- 2005 ---	--- --- 1	-33.3893m -33.3984m -0.009106m	0.0354m 0.0333m 0.0121m	0.19
7	1 7	hgoid	--- 2007 ---	--- --- 1	-33.3605m -33.3588m +0.001756m	0.0354m 0.0336m 0.0111m	0.04
8	1 8	hgoid	--- 2009 ---	--- --- 1	-33.2589m -33.2546m +0.004253m	0.0354m 0.0330m 0.0128m	0.08
9	1 9	hgoid	--- 2011 ---	--- --- 1	-33.2900m -33.2830m +0.007029m	0.0354m 0.0309m 0.0173m	0.10
10	1 10	hgoid	--- 2017 ---	--- --- 1	-33.4143m -33.4231m -0.008781m	0.0354m 0.0343m 0.0090m	0.25
11	1 11	hgoid	--- 9901 ---	--- --- 1	-33.6673m -33.6727m -0.005371m	0.0354m 0.0346m 0.0074m	0.18
12	1 12	hgoid	--- 9902 ---	--- --- ---	-33.5216m -33.5272m	0.0354m 0.0325m	0.10

		---	1	-0.005609m	0.0141m	
13	1 hgoid	---	---	-33.5098m	0.0354m	0.10
	13	9903	---	-33.5157m	0.0324m	
		---	1	-0.005866m	0.0144m	
14	1 hgoid	---	---	-33.3463m	0.0354m	0.18
	14	9904	---	-33.3561m	0.0326m	
		---	1	-0.009727m	0.0138m	
15	1 hgoid	---	---	-33.3274m	0.0354m	0.15
	15	9905	---	-33.3359m	0.0324m	
		---	1	-0.008551m	0.0143m	
16	1 hgoid	---	---	-33.2814m	0.0354m	0.04
	16	9906	---	-33.2792m	0.0329m	
		---	1	+0.002200m	0.0131m	
17	1 hgoid	---	---	-33.2813m	0.0354m	0.05
	17	9907	---	-33.2788m	0.0329m	
		---	1	+0.002506m	0.0131m	
18	1 hgoid	---	---	-33.3034m	0.0354m	0.10
	18	9908	---	-33.3100m	0.0310m	
		---	1	-0.006586m	0.0172m	
19	1 hgoid	---	---	-33.3064m	0.0354m	0.10
	19	9909	---	-33.3131m	0.0309m	
		---	1	-0.006628m	0.0174m	
20	1 hgoid	---	---	-33.2595m	0.0354m	0.01
	20	9910	---	-33.2590m	0.0312m	
		---	1	+0.000479m	0.0168m	
21	1 hgoid	---	---	-33.2623m	0.0354m	0.01
	21	9911	---	-33.2618m	0.0310m	
		---	1	+0.000467m	0.0171m	
22	1 hgoid	---	---	-33.3339m	0.0354m	0.02
	22	9912	---	-33.3357m	0.0294m	
		---	1	-0.001850m	0.0197m	
23	1 hgoid	---	---	-33.3392m	0.0354m	0.03
	23	9913	---	-33.3418m	0.0295m	
		---	1	-0.002571m	0.0195m	
24	1 hgoid	---	---	-33.3762m	0.0354m	0.08
	24	9914	---	-33.3813m	0.0319m	
		---	1	-0.005105m	0.0154m	
25	1 hgoid	---	---	-33.3807m	0.0354m	0.08
	25	9915	---	-33.3848m	0.0329m	
		---	1	-0.004071m	0.0131m	
26	1 hgoid	---	---	-33.4328m	0.0354m	0.32
	26	9916	---	-33.4513m	0.0324m	
		---	1	-0.018496m	0.0144m	
27	1 hgoid	---	---	-33.4345m	0.0354m	0.33
	27	9917	---	-33.4530m	0.0324m	
		---	1	-0.018526m	0.0143m	
28	1 hgoid	---	---	-33.4472m	0.0354m	0.39
	28	9918	---	-33.4609m	0.0343m	
		---	1	-0.013659m	0.0089m	

29	1 hgoid	---	---	-33.8744m	0.0354m	0.05
29		BLUEPT A	---	-33.8723m	0.0339m	
			---	+0.002075m	0.0102m	
30	1 hgoid	---	---	-33.8063m	0.0354m	0.06
30		BM B 347	---	-33.8035m	0.0333m	
			---	+0.002813m	0.0122m	
31	1 hgoid	---	---	-33.5446m	0.0354m	0.18
31		BT01	---	-33.5524m	0.0338m	
			---	-0.007795m	0.0107m	
32	1 hgoid	---	---	-33.2955m	0.0354m	0.10
32		BT02	---	-33.3020m	0.0315m	
			---	-0.006530m	0.0163m	
33	1 hgoid	---	---	-33.2596m	0.0354m	0.02
33		BT03	---	-33.2610m	0.0313m	
			---	-0.001450m	0.0165m	
34	1 hgoid	---	---	-33.2514m	0.0354m	0.06
34		BT04	---	-33.2482m	0.0325m	
			---	+0.003122m	0.0141m	
35	1 hgoid	---	---	-33.4712m	0.0354m	0.42
35		BU 74	---	-33.4862m	0.0343m	
			---	-0.015047m	0.0089m	
36	1 hgoid	---	---	-33.7481m	0.0354m	0.03
36		BUT 51	---	-33.7494m	0.0338m	
			---	-0.001242m	0.0105m	
37	1 hgoid	---	---	-33.7485m	0.0354m	0.03
37		BUT 51A	---	-33.7496m	0.0338m	
			---	-0.001109m	0.0107m	
38	1 hgoid	---	---	-33.7882m	0.0354m	0.03
38		BUT 52	---	-33.7865m	0.0333m	
			---	+0.001621m	0.0120m	
39	1 hgoid	---	---	-33.7895m	0.0354m	0.03
39		BUT 52A	---	-33.7880m	0.0334m	
			---	+0.001487m	0.0119m	
40	1 hgoid	---	---	-33.6652m	0.0354m	0.06
40		BUT 53	---	-33.6683m	0.0330m	
			---	-0.003083m	0.0129m	
41	1 hgoid	---	---	-33.6584m	0.0354m	0.06
41		BUT 53A	---	-33.6618m	0.0329m	
			---	-0.003341m	0.0130m	
42	1 hgoid	---	---	-33.6706m	0.0354m	0.02
42		BUT 54	---	-33.6714m	0.0325m	
			---	-0.000848m	0.0141m	
43	1 hgoid	---	---	-33.6583m	0.0354m	0.02
43		BUT 54A	---	-33.6594m	0.0324m	
			---	-0.001128m	0.0143m	
44	1 hgoid	---	---	-33.6256m	0.0354m	0.02
44		BUT 55	---	-33.6270m	0.0322m	
			---	-0.001364m	0.0148m	
45	1 hgoid	---	---	-33.6291m	0.0354m	0.02
45		BUT 55A	---	-33.6304m	0.0322m	

			----	1	-0.001289m	0.0148m	
46	1 hgoid		----	----	-33.5327m	0.0354m	0.05
	46	BUT 56	----	----	-33.5363m	0.0313m	
			----	1	-0.003542m	0.0167m	
47	1 hgoid		----	----	-33.5419m	0.0354m	0.05
	47	BUT 56A	----	----	-33.5452m	0.0313m	
			----	1	-0.003321m	0.0165m	
48	1 hgoid		----	----	-33.5350m	0.0354m	0.05
	48	BUT 57	----	----	-33.5383m	0.0308m	
			----	1	-0.003217m	0.0176m	
49	1 hgoid		----	----	-33.5496m	0.0354m	0.04
	49	BUT 57A	----	----	-33.5526m	0.0309m	
			----	1	-0.002954m	0.0173m	
50	1 hgoid		----	----	-33.4505m	0.0354m	0.06
	50	BUT 58	----	----	-33.4554m	0.0299m	
			----	1	-0.004824m	0.0190m	
51	1 hgoid		----	----	-33.4618m	0.0354m	0.06
	51	BUT 58A	----	----	-33.4664m	0.0300m	
			----	1	-0.004617m	0.0189m	
52	1 hgoid		----	----	-33.4286m	0.0354m	0.08
	52	BUT 59	----	----	-33.4343m	0.0305m	
			----	1	-0.005731m	0.0181m	
53	1 hgoid		----	----	-33.4315m	0.0354m	0.08
	53	BUT 59A	----	----	-33.4372m	0.0305m	
			----	1	-0.005721m	0.0181m	
54	1 hgoid		----	----	-33.5680m	0.0354m	0.05
	54	BUT 60A	----	----	-33.5715m	0.0316m	
			----	1	-0.003444m	0.0159m	
55	1 hgoid		----	----	-33.5894m	0.0354m	0.07
	55	BUT 61	----	----	-33.5936m	0.0319m	
			----	1	-0.004186m	0.0153m	
56	1 hgoid		----	----	-33.5836m	0.0354m	0.07
	56	BUT 61A	----	----	-33.5880m	0.0319m	
			----	1	-0.004387m	0.0155m	
57	1 hgoid		----	----	-33.6266m	0.0354m	0.14
	57	BUT 62	----	----	-33.6331m	0.0335m	
			----	1	-0.006510m	0.0115m	
58	1 hgoid		----	----	-33.6366m	0.0354m	0.13
	58	BUT 62A	----	----	-33.6426m	0.0335m	
			----	1	-0.005982m	0.0114m	
59	1 hgoid		----	----	-33.5069m	0.0354m	0.09
	59	BUT 63	----	----	-33.5134m	0.0308m	
			----	1	-0.006443m	0.0175m	
60	1 hgoid		----	----	-33.5138m	0.0354m	0.10
	60	BUT 63A	----	----	-33.5205m	0.0309m	
			----	1	-0.006685m	0.0174m	
61	1 hgoid		----	----	-33.3793m	0.0354m	0.09
	61	BUT 64	----	----	-33.3865m	0.0299m	
			----	1	-0.007218m	0.0190m	

62	1 hgoid	---	---	-33.3806m	0.0354m	0.09
62		BUT 64A	---	-33.3876m	0.0300m	
		---	1	-0.007005m	0.0188m	
63	1 hgoid	---	---	-33.5726m	0.0354m	0.19
63		BUT 65A	---	-33.5820m	0.0333m	
		---	1	-0.009411m	0.0121m	
64	1 hgoid	---	---	-33.5729m	0.0354m	0.14
64		BUT 66	---	-33.5809m	0.0325m	
		---	1	-0.007982m	0.0142m	
65	1 hgoid	---	---	-33.5765m	0.0354m	0.14
65		BUT 66A	---	-33.5846m	0.0326m	
		---	1	-0.008032m	0.0139m	
66	1 hgoid	---	---	-33.5386m	0.0354m	0.25
66		BUT 67	---	-33.5513m	0.0330m	
		---	1	-0.012732m	0.0128m	
67	1 hgoid	---	---	-33.5436m	0.0354m	0.24
67		BUT 67A	---	-33.5558m	0.0330m	
		---	1	-0.012188m	0.0129m	
68	1 hgoid	---	---	-33.4906m	0.0354m	0.16
68		BUT 68	---	-33.5019m	0.0307m	
		---	1	-0.011276m	0.0177m	
69	1 hgoid	---	---	-33.4967m	0.0354m	0.16
69		BUT 68A	---	-33.5077m	0.0308m	
		---	1	-0.010932m	0.0175m	
70	1 hgoid	---	---	-33.4107m	0.0354m	0.10
70		BUT 69	---	-33.4192m	0.0288m	
		---	1	-0.008553m	0.0206m	
71	1 hgoid	---	---	-33.4097m	0.0354m	0.10
71		BUT 69A	---	-33.4183m	0.0287m	
		---	1	-0.008655m	0.0207m	
72	1 hgoid	---	---	-33.3123m	0.0354m	0.09
72		BUT 70	---	-33.3201m	0.0287m	
		---	1	-0.007738m	0.0207m	
73	1 hgoid	---	---	-33.3180m	0.0354m	0.10
73		BUT 70A	---	-33.3262m	0.0285m	
		---	1	-0.008271m	0.0211m	
74	1 hgoid	---	---	-33.4420m	0.0354m	0.14
74		BUT 71	---	-33.4529m	0.0296m	
		---	1	-0.010913m	0.0195m	
75	1 hgoid	---	---	-33.4503m	0.0354m	0.15
75		BUT 71A	---	-33.4621m	0.0299m	
		---	1	-0.011752m	0.0191m	
76	1 hgoid	---	---	-33.5020m	0.0354m	0.37
76		BUT 72	---	-33.5151m	0.0343m	
		---	1	-0.013152m	0.0089m	
77	1 hgoid	---	---	-33.5010m	0.0354m	0.37
77		BUT 72A	---	-33.5138m	0.0343m	
		---	1	-0.012852m	0.0087m	
78	1 hgoid	---	---	-33.4904m	0.0354m	0.35
78		BUT 73	---	-33.5086m	0.0330m	

		---	1	-0.018214m	0.0130m	
79	1 hgoid	---	---	-33.4934m	0.0354m	0.36
	79	BUT 73A	---	-33.5110m	0.0332m	
		---	1	-0.017573m	0.0123m	
80	1 hgoid	---	---	-33.4712m	0.0354m	0.42
	80	BUT 74	---	-33.4862m	0.0343m	
		---	1	-0.015047m	0.0089m	
81	1 hgoid	---	---	-33.4751m	0.0354m	0.42
	81	BUT 74A	---	-33.4904m	0.0342m	
		---	1	-0.015298m	0.0091m	
82	1 hgoid	---	---	-33.5264m	0.0354m	0.11
	82	BUT1 NGS	---	-33.5337m	0.0311m	
		---	1	-0.007277m	0.0169m	
83	1 hgoid	---	---	-33.7638m	0.0354m	0.03
	83	HARR	---	-33.7649m	0.0345m	
		---	1	-0.001058m	0.0079m	
84	1 hgoid	---	---	-33.4433m	0.0354m	0.35
	84	HATT	---	-33.4680m	0.0307m	
		---	1	-0.024755m	0.0177m	
85	1 hgoid	---	---	-33.5526m	0.0354m	0.06
	85	HOGAN AZ	---	-33.5564m	0.0315m	
		---	1	-0.003802m	0.0162m	
86	1 hgoid	---	---	-33.3962m	0.0354m	0.18
	86	KTO1	---	-33.4084m	0.0313m	
		---	1	-0.012231m	0.0166m	
87	1 hgoid	---	---	-33.3289m	0.0354m	0.11
	87	M 135	---	-33.3394m	0.0269m	
		---	1	-0.010510m	0.0231m	
88	1 hgoid	---	---	-33.4655m	0.0354m	0.37
	88	MWO A	---	-33.4861m	0.0326m	
		---	1	-0.020565m	0.0140m	
89	1 hgoid	---	---	-33.4694m	0.0354m	0.37
	89	MWOA 75A	---	-33.4895m	0.0328m	
		---	1	-0.020046m	0.0135m	
90	1 hgoid	---	---	-33.3035m	0.0354m	0.05
	90	OXFO	---	-33.3009m	0.0327m	
		---	1	+0.002606m	0.0136m	
91	1 hgoid	---	---	-33.4189m	0.0354m	0.25
	91	PEOR	---	-33.4339m	0.0321m	
		---	1	-0.014993m	0.0150m	
92	1 hgoid	---	---	-33.5682m	0.0354m	0.19
	92	T 347	---	-33.5777m	0.0333m	
		---	1	-0.009478m	0.0122m	
93	1 hgoid	---	---	-33.4813m	0.0354m	0.05
	93	V 143ECC	---	-33.4857m	0.0288m	
		---	1	-0.004419m	0.0206m	
94	1 hgoid	---	---	-33.3129m	0.0354m	0.11
	94	V135	---	-33.3042m	0.0290m	
		---	1	+0.008744m	0.0203m	

95	1 hgoid	---	---	-33.4166m	0.0354m	0.21
95		W136	---	-33.4248m	0.0340m	
		---	1	-0.008215m	0.0099m	
96	1 hgoid	---	---	-33.4480m	0.0354m	0.09
96		Y139	---	-33.4560m	0.0285m	
		---	1	-0.007979m	0.0210m	
97	1 gpsaz	---	---	298°44'36.4912"	0.1879"	0.13
1		BUT 57A	---	298°44'36.4139"	0.1118"	
		V 143ECC	1	-0.077271"	0.1510"	
98	1 gpsht	---	---	+54.8127m	0.0114m	0.08
1		BUT 57A	---	+54.8097m	0.0062m	
		V 143ECC	1	-0.002983m	0.0096m	
99	1 gpsds	---	---	4679.0555m	0.0055m	0.11
1		BUT 57A	---	4679.0575m	0.0030m	
		V 143ECC	1	+0.002061m	0.0046m	
100	2 gpsaz	---	---	309°32'16.2794"	0.1870"	0.40
1		BUT 63A	---	309°32'16.5538"	0.0720"	
		BUT 70A	1	+0.274395"	0.1726"	
101	2 gpsht	---	---	-1.1990m	0.0236m	0.01
1		BUT 63A	---	-1.1978m	0.0099m	
		BUT 70A	1	+0.001259m	0.0214m	
102	2 gpsds	---	---	11581.3225m	0.0104m	0.09
1		BUT 63A	---	11581.3190m	0.0043m	
		BUT 70A	1	-0.003546m	0.0094m	
103	3 gpsaz	---	---	252°28'30.6738"	0.2257"	0.21
1		BUT 73	---	252°28'30.8478"	0.0811"	
		BUT 71	1	+0.174032"	0.2106"	
104	3 gpsht	---	---	-6.8679m	0.0190m	0.13
1		BUT 73	---	-6.8772m	0.0072m	
		BUT 71	1	-0.009297m	0.0175m	
105	3 gpsds	---	---	7712.1897m	0.0068m	0.32
1		BUT 73	---	7712.1816m	0.0026m	
		BUT 71	1	-0.008090m	0.0062m	
106	4 gpsaz	---	---	112°11'57.9636"	0.5712"	0.04
1		BUT 61	---	112°11'57.8794"	0.2242"	
		BUT 53	1	-0.084155"	0.5254"	
107	4 gpsht	---	---	+42.2300m	0.0344m	0.25
1		BUT 61	---	+42.1995m	0.0154m	
		BUT 53	1	-0.030592m	0.0307m	
108	4 gpsds	---	---	5290.7011m	0.0136m	0.09
1		BUT 61	---	5290.7057m	0.0055m	
		BUT 53	1	+0.004612m	0.0124m	
109	5 gpsaz	---	---	153°30'57.4057"	0.3349"	0.05
1		MWOA 75A	---	153°30'57.4612"	0.1628"	
		BUT 73A	1	+0.055463"	0.2926"	
110	5 gpsht	---	---	+9.3257m	0.0113m	0.04
1		MWOA 75A	---	+9.3271m	0.0056m	
		BUT 73A	1	+0.001415m	0.0098m	
111	5 gpsds	---	---	2749.0623m	0.0045m	0.10
1		MWOA 75A	---	2749.0638m	0.0024m	

		BUT 73A	1	+0.001549m	0.0038m	
112	6 gpsaz	---	---	150°25'52.6827"	0.1663"	0.31
	1	BUT 74	---	150°25'52.5088"	0.0916"	
		BUT 72A	1	-0.173947"	0.1388"	
113	6 gpsht	---	---	-56.2594m	0.0101m	0.18
	1	BUT 74	---	-56.2657m	0.0053m	
		BUT 72A	1	-0.006316m	0.0086m	
114	6 gpsds	---	---	4254.5061m	0.0047m	0.24
	1	BUT 74	---	4254.5100m	0.0023m	
		BUT 72A	1	+0.003925m	0.0041m	
115	7 gpsaz	---	---	290°22'56.0371"	0.2125"	0.12
	1	BUT 62	---	290°22'55.9510"	0.1151"	
		BUT 66A	1	-0.086162"	0.1786"	
116	7 gpsht	---	---	-45.1750m	0.0136m	0.09
	1	BUT 62	---	-45.1708m	0.0077m	
		BUT 66A	1	+0.004206m	0.0112m	
117	7 gpsds	---	---	6276.3420m	0.0051m	0.13
	1	BUT 62	---	6276.3399m	0.0033m	
		BUT 66A	1	-0.002037m	0.0039m	
118	8 gpsaz	---	---	130°38'48.4306"	0.2955"	0.03
	1	BUT 53	---	130°38'48.4645"	0.1332"	
		BUT 51A	1	+0.033975"	0.2638"	
119	8 gpsht	---	---	+26.3349m	0.0247m	0.10
	1	BUT 53	---	+26.3258m	0.0114m	
		BUT 51A	1	-0.009086m	0.0220m	
120	8 gpsds	---	---	7003.9608m	0.0107m	0.07
	1	BUT 53	---	7003.9633m	0.0049m	
		BUT 51A	1	+0.002514m	0.0095m	
121	9 gpsaz	---	---	215°20'11.4458"	0.1392"	0.24
	1	HOGAN AZ	---	215°20'11.5538"	0.0825"	
		BUT 55	1	+0.107938"	0.1122"	
122	9 gpsht	---	---	+72.0374m	0.0120m	0.05
	1	HOGAN AZ	---	+72.0356m	0.0071m	
		BUT 55	1	-0.001809m	0.0096m	
123	9 gpsds	---	---	7637.9714m	0.0059m	0.00
	1	HOGAN AZ	---	7637.9715m	0.0034m	
		BUT 55	1	+0.000090m	0.0048m	
124	10 gpsaz	---	---	335°15'19.9575"	0.1648"	0.18
	1	BUT 57	---	335°15'19.8714"	0.1146"	
		BUT 58	1	-0.086188"	0.1184"	
125	10 gpsht	---	---	+4.7458m	0.0068m	0.02
	1	BUT 57	---	+4.7454m	0.0048m	
		BUT 58	1	-0.000409m	0.0049m	
126	10 gpsds	---	---	3632.1373m	0.0035m	0.18
	1	BUT 57	---	3632.1355m	0.0025m	
		BUT 58	1	-0.001812m	0.0025m	
127	11 gpsaz	---	---	310°57'58.2849"	1.4131"	0.45
	1	BUT 58A	---	310°57'59.9734"	1.0636"	
		BUT 58	1	+1.688496"	0.9305"	