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 211573 HAWAII STATION 1302
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

KEWALO (Hawaii,L.G.S.,1928)--A standard bronze disk (Territory Survey) set in drilled hole on W edge of concrete pier, on W side of Kewalo basin, and about midway along the length of the pier.

OBJECT	AZIMUTH
Kewalo Service Station, flagstaff	203°13'15"
Central Union Church, spire	257 49 03

FORM 526a (9-18-59)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: KEWALO
ESTABLISHED BY: L.G.S. YEAR: 1928 STATE: Hawaii
RECOVERED BY:* W.M. Porter YEAR: 1963 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK 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 FEET	DISTANCE METERS	DIRECTION ° ′ ″
PUNCHBOWL 1873-1928				00 00 00.0
BM B5 (R.M. No. 2)	NE	201.585	(61.443)	27 33 49.8
Central Union Church Spire	ENE			53 28 05.6
R.M. No. 1	SW	51.904	15.821	206 52 39
Kewalo Service Station Flagstaff	NNE			358 52 31.1

An unstamped, Hawaiian Territorial Survey bench mark disk was recovered in good condition and an angle check proved it to be the station . One reference mark was established, Bench mark B 5 was used for the second reference mark, and the station mark was stamped "KEWALO". A complete description follows:

Station is located about 3/4 mile airline south-southeast of the Federal Building in Honolulu, at Kewalo Basin, on the concrete pier between the Fishermen's Wharf Restaurant and the northwest side of the basin.

To reach station from the Federal Building in Honolulu, go southeast on Queen Street for 0.75 mile; turn right and go southwest on Ward Ave. for 0.3 mile to Kewalo Basin and the station.

Station mark is a Hawaiian Territorial Survey disk, stamped "KEWALO", cemented in a drill hole in the concrete pier. It is 60 feet southeast of the southeast corner of the Fishermen's Wharf Restaurant, 28-1/2 feet west of a boat-loading derrick, 29 feet north of a large, iron, mooring bitt, 5.4 feet southeast of parking meter No. 17, 10 inches southeast of the line where concrete pier joins asphalt parking area, and 24 feet northwest of the water edge of the pier.

Reference mark number one is a standard disk stamped "KEWALO NO 1 1928", cemented in a drill hole in the concrete foundation of parking meter No. 21, 3-1/2 feet southeast of asphalt curbing, 4 inches north of parking meter pipe, and at same elevation as station.

Bench Mark B 5 will serve as reference mark number two. It is a standard bench mark disk, stamped "B 5 1928", cemented in a drill hole in the concrete pier, 48.7 feet southwest of northeast corner of basin, 1 foot northwest of a timber, guard rail, 48 feet south of a U.S. Corps of Engineers survey disk stamped "WAIKIKI 1948", and at same elevation as station.

(J.M.C.,1966)--Station recovered in good condition, previous description adequate.

*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 27173-P66

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KEWALO
STATE: HAWAII YEAR: 1928 SECOND ORDER
SOURCE: G- 7448

GEODETIC LATITUDE:	21 °17 ′49.″654	ELEVATION: SCALED	2 METERS FEET
GEODETIC LONGITUDE:	157 51 38.471		

STATE COORDINATES (First)

STATE & ZONE	CODE	X	Y	ϕ OR Δ α ANGLE *
HI 3	5103	547,426.83	47,408.05	+ 0 03 02

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
PUNCHBOWL	204° 20′ 42.3	204 °17 ′40 ″	5103

QE 002

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 211573 STATION 1303
HAWAII
LATITUDE 21 °00′ TO 21 °30′
LONGITUDE 157 °30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 535 b

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Kewalo Basin, Front range light YEAR: 1964 STATE: Hawaii COUNTY: Honolulu

CHIEF OF PARTY: R.C. Munson

Description, including sketch of object: Station is the range light mounted on top of a white pole which has a white diamond-shaped daymarker on the side. The light is 57 feet above ground. Located in Honolulu, at Kewalo Basin boat harbor, along edge of pier, opposite the Fishermens Wharf Restaurant, 77 yards southwest of the rear range light.

Described by .....

U. S. GOVERNMENT PRINTING OFFICE 16—66301-1

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KEWALO BASIN F RNG LT

STATE: HAWAII YEAR: 1964 THIRD ORDER

SOURCE: G-13544

GEODETIC LATITUDE:	21 °17 ′50.″069	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 37.717		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	547,498.09	47,449.99	+ 0 °03 ′02 ″

* 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

QF 438

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 211573 STATION 1304
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 535 b

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Kewalo Basin Rear range light YEAR: 1964 STATE: Hawaii COUNTY: Honolulu

CHIEF OF PARTY: R.C. Munson

Description, including sketch of object: Station is the range light mounted on a short pipe atop a 3-legged, white, skeleton tower with a white diamond-shaped daymarker on the side. The light is 69 feet above ground.

Located in Honolulu, at Kewalo Basin boat harbor, 55 yards southeast from the intersection of Ala Moana Blvd. and Ward Ave, at the southwest edge of Ala Moana Blvd.

U. S. GOVERNMENT PRINTING OFFICE 16—86291-1

Described by .....

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KEWALO BASIN R RNG LT

STATE: HAWAII YEAR: 1964 THIRD ORDER

SOURCE: G-13544

GEODETIC LATITUDE:	21 °17′51.″965	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 36.324		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ (OR Δ α) ANGLE
HI 3	5103	547,029.65	47,641.41	+ 0 ° 03 ′ 03 ″

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

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

QF 439

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 211573 STATION 1305
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

Konahuanui (Oahu Island, Hawaiian Government Survey, 1872).—On the southernmost of the two highest peaks south of Nuuanu Pali, above the ridge that separates the head of Manoa Valley from that of Nuuanu Valley. Marked by an iron stake.

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: KONAHUANUI
ESTABLISHED BY: Haw.Gov.Surv. YEAR: 1872 STATE: Hawaii
RECOVERED BY:* D.M. Whipp YEAR: 1965 COUNTY: Honolulu

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

Station is gone.
Apparently not recovered in 1927, when KONAHUANUI 2 was established at about the same point.

*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 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KONAHUANUI
STATE: HAWAII YEAR: 1872 THIRD ORDER
SOURCE: G-SP156

GEODETIC LATITUDE:	21 °21 ′23.″323	ELEVATION:	946 METERS
GEODETIC LONGITUDE:	157 47 29.451	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	570,946.81	68,993.12	+ 0° 04′ 33″

* 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
	° ′ ″	° ′ ″	

QI 310

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 211573 HAWAII STATION 1306
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

Konahuanui 2 (Oahu Island, L. G. Simmons, 1927).—On the southernmost of the high peaks just south of the Nuuanu Pali, near the south end of the long ridge forming the top of this hill, about 25 feet south of the rain gauge. The quickest approach is up the Nuuanu Pali road to the south side of reservoir and then head for the second ridge to the south leading up the mountain side. Take this ridge up to near the summit of the main ridge, where the old Konahuanui trail is reached; this trail is then easily followed to the north and up to the peak. Marked according to note 6a, a standard disk station mark set in concrete in top of tile. Reference marks, note 13a, standard reference disks in concrete in tiles, were set at the following distances and azimuths from station: Reference mark north, 10.682 meters (35.05 feet), 242° 44′; reference mark south, 7.035 meters (23.08 feet), 22° 27′. Re-marked according to note 14X in 1929.

(9-18-69) COAST AND GEODETIC SURVEY **R**

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: KONAHUANUI 2
ESTABLISHED BY: L.G.S. YEAR: 1927 STATE: Hawaii
RECOVERED BY:* D.G. Rushford YEAR: 1964 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK 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 FEET	DISTANCE METERS	AZIMUTH DIRECTION ° ′ ″
1927 DISTANCE & AZIMUTH				
R.M. North		35.05 ′	10.682 ′	242 44
R.M. South		23.08 ′	7.035 ′	22 27
1964 DISTANCE				
R.M. North		35.022 ′	10.675 ′	
R.M. South		23.069 ′	7.031 ′	

Station was recovered and all marks found in good condition. The "Type 14X" target erected in 1929 by the Hawaii Territorial Survey is gone. The rain gauge mentioned in the old description is also gone. A complete description follows:

Station is located on the Koolau Range, about on line between Kailua and Honolulu, and 1 mile south-southeast of the Pali Highway tunnels, on Puu Konahuanui, a peak of 3105 feet elevation that lies about 1/4 mile south of a slightly higher peak.

To reach station from intersection of Vinyard Street and Queen Emma Street in Honolulu, go northeast on Queen Emma for 0.2 mile; continue ahead, on Lusitana St., for 0.15 mile; take right fork and go 0.75 mile on Puowaina St. to beginning of Tantalus Drive at side road right to Punchbowl Cemetery. Continue ahead, following Tantalus Drive, for 4.0 miles to paved left fork with locked gate, and sign "TRAIL NO 2"; this is end of truck travel. Follow good trail along side of ridge about 3/4 mile to the first sharp right switchback, at a trail junction (a tree with blazed arrow sets in the switchback). Leave main trail, continuing ahead along side of ridge and then crossing Pauoa Flat, for about 1 mile to point overlooking the reservoir by the Pali Highway. Turn right and follow trail up along ridge line to main range and station. About a 3-hour pack.

Station mark is a standard disk stamped "KONAHUANUI 2 1927", set in concrete in the top of a 5-inch soil pipe that projects 3 inches from a 12-inch-square, concrete monument flush with the ground. It is 1 foot west of trail and 4 feet east of the sheer edge of the hill, in a small grassy patch surrounded by 12-foot brush and small trees.

Reference mark number one is a standard disk stamped "KONAHUANUI 2", set in concrete in the top of a 5-inch soil pipe that projects 6 inches above ground. It is 6 feet east of the trail, in grassy patch at south end of a clump of tree ferns and moss-covered brush and is about 8 inches lower than station mark.

Reference mark number two is a standard disk, unstamped, set in concrete in the top of a 5-inch soil pipe that projects 10 inches above ground. It is 6 feet east of the trail, on a fairly wide and flat part of the hill, and is about 1-1/2 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.

USCOMM-DC 27173-P69

(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KONAHUANUI 2
STATE: HAWAII YEAR: 1927 THIRD ORDER
SOURCE: G-SP15c

GEODETIC LATITUDE:	21 °21 ′23.449	ELEVATION:	946 METERS
GEODETIC LONGITUDE:	157 47 29.380		SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE *
HI 3	5103	570,953.50	69,005.85	+ 0° 04′ 33″

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

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

QI 323

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 211573 STATION 1307
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

FORM 526a
(9-10-68)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: LANIKAI
ESTABLISHED BY: HTS YEAR: 1952 STATE: Hawaii
RECOVERED BY:* W.R. Porter YEAR: 1963 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.52 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 FEET	DISTANCE METERS	DIRECTION ° ′ ″
MOKAPU				00 00 00.0
R.M. No. 1	NE	15.314	4.668	69 51 10
Chiseled Cross	ESE	7.130	2.173	122 28 16
R.M. No. 2	SE	9.357	2.853	150 14 58

A 4-inch, chiseled cross in bedrock, surrounded by a 12-inch cement ring with "LANIKAI FREDERICK" inscribed in it was recovered. Data recorded in Field Book No. 1539 of the Hawaii State Survey Office shows this cross to be the station mark. A station disk was set at the exact center of the cross and two reference marks, numbers one and two, were established. A complete description follows:

Station is located between Kailua and Lanikai, on Alala Point, on the rise overlooking the east end of Kailua Beach Park, along the north side of Alala Drive and at the west side of Lanikai Monument, an 18-foot-high, cylindrical, stone and cement monument.

To reach station from the traffic light at the junction of Kailua Road and Kuulei Road in Kailua, go easterly on Kailua Road for 0.5 mile to fork at traffic light. Take left fork and go 0.5 mile to fork at Foodland Store. Take right fork and go 0.8 mile to station on left at top of rise.

Station mark is a standard disk stamped "LANIKAI 1952", cemented in a drill hole in a bedrock ledge. It is surrounded by a 12-inch-diameter cement ring with "LANIKAI FREDERICK" inscribed in it. The mark is 7.13 feet west-northwest of a chiseled cross in the base of the Lanikai Monument, 30.5 feet north of the center line of Alala Road, 4 feet east of east end of guard rail, 22.85 feet east-northeast of center of a Mutual Telephone Company manhole cover, and 35 feet southwest of the west end of the house at 726 Alala Drive.

Reference mark number one is a standard disk stamped "LANIKAI NO 1 1952 1963", cemented in a drill hole in the lower, sloping part of the same bedrock ledge that the station is in. It is 3 feet northwest of the edge of the base of the Lanikai Monument and 2.7 feet lower than station mark.

Reference mark number two is a standard disk stamped "LANIKAI NO 2 1952 1963", cemented in a drill hole in the bedrock ledge at the south side of the Lanikai Monument; 1 foot south of the bottom of the monument base, 6 feet north of the edge of the sidewalk, 3 feet higher than the sidewalk, and 1.2 feet higher than station mark.

Chiseled Cross is a 2-inch cross cut into the top of the stone base of the Lanikai Monument.

*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 27179-P80

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: LANIKAI OBS BY HTS
STATE: HAWAII YEAR: 1952 THIRD ORDER
SOURCE: G-11968

GEODETIC LATITUDE:	21 °23 ′56.″054	ELEVATION: METERS FEET
GEODETIC LONGITUDE:	157 43 23.160	

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	φ (OR Δ α) ANGLE *
HI 3	5103	594,200.82	84,439.68	+ 0 ° 06 ′ 04 ″

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
MOKAPU	169 ° 33 ′ 07.″7	169 ° 27 ′ 04 ″	5103

QF 204

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 211573 STATION 1308
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

Lanipo (Oahu Island, L. G. Simmons, 1927).—In southeastern Oahu, on summit of Koolau Range, about 100 yards west of the highest point of Puu Lanipo, on a flat spot on the ridge. It is best reached by driving to the highest point on Wilhelmina Rise (above Kaimuki) and taking on foot the ridge which leads directly off this rise up to the summit of the Koolau Range. After reaching the divide of the range, turn east (right) and go on up to the station, distant ½ mile or less. Station established by United States Engineers, and marked by them with a United States Engineers' rectangular brass plate, set in concrete in a 5-inch pipe embedded in ground. Reference marks, note 13a, standard reference disks in concrete in tiles, were set at the following distances and azimuths from station: No. 1, 1.822 meters (5.98 feet), 230° 36′; No. 2, 8.800 meters (28.87 feet), 88° 05′. Re-marked according to note 14X in 1929. **R**

RECOVERY NOTE, TRIANGULATION STATION

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

HEIGHT OF TELESCOPE ABOVE STATION MARK 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 FEET	DISTANCE METERS	AZIMUTH DIRECTION ° ′ ″
1927 DISTANCE & AZIMUTH				
R.M. No. 1		5.98	1.822	230 36
R.M. No. 2		28.87	8.800	88 05
----------1964 DISTANCE----------				
R.M. No. 1		5.972	1.821	
R.M. No. 2		28.875	8.801	

Station was recovered and all marks found in good condition. The guy-cables of the Type 14X signal have rusted away and the target lays by the station mark. A complete description follows:

Station is located about 3 miles west-southwest of Waimanalo and 3-1/4 miles southeast of Nuuanu Pali, on Puu Lanipo, a double-topped hill of about 2621 feet elevation on the Koolau Mountain Range, about 1/4-mile west of 6 wooden power line poles that set in a saddle.

To reach station from the traffic light at intersection of W. Hind Drive in Aina Haina, go west on Kalanianaole Highway for 1.2 miles; turn right and go up ridge on Laukahi Street for 1.0 mile to locked gate at end of street. (Key may be obtained at Bishop Estate Office in Honolulu). Pass through gate and go 3.3 miles on good track road to end of road. Pack on good trail up along ridge for about 3/4 mile to crest of main range. Go left on trail along ridge for about 1/4 mile to the 6-wire power line. Continue up along ridge line about 1/4 mile to station on second hill past the power line.

Station mark is a 3 x 4-inch brass plate of the U.S. Army Engineers, stamped "LANIPO 1927", set in the top of a concrete-filled, 5-inch, soil pipe that is set in a mass of concrete and projects 5 inches above ground. It is about 100 yards west from the high end of the ridge, set in a slight dip, about 20 yards east of where the hill drops steeply down to west.

Reference mark number one is a standard disk stamped "LANIPO NO 1", set in concrete in the top of a 5-inch soil pipe that projects 10 inches above ground. There is a thin, concrete collar around the pipe about 2 inches above ground. The mark is 2 feet north of the trail and about 4 inches lower than station mark.

Reference mark number two is a standard disk stamped "LANIPO NO 2", set in concrete in the top of a 5-inch soil pipe that projects 1 foot above ground. It is set in the trail and is about 2 feet higher than the station mark.

NOTE: Packing time about 2 hours.

*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 27179-P80

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: LANIPO
STATE: HAWAII YEAR: 1927 SECOND ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 °20 ′05.754	ELEVATION: SCALED	799 METERS FEET
GEODETIC LONGITUDE:	157 45 44.880		

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	ϕ IOR Δ α ANGLE °
HI 3	5103	580,843.39	61,180.43	+ 0° 05′ 11″

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

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

QI 287

DEC 1979

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 211573 HAWAII STATION 1309
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

]

DESCRIPTION OF SURVEY MARK

NAME OF STATION: LUA STATE: Hawaii COUNTY: Honolulu

NEAREST TOWN: Honolulu

ESTABLISHED BY: State of Hawaii, Highways Division DATE: 1971

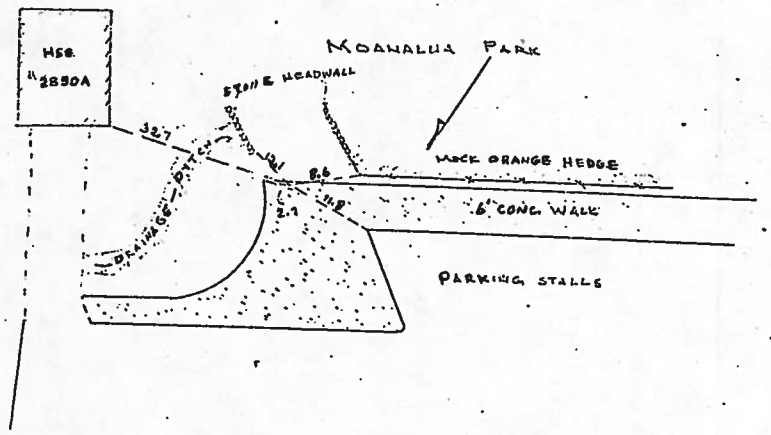
DESCRIBED BY: James T. Ishihara SURFACE MARK: "+" Cut on Concrete Walkway

Station is located on the Northwesterly side of Moanalua Park on the northeasterly side of parking area in Moanalua Park.

To reach station from the U.S. Army, Fort Shafter Simon Bolivar Buckner Gate, head 0.35 mile northwest along Kaua Street to the intersection at Moanalua Road, continue 0.2 mile northwesterly along Moanalua Road to the Moanalua Park entrance, turn right and proceed 0.05 mile northeasterly to the end of Moanalua Park parking area to station.

Station mark is a "+" cut about 0.2 ft. from the edge of a concrete walkway leading into park.

Ties to station are: WSW 32.7 ft. from the westerly corner of house #2850A, NW 12.1 ft. from the NW corner of the easterly stone headwall, NE 8.6 ft. from the angle point of a chainlink fence, E 11.8 ft. from the angle point of a concrete curb and westerly 2.7 ft. from the corner of the concrete walkway.



ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: LUA OBS BY WIDT
STATE: HAWAII YEAR: 1971 THIRD ORDER
SOURCE: G-15752

GEODETIC LATITUDE: 21°21′03.92469		ELEVATION SCALED	3 METERS FEET
GEODETIC LONGITUDE: 157 53 45.99557			

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	ϕ OR Δ α ANGLE *
HI 3	5103	535,354.60	67,000.51	+ 0° 02′ 16″

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
HENRY	150° 54′ 53.7	150° 52′ 37″	5103

THESE DATA OBTAINED FROM ADJUSTMENT OF SEP 1979

RL 144

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 211573 HAWAII STATION 1310
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 153 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526
(11-8-55)

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

R

NAME OF STATION: Lunalilo Home Water Tank
ESTABLISHED BY: L.G.S. YEAR: 1928 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:

This is the same intersection station as "R.C.A. Tank at receiving station 1925"; the buildings and property were taken over in 1928 by the Lunalilo Home for Aged.

Located on east end of Oahu, on southeast side of Lunalilo Home Rd., about 3/4 mile northeast of the Hawaii Kai shopping center.

Station is an unpainted, concrete standpipe 45 feet high, with a slightly peaked top. The first 30 feet of the standpipe is octagonal and the top 15 feet (the water tank) is cylindrical.

*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.

CORS-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: LUNALILO HOME WATER TANK
STATE: HAWAII YEAR: 1928 THIRD -ORDER

SOURCE: G- 7448

GEODETIC LATITUDE:	21 °17 ′06.″812	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 41 59.104		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE
HI-3	5103	602,222.87	43,161.64	+ 0 °06 ′32 ″

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

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

QE 019

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 211573 STATION 1311
HAWAII
LATITUDE 21 °00′ TO 21 °30′
LONGITUDE 157 °30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526
(11-8-65)

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

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: MAKIKI
ESTABLISHED BY: L.G.S. YEAR: 1927 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 was recovered in good condition. A complete description follows:

Station is located in the Makiki Heights district of Honolulu, at about 400 feet elevation, on property of Mr. R.B. Johnson, at 2447 Makiki Hts Dr.

To reach from the Honolulu Police Station at Beretania St. and Kalakaua Ave, go east on Beretania for 0.15 mile; turn left on Punahou St. and go 0.35 mile; turn left on Wilder Ave. and go 0.15 mile; turn right on Makiki St. and go 0.35 mile; take left fork and follow Makiki Hts. Dr. upgrade for 1.0 mile to adress 2447 on right. Walk past right side of house and down long, sloping lawn for about 75 yards to station.

Station is top of a 2-1/2-inch iron pipe that projects 18 inches from the center of a 6-foot-square, concrete platform which extends about 1 foot above ground. It is 15 yards southwest of end of lawn, 15 yards northeast of white brick house and hidden by dense growth of shrubbery and trees.

NOTE: Because of its isolated location and complete obstruction of view, the station is no longer used, and the State of Hawaii Survey Dept. has established some traverse stations from it in more accessible locations along Makiki Hts. Dr.

*Nom ...ty should be inserted here. The officer who actually vis... ...ation should sign his name at the end of the recovery note.
NOTE.—One of these forms must be ... ...ation received.

Coast-DC 24314

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MAKIKI
STATE: HAWAII YEAR: 1927 SECOND -ORDER

SOURCE: G- 7448

GEODETIC LATITUDE:	21 °18 ′52.″065	ELEVATION:	122 METERS
GEODETIC LONGITUDE:	157 50 04.817	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR Δ GI ANGLE *
HI-3	5103	556,276.58	53,713.82	+ 0°03′36″

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

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

QE 009

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 211573 STATION 1312
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

SEE STATION HAWAII ASTRO IGY

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MARKOWITZ MOON TELESCOPE

STATE: HAWAII YEAR 1957 THIRD ORDER

SOURCE: G-11857
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21 °20 ′51.″181	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 55 08.501		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ (OR Δ α) ANGLE *
HI 3	5103	527,556.02	65,710.10	+ 0° 01′ 46″

* 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

POSITION DETERMINED BY TRAVERSE FROM STATION HAWAII ASTR IGY

QF 227

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 211573 STATION 1313
HAWAII
LATITUDE 21 ° 30′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 528
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: MAUUMEA
ESTABLISHED BY: L.G.S. YEAR: 1927 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 was recovered and found in good condition. A complete description follows:

Station is located in the Kaimuki district of Honolulu, about 1/4 mile northeast of Waialae Avenue and 100 yards southwest of the junction of Sierra Drive and Center Street, on a hill of about 334 feet elevation which has two large, white houses on its summit.

To reach station from the post office in Kaimuki, go northeast on Koko Head Ave. for 0.05 mile; turn left and go 0.1 mile on Waialae Ave.; turn right and go 0.15 mile on Center Street; turn left and follow Highview Place for 0.15 mile to its end on top of hill by the north house of the two. Station is about 20 yards southwest.

Station is center of 2-1/2-inch iron pipe which projects from center of 6-foot-square, concrete floor on top of a solid foundation of stone and mortar construction (this is a Hawaiian Territorial Survey "Type C" signal). The foundation is incorporated in a stone and mortar fence running east-west, and is about 4-1/2 feet above ground. Station is 18 feet west of fence corner, 6.8 feet north of northeast corner of the south house and 26 feet southeast of east end of top step of the north house.

NOTE: There is no previous description for this station. A Type C signal has no access hole so a check could not be made as to the original station mark.

No reference marks were 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 3a.-14

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MAUUMEA
STATE: HAWAII YEAR: 1927 SECOND -ORDER
SOURCE: G- 7448

GEODETIC LATITUDE:	21 °17 ′20.″365	ELEVATION: SCALED	102 METERS FEET
GEODETIC LONGITUDE:	157 48 00.763		

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE *
HI 3	5103	568,018.07	44,474.95	+ 0 ° 04 ′ 21 ″

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

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

QE 015

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 211573 STATION 1314
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 525 b

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Mc Waynes Light YEAR: 1952 STATE: Hawaii County: Honolulu

CHIEF OF PARTY: C. A. George

Description, including sketch of object:

The station is located in the city of Honolulu at the residence of Mr. Charles A. McWayne on the south slope of Mt. Tantalus. The station is the fixed green light displayed from the veranda.

The light was located by a 3-point fix from an eccentric set up near the residence.

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

R

NAME OF STATION: Mc Waynes Light
ESTABLISHED BY: C.A.G. YEAR: 1952 STATE: Hawaii
RECOVERED BY:* D.M. Whipp YEAR: 1965 COUNTY: Honolulu

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

Station was recovered as described. It is a fixed green light attached to the southwest side of the house. Listed as Tantalus Light in the U.S. Coast Guard Light List (pub. CG-162), at 1346 feet elevation. It is located on the southwest slopes of Mt. Tantalus, at the residence of Mrs. McWayne.

* 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 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MC WAYNES LIGHT
STATE: HAWAII YEAR: 1952 THIRD ORDER

SOURCE: G- 9849
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21 °19 ′40.″46	ELEVATION:	410.3 METERS
GEODETIC LONGITUDE:	157 49 10.40		1346 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ IOR Δ α ANGLE °
HI 3	5103	561,416.32	58,602.49	+ 0 °03 ′56 ″

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

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

POSITION DETERMINED BY TRAVERSE FROM STATION MCWAYNES LT ECC

QF 157

NOV 1979

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 211573
HAWAII
STATION 1315
LATITUDE 21 ° 00′ TO 21 ° 30
LONGITUDE 157 ° 30′ TO 158 ° 00
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: MEAS HALF-MILE N RNG FRONT — OBS BY NGS
STATE: HAWAII — YEAR: 1976 — THIRD ORDER
SOURCE: G-15809

GEODETIC LATITUDE:	21°25′51.64767	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 46 22.92308		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β OR Δ α ANGLE *
HI 3	5103	577,234.16	96,075.96	+ 0° 04′ 59″

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 025

NOV 1979

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 211573 HAWAII STATION 1316
LATITUDE 21 ° 00' TO 21 ° 30'
LONGITUDE 157 ° 30' TO 158 ° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: MEAS HALF-MILE N RNG REAR OBS BY NGS

STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE: 21°25'50.68134 GEODETIC LONGITUDE: 157 46 20.72297	ELEVATION:	METERS FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR $\Delta\alpha$ ANGLE *
HI 3	5103	577,404.37	95,978.71	+ 0° 04' 59"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ OR $\Delta\alpha$ FORMULA NEGLECTING THE SECOND TERM.

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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 026

NOV 1979

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 211573
HAWAII
STATION 1317
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: MEAS HALF-MILE S RNG FRONT OBS BY NGS

STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21°25'23.83508	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 46 30.75835		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ α ANGLE *
HI 3	5103	576,460.12	93,268.53	+ 0° 04' 56"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 027

NOV 1979
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 211573 HAWAII STATION 1318
LATITUDE 21 ° 00' TO 21 ° 30'
LONGITUDE 157 ° 30' TO 158 ° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: MEAS HALF-MILE S RNG REAR OBS BY NGS

STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE: 21°25'23.53002 GEODETIC LONGITUDE: 157 46 29.97524		ELEVATION:	METERS FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	576,534.15	93,237.85	+ 0° 04' 56"

* 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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 028

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 211573 STATION 1319
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 526
Rev. Aug. 1968

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: MID P (USN) STATE: Hawaii COUNTY: Honolulu

CHIEF OF PARTY: W.R. Porter YEAR: 1960 Described by: D.R. Tomlinson

NOTE.* HEIGHT OF TELESCOPE ABOVE STATION MARK 1 METERS.† HEIGHT OF LIGHT ABOVE STATION MARK 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 feet	DISTANCE meters	DIRECTION ° ′ ″
	SALT LAKE 1873 1927				0 00 00.0
Desc.	RM 1	SSE	24.04	7.328	66 04 54
Desc.	RM 2	NW	21.07	6.423	225 58 49

Station is located in the Pearl Harbor Shipyard, near the northeast end of birth 17.

The station mark is a United States Navy bronze disk, stamped MID P, cemented in a drill hole in concrete. It is 20 feet northwest of the southeast corner of the pier.

Reference mark 1 is a standard disk, stamped MID P USN NO 1 1960, cemented in a drill hole in concrete. It is 12 feet southwest of the northeast corner of the pier.

Reference mark 2 is a standard disk, stamped MID P USN NO 2 1960, cemented in a drill hole in concrete. It is 41 feet northwest of the southeast corner of the pier.

Added descriptions

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: MID P (USN)
ESTABLISHED BY: W.R. Porter YEAR: 1960 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 recovered and all marks found in good condition as described.

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

Coms-DC 34314

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MID P USN

STATE: HAWAII YEAR: 1960 SECOND ORDER

SOURCE: G-12191

GEODETIC LATITUDE:	21 °21 ′30.088	ELEVATION:	1 METERS
GEODETIC LONGITUDE:	157 57 13.314	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ (OR Δ α) ANGLE*
HI 3	5103	515,756.02	69,631.02	+ 0 01 01

* 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
SALT LAKE	258 32 19.4	258 31 18	5103

QF 252

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 211573 STATION 1320
HAWAII
LATITUDE 21 °00′ TO 21 °30′
LONGITUDE 157 °30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

Militres (Oahu Island, E. R. Hand, 1926).—On southeast coast of Oahu, on the shore of Waimanalo Bay, in the Waimanalo Military Reservation, 5 meters from high-water mark, 320 meters north of the reservation fence where it cuts the shore, which is about 1 mile northeast of Waimanalo Landing. Because of the shifting sand a special type of mark was placed consisting of a 7-foot pyramid (truncated) of concrete cast in place, about 18 inches square at base and 6 inches square at top, which projects 1 foot. Throughout the entire length of the monument, marking the center, is a 1-inch iron bar.

MILITRES (Hawaii,E.R.H.,1926;H.A.P.,1933)
--Recovered in poor condition. The post was found leaning over. Top about 2 feet out of plumb. Suitable only for topographic or hydrographic station.

(11-8-55) RECOVERY NOTE, TRIANGULATION STATION **R**

NAME OF STATION: MILITRES
ESTABLISHED BY: E.R. Hand YEAR: 1926 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 was searched for but not found. According to the old measurement from the south boundary fence the location of the station is near a lifeguard station along the sand beach just east of a row of beach cabins on Bellows Air Force Base recreation area. It is believed that the station has been destroyed by erosion due to high waves.

*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.

Coast-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MILITRES
STATE: HAWAII YEAR: 1926 THIRD ORDER
SOURCE: G-SP156

GEODETIC LATITUDE:	21 °20′49.897	ELEVATION:	2 METERS
GEODETIC LONGITUDE:	157 42 16.520		SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	600,533.59	65,667.80	+ 0 °06′27″

* 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

QI 439

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 211573 STATION 1321
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Moana Hotel flagstaff (Oahu Island, E. R. Hand, 1925; L. G. Simmons, 1927).—On southeastern coast of Oahu, on beach west of Diamond Head. Moana Hotel is a very extensive building, light gray in color, and has a great semicircular window at sea end of gable roof. Station is flagpole in exact center of roof of building.

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: Moana Hotel, flagstaff
ESTABLISHED BY: E.R.H. YEAR: 1925 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 recovered.
It is a white pole with small ball on top, located on the roof of the central structure of the Moana Hotel, a few feet northeast of a cupola. The roof-line of this part of the building is slightly lower than the roofs of the northwest and southeast parts of the H-shaped building.
Located in the Waikiki district, between Kalakaua Avenue and the sea, at intersection of Kaiulani Ave. and Kalakaua Ave.

*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.

Coast-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MOANA HOTEL FLAGSTAFF

STATE: HAWAII YEAR: 1925 THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 °16′47.°042	ELEVATION	METERS
GEODETIC LONGITUDE:	157 49 45.669		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE *
HI 3	5103	558,100.74	41,101.05	+ 0° 03′ 43″

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

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

QI 326

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 211573 STATION 1322
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 526
Rev. Aug. 1948

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: MOK STATE: Hawaii COUNTY: Honolulu

CHIEF OF PARTY: D.M. Whipp YEAR: 1965 Described by: R.F. Hanson

NOTE.* HEIGHT OF TELESCOPE ABOVE STATION MARK 1.5 METERS.† HEIGHT OF LIGHT ABOVE STATION MARK 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 feet	DISTANCE meters	DIRECTION‡ °	′	″
PUHI 1932				00	00	00.0
PAPAA 2 1932				28	53	09.8
HAWAIILOA HILL 1926				70	32	54.5
MOK Traverse Point A	N	74.733	22.778	170	15	12.1

Detailed descriptions:

Station is located about 3 miles north-northeast of Kailua, on the Kaneohe Marine Corps Air Station, on the southwest slope of Ulupau Crater, at about 400 feet elevation, about 25 yards west of the bottom terminal of the cable lift running to top of hill, in front of a cave which has "HUT J-2" stencilled on the door.

Station may be reached by obtaining permission and directions at the S-2 Office in the Base Administration Building, No. 215, on the Marine Base.

Station mark is a standard disk, stamped "MOK 1965", cemented in a drill hole in the south end of the concrete ramp leading through a cut in the rock hillside to cave door. It is 19 feet south of door, 1 foot east of center line of ramp, 6 inches north from end of ramp, and even with beginning of rock cut.

MOK Traverse Point A is a punch mark in the concrete floor of the tunnel leading in to seismograph. It is at a bend in tunnel where it changes direction from north to northeast and is 0.8 foot north of the north edge of a 2 x 2-foot iron cover-plate in the floor.

*Refers to notes in manuals of triangulation and state publications of triangulation. ‡Direction-angle measured clockwise, referred to initial station.
†To nearest meter only, when no trigonometric leveling is being done.

16—30892-1 U. S. GOVERNMENT PRINTING OFFICE

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MOK
STATE: HAWAII YEAR: 1965 THIRD ORDER
SOURCE: G-12664

GEODETIC LATITUDE:	21 °27′22.231	ELEVATION: SCALED	73 METERS / FEET
GEODETIC LONGITUDE:	157 44 12.079		

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ FOR Δ G ANGLE *
HI · 3	5103	589,545.05	105,235.21	+ 0°05′47″

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) °	′	″	PLANE AZIMUTH * (From south) °	′	″	CODE
PUHI	6	14	44.8	6	08	58	5103

QF 484

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 211573 STATION 1323
HAWAII
LATITUDE 21 °00′ TO 21 °30′
LONGITUDE 157 °30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

SEE STATION MOK

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MOK TRAVERSE POINT A

STATE: HAWAII YEAR 1965 THIRD ORDER

SOURCE: G-12664
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21 °27′22.970	ELEVATION:	73 METERS
GEODETIC LONGITUDE:	157 44 12.127	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ (OR Δ α) ANGLE *
HI 3	5103	589,538.39	105,309.77	+ 0°05′47″

* 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

POSITION DETERMINED BY TRAVERSE FROM STATION MOK

QF 485

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 211573 STATION 1324
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
FORM 526
(REV. FEB. 1963)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: MOKAUEA
ESTABLISHED BY: L&S YEAR: 1928 STATE: Hawaii
RECOVERED BY:* JLH YEAR: 1956 COUNTY: Honolulu

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

Station is on Oahu Island about 2¼ miles northwest of Center of Honolulu. To get to the station from the intersection of School Street & Kalihi Street — go northwest on Kalihi Street approximately 0.5 miles to Akahi Street; turn right on Akahi Street and go to the end of the street at the foot of a ridge. Climb ridge and walk SW along ridge. Station is approximately 50 feet SW of a chicken coop. It is a type 'C' Mark, on ridge immediately behind house No 1931 Kalihi St. Station recovered in good condition.

*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.
U. S. GOVERNMENT PRINTING OFFICE NOTE.—One of these forms must be used for every station recovered. 16—65480-8

(continued on next page)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MOKAUEA
STATE: HAWAII YEAR: 1928 SECOND ORDER
SOURCE: G- 7448

GEODETIC LATITUDE	21 °20 ′37.°433	ELEVATION:	74 METERS
GEODETIC LONGITUDE	157 52 08.772	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE *
HI 3	5103	544,547.36	64,334.37	+ 0 02 52

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
	° ′ ″	° ′ ″	
HAUIKI	114 42 44.5	114 39 52	5103

QE 004

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 211573 STATION 1324

LATITUDE ° ′ TO ° ′
LONGITUDE ° ′ TO ° ′
DIAGRAM

MOKAUEA (continued)

FORM 526a
(8-19-59)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: MOKAUEA
ESTABLISHED BY: L.G.S. YEAR: 1928 STATE: Hawaii
RECOVERED BY:* W.R. Porter YEAR: 1963 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.59 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 FEET	DISTANCE METERS	DIRECTION ° ′ ″
HAUIKI 1928				00 00 00.0
R.M. No. 1	NNW	31.469	9.592	68 05 37
R.M. No. 2	ENE	25.368	7.732	146 52 45

A "Type C", Hawaiian Territorial Survey signal was recovered in good condition.

Two new reference marks, numbers one and two, were established. A complete description follows:

Station is located about 2-1/2 miles airline north of the Federal Building in Honolulu, in the Kalihi District, at about 240 feet elevation, on the southwest end of the ridge on the southeast side of Likelike Highway, and about 700 feet northeast from the intersection of Likelike Highway and Kalihi Street.

To reach station from the intersection of Likelike Highway and School Street in Kalihi, go northeast on Likelike Highway for 0.25 mile; take right fork and go 0.15 mile on Kalihi Street to crossroad where Akahi Street goes left. Turn right and follow hard-surfaced road up steep hill for 0.1 mile to end of road in a yard. Pass to left of house and pack southwest along top of ridge for about 75 yards to station.

Station is center of 2-1/2-inch iron pipe that projects 2.3 feet from the center of a 6-foot-square, concrete floor. It is 75 yards southwest of house and at the southeast side of an old fence line.

Reference mark number one is a standard disk stamped "MAKAUEA NO 1 1928 1963", cemented in a drill hole in a black bedrock ledge under the southwest side of a tree. It is 5 feet southwest of center of tree clump, 18 feet northwest of a trail and about 2 feet lower than top of station platform.

Reference mark number two is a standard disk stamped "MAKAUEA NO 2 1928 1963", cemented in a drill hole in a 1 x 3-foot black bedrock outcrop that projects 6 inches. It is 20 feet southeast of the trail and 1.7 feet lower than station platform.

*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 27178-P59

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 211573 HAWAII STATION 1325
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

Mokolea Rock Highest Part

(Oahu Island, E. R. Hand, 1926).—On southeast coast of Oahu, in Kailua Bay, south of Mokapu Point. Station is highest point of a steep, sharp rock of same name.

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

R

NAME OF STATION: MOKOLEA ROCK HIGHEST PART
ESTABLISHED BY: E.R.H. YEAR: 1926 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:

Station was recovered as described. It is a lone rock, shown as 53 feet elevation on USGS topographic map, located in Kailua Bay, off the east end of the Kaneohe Marine Corps Air Station, about 1-3/4 miles south of Mokapu Point and 1-1/2 miles east-northeast of Kapoho Point.

*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.

Coast-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MOKOLEA ROCK HIGHEST PART
STATE: HAWAII YEAR: 1926 THIRD ORDER
SOURCE: G-SP156

GEODETIC LATITUDE:	21 °26 ′06.385	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 43 20.231		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ IOR Δ α ANGLE *
HI 3	5103	594,454.33	97,590.70	+ 0 ° 06 ′ 05 "

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

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

QI 432

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 211573 STATION 1326
HAWAII
LATITUDE 21 °00′ TO 21 °30′
LONGITUDE 157 °30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

Mokulua Island (Oahu Island, E. R. Hand, 1926).—Off the southeast coast of Oahu, on top of the more northerly of the two islands (Mokulua Islands) that lie northeast of Wailea Point. This island is very steep and rocky, and is higher than the smooth grassy sloped island south of it. The top is well defined, and appears as a shaft, roughly cubical.

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: Mokulua Island
ESTABLISHED BY: E.R.H. YEAR: 1926 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:

Station was recovered. It is the north, and higher, one of two islands that lie about 3/4 mile offshore from Lanikai. The highest part of the island is a very steep-sided spire, or hump, on which is a small, sharp, rock tip. Station elevation is about 225 feet.

* 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.

Coast-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MOKULUA ISLAND
STATE: HAWAII YEAR: 1926 THIRD ORDER
SOURCE: G-SP156

GEODETIC LATITUDE:	21 °23 ′41.″646	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 42 03.938		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	601,690.07	82,999.62	+ 0 °06 ′33 ″

* 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

QI 437

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 211573 STATION 1327
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

SEE STATION PUULOA 2

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: NAVY BOUNDARY MARKER

STATE: HAWAII YEAR: 1963 THIRD ORDER

SOURCE: G-12664
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE: 21 °19′37.719		ELEVATION: SCALED 1	METERS / FEET
GEODETIC LONGITUDE: 157 58 25.782			

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	508,907.86	58,291.49	+ 0 ° 00 ′ 34 ″

* 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

POSITION DETERMINED BY TRAVERSE FROM STATION PUULOA 2

QF 563

NOV 1979
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 211573 STATION 1328
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: NE RADIO TOWER AERO OBSTR LT OBS BY NGS

STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE: 21°27′42:83219 GEODETIC LONGITUDE: 157 46 04.27621	ELEVATION:	METERS FEET	

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ (OR △ α) ANGLE *
HI 3	5103	578,941.48	107,297.13	+ 0° 05′ 06″

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 030

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 211573 STATION 1329
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NIU 2 (Hawaii,L.G.S.,1928)--A standard bronze disk (Territory Survey) set in concrete in a 5-inch cast pipe on summit of a knoll on the ridge between the Wailupe and Niu districts, about 15 feet W of fence line dividing these districts, at an elevation of about 1100 feet, and about 1.2 miles N of Waialae road. An old pineapple road, which cannot be traversed by a car, leads up the ridge on its W side.

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: NIU 2
ESTABLISHED BY: L.G.S. YEAR: 1928 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 was found destroyed. Wind erosion has worn the top of the sand ridge down several feet. The Hawaiian Territorial Survey "Type A" signal was found tipped over onto its side on the hillside.

Station was originally described as being marked with an HTS bronze disk set in the top of a 5-inch, concrete-filled, iron pipe; however, a length of 5-inch, iron pipe, filled with concrete, with a cross at one end, was found laying near the signal and is believed to be the old 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.

Coms-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: NIU 2
STATE: HAWAII YEAR: 1928 SECOND ORDER
SOURCE: G- 7448

GEODETIC LATITUDE:	21 °17′55.924	ELEVATION:	329 METERS
GEODETIC LONGITUDE:	157 44 56.472	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE *
HI 3	5103	585,440.79	48,087.72	+ 0°05′28″

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

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

QE 016

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 211573 STATION 1330
HAWAII
LATITUDE 21 °00′ TO 21 °30′
LONGITUDE 157 °30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

Oahu east base (Oahu Island, Hawaiian Government Survey, 1872).—At the northern foot of Mooiliili ridge, a few rods above the government road. Marked by cross lines on copper bolt in top of granite post surrounded by brick pier. Reported in 1910 as lost.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: OAHU EAST BASE

STATE: HAWAII YEAR: 1872 THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 °17′38.″438	ELEVATION:	5 METERS
GEODETIC LONGITUDE:	157 49 19.759	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR △ α ANGLE *
HI 3	5103	560,545.36	46,289.56	+ 0 °03′53″

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

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

QI 296

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 211573 STATION 1331
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: Oahu Jail, flag
ESTABLISHED BY: L.G.S. YEAR: 1928 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 angle at station PUNCHBOWL and recovered. It is a short white flagpole, with a gold ball on top, mounted on the northeast edge of the roof of the Oahu Prison directly above the Dillingham Blvd. entrance of the building. Prison is located in the Kalihi District of Honolulu, at the intersection of Dillingham Blvd. and Puuhale Rd.

*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 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: OAHU JAIL FLAG
STATE: HAWAII YEAR: 1928 THIRD ORDER
SOURCE: G- 7448

GEODETIC LATITUDE:	21 °19 ′59.″259	ELEVATION: METERS / FEET
GEODETIC LONGITUDE:	157 53 10.311	

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ (OR Δ α) ANGLE *
HI 3	5103	538,732.57	60,478.11	+ 0° 02′ 29″

* 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

QE 018

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 211573 STATION 1332
HAWAII
LATITUDE 21 °00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

Oahu Pen. (Oahu Island, E. R. Hand, 1925).—In southern Oahu, about 2 miles northwest of Honolulu, the tower of the Oahu jail, square, flat on top, cement color, with two narrow windows in each side.

Form 526
(11-8-55)

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

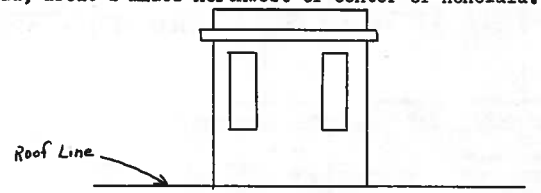
RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: Oahu Pen
ESTABLISHED BY: E.R.H. YEAR: 1925 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 angle at station SALT LAKE and recovered. It is a low, square, flat-topped, grey, concrete tower, with two long, narrow windows set vertically in each side. The tower sets on the roof of a long building setting diagonally in the prison yard and is the highest structure at the prison. Located at the Oahu Prison, at intersection of Dillingham Blvd. and Puuhale Rd., in the Kalihi District of Honolulu, about 2 miles northwest of center of Honolulu.



*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.

Coast-DC 3

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: OAHU PEN
STATE: HAWAII YEAR: 1925 THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 °19 ′57.″863	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 °53 ′11.″570		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β OR Δ α ANGLE °
HI 3	5103	538,613.65	60,337.17	+ 0 °02 ′29 ″

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

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

QI 366

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 211573 STATION 1333
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Oahu west base (Oahu Island, Hawaiian Government Survey, 1872; O. B. French, 1910).—In the southeastern suburb of Honolulu, in lot No. 53, east of King Street, in grant 294 to R. Armstrong. Marked by a granite post set in a pier of solid masonry, in top of which is copper bolt marked with cross lines.

Form 526 (11-8-55) U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: OAHU WEST BASE
ESTABLISHED BY: HGS YEAR: 1872 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 was recovered as a result of data obtained from the files of the State of Hawaii Survey Office. When a service station was to be built on the property they were notified that new fill would cover the mark, so took steps to preserve it. Following is a quote from their Field Record Book No. 1629 "NOTE: Street Monument reset over West Base Station July 16 and 23, 1958, Brass pin set in concrete July 23, 1958".
A complete description follows:

Station is located about 1 mile east-southeast along South King Street from the Federal Building in Honolulu, in the northwest angle of the intersection of South King and Pensacola Streets, at the southwest corner of the "flying A" service station property at 1096 S. King Street.

Station mark is a 3/8-inch brass pin, projecting about 1 inch from the top of a 3-inch-diameter, concrete post plumbed over original station mark. It is 30 feet northeast of the northeast curb of S. King Street, 32.74 feet northeast of a 4-inch, chiseled cross in the concrete gutter, 19 feet east-southeast of an iron light-pole, and 139.67 feet, in azimuth 124° 15′, from the street survey monument at intersection of S. King & Pensacola Streets. The mark is 6 inches below asphalt surfacing and is covered by a 7-inch, iron hand-hole cover.

* 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 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: OAHU WEST BASE
STATE: HAWAII YEAR: 1872 THIRD ORDER
SOURCE: G-SP156

GEODETIC LATITUDE:	21 °18 ′13.°889	ELEVATION:	4 METERS
GEODETIC LONGITUDE:	157 50 55.796	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ FOR Δ α ANGLE *
HI 3	5103	551,460.03	49,857.06	+ 0 °03 ′18 ″

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

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

QI 297

DEC 1979
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 211573 HAWAII STATION 1334
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

DESCRIPTION OF SURVEY MARK

NAME OF STATION: OFFSET MONUMENT 3 STATE: Hawaii COUNTY: Honolulu

NEAREST TOWN: Honolulu

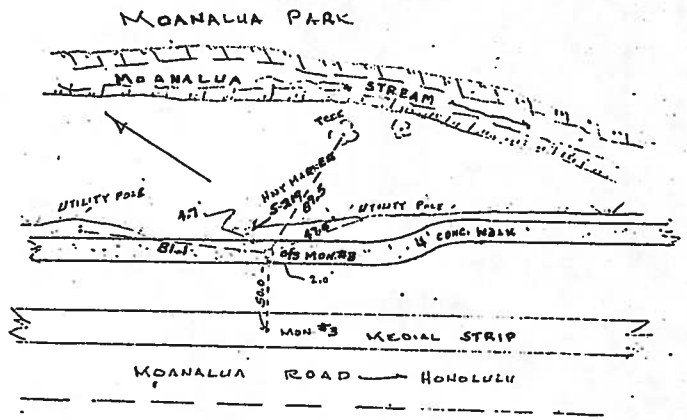
ESTABLISHED BY State of Hawaii, Highways Division DATE: 1971

DESCRIBED BY: James T. Ishihara SURFACE MARK: "+" Cut on Concrete Sidewalk

Station is located on the northerly side of Moanalua Road on a 4.0 ft. concrete sidewalk on the southerly side of Moanalua Park.

To reach station from the, U.S. Army, Fort Shafter Simon Bolivar Buchner Gate, head 0.35 mile northwest along Kaua St. to the intersection at Moanalua Road, continue 0.15 mile in a northwesterly direction along Moanalua Road to station.

Station mark is a "+" cut on a 4.0 feet concrete sidewalk running parallel with Moanalua Road. Ties to station are: SE 81.4 ft. from a utility pole, S 4.7 ft. from a highway marker set in concrete marked S-219, W 89.5 ft. from a tree next to Moanalua Stream, NW 47.6 ft. from a utility pole, NE 2.0 ft. from the southerly face of the sidewalk curbing and NE 50.0 ft. from a highway monument, brass pin set in concrete, in the center of a medial strip of Moanalua Road.



ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: OFFSET MONUMENT 3 OBS BY HIDT

STATE: HAWAII YEAR: 1971 THIRD ORDER

SOURCE: G-15752

GEODETIC LATITUDE:	21°20′57.56692	ELEVATION	2 METERS
GEODETIC LONGITUDE:	157 53 47.43783	SCALED	FEET

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE *
HI 3	5103	535,218.68	66,358.92	+ 0° 02′ 16″

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
STATE SURVEY 1-2	213° 28′ 34.7	213° 26′ 19″	5103

THESE DATA OBTAINED FROM ADJUSTMENT OF SEP 1979

RL 146

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 211573 STATION 1335
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: OLOMANA
ESTABLISHED BY: O.B.F. YEAR: 1910 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:

Olomana Peak is a prominent peak of 1643 feet elevation, and lies 3 miles south of Kailua. It has a very narrow, sharp tip and this was probably intersected. The peak was not visited.

*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.

COMS-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: OLOMANA
STATE: HAWAII YEAR: 1910 THIRD ORDER
SOURCE: G-SP156

GEODETIC LATITUDE:	21 °21 ′51.680	ELEVATION.	METERS
GEODETIC LONGITUDE:	157 45 11.980		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE
HI 3	5103	583,937.04	71,873.15	+ 0° 05′ 24″

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

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

QI 438

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 211573 STATION 1336
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
FORM 526
2nd July, 1959

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: Pako
STATE: Hawaii COUNTY: Honolulu
CHIEF OF PARTY: H. A. Paton
YEAR: 1932 LOCALITY: Mokapu Peninsula

Surface-station mark,	Note,*	4
Underground-station mark,	Note,*	
Reference mark,	Note,*	12 c
Reference mark,	Note,*	
Witness mark,	Note,*	
Witness mark,	Note,*	
Height of signal above station mark	meters.	
Height of telescope above station mark	meters.	

DISTANCES AND DIRECTIONS TO REFERENCE MARKS AND PROMINENT OBJECTS

OBJECT	DISTANCE	DIRECTION	AZIMUTH
		° ′ ″	° ′ ″
Hawaiiloa Hill		0 00 00	
Ref. Mark	6.05m	332 19 23	

Detailed description:

Station is on the highest part of a knoll about 250 meters SW of Pyramid Rock which could not be occupied on account of its sharpness.

FORM 526e
(9-16-69)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

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

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.31 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 FEET	DISTANCE METERS	DIRECTION °	′	″
HAWAIILOA HILL 1926				00	00	00.0
Pyramid Rock Light	NE	800 (Approx.)		254	50	51.0
R.M. No. 2	ENE	40.523	12.350	299	23	32
R.M. No. 3	SE	25.058	7.637	358	49	18

Station mark was recovered in good condition. The reference mark is gone. Two new reference marks, numbers two and three, were established. A complete description follows:

Station is located about 3-1/2 miles airline northeast of Kaneohe, on the northwest point of Mokapu Peninsula, on the Kaneohe Marine Corps Air Station, on a knoll of about 70 feet elevation, which has ammunition storage bunkers beneath it. The remains of an old artillery fire-control post are on the hilltop near the station.

Station may be reached by obtaining permission and directions at the S-2 Office in the Base Administration Building, No. 215, on the Marine Base.

Station mark is a standard disk stamped "PAKO 1932", cemented in a drill hole in the southwest end of a rough, twisted, lava rock outcrop about 2-1/2 by 6 feet in size, on the southeast side of a 6-foot-high brush-row. It is 31.7 feet northeast of the northeast corner of a brick pen, 23.1 feet south of the southeast corner of a similar pen, 9.9 feet south of a 2-inch pipe that projects 16 inches from the top of a 10 x 12-inch concrete post which projects 3 feet from the center of a 4-foot-square concrete base, and 31.1 feet northeast of an 8-inch-diameter pipe that projects 5 feet from a 5-foot-square concrete base.

Reference mark number two is a standard disk stamped "PAKO NO 2 1932 1963", cemented in a drill hole in a bedrock point projecting about 3 feet above line of edge of hill. It is 5.66 feet lower than station mark.

Reference mark number three is a standard disk stamped "PAKO NO 3 1932 1963", cemented in a drill hole in a bedrock outcrop that projects 2 feet above line of edge of hill. It is about 6 feet above the northeast corner of the concrete roof that projects out from the hillside below rock line. The mark is 8.83 feet lower than station mark.

(continued on next page)

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

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

GEODETIC LATITUDE:	21 °27 ′50.″330	ELEVATION:	22 METERS
GEODETIC LONGITUDE:	157 46 03.951	SCALED	FEET

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	φ (OR Δ α) ANGLE °
HI 3	5103	578,971.08	108,053.72	+ 0 05 06

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH* (From south) ° ′ ″	CODE
HAWAIILOA HILL	329 13 33.2	329 08 27	5103

QF 15S

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 211573 STATION 1336

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

PAKO (continued)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: PAKO
ESTABLISHED BY: H.A.P. YEAR: 1932 STATE: Hawaii BENCH MARK(S) ALSO ☐
RECOVERED BY: C.K.T. YEAR: 1976 COUNTY: Honolulu
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: 3½ miles NE of Kaneohe

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:
The station and all three reference marks were recovered in good condition. Reference mark 1 is unstamped.

FORM C&GS-526 (9-66)
USCOMM-DC 36496-P66

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

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 211573 STATION 1337
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: PALI
ESTABLISHED BY: H.O.F. YEAR:1957 STATE: Hawaii
RECOVERED BY:* D.M. Whipp YEAR:1965 COUNTY: Honolulu

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

The station was recovered in good condition. A complete description follows:

Station is located about 4 miles southwest of Kailua, on a shoulder of the ridge line in the deep saddle of the Koolau Mountains where the Pali Highway tunnels are located. It is about 500 feet northwest, across the highway, from the Pali Lookout Point, is at about 1275 feet elevation, and is about 90 feet higher than the lookout point.

To reach station from the intersection of Vinyard Street and the Pali Highway in Honolulu, go northeast on Pali Highway for 5.5 miles; take right fork and go 0.35 mile; turn back sharp left, just before reaching the Pali Lookout point, and go 0.05 mile to where power line crosses road. From here walk up along power line about 50 yards to top of ridge; bear left and go up through trees about 150 yards to station.

Station is center of a 2-1/2-inch iron pipe that projects 2 feet from the center of a concrete platform that is about 5 feet square and 16 inches thick. This signal was built long ago by the Hawaii Territorial Survey and is known as a "Type C" signal. It is at the northeast point of a grove of ironwoods and at edge of sheer cliff to northeast.

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

Conn-IX

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PALI OBS BY HTS
STATE: HAWAII YEAR: 1957 THIRD ORDER

SOURCE: G-11968

GEODETIC LATITUDE:	21 °22 ′14.″428	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 47 49.067		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ IOR Δ α ANGLE *
HI 3	5103	569,085.91	74,147.19	+ 0 °04 ′26 ″

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

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

QF 211

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 211573 STATION 1338
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

PAPAA (Honolulu County,Hawaii,O.B.F.,1910;H.A.P.,1932)--
Station was searched for and not recovered. Station PAPAA 2
tablished. See description of PAPAA 2.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PAPAA

STATE: HAWAII YEAR: 1910 THIRD -ORDER

SOURCE: G-SP156

GEODETIC LATITUDE: 21 °25 ′32.°169 GEODETIC LONGITUDE: 157 45 34.766		ELEVATION:	METERS FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR △ φ ANGLE °
HI 3	5103	581,749.21	94,117.27	+ 0 ′05 ′16 ″

° PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ OR △ φ FORMULA NEGLECTING THE SECOND TERM.

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

QI 426

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 211573 STATION 1339
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

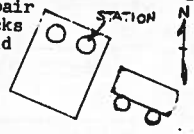
R

NAME OF STATION: Pearl Harbor Elec Co SE Stack
ESTABLISHED BY: HTS YEAR: 1957 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 check angle at WAIPIO UKA and EWA CHURCH and recovered. It is located along the southwest side of Kamehameha Highway, about 1/2-mile southeast from center of Pearl City.

Although named "SE Stack of Four" it is actually the southeast stack of two which are the northwest pair of two sets of stacks of about the same height but slightly different diameter. Station stack and its twin are located on roof of the large, tan, main building at the HECO power plant. Building is about 40 feet high and the stacks extend about 20 feet above it. The southeast pair of stacks are at the southwest side of a separate, open-walled, power plant structure setting out from southeast end of main building. They set on a line about 60 feet southwest from northwest pair and about 60 feet southeast from station stack. All 4 stacks are painted green with black band at top. Station stack and its twin are slightly larger in diameter than other pair.



(C.A.Annis,1969)--Station recovered in good condition as described.

*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.

Coast-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PEARL HARBOR ELEC CO SE STACK
STATE: HAWAII YEAR: 1957 THIRD ORDER
SOURCE: G-11968

GEODETIC LATITUDE:	21 °23 ′31.°909	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 57 50.929		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	x	y	β (OR Δ α) ANGLE °
HI 3	5103	512,197.66	81,921.79	+ 0° 00′ 47″

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

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

QF 635

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 211573 STATION 1340
HAWAII
LATITUDE 21 °00′ TO 21 °30′
LONGITUDE 157 °30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

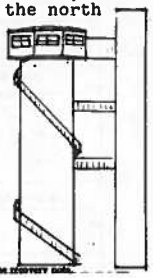
R

NAME OF STATION: Pearl Harbor, Escape Training Tower
ESTABLISHED BY: HTS YEAR: 1957 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 recovered.

Located at Pearl Harbor, near north end of the Naval Base, across Morton Street from ComSubPac Headquarters. It is a tan, steel, standpipe about 125 feet high, with octagon, windowed room on top and outside, spiral stairs. A square, corrugated metal chute rises along the north side of the standpipe and is connected to it by 3 catwalks. Top of chute is about 10 feet higher than roof of octagon room. An angle check at station EWA CHURCH indicates that point intersected was center of standpipe and octagon room.



* 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.

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: PEARL HARBOR ESCAPE TRAINING TOWER
ESTABLISHED BY: HTS YEAR: 1957 STATE: Hawaii BENCH MARK(S) ALSO ☐
RECOVERED BY: Carl A. Annis YEAR: 1969 COUNTY: Honolulu
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 intersection station was recovered in good condition as described.

FORM C&GS-526 (9-66)
USCOMM-DC 56496-P66

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

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PEARL HARBOR ESCAPE TRAIN TWR OBS BY HTS
STATE: HAWAII YEAR: 1957 THIRD ORDER

SOURCE: G-11968

GEODETIC LATITUDE:	21 °21 ′31.°623	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 56 43.952		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	518,531.42	69,786.79	+ 0 °01 ′11 ″

* 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

QF 223

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 211573 STATION 1341
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526
(11-8-68)

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

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: Pearl Harbor Makalapa W Radio Tower of 3
ESTABLISHED BY: HTS YEAR: 1957 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 angle from EWA CHURCH and recovered.

Located about 1-1/2 miles south of Aiea, in a wide draw, along east side of Kamehameha Highway and on south side of Makalapa Drive, 0.1 mile east of the junction of these two roads.

Station is west one of three identical towers that set in a triangle about 400 feet on a side; building No. 200 sets in the center of the triangle. The towers are three-legged, skeleton steel structures about 150 feet high. All 3 have a small catwalk with guardrails, mounted on top. The towers are painted alternate red and white.

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: PEARL HARBOR MAKALAPA W RADIO TOWER OF 3
ESTABLISHED BY: H. T. S. YEAR: 1957 STATE: Hawaii BENCH MARK(S) ALSO ☐
RECOVERED BY: Carl A. Annis YEAR: 1969 COUNTY: Honolulu
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:

Intersection station recovered in good condition as described.

FORM C&GS-526 (9-66)
USCOMM-DC 36496-P66

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

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PEARL HARBOR MAKALAPA W RAD TR OBS BY HTS
STATE: HAWAII YEAR: 1957 THIRD -ORDER

SOURCE: G-11968

GEODETIC LATITUDE:	21 °21 ′22.″759	ELEVATION: METERS / FEET
GEODETIC LONGITUDE:	157 56 12.465	

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β IOR Δ α ANGLE °
HI 3	5103	521,508.09	68,893.53	+ 0 01 23

° PLANE AZIMUTH HAS BEEN COMPUTED BY THE β IOR Δ α FORMULA NEGLECTING THE SECOND TERM.

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

QF 221

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 211573 STATION 1342
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

PILE (Hawaii,H.A.P.,1932)--On the E side of Mokapu Peninsula, at edge of coral reef at the N end of a sand beach, and about 150 meters S of place where shoreline turns E. A pile of an old fishing pier, the offshore one of two. The pile consists of two joints of 15-inch tile filled with concrete.

OBJECT	DISTANCE meters	DIRECTION
HAWAIILOA HILL		0°00'00".0
SE corner of porch of E one of two small houses	53.9	55
High-water line	40	55

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: PILE
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 is gone. There are no remains of any of the old pilings left.

*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 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PILE
STATE: HAWAII YEAR: 1932 THIRD ORDER

SOURCE: G- 9889

GEODETIC LATITUDE:	21 °26 ′52.″584	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 44 16.406		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ (OR Δ α) ANGLE *
HI 3	5103	589,139.31	102,243.10	+ 0 °05 ′45 ″

* 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
HAWAIILOA HILL	98 ° 57 ′ 17.″7	98 ° 51 ′ 33 ″	5103

QF 165

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 211573 STATION 1343
HAWAII
LATITUDE 21 °00′ TO 21 °30′
LONGITUDE 157 °30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

Podmore (Oahu Island, E. R. Hand, 1926).—On the southeast coast of Oahu, on top of sharp hill midway between Wailea and Alala Points, and 600 meters back from the beach. It is above the recently subdivided residential district of Lanakai, the dividing line between lots 2 and 3 (M. R. Kellem owns the latter) would if continued from the beach up the hill pass 100 meters north of the station. Mark is a short section of 1½-inch galvanized iron pipe set vertically in rock with concrete; a smoothed spot in the concrete is marked "Podmore, 5/27/15." This is a private survey mark.

PODMORE (Hawaii,E.R.H.,1926;H.A.P.,1933)
--Station recovered in good condition.
A good trail leads to station along ridge E of station, starting at end of paved street below and E of station. A fence passes alongside of mark.

(11-5-55) RECOVERY NOTE, TRIANGULATION STATION **R**

NAME OF STATION: PODMORE
ESTABLISHED BY: E.R.H. YEAR: 1926 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:

Station was searched for but not found. There is an old, concrete, army pillbox on the hill and it is believed that the station was destroyed.

*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 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PODMORE
STATE: HAWAII YEAR: 1926 THIRD -ORDER
SOURCE: G-SP156

GEODETIC LATITUDE:	21 °23 ′19.″475	ELEVATION:	172 METERS
GEODETIC LONGITUDE:	157 43 09.688	SCALED	FEET

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	φ (OR Δ α) ANGLE *
HI 3	5103	595,480.52	80,751.09	+ 0 °06 ′09 ″

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

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

QI 425

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 211573 STATION 1344
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

Pond (Oahu Island, E. R. Hand, 1926).—On east coast of Oahu, in the exact center of the long, humped-up, narrow, steep-sided point that juts out into Kaneohe Bay, 1 mile north of Heeia Landing and 1 mile east of the high hill on which Heeia triangulation station is located. There is an immense fish pond between this point and Heeia. The main highway is west of the station which is on the highest part of the rise in the center of the point. Marked by a 2-inch galvanized iron pipe, which was presumably established for private land surveys.

POND (Hawaii,E.R.H.,1926;H.A.P.,1932)
--Found a 1-1/2-inch iron rod extending 8 inches above ground instead of a 2-inch pipe. Remains of old signal found on ground. A path has been cleared recently from the road, along the middle of point. It passes 4 meters S of station.

(11-8-55)

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: POND
ESTABLISHED BY: E.R.H. YEAR: 1926 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 gone. This point is now occupied by a restaurant.

* 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.

Coast-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: POND
STATE: HAWAII YEAR: 1926 THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 °26′43.″391	ELEVATION:	17 METERS
GEODETIC LONGITUDE:	157 48 39.334	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	564,302.10	101,279.76	+ 0 ° 04′ 09″

* 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

QI 421

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 211573 STATION 1345
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

POND (Hawaii,L.G.S.,1928)--A standard bronze disk (Territory Survey) set in concrete pier, on the Kuapa around the fish pond at Wailupe. On the W side of pond just S of Creek, about 100 yards S of picnic benches, and 50 yards N of SW bend in the Kuapa.

Hind & Clarke Dairy, large water tank is 202°33'22" in azimuth from station.

Form 526
(11-8-55)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: POND
ESTABLISHED BY: L.G.S. YEAR: 1928 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:

The old fishpond was filled in about 1946 and homes built; this is now the Wailupe district. It was learned from the man who owned the land where the station was located at the time of the development, that the rock wall was raised about 2 feet at first. Before the development was completed a tidal wave hit and more height seemed advisable so another 2 feet was added onto the wall.

It is possible that the mark is still in place below the top of the present wall, but since it is not practical to break the seawall apart no excavation was done in a search for the 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.

COMM-DC 34814

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: POND
STATE: HAWAII YEAR: 1928 SECOND ORDER
SOURCE: G- 7448

GEODETIC LATITUDE:	21 °16 ′37.305	ELEVATION:	2 METERS
GEODETIC LONGITUDE:	157 45 40.788	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ (OR Δ α) ANGLE *
HI 3	5103	581,262.09	40,148.62	+ 0 °05 ′12 ″

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

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

QE 017

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 211573 STATION 1346
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

Post Office NW Tower Instrument Cupola
(Oahu Island, E. R. Hand, 1925).—Slender cupola on massive square yellow tower, the northwestern of twin towers rising from the Federal Building. On this cupola are an anemometer and other Weather Bureau instruments.

Form 526
(11-8-55)

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: Post Office NW Tower Instrument Cupola
ESTABLISHED BY: E.R.H. YEAR: 1925 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 recovered. It is a slender, octagon-shaped, louvered cupola setting on top of the northwest one of the twin towers on the Federal Building in Honolulu.

* 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 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: POST OFFICE NW TWR INSTRUM CUP
STATE: HAWAII YEAR: 1925 THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 °18 ′33.°724	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 48.564		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ (OR Δ α) ANGLE *
HI 3	5103	546,468.54	51,853.84	+ 0 ° 02 ′ 59 ″

* 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

QI 334

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 211573 HAWAII
STATION 1347
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

SEE STATION KALIHI 2

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PROPERTY COR MARKER PIPE

STATE: HAWAII YEAR: 1964 THIRD ORDER

SOURCE: G-12664
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21 °19 ′29.″326	ELEVATION:	2 METERS
GEODETIC LONGITUDE:	157 53 40.429		SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	535,887.20	57,455.91	+ 0 ° 02 ′ 18 ″

* 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

POSITION DETERMINED BY TRAVERSE FROM STATION KALIHI 2

QF 560

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 211573 STATION 1348
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

PUHI (Hawaii,H.A.P.,1932)--Station is on a little mound just to the N of the floodgate to Kaluapuhi Pond.
Station mark is a standard disk set in concrete.
Reference mark is a standard disk set in the center of the middle concrete pier of the floodgate.

OBJECT	DISTANCE meters	DIRECTION
MOKAPU		0°00'00"0
Reference mark	13.93	210 40 40
High water	14.0	270

FORM 526e (9-18-68) U.S. DEPARTMENT OF COMMERCE COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PUHI
ESTABLISHED BY: H.A.P. YEAR: 1932 STATE: Hawaii
RECOVERED BY: W.R. Porter YEAR: 1964 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.52 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 FEET	DISTANCE METERS	DIRECTION ° ′ ″
PAPAA 2 1932				00 00 00.0
R.M. No. 2	ESE	56.143	17.112	234 02 54
R.M. No. 3	SW	55.113	16.799	330 24 11

Station was recovered; the concrete monument was projecting about 1 foot above the sand, appeared slightly tilted, and was slightly loose. A check run was taken which proved the station to be at the original point. The reference mark has been destroyed; the center pier of the floodgate, in which it was set, is gone. The station monument was lowered and re-inforced with a large mass of rock and concrete. Two new reference marks, numbers two and three, were established. A complete description follows:

Station is located about 2-1/2 miles north of the center of Kailua, along the east shore of Mokapu Peninsula, and at the southeast corner of the Kaneohe Marine Corps Air Station, at the north side of the mouth of the channel running from Kaluapuhi Pond.

To reach station from the traffic light at the intersection of Mokapu Rd. and Kaneohe Bay Drive at the north end of Kailua, go northeast on Mokapu Rd. for 0.7 mile to the entrance gate of Kaneohe Marine Corps Air Station; pass through gate, go about 25 yards, then turn right and follow track road east along boundary fence for 0.35 mile to shoreline; turn left and go 0.25 mile to end of road at channel. Walk across footbridge to station.

Station mark is a standard disk stamped "PUHI 1932", set in the top of a 12-inch-square, concrete monument flush with the ground. It is 28 feet northeast of north end of footbridge, 65 feet west of waterline and 15 feet west of edge of sandbank.

Reference mark number two is a standard disk stamped "PUHI NO 2 1932 1964", cemented in a drill hole in bedrock on the beach shelf. It it is 30 feet north of mouth of channel and 7 feet lower than station.

Reference mark number three is a standard disk stamped "PUHI NO 3 1932 1964", cemented in a drill hole in the top of the stone and concrete channel wall along south side of channel. It is 4 feet east of south end of footbridge, 3.4 feet lower than station, and set at a curve of the wall.

*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 27173-P69

ADJUSTED HORIZONTAL CONTROL DATA

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

GEODETIC LATITUDE:	21 °26 ′05.″150	ELEVATION:	2 METERS
GEODETIC LONGITUDE:	157 44 21.089	SCALED	FEET

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	β OR Δ α ANGLE *
HI 3	5103	588,704.88	97,456.21	+ 0° 05′ 43″

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
PAPAA 2	64 °29 ′11.″7	64 °23 ′29″	5103

QF 158

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 211573 HAWAII STATION 1349
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526
(11-8-55)

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

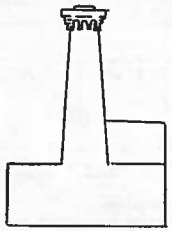
RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: Pumping station chimney
ESTABLISHED BY: O.B.F. YEAR: 1909 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 angle at station PUNCHBOWL and recovered. It is a square, slightly-tapering, grey brick stack, 63 feet high, with a corniced top; located at the northeast corner of Fort Armstrong in Honolulu, at intersection of Keawe Street and Ala Moana Boulevard, at the City of Honolulu sewer pumping plant.



*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.

Coast-DC 34814

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PUMPING STATION CHIMNEY
STATE: HAWAII YEAR: 1909 THIRD ORDER

SOURCE: G-SP15o

GEODETIC LATITUDE:	21 °18 ′04.″787	ELEVATION	METERS
GEODETIC LONGITUDE:	157 51 56.176		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE
HI 3	5103	545,751.26	48,933.51	+ 0 02 56

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

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

Q1 345

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 211573 HAWAII STATION 1350
LATITUDE 21 °00′ TO 21 °30′
LONGITUDE 157 °30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

PUU PIA (Hawaii,L.G.S.,1928)--Old mark consisting of a 2-inch pine in ground was recovered and found to be loose. It was replaced by a standard bronze disk (Territory Survey) set in concrete in a 5-inch cast-iron pipe which was embedded in the ground. A concrete shoulder was placed around the pipe near the surface.

(9-18-68) COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PUU PIA
ESTABLISHED BY: L.G.S. YEAR: 1928 STATE: Hawaii
RECOVERED BY:* W.R. Porter YEAR: 1963 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.04 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 FEET	DISTANCE METERS	DIRECTION ° ′ ″
TANTALUS 1872-1927				00 00 00.0
R.M. No. 2	NW	18.777	5.724	18 49 58
R.M. No. 1	NE	19.426	5.922	111 11 37

A "Type C" Hawaiian Territorial Survey signal was recovered in good condition. The station was previously described as being marked by a Hawaiian Territorial Survey bronze disk set in concrete in a 5-inch cast-iron pipe, however this could not be checked because of the signal. Two new reference marks, numbers one and two, were established. A Complete description follows:

Station is located about 4-1/2 miles airline northeast of the Federal Building in Honolulu, on a prominent hill of about 880 feet elevation that has two large wooden power poles on its summit and lies at the head of Manoa Valley.

To reach station from the U.S. Post Office Sub Station No. 5 in Manoa, go northeast on E. Manoa Road for 0.75 mile to fork at south corner of cemetery. Take left fork and go northeast on Akaka Place for 0.3 mile to end of street and home at 3599 Akaka Pl. Walk through the yard and get onto trail, following it northeast along ridge line for about 1/3 mile to top of hill and station.

Station is center of 2-1/2-inch, iron pipe that projects 2 feet from center of 5-foot-square, concrete platform that is flush with the ground. It is on the southwest end of the hill and 15.2 feet southwest of the southwest one of the two power poles.

Reference mark number one is a standard disk stamped "PUU PIA NO 1 1928 1963", brazed to the top of a 1-1/2-inch, iron pipe that is set in cement and projects 6 inches above ground. It is 15.5 feet southwest of the northeast power pole, 6.7 feet northwest of the southwest power pole, and at about the same elevation as top of station pipe.

Reference mark number two is a standard disk stamped "PUU PIA NO 2 1928 1963", brazed to the top of a 1-1/2-inch iron pipe that is set in cement and projects 6 inches above ground. It is in a small, flat area at west side of end of knoll and about 3 feet lower than top of station pipe.

*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 27178-P66

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PUU PIA
STATE: HAWAII YEAR: 1928 SECOND ORDER

SOURCE: G- 7448

GEODETIC LATITUDE:	21 °19 ′42.570	ELEVATION:	268 METERS
GEODETIC LONGITUDE:	157 47 57.038		SCALED FEET

STATE COORDINATES (First)

STATE & ZONE	CODE	X	Y	β OR Δ α ANGLE*
HI 3	5103	568,352.06	58,823.78	+ 0 °04 ′23 ″

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH* (From south) ° ′ ″	CODE
TANTALUS-PUU OHIA	113 01 40.6	112 57 18	5103

QE 011

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 211573 STATION 1351
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

PUULOA LATITUDE STATION (Hawaii,E.D.P.,1887)--See description of PUULOA 2.

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: PUULOA LATITUDE STATION
ESTABLISHED BY: E.D.P. YEAR: 1887 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:

The remains of the old red brick pier was recovered by distance and direction from PUULOA 2 after digging down 3 feet below ground level. Upon baring the edges of the structure it was found that the base, which is in good condition, is 4 feet square. The pedestal for instrument support has been broken off at one brick-depth above the base top. The outline of the pedestal is 1.1 x 2.2 feet in size. No center rod or mark was found in the pedestal. Station is destroyed.

*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.

Coms-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PUULOA LATITUDE STATION
STATE: HAWAII YEAR: 1887 SECOND ORDER

SOURCE: G- 558
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21 °19 ′37.°954	ELEVATION: SCALED	1 METERS FEET
GEODETIC LONGITUDE:	157 58 25.626		

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE *
HI 3	5103	508,922.60	58,315.21	+ 0 ° 00 ′ 34 ″

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

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

POSITION DETERMINED BY TRAVERSE FROM STATION PUULOA

QF 008

NOV 1979

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 211573 HAWAII
STATION 1352
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Pyramid Rock Light

CHIEF OF PARTY: R. B. Melby YEAR: 1975 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

The station is located about 3½ miles northeast of the town of Kaneohe, on the northwest point of the Mokapu Peninsula, on the southeast shore of Kaneohe Bay and on Pyramid Rock.

The station is the white, navigation light atop a small, square, concrete house with black and white diagonal stripes. Designated as No. 3741 in the publication 'Light List, Volume III, Pacific Coast and Pacific Islands, 1975'.

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: Pyramid Rock Light
ESTABLISHED BY: R.B.M. YEAR: 1975 STATE: Hawaii BENCH MARK(S) ALSO ☐
RECOVERED BY: C.K.T. YEAR: 1976 COUNTY: Honolulu
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: at Kaneohe MCAS

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

The station was recovered in good condition as described in 1975.

FORM C&GS-526 (8-66)
USCOMM-DC 36496-P66

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

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: PYRAMID ROCK LIGHT
OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21°27′55.53623	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 45 58.56714		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ (OR Δ α) ANGLE *
HI 3	5103	579,478.85	108,579.79	+ 0° 05′ 08″

* 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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 031

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 211573 STATION 1353
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 526
Ed. July, 1949

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: KGU East Radio Station tower
STATE: Hawaii COUNTY: Honolulu
CHIEF OF PARTY: J.H.Peters
YEAR: 1930 LOCALITY: Oahu Island

		DISTANCES AND DIRECTIONS TO REFERENCE MARKS AND PROMINENT OBJECTS			
		OBJECT	DISTANCE	DIRECTION ° ′ ″	AZIMUTH ° ′ ″
Surface-station mark,	Note,*				
Underground-station mark,	Note,*				
Reference mark,	Note,*				
Reference mark,	Note,*				
Witness mark,	Note,*				
Witness mark,	Note,*				
Height of signal above station mark	meters.				
Height of telescope above station mark	meters.				

Detailed description:

KGU east radio tower, steel skeleton, height 200 feet above mean sea level. Neon lighted red between 6 p.m. and midnight from height of 50 feet to 200 feet.
This tower is very distinctive at night. It is lighted to a height of 7 feet above the harbor light, and has been reported by officers of the PIONEER as being visible at the same distance as the Harbor Light from a southward position.

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: Radio Station K.G.U., east tower
ESTABLISHED BY: J.H.P. YEAR: 1930 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 recovered in good condition.
Located in Honolulu at intersection of Kapiolani Blvd. and South Street, on roof of Star Bulletin building. Station is a 4-legged, tapering, skeleton steel structure, painted alternate red and white. Top of tower is 200 feet above sea level.

*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 34314

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: RADIU STATION KGU EAST TOWER
STATE: HAWAII YEAR: 1930 THIRD ORDER
SOURCE: G- 9849

GEODETIC LATITUDE:	21 °18 ′22.406	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 30.057		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR △ α ANGLE °
HI 3	5103	548,219.53	50,713.41	+ 0 °03 ′05 ″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ OR △ α FORMULA NEGLECTING THE SECOND TERM.

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

QF 135

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 211573 HAWAII STATION 1354
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 526
Rd. Jan. 1929

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: KGU west Radio Station tower STATE: Hawaii COUNTY: Honolulu
CHIEF OF PARTY: J.H.Peters YEAR: 1930 LOCALITY: Oahu Island

		DISTANCES AND DIRECTIONS TO REFERENCE MARKS AND PROMINENT OBJECTS			
		OBJECT	DISTANCE	DIRECTION	AZIMUTH
				° ′ ″	° ′ ″
Surface-station mark,	Note,*				
Underground-station mark,	Note,*				
Reference mark,	Note,*				
Reference mark,	Note,*				
Witness mark,	Note,*				
Witness mark,	Note,*				
Height of signal above station mark	meters.				
Height of telescope above station mark	meters.				

Detailed description:

KGU west radio tower, steel, skeleton, height 187 feet above mean sea level.

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: Radio Station K.G.U., west tower
ESTABLISHED BY: J.H.P. YEAR: 1930 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 recovered in good condition.
Located in Honolulu at intersection of Kapiolani Blvd. and South Street, on roof of Star Bulletin building. Station is a 4-legged, tapering, skeleton steel structure, painted alternate red and white. Top of tower is 187 feet above sea level.

*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.

Coast-DC 34814

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: RADIO STATION KGU WEST TOWER
STATE: HAWAII YEAR: 1930 THIRD ORDER
SOURCE: G- 9849

GEODETIC LATITUDE:	21 °18 ′21.997	ELEVATION	METERS
GEODETIC LONGITUDE:	157 51 31.544		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ (or Δ φ) ANGLE °
HI 3	5103	548,078.95	50,672.01	+ 0 ° 03 ′ 05 ″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ (or Δ φ) FORMULA NEGLECTING THE SECOND TERM.

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

QF 140

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 211573 STATION 1355
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: REAR RANGE LIGHTHOUSE

STATE: HAWAII YEAR: 1909 THIRD -ORDER

SOURCE: G-SP156
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE: 21 °18 ′37.″04 GEODETIC LONGITUDE: 157 52 08.66	ELEVATION:	METERS FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ ior Δ α ANGLE °
HI 3	5103	544,568.05	52,186.81	+ 0 °02 ′51 ″

° PLANE AZIMUTH HAS BEEN COMPUTED BY THE ϕ ior Δ α FORMULA NEGLECTING THE SECOND TERM.

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

QI 357

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 211573 STATION 1356
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

Red Gas Tank Center

(Oahu Island, E. R. Hand, 1925).—In southern Oahu, on west side of Honolulu, center of large red gas tank. A very conspicuous object even from as far away as Barbers Point.

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

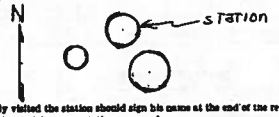
NAME OF STATION: Red gas tank Center
ESTABLISHED BY: E.R.H. YEAR: 1925 STATE: Hawaii
RECOVERED BY:* D.M. Whipp YEAR: 1965 COUNTY: Honolulu

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

Station was identified by angle from PUNCHBOWL & KALAEPOHAKU, and recovered. It is the north, and middle-sized one, of three gas tanks at the Honolulu Gas Co. plant in the Iwilei District of Honolulu.

The tank, which was constructed in 1924, is about 100 feet in diameter and 85 feet high; it is now painted black. It sets inside of a silver-colored, steel scaffolding, or re-enforcing framework, which extends up to about 125 feet above ground.

All three tanks are of similar construction, but the west one, built in 1910 is very small. The east tank, built in 1948, is very large, and it's re-enforcing framework is about 60 feet higher than the station tanks'.
NOTE: Station is almost entirely obscured by surrounding industrial buildings, and the large tank is the only prominent or noticeable one.



* 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 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: RED GAS TANK CENTER
STATE: HAWAII YEAR: 1925 THIRD ORDER
SOURCE: G-SP156

GEODETIC LATITUDE:	21 °19 ′11.045	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 52 27.700		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	542,764.96	55,616.42	+ 0 02 44

* 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
	° ′ ″	° ′ ″	

QI 364

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 211573 STATION 1357
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Ridge (Oahu Island, W. C. Dibrell, 1910; E. R. Hand, 1925).—In the southeastern part of Oahu, on a knob on a ridge. This ridge is true north from the top of Koko Head across Koapa Fish Pond, into which pond the base of the ridge projects. The prominent knob where the station is may be identified as follows: Diamond Head bears S. 65° W.; station *Koko Head* bears S. 11° E.; and the narrow, deep opening to the sea, that is immediately north of the steep hill having a radio tower on top, bears east. Marked by a drill hole 2 inches deep in the rock, surrounded by a triangle 5 inches on side. A cairn of rocks was placed over the station.

RIDGE (Hawaii,W.C.D.,1910;H.A.P.,1932)
--Station mark is surrounded by a mass of concrete 2 feet 6 inches in diameter. Station mark is in the center of a hole in this concrete 9 inches square and 5 inches deep. A standard signal (Note 14C) has been set according to the following directions:

OBJECT	DISTANCE	DIRECTION
DIAMOND HEAD	meters	0°00'00.0
Signal	3.68	324 33

(11-8-55)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: RIDGE
ESTABLISHED BY: W.C.D. YEAR: 1910 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 mark was recovered and found in good condition. It is on the same knoll as station MAUNALUA 1928. A complete description follows:

Station is located about 3-1/2 miles airline east-northeast of Aina Haina and 1/2 mile west of the head of Kuapa Pond, on a rocky knoll of about 525 feet elevation, on Kaluanui Ridge, about 50 yards west of old bulldozed road.

To reach station from traffic light at intersection of West Hind Drive and State Highway 72 in Aina Haina, go easterly on the highway for 3.7 miles; turn left on Lunalilo Home Rd. and go 1.4 miles; turn left on graveled road and go 0.35 mile to fork; take left fork for 0.05 mile to fork in Kaiser equipment yard. Take left fork along power line for 0.35 mile to fork at end of power line. Take right fork, around lower end of ridge, for 0.2 mile to T-junction. Go right for 0.05 mile to steep grade. Pack northerly on old road for about 0.4 mile to station. (4-wheel-drive truck can be driven to within 50 yards of station).

Station mark is a 1/2-inch-diameter drill hole at center of 4-inch, chiseled triangle in top of lava rock. It is in the bottom of a 9-inch-square, 5-inch-deep depression in the center of a mass of concrete 30 inches in diameter. Station is 3.701 meters north-northeast of station MAUNALUA.

* 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

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: RIDGE
STATE: HAWAII YEAR: 1910 SECOND ORDER
SOURCE: G-12664

GEODETIC LATITUDE:	21°17′57.780	ELEVATION: SCALED	160 METERS / FEET
GEODETIC LONGITUDE:	157 42 24.043		

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	599,854.75	48,299.86	+ 0° 06′ 24″

* 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
DIAMOND HEAD	70 09 17.3	70 02 53	5103

POSITION DETERMINED BY TRAVERSE FROM STATION MAUNALUA
AND CHECKED BY ADDITIONAL OBSERVATIONS

QF 532

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 211573 STATION 1358
HAWAII
LATITUDE 21 °00′ TO 21 °30′
LONGITUDE 157 °30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION **R**

NAME OF STATION: RNG Honolulu HNL
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii
RECOVERED BY:* H.J.S. YEAR: 1961 COUNTY: Honolulu

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

Recovered.
The station is the center one of 5 red and white painted steel towers at Ewa Beach, just west of the Capehart Housing area, south of the F.A.A. Radio transmitting station and east of the Honolulu Magnetic Observatory. The center tower is the only one which is not obstruction lighted.

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION **R**

NAME OF STATION: RNG Honolulu HNL
ESTABLISHED BY: H.O.F. YEAR: 1957 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 was recovered. Located on Puuloa Point, about 1 mile east-northeast of the USC&GS Honolulu Magnetic Observatory and at west edge of Naval Capehart Housing. Station is center one of five steel, radio towers about 120 feet high and painted alternate red and white. This instalation is a F.A.A. low-frequency directional beam transmitting station. The call letters are HL, not HNL.
NOTE: According the the F.A.A. this station is to be discontinued in 1964 and will be dismantled, so the station will be destroyed.

*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 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: RNG HONOLULU HNL OBS BY HTS
STATE: HAWAII YEAR: 1957 THIRD ORDER

SOURCE: G-11968

GEODETIC LATITUDE:	21 °19 ′32.″869	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 59 13.224		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β (OR Δ α) ANGLE *
HI 3	5103	504,422.48	57,801.57	+ 0 °00 ′17 ″

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

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

QF 225

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 211573 STATION 1359
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Rocky Hill (Oahu Island, Hawaiian Government Survey, 1872; L. G. Simmons, 1927).—In southeastern part of Oahu, on summit of hill at entrance to Manoa Valley, in Punahou. This hill is in the grounds of the Punahou School. Marked originally by an iron pin driven down nearly level with the ground. Later this mark was surrounded by a concrete pier, 6 feet square, with an iron pipe in center set vertically over the pin.

(J.H.P.,1931)--Desoription as given is satisfactory except that the signal now erected over the station is of Type C.

(J.H.P.,1933)--On the W brow of Rocky Hill in the city of Honolulu and in the grounds of Punahou College. Marked with Type 14C monument.

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

R

NAME OF STATION: ROCKY HILL
ESTABLISHED BY: H.G.S. YEAR: 1872 STATE: Hawaii
RECOVERED BY:* H.J.S. YEAR: 1961 COUNTY: Honolulu

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

It is located on Rocky Hill, on the grounds of Punahou School, and may be reached by trail from #1955 Kakela Drive. It is marked by a pipe which projects from a 6 foot square concrete slab. This is a type C Hawaiian Territory Survey marker minus the signal.

* 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 34314

(continued on next page)

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: ROCKY HILL
STATE: HAWAII YEAR: 1872 SECOND -ORDER
SOURCE: G- 7448

GEODETIC LATITUDE:	21 °18 ′23.″879	ELEVATION: SCALED	90 METERS FEET
GEODETIC LONGITUDE:	157 49 42.836		

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β OR Δ α ANGLE *
HI 3	5103	558,358.06	50,872.10	+ 0 °03 ′44 ″

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
PUNCHBOWL	111 °48 ′10.″5	111 °44 ′26 ″	5103

QE 008

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 211573 STATION 1359

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

ROCKY HILL (continued)

FORM 526a (6-10-57) U.S. DEPARTMENT OF COMMERCE COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: ROCKY HILL
ESTABLISHED BY: HGS YEAR: 1872 STATE: Hawaii
RECOVERED BY:* W.R. Porter YEAR: 1963 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK 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 FEET	DISTANCE METERS	DIRECTION °	'	"
PUNCHBOWL 1873 1928				00	00	00.0
R.M. No. 2	NNW	7.459	2.274	61	50	55
R.M. No. 1	SE	45.820	13.967	213	38	29

Station was recovered and found in good condition. Two reference marks were established. A complete description follows:

Station is located about 2-1/4 miles airline east of the Federal Building in Honolulu, on the summit of a brushy hill of 296 feet elevation, on property of Punaahou School, and overlooking the school buildings to the west.

To reach station from the Honolulu Police Station, go southeast on Beretania Street for 0.1 mile; turn left and go northeast on Punahou Street for 0.35 mile; turn right and go southeast on Wilder Avenue for 0.5 mile; bear left at traffic light and follow Metcalf Street for 0.25 mile; turn left and go north on Runnewell Street for 0.35 mile; turn left and go northwest on Lanihuli Street for 0.1 mile; turn left and follow McKinley Street for 0.05 mile; turn right and go 0.05 mile on Kakela Drive; turn right and go 0.05 mile on Kakela Place to end of paved street at chain gate. Pass through gate and follow winding dirt road for 0.1 mile to end of road along northwest side of wire mesh fence surrounding a storehouse. From here pack southwesterly on dim trail through brush for about 75 yards to top of hill and station.

Station is center of a 2-1/2-inch iron pipe which projects 1.7 feet above the 6-foot-square, concrete platform, which is a "Type C" monument of the State of Hawaii Survey Department.

Reference mark number one is a standard disk stamped "ROCKY HILL NO 1 1872 1927", cemented in a drill hole in a black lava rock outcrop that projects about 3 feet above ground. It is on the east side of the crest of the hill and about 5 feet lower than top of station pipe.

Reference mark number two is a standard disk stamped "ROCKY HILL NO 2 1872 1927", cemented in a drill hole in a 3-foot-diameter lava rock outcrop that projects about 1 foot above ground. It is 8 feet northeast of the crest of the hill, partially hidden by brush, and abqut 2-1/2 feet lower than top of station pipe.

*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 27178-P66

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 211573 STATION 1360
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 525
Rev. Aug. 1948

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: ROOF (USN) STATE: Hawaii COUNTY: Honolulu

CHIEF OF PARTY: W.R. Porter YEAR: 1960 Described by: D.R. Tomlinson

NOTE.*	HEIGHT OF TELESCOPE ABOVE STATION MARK 1 METERS.†	HEIGHT OF LIGHT ABOVE STATION MARK METERS.

NOTE.*	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 ° ′ ″
	WAIPIO UKA 1873 1927				0 00 00.0
Desc.	RM 1	NE	16.31	4.971	54 36 48
Desc.	RM 2	NW	20.55	6.265	324 23 06

Station is located in the Pearl Harbor Shipyard, on top of building 17.
The station mark is a United States Navy disk, stamped ROOF, cemented in a drill hole in the concrete roof of building 17 near the east corner.
Reference mark 1 is a standard disk, stamped ROOF USN NO 1 1960, cemented in a drill hole in the concrete roof near the northwest side of the building.
Reference mark 2 is a standard disk, stamped ROOF USN NO 2 1960, cemented in a drill hole in the concrete roof near the northeast end of the building.

Form 526
(11-8-55)

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

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: ROOF (USN)
ESTABLISHED BY: W.R. Porter YEAR: 1960 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 recovered and all marks found in good condition as described.

*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 34314

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: ROOF USN

STATE: HAWAII YEAR: 1960 SECOND ORDER

SOURCE: G-12191

GEODETIC LATITUDE:	21 °21 ′20.″146	ELEVATION: SCALED	1 METERS FEET
GEODETIC LONGITUDE:	157 57 39.356		

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	513,294.65	68,627.21	+ 0° 00′ 51″

* 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
WAIPIO UKA	153 ° 19 ′ 33.″6	153 ° 18 ′ 43 ″	5103

QF 233

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 211573 HAWAII STATION 1361
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

FORM 526a
(6-15-69)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: ROSEBANK
ESTABLISHED BY: L.G.S. YEAR: 1928 STATE: Hawaii
RECOVERED BY:* W.R. Porter YEAR: 1963 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK 1 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 FEET	DISTANCE METERS	DIRECTION ° ′ ″
PUNCHBOWL 1873-1928				00 00 00.0
R.M. No. 1	ESE	18.618	5.675	261 23 33
R.M. No. 2	SSE	13.686	4.172	327 26 07

A "Type C" Hawaiian Territorial Survey signal was recovered. There is a large crack about 1/3 of the way in from the southeast side of the concrete platform, but the main part, which supports the station pipe, is very solid. Two new reference marks, numbers one and two, were established. A complete description follows:

Station is located about 2 miles airline northeast of the Federal Building in Honolulu, in the Pacific Heights district, at about 580 feet elevation, on the side of the ridge, and in a clump of large ironwood trees above the home at 2980 Laukoa Place.

To reach station from the intersection of Beretania Street and the Pali Highway in Honolulu, go northeast on the Pali Highway for 0.8 mile; angle right, onto Pacific Heights Road, and go 0.15 mile to traffic light at Pauoa Road. Continue ahead, on Pacific Heights Road, winding uphill for 1.6 miles; take left fork and go 0.1 mile on Laola Place; turn right and go 0.05 mile on Laukoa Place to end of street. Walk northerly up hillside about 25 yards to station.

Station is center of 2-1/2-inch, iron pipe that projects 2 feet from the center of a 2-foot-square, concrete block which sets in the center of a 6-foot-square, concrete platform and extends 1 foot above it. The platform projects 6 inches above ground on its southeast, uphill, side, and 3 feet above ground on the northwest side.

Reference mark number one is a standard disk stamped "ROSEBANK NO 1 1928 1963", brazed to the top of a 1-1/2-inch, iron pipe that is set in cement and projects 10 inches above ground. It is 8 feet west-southwest of a 16-inch ironwood tree and at same elevation as top of station pipe.

Reference mark number two is a standard disk stamped "ROSEBANK NO 2 1928 1963", cemented in a drill hole in a 12-inch boulder that projects 4 inches above ground. It is 1.4 feet north-northwest of an iron pipe driven into the ground and is in the trail leading to station. The mark is about 4 feet lower than top of station pipe.

*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 27178-P69

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: ROSEBANK
STATE: HAWAII YEAR: 1928 SECOND ORDER

SOURCE: G- 7448

GEODETIC LATITUDE:	21 °19 ′53.″949	ELEVATION:	176 METERS
GEODETIC LONGITUDE:	157 50 39.534		SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	552,987.80	59,954.53	+ 0°03′24″

* 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
PUNCHBOWL	23°31′15.″6	23°27′52″	5103

QE 007