AD-A182 693 SURVEY OF THE EAST COAST AIR COMBAT MANEUVERING RANGE 1/1
(U) BROWN AND ROOT DEVELOPMENT INC HOUSTON TX
18 OCT 77 CHES/NAVFAC-FPO-7741 N62477-78-C-0180

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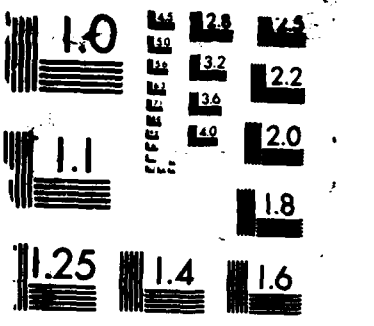

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AD-A182 693

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INVENTORY

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18 OCT 77

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AD-A182 693

SURVEY OF

THE EAST COAST
AIR COMBAT MANEUVERING RANGE

FOR

THE DEPARTMENT OF THE NAVY

CHESAPEAKE DIVISION
NAVAL FACILITIES ENGINEERING COMMAND

CONTRACT NO. N62477-78-C-0180

BROWN & ROOT, INC.
ELECTRONIC SURVEY OPERATIONS
HOUSTON, TEXAS

18 OCTOBER 1977

TABLE OF CONTENTS

CONTENTS

PURPOSE OF SURVEY

CONTROL SURVEY

LOCATION SURVEY

FIELD PRACTICES

COMPUTATION

COORDINATE POSITIONS TABULATED

DESCRIPTIONS OF STATIONS

DRAWINGS

LOCATION MAP

CONTROL SURVEY

LOCATION SURVEY

STATION LOCATION DIAGRAMS

SUPPLEMENTARY DATA

U.S.C.&G. HORIZONTAL CONTROL DATA

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Houston, TX

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This survey was performed to accurately establish the locations of the four Air Combat Maneuvering Range (ACMR) platforms constructed by Brown & Root, Inc. in the Atlantic Ocean offshore of Kitty Hawk, N.C. during the summer 1977.

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THE EAST COAST
AIR COMBAT MANEUVERING RANGE
FOR
THE DEPARTMENT OF THE NAVY
CHESAPEAKE DIVISION
NAVAL FACILITIES ENGINEERING COMMAND

CONTRACT NO. N62477-78-C-0180
18 OCTOBER 1977

PURPOSE OF SURVEY

This survey was performed to accurately establish the locations of the four Air Combat Maneuvering Range (ACMR) platforms constructed by Brown & Root, Inc. in the Atlantic Ocean offshore of Kitty Hawk, N.C. during the summer of 1977.

CONTROL SURVEY

Prior to performing the ACMR Tower location survey onshore control points with sufficient elevation for the long shots to the offshore sites had to be located. It was found that the U.S.C.&G. monuments "Wright" located atop the Wright Memorial Monument at elevation 144 ft. and "Bodie Island Lighthouse" at elevation 156 ft. met the criteria for elevation.

The monument on Bodie Island Lighthouse could not be directly occupied as it was located at the center of the lighthouse, and the monument at Wright was situated such that a clear line of sight to Bodie Island Lighthouse was not possible. For the above reasons, a control survey was performed to locate offset points for the monuments at Wright and Bodie Island Lighthouse. These offset points will hereinafter be referred to as "WT. #2" for the offset point at Wright and "B.L. #3" for the offset point at Bodie Island Lighthouse.

Offset point B.L. #3 was located by using the U.S.C.&G. monuments "Bodie Island South Base" and "Park". Offset point WT. #2 was located by using the U.S.C.&G. monuments "Kitty" and "Devil". A traverse was run between B.L. #3, WT. #2 and an arbitrary point set on top of the Ramada Inn at Nags Head, N.C. The ends of this traverse were tied back to the U.S.C.&G. monuments mentioned above. A further check was made by comparing the calculated distances B.L. #3 to Bodie Island Lighthouse and WT. #2 to Wright with the measured distances.

The theoretical precision of this control survey was calculated to be greater than 1:300 000.

LOCATION SURVEY

The location survey consisted of measuring the sides and angles of the five triangles formed by the four ACMR platforms and two control stations onshore, Bodie Light No. 3 (B.L. #3) and Wright No. 2 (WT. #2).

The measured distances were used to calculate the coordinate positions of the offshore platforms using the method of trilateration. The angles and distances were used to determine the coordinate positions using the traverse method.

Several traverses were run starting from different control stations and running through the offshore stations in differing sequence. The strongest traverses were selected and the coordinates derived were averaged along with the trilateration derived coordinates to produce the final coordinate position for each of the ACMR platforms.

The theoretical precision of the location survey was calculated to be greater than 1:125 000. The accuracy of the final calculated position of each offshore structure is within the 0.9 meter tolerance.

FIELD PRACTICES

The distances were measured using a K & E Rangemaster II laser distance measuring instrument and the angles were observed with a Wild T2 one second theodolite.

All angles were turned using four zero settings on the horizontal and with upright and inverted telescope. The mean of the eight readings was then taken as the observed angle.

Distances were measured by taking multiple readings, in one direction only, using the K & E Rangemaster and averaging the readings.

Temperature and barometric pressure were recorded at the time that each set of readings was taken and the appropriate correction was set into the instrument to compensate for refractivity. Ten distance measurements were averaged for most of the lines. However, due to adverse atmospheric conditions only three readings were taken for two of the lines. This was not considered to be detrimental to the accuracy of the survey since the greatest difference in readings on any of the lines measured was only a few hundredths of a meter.

The distance from Bodie Light to ACMR #4 was not measured.

COMPUTATION

Most of the calculations were performed by computers using proven software. The automatic data processing was broken at certain points to allow critical decisions to be made and reviewed by engineering personnel.

The slope distances measured in the field were first reduced to spherical distances and then to U.T.M. grid distances. Spherical excess and other corrections were calculated for the field angles. Since the magnitudes of the angular corrections were very much less than the magnitudes of the anticipated error in the measured angles, the corrections were not applied and the adjusted field angles were used. All subsequent calculations were then performed as plain grid calculations and the U.T.M. coordinates derived. The U.T.M. coordinates were used to calculate the grid distances and azimuths and the geographic positions, distances, and azimuths. The traverse calculations were run by the computer and adjusted by compass rule.

EAST COAST AIR COMBAT MANEUVERING RANGE

ACMR PLATFORM LOCATIONS

	GEOGRAPHIC	U.T.M.	N.C. STATE
ACMR 1	N 35 56 59.5646 W 75 15 58.1461	N 3 978 221.727 E 475 996.616	X 3 104 922.448 Y 821 413.558
ACMR 2	N 36 13 35.4728 W 75 15 01.1123	N 4 008 901.268 E 477 504.380	X 3 105 805.429 Y 922 223.264
ACMR 3	N 36 03 53.2239 W 74 58 59.3154	N 3 990 933.505 E 501 518.059	X 3 186 934.355 Y 866 475.872
ACMR 4	N 35 47 11.2302 W 75 05 42.1955	N 3 960 067.671 E 491 409.740	X 3 157 867.525 Y 763 921.184

Geographic Coordinates Referenced to Clarke's Spheroid of 1866.

U.T.M. Coordinates are Universal Transverse Mercator Grid Coordinates Referenced to Clarke's Spheroid of 1866 in Meters, Zone 18, Central Meridian 75 Degrees West.

N.C. State is State Plane Coordinate Grid System in Feet, Zone 3200.

Datum is National Geodetic Vertical Datum (NGVD) 1929.

18 OCTOBER 1977

STATION AT ACMR TOWER NO. 1

STATION IS A SMALL TRIANGLE OF WHITE PAINT WITH A PUNCH HOLE LOCATED IN THE CENTER OF THE UPPERMOST DECK OF THE PLATFORM.

		GEOGRAPHICAL			U.T.M. GRID		
COORDINATES AT ACMR #1	LAT.	35	56	59.5646	N 3	978	221.727
	LONG.	75	15	58.1461	E	475	996.616
DIST. TO ACMR #2			30	728.654		30	716.569
N.AZ. TO ACMR #2		2	39	24.5	2	48	48.9
DIST. TO ACMR #3			28	523.333		28	511.986
N.AZ. TO ACMR #3		63	21	59.5	63	31	22.5
DIST. TO ACMR #4			23	824.026		23	814.578
N.AZ. TO ACMR #4		139	30	43.7	139	40	05.3
DIST. TO B.L. #3			30	570.331		30	558.656
N.AZ. TO B.L. #3		241	34	52.2	241	44	13.5
DIST. TO WT. #2			36	960.477		36	946.551
N.AZ. TO WT. #2		281	14	21.9	281	23	45.1
N.AZ. TO N. LEG OF ACMR #1		0	43	50	0	53	13

NOTES:

ALL DISTANCES SHOWN ARE IN METERS.

ALL AZIMUTHS SHOWN ARE IN DEGREES, MINUTES, AND SECONDS MEASURED CLOCKWISE FROM NORTH.

U.T.M. GRID IS UNIVERSAL TRANSVERSE MERCATOR GRID REFERENCED TO CLARKE'S SPHEROID OF 1866 IN METERS.

U.T.M. GRID ZONE IS ZONE 18, CENTRAL MERIDIAN 75 DEG. W.

18 OCTOBER 1977

STATION AT ACMR TOWER NO. 2

STATION IS A SMALL TRIANGLE OF WHITE PAINT WITH A PUNCH HOLE LOCATED IN THE CENTER OF THE UPPERMOST DECK OF THE PLATFORM.

		GEOGRAPHICAL			U.T.M. GRID		
COORDINATES AT ACMR #2	LAT.	36	13	35.4728	N 4	008	901.268
	LONG.	75	15	01.1123	E	477	504.380
DIST. TO ACMR #1			30	728.654		30	716.569
N.AZ. TO ACMR #1		182	39	58.1	182	48	48.9
DIST. TO ACMR #3			30	003.561		29	991.620
N.AZ. TO ACMR #3		126	39	25.9	126	48	17.8
DIST. TO WT. #2			44	399.662		44	382.900
N.AZ. TO WT. #2		238	03	55.6	238	12	46.1
N.AZ. TO N. LEG OF ACMR #2		356	06	29	356	15	22

NOTES:

ALL DISTANCES SHOWN ARE IN METERS.

ALL AZIMUTHS SHOWN ARE IN DEGREES, MINUTES, AND SECONDS MEASURED CLOCKWISE FROM NORTH.

U.T.M. GRID IS UNIVERSAL TRANSVERSE MERCATOR GRID REFERENCED TO CLARKE'S SPHEROID OF 1866 IN METERS.

U.T.M. GRID ZONE IS ZONE 18, CENTRAL MERIDIAN 75 DEG. W.

18 OCTOBER 1977

STATION AT ACMR TOWER NO. 3

STATION IS A SMALL TRIANGLE OF WHITE PAINT WITH A PUNCH HOLE LOCATED IN THE CENTER OF THE UPPERMOST DECK OF THE PLATFORM.

		GEOGRAPHICAL	U.T.M. GRID
COORDINATES AT ACMR #3	LAT.	36 03 53.2239	N 3 990 933.505
	LONG.	74 58 59.3154	E 501 518.059
DIST. TO ACMR #1		28 523.333	28 511.986
N.AZ. TO ACMR #1		243 31 58.5	243 31 22.5
DIST. TO ACMR #2		30 003.561	29 991.620
N.AZ. TO ACMR #2		306 48 53.2	306 48 17.8
DIST. TO ACMR #4		32 491.873	32 478.883
N.AZ. TO ACMR #4		198 08 35.4	198 07 59.6
N.AZ. TO N. LEG OF ACMR #3		359 20 36	359 20 00

NOTES:

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U.T.M. GRID ZONE IS ZONE 18, CENTRAL MERIDIAN 75 DEG. W.

18 OCTOBER 1977

STATION AT ACMR TOWER NO. 4

STATION IS A SMALL TRIANGLE OF WHITE PAINT WITH A PUNCH HOLE LOCATED IN THE CENTER OF THE UPPERMOST DECK OF THE PLATFORM.

		GEOGRAPHICAL	U.T.M. GRID
COORDINATES AT ACMR #4	LAT.	35 47 11.2302	N 3 960 067.671
	LONG.	75 05 42.1955	E 491 409.740
DIST. TO ACMR #1		23 824.026	23 814.578
N.AZ. TO ACMR #1		319 36 44.6	319 40 05.3
DIST. TO ACMR #3		32 491.873	32 478.883
N.AZ. TO ACMR #3		18 04 39.1	18 07 59.6
DIST. TO B.L. #3		42 505.167	42 488.707
N.AZ. TO B.L. #3		274 55 06.3	274 58 26.6
N.AZ. TO N. LEG OF ACMR #4		0 46 14	0 49 34

NOTES:

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U.T.M. GRID IS UNIVERSAL TRANSVERSE MERCATOR GRID REFERENCED TO CLARKE'S SPHEROID OF 1866 IN METERS.

U.T.M. GRID ZONE IS ZONE 18, CENTRAL MERIDIAN 75 DEG. W.

18 OCTOBER 1977

STATION AT BODIE LIGHT NO. 3 (B.L. #3)

STATION IS A SMALL TRIANGLE OF WHITE PAINT WITH A PUNCH HOLE LOCATED ON THE LOWER OF TWO CATWALKS AT THE TOP OF THE BODIE ISLAND LIGHTHOUSE, 2.56 FT. EAST OF THE WALL OF OF THE LIGHTHOUSE.

		GEOGRAPHICAL	U.T.M. GRID
COORDINATES AT B.L. #3	LAT.	35 49 06.1868	N 3 963 751.642
	LONG.	75 33 49.1733	E 449 081.043
DIST. TO ACMR #1		30 570.331	30 558.656
N.AZ. TO ACMR #1		61 24 24.4	61 44 13.5
DIST. TO ACMR #4		42 505.167	42 488.707
N.AZ. TO ACMR #4		94 38 39.4	94 58 26.6
DIST. TO WT. #2		23 683.053	23 674.484
N.AZ. TO WT. #2		336 31 54.8	336 51 45.4

NOTES:

ALL DISTANCES SHOWN ARE IN METERS.

ALL AZIMUTHS SHOWN ARE IN DEGREES, MINUTES, AND SECONDS MEASURED CLOCKWISE FROM NORTH.

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U.T.M. GRID ZONE IS ZONE 18, CENTRAL MERIDIAN 75 DEG. W.

18 OCTOBER 1977

STATION AT WRIGHT NO. 2 (WT. #2)

STATION IS ON STONE STEP 0.96 FT. EAST OF USC&G MONUMENT WRIGHT.

		GEOGRAPHICAL			U.T.M. GRID		
COORDINATES	LAT.	36	00	50.8745	N 3	985	521.873
AT WT. #2	LONG.	75	40	05.8062	E	439	778.451
DIST. TO ACMR #1			36	960.477		36	946.551
N.AZ. TO ACMR #1		101	00	11.4	101	23	45.1
DIST. TO ACMR #2			44	399.662		44	382.900
N.AZ. TO ACMR #2		57	49	08.7	58	12	46.1
DIST. TO B.L. #3			23	688.053		23	674.484
N.AZ. TO B.L. #3		156	28	13.9	156	51	45.4

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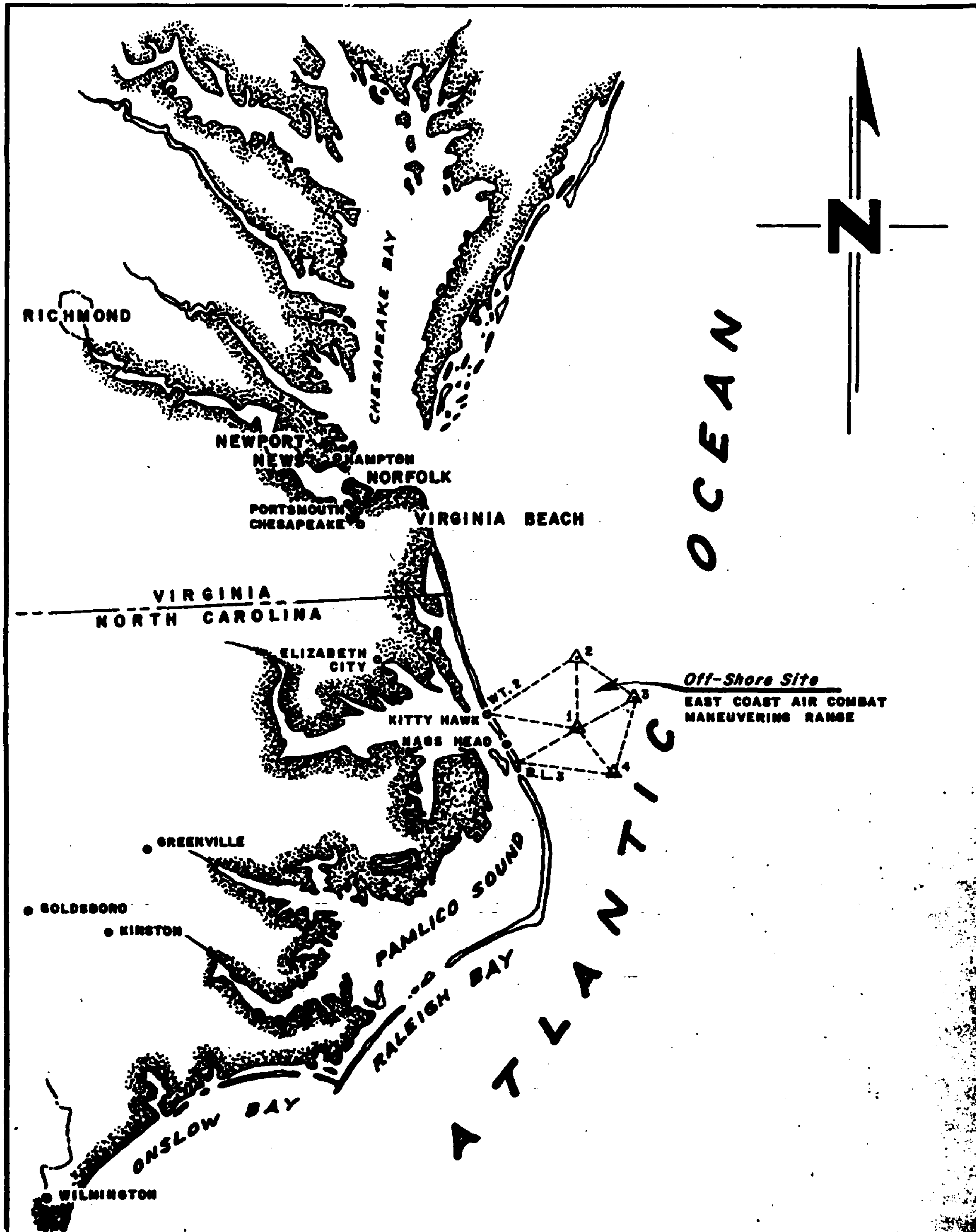
U.T.M. GRID ZONE IS ZONE 18, CENTRAL MERIDIAN 75 DEG. W.

18 OCTOBER 1977



BROWN & ROOT Inc. HOUSTON, TEXAS

CONT. NO. 29-5119-010

LOCATION MAP — EAST COAST AIR COMBAT MANEUVERING RANGE — DEPT. OF THE NAVY

CHESDIVNAVFACENGCOM N62477-76-C-0180

DWG. NO. KH-100-00

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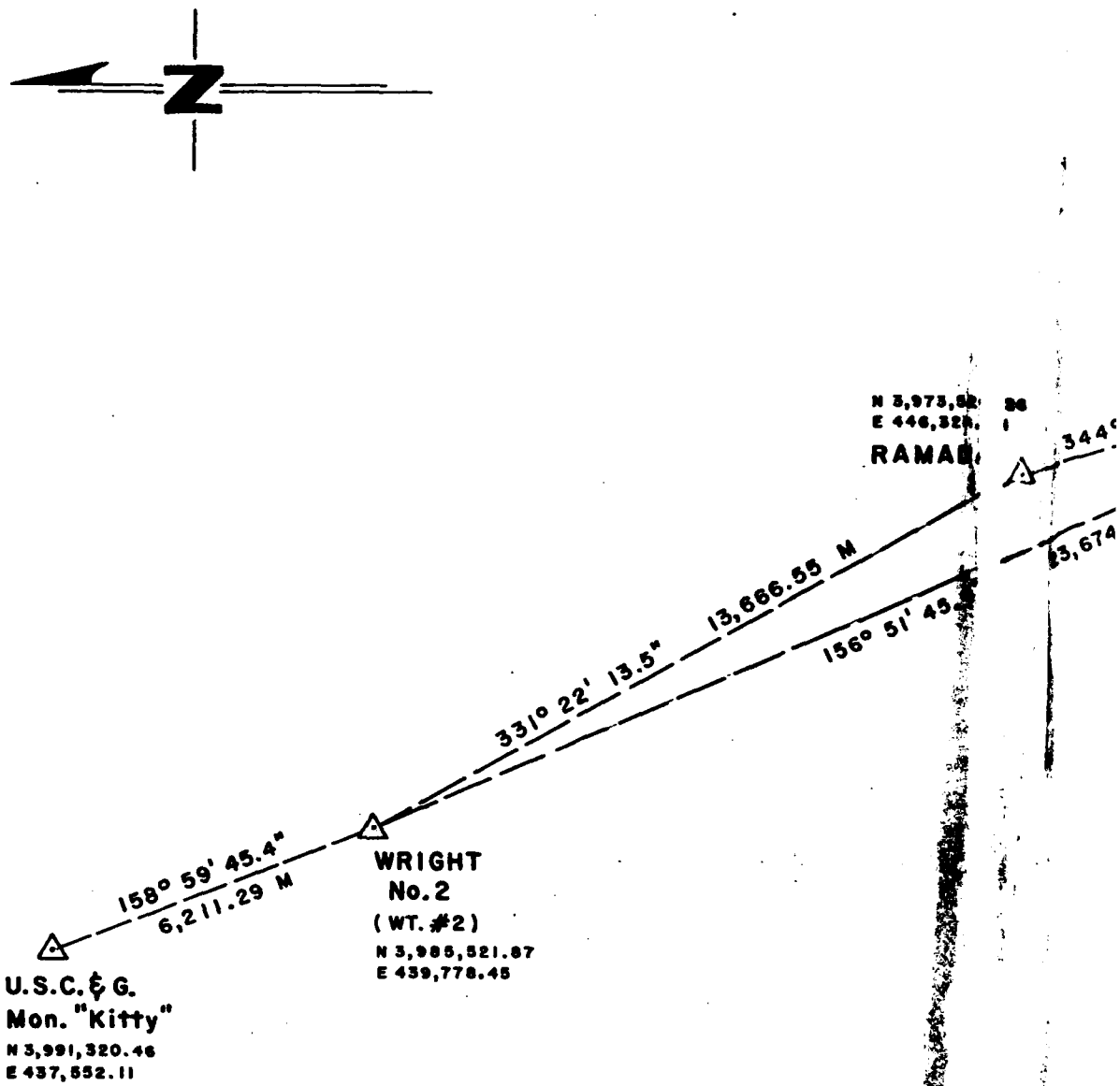
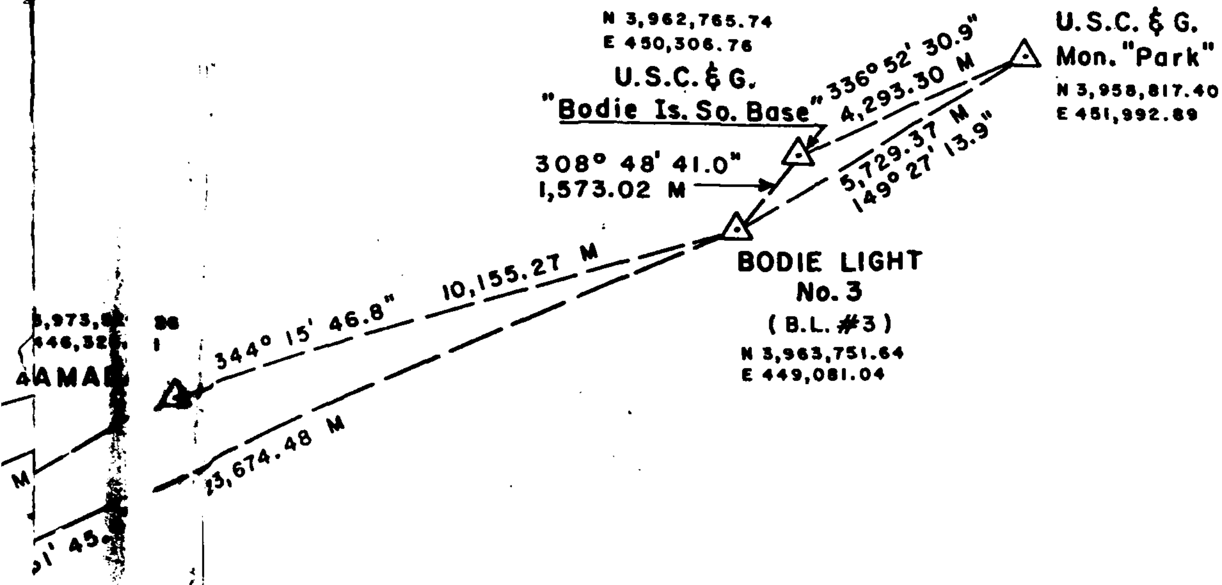


NOTES

SURVEY PERFORMED 20 AUGUST — 3 SEPTEMBER 1977.

REVISIONS	DATE



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SCALE = 1:120,000

DATE

BROWN & ROOT Inc. HOUSTON, TEXAS

CONT. No. 29-5119-010

CONTROL SURVEY — EAST COAST AIR COMBAT MANEUVERING RANGE — DEPT. OF THE NAVY
CHESDIVNAVFACENGCOM N62477-76-C-0180

DWG. No. KH-101-00

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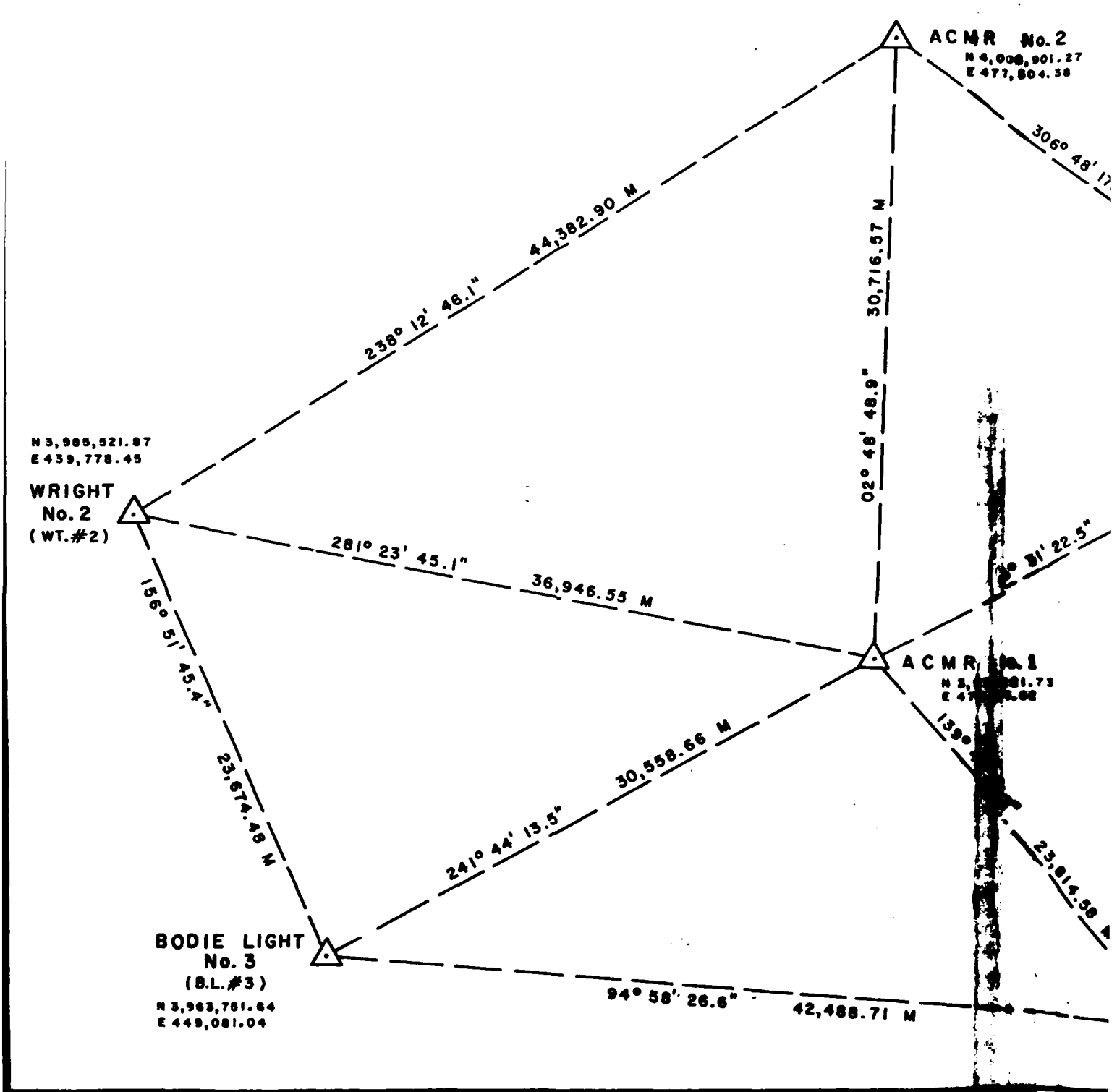

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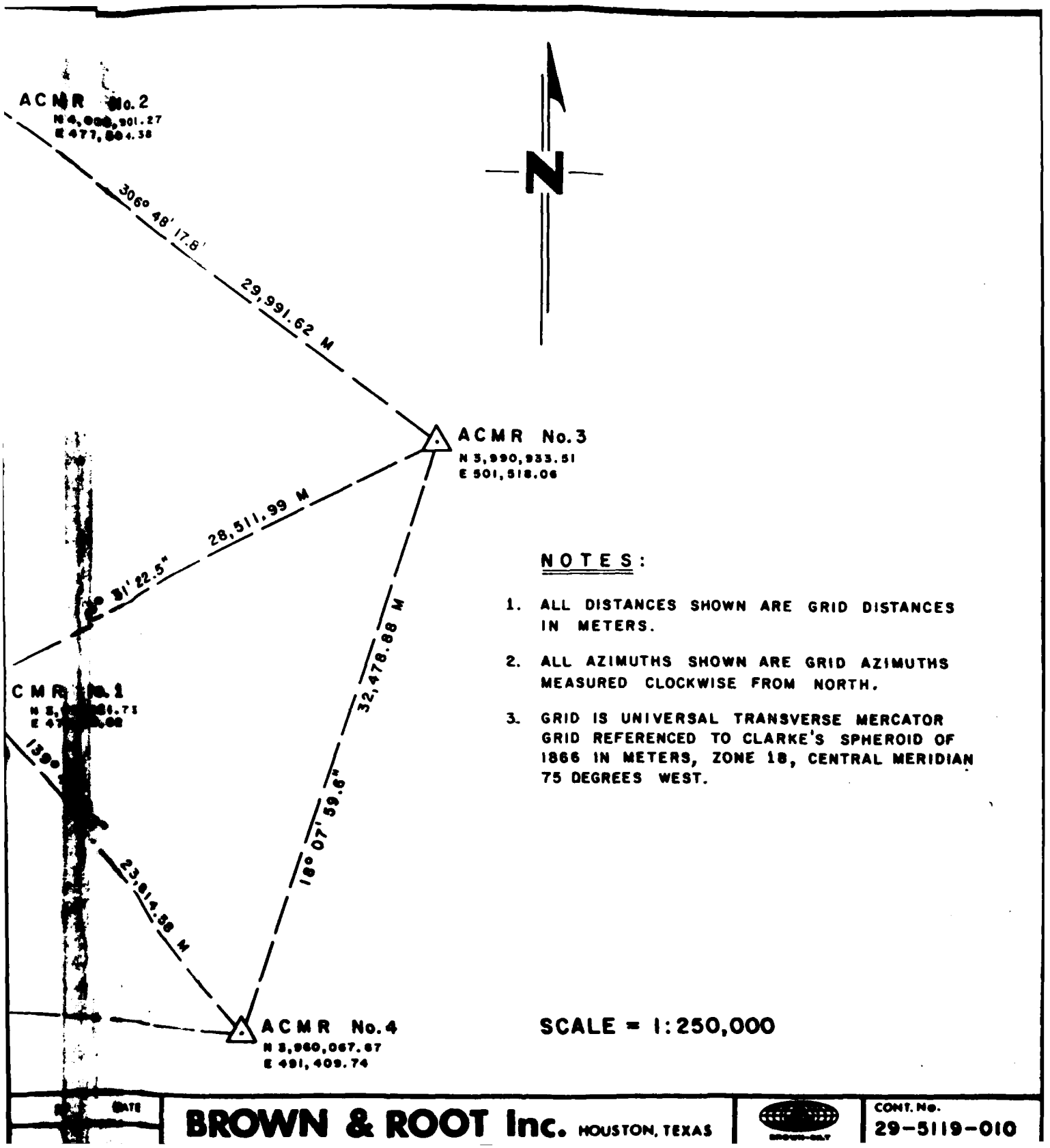
REVISIONS		DATE



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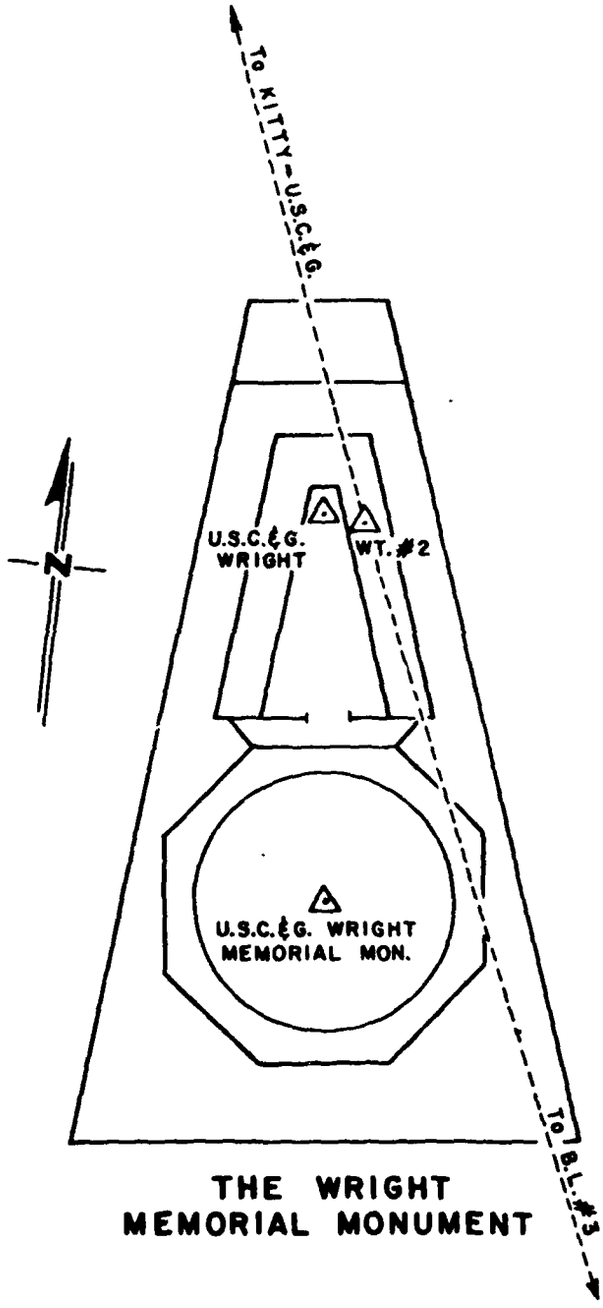
SCALE = 1:250,000

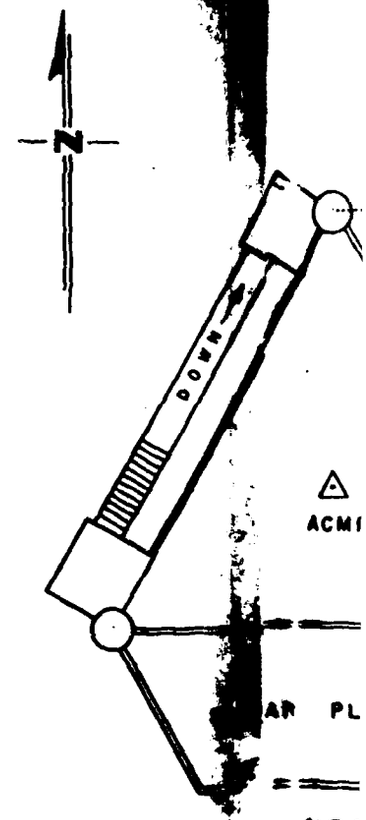
DATE

BROWN & ROOT Inc. HOUSTON, TEXAS

CONT. No.
29-5119-010



THE WRIGHT
MEMORIAL MONUMENT



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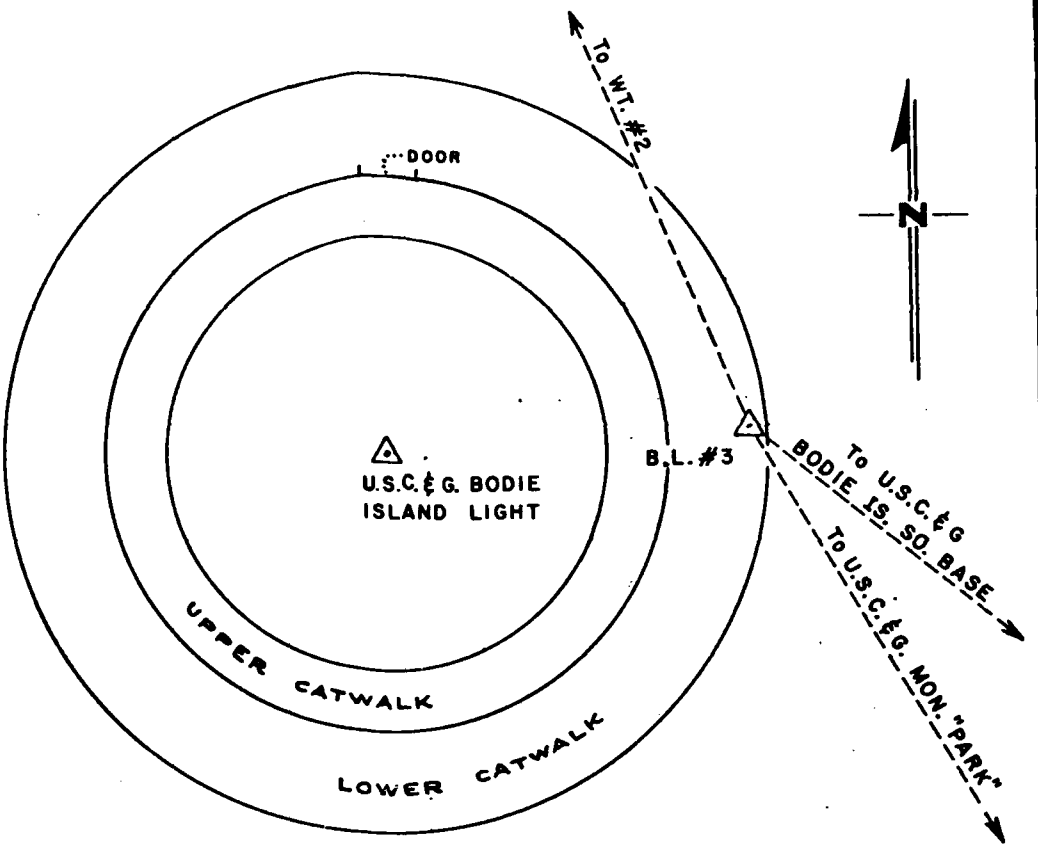
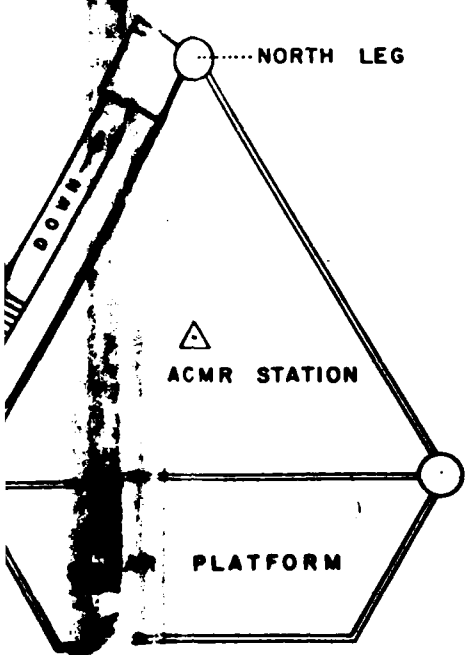
REVISIONS	BY	DATE



BODIE ISLAND LIGHTHOUSE



YPIC . ACMR TOWER

(NOT TO SCALE)

DATE	**BROWN & ROOT Inc.** HOUSTON, TEXAS	BROWN-OILT	CONT. No. 29-5119-010
	STATION LOCATION DIAGRAMS — EAST COAST AIR COMBAT MANEUVERING RANGE — DEPT. OF THE NAVY CHESDIVNAVFACENGCOM N62477-76-C-0180		DWG. No. KH-103-00
	DRAWN BY [illegible] CHECKED JRB APPROVED [illegible]	DATE 18 Oct. 77	SHT. ____ OF ____

SEP 1976
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY, NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA
by the
NATIONAL GEODETIC SURVEY
NORTH AMERICAN 1927 DATUM

QUAD 350754 STATION 1060
NC
LATITUDE 35°30' TO 36°00'
LONGITUDE 75°30' TO 76°00'
DIAGRAM NI 18-2 MANTEO

PARK (continued)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: PARK
ESTABLISHED BY: S.C. Miller YEAR: 1962 STATE: North Carolina MARKED ALSO ☐
RECOVERED BY: E.A. Beauchamp YEAR: 1975 COUNTY: Dare
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

Detailed statement as to the fitness of the original description, including marks found, stampings, changes made, and other pertinent facts:

All marks were recovered and they were all found to be in good condition.

To reach the station from the south end of the concrete bridge over the Oregon Inlet, go southeasterly following State Road 12 for 0.4 mile to a side road on the left. Turn left and go northwesterly following a paved road for 0.35 mile to the Oregon Inlet U S Coast Guard Station on the left. Continue on northwesterly following the paved road for 0.45 mile to the old Ferry Landing, turn right and go north following a paved road for 0.2 mile to the station site on the left as described in 1962.

E.A. Beauchamp

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

FORM C&GS-526

SEP 1976

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Geodetic Survey
NORTH AMERICAN 1927 DATUM

QUAD 350754 STATION 1010
NC
LATITUDE 35° 30' TO 36° 00'
LONGITUDE 75° 30' TO 76° 00'
DIAGRAM NI 18-2 MANTEO

Bodie Island Lighthouse (Dare County, A. D. Bache, 1875; 1937).—On Bodie Island. Station is center of lighthouse, which is conical tower with alternate white and black horizontal bands above granite base, with black ironwork housing light, 156 feet above mean water level.

RECOVERY NOTE, TRIANGULATION STATION — R

Name of Station: BODIE ISLAND LIGHTHOUSE State: North Carolina County: Dare
Established by: A.D.B. Year: 1875 Locality: Nags Head
Recovered by: E. R. McCarthy Year: 1950

Detailed statement as to the fitness of the original description:

Station recovered in good condition.
Description adequate and correct except for the following addition:
Located about 2.0 miles north of the Ferry Landing on north side of Oregon Inlet.

U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY
RECOVERY NOTE, TRIANGULATION STATION — R

Name of Station: BODIE ISLAND LIGHTHOUSE
Established by: A.D.B. Year: 1875 State: North Carolina
Recovered by: J.C. Ellerbe Year: 1962 County: Dare

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:
The station was recovered as described.

The station was observed eccentric. The eccentric point is located on the lower one of two cat walks of the lighthouse, over the front window, between the fourth and fifth guard rail post from the door approaching the catwalk, 2.34 feet west of the east edge of the catwalk, 2.44 feet northeast of the fifth post from the door, 2.61 feet east-northeast of the west edge of the catwalk and 2.81 feet southeast of the fourth post from the door. The eccentric point was a 1-inch triangle chisled in the catwalk with a punch hole. The point observed on and traversed to was the sharp point at the apex of the ball in the center of the roof of the lighthouse, the distance being 3.003 meters.

U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY
RECOVERY NOTE, TRIANGULATION STATION — R

Name of Station: BODIE ISLAND LIGHTHOUSE
Established by: A. D. Bache Year: 1875 State: North Carolina
Recovered by: V.R.Sobieralski Year: 1942 County: Dare

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:
Apparently unchanged except for electrification and automation since built according to the date on gable of the accessory house at the western foot of the lighthouse tower in 1871.

RECOVERY NOTE, TRIANGULATION STATION — R

Name of Station: BODIE ISLAND LIGHTHOUSE State: North Carolina Bench Mark(s) Also ☐
Established by: A.D. Bache Year: 1875
Recovered by: E.A. Beauchamp Year: 1975 County: Dare
Airline distance and direction from nearest town:

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

Station was recovered as stated in the previous descriptions and recovery notes, in good condition.

A key is needed to get to the top of this lighthouse, key can be gotten from the Officer in charge, at the Oregon Inlet U S Coast Guard Station, located about 3.5 miles south of the lighthouse on the south side of the Oregon Inlet as per signs COAST GUARD STATION.

To reach the station site from the north end of the concrete bridge over the Oregon Inlet, go northerly following State Road 12 for 2.6 miles to crossroads, turn left and follow the paved road southwest and southerly for 0.95 mile to the lighthouse and the station site as described in the previous descriptions.

ADJUSTED HORIZONTAL CONTROL DATA

Name of Station: BODIE ISLAND LIGHTHOUSE
State: NORTH CAROLINA Year: 1875 SECOND -Order
Source: G- 2031

Geodetic Latitude	35°49'06.17854	SCALED	1	Meters
Geodetic Longitude	75 33 49.29767			Feet

State Coordinates (Feet)				
State & Zone	Code	X	Y	θ (or Δα) Angle*
NC	3200	3,018,566.84	770,398.08	+ 1° 59' 00"

* Plane azimuth has been computed by the θ (or Δα) formula neglecting the second term

To Station or Object	Geodetic Azimuth (From South)	Plane Azimuth* (From South)	Code
	° ' "	° ' "	

93 278

USCOMM-NOAA-ASHEVILLE

SEP 1976
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the

National Geodetic Survey

NORTH AMERICAN 1927 DATUM

QUAD 350754 NC — STATION 1013
LATITUDE 35 ° 30′ TO 36 ° 00′
LONGITUDE 75 ° 30′ TO 76 ° 00′
DIAGRAM NI 18-2 NANTEO

BODIE ISLAND SOUTH BASE(Dare County N.C., A.D.B., 1849; 1937)-Near the southerly end of Bodie Island, about 1 mile southeast of lighthouse, about 0.75 mile west of Atlantic shore, 120 meters (394 feet) west of telephone line, and in range with lighthouse and Broad Creek Point. Underground mark is a copper nail in top of 4-inch red-cedar stake driven down through a hollow glazed stoneware marker shaped as frustrum of pyramid, top of which is 3 feet below surface of ground. A 5 foot square platform made of 3-inch planks laid crosswise and bolted together, with 18-inch diameter hole at center, was placed with center of hole over and 8 inches above the stake. On this is placed surface mark, which is small drill hole in copper bolt placed at center of stone monument 3.3 feet square by 2.8 feet high. This stone is set on the platform and its top is about flush with surface of ground. Over surface mark is placed a capstone 3 feet high and 2 feet on each side, with top in the form of a pyramid about 8 inches high. Capstone bears following inscriptions: On north face, U.S. COAST SURVEY); on east face, 1848 ; on south face, BASE No. 4 ; and on west face, A.D.B.Supt . Two subsidiary stone monuments 2.62 feet long by about 1 foot square were placed at the east and west extremities of knoll on which station is located and nearly on same level as station, on a line nearly at right angles to base line passing through station. These stones are flush with ground and each has a copper bolt with drill hole and cross lines on top. Distance from station to west monument is 25.44 meters (83.5 feet) and to east monument 21.66 meters (71.1 feet) In 1903 the east subsidiary stone could not be found. In 1933 the capstone was recovered as described, and it is presumed that the other parts of station are as described. Reference marks were not recovered. Azimuth from station to Bodie Island Lighthouse is 128°24′41.5".

BODIE ISLAND SOUTH BASE (Dare County, N.C., A.D.B., 1849; N.E.F., 1937) --The capstone as described was recovered and found in excellent condition. The description should be amended to read: Near the southerly end of Bodie Island, 7/8 mile southeast of Bodie Island Lighthouse, 1/3 mile west of Atlantic shore, about 120 meters west of telephone line, at the junction of the two sand roads from the inlet.

It is assumed that the other parts of the mark are as described. No reference marks were found; however, no definite search was made for them since they are covered with several feet of sand.

U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: BODIE ISLAND SOUTH BASE
ESTABLISHED BY: A. D. Bache YEAR: 1849 STATE: North Carolina
RECOVERED BY: V.R.Sobierelski YEAR: 1962 COUNTY: Dare

Detailed statement as to the status of the original description; including marks found, stampings, changes made, and other pertinent facts:

Recovered the toppled and some 2 or 3 yards removed about 2-foot square granite post about 3 feet long with identifying incised lettering was found southwest of the station. An object that sounded as granite when struck with a shovel and apparently level and about the described 3.3-foot square dimensions was recovered about 3 feet S of a steel witness post, that was toppled and bent, reported by engineers of the National Park Service as set recently by Mr. C. O. Siver of the Coast Survey. Undersigned failed to shovel sand and water fast enough to over actually view the granite block which is supposedly the undisturbed "surface" station mark.

About 7.8 miles S'ly along No. 1001 paved highway from the junction of Nos. 64, 264, and 158 U. S. Highways at Manteloking or the southern part of the village of Nags Head, about 0.4 mile N along the said road from Oregon Inlet, about 90 yards E of center line of the road pavement, 29 feet in magnetic bearing S 60° W from No. 280 creosoted telephone pole, about 7 feet lower than the core in the pole number, 3 feet S of steel witness post, and about 2 feet below the present sand surface or about one foot below the water table.

93 267

NOAA FORM 76-24
(continued on next page)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: BODIE ISLAND SOUTH BASE
STATE: NORTH CAROLINA YEAR: 1849 SECOND ORDER
SOURCE: G- 2031

GEODETIC LATITUDE:	35°48′34.41290	ELEVATION	0.8 METERS
GEODETIC LONGITUDE	75 33 00.10833		3 FEET

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	φ FOR Δ α ANGLE *
NC	3200	3,022,726.91	767,328.74	+ 1° 59′ 28"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ FOR Δ α FORMULA NEGLECTING THE SECOND TERM

TO STATION OR OBJECT	GEODETIC AZIMUTH (From north) ° ′ ″	PLANE AZIMUTH * (From north) ° ′ ″	CODE

USCOMM-NOAA-ASHEVILLE

SEP 1976
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
NORTH AMERICAN 1927 DATUM

DNAD 360753 STATION 1049
NC
LATITUDE 36 ° 00′ TO 36 ° 30′
LONGITUDE 75 ° 30′ TO 76 ° 00′
DIAGRAM NJ 18-8.11 EASTVILLE

U.S. DEPARTMENT OF COMMERCE
C.&G.S. NAT. GEODETIC SURVEY

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: DEVIL STATE: North Carolina COUNTY: Dare

CHIEF OF PARTY: S.C. Miller YEAR: 1962 COMPUTED BY: M.O.C.

stand

NOTE	DISTANCE ABOVE STATION MARK 1.38 METERS; DISTANCE OF MARK ABOVE STATION MARK .10 METERS. DISTANCE-STATION MARK, UNDERGROUND-STATION MARK; REFERENCE MARK DESCRIBED BY ABSOLUTE TRUE, APPROXIMATE TRUE, APPROXIMATE MAGNETIC MARKS AND PERMANENT OBJECTS FROM ONE OF WHICH PARTS THE SURVEY AT THE STATION				
	OBJECT	DIRECTION	DISTANCE FEET	DISTANCE METERS	DIRECTION ° ′ ″
	KITTY				0 00 00.0
Base	Azimuth Mark (Wright Memorial Monument 1933)	S E	About 1.7 miles		191 27 53.4 -
11a	Reference Mark No. 2	NEW	70.68	21.541	270 21 03 -
11a	Reference Mark No. 1	NW	169.41	21.215	358 53 43 -

Station is located on the west edge of the village of Kill Devil Hills, about 0.3 mile west of the ocean beach, 1.4 miles north of the intersection of U.S. Highway 158 By-pass and the entrance to the Wright Memorial Monument and in the southwest angle of the intersection of U.S. Highway 158 By-pass and Durham Street. Station is 70 feet west of the center line of the highway, 30.4 feet south of the center line of Durham Street, 31 feet south of power line pole # 115-16 and 2.1 feet north-northwest of a metal witness post and sign. The mark is a standard disk, set in the top of a 12x12 inch concrete monument projecting 4 inches and is stamped DEVIL 1962.

To reach from the intersection of U.S. Highway 158 By-pass and the entrance to the Wright Memorial Monument and Museum, go northerly on U.S. Highway 158 By-pass for 1.4 miles to cross road and station on left.

Reference Mark No. 1 is 70.5 feet west of the center line of the highway, 38.7 feet north of power pole # 115-16, 71.4 feet north of the witness post and sign, 19.3 feet north of the center line of Durham Street and 21 feet west of the center line of a narrow concrete service road. The mark is a standard disk, set in the top of a 12x12 inch concrete monument projecting 6 inches and is stamped DEVIL NO 1 1962.

Reference Mark No. 2 is 72.7 feet southwest of power pole # 115-16, 71.5 feet west of the metal witness post and sign and 48 feet south of the center line of Durham Street. The mark is a standard disk, set in the top of a 12x12 inch concrete monument projecting 6 inches and is stamped DEVIL NO 2 1962.

Azimuth Mark is 1.7 miles south of the station and about 0.5 mile west of U.S. Highway 158 By-pass. It is the center of the dome of the Wright Memorial Monument.

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: DEVIL
ESTABLISHED BY: S.C. Miller YEAR: 1962 STATE: North Carolina DOUBLE MARKER ALSO ☐
RECOVERED BY: A.L. Powell YEAR: 1969 COUNTY: Dare
ACCURATE DISTANCE AND DIRECTION FROM NEARBY TOWN: at Kill Devil Hills

Detailed statement as to the fitness of the original description including marks found, recoveries, changes made, and other pertinent items

Station was recovered as described and all marks were found to be in good condition. The original description is adequate except the station mark is now in the lawn of a new cottage. Mark is 38 feet east of the northeast corner of cottage and 15 feet north of the centerline of driveway. Reference Mark No. 2 is 12 feet north of the northwest corner of cottage.

(Continued on next page)

FORM C&GS-1962 (REVISED JUNE 1966)

U.S. DEPARTMENT OF COMMERCE
C.&G.S. NAT. GEODETIC SURVEY

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: DEVIL
STATE: NORTH CAROLINA YEAR: 1962 SECOND ORDER
LOCALITY:
SOURCE: 0-13956 FIELD SECTION:

GEODETIC LATITUDE:	36 ° 02 ′ 17.16916 ″	ELEVATION:	2.28 METERS
GEODETIC LONGITUDE:	75 ° 40 ′ 34.25605 ″		7.5 FEET

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	φ NOT Δ α ANGLE *
NC	3200	2,982,559.05	849,196.66	+ 1 ° 55 ′ 06 ″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ NOT Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
WRIGHT MEMORIAL MONUMENT	345 ° 00 ′ 59.4 ″	343 ° 05 ′ 53 ″	3200

97 356

SEP 1976
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA
by the
NATIONAL GEODETIC SURVEY
NORTH AMERICAN 1927 DATUM

QUAD 360753 STATION 1049
NC
LATITUDE 36°00' TO 36°30'
LONGITUDE 75°30' TO 76°00'
DIAGRAM NJ 18-8,11 EASTVILLE

DEVIL (Continued)

REPORT ON CONDITION OF SURVEY MARK

Form Approved
Budget Bureau No. 41-R1971

Name or Designation: DEVIL Year Established: 1962
State: North Carolina County: Dare Organization Established by: USC&GS
Distance and direction from nearest town: In Kill Devil Hills
Description published in: (place, book, or quadrangle number)
Mark searched for or recovered by: Name - J. D. Barbour, Division of Geodetic Survey
Organization - Dept. Natural & Economic Resources
Date of report 1-16-74 Address - Raleigh, N. C. 27611

Condition of marks: List letters and numbers found stamped in (on) each mark.

Mark stamped:	Condition:
DEVIL 1962	Good
DEVIL RM 1 1962	Good
DEVIL RM 2 1962	Good

Marks accessible? ☒ Yes ☐ No Property owner consulted? ☐ Yes ☒ No
Please report on the thoroughness of the search in case a mark was not recovered, suggested changes in description, need for repairing or moving the mark, or other pertinent facts:

30.0' S of PP #TL60-17 with aluminum ref. tag

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: DEVIL
ESTABLISHED BY: S.C. Miller YEAR: 1962 STATE: North Carolina BENCH MARK(S) ALSO ☐
RECOVERED BY: E.A. Beauchamp YEAR: 1975 COUNTY: Dare
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

Detailed statement as to the fitness of the original description including marks found, stampings, changes made, and other pertinent facts:

Station mark was recovered and it was found to be in good condition. Mark is 32 feet northeasterly of the northeast corner of a house, 14 feet west of the west edge of a concrete side walk and is flush with the ground.

Reference mark No 2 was recovered in good condition. It is 13 feet north of the northwest corner of a house and is flush with the ground.

Reference mark NO 1 was recovered and it was found to be in good condition. It now has been painted white and it projects about 1 foot.

The 1962 decription is adequate to reach.

[signature]
U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

FORM C&GS-526 (10-66)

SEP 1976
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
NORTH AMERICAN 1927 DATUM

QUAD 360753 STATION 1159
NC
LATITUDE 36° 00' TO 36° 30'
LONGITUDE 75° 30' TO 76° 00'
DIAGRAM NJ 18-8,11 EASTVILLE

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: WRIGHT STATE: North Carolina COUNTY: Dare

CHIEF OF PARTY: S.C. Miller YEAR: 1962 DESCRIBED BY: R.L.W.

HEIGHT OF TELESCOPE ABOVE STATION MARK 3.18 METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS.

NOTE	OBJECT	BEARING	DISTANCE FEET	DISTANCE METERS	DIRECTION
DESC.	HARBOR 1933				00 00 00.0
	Mamie, Norfolk and Carolina Tel. and Tel. Relay Tower	NW			04 51 47.7
apex.	WRIGHT MEMORIAL MONUMENT 1933	S	6.65	2.203	229 32

Station is located at the top of the Wright Memorial Monument which is at the top of Kill Devil Hill about 4½ miles south of the village of Kitty Hawk, about 3/4 miles northwest of the village of Kill Devil Hills and about 7 miles north of Manteo. Station is a standard disk set in a drillhole in the floor of the lookout at the top of the memorial. It is 3 feet north of the door at the top of the stairs and ½ foot north of a water drain. The mark is set flush in the concrete and the disk is stamped WRIGHT 1962.

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: WRIGHT
ESTABLISHED BY: S.C. Miller YEAR: 1962 STATE: North Carolina BENCH MARK(S) ALSO ☐
RECOVERED BY: R.A. Beauchamp YEAR: 1975 COUNTY: Dare
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

The station mark was recovered and it was found to be in very good condition.

FORM C&GS-526
U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WRIGHT

STATE: NORTH CAROLINA YEAR: 1962 SECOND -ORDER

LOCALITY:

SOURCE: G-13956 FIELD SKETCH:

GEODETIC LATITUDE:	36 00 50.87183	ELEVATION:	43.9 METERS
GEODETIC LONGITUDE:	75 40 05.81670		144 FEET

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	θ (OR Δ α) ANGLE*
NC	3200	2,985,186.26	840,553.83	+ 1 55 23

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ (OR Δ α) FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
HARBOR	123 09 34.6	121 14 12	3200

POSITION DETERMINED BY TRAVERSE FROM STATION WRIGHT MEM MON
AND CHECKED BY ADDITIONAL OBSERVATIONS

97 354

SEP 1976
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Geodetic Survey
NORTH AMERICAN 1927 DATUM

QUAD 350754 STATION 1060
NC
LATITUDE 35° 30′ TO 36° 00′
LONGITUDE 75° 30′ TO 76° 00′
DIAGRAM NI 18-2 MANTEO

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: PARK STATE: North Carolina COUNTY: Dare

CHIEF OF PARTY: S.C.Miller YEAR: 1962 DESCRIBED BY: M.G.C. plate

NOTE.* HEIGHT OF TELESCOPE ABOVE STATION MARK 11.62 METERS.; HEIGHT OF LIGHT ABOVE STATION MARK 4.10 METERS.

DESC. SURFACE-STATION MARK, UNDERGROUND-STATION MARK; DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION

	OBJECT	BEARING	DISTANCE FEET	DISTANCE METERS	DIRECTION ° ′ ″
	DIKE				0 00 00.0
Desc.	Reference Mark No. 2	SW	83.66	25.499	84 45 59
	Azimuth Mark (Bodie Island Lighthouse, 1875)				176 46 16.7
Desc.	Reference Mark No. 1	N	49.39	15.053	200 36 34

Station is located on the south shore of Oregon Inlet, about 0.8 mile north-northwest of the Oregon Inlet U.S. Coast Guard Lifeboat Station and 0.2 mile north of the Oregon Inlet Ferry Docks. Station is about 300 feet south of shore beacon No. 5, 90 feet southwest of the southwest corner of a paved parking area, 101 feet west of the center line of a paved road leading from the ferry docks to a beach camping area and 5.5 feet west of a metal witness post and sign. The station is a standard disk, clamped to the top of a copper weld rod which is driven through a 2½ inch galvanized pipe to a depth of 24 feet. The disk projects 4 inches and is stamped PARK 1962.

To reach the station from the ferry docks on the south shore of Oregon Inlet, go north for 0.2 mile on a paved road to parking area and station on left.

Reference Mark No. 1 is 77 feet west of centerline of road, 50.5 feet west-southwest of the southwest corner of paved parking area and 51.6 feet north of a metal witness post and sign. The mark is a standard disk, clamped to the top of a copper weld rod which is driven through a 2½ inch galvanized pipe to a depth of 24 feet. The disk projects 6 inches and is stamped PARK NO 1 1962.

Reference Mark No. 2 is 87.5 feet southwest of the metal witness post and sign. The mark is a standard disk, clamped to the top of a copper weld rod which is driven through a 2½ inch galvanized pipe to a depth of 24 feet. The disk projects 6 inches and is stamped PARK NO 2 1962.

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: PARK North
ESTABLISHED BY: S.C. Miller YEAR: 1962 STATE: Carolina DISTINCT MARKERS ALSO ☐
RECOVERED BY: A.L. Powell YEAR: 1969 COUNTY: Dare
AVAILABLE DISTANCE AND DIRECTION FROM NEAREST TOWN: 12 miles south of Nags Head

Detailed statement as to the fitness of the original description, including marks found, stampings, changes made, and other pertinent facts:
Recovered as described. A bridge has been built over Oregon Inlet and the Ferry Docks are no longer in use but still easily recoverable.

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: PARK
ESTABLISHED BY: S.C.M. YEAR: 1962 STATE: North Carolina DISTINCT MARKERS ALSO ☐
RECOVERED BY: R.S. Tibbetts YEAR: 1974 COUNTY: Dare
AVAILABLE DISTANCE AND DIRECTION FROM NEAREST TOWN:

Detailed statement as to the fitness of the original description, including marks found, stampings, changes made, and other pertinent facts:
The station mark was recovered in fair condition. The disk has been badly battered. Reference marks 1 and 2 were recovered in good condition. The original description is adequate.

(continued on next page)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PARK
STATE: NORTH CAROLINA YEAR: 1962 SECOND ORDER

SOURCE: G-13956

GEODETIC LATITUDE:	35 46 26.55994	ELEVATION	2.9 METERS
GEODETIC LONGITUDE:	75 31 52.07148		10 FEET

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	γ (GRID AZ. ANGLE)*
NC	3200	3,028,778.81	754,605.03	+ 2° 00′ 08″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE γ (GRID AZ.) FORMULA NEGLECTING THE SECOND TERM

TO STATION OR OBJECT	GEODETIC AZIMUTH (From South)	PLANE AZIMUTH* (From South)	CODE
BODIE ISLAND LIGHTHOUSE	149° 06′ 54.3″	147° 06′ 47″	3200

93 277

MEDIUM-NOAA-ASHEVILLE

SEP 1976

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY, NATIONAL GEODETIC SURVEY

DESCRIPTION OF TRIANGULATION STATION

HORIZONTAL CONTROL DATA

by the National Ocean Survey
NORTH AMERICAN 1927 DATUM

QUAD 360753 STATION 1079
NC
LATITUDE 36°00' TO 36°30'
LONGITUDE 75°30' TO 76°00'
DIAGRAM NJ 18-8,11 EASTVILLE

NAME OF STATION: KITTY   STATE: North Carolina   COUNTY: Dare
CHIEF OF PARTY: S.C. Miller   YEAR: 1962   DESCRIBED BY: R.L.M.

HEIGHT OF TELESCOPE ABOVE STATION MARK 3.3 METERS / HEIGHT OF LIGHT ABOVE STATION MARK 3.07 METERS

NOTE	OBJECT	BEARING	DISTANCE FEET	DISTANCE METERS	DIRECTION
7a	DEVIL				00 00 00.0
	Wright Memorial Monument	SE	about 4 miles		05 03 17.1
	U.S. Army Tower	SW	about 0.5 mile		88 41 01.7
11a	R.M. No. 1	NW	64.20	19.569	185 31 40
11a	R.M. No. 2	NE	49.27	15.019	264 06 25

Station is located about 0.65 mile east of the Post Office in Kitty Hawk. Station, a standard disk set in a 12x12 inch concrete monument and stamped KITTY 1962 is 126 feet east-southeast of the intersection, 17 feet east of a powerline pole and 2.7 feet northeast of a metal witness post with sign. The mark is flush with the ground.

To reach from the Post Office in the village of Kitty Hawk, go east on surfaced road for 0.65 mile to U.S. Highway No. 158 By-pass and Station as described.

Reference Mark No. 1, a standard disk set in a 12x12 inch concrete monument and stamped KITTY NO 1 1962 is 29½ feet north of the approximate centerline of surfaced road, 47.7 feet east of a powerline pole and 3 feet east of a highway right-of-way marker. The mark projects 3 inches.

Reference Mark No. 2, a standard disk set in a 12x12 inch concrete monument and stamped KITTY NO 2 1962 is 22 feet north of the approximate centerline of surfaced road, 95½ feet west-northwest of a utility pole and 44½ feet east of a highway right-of-way marker. The mark projects 3 inches.

Azimuth Mark, a standard disk set in a 12x12 inch concrete monument and stamped KITTY 1962 is 59 feet northeast of a highway right-of-way marker, 38 feet west of the approximate centerline of the highway and 3.2 feet southeast of an aluminum witness post with a metal sign. The mark projects 4 inches.

To reach Azimuth Mark from Station, go south on U.S. Highway No. 158 by-pass for 0.25 mile to mark on right (west) side of highway.

Additional Observations.

OBJECT	BEARING	DISTANCE	DIRECTION
DEVIL			00 00 00.0
Azimuth Mark	SE	about 0.25 mile	05 27 12.1

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: KITTY
ESTABLISHED BY: A.W. Steinman- YEAR: 1962 STATE: N.C.
RECOVERED BY: L.P. Wood YEAR: 1965 COUNTY:
BENCH MARKED ALSO ☐
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

Detailed statement as to the fitness of the original description, including marks found, stampings, changes made, and other pertinent items:

Station was recovered in good condition.

A large billboard has been erected about 10 feet South of the station, which obstructs the line of sight to the Azimuth Mark.

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: KITTY
ESTABLISHED BY: S.C. Miller YEAR: 1962 STATE: North Carolina BENCH MARKED ALSO ☒
RECOVERED BY: A.L. Powell YEAR: 1969 COUNTY: Dare
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: at Kitty Hawk

Detailed statement as to the fitness of the original description, including marks found, stampings, changes made, and other pertinent items:

Station was recovered as described and all marks were found to be in good condition. The original description is adequate except the azimuth mark is presently about 10 inches below the [illegible] and the description of Reference Mark No. 2 should be 22 feet [illegible] of the approximate centerline of surfaced road and not 22 feet north.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KITTY
STATE: NORTH CAROLINA   YEAR: 1962   SECOND ORDER
LOCALITY:
SOURCE: G-13956   FIELD SKETCH:

GEODETIC LATITUDE	36 03 58.56646	ELEVATION	3.10 METERS
GEODETIC LONGITUDE	75 41 56.39844		10.2 FEET

STATE COORDINATES (feet)

STATE & ZONE	CODE	X	Y	θ (OR Δ α) ANGLE[*]
NC	3200	2,977,117.37	859,273.57	+ 1 54 30

[*] PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ (OR Δ α) FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH[*] (From south)	CODE
AZIMUTH MARK	338 59 33.2	337 05 03	3200

97 357

SEP 1976
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
NORTH AMERICAN 1927 DATUM

QUAD 360753 STATION 1079
NC
LATITUDE 36°00' TO 36°30'
LONGITUDE 75°30' TO 76°00'
DIAGRAM NJ 18-8,11 EASTVILLE

KITTY (Continued)

REPORT ON CONDITION OF SURVEY MARK

Form Approved
Budget Bureau No. 41-R1983

Name or Designation: KITTY Year Established: 1962
State: North Carolina County: Dare Organization Established by: USC&GS
Distance and direction from nearest town: in Kitty Hawk
Description published in: (Line, book, or quadrangle number)
Mark searched for or recovered by: Name - J. D. Barbour, Division of Geodetic Survey
Organization - Dept. Natural & Economic Resources
Date of report: 1-16-74 Address - Raleigh, North Carolina 27611
Condition of marks: List boxes and numbers found stamped in (or cast in) each mark.

Mark stamped: KITTY 1962	Condition: Good
KITTY No. 1 1962	Good
KITTY No. 2 1962	Good
KITTY AZ. 1962	Good

Marks recoverable? [X] Yes [ ] No Property owner contacted? [ ] Yes [X] No
Please report on the circumstances of the search in case a mark was not recovered, suggested changes in description, need for regaining or moving the mark, or other pertinent items:

KITTY 1962 is in the NE quadrant of intersection of US 158 Bypass and SR 1206. 7.9' NNW of sign brass post with alum. tag and witness sign, 117.0' SW of PP with alum. ref. tag. Station is 12 inches below the ground.

KITTY No. 1 1962 is 47.0' E of PP with aluminum ref. tag, and is 6 inches below grund.

KITTY No. 2 1962 is south of SR 1206 instead of north as described, 72.5' SW of PP with aluminum ref. tag, and 6 inches below the ground.

KITTY AZ. is 117.8' W of PP with aluminum ref. tag, and 12 inches below the ground.