

GROUND CONTROL SURVEY REPORT

**CONNECTICUT COASTAL ELEVATION MAPPING
PROJECT**

FOR
**NATIONAL OCEANIC AND ATMOSPHERIC
ADMINISTRATION (NOAA) COASTAL SERVICES CENTER**

IN CONJUNCTION WITH THE
NATIONAL-GEOSPATIAL INTELLIGENCE AGENCY (NGA)

UNDER
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WOOLPERT PROJECT #63163

November 2004

Connecticut Coastal Elevation Mapping Project Ground Control Survey Report

for:

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Summary of Contents

Section 1: Ground Control Survey Report	
Summary Of Contents.....	i
Introduction.....	1
Monumentation.....	1
Methodology.....	1
Date of Survey.....	1
Datum Reference.....	1
GPS Data Processing.....	2
GPS Adjustments.....	2
Final Coordinates.....	2
Accuracy Specifications.....	2
Section 2: Existing Control Station Information	
Section 3: Station Coordinate Listing	
Section 4: Base Station GPS Logs	
Section 5: Quality Control Station Logs	
Section 6: Control Diagram	

Section 1

Introduction

The intent of this survey was to establish 3-dimensional coordinates for 2 base station control points and a minimum of twenty (20) Quality Control points in support of the Connecticut Coastal Elevation LIDAR Mapping project.

Monumentation

The intent was to utilize two (2) existing control stations in suitable locations as GPS LIDAR base stations. However, after investigating the placement of the existing control, it was determined that Woolpert field crew would only be able to utilize one existing National Geodetic Survey (NGS) station (P 36). A second GPS LIDAR base control station (MADISON CP) was established in a secure location and was to be utilized as a secondary base station. This additional control station consists of a chiseled cross placed on a concrete parking lot curb.

Quality Assurance Control Checks

Quality Control field observations were implemented to verify the accuracy of the LIDAR mission. Woolpert established a total of twenty-two (22) quality control points in specified areas throughout the project mapping limits. Each control point (C001-C022) observation was taken on hard surface (bare ground) areas that were suitable for both GPS and LIDAR measurements.

Methodology

Rapid-Static GPS surveying techniques were used for measuring all ground control stations. Rapid-Static GPS surveying requires a minimum of two receivers to occupy stations at either end of a baseline for approximately 5-20 minutes, depending upon baseline length, number of satellites, and satellite geometry. This is similar in theory to static surveying; however, shorter observation time is made possible due to advances in both hardware and software.

The survey was conducted using two (2), Woolpert-owned, Trimble Navigation R 7 dual-frequency geodetic receivers and one (1), Woolpert-owned, Trimble Navigation 4000SSE/SSI dual-frequency geodetic GPS receiver. Each observation session utilized a 5-second sync rate, lasting between 15 - 35 minutes each.

Date of Survey

All ground control field operations took place between October 8 and October 10, 2004.

Datum Reference

All horizontal GPS control was based on the North American Datum (NAD) 1983 (1996). The vertical datum used for this survey was the North American Vertical Datum (NAVD) of 1988.

GPS Data Processing

The field crew chief processed all session baselines each day using *Trimble Navigation's* Trimble Geomatics Office (TGO) Version 1.61 baseline processor and using the broadcast ephemeris. *Trimble Navigation's* Trimble Geomatics Office (TGO) Wave Software User's Guide (November 1999) was used as a reference. The ratio and root-mean-square (RMS) criteria on pages 3-4 to 3-6 of the guide were followed. Other criteria used a maximum of 10.5 percent rejections, along with float-versus-fixed deltas of 10 cm. All cases that failed to meet any of these criteria were rejected and not used. Fixed solutions were obtained for all vector baselines.

Daily processing allowed the field crew to discover any weak links in the network and immediately schedule re-observations of the affected baselines. Once the fieldwork was complete, the processed baselines were then run through a rigorous loop closure analysis. Baselines that failed this analysis were either reprocessed or removed from the network.

GPS Adjustments

Upon completion of all field data processing, Woolpert performed both minimally constrained and fully constrained least-squares adjustments using *Trimble Navigation's* Trimble Geomatics Office (TGO) Version 1.61 adjustment software. After an acceptable minimally constrained least-squares adjustment was obtained, Woolpert performed a fully constrained least-squares adjustment by fixing the GPS networks to existing NGS control stations. Geoid03 was used to model the elevations. For this survey the following stations were held fixed:

Dimension	Existing Control Stations Used
3-D Control Stations	P 36
2-D Control Stations	MORICHES 1 CORS ARP

National Geodetic Survey control data sheets for each of these control stations will be found in Section 2.

Final Coordinates

The final NAD83 (1996) coordinates and NAVD88 elevations for the ground control network stations are presented in Section 3.

Accuracy Specifications

The final constrained adjustment for the ground control network indicates that the GPS survey exceeds criteria for LIDAR mapping outlined in the *Guidelines and Specifications for Flood Hazard Mapping Partners* as published February 2002.

Section 2

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```

DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 7.07
1      National Geodetic Survey,  Retrieval Date = NOVEMBER 1, 2004
LX0452 *****
LX0452 CBN - This is a Cooperative Base Network Control Station.
LX0452 TIDAL BM - This is a Tidal Bench Mark.
LX0452 DESIGNATION - P 36
LX0452 PID - LX0452
LX0452 STATE/COUNTY- CT/NEW HAVEN
LX0452 USGS QUAD - CLINTON (1984)
LX0452
LX0452 *CURRENT SURVEY CONTROL
LX0452
LX0452* NAD 83(1996) - 41 16 09.03408(N) 072 35 57.56343(W) ADJUSTED
LX0452* NAVD 88 - 2.147 (meters) 7.04 (feet) ADJUSTED
LX0452
LX0452 X - 1,435,720.524 (meters) COMP
LX0452 Y - -4,581,200.115 (meters) COMP
LX0452 Z - 4,184,919.629 (meters) COMP
LX0452 LAPLACE CORR- -2.48 (seconds) DEFLEC99
LX0452 ELLIP HEIGHT- -28.09 (meters) (06/22/01) GPS OBS
LX0452 GEOID HEIGHT- -30.24 (meters) GEOID03
LX0452 DYNAMIC HT - 2.146 (meters) 7.04 (feet) COMP
LX0452 MODELED GRAV- 980,290.7 (mgal) NAVD 88
LX0452
LX0452 HORZ ORDER - A
LX0452 VERT ORDER - FIRST CLASS I
LX0452 ELLP ORDER - FOURTH CLASS I
LX0452
LX0452.The horizontal coordinates were established by GPS observations
LX0452.and adjusted by the National Geodetic Survey in June 2001.
LX0452
LX0452.The orthometric height was determined by differential leveling
LX0452.and adjusted by the National Geodetic Survey in June 1991.
LX0452
LX0452.This Tidal Bench Mark is designated as VM 2253
LX0452.by the Center for Operational Oceanographic Products and Services.
LX0452
LX0452.The X, Y, and Z were computed from the position and the ellipsoidal ht.
LX0452
LX0452.The Laplace correction was computed from DEFLEC99 derived deflections.
LX0452
LX0452.The ellipsoidal height was determined by GPS observations
LX0452.and is referenced to NAD 83.
LX0452
LX0452.The geoid height was determined by GEOID03.
LX0452
LX0452.The dynamic height is computed by dividing the NAVD 88
LX0452.geopotential number by the normal gravity value computed on the
LX0452.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
LX0452.degrees latitude (g = 980.6199 gals.).
LX0452
LX0452.The modeled gravity was interpolated from observed gravity values.
LX0452
LX0452; North East Units Scale Factor Converg.
LX0452;SPC CT - 200,814.795 317,426.032 MT 0.99999374 +0 05 59.7
LX0452;UTM 18 - 4,571,418.422 701,084.721 MT 1.00009766 +1 35 02.4
LX0452
LX0452! - Elev Factor x Scale Factor = Combined Factor

```

LX0452!SPC CT - 1.00000441 x 0.99999374 = 0.99999815
LX0452!UTM 18 - 1.00000441 x 1.00009766 = 1.00010207
LX0452
LX0452 SUPERSEDED SURVEY CONTROL
LX0452
LX0452 NAVD 88 (06/22/01) 2.15 (m) 7.1 (f) LEVELING 3
LX0452 NGVD 29 (??/??/92) 2.454 (m) 8.05 (f) ADJ UNCH 1 1
LX0452
LX0452.Superseded values are not recommended for survey control.
LX0452.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
LX0452.See file dsdata.txt to determine how the superseded data were derived.
LX0452
LX0452_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TYL0108571418(NAD 83)
LX0452_MARKER: DB = BENCH MARK DISK
LX0452_SETTING: 32 = SEA WALL
LX0452_STAMPING: P 36 1965
LX0452_MARK LOGO: CGS
LX0452_MAGNETIC: N = NO MAGNETIC MATERIAL
LX0452_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
LX0452+STABILITY: SURFACE MOTION
LX0452_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
LX0452+SATELLITE: SATELLITE OBSERVATIONS - July 16, 2001
LX0452
LX0452 HISTORY - Date Condition Report By
LX0452 HISTORY - 1965 MONUMENTED CGS
LX0452 HISTORY - 20001121 GOOD CTGS
LX0452 HISTORY - 20010716 GOOD CTGS
LX0452
LX0452 STATION DESCRIPTION
LX0452
LX0452'DESCRIBED BY COAST AND GEODETIC SURVEY 1965
LX0452'1 MI SW FROM MADISON.
LX0452'0.3 MILE WEST ALONG U.S. HIGHWAY 1 FROM THE POST OFFICE AT
LX0452'MADISON, THENCE 0.7 MILE SOUTH ALONG ISLAND AVENUE, ABOUT 0.1
LX0452'MILE EAST OF THE MADISON BEACH CLUB AT MIDDLE BEACH, AT THE
LX0452'JUNCTION OF A STREET LEADING NORTH, 37 FEET SOUTH OF THE CENTER
LX0452'OF STREET JUNCTION, 11 FEET WEST OF THE EXTENDED CENTER LINE OF
LX0452'STREET LEADING NORTH, SET ON THE TOP OF THE NORTH END OF A 2-FOOT
LX0452'WIDE CONCRETE WALL WHICH PROJECTS OUT TO THE NORTH FROM A SEA
LX0452'WALL, 1.2 FEET SOUTH OF THE NORTH END OF THE WALL AND 2 FEET
LX0452'ABOVE THE LEVEL OF THE STREET.
LX0452
LX0452 STATION RECOVERY (2000)
LX0452
LX0452'RECOVERY NOTE BY CONNECTICUT GEODETIC SURVEY 2000 (RB)
LX0452'0.3 MILE WEST ALONG U. S. HIGHWAY 1 FROM THE POST OFFICE AT
LX0452'MADISON, THENCE 0.7 MILE SOUTH ALONG ISLAND AVENUE, ABOUT 0.1 MILE
LX0452'EAST OF THE MADISON BEACH CLUB AT MIDDLE BEACH, AT THE JUNCTION OF
LX0452'A STREET LEADING NORTH,37 FEET SOUTH OF THE CENTER OF STREET
LX0452'JUNCTION, 11 FEET WEST OF THE EXTENDED CENTER LINE OF STREET
LX0452'LEADING NORTH, SET ON THE TOP OF THE NORTH END OF A 2-FOOT WIDE
LX0452'CONCRETE WALL WHICH PROJECTS OUT TO THE NORTH FROM A SEA WALL,
LX0452'1.2 FEET SOUTH OF THE NORTH END OF THE WALL, 2 FEET ABOVE THE LEVEL
LX0452'OF THE STREET, TIDAL STATION NO. 19, CONNECTICUT, MADISON (BEACH
LX0452'CLUB) LONG ISLAND SOUND, 24.3 FT SOUTH OF POLE NUMBER 4446.
LX0452'
LX0452'
LX0452'
LX0452
LX0452 STATION RECOVERY (2001)
LX0452
LX0452'RECOVERY NOTE BY CONNECTICUT GEODETIC SURVEY 2001 (DM)
LX0452'RECOVERED AS DESCRIBED.

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 7.07
1 National Geodetic Survey, Retrieval Date = NOVEMBER 1, 2004
AH5048 *****
AH5048 CORS - This is a GPS Continuously Operating Reference Station.
AH5048 DESIGNATION - MORICHES 1 CORS ARP
AH5048 CORS_ID - MOR1
AH5048 PID - AH5048
AH5048 STATE/COUNTY- NY/SUFFOLK
AH5048 USGS QUAD - EASTPORT (1956)
AH5048
AH5048 *CURRENT SURVEY CONTROL
AH5048
AH5048* NAD 83(CORS)- 40 47 22.25925(N) 072 44 46.63864(W) ADJUSTED
AH5048* NAVD 88 - 8.78 (meters) 28.8 (feet) GPS OBS
AH5048
AH5048 EPOCH DATE - 2002.00
AH5048 X - 1,434,337.565 (meters) COMP
AH5048 Y - -4,618,265.498 (meters) COMP
AH5048 Z - 4,144,739.117 (meters) COMP
AH5048 ELLIP HEIGHT- -22.85 (meters) (03/??/02) GPS OBS
AH5048 GEOID HEIGHT- -31.60 (meters) GEOID03
AH5048
AH5048 HORZ ORDER - SPECIAL (CORS)
AH5048 ELLP ORDER - SPECIAL (CORS)
AH5048
AH5048. ITRF positions are available for this station.
AH5048. The coordinates were established by GPS observations
AH5048. and adjusted by the National Geodetic Survey in March 2002.
AH5048. The coordinates are valid at the epoch date displayed above.
AH5048. The epoch date for horizontal control is a decimal equivalence
AH5048. of Year/Month/Day.
AH5048
AH5048. The orthometric height was determined by GPS observations and a
AH5048. high-resolution geoid model using precise GPS observation and
AH5048. processing techniques.
AH5048
AH5048. The PID for the CORS L1 Phase Center is AJ7946.
AH5048
AH5048. The XYZ, and position/ellipsoidal ht. are equivalent.
AH5048
AH5048. The ellipsoidal height was determined by GPS observations
AH5048. and is referenced to NAD 83.
AH5048
AH5048. The geoid height was determined by GEOID03.
AH5048
AH5048;
AH5048; SPC NY L - North East Units Scale Factor Converg.
69,922.280 405,811.999 MT 0.99999546 +0 49 12.1
AH5048
AH5048!
AH5048! SPC NY L - Elev Factor x Scale Factor = Combined Factor
1.00000358 x 0.99999546 = 0.99999904
AH5048
AH5048 SUPERSEDED SURVEY CONTROL
AH5048
AH5048 NAD 83(CORS)- 40 47 22.25950(N) 072 44 46.63891(W) AD(1997.00) c
AH5048 ELLIP H (11/??/98) -22.86 (m) GP(1997.00) c c
AH5048
AH5048. Superseded values are not recommended for survey control.
AH5048. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

AH5048. See file dsdata.txt to determine how the superseded data were derived.

AH5048

AH5048 U.S. NATIONAL GRID SPATIAL ADDRESS: 18TXL9015017836(NAD 83)

AH5048 MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA

AH5048

STATION DESCRIPTION

AH5048

AH5048 DESCRIBED BY NATIONAL GEODETIC SURVEY 2002

AH5048 STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND

AH5048 VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE

AH5048 BY ANONYMOUS FTP OR THE WORLDWIDE WEB.

AH5048 FTP CORS.NGS.NOAA.GOV: CORS/COORD AND CORS/STATION_LOG

AH5048 HTTP://WWW.NGS.NOAA.GOV UNDER PRODUCTS AND SERVICES.

Section 3

Connecticut Coastal Elevation Mapping Project
Horizontal Datum: NAD 83 (1996)
Vertical Datum: NAVD 88
Units: Decimal Degrees / Meters
Geoid Model: Geoid03
Coordinates: Geographical

LIDAR Base Stations:

Station Name	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Elevation (M)	Y Std. Dev.	X Std. Dev.	Z Std. Dev.
P 36	41.269176135	-72.599323170	2.147	0.000	0.000	0.000
MADISON CP	41.270974042	-72.601207229	2.507	0.004	0.004	0.010

CORS Station Used:

Station Name	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Elevation (M)	Y Std. Dev.	X Std. Dev.	Z Std. Dev.
MORICHES 1 CORS ARP	40.789516461	-72.746288509	8.725	0.000	0.000	0.013

Profile QA/QA Points:

Station Name	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Elevation (M)	Y Std. Dev.	X Std. Dev.	Z Std. Dev.
C001	41.447215351	-72.474543058	13.085	0.016	0.014	0.023
C002	41.449359141	-72.466460326	2.382	0.016	0.014	0.035
C003	41.450747108	-72.461367196	2.617	0.012	0.011	0.026
C004	41.411617002	-72.440340622	2.511	0.015	0.012	0.023
C005	41.350768671	-72.384868879	1.481	0.020	0.014	0.026
C006	41.319041560	-72.350627481	1.364	0.019	0.010	0.022
C007	41.387188672	-72.351130092	7.329	0.045	0.025	0.064
C008	41.411523063	-72.420180865	4.720	0.023	0.014	0.026
C009	41.288604844	-72.290056767	4.550	0.018	0.018	0.035
C010	41.318524939	-72.301764719	9.796	0.021	0.014	0.034
C011	41.269168221	-72.392702889	1.769	0.022	0.014	0.029
C012	41.279588454	-72.424198018	4.625	0.023	0.014	0.031
C013	41.275186840	-72.473563072	2.408	0.018	0.012	0.027
C014	41.277548090	-72.537265419	4.904	0.036	0.018	0.059
C015	41.279102242	-72.600748664	6.447	0.007	0.008	0.017
C016	41.271864355	-72.664690025	1.359	0.046	0.017	0.048
C017	41.262723488	-72.719471011	14.163	0.028	0.013	0.038
C018	41.261040236	-72.801105453	1.509	0.018	0.013	0.035
C019	41.248101685	-72.894552635	5.849	0.017	0.026	0.049
C020	41.378418923	-72.879438166	6.383	0.013	0.011	0.027
C021	41.285530305	-72.882209414	4.137	0.019	0.019	0.034
C022	41.321424103	-72.876764429	3.151	0.014	0.013	0.026

Section 4



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GPS STATION LOG

Station Name: P36 Project Name: CONNECTICUT COASTAL
 Receiver No.: R7 Job Number: _____
 Day of Year: 221 Local Date: 8/8/04
 Session No.: BASE Operator: CS.

C/A CODE POSITION

Lat: 41° 16' 09" N
 Long: 072° 35' 57" W
 Ellip. Height: _____ M

Trimble: 4000 SSE, 4000 SSI, Other R7
 Antenna: Kinematic, Compact, Groundplane, Dome
 Battery No.: Zephyr Geodetic
 Tribrach No.: FH-TP
 File Name: _____

Antenna H.I. ==> Before: 2.053 M _____ Ft Actual ==> Start _____ : _____ Stop _____ : _____ UTC
 After: 2.053 M _____ Ft Start 00:20 Stop _____ : _____ Local
Rapid Static Static, Kinematic Survey Local-UTC Time Offset: _____

SV's Used: _____ Weather: _____

Sketch:

Description:

Type of Mark: Disk in cone Remarks: _____
 Stamping: P36
 Agency: _____ Indicate North



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GPS STATION LOG

Station Name: MADISON CP Project Name: CONNECTICUT COASTAL
 Receiver No.: 4700 Job Number: _____
 Day of Year: 221 Local Date: 8/8/04
 Session No.: BASE #1 Operator: CS

C/A CODE POSITION

Lat: 41° 16' 15" N
 Long: 072° 36' 04" W
 Ellip. Height: _____ M

Trimble: 4000 SSE, 4000 SSI, Other 4700
 Antenna: Kinematic, Compact, Groundplane, Dome
 Battery No.: MICRO-CENTRED
 Tribrach No.: FT.P - CONVENTIONAL
 File Name: _____

Antenna H.I. => Before: 1.573 M _____ Ft Actual => Start _____ : _____ Stop _____ : _____ UTC
 T.V. After: 1.573 M _____ Ft Start 00:36 Stop _____ : _____ Local
 Rapid Static, Static, Kinematic Survey Local-UTC Time Offset: _____

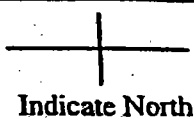
SV's Used: _____ Weather: _____

Sketch:

Description:

located @ Parking Lot
 of Madison boating club.

Type of Mark: Chiseled cross
 Stamping: ON CONC. CURB
 Agency: _____



Remarks:



GPS STATION LOG

Station Name: P36 Project Name: Connecticut Coastal
Receiver No.: R7 Job Number: _____
Day of Year: 221 Local Date: 8/8/04
Session No.: BASE Operator: C.S.

C/A CODE POSITION
Lat: 41° 14' 09" N Trimble: 4000 SSE, 4000 SSI, Other R7
Long: 072° 35' 57" W Antenna: Kinematic, Compact, Groundplane, Dome
Ellip. Height: _____ M Battery No.: Zephyr Geodetic
Tribrach No.: F.H.-TP
File Name: _____

Antenna H.I. ==> Before: 2053 M _____ Ft Actual ==> Start _____ : _____ Stop _____ : _____ UTC
After: 2053 M _____ Ft Start 20:47 Stop _____ : _____ Local
Rapid Static, Static, Kinematic Survey Local-UTC Time Offset: _____

SV's Used: _____ Weather: _____

Sketch:

Description:

Type of Mark: Disk in Conc Remarks: _____
Stamping: P36 _____
Agency: _____ Indicate North



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GPS STATION LOG

Station Name: MADISON CP Project Name: Connecticut Coastal
 Receiver No.: 4700 Job Number: _____
 Day of Year: 221 Local Date: 8/8/04
 Session No.: DATA #2 Operator: C.S.

C/A CODE POSITION

Lat: 41 ° 16 ' 15 " N
 Long: 072 ° 36 ' 04 " W
 Ellip. Height: _____ M

Trimble: 4000 SSE, 4000 SSI, Other 4700
 Antenna: Kinematic, Compact, Groundplane, Dome
 Battery No.: Micro-Centered
 Tribach No.: _____
 File Name: _____

Antenna H.I. ==> Before: 1.640 M _____ Ft Actual ==> Start _____ : _____ Stop _____ : _____ UTC
 After: 1.640 M _____ Ft Start 21 : 03 Stop _____ : _____ Local
 Rapid Static, Static, Kinematic Survey Local-UTC Time Offset: _____

SV's Used: _____ Weather: _____

Sketch:

Description:

located @ Parking lot
 of MADISON boating club.

Type of Mark: Chiseled cross on
 Stamping: CONC CURB
 Agency: _____

Indicate North

Remarks:



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GPS STATION LOG

Station Name: P 36 Project Name: CONNECTICUT COASTAL
 Receiver No.: 4700 Job Number: _____
 Day of Year: 223 Local Date: 8/10/04
 Session No.: Base Operator: C.S.

C/A CODE POSITION

Lat: 41° 16' 09" N
 Long: 072° 35' 57" W
 Ellip. Height: _____ M

Trimble: 4000 SSE, 4000 SSI, Other 4700
 Antenna: Kinematic, Compact, Groundplane, Dome
 Battery No.: Micro-Centered
 Tribrach No.: F-H-TP
 File Name: _____

Antenna H.I. => Before: 1.931 M _____ Ft Actual => Start _____ : _____ Stop _____ : _____ UTC
 T.V. After: 1.931 M _____ Ft Start 07 : 00 Stop _____ : _____ Local
Rapid Static Static, Kinematic Survey Local-UTC Time Offset: _____

SV's Used: _____ Weather: _____

Sketch:

Description:

Type of Mark: DISK in cone
 Stamping: P36
 Agency: _____

Indicate North

Remarks:



WOOLPERT

GPS STATION LOG

Station Name: P36 Project Name: Connecticut Coastal
 Receiver No.: 4700 Job Number: _____
 Day of Year: 223 Local Date: 8/10/04
 Session No.: BASE Operator: C.S.

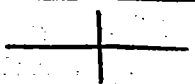
C/A CODE POSITION
 Lat: 42° 16' 09" N
 Long: 072° 35' 57" W
 Ellip. Height: _____ M
 Trimble: 4000 SSE, 4000 SSI, Other 4700
 Antenna: Kinematic, Compact, Groundplane, Dome
 Battery No.: Micro-centered
 Tribach No.: F-H-TP
 File Name: _____

Antenna H.I. => Before: 1.931 M _____ Ft Actual => Start _____ : _____ Stop _____ : _____ UTC
T.V. After: 1.931 M _____ Ft Start 11:36 Stop _____ : _____ Local
Rapid Static Static, Kinematic Survey Local-UTC Time Offset: _____

SV's Used: _____ Weather: _____

Sketch:

Description:

Type of Mark: <u>Disk in Conc</u>	 Indicate North	Remarks:
Stamping: <u>P36</u>		
Agency: _____		

Section 5



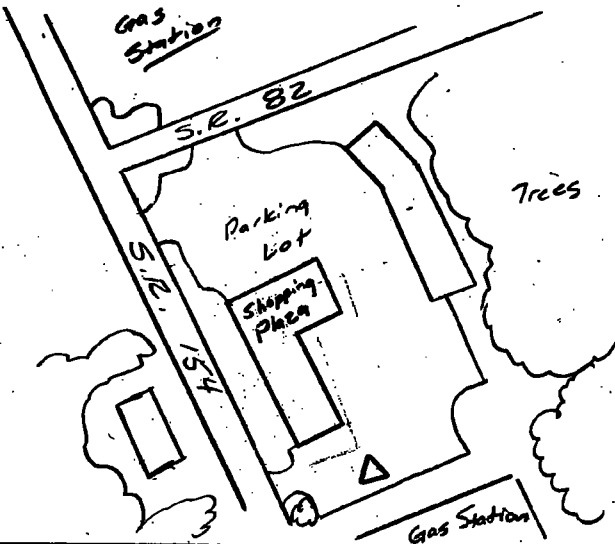
Station Recovery Log

Station #: COO1
 Project Name: Connecticut LIDAR
 Job Number: _____
 Local Date: 10/8/04
 Name: CS

TO-REACH DESCRIPTION

P.L. of the Swing Bridge
 Market Place in Haddam, CT.

STATION LOCATION



I.H. 2,000 m
 Compact 1/2 antenna
 4000 SS Receiver
 FN: 5487-282-0

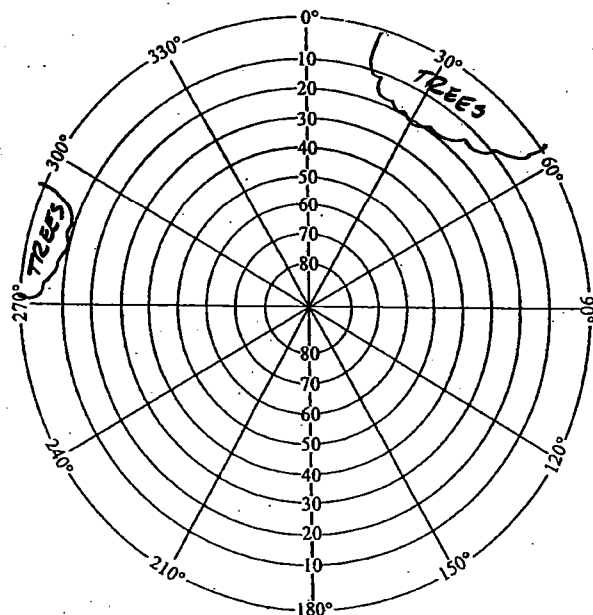


REFERENCES

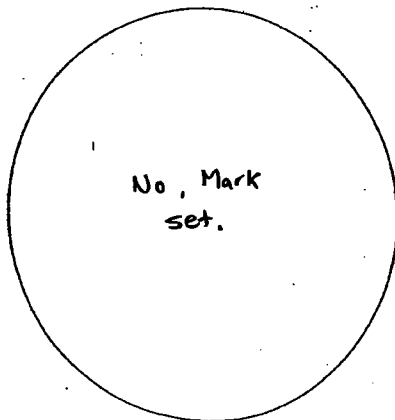
Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISCUSSION





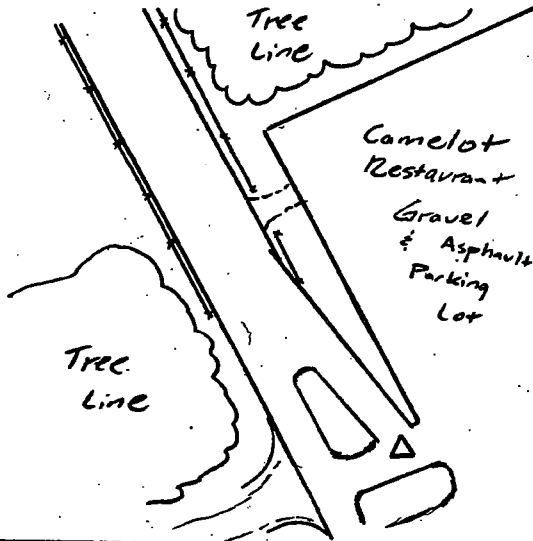
Station Recovery Log

Station #: 002
 Project Name: Connecticut LiDAR
 Job Number: _____
 Local Date: 10/8/04
 Name: C3

TO REACH DESCRIPTION

to the roadway of the entrance to the Camelot Connecticut River Cruises Dock Side Restaurant.

STATION LOCATION



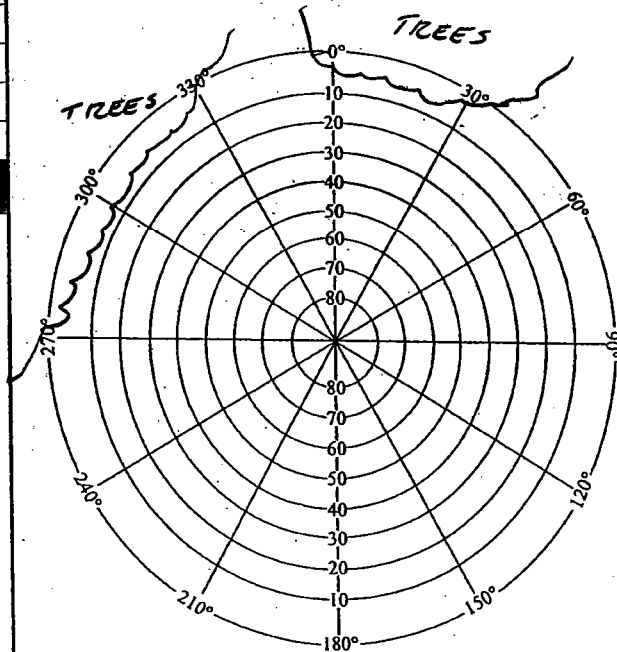
I.H. 2.000m
 Compact U/LZ Antenna
 4000 SSE Receiver
 S/N: 3616A 15487
 5487-282-1

REFERENCES

Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISC DETAIL





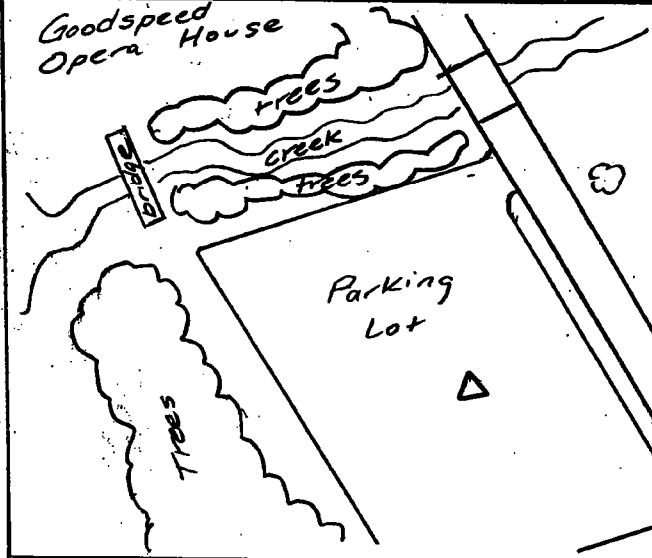
Station Recovery Log

Station #: C003
 Project Name: Connecticut LIDAR
 Job Number: _____
 Local Date: 10/18/04
 Name: CS

TO-REACH DESCRIPTION

In the parking lot of the
 Goodspeed Opera House.

STATION LOCATION



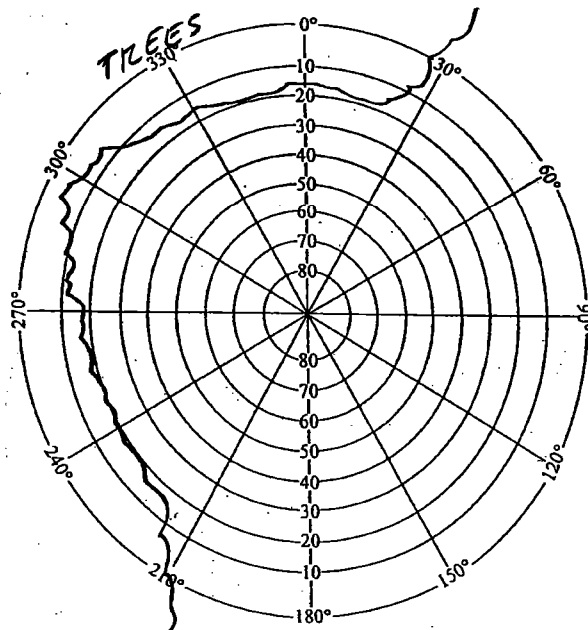
I.H. 2.000
 Compact U/LZ Antenna
 4000 SSE Receiver
 S/N: 3616A15487
 F/N: 5487-282-2

REFERENCES

Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISCUSSION

No mark
 set.

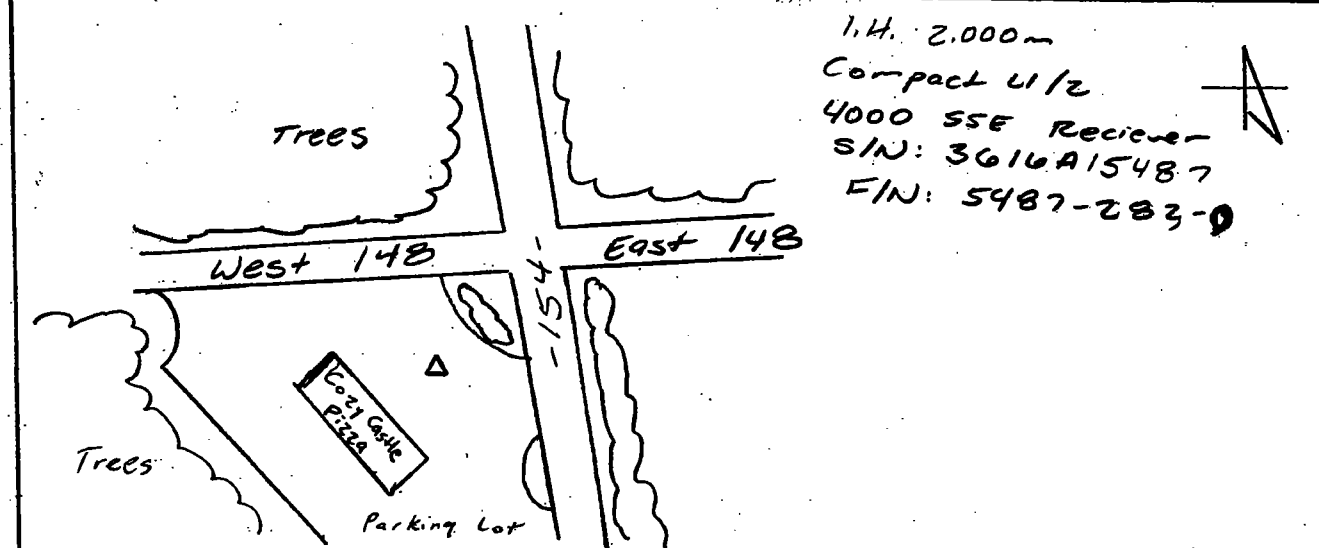


Station Recovery Log

Station #: C004
 Project Name: Connecticut LiDAR
 Job Number: _____
 Local Date: 10/9/104
 Name: CS

TO REACH DESCRIPTION
 P.L. of Cozy Castle Pizza
 east Chester, CT.

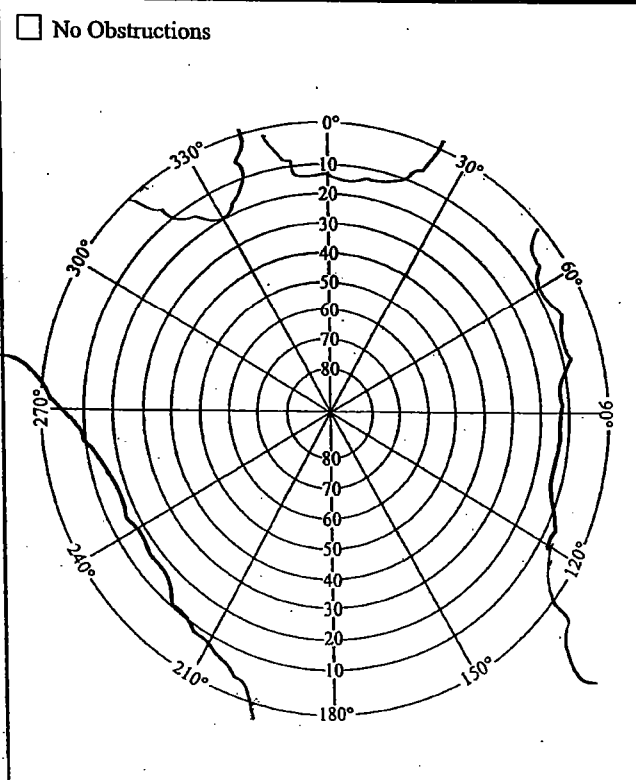
STATION LOCATION



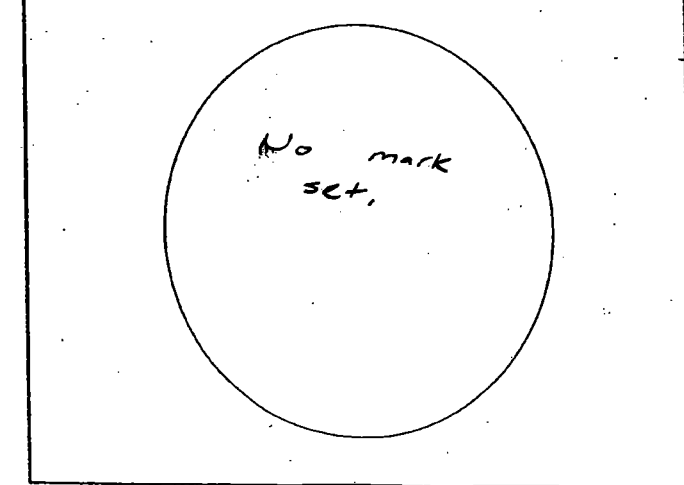
REFERENCES

Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM



DETAIL



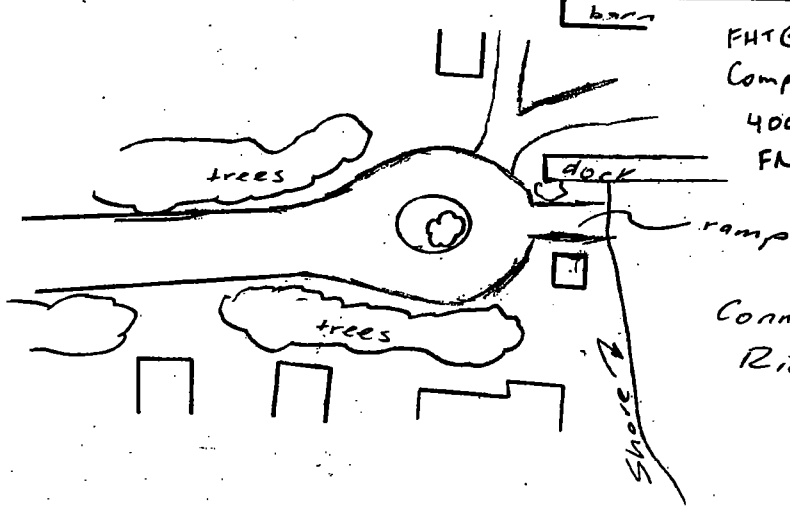


Station Recovery Log

Station #: COOS
 Project Name: Connecticut LiDAR
 Job Number: _____
 Local Date: 10/9/04
 Name: CS

TO REACH DESCRIPTION
 The Cut-dug @ the end of
 in Essex, CT.

STATION LOCATION



FHT @ 2,000 m
 Compact L1/2 antenna
 4000 SSE Receiver
 FN: 5487-283-1

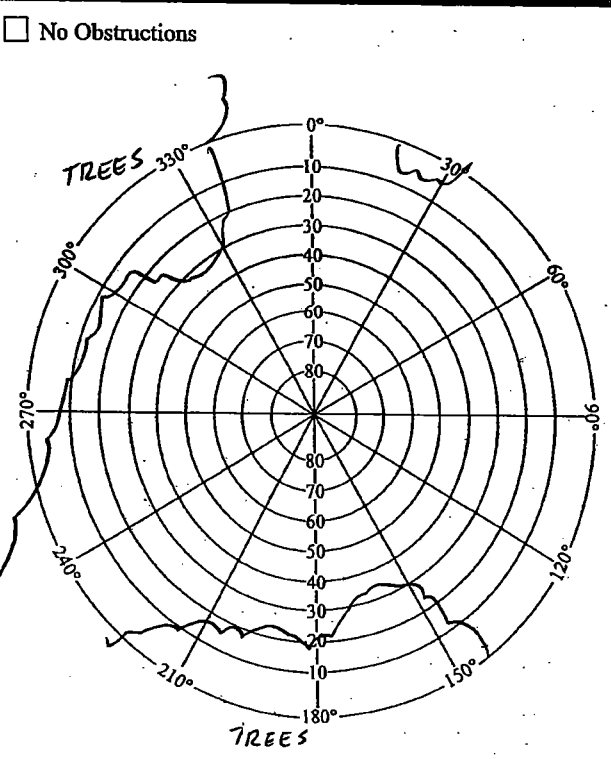


Connecticut
 River

REFERENCES

Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM



DISCUSS

No Mark
 Set.



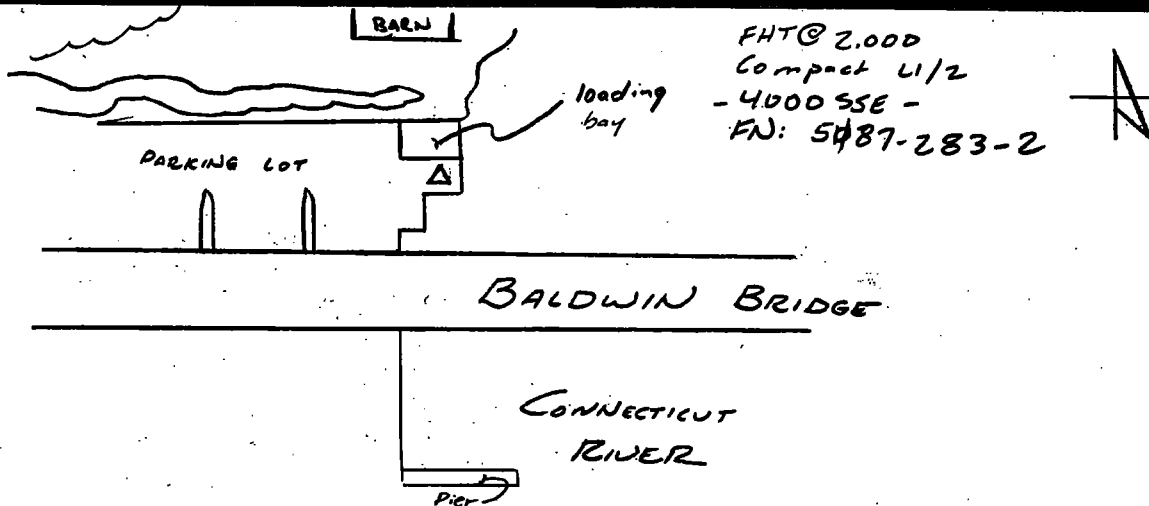
Station Recovery Log

Station #: C006
 Project Name: Connecticut LiDAR
 Job Number:
 Local Date: 10/9/04
 Name: CS

TO REACH DESCRIPTION

On the dark side pier just North of the Baldwin Bridge, below 95.

STATION LOCATION

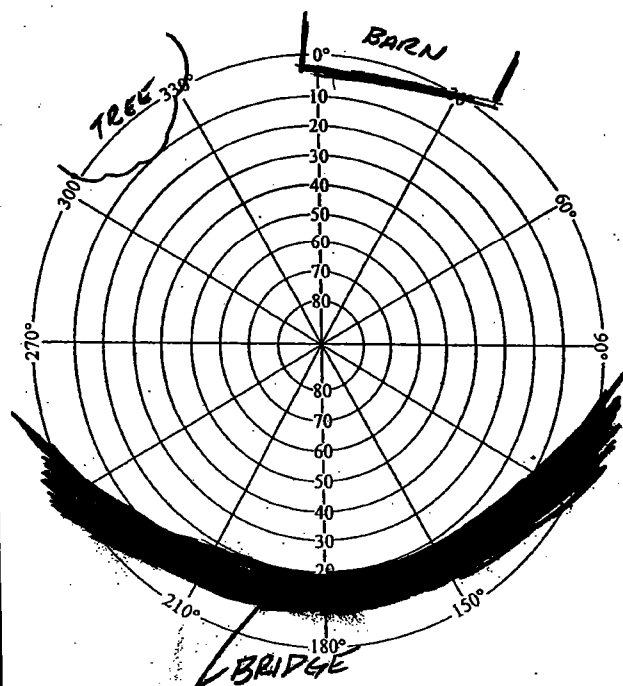


REFERENCES

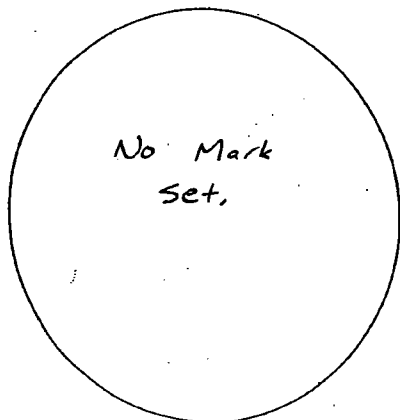
Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISC. DETAIL



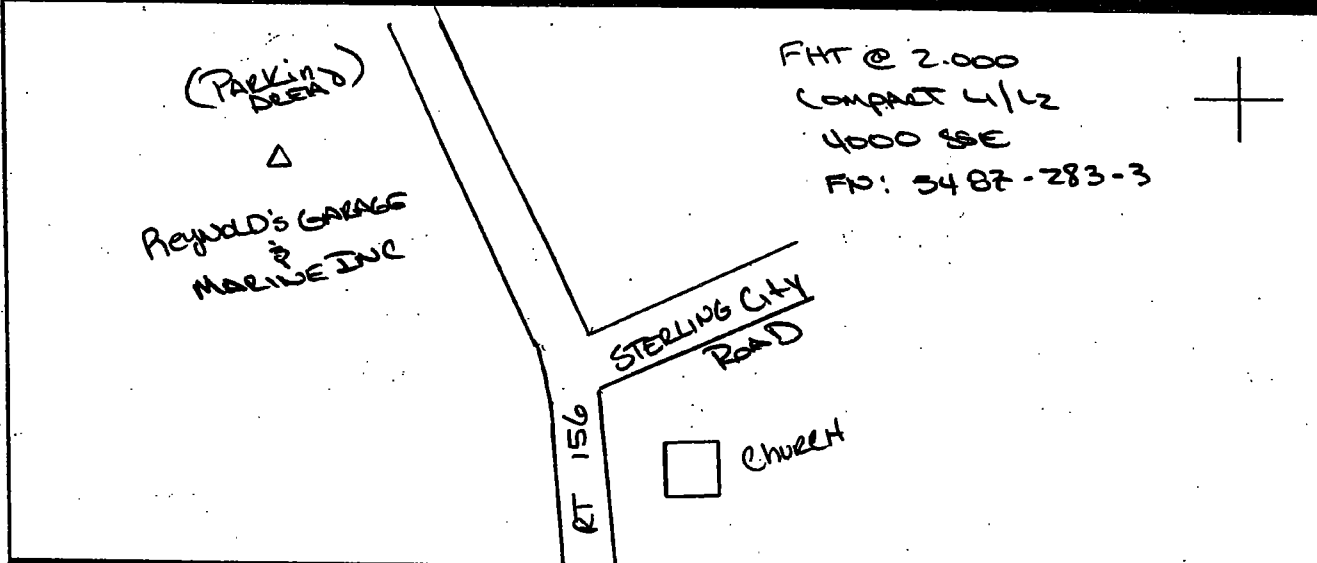


Station Recovery Log

Station #: C007
 Project Name: CONNECTICUT LIDAR
 Job Number: _____
 Local Date: 10/19/04
 Name: CS

TO-REACH DESCRIPTION

STATION LOCATION

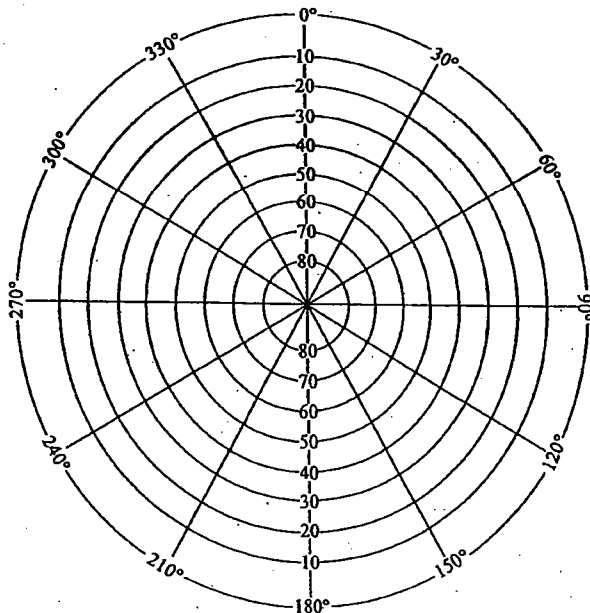


REFERENCES

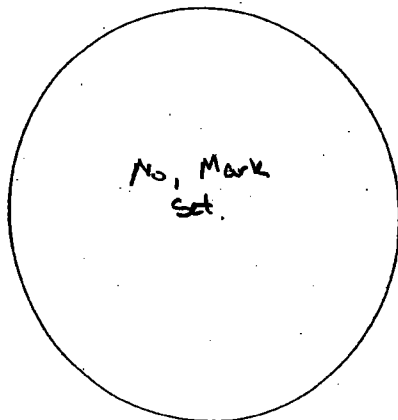
Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISCUSSION





Station Recovery Log

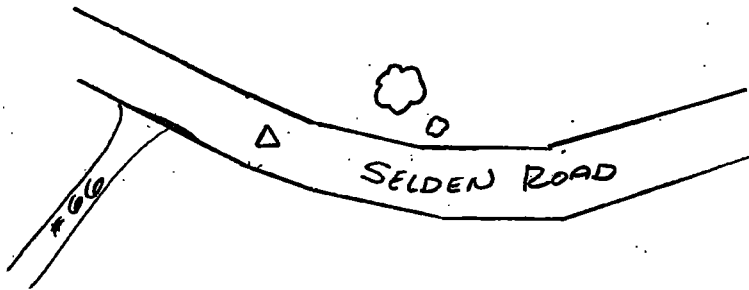
Station #: 1008
 Project Name: Connecticut LIDAR
 Job Number: _____
 Local Date: 10/9/04
 Name: CS

TO-BEACH DESCRIPTION

Q of Selden Rd. West
 of Hadlyme, CT.

STATION LOCATION

FHT@2.000
 Compact 4/2
 4600 SSE
 FN: 5487-283-3

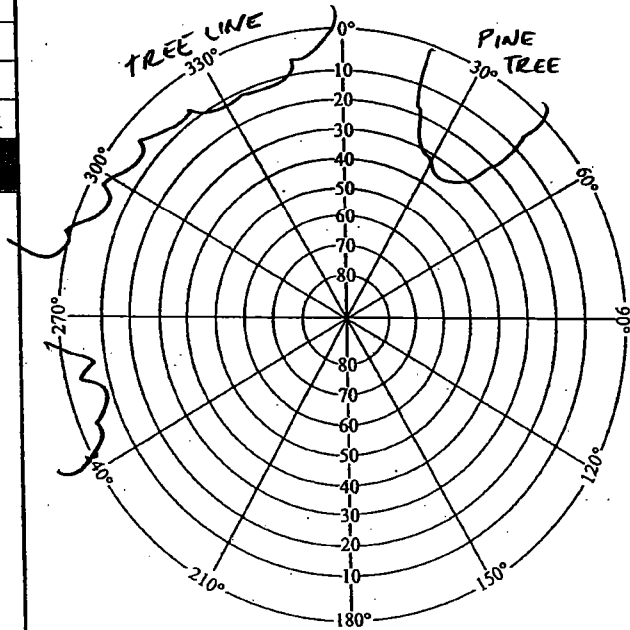


REFERENCES

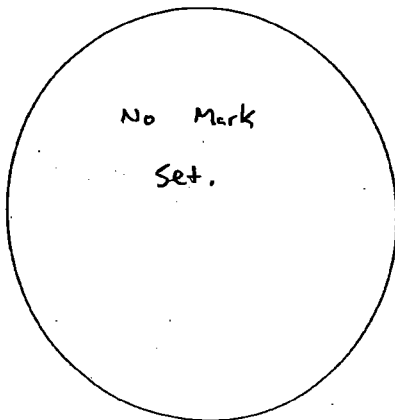
Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISC DETAIL





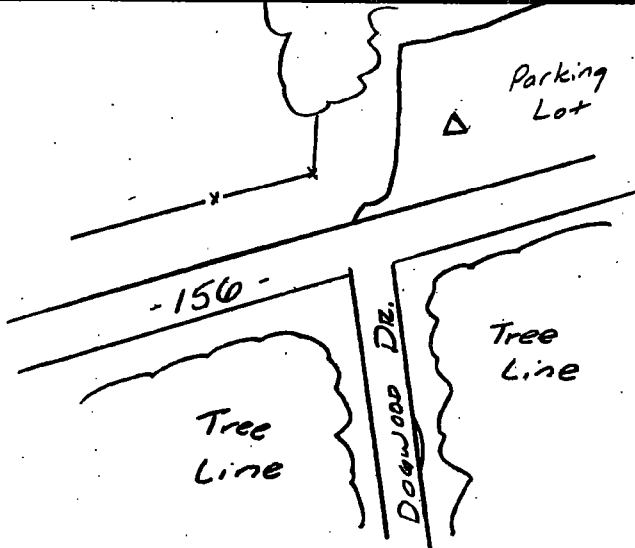
Station Recovery Log

Station #: C009
 Project Name: Connecticut LiDAR
 Job Number: _____
 Local Date: 10/9/04
 Name: CS

TO-REACH DESCRIPTION

P.L. West of
 Soundview, CT.

STATION LOCATION



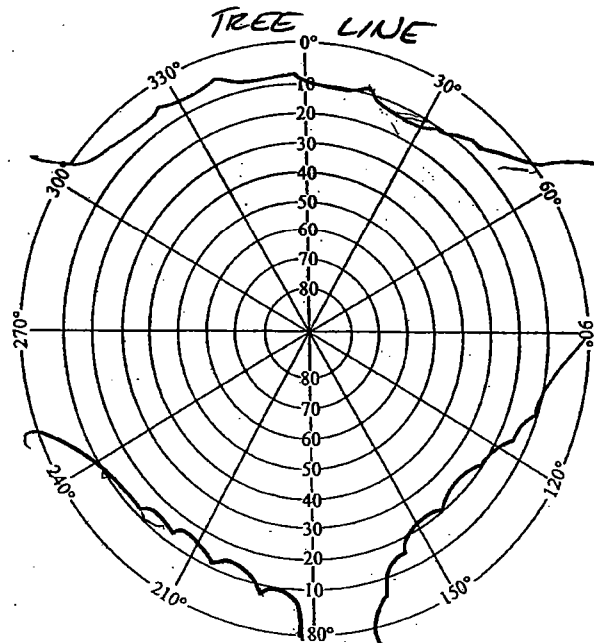
EHT@ 2.000
 Compact U/I 2
 -4000 SSE -
 FN: 5087-283-4

REFERENCES

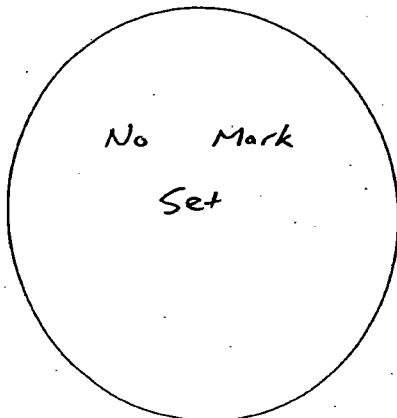
Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISC DETAIL



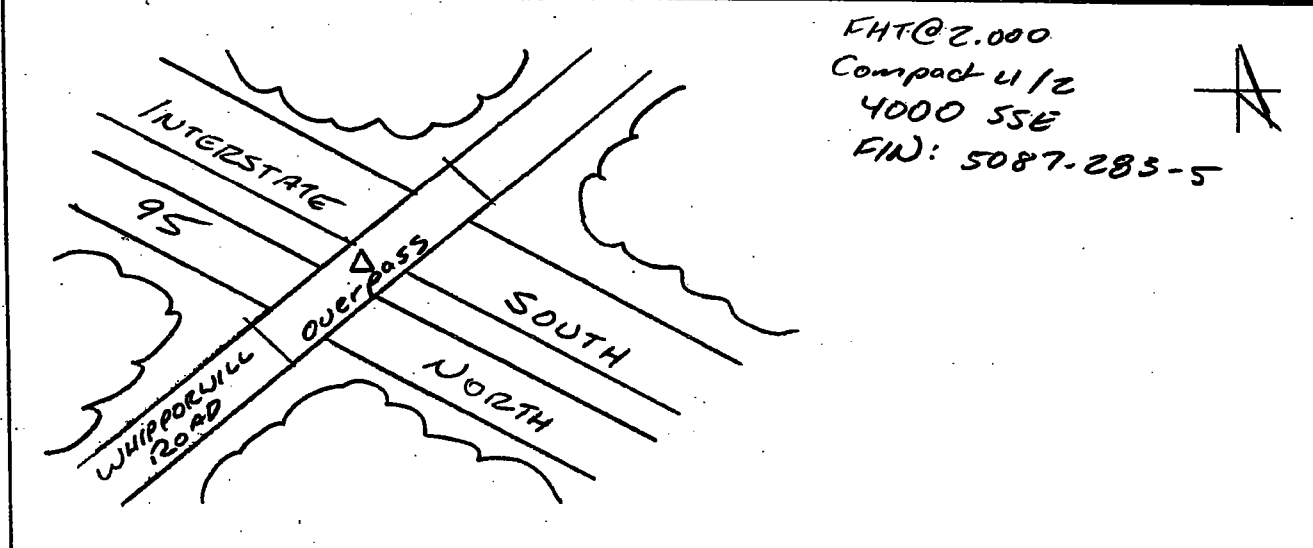


Station Recovery Log

Station #: 6010
 Project Name: Connecticut LiDAR
 Job Number: _____
 Local Date: 10/19/04
 Name: CS

TO-BEACH DESCRIPTION
 On the Whiporwill Rd.
 Overpass of I-95,

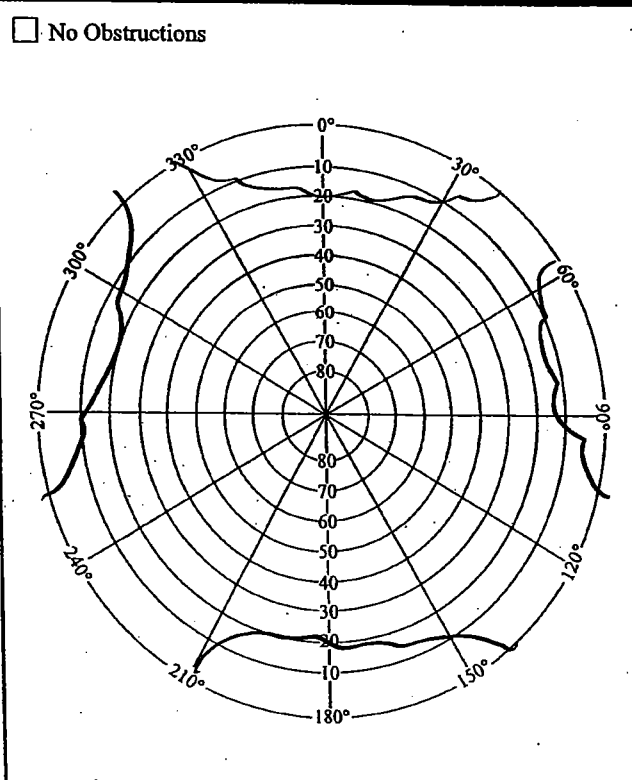
STATION LOCATION



REFERENCES

Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM



DISCUSSION

No mark set.



Station Recovery Log

Station #: 5011
 Project Name: Connecticut LIDAR
 Job Number: _____
 Local Date: 10/9/04
 Name: CS

TO-STATION DESCRIPTION
 In the P.L. of the
 Plum Bank Beach,

STATION LOCATION

LONG ISLAND SOUND

PLUM BANK BEACH

Residence

Brushy

Parking Lot

154

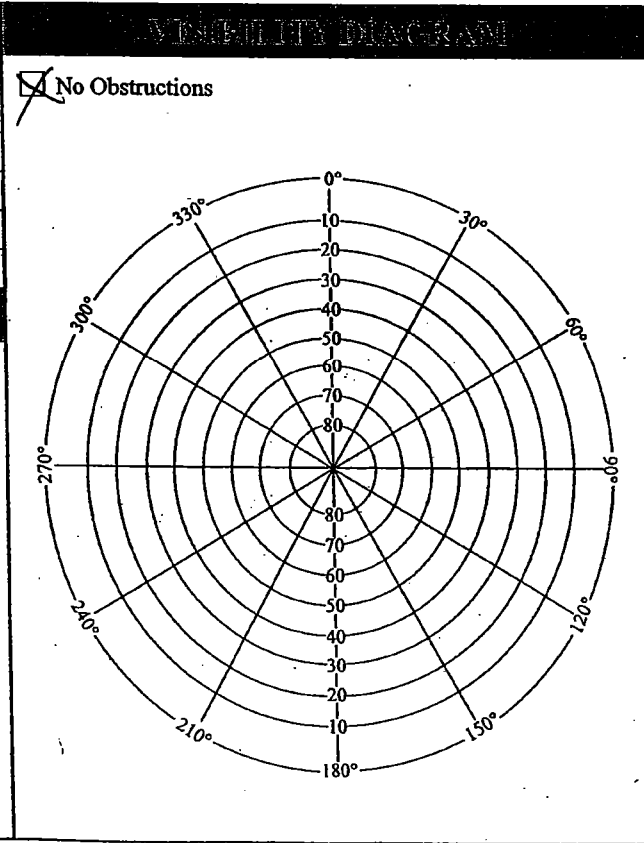
On-Street Parking

BEACH COMPLEX

FHT @ 2.000
 Compact U/2
 4000 SSE
 F/N: 5487-283-6

REFERENCES

Reference Object	Distance	Azimuth



DISCUSSION

No Mark Set.



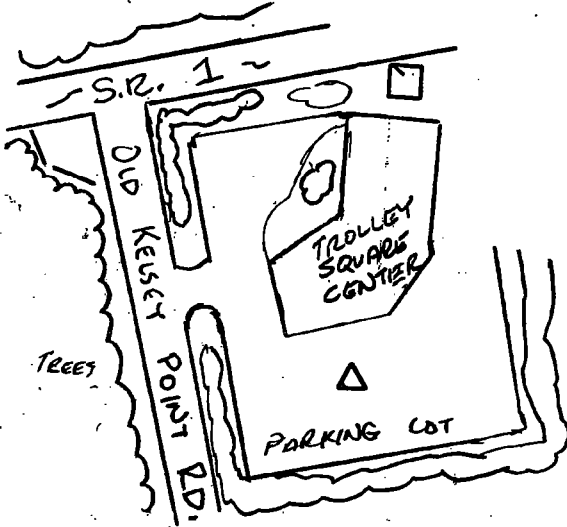
Station Recovery Log

Station #: CO12
 Project Name: Connecticut LIPAR
 Job Number: _____
 Local Date: 10/9/04
 Name: CS

TO-REACH DESCRIPTION

In the rear parking lot
 of the Trolley Square
 Center shopping plaza, in

STATION LOCATION



FHT@2.000
 Compact 41/2
 4000 SSE
 5487-283-7

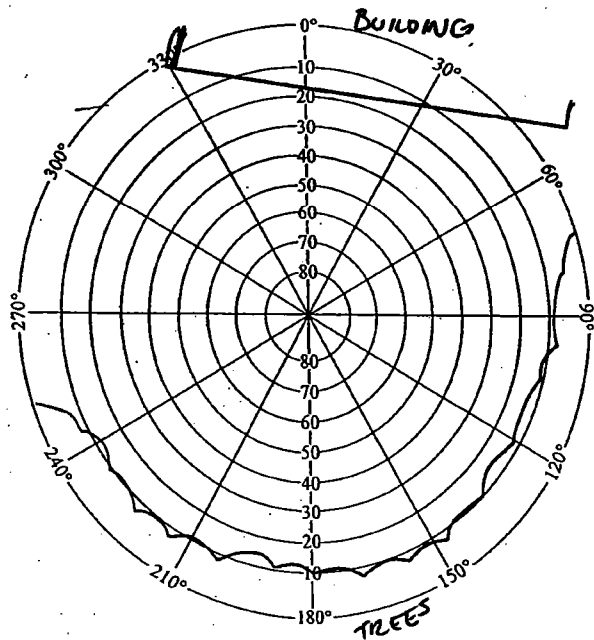


REFERENCES

Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISCUSSION

No MARK
 SET.



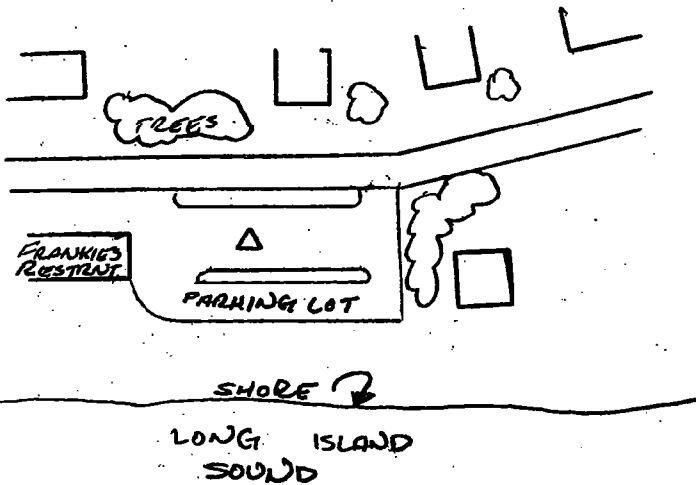
Station Recovery Log

Station #: CD13
 Project Name: Connecticut LIDAR
 Job Number: _____
 Local Date: 10/19/04
 Name: CS

TO-REACH DESCRIPTION

In the parking lot of
 Frankies Prime Rib & Sea food,

STATION LOCATION



FHT@2.000
 COMPACT 4/2
 4000 SSE RECEIVER
 5487-283-B

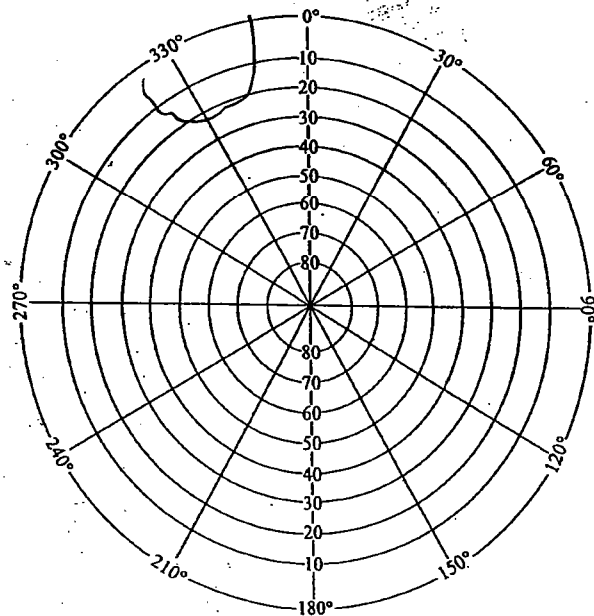


REFERENCES

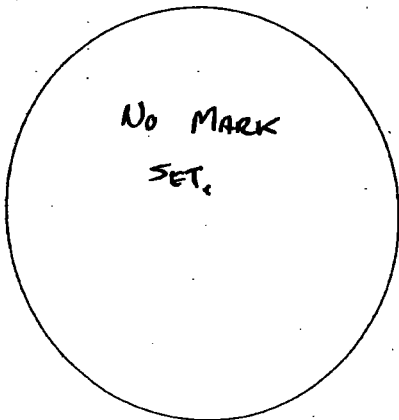
Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISC DETAIL





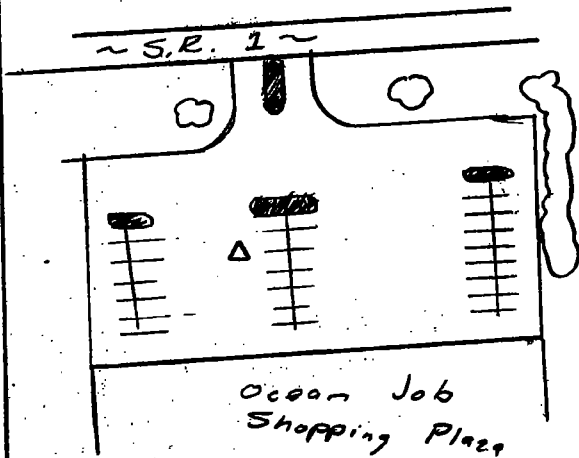
Station Recovery Log

Station #: CO14
 Project Name: Connecticut LIBAR
 Job Number: _____
 Local Date: 10/19/04
 Name: CS

TO-BEACH DESCRIPTION

In the P.L. of the
 Ocean Job Mall in
 Clinton, CT.

STATION LOCATION



FHT@ 8000m
 Compact u/2
 4000 SSE
 5487-283-9

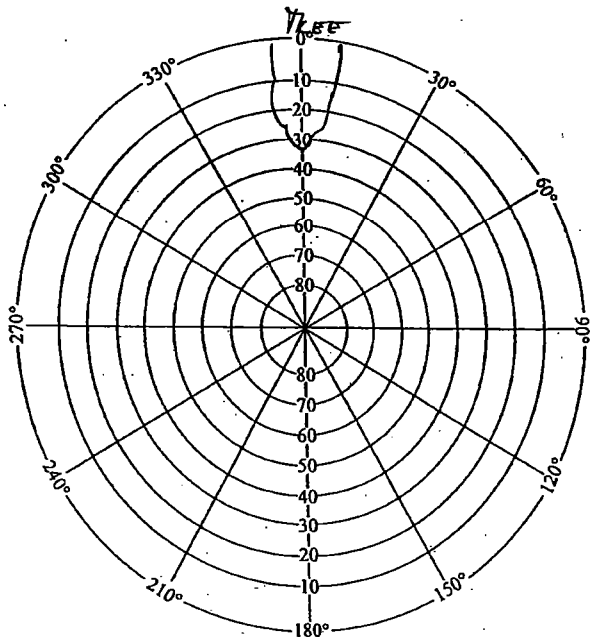


REFERENCES

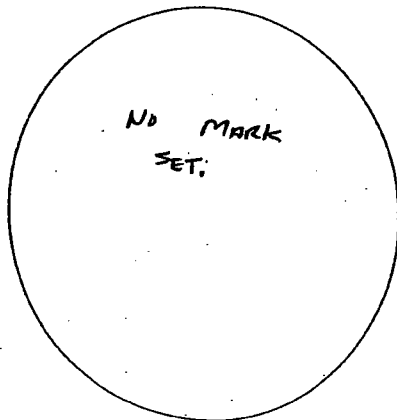
Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISC DETAIL



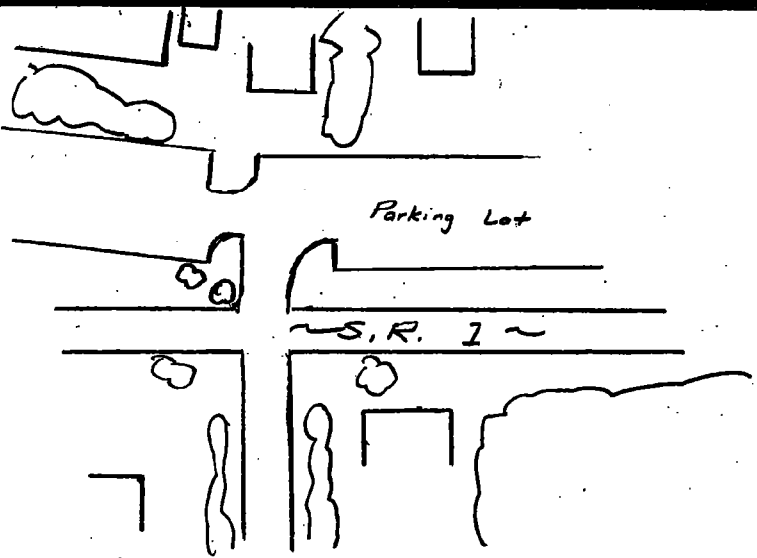


Station Recovery Log

Station #: CO15
 Project Name: Connecticut LIDAR
 Job Number: _____
 Local Date: 10/7/04
 Name: CS

TO REACH DESCRIPTION
 P.L. in Madison, N. of
 S.R. 1 & int.

STATION LOCATION



Compact U/L
 5487-283-C

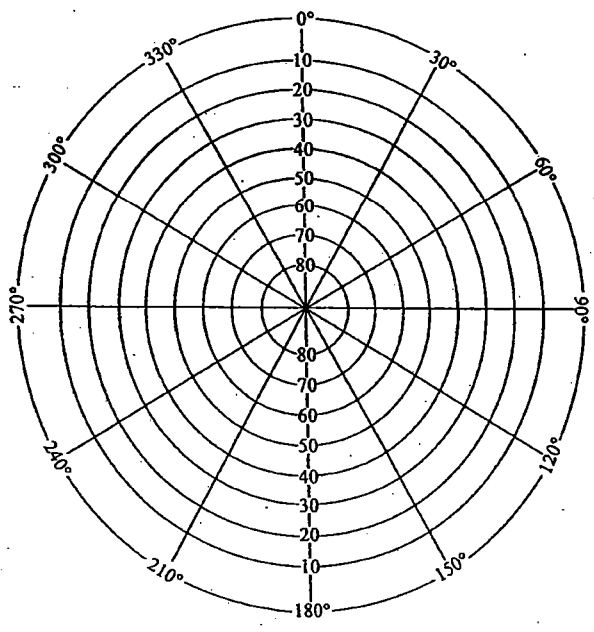


REFERENCES

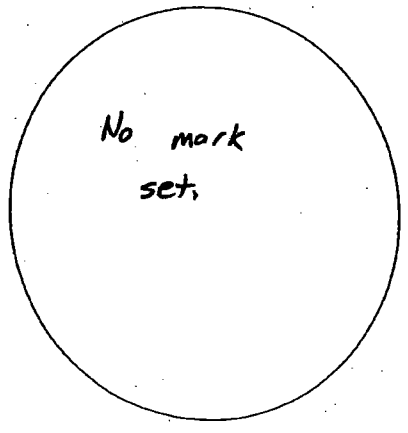
Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISC DETAIL



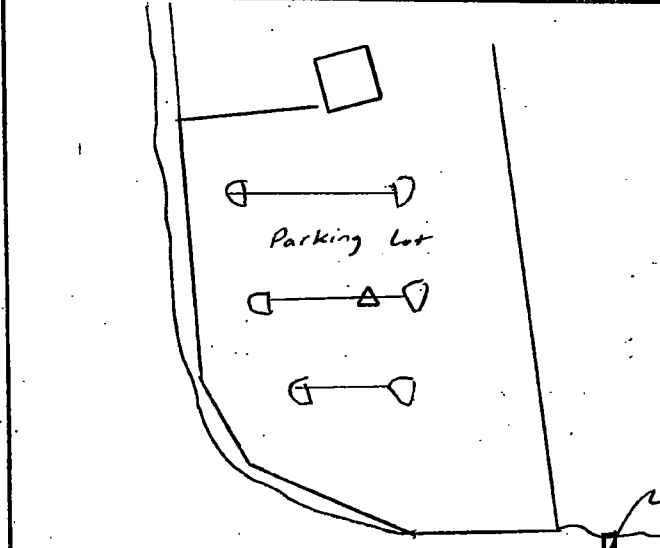


Station Recovery Log

Station #: CO14
 Project Name: Connecticut LIDAR
 Job Number: _____
 Local Date: 10/18/04
 Name: CS

TO REACH DESCRIPTION

STATION LOCATION



FHT@2,000
Compact 4 1/2
 4000 SSE
 5487-283-D
Wrong Ant. in file

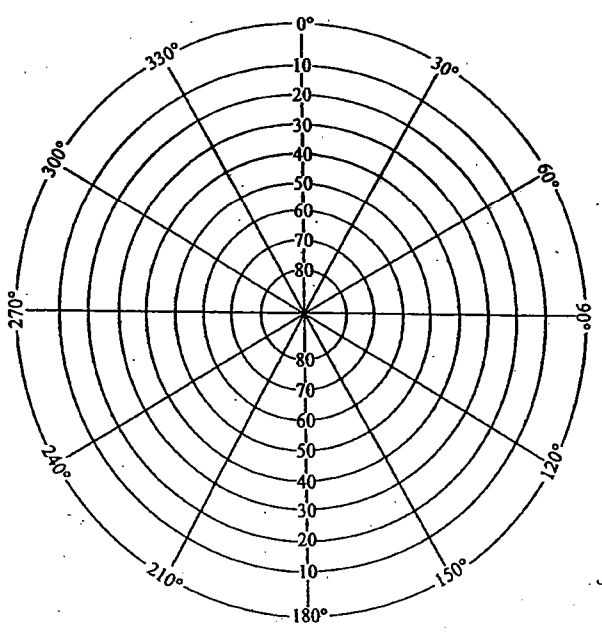


REFERENCES

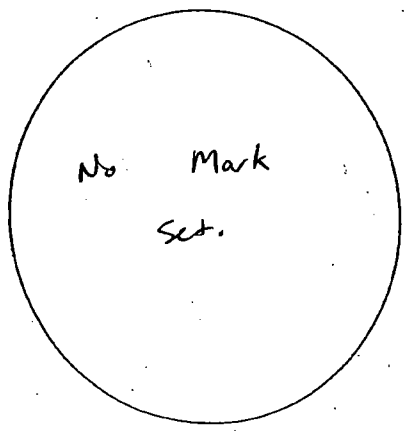
Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DETAIL



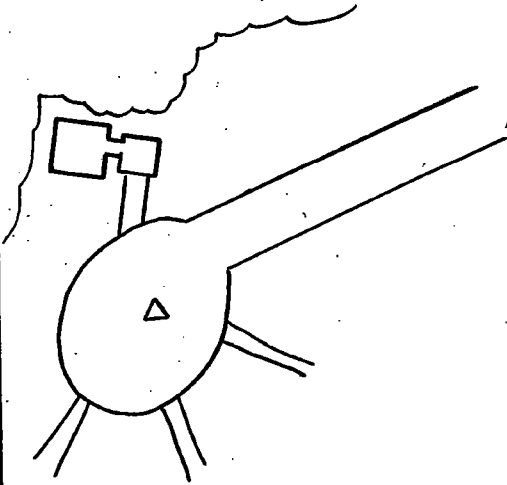


Station Recovery Log

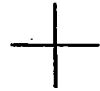
Station #: 2017
 Project Name: _____
 Job Number: Connecticut L.DAR
 Local Date: 10/8/07
 Name: CS

TO-REACH DESCRIPTION

STATION LOCATION



Compact 21/22
 FHT @ 2.000m
 4000 SSE



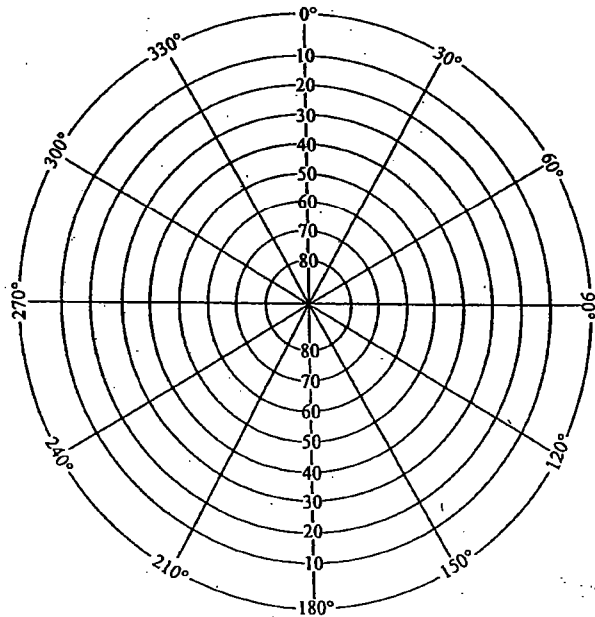
5487-283-E

REFERENCES

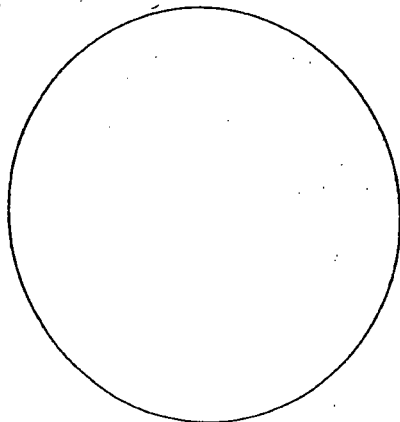
Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISC DETAIL



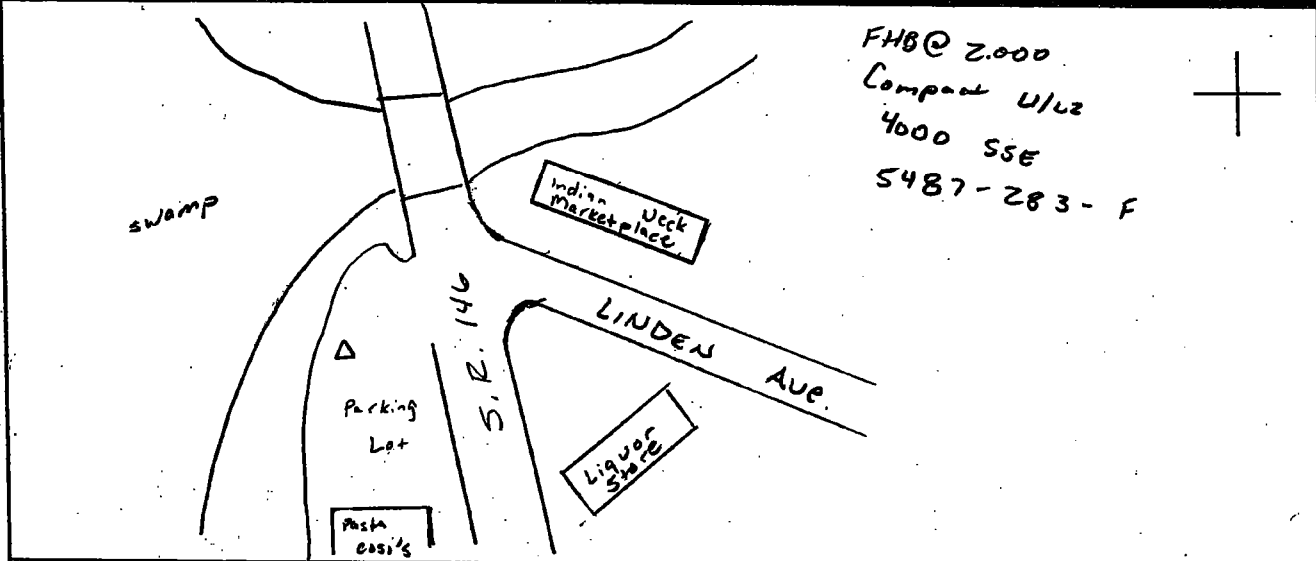


Station Recovery Log

Station #: CO18
 Project Name: Connecticut LINAR
 Job Number: _____
 Local Date: 10/10/04
 Name: CS

TO-REACH DESCRIPTION

STATION LOCATION

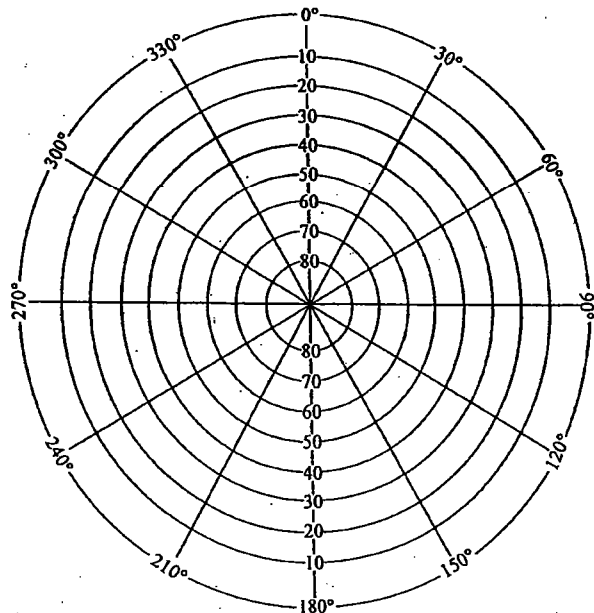


REFERENCES

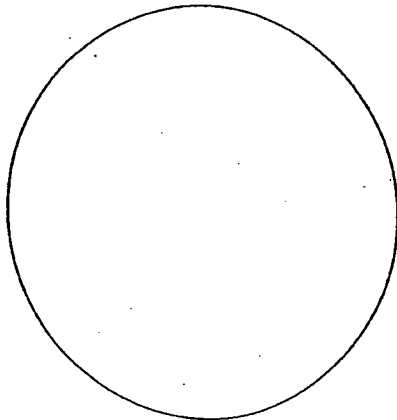
Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISCUSSION





Station Recovery Log

Station #: CO19
 Project Name: CONNECTICUT LIDAR
 Job Number: _____
 Local Date: 10/10/04
 Name: CS

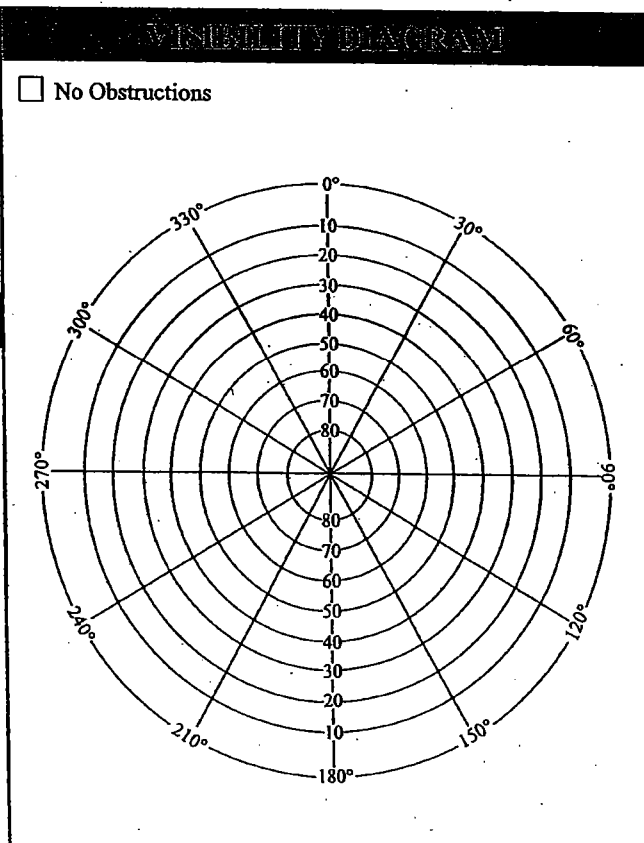
TO-REACH DESCRIPTION

STATION LOCATION

I.H. 2.000
 Compact 4/L2 Antenna
 4000 SSE Receiver
 S/N : 3616A15487
 5487-283-G

REFERENCES

Reference Object	Distance	Azimuth



DISCUSSION

No, Mark Set.

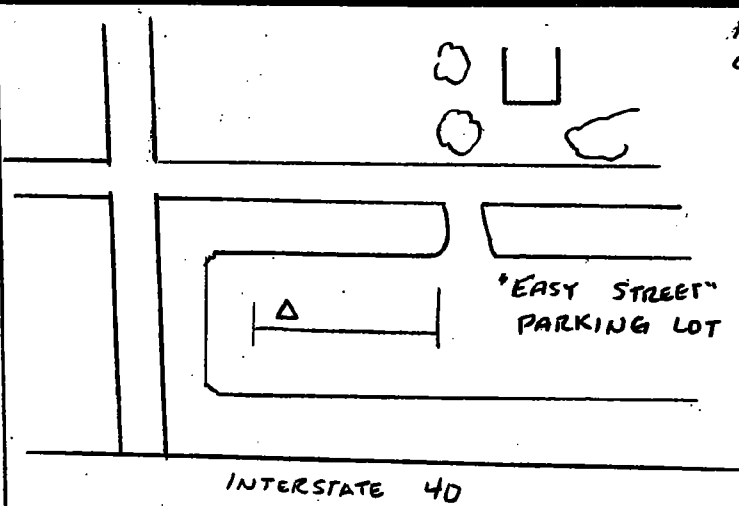


Station Recovery Log

Station #: C020
 Project Name: Connecticut LIDAR
 Job Number: _____
 Local Date: _____
 Name: _____

TO-REACH DESCRIPTION

STATION LOCATION



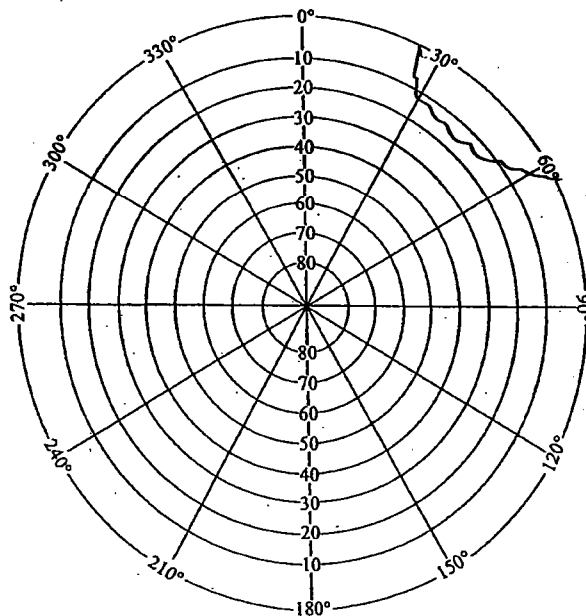
FHT @ 2.000
 Compact L/LZ
 4000 SSE
 FN: 5487-283-H

REFERENCES

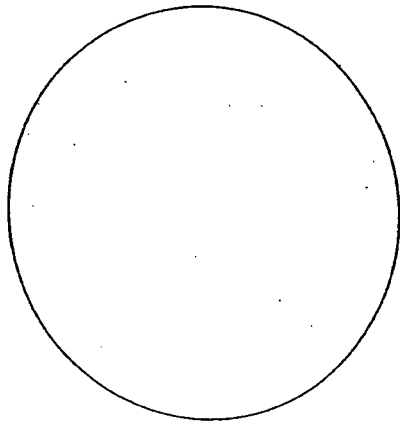
Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DETAIL



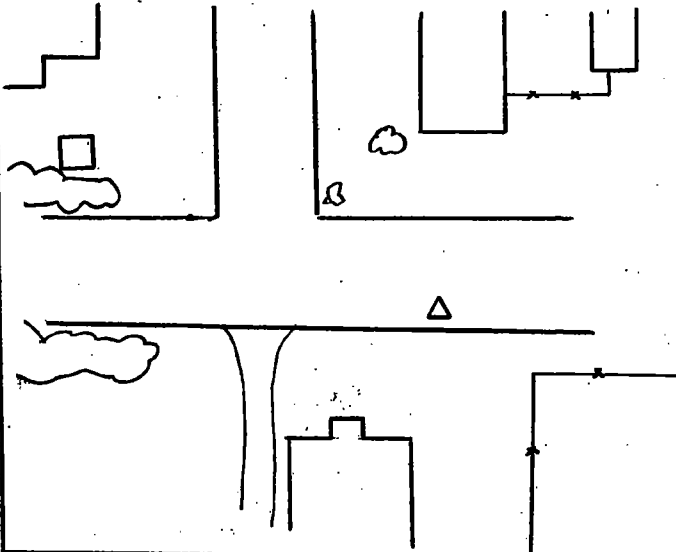


Station Recovery Log

Station #: CO21
 Project Name: Connecticut LIDAR
 Job Number: _____
 Local Date: 10/10/04
 Name: CS

TO-REACH DESCRIPTION

STATION LOCATION



FHT @ 2.000
 Compact 4 1/2
 4000 SSE
 FIN: 5487-283 - T

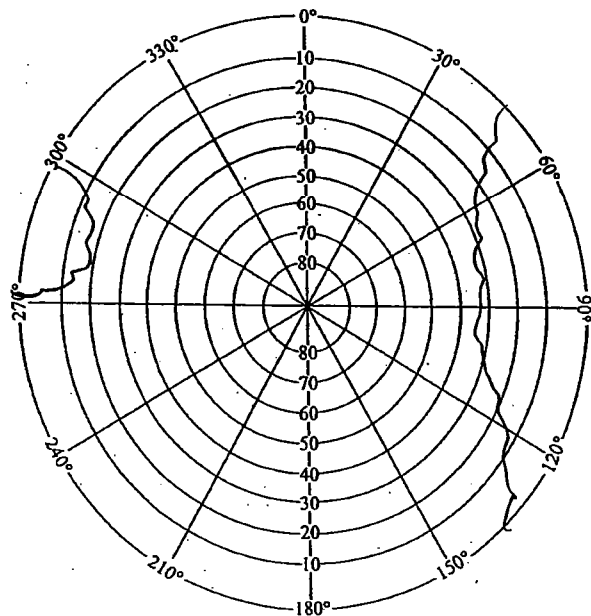


REFERENCES

Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISCUSSION

~~No mark set~~
 on rebobs.
 PK Set.



Station Recovery Log

Station #: C022
Project Name: Connecticut LIDAR
Job Number: _____
Local Date: 10/8/04
Name: CS

TO-REACH DESCRIPTION

In Walmart P.L.

STATION LOCATION

F.H.B. @ 2,000
Compad 4/2
4000 SSE
5487-283-J

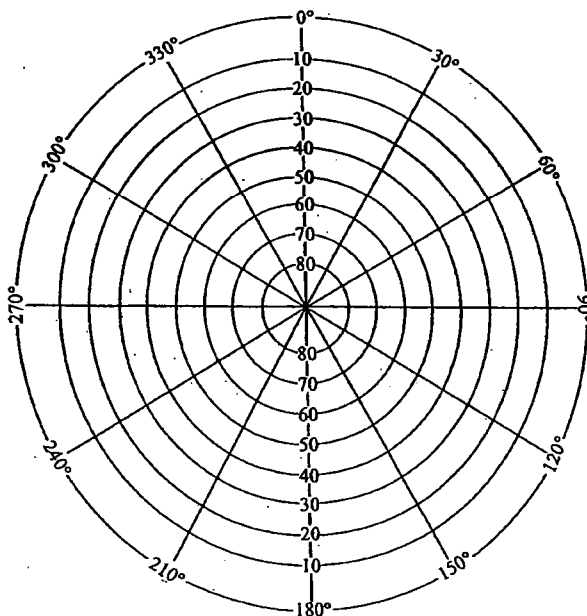


REFERENCES

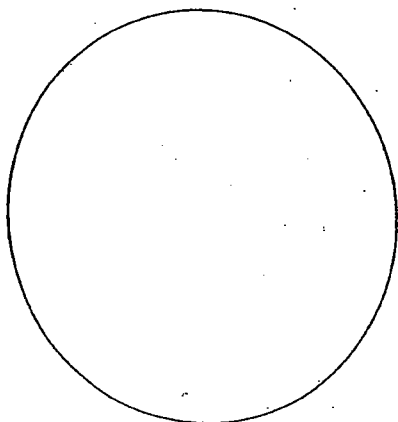
Reference Object	Distance	Azimuth

VISIBILITY DIAGRAM

No Obstructions



DISC DETAIL



Section 6