

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1102
HAWAII
LATITUDE 21° 30' TO 22° 00'
LONGITUDE 158° 00' TO 156° 30'
DIAGRAM NF 4-11 OAHU

MANINI (Hawaii, H.A.P., 1932)--Station is 1-1/2 miles E of Kaena Point, at the W end of the Manini Pali, about 300 meters NW of the top of the grade for an inclined railway (?) down the face of the cliff. A winding road was partially constructed up the cliff but it leads into a blind pocket below the station. Station and R.M.s 1 and 2 are standard disks set in concrete in depressions in outcropping bedrock.

OBJECT	DISTANCE	DIRECTION
PUEO	meters	0°00'00"0
R.M. 2	19.67	66 51 20
R.M. 1	17.095	241 28 40

Height of signal above station mark - 3 meters.
Height of instrument above station mark - 1.5 meters.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MANINI
STATE: HAWAII YEAR: 1932 THIRD ORDER
SOURCE: G- 9889

GEODETIC LATITUDE: 21° 34' 33.999	ELEVATION: 272 METERS
GEODETIC LONGITUDE: 158 15 33.090	SCALED FEET

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
Form 558
Rev. Aug. 1963

RECOVERY RECOVERY OF TRIANGULATION STATION

NAME OF STATION: MANINI STATE: Hawaii COUNTY: Honolulu
Recovered By: CHIEF OF PARTY: E.E. Jones YEAR: 1958 Described by: L.W.
NOTE: HEIGHT OF TELESCOPE ABOVE STATION MARK 1.5 METERS. HEIGHT OF LIGHT ABOVE STATION MARK 1.8 METERS.
2a Surface-station mark, DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION
Underground-station mark

OBJECT	BEARING	DISTANCE		DIRECTION
		feet	meters	
TREE				00 00 00
RM 1	SE	63.19	19.260	43 26 52
RM 2	SW	59.40	18.105	228 49 28

Detailed description

The station was recovered and found to be in good condition. the old and new directions to the reference marks check, there is however an error in the old distances, a new route to the station follows. To reach the station from the post office in Waianae go west and north for 6.9 miles to the end of the pavement at a cemetery on the right, continue straight ahead for 1.5 miles to a T-road right, turn right and follow the winding road to the top of the hill and a T-intersection, turn left and go west for 0.6 mile to a dim bladed road on the right just after passing a power pole, turn right on the winding road and follow it to its end about 1.0 mile, from end of truck travel pack north down the main ridge about 0.4 mile to the station, a 15 minute pack.

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	PLANE AZIMUTH * (From south)
HI 3	5103	411,930.21	148,799.18	- 0° 05' 43"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE PLANE AZIMUTH FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
TREE	289° 53' 53.4"	289° 59' 36"	5103

QF 186

(continued on next page)

HORIZONTAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
OLD HAWAIIAN DATUM

QUAD 211581

STATION 1102

LATITUDE ° ' TO ° '
LONGITUDE ° ' TO ° '
DIAGRAM

MANINI (continued)

FORM 524a
(9-18-89)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: MANINI

ESTABLISHED BY: H.A.P. YEAR: 1932 STATE: Hawaii

RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK		1.50		METERS		HEIGHT OF LIGHT ABOVE STATION MARK				METERS	
DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION											
OBJECT		BEARING	DISTANCE		DIRECTION						
			FEET	METERS							
PUEO 1932		NW SE SE SSE	63.305	19.295	00	00	00.0				
R.M. No. 2			about 0.9 mile	66	51	42					
Radio mast				233	13	10.4					
R.M. No. 1				241	28	31					
RED 1958					245	11	11.6				

The station mark was found to be solid, but the cement around edge of disk was broken away and there is a crack across one end of the boulder. The disk was re-cemented and the rock also re-inforced. Both reference marks were found in good condition. A complete description follows:

Station is located about 1-1/2 miles east of Kaena Point and 1/2 mile west of Manini Gulch on a point at about 840 feet elevation at the west end of Manini Pali and about 300 yards west from a buried telephone cable which comes up the steep ravine. A track road now runs down from the ridge above, ending about 300 yards southeast of station.

To reach station from the post office in Waianae, go northerly on Farrington Highway for 9.1 miles to a macadam side road right. Follow this side road up side of ridge for 2.0 miles to T-junction at top of ridge and a guard booth at radar site. Turn left and go 0.35 mile to side road right. Go right and follow track road down along the buried cable for 0.7 mile to end of road. From here pack northwest at about same elevation along ridge to left of steep ravine, for about 300 yards to station.

Station mark is a standard disk stamped "MANINI 1932", cemented in a drill hole in a flat 2-1/2 x 4-foot boulder projecting 1 foot above ground. It is about 40 yards southeast of extreme end of ridge and 4 feet east of a rock row that is 6 feet long and 3 feet high.

Reference mark number one is a standard disk stamped "MANINI NO 1", cemented in a drill hole in bedrock that projects 8 inches above ground. It is along the ridge line in brush and is 1.6 feet higher than station.

Reference mark number two is a standard disk stamped "MANINI NO 2", cemented in a drill hole in bedrock projecting 4 inches above ground. It is along the ridge line, 10.9 feet lower than station and 4 feet southwest of a prominent boulder projecting 3 feet above ground.

Radio mast is skeleton steel structure, triangular in shape and about 60 feet high, painted alternate red and white, and supported by guy wires.

*Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.

NOTE - One of these forms must be used for every station recovered.

USCOMM-DC 27175-P89

QI 388

HORIZONTAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1103

LATITUDE ° ' TO ° '
LONGITUDE ° ' TO ° '
DIAGRAM

MOKULEIA (continued)

FORM 326
(8-18-69)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: MOKULEIA
ESTABLISHED BY: L.G.S. YEAR: 1927 STATE: Hawaii
RECOVERED BY: W.R. Porter YEAR: 1963 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.70 METERS, HEIGHT OF LIGHT ABOVE STATION MARK METERS.
DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
MOKU 1927 LEIA (Magnetic Station)	SE	97.985	(29.866)	00 00 00.0 278 49 43.0

Station mark and LEIA 1963 (Magnetic Station) were recovered and found in good condition. The concrete platform surrounding the station mark was built in March, 1930 by the Hawaii Territory Survey. A tie was made between the two marks. A complete description follows:

Station is located about 2-1/2 miles west of Waialua, 1 mile east of the east end of Dillingham Airfield, 120 yards west of the mouth of Makaleha Stream, and 200 yards north of State Highway 99, along the north shore of Oahu on a brush-covered sand dune about 15 feet above sea level. It is the highest in the area and is hidden by large ironwood trees.

To reach station from the post office in Waialua, go south on Goodale Avenue for 0.5 mile; take right fork and go west on State Highway 99 for 3.2 miles to bridge at Makaleha Stream. Walk northerly across pasture along west side of stream for about 200 yards to station. (NOTE: It is possible to drive to station by passing through a locked gate just beyond the bridge and driving across pasture. Key for the gate may be obtained from the Crowbar Ranch on left side of Highway).

Station mark is a standard disk stamped "MOKULEIA 1927", set in the top of a 10-inch-square, concrete monument that projects 1/2 inch from the center of a 5-1/2-foot-square, concrete platform which is flush with the ground. It is at the east end of a row of coconut trees, 18 feet west of an old fishing shelter, and 35 feet south from the edge of the sand beach.

Station LEIA 1963 is a standard magnetic station disk, stamped "LEIA 1963", set in the top of a concrete-filled, 8-inch-diameter, red clay soil pipe that projects 6 inches above ground. It is located on the flat below the station dune, 29.6 feet west-southwest of a 6-point star blaze on an ironwood tree, and 6 feet lower than station mark.

*Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.

NOTE - One of these forms must be used for every station recovered.

USCOMNAV-DC 87179-P00

HORIZONTAL CONTROL DATA

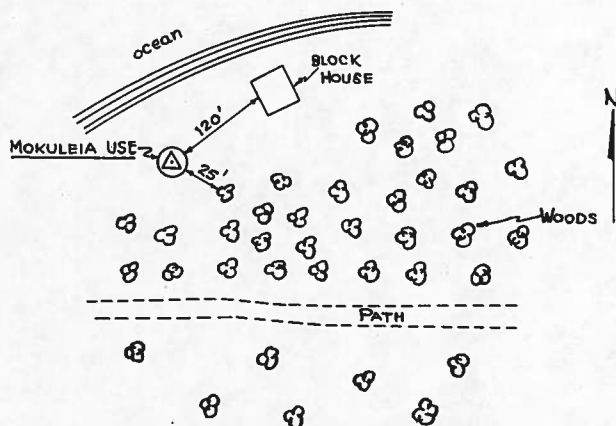
by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1104
HAWAII
LATITUDE 21 ° 30' TO 22 ° 00'
LONGITUDE 158 ° 00' TO 158 ° 30'
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

MOKULEIA (U.S.E.) (Hawaii, U.S.E., 1914; H.A.P., 1932)
--About 2-1/2 miles W of Waialua, 0.65 mile
E of Mokuleia railroad station, about 6 meters S of the storm high-
water line.
Station is marked by a 4-inch iron pipe, filled with concrete,
projecting 12 inches above ground. A brass rectangular plate is
in top surface, inscribed "U.S.E.D. 12.3, MOKLEIA" (note misspell-
ing). A heavy growth of ironwood trees stands 5 meters S of the
station.

(477th FA Obsn. Bn., 1945)--Station is in good condition.
Mark is a cast-iron pipe, 5 inches in diameter, 6 inches above
surface, concrete filled with rectangular steel plate on top.
From junction of Highways 130 and 11, just S of Waialua,
proceed NW via Highway 11 for 2.5 miles to intersection with dirt
road running NE and SW, thence NE (right) via dirt road which
leads into Officer's Recreational Grounds, continue on dirt road
through grounds and past buildings for 0.6 mile to station site,
which is off to N of road and on the beach.



FORM 520
(11-8-55)

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

R

NAME OF STATION: MOKULEIA (U.S.E.)
ESTABLISHED BY: U.S.E. YEAR: 1914 STATE: Hawaii
RECOVERED BY: 25th Div. Arty. YEAR: 1958 COUNTY: Honolulu

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

Station has been hit by some type of object. It is leaning to one
side. Station should be straightened and re-established.

(continued on next page)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MOKULEIA USE

STATE: HAWAII

YEAR: 1914

THIRD

-ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 ° 34' 59.606	ELEVATION:	METERS
GEODETIC LONGITUDE:	158 10 01.477		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ θ ANGLE *
HI 3	5103	443,232.39	151,340.18	- 0 03 41

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
MOKULEIA	69 ° 06' 28.2	69 ° 10' 09 "	5103

QI 305

HORIZONTAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1104

LATITUDE ° ' TO ° '
LONGITUDE ° ' TO ° '
DIAGRAM

MOKULEIA (U.S.E.) (continued)

FORM 526a
(9-18-69)

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

NAME OF STATION: MOKULEIA (USE)
ESTABLISHED BY: U.S.E. YEAR: 1914 STATE: Hawaii
RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.5 METERS.		HEIGHT OF LIGHT ABOVE STATION MARK METERS.		
DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION				
OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
MOKULEIA 1927				00 00 00.0
R.M. No. 1	ESE	34.761	10.595	221 23 51
R.M. No. 2	S	32.828	10.005	296 38 25

Station was recovered, with the top of the pipe broken off and the shank of the mark projecting from the concrete in the pipe, about flush with the ground. The mark, a 2-1/2 x 3-inch brass plate, stamped "US ELE 12.3 MOKULEIA", was found alongside of the pipe. The pipe was found to be set in a large mass of concrete below the ground and was still solid, so it was rebuilt. A new station mark and two reference marks were established. A complete description follows:

Station is located about 2-1/2 miles west of Waialua, along the north coast of the island, at north edge of grove of large ironwood trees, on narrow strip between fence and sea; 1378.8 feet from station MOKULEIA 1927

in azimuth 249° 02', and about 700 feet northeast along fence from fence corner.

To reach station from intersection of Goodale Ave. and State Highway 99 in Waialua, go west on the highway for 3.0 miles to board gate on right. (Key may be obtained at the Crowbar Ranch 1/2-mile further west, on left side of highway). Pass through gate and follow track road, passing through a board gate and 2 wire gates, for 0.3 mile to beach. Go right, along fence, for 0.15 mile to station.

Station mark is a standard disk stamped "MOKULEIA USE 1914 1964", set in the top of a round-topped mass of concrete about 2 feet in diameter and projecting 5 inches above sand. It is 28.1 feet northwest of fence, 37.7 feet north of a triangle blaze on a tree used as a fence-post, 38.2 feet west of jog in fence, and 55 yards west of west end of a row of ironwoods that is the south 1 of 4 rows of trees that set outside of pasture fence.

Reference mark number one is a standard disk stamped "MOKULEIA USE NO 1 1914 1964", set in the top of a 12-inch-square, concrete monument projecting 4 inches. It is 4.7 feet west of jog in fence and 1 foot north of fence.

Reference mark number two is a standard disk stamped "MOKULEIA USE NO 2 1914 1964", set in the top of a 12-inch-square, concrete monument that projects 4 inches. It is 6 feet north of the triangle blaze on the tree and 16 inches northwest of fence.

*Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.

NOTE - One of these forms must be used for every station recovered.

USCOMMA-DC 87173-P99

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1105
HAWAII
LATITUDE 21 ° 30' TO 22 ° 00'
LONGITUDE 158 ° 00' TO 159 ° 30'
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

ADJUSTED HORIZONTAL CONTROL DATA

U.S. DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 536
(Rev. Feb. 1965)
RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: Ohikilolo
ESTABLISHED BY: L. G. Simmons YEAR: 1927 STATE: Hawaii
RECOVERED BY: G. A. Nelson YEAR: 1952 COUNTY: Honolulu

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

Marked with U.S.E. plate set in 5" concrete pipe flush with ground.

In good condition.

Form 536
(11-8-65)
U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY
RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: OHIKILOLO
ESTABLISHED BY: L.G.S. YEAR: 1927 STATE: Hawaii
RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

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

Station mark

recovered and found in good condition. A complete description follows:
Station is located about 3-1/4 miles north of Makaha village, on a point at about 1215 feet elevation along the prominent ridge at the south side of Makua Valley, and about midway along ridge between stations MAKUA 2 and LOLO.

To reach station from the shopping center in Makaha village, go north on State Highway 90 for 5.4 miles to a track crossroad at south side of old cemetery on right, just after crossing bridge. Turn right and follow main track road southeast along base of ridge for 0.9 mile to end of truck travel at parking area on right. Pack southerly up side of ridge to station MAKUA 2 on the point on end of ridge, then go east on trail along crest of ridge for about 1/2 mile to station.

Station mark is a 3 x 4-inch brass plate set in cement in the top of a 5-inch soil pipe flush with ground. The plate is very faintly stamped "OHIKILOLO", and also has US ENG ELEV" inscribed in it. It is located on a narrow, rocky shoulder of the ridge.

* Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
Note.—One of these forms must be used for every station recovered.

COM-DC 34314

NAME OF STATION: OHIKILOLO

STATE: HAWAII

YEAR: 1927

THIRD

—ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 ° 31 '09.139	ELEVATION:	METERS
GEODETIC LONGITUDE:	158 13 05.730		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ FOR Δ OF ANGLE *
HI 3	5103	425,809.93	128,107.03	- 0 ° 04 48

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE $\theta = \arctan \frac{Y}{X}$ FORMULA NEGLECTING THE SECOND TERM

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
	° ' "	° ' "	

QI 383

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1106
HAWAII
LATITUDE 21 ° 30' TO 22 ° 00'
LONGITUDE 158 ° 00' TO 158 ° 30'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PROTESTANT CHURCH

STATE: HAWAII

YEAR: 1910

THIRD

-ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 ° 35' 37.924	ELEVATION:	METERS
GEODETIC LONGITUDE:	158 06 17.971		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ 10R Δ θ 1 ANGLE *
HI 3	5103	464,329.59	155,188.13	- 0 ° 02' 19"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ 10R Δ θ 1 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE

QI 395

QUAD 211581 STATION 1107
HAWAII
LATITUDE 21 ° 30' TO 22 ° 00'
LONGITUDE 158 ° 00' TO 158 ° 30'
DIAGRAM NF 4-11 OAHU

Puaena (Oahu Island, Hawaiian Government Survey, 1875).—On the east side of Waialua harbor, on a projecting point. Marked by concrete post. Destroyed by storm in 1880.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PUAENA

STATE: HAWAII

YEAR: 1875

THIRD

-ORDER

SOURCE: G-SP156

GEODETIC LATITUDE: 21°36'19.068 GEODETIC LONGITUDE: 158 06 31.947	ELEVATION: 1 METERS SCALED FEET
--	------------------------------------

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ S' ANGLE °
HI 3	5103	463,013.53	159,340.57	- 0° 02' 24"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) 0 1 2	PLANE AZIMUTH * (From south) 0 1 2	CODE

QI 398

QI 398

JUN 1978
 U.S. DEPARTMENT OF COMMERCE
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
 NATIONAL OCEAN SURVEY, NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211581 STATION 1108
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 158° 00' TO 158° 30'
 DIAGRAM NF 4-11 OAHU

SEE STATION PUU IKI

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION RAIN GAUGE

STATE HAWAII

YEAR 1963

THIRD

-ORDER

SOURCE: G-12664
 NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21° 32' 30.308	ELEVATION	349	METERS
GEODETIC LONGITUDE:	158 07 32.032	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE *
HI 3	5103	457,324.95	136,262.44	- 0° 02' 46"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE

POSITION DETERMINED BY TRAVERSE FROM STATION PUU IKI

QF 565

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY, NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1109
HAWAII
LATITUDE 21 ° 30' TO 22 ° 00'
LONGITUDE 158 ° 00' TO 158 ° 30'
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 528
Rev. Aug. 1963

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: RED

STATE: Hawaii

COUNTY: Honolulu

CHIEF OF PARTY: E.E. Jones

YEAR: 1958

Described by: L.W.

NOTE*	HEIGHT OF TELESCOPE ABOVE STATION MARK	METERS.1	1.5	HEIGHT OF LIGHT ABOVE STATION MARK	1.8	METERS.
	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	DIRECTION:		
			feet	meters	° ' "	
	CLIFF MANINI 1932	W			00 00 00.0 34 43 22	

The station is about 7.0 miles north of Waianae, 2.7 miles east of Kaena Point Light House and 2.5 miles south-west of the west end of the runway at Dillingham Air force Base.

To reach the station from the post office in Waianae go west and north on the main traveled road for 6.9 miles to the end of the pavement and a cemetery on the right, continue straight ahead for 1.5 miles to a T-road right, turn right and follow the winding road up the steep hill for 1.6 miles to the top and a T-intersection, turn left and follow the main traveled road west for 0.8 mile, pack north to the top of the hill and the station, a 10 minute pack.

The station a standard disk stamped RED 1958 is set in a prominent outcrop of bed rock.

Reference mark 1, was established at this station and later destroyed.

Form 528
(11-8-55)

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

R

NAME OF STATION: RED

ESTABLISHED BY: E.E. Jones YEAR: 1958 STATE: Hawaii

RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

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 found in good condition. Located on the ridge above Kaena Point, at Kaena Point Tracking Station; 0.8 mile west along the main road from the Security Guard shack and T-junction, on the summit of a bare, red knoll about 100 yards south-west off of road.

Station mark is a standard disk stamped "RED 1958", cemented in a drill hole a bedrock outcrop that projects 6 inches above ground. No reference marks established.

* Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
Note.—One of these forms must be used for every station recovered.

Comm-DC 343 14

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: RED

STATE: HAWAII

YEAR: 1958

THIRD

-ORDER

SOURCE: G-11764

GEODETIC LATITUDE:	21 ° 33' 55.1687	ELEVATION:	381.9
GEODETIC LONGITUDE:	158 15 15.5145		1253
			FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ ± ANGLE °
HI 3	5103	413,582.69	144,878.37	- 0 05 37 "

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
CLIFF	122 19 39.2	122 25 16 "	5103

QF 456

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1110
HAWAII
LATITUDE 21 ° 30' TO 22 ° 00'
LONGITUDE 158 ° 00' TO 158 ° 30'
DIAGRAM NF 4-11 OAHU

RICE (Hawaii, H.A.P., 1932)--r4-3/4 miles E of Kaena Point, an old Territorial Survey mark was recovered and located. It is a stone post projecting 6 inches with cross cut in top. Station is about 60 meters N of O.R. & L. tracks, opposite the Kawaihapai Military Reservation camp site.

Witness mark 1 is the NE corner of the motor house of the Q.M. U.S.A. sand pit. R.M. 1 is set in tree line along N side of railroad. The sand pit will soon undermine this station but the reference marks will probably not be disturbed.

Reference marks 1 and 2 are standard disks set in concrete.
OBJECT DISTANCE DIRECTION
LAND meters 0°00'00"0
Witness mark 1 36.78 64 28 40
R.M. 1 58.66 114 26 20
R.M. 2 30.43 199 07 50
Storm high-water line 19 265
High-water line 29 265
Height of signal above station mark - 3 meters.
Height of instrument above station mark - 1.5 meters.

(477th FA Obsn. Bn., 1945)--Station has been destroyed by excavation. The site is now a sand pit and small arms range.

(11-8-55)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: RICE
ESTABLISHED BY: H.A.P. YEAR: 1932 STATE: Hawaii
RECOVERED BY: W.R. Porter YEAR: 1963 COUNTY: Honolulu

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

Station has been destroyed by sand excavation. There is now a deep pit at the site. The only mark recovered was Reference Mark No. 1, which is in good condition. It is a standard disk set in the top of a 12-inch square concrete monument projecting about 2 inches above ground. It is set in the tree line along the north side of the old railroad bed. It is 115.2 feet, in azimuth 128° 39', from Traverse Station F, a State Highway Survey spike in center line of State Highway 99.

* Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
Note.—One of these forms must be used for every station recovered.
COM-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: RICE
STATE: HAWAII

YEAR: 1932

THIRD ORDER

SOURCE: G- 9889

GEODETIC LATITUDE:	21 ° 35 ' 05.699	ELEVATION:	2	METERS
GEODETIC LONGITUDE:	158 12 34.421	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ θ1 ANGLE *
HI 3	5103	428,798.27	151,972.43	- 0° 04' 38"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ OR Δ θ1 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH *	CODE
LAND	266 58 15.5	267 02 54	5103

QF 177

JUN 1978
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY, NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1111
HAWAII
LATITUDE 21 ° 30' TO 22 ° 00'
LONGITUDE 158 ° 00' TO 158 ° 30'
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
Form 528
Rev. Aug. 1965

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: ROCKY

STATE: Hawaii

COUNTY: Honolulu

CHIEF OF PARTY: E.E. Jones

YEAR: 1958

Described by: L. Wakefield

NOTE*	HEIGHT OF TELESCOPE ABOVE STATION MARK METERS. 1.5	HEIGHT OF LIGHT ABOVE STATION MARK METERS. 1.8
2a	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 meters
		DIRECTION: 0 1 2 3 4
2a	MANINI 1932	SW 34.62 10.553 06 00 00.0
11c	RM 1	SW 37.12 11.314 10 39 22
desc	Towell Station # 1	SW 37.12 11.314 12 23 41

The station is on Kaena Point, Oahu island T.H. 2.5 miles south-east of the west end of the Dillingham Airforce Base runway, and 1.3 miles east of the Kaena Point Lighthouse.

To reach the station from the post office in Waiānāe go west and north for 6.9 miles on the main road to the end of the pavement at a cemetery on the right, continue straight ahead for 1.5 mile to a T-intersection, turn right and follow the winding road up the steep for 1.6 miles to the top and a T-intersection, turn left and follow the main traveled road for 2.0 miles to its end, back west to the top of the hill and the station, a 10 minute pack.

The station a standard disk stamped ROCKY 1958 is set in a prominent outcrop of bedrock on the highest part of the hill.

Reference mark no. 1, a standard disk stamped ROCKY NO 1 1958 is set in a drill hole in the concrete base of an old installation and is about the same elevation as the station.

Towell station # 1 is a small bolt driven into the top of a 5.0 foot circular object and is just above RM 1.

Form 528
(11-8-65)

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: ROCKY

ESTABLISHED BY: E.E.J.

RECOVERED BY: W.R.P.

YEAR: 1958 STATE: Hawaii

YEAR: 1960 COUNTY: Honolulu

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

This station was destroyed by construction.

NAME OF STATION: ROCKY

STATE: HAWAII

YEAR: 1958

THIRD

SOURCE: G-11764

GEODETIC LATITUDE:	21 ° 34' 31.3314	ELEVATION:	281.4 METERS
GEODETIC LONGITUDE:	158 16 09.7100		923 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ θ' ANGLE °
HI 3	5103	408,473.34	148,535.88	- 0° 05' 57"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
MANINI	265 32 44.5	265 38 41	5103

QF 453

* Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
NOTE.—One of these forms must be used for every station recovered.

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1112
HAWAII
LATITUDE 21 ° 30' TO 22 ° 00'
LONGITUDE 158 ° 00' TO 158 ° 30'
DIAGRAM NF 4-11 OAHU

SON (Hawaii, H.A.P., 1932) -- About 1.9 miles SW of Kahuka Point, on the W point forming Kawela Bay, on a low sand ridge covered with grass and bushes.
Station mark is a standard disk set in concrete. Underground mark is a standard disk set in a block of concrete 3 feet below the ground containing at the center of its upper surface a glass bottle with neck projecting a little above the concrete.
Reference marks are standard disks set in concrete in depressions in boulders.

OBJECT	DISTANCE	DIRECTION
OPANA	meters	0°00'00"0
R.M. 2	57.43	49 51 10
NE corner small white cottage	55.08	65 46
High-water line	16	170
Storm high-water line	3	170
Center, small rocky island	95	190
Small lake	55	350
R.M. No. 1	14.88	234 32

RECOVERY NOTE, TRIANGULATION STATION

R

U. S. COAST AND GEODETIC SURVEY
Form 528
(Rev. Feb. 1965)

NAME OF STATION: SON
ESTABLISHED BY: H.A.P. YEAR: 1932 STATE: Hawaii
RECOVERED BY: H.O.J. YEAR: 1955 COUNTY: Honolulu

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

The surface mark has been destroyed. See letter 6 August 1955 from Mr. J. M. Muir who found the marker at tide water level in a pond on his property at Kawela Bay. At the Honolulu District Office's request, he brought the marker to the office. No attempt was made to recover the sub-surface mark.

Form 528
(11-8-55)

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

R

NAME OF STATION: SON
ESTABLISHED BY: H.A.P. YEAR: 1932 STATE: Hawaii
RECOVERED BY: F.J. Tucker Jr YEAR: 1965 COUNTY: Honolulu

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

Information on file in Honolulu Field Office indicates that station monument was found laying on top of ground in 1956 by Mr. J. Muir, the property owner, who turned the disk in to the office. No mention was made of reference mark or underground mark. A complete description follows:

The underground mark is believed destroyed. The reference mark was recovered in good condition. It is a standard disk stamped "SON 2", cemented in a drill hole in a depression in the middle of a 12-inch-diameter bedrock outcrop flush with ground, in the right wheel track of the driveway in the yard at the A.L. Simpson home, which is on the second lot southwest from the lot on which the station was located. It is 16.8 feet south of the southeast corner of the garage, 56.8 feet east-southeast of the southwest corner of the house and 48.3 feet northwest of the southeast property corner marker pipe of the lot. The mark is usually covered with dirt.

The station location, as plotted from a State tax map, coincides with distance and direction from RM No.2 and small white cottage in putting station location out on sloping sand beach, about 3 feet lower than bank.

NOTE: All old lines from station are blocked by trees.

* Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
Notes.—One of these forms must be used for every station recovered.

COGN-DC 343 14

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: SON

STATE: HAWAII

YEAR: 1932

THIRD

ORDER

SOURCE: G- 9885

GEODETIC LATITUDE:	21 ° 42 ' 04.235	ELEVATION:	1	METERS
GEODETIC LONGITUDE:	158 00 59.840	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ §1 ANGLE *
HI 3	5103	494,356.87	194,156.34	- 0° 00' 22"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE § 10R Δ §1 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE

QF 164

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1114
HAWAII
LATITUDE 21° 30' TO 22° 00'
LONGITUDE 158° 00' TO 158° 30'
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
FORM 555
Rev. Aug. 1965

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: TREE

STATE: Hawaii

COUNTY: Honolulu

CHIEF OF PARTY: E.E. Jones

YEAR: 1958

Described by: L. Wakefield

NOTE*	HEIGHT OF TELESCOPE ABOVE STATION MARK		1958	Described by: L.Wakefield	
2a	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	METERS.† 1.5	HEIGHT OF LIGHT ABOVE STATION MARK	1.8 METERS
	OBJECT	BEARING	DISTANCE		DIRECTION‡
			feet	meters	
12a	MANINI 1932	N	32.73	9.977	0 00 00.0
desc	RM 1	S	7.99	2.435	107 28 23
	Towell Station #6				233 36

Detailed description

The station is on Kaena Point, Oahu Island T.H. 3.0 miles east of the Light House on Kaena Point, and 2.5 miles south-west of the west end of the runway at the Dillingham Air Force Base.

To reach the station from the post office in Waianae go west and north for 6.9 miles to the end of the pavement at a cemetery on the right, continue straight ahead for 1.5 mile to a T-intersection, turn right and follow the winding road up the steep hill for 1.6 miles to the top and a T-intersection, turn right and follow the main traveled road for 1.0 mile to its end at the bottom of a steep hill, pack north to the top of the hill and station HILL, thence down the main ridge about 0.4 mile to a prominent pine and the station, the only tree on the ridge.

The station a standard disk stamped TREE 1958 is set in a drill hole in an outcrop of bedrock, it is about midway between two large beds of cactus and 20 feet south of the lone pine tree.

Towell Station #6 is a 1 inch iron pipe projecting 6 inches it is about 30 feet south of the pine tree and 10 feet north of a large bed of cactus, the pipe is not stamped.

* Refer to notes in manuals of triangulation and state publications of triangulation. † To nearest meter only, when no trigonometric leveling is being done. ‡ Direction-angle measured clockwise, referred to initial station.
16-50209-1 U. S. GOVERNMENT PRINTING OFFICE

(continued on next page)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: TREE

STATE: HAWAII

YEAR: 1958

THIRD

ORDER

SOURCE: G-11764

GEODETIC LATITUDE: 21° 34' 15.7640	ELEVATION: 342.1 METERS
GEODETIC LONGITUDE: 158 14 39.2422	1122 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ § 1 ANGLE °
HI 3	5103	417,009.78	146,951.01	- 0° 05' 23"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE § 10R Δ § 1 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
MANINI	109 54 13.2	109 59 36	5103

QF 457

HORIZONTAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1114

LATITUDE ° ' TO ° '
LONGITUDE ° ' TO ° '
DIAGRAM

TREE (continued)

FORM 325a
(9-19-69)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: TREE
ESTABLISHED BY: E.E. Jones YEAR: 1958 STATE: Hawaii
RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK		1.33 METERS.		HEIGHT OF LIGHT ABOVE STATION MARK		METERS	
DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION							
OBJECT	BEARING	DISTANCE		DIRECTION			
		FEET	METERS	°	'	°	'
MANINI 1932	NE	32.719	9.973	00	00	00	00
R.M. No. 1	SSE	7.978	2.432	107	27	19	
Towill Station #6				233	49	48	

Station was recovered and all marks found in good condition. A complete description follows:

Station is located about 2-3/4 miles east of Kaena Point, on the northwest and lower end of a small ridge at the southwest side of Manini Gulch. It is about 425 yards northwest down the ridge from the Angle Tracker building of the satellite tracking station.

To reach station from the post office in Waianae, go north on State Highway 90 for 9.1 miles to paved side road right. Turn right and go 2.0 miles to top of hill and T-junction at guard shack. Turn right and follow main road for 0.75 mile to end of road at the building across

canyon from guard shack. Pack northwest, around right side of fence and down ridge about 1/4 mile to station.

Station mark is a standard disk stamped "TREE 1958", cemented in a drill hole in a 1-1/2 x 2-foot, rounded boulder that projects 6 inches above ground. It is 40 feet south from extreme end of ridge and about 35 feet south of a small clump of ironwood.

Reference mark number one is a standard disk stamped "TREE RM 1 1958", cemented in a drill hole in a bedrock outcrop on the northeast slope of the ridge. It is 12 feet east of the ironwood clump, projects 8 inches above ground, and is 8.1 feet lower than station mark.

Towill Station #6 is a 1-inch, iron pipe that projects 6 inches from the ground.

*Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.

NOTE - One of these forms must be used for every station recovered.

USCOMM-DC 87179-P89

HORIZONTAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1114

LATITUDE ° ' TO ° '
LONGITUDE ° ' TO ° '
DIAGRAM

TREE (continued)

Form 524e
(6-16-69)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: TREE
ESTABLISHED BY: E.E. Jones YEAR: 1958 STATE: Hawaii
RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.33 METERS,		HEIGHT OF LIGHT ABOVE STATION MARK		METERS		
DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION						
OBJECT	BEARING	DISTANCE		DIRECTION		
		FEET	METERS	°	'	"
MANINI 1932				00	00	00.0
R.M. No. 1	NE	32.719	9.973	107	27	19
Towill Station #6	SSE	7.978	2.432	233	49	48

Station was recovered and all marks found in good condition. A complete description follows:

Station is located about 2-3/4 miles east of Kaena Point, on the northwest and lower end of a small ridge at the southwest side of Manini Gulch. It is about 425 yards northwest down the ridge from the Angle Tracker building of the satellite tracking station.

To reach station from the post office in Waianae, go north on State Highway 90 for 9.1 miles to paved side road right. Turn right and go 2.0 miles to top of hill and T-junction at guard shack. Turn right and follow main road for 0.75 mile to end of road at the building across

canyon from guard shack. Pack northwest, around right side of fence and down ridge about 1/4 mile to station.

Station mark is a standard disk stamped "TREE 1958", cemented in a drill hole in a 1-1/2 x 2-foot, rounded boulder that projects 6 inches above ground. It is 40 feet south from extreme end of ridge and about 35 feet south of a small clump of ironwood.

Reference mark number one is a standard disk stamped "TREE RM 1 1958", cemented in a drill hole in a bedrock outcrop on the northeast slope of the ridge. It is 12 feet east of the ironwood clump, projects 8 inches above ground, and is 8.1 feet lower than station mark.

Towill Station #6 is a 1-inch, iron pipe that projects 6 inches from the ground.

*Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.

NOTE - One of these forms must be used for every station recovered.

USCOMMA-DC 57172-P29

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY, NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1115
HAWAII
LATITUDE 21° 30' TO 22° 00'
LONGITUDE 158° 00' TO 158° 30'
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 528
(11-6-55)

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

RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

NAME OF STATION: WART
ESTABLISHED BY: H.A.P. YEAR: 1932 STATE: Hawaii
RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

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

Station was identified by an angle check at HIKE 1932 and found in good condition. It is a prominent rock formation, about 10 or 15 feet high and shaped like the top part of a bell, with a slight nipple topping the main formation. Most easily identified from the vicinity of Camp Erdman, or else from about a mile west along State Highway 99 beyond station.

Located about 2-3/4 miles east of Kaena Point and 1 mile west of Camp Erdman, at about 800 feet elevation, on a projection below top of pali. (NOTE: Seen from the gate at Camp Erdman, station is on the second step of the skyline profile).

← Station

STATE HIGHWAY 99 →

* Name of chief of party should be inserted here. * The officer who actually visited the station should sign his name at the end of the recovery note.
NOTE:—One of these forms must be used for every station recovered.

Comm-DC 34

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WART

STATE: HAWAII

YEAR: 1932

THIRD

—ORDER

SOURCE: G- 9889

GEODETIC LATITUDE	21° 34' 41.757	ELEVATION	METERS
GEODETIC LONGITUDE	158 14 28.271		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 108 Δ 01 ANGLE *
HI 3	5103	418,049.40	149,572.16	- 0° 05' 19"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE § 108 Δ 01 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE

QF 189

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

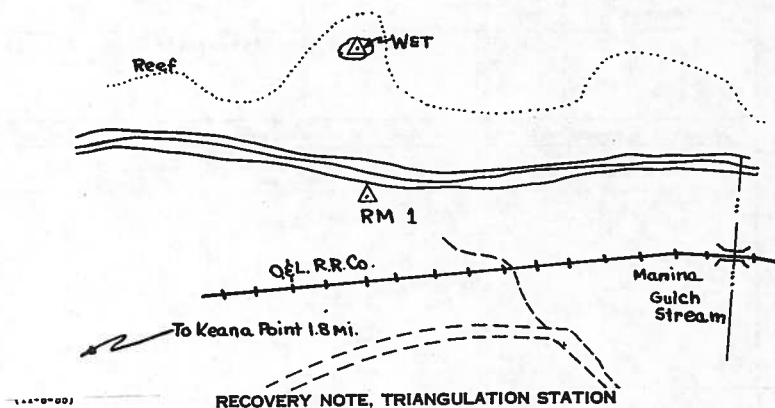
QUAD 211581 STATION 1116
HAWAII
LATITUDE 21° 30' TO 22° 00'
LONGITUDE 158° 00' TO 158° 30'
DIAGRAM NF 4-11 OAHU

WET (Hawaii, H.A.P., 1932)--1.8 miles E of Kaena Point, 300 meters W of the mouth of the stream from Manini Gulch, on an offshore rock about 10 feet in diameter, and about 3 feet above high water. A flat coral reef, covered at high water, extends out from shore past the station. Can be occupied at low water. Station and reference mark are standard disks set in concrete in depressions in outcropping bedrock.

Reference mark is 54.60 feet distant from station in azimuth 353°.

(477th FA Obsn. Bn., 1945)--1.8 miles E of Kaena Point, 300 meters W of mouth of stream from Manini Gulch, on an offshore rock about 10 feet in diameter and 3 feet above high water. It is about 100 yards NW of a concrete pill box. A flat coral reef, covered at high water, extends out from shore past station. Can be occupied at low water. Mark is in good condition.

R.M. 1 is in good condition and as described.



NAME OF STATION: WET
ESTABLISHED BY: H.A.P. YEAR: 1932 STATE: Hawaii
RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

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

Station mark was recovered in good condition. The reference mark is gone; it is believed that wave action has eroded the rock in which it was set, from the coral ledge. No new reference marks were set because of the inaccessibility of the station. A complete description follows:

Station is located along north coast of Oahu, about 1-1/4 miles west of Camp Erdman and 1.6 miles east of Kaena Point, on a black formation of boulders that sets on a coral reef, about 100 yards out from shoreline.

To reach station from the overpass at Waialua, go west on Farrington Highway for 7.0 miles to Camp Erdman; continue west on the highway (which becomes rough dirt road) for 2.0 miles; turn right, on old track road between power poles No. 256 and No. 257 and go 0.1 mile to shoreline bluff overlooking station.

Station mark is a standard disk stamped "WET 1932", cemented in a drill hole in a 3-foot-diameter boulder near the northeast end of the 8 x 16-foot formation. It is 3 feet northeast of the highest rock in the formation. The formation extends about 4-1/2 feet above the coral reef. The reef is under water except at very low tide.

* Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the bottom. One of these forms must be used for every station recovered.

CONR-DC 3a314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WET

STATE: HAWAII

YEAR: 1932

THIRD

-ORDER

SOURCE: G- 5889

GEODETIC LATITUDE:	21° 34' 58.756	ELEVATION:	2 METERS
GEODETIC LONGITUDE:	158 15 17.167	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ θ ANGLE *
HI 3	5103	413,437.20	151,294.76	- 0° 05' 37"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE

QF 185

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1117
HAWAII
LATITUDE 21° 30' TO 22° 00'
LONGITUDE 158° 00' TO 158° 30'
DIAGRAM NF 4-11 OAHU

Y.M.C.A. (Hawaii, H.A.P., 1932)--3.6 miles E of Kaena Point, on the grounds of Y.M.C.A. Camp, N of the prominent red brick building (Dollar Radio Station), on the sand ridge, paralleling the shore.

Surface, underground, and R.M. 1 are standard disks set in concrete.

R.M. 2 is a standard reference-mark disk cemented in a drill hole in the concrete base of a flagpole.

OBJECT	DISTANCE	DIRECTION
MAHOE	meters	0°00'00.0
R.M. 2	38.76	34 47 00
R.M. 1	27.25	163 03 00
Storm high-water line	8	260

Height of signal above station mark - 3 meters.

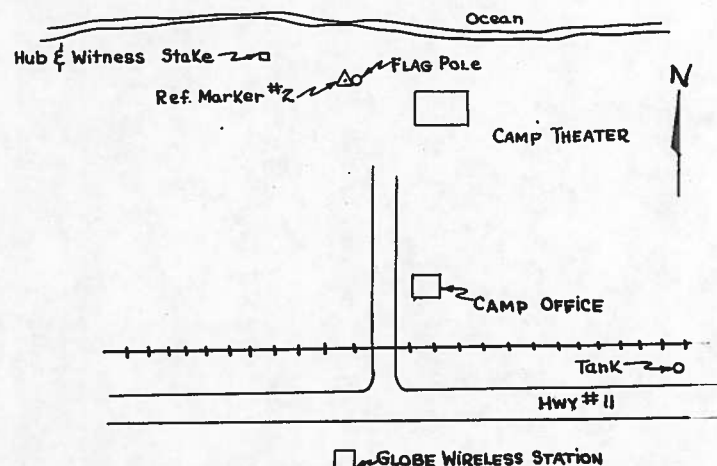
Height of instrument above station mark - 1.5 meters.

(U.S.E., 1944)--Letter of W.D. Patterson, Supervisor, Pacific District, Honolulu, T.H., dated 8/2/44:

R.M. 2 at base of flagpole is the only mark remaining.

(477th FA Obsn.Bn., 1945)--3.6 miles E of Kaena Point, on the grounds of the Y.M.C.A. Camp, N of the prominent red brick building (Dollar Radio Station), on the sand ridge paralleling the shore. R.M. 2 is a standard reference-mark disk cemented in a drill hole in the concrete base of a flagpole.

Station is evidently lost during construction of volley ball court on grounds of Camp Harold R. Erdman, Naval Officers Recreation Camp, 3 miles W of gate to Mokuleia Airstrip. R.M. 2 is located as described and in good condition.



(continued on next page)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: Y M C A

STATE: HAWAII

YEAR: 1932

THIRD

-ORDER

SOURCE: G- 9889

GEODETIC LATITUDE:	21° 34' 57.138	ELEVATION:	2	METERS
GEODETIC LONGITUDE:	158 13 37.017	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	# HOR Δ #1 ANGLE
HI 3	5103	422,889.22	151,116.88	- 0° 05' 01"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE # HOR Δ #1 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
MAHOE	264° 57' 25.4	265 02 26	5103

QF 181

JUN 1978
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY, NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
OLD HAWAIIAN DATUM

QUAD 211581 STATION 1117

LATITUDE ° ' TO ° '
LONGITUDE ° ' TO ° '
DIAGRAM

Y.M.C.A. (continued)

Form 528
(11-8-68)

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

R

NAME OF STATION: Y.M.C.A.

ESTABLISHED BY: H.A.P.

YEAR: 1932 STATE: Hawaii

RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

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

Station is destroyed. The only mark recovered was reference mark number two. A search was made by distance and azimuth for the station mark, but it was not found. The sand beach in that vicinity is now about 4 feet lower than it was originally due to wearing away by wave action, and the vegetation line is now about 25 feet south of the station point.

Reference mark number two is a standard disk stamped "YMCA NO 2", cemented in a drill hole in concrete slab. It is located in sand, just off the north edge of the large lawn area at Camp Erdman, 22.0 feet north of the flagpole and 49 feet west of the westernmost ironwood tree of a row. It is under several inches of sand.

* Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
Note.—One of these forms must be used for every station recovered.

COM-DC 34314