

# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1051  
 HAWAII  
 LATITUDE 21 ° 00' TO 21 ° 30'  
 LONGITUDE 157 ° 00' TO 157 ° 30'  
 DIAGRAM NF 4-16 MAUI

**Port (Molokai Island, R. W. Woodworth, 1925).**—On western coast of Molokai, 25 feet above high water on the southerly side of the rocky point ¼ mile north of Puu o Kaiaka (the hill on which the loading tower is situated), and ¼ mile north of a frame house, the only one in the vicinity. Station is 5 feet lower in elevation than the highest part of the point, and is marked according to note 3, a standard bronze tablet set in concrete in a depression in outcropping bedrock. Three reference marks, all standard bronze tablets with arrows pointing toward the station, were set in concrete in depressions in outcropping bedrock, note 12b, at the following distances and azimuths from the station: No. 1, 13.92 meters (45.7 feet), 350° 07'; No. 2, 18.20 meters (59.7 feet), 153° 45'; No. 3, 14.01 meters (46.0 feet), 246° 00'.

(11-0-55)

**RECOVERY NOTE, TRIANGULATION STATION**

**R**

NAME OF STATION: Port  
 ESTABLISHED BY: R.W.W. YEAR: 1925 STATE: Hawaii  
 RECOVERED BY: R.L.S. YEAR: 1962 COUNTY: Maui

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

Station and reference marks were recovered in good condition. No check was made on the distance to the reference marks. Description is adequate and correct except for the loading tower and frame house which have been removed.

**RECOVERY NOTE, TRIANGULATION STATION**

**R**

NAME OF STATION: Port  
 ESTABLISHED BY: R. W. W. YEAR: 1926 STATE: Hawaii BENCH MARK(S) ALSO   
 RECOVERED BY: R. L. Newsom YEAR: 1967 COUNTY: Maui

AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

Six (6) miles NW of Mauna Loa

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

Station and reference marks recovered as previously described and found to be in good condition.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PORT  
 STATE: HAWAII YEAR: 1925 THIRD ORDER

SOURCE: G-SP156  
 NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE: 21 ° 11 ' 41.34	ELEVATION: 7 METERS
GEODETIC LONGITUDE: 157 15 06.76	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	# OR Δ # ANGLE °
HI 2	5102	300,640.01	313,262.23	- 0 12 42 °

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

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

# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1052  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

**Pukauahi (Molokai Island, Hawaiian Government Survey; R. W. Woodworth, 1925).**—In southwest Molokai. In 1925 station searched for and made certain that the pile of stones marking the station had been removed.

Form 526  
 (11-8-55)

## RECOVERY NOTE, TRIANGULATION STATION

**R**

NAME OF STATION: PUKAUHI

ESTABLISHED BY: R.W.W.

RECOVERED BY: H.J.S.

YEAR: 1925 STATE: Hawaii

YEAR: 1962 COUNTY: Maui

Island-Molokai

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

The location of the station was plotted on U.S. G.S. quadrangle and the area visited. A thorough search of the area was made but no mark that might have been used to mark the station was found. The station should be considered lost.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PUKAUHI

STATE: HAWAII

YEAR: 1925

SECOND

ORDER

SOURCE: G-SP156

GEODEIC LATITUDE:	21° 00' 45.628	ELEVATION:	250	METERS
GEODEIC LONGITUDE:	157 10 31.508	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\phi$ OR $\Delta$ OR ANGLE *
HI 2	5102	326,551.69	283,335.70	- 0° 21' 00"

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

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

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

COM-DC 34314

Q1 569

# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1053  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

DEPARTMENT OF COMMERCE  
 U. S. COAST AND GEODETIC SURVEY  
 FORM 526  
 Rev. Aug. 1962

## DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: PUNAKOU STATE: Hawaii COUNTY: Maui  
 Island: Molokai  
 Described by: J. R. S.

CHIEF OF PARTY: H. J. Seaborg YEAR: 1962

NOTE: HEIGHT OF TELESCOPE ABOVE STATION MARK 1.46 METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS.

NOTE*	HEIGHT OF TELESCOPE ABOVE STATION MARK	HEIGHT OF LIGHT ABOVE STATION MARK	DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION			
			OBJECT	BEARING	DISTANCE feet meters	DIRECTION
1b 7a	Surface-station mark, Underground-station mark					
12c			MAUNA LOA 1872 1926 (HGS)	ENE	26.14 7.967	00 00 00.00
12c			RM 1	SSE	24.65 7.511	68 50 05
			RM 2	WNW	( about 1.5 mile)	182 29 27
			VR, Molokai MKK			329 49 13.4

Station is located, airline, about 9 miles west of Kaunakakai, 4.0 east northeast of the town of Mauna Loa, on the east end of a small ridge.

To reach the station from the junction of State highways 45 & 46, just south of the Post Office in Kaunakakai, go westerly on State Highway 46 for 7.1 miles to a fork and sign "MAUNA LOA". Keep left and follow State Highway 46 for 5.75 miles to a dirt crossroad at the top of the grade, and sign on right "UNITED STATES COAST GUARD". Turn left and go southerly on road through pineapple field for 0.2 mile to gate on right, at north end of grove of trees. Bear right, through gate, and follow graded road for 0.4 mile to a T-intersection, turn left and go 0.1 mile to a locked gate on the left, pass through gate and follow road .7 mile to a board gate, pass through gate and follow road southeast 0.7 mile to the top of the hill and a track road on the right.

Turn right and follow the track road for 0.2 mile to the southeast edge of the hill and the station mark.

The station mark is a standard disk stamped, PUNAKOU 1962, set in the top of a concrete post that projects 1 inch, 4.8 feet east of a white witness post.

Reference mark No. 1 is a standard disk stamped, PUNAKOU NO 1 1962 cemented in a drill hole in a boulder that projects about 1 foot above the surface of the ground.

Reference mark No. 2 is a standard disk stamped, PUNAKOU NO 2 1962, cemented in a drill hole in a boulder that projects about 1 foot above ground.

MAUNA LOA can be used as the azimuth.

Form 526  
 (11-8-65)

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

R

NAME OF STATION: PUNAKOU  
 ESTABLISHED BY: H. J. Seaborg YEAR: 1962 STATE: Hawaii  
 RECOVERED BY: E. P. Cline YEAR: 1964 COUNTY: Maui Island: Molokai

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 in 1962. The original to-reach description is adequate.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PUNAKOU  
 STATE: HAWAII YEAR: 1962 SECOND ORDER

SOURCE: G-12734

GEODETIC LATITUDE	21° 07' 45.085	ELEVATION	383 METERS
GEODETIC LONGITUDE	157° 09' 05.634	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE
HI 2	5102	354,740.92	289,369.87	- 0 10 29

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
MAUNA LOA	154 25 58.7	154 36 28	5102

QF 272



# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1055  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

DEPARTMENT OF COMMERCE  
 U. S. COAST AND GEODETIC SURVEY  
 FORM 582  
 Rev. Aug. 1968

## DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: PUNAKUA 2 STATE: Hawaii COUNTY: Maui  
 Island: Molokai  
 CHIEF OF PARTY: Harold J. Seaborg YEAR: 1962 Described by: R. F. Hanson

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.37 METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS.

NOTE	HEIGHT OF TELESCOPE ABOVE STATION MARK	DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION	DISTANCE		DIRECTION
			feet	meters	
2	Surface-station mark, Underground-station mark				
	HALENA				
12c	RM 2	SE	14.81	4.513	00 00 00.00 -
12c	RM 1	NNE	22.70	6.918	67 12 22 - 340 45 17 -

Station is located, airline, about 4-3/4 miles southwest of the village of Mauna Loa, 1-3/4 miles west-northwest of the sand-loading plant at Hale O Lono Point, 2-1/2 miles east of Laau Point which is the westernmost point of Molokai Island, and 1/2 mile north of the south coast of the island, on the summit of a red-rock and brushy knoll of about 298 feet elevation.

To reach from the post office in Mauna Loa, go westerly on State Highway 46 for 0.25 mile to a graded side road sharp left, after rounding a right curve in the highway. Turn sharp left and go southwest for 1.0 mile to a T-junction. Turn right and go west on wide graded road for 0.4 mile to a fork. Take right fork and go 0.25 mile to station POHAKULOA on the right. Continue westerly on graded road for 1.05 miles to wash. Cross wash and continue on graded road along fence line for 0.5 mile to a locked gate. Pass through gate and continue for 0.4 mile to a T-junction just

left of a cattleguard. Turn left and follow wide sand road for 1.7 miles to a track road right, at top of grade. Turn right and go westerly for 0.65 mile to a fork. Take left fork for 0.15 mile to crossroad at stake. Turn left for 20 yards then take right fork and follow main road for 0.6 mile to grove of trees on right, where fence begins to bear away from road on left. Continue ahead for 0.1 mile to dim side road left. Go left for 0.1 mile to fence corner on left. Pass around fence corner and bear southeast on old track road for 0.3 mile to cairn on right. Turn right and go cross-country south-southwest for 0.15 mile to end of truck travel at left side of shallow rocky wash at edge of dense brush. Pack south-southwest through trees for about 250 yards to summit of knoll and station.

Station mark is a standard disk stamped "PUNAKUA 2 1962", cemented in a drill hole in a 3-foot-diameter red rock outcrop that projects 16 inches above ground. It is on the open north side of the hill, about 10 yards northeast of dense brush.

Reference mark number one is a standard disk stamped "PUNAKUA 2 NO 1 1962", cemented in a drill hole in the west end of a 6-foot-diameter red rock outcrop that projects 2 feet above ground. It is on the northeast slope of the hill and about 2 feet lower than the station.

Reference mark number two is a standard disk stamped "PUNAKUA 2 NO 2 1962", cemented in a drill hole in a 4-foot-diameter, red rock outcrop that projects about 2-1/2 feet above ground. It is the highest outcrop in the vicinity, is 20 feet northwest of dense brush and is about 1 foot higher than the station.

Station HALENA will serve as the azimuth mark.

NOTE: Key for locked gate may be obtained from the Molokai Ranch office in Kaunakakai.

\* Refer 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.)  
 16-58882-1 U. S. GOVERNMENT PRINTING OFFICE

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION PUNAKUA 2  
 STATE HAWAII YEAR 1962 SECOND ORDER

SOURCE G-12734

GEODETIC LATITUDE	21° 06' 03.834	ELEVATION	86 METERS
GEODETIC LONGITUDE	157 16 31.878	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ HOR $\Delta$ $\theta$ ANGLE *
HI 2	5102	292,454.62	279,238.63	- 0° 23.09 "

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE  $\theta$  HOR  $\Delta$   $\theta$  FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
HALENA	263 12 26.0	263 25 35	5102

QF 276





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 211572 STATION 1058  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

## NO ORIGINAL TEXT

### ADJUSTED HORIZONTAL CONTROL DATA

FORM 526  
 (6-18-65)

U. S. DEPARTMENT OF COMMERCE  
 COAST AND GEODETIC SURVEY

#### RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PUU HAKINA  
 ESTABLISHED BY: R.W.W.  
 RECOVERED BY: H.J. Seaborg  
 YEAR: 1925 STATE: Hawaii  
 YEAR: 1962 COUNTY: Maui Island: Molokai

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	

A 1-inch iron pipe with a target pole centered over it was recovered. A complete description follows:  
 Station is located, airline, about 3-1/2 miles southwest of the village of Mauna Loa, 1/2 mile north of the south shore line and 0.6 mile northwest of the H.C.&D. Company's sand loading plant at Hale O Lono Point, on the west slope of a brushy knoll of about 325 feet elevation.

To reach from the post office in Mauna Loa, go west on State Highway 46 for 0.25 mile to a graded side road left, after rounding a right turn in the highway. Turn sharp left and go southwest for 1.0 mile to a T-junction. Turn right and go west on wide graded road for 0.4 mile to fork. Take left fork, main cindered road, and go 0.5 mile to fence corner on left. Continue ahead on main road for 0.25 mile to a graveled side road left, 0.1 mile before reaching a black water tank. Turn left and go southerly 0.15 mile to a fence corner on left. Continue southerly along fence line for 0.6 mile to fork. Take left fork, through gate, then take right fork and go 0.15 mile to locked gate. Pass through gate and go 0.15 mile to fork. Take right fork and continue on main graveled road for 0.35 mile to a side road right. Turn right and go 0.4 mile to a fork. Take left fork and go 0.1 mile to junction with wide sand road. Turn left and go downgrade on sand road for 0.15 mile to a left curve in road. Here leave road and turn back sharp right down through trees and across draw for 0.1 mile to dim crossroad. Bear left and follow track road southwest down along crest of ridge for 0.3 mile to station on left.

Station is marked by a 1-inch iron pipe projecting 10 inches above ground and surrounded by a circle of rocks. It is 27 yards south of center line of track road and about 50 yards west of high point of hill.

No reference objects were found.

NOTE: Key to locked gate may be obtained from the Molokai Ranch Office at Kaunakakai.

\*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 37178-P89

NAME OF STATION PUU HAKINA

STATE HAWAII

YEAR 1925

THIRD

ORDER

SOURCE G-SP156

GEODETIC LATITUDE: 21° 05' 55.23	ELEVATION: METERS
GEODETIC LONGITUDE: 157 15 19.48	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ #1 ANGLE °
HI 2	5102	299,506.84	278,344.71	- 0° 12' 43"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From 1925)	PLANE AZIMUTH* (From 1925)	CODE

Q1 587



# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1059  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

## NO ORIGINAL TEXT

**Puu Ioli** (Maui County, Hawaii, H.G.S., 1885; E. R. Hand, 1915).—  
 On southern coast of Molokai, on small hill of same name, 400 meters from shore,  
 180 meters above road, at a point 6¼ miles west from Kaunakakai. It is 1¼  
 miles west of deep cove where mangrove is planted, and at base where the steep  
 slopes of Mauna Loa join the comparatively gentle slopes which lie west of  
 Kaunakakai. In 1915 a large whitewashed cairn was found over the station, so  
 marks were not searched for.

**PUU ILOLI** (Maui County, Hawaii, H.G.S., 1885; O.W.S.,  
 1930) --Station was recovered  
 as described. A large whitewashed cairn still exists over the  
 station, so the marks were not searched for.

FORM 2400  
 (6-18-65)

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
 COAST AND GEODETIC SURVEY

### RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: **PUU ILOLI**  
 ESTABLISHED BY: **HGS** YEAR: **1885** STATE: **Hawaii** Island: **Molokai**  
 RECOVERED BY: **H. J. Seaborg** YEAR: **1962** COUNTY: **Maui**

HEIGHT OF TELESCOPE ABOVE STATION MARK **1.39** METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS.

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
FUNAKOU				00 00 00.0
Rh 1	NE	24.85	7.576	92 11 21
RM 2	WNW	24.87	7.583	343 18 17

Station is located about 6¼ miles airline west of Kaunakakai,  
 along the south shore of Molokai Island, on a small hill of the same  
 name.

To reach the station from the Post Office in Kaunakakai go  
 westerly on State Highway 46 for 2.6 miles to a reverse-Y on left at  
 bottom of grade. Turn sharp right and go south on old paved road to  
 second side road right. Turn right and go west on gravel road for 1.45  
 miles to a fork, take right fork across cattle guard for 0.15 mile to a  
 reverse-Y on right. Angle left and go west for 0.65 mile to a fork.  
 Take right fork straight ahead for 0.9 mile to a fork. Take right fork  
 along the top of a dike for 0.6 mile to a crossroad. Continue ahead on  
 dike road for 1.0 mile to fork, take right fork off of dike and continue  
 on track road for 0.7 mile to metal gate. Pass through gate for 0.25  
 mile to the end of truck travel. From here pack northerly through trees  
 to the base of a ridge. Follow game trail up left side of ridge for  
 about 200 yards to the top of the hill and station.

The station mark is a standard disk stamped, PUU ILOLI 1915 1962,  
 brazed to the top of a 1-¾ inch iron pipe that is set in cement and pro-  
 jects 8 inches above the surface of the ground, 7 feet northwest of a  
 4 X 4 post that is set on top of a group of large boulders that projects  
 about 3 feet above the surrounding area.

Reference mark No. 1 is a standard disk stamped, PUU ILOLI NO 1  
 1915 1962, cemented in a drill hole in a lava boulder that projects  
 two feet above ground and about two feet higher than the station.

Reference mark No. 2 is a standard disk stamped, PUU ILOLI NO 2  
 1915 1962, cemented in a drill hole in a lava boulder that projects  
 1 foot and is about level with the station mark.

Station KALA will serve as the azimuth mark.

(R.L.N., 1967)--Station and all reference marks recovered as  
 described. Description adequate and correct.

\*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

station recovered.

USCOM-DC 27173-P89

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: **PUU ILOLI**  
 STATE: **HAWAII** YEAR: **1885** SECOND ORDER

SOURCE: **G-12734**

GEODETIC LATITUDE	21° 06' 28.855	ELEVATION	37 METERS
GEODETIC LONGITUDE	157 07 08.538	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β HOR Δ RI ANGLE
HI 2	5102	345,804.52	281,585.71	- 0° 09' 47"

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE β HOR Δ RI FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
PUNAKOU	124 57 59.6	125 07 47	5102

QF 298

# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1060  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

## NO ORIGINAL TEXT

## ADJUSTED HORIZONTAL CONTROL DATA

PUU KAPELE ( Maui County, Hawaii, Hawaiian Government Survey, 1885; Hawaiian Territorial Survey, 1932)

--Station was originally marked with a redwood post and box signal, which finally rotted down, and the station was marked by a 2-in. pipe in 1924 by the H.T.S.

Station, now marked by a Type B monument, is situated on the summit of the hill of the same name, 200 ft. from the edge of the seacoast, and about 1000 ft. N of the N boundary of Lot 91 of the Hoolehua-Palaau Homesteads. The present station mark is 1 ft. lower than the original station.

There is an observation sheet for this station in the H.T.S. files.

(11-8-55)

### RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PUU KAPELE  
 ESTABLISHED BY: Gov't. of H. YEAR: 1885 STATE: Hawaii H.I. 1.75m  
 RECOVERED BY: H.J.S. YEAR: 1962 COUNTY: Maui Island: Molokai

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

Station recovered in good condition.

Station is located on the north coast on a prominent hill, about 7.0 miles west of Kalaupapa, about 2.5 miles north of the Molokai Airport, about 2.4 miles north-northwest of Kulanuu, and about 200 feet south of the coast.

To reach the station from the junction of State Routes 46 and 481 about 1.5 miles east of the Molokai Airport, go 1.4 miles north on State Route 481 to junction with State Route 48, turn left go 2.0 miles west to intersection with field road, turn right go 0.7 mile north to intersection with field road, turn left and cross cattleguard in fence line on right, take track road on right just after crossing cattleguard, go 0.5 mile north to fork in road, take right fork about 0.5 mile north to base of prominent hill and end of truck travel. From here pack about 0.05 mile northwest to station on summit of hill. A 4-wheel vehicle can be driven up the southeast slope of the hill to the summit and along the summit to the station.

State survey, Type B now over station.

Form 328  
 (11-8-55)

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

### RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PUU KAPELE  
 ESTABLISHED BY: Haw. Gov. Surv. YEAR: 1885 STATE: Hawaii  
 RECOVERED BY: E.P. Cline YEAR: 1964 COUNTY: Maui Island: Molokai

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

Station was not visited but the Hawaii Territorial Survey "Type B" signal was seen and observations made on it.

### RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PUU KAPELE  
 ESTABLISHED BY: Gov't of Hawaii YEAR: 1885 STATE: Hawaii BENCH MARK(S) ALSO   
 RECOVERED BY: R. L. N. YEAR: 1967 COUNTY: Maui  
 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: Island: Molokai

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

Station found in good condition as previously described.

NAME OF STATION: PUU KAPELE

STATE: HAWAII

YEAR: 1885

SECOND

ORDER

SOURCE: G-12734

GEODETIC LATITUDE: 21° 11' 47.765	ELEVATION SCALED 140 METERS
GEODETIC LONGITUDE: 157° 05' 40.474	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	# HOR Δ # V ANGLE °
HI 2	5102	354,229.55	313,739.20	- 0 05 17

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE # HOR Δ # V FORMULA NEGLECTING THE SECOND TERM

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

QF 290



# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1062  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

**Puu Luahine** (Maui County, Hawaii,  
 R. W. Woodworth, 1925).—In central Molokai, on the higher and more  
 westerly of two red hills seen about 3 miles north of Kaunakakai village. The  
 hill is most symmetrical and shows up prominently against the skyline. It  
 appears to be elongated in an east and west direction, and a cairn marking  
 station is seen plainly at its western end.

PUU LUAHINE (Maui County, Hawaii, R.W.W., 1925; Hawai-  
 ian Territorial Survey, 1930)  
 Station is on a prominent red hill, 5 mi. back of Kaunakakai, ele-  
 vation is 1210 ft., in the Land of Hoolehewa.

Found all three witness crosses on rocks, and a 2- by 3-in.  
 in a large pile of stones agreeing well with the witness marks,  
 but the azimuths to and from other stations (equally well marked)  
 do not agree very precisely with the recorded values. This was  
 noted by others as well as myself.

Bronze disk, B.M. EL. 1210 FT., was set by the U.S.G.S. and  
 cemented in the same rock as one of the original witness crosses.

Built a concrete monument, with an Hawaii Territory Survey  
 bronze disk, 12- by 12-in.; 18 in. below the surface of the  
 ground, and a Type B1 superstructure about 1 ft. above ground,  
 with edges extending 1 ft. below the ground surface, and 1 ft.  
 thick all around, all of boulder concrete. Bench mark and two  
 witness crosses are exposed a little below the surface of the  
 platform.

This is a very valuable station.

(11-8-55)

## RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PUU LUAHINE  
 ESTABLISHED BY: R.W.W. YEAR: 1925 STATE: Hawaii  
 RECOVERED BY: H.J.S. YEAR: 1962 COUNTY: Maui ISLAND: Molokai  
 H.I. 1.82m

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

OBJECT	BEARING	DISTANCE	DIRECTION
MIDDLE HILL (HGS) 1885			0° 00' 00"
Cross on Boulder	E	2.56 ft.	162 09 50
Cross on Boulder	SW	2.36 ft.	296 00 08
PBM Maunahui (USGS)	WSW	2.56 ft.	306 06 41
Waiahawahewa, Aero Beacon	W	7.0 miles	334 16 41.7
Red Light			

Station was recovered in good condition as described in 1930 by  
 Hawaiian Territory Survey.

To reach the station from the junction of State Routes 45 and 46 at  
 the post office in Kaunakakai, go 4.1 miles northwest on State Route 46  
 to road on right, turn right go 3.8 miles easterly on grade gravel road  
 to road on right, turn right go 0.4 mile south to end of truck travel  
 at the north edge of gravel pit. Pack easterly up steep slope to station  
 on highest part of hill. About a 5 minute pack. State Survey monument,  
 Type B, now over station.

Form 526  
 (11-8-55)

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

## RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PUU LUAHINE  
 ESTABLISHED BY: R.W.W. YEAR: 1925 STATE: Hawaii  
 RECOVERED BY: L.F. Woodcock YEAR: 1965 COUNTY: Maui ISLAND: Molokai

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 in good condition.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PUU LUAHINE

STATE: HAWAII

YEAR: 1925

SECOND

ORDER

SOURCE: G-12734

GEODETIC LATITUDE:	21° 07' 56".615	ELEVATION:	369 METERS
GEODETIC LONGITUDE:	157° 00' 55".870	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ or ANGLE*
HI 2	5102	381,109.78	290,351.05	- 0° 07' 33"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
MIDDLE HILL	119 46 04.0	119 53 37	5102

QF 302

# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1063  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

## 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: PUU O HOLEHUA  
 ESTABLISHED BY: R.W.W. YEAR: 1925 STATE: Hawaii  
 RECOVERED BY: H.J.S. YEAR: 1962 COUNTY: Maui  
 Island: Koloala

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

The location of the station was plotted on a U.S. G.S. quadrangle and the area visited. A thorough search of the area was made but nothing that might have been used to mark the station was found. The station should be considered lost.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PUU O HOLEHUA  
 STATE: HAWAII YEAR: 1925 SECOND ORDER  
 SOURCE: G-SP156

GEODETIC LATITUDE:	21° 07' 17".166	ELEVATION	225	METERS
GEODETIC LONGITUDE:	157 07 50.510	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\beta$ HOR $\Delta$ RI ANGLE *
HI 2	5102	341,844.62	286,471.16	- 0 10 02 "

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE  $\beta$  HOR  $\Delta$  RI FORMULA NEGLECTING THE SECOND TERM

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

\* 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. COMN-DC 34314

# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1064  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

**Puu o Kahanui** (Maui County, Hawaii,  
 R. W. Woodworth, 1925).—On southern coast of Molokai, on a knoll 3½  
 miles west along coast from Kaunakakai wharf, and 1 mile east of the deep cove  
 where small mangrove is planted, 1,040 meters up from the sea, and 450 meters  
 above government road. From the station the end of Kaunakakai Wharf bears  
 S. 65° E.; and a prominent square house, red, with pyramidal roof, located  
 down on the beach and belonging to a native named Kahinu or Kanihu bears S.  
 25° W. Station is on an old grave. Underground mark is a bottle. Surface  
 mark is concrete post 1 foot square, projecting 1 foot above surface of ground,  
 with standard United States Coast and Geodetic Survey bronze disk in top,  
 note 8½. Over the mark a semicircular cairn was erected and painted white.

PUU O KAHANUI (Maui County, Hawaii, R.W.W., 1925; O.W.S.,  
 1930) --Station was recovered  
 as described. A loose rock wall enclosure about 40- by 25- by 3-  
 ft. high, probably an old native house foundation, is 30 m. S of  
 the station.

(11-15-55)

COAST AND GEODETIC SURVEY

## RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PUU O KAHANUI  
 ESTABLISHED BY: R.W.W. YEAR: 1925 STATE: Hawaii Island: Molokai  
 RECOVERED BY: H.J. Seaborg YEAR: 1962 COUNTY: Maui

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.44 METERS, HEIGHT OF LIGHT ABOVE STATION MARK METERS.

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
PUU ILOLI (HGS) 1885-1915				00 00 00.00
RM 1	W	22.44	6.840	05 57 42 ✓
Aero beacon on pole, Waiahawahewa	NW	3½ Miles	37 26 18.1	
RM 2	NNW	39.72	12.100	89 26 21 ✓

Station is located about 3.75 miles westnorthwest of Kaunakakai,  
 3 miles southeast of the Molokai Airport and 0.75 mile north of the south  
 coast of Molokai Island, on a low rocky knoll on the south slope of roll-  
 ing brushy country that rises gradually to the north. The highest point  
 of land is about ½ mile north of the station.

To reach the station from the junction of State Highways 45 & 46  
 just south of the Post Office in Kaunakakai, go westerly on State High-  
 way 46 for 2.6 miles to a reverse-Y on left. Turn sharp left and go 0.15  
 mile on old paved road to the second side road on the right. Turn  
 right and go west 1.4 miles to a fork and cattle guard, cross cattle  
 guard and go 0.1 mile to a reverse-Y on right. Angle left and go west  
 for 0.2 mile to a power pole with white paint on it, continue ahead for  
 0.05 mile to a point 50 feet before reaching the last power pole along  
 road. At a point marked by a triangle blaze on Keawe tree go right, off  
 of road, and pick way through trees and rocks north for 0.25 to station  
 on rocky knoll.

The station is a standard disk unstamped, set in the top of a 6"  
 concrete post that projects 18 inches, 3.9 feet southwest of a white  
 witness post and is near the center of a large pile of rocks.

Reference mark No. 1 is a standard disk stamped, PUU O KAHANUI  
 NO 1 1-25 1962, cemented in a drill hole in rock outcrop that projects  
 about 18 inches and about 1 ½ foot lower than the station.

Reference mark No. 2 is a standard disk stamped, PUU O KAHANUI  
 NO 1, 1925 1962, cemented in a drill hole in rock outcrop that projects  
 1 foot and is about 3 feet lower than the station.

Station PUU LUAHIE can be used as the azimuth mark.

(continued on next page)

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PUU O KAHANUI

STATE: HAWAII

YEAR: 1925

SECOND

ORDER

SOURCE: G-12734

GEODETIC LATITUDE: 21° 06' 53.771	ELEVATION: 41 METERS
GEODETIC LONGITUDE: 157° 04' 53.815	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ OR ANGLE*
HI 2	5102	360,460.88	284,059.55	- 0 08 51

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
PUU ILOLI	80 16 19.0	80 25 10	5102

QF 301

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 211572      STATION 1064

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

PUU O KAHANUI (continued)

## RECOVERY NOTE, TRIANGULATION STATION

# R

NAME OF STATION: PUU O KAHANUI  
ESTABLISHED BY: R.W.W.      YEAR: 1926      STATE: Hawaii      BENCH MARK(S) ALSO   
RECOVERED BY: R.L.N.      YEAR: 1967      COUNTY: Maui  
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:      Island: Molokai

3.75 West North West of Kaunakakai

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

Station and all reference marks recovered as described.  
Description adequate and correct.

# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1065  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

**Puu o Kaiaka** (Maui County, Hawaii,  
 R. W. Woodworth, 1925).—On western coast of Molokai, on the most  
 southerly of two 100-foot knobs about 60 meters apart on hill of same name, about  
 2½ miles south of Ilio Point, and at northeast end of beach 2 miles long. A der-  
 rick and loading platform for the near-by pineapple plantation is located on  
 the western extremity of the same hill. Station is at the seaward or west end  
 of a stone inclosure (fish lookout) about 20 by 30 feet in size. No center mark  
 was found in 1915, but the three reference crosses were found, and a ring of paint  
 placed around each. These marks were at the following distances from station:  
 No. 1, to north, 3 feet; No. 2, to east and at end of stone wall, 5 feet; and No. 3,  
 to west, 5 feet. The distances between reference marks were as follows: Nos. 1  
 to 2, 7.1 feet; Nos. 2 to 3, 7.9 feet; and Nos. 3 to 1, 8 feet. Paint was placed on  
 corner of wall to serve as hydrographic signal. In 1925 the three reference  
 marks were recovered, but the distances between them did not agree with the  
 distances given in the earlier descriptions, the new distances being as follows:  
 Nos. 1 to 2, 7.09 feet; Nos. 2 to 3, 8.14 feet; and Nos. 3 to 1, 7.21 feet. A new  
 mark put in consisted of a standard United States Coast and Geodetic Survey  
 bronze disk, stamped 1925, and set in a mass of concrete, bed rock, and boulders.  
 Its distances from the reference marks are as follows: No. 1, 3.0 feet; No. 2, 5.01  
 feet; and No. 3, 4.96 feet.

PUU O KAIAKA (Maui County, Hawaii, R.W.W., 1925 ;K.T.A.,  
 1929) —This station was re-  
 covered and conforms with the description in every detail except  
 that the derrick, mentioned, no longer stands on the loading  
 platform.

(O.W.S., 1930)—Station is on the W coast of Molokai Island.  
 It was recovered as described. Boulders are around the end of  
 the wall whitewashed for a signal.

(C.T.H., 1950)—Station was recovered as described and in  
 good condition. All reference marks are crosses cut on stone.  
 Station is located on property of the Molokai Ranch, and a  
 key to locked gates must be procured from their office.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION. PUU O KAIAKA  
 STATE: HAWAII YEAR: 1925 SECOND ORDER  
 SOURCE: G-12734

GEODETIC LATITUDE:	21° 11' 03.903	ELEVATION:	34	METERS
GEODETIC LONGITUDE:	157 15 13.588	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ ± ANGLE*
HI 2	5102	299,979.87	309,487.27	- 0° 12' 44"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
NA PUU KULUA 2	321 23 39.0	321 36 23	5102

QF 284

(continued on next page)



# HORIZONTAL CONTROL DATA

QUAD 211572 STATION 1065

PUU O KAIAKA (continued)

by the  
 NATIONAL GEODETIC SURVEY  
 OLD HAWAIIAN DATUM

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

FORM 52a  
 (8-18-69)

U.S. DEPARTMENT OF COMMERCE  
 COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PUU O KAIAKA  
 ESTABLISHED BY: R.W.W.     YEAR: 1925     STATE: Hawaii     Island: Molokai  
 RECOVERED BY: H.J.S.     YEAR: 1962     COUNTY: Maui

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
NA PUU KULUA 2 1925				00 00 00.00
RM 1	S	15.59	4.752	45 25 34
RM 2	W	15.10	4.602	167 11 50
Ilii Pt. Coast Guard Loran Mast	NRW	( about	2.5 miles	210 31 47.4
Molokai VOR (MKK)	SE			337 25 22.2

The station is located on the western coast of Molokai, 2.5 miles south of the Coast Guard Station, on the most southerly of two 100 foot knobs about 200 feet apart. Station is at the west end of a stone enclosure about 20 by 30 feet in size.

To reach the station from the Post Office in Mauna Loa, go west on State Highway 46 for 0.25 mile to a graded road on the left. Turn left and go southwest for 1.0 mile to a T-junction. Turn right and go 0.4 mile to a fork. Take right fork and go 0.25 mile to station Pohaku-Loa on the right. Continue westerly for 1.05 miles, cross wash and continue on graded road for 0.5 mile along fence to a locked gate. Pass through gate and continue westerly for 0.4 mile to a sand road. Turn right on sand road and go 1.7 miles to a fork, turn right and go 1.2 miles to a fork, keep right fork and continue on track road for 1.3 miles to a board gate, just after passing a water tank, pass through gate and continue on track road for 0.7 mile to a track road on the left, turn left and follow track road and wash for 0.2 mile to the end of track travel. From here pack up the hill west and southwest for about 5 minutes.

The station is a standard disk stamped 1925 set in the top of a concrete post that projects 1 inch. In the south-west corner of a rock wall that was used as a fish lookout.

Reference mark No. 1 is a standard disk stamped, PUU O KAIAKA NO 1 1915 1925 1962, cemented in a larger boulder that is about 3 feet lower than the station.

Reference Mark No. 2 is a standard disk stamped, PUU O KAIAKA NO 2 1915 1925 1962, cemented in a drill hole in a boulder that projects 6 inches and about 2 feet lower than the station.

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: PUU O KAIAKA  
 ESTABLISHED BY: R.W.W.     YEAR: 1925     STATE: Hawaii     BENCH MARK(S) ALSO   
 RECOVERED BY: R.L.N.     YEAR: 1967     COUNTY: Maui

AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

6 Miles N.W. of Mauna Loa

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

Station has been bulldozed over. R.M. #1 was found and a search made for station, but R.M. #1 may have been moved by bulldozer. Station is assumed to be destroyed.

# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1066  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

SAND (Maui County, Hawaii, C.T.H., 1950)--Station is located near the NE corner of Molokai Island, near the extreme W end of Ilio Point, on a prominent sand point, about 700 ft. in from the shore, and on government owned land at the proposed site of a U.S. Coast Guard loran station. It is a 1-in. galvanized-iron pipe driven into the ground, projecting 8 in. and painted white. The center of the pipe is the station.

No reference marks were set.

FORM 2100  
 10-18-59

U.S. DEPARTMENT OF COMMERCE  
 COAST AND GEODETIC SURVEY

## RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: SAND  
 ESTABLISHED BY: C.T.H. YEAR: 1950 STATE: Hawaii Island: Molokai  
 RECOVERED BY: H.J.S. YEAR: 1960 COUNTY: Maui

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.46 METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS.

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
KABO 1925 Ilio Pt. Coast Guard Loran Mast	E	00 00	00.00	10 34 16.6

The station is located on Ilio Pt. and about 300 yards west of the Coast Guard Station on a small sandy knoll.

The station was recovered and found to be in good shape no reference marks were set. A complete description follows.

To reach the station from the Post Office in Kaunakakai, just north of junctions of State Highways 45 & 46, go westerly on State Highway 46 for 7.1 to a fork and sign "MAUNA LOA". Keep on Highway 46 for 5.75 miles to a dirt crossroad at the top of the grade, and sign on the left "UNITED STATES COAST GUARD". Turn right and go northwest on the graded road for 0.65 mile through the pineapple field to a locked gate. Pass through the gate and follow the Coast Guard road for 4.15 miles to a board gate, just after passing corrals and loading pens, continue on Coast Guard road for 0.65 mile to a fork, keep left fork leading to the Coast Guard Station for 1.3 miles to a concrete water tank on the right, continue on Coast Guard road for 2.8 miles and just before reaching the Coast Guard Station turn sharp right to the top of a small sand knoll and the station.

The station is a standard disk stamped, SAND 1950, set in the top of a concrete post that is 6 by 6 inches square and projects 4 inches.

## RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: Sand  
 ESTABLISHED BY: C.T.H. YEAR: 1950 STATE: Hawaii BENCH MARK(S) ALSO   
 RECOVERED BY: R.L. Newsom YEAR: 1967 COUNTY: Maui  
 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: Island: Molokai  
 7 1/2 miles NW of Mauna Loa

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

Station recovered in good condition as described.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: SAND  
 STATE: HAWAII YEAR: 1950 SECOND ORDER

SOURCE G-12734

GEODETIC LATITUDE: 21° 13' 13.018	ELEVATION 20 METERS
GEODETIC LONGITUDE: 157 15 41.425	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β OR Δ * ANGLE °
HI 2	5102	297,394.36	322,524.69	- 0° 12' 55"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
KABO	278 15 00.4	278 27 55	5102

QF 285

# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1067  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

## NO ORIGINAL TEXT

W.C. 17 (Maui County, Hawaii, R.W.W., 1925 ; O.W.S., 1931)

This station was recovered and it was found to be marked by a cairn of rocks with an old signal pole in its center. A new signal pole was put in place, and the cairn was whitewashed.

DEPARTMENT OF COMMERCE  
 U. S. COAST AND GEODETIC SURVEY  
 FORM 528  
 (Rev. Feb. 1968)  
**RECOVERY NOTE, TRIANGULATION STATION**

**R**

NAME OF STATION: W. C. 17  
 ESTABLISHED BY: R.W.W. YEAR: 1925 STATE: Hawaii  
 RECOVERED BY: W. R. Porter YEAR: 1957 COUNTY: Maui

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

Recovered as described, except that signal pole has disappeared and most of the whitewash has washed off the cairn of rocks.

FORM 528  
 (11-8-65)

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

**R**

NAME OF STATION: W.C. 17  
 ESTABLISHED BY: R.W.W. YEAR: 1925 STATE: Hawaii  
 RECOVERED BY: H.J. Seaborg YEAR: 1962 COUNTY: Maui Island: Molokai

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. A new description follows:

Station is located about 3-1/4 miles airline north-northeast of Laau Point, along the west coast of Molokai, on a brush-covered point, on shore bank. It is marked by a large cairn with a 10-foot 2 x 4 in the center. It has a good view of the ocean but heavy keawe growth blocks view in all directions inland.

To reach from the post office in Mauna Loa, go westerly on State Highway 46 for 0.25 mile to side road left. Go left for 1.0 mile to T-intersection. Turn right and go west 0.4 mile to fork. Take right fork west for 0.25 mile to station POHAYULOA. Continue west for 1.05 miles, cross wash and continue for 0.5 mile to locked gate. Pass through gate and continue for 0.4 mile to T-junction. Turn right and follow wide sand road for 2.9 miles to side road sharp left, just before reaching fork in main road. Go sharp left on track road for 0.3 mile to fork. Take left fork and keep ahead for 0.15 mile to fork. Take right fork, main road, and go 0.75 mile to a side road sharp left and end of truck travel. Pack southwest across open rocky area for about 250 yards to station behind brush at northwest end of the clearing.

**RECOVERY NOTE, TRIANGULATION STATION**

**R**

NAME OF STATION: W.C. 17  
 ESTABLISHED BY: R.W.W. YEAR: 1925 STATE: Hawaii BENCH MARK(S) ALSO   
 RECOVERED BY: R.L.N. YEAR: 1967 COUNTY: Maui  
 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: Island; Molokai

8 Miles west of Mauna Loa.

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

Station was recovered as previously described.  
 A hydrographic signal (12' Tripod) was built over station.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: W C 17  
 STATE: HAWAII YEAR: 1925 THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE	21° 08' 56.26	ELEVATION	METERS
GEODETIC LONGITUDE	157 17 27.71		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ OR $\Delta$ OR ANGLE
HI 2	5102	287,236.15	296,656.68	- 0 13 31

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From 1925)	PLANE AZIMUTH* (From 1925)	CODE
			QI 582



# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1069  
 HAWAII  
 LATITUDE 21 ° 00' TO 21 ° 30'  
 LONGITUDE 157 ° 00' TO 157 ° 30'  
 DIAGRAM NF 4-16 MAUI

## NO ORIGINAL TEXT

**Waieli** (Molokai Island, Hawaiian Government Survey 1885;  
 R. W. Woodworth, 1925).—Near southern coast of western Molokai, on  
 prominent hill of same name, 5 miles east of Laau Point and 1 mile back from  
 shore. In 1915 no center marks were found, and the point was reproduced from  
 reference marks which were crosses cut in immovable rock outcroppings. The  
 new mark is a concrete monument with bronze disk in top, note 6%. The distances  
 to the reference marks are: No. 1, 6.7 feet; No. 2, 4.2 feet; and No. 3, 10.76 feet.  
 The distances between the marks are: Nos. 1 to 2, 8.57 feet; Nos. 2 to 3, 14.08  
 feet; and Nos. 3 to 1, 15.57 feet.

WAIELI (Maui County, Hawaii, Hawaiian Government Sur-  
 vey, 1885; O.W.S., 1931) --Station  
 is on W Molokai. It was not visited. The highest point of moun-  
 tain was used for hydrography.

(Hawaiian Territorial Survey, 1932)--The original station of  
 1885 was replaced in 1915 by E.R. Hand with a concrete monument  
 with a brass disk in the top. The station is, at present, marked  
 with a Type B monument and is situated on a prominent hill of the  
 same name, 5 mi. E of Laau Point, and 1 mi. back from shore. Ref-  
 erence ties were verified and checked and found to be correct.

There is a triangulation sheet on this station in the H.T.S.  
 files.

WAIELI (Maui County, Hawaii, Hawaiian Government Sur-  
 vey, 1885; J.M.D., 1945)

--The station is soon to  
 be disturbed by quarrying operations by Libby, McNeil and Libby,  
 who are building roads at the W end of the island.

A new station, WAIELI 2, was established 319.76 ft. from the  
 station in azimuth 164°25'30".

(11-8-85)

### RECOVERY NOTE, TRIANGULATION STATION

**R**

NAME OF STATION: WAIELI  
 ESTABLISHED BY: U.S.C.S.  
 RECOVERED BY: H.J.S.

YEAR: 1885 STATE: Hawaii  
 YEAR: 1962 COUNTY: Maui

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

Station is destroyed. Station was not recovered as reported by D.H.R. in  
 1915 recovery note.

\* 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.—One of these forms must be used for every station recovered.

C. - DC 34314

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WAIELI  
 STATE: HAWAII YEAR: 1885 SECOND ORDER  
 SOURCE: G-SP156

GEODETIC LATITUDE	21 ° 06' 15.692	ELEVATION	171
GEODETIC LONGITUDE	157 14 20.440	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β OR Δ ° ANGLE
HI 2	5102	304,504.85	280,388.89	- 0 12 22

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE β OR Δ ° FORMULA NEGLECTING THE SECOND TERM

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

QI 566

# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1070  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

DEPARTMENT OF COMMERCE  
 U. S. COAST AND GEODETIC SURVEY  
 FORM 536  
 Rev. Aug. 1968

## DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: **WAIELI 2** STATE: **Hawaii** COUNTY: **MAUI**

CHIEF OF PARTY: **James M. Dunn** YEAR: **1945** Described by: **Office**

NOTE: HEIGHT OF TELESCOPE ABOVE STATION MARK 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		DIRECTION:
				feet	meters	O I M

The station is located near the southern coast of the west end of Molokai Island. It is about 5 miles east of Leau Point and 1 mile back from the shore. The mark is a Territorial Survey brass disk set in the top of a four inch cast iron pipe, two feet long, filled with concrete, and set in concrete.

Three reference marks were set as follows.

Reference mark No. 1 is marked by a cross on a cement block 15.75 feet away from the station, in azimuth 206 degrees 28 minutes.

Reference mark No. 2 is marked by a cross on cement filled in a hole in a large rock 19.06 feet away from the station, in azimuth 303 degrees 20 minutes.

Reference mark No. 3 is marked by a cross on a boulder 14.88 feet away from the station, in azimuth 59 degrees 34 minutes.

Reference mark No. 1 to Reference mark No. 2 : 26.14 feet

Reference mark No. 2 to Reference mark No. 3 : 28.92 feet

Reference mark No. 3 to Reference mark No. 1 : 29.02 feet

Form 526  
 (11-8-55)

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

**R**

NAME OF STATION: **WAIELI 2**  
 ESTABLISHED BY: **J.M.D.** YEAR: **1945** STATE: **Hawaii**  
 RECOVERED BY: **H.J.S.** YEAR: **1962** COUNTY: **Maui**

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

Station destroyed. A new station was established in the approximate location of WAIELI 1915 by a Territory of Hawaii survey party in 1945. This station was destroyed about 2 months ago when the top of the hill was graded. The area is now being excavated for gravel.

This station was replaced by **HALEMA 1962** which is located about 0.7 mile west.

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

COM-DC 343 14

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: **WAIELI 2**  
 STATE: **HAWAII** YEAR: **1945** THIRD ORDER

SOURCE: **G- 6566**

GEODETIC LATITUDE:	21° 06' 18.745	ELEVATION:	192 METERS
GEODETIC LONGITUDE:	157° 14' 21.347	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ ρ1 ANGLE *
HI 2	5102	304,820.12	280,697.24	- 0° 12' 22"

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE ϕ OR Δ ρ1 FORMULA NEGLECTING THE SECOND TERM.

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

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

QF 037

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 211572 STATION 1071  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

NO TEXT

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: **WAIELI**  
 STATE: **HAWAII** YEAR: **1914** ORDER: **THIRD**

SOURCE: **G-SP156**  
 NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21° 06' 19.35	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 14 24.51		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ OR $\Delta$ ANGLE °
HI 2	5102	304,520.84	280,759.36	- 0° 12' 23"

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

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

QI 598

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 211572 STATION 1072  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 30'  
 DIAGRAM NF 4-16 MAUI

SEE STATION HAUAKEA 2

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WALHUNA AERO BEACON RED LIGHT  
 STATE: HAWAII YEAR: 1962 THIRD ORDER

SOURCE: G-12734  
 NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21° 09' 54.145	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 07 54.359		FEET

STATE COORDINATES (FNM)				
STATE & ZONE	CODE	X	Y	$\theta$ OR $\Delta$ OR ANGLE*
HI 2	5102	341,520.67	300,292.99	- 0 10 04

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From north)	PLANE AZIMUTH* (From north)	CODE
POSITION DETERMINED BY TRAVERSE FROM STATION HAUAKEA 2			
QF 345			



# HORIZONTAL CONTROL DATA

by the  
 National Ocean Survey  
 OLD HAWAIIAN DATUM

QUAD 211572 STATION 1073  
 HAWAII  
 LATITUDE 21° 00' TO 21° 30'  
 LONGITUDE 157° 00' TO 157° 50'  
 DIAGRAM NF 4-16 MAUI

White (Molokai Island, R. W. Woodworth, 1925).—On southwest coast of Molokai, about 1½ miles west from Kolo Wharf, atop of the most prominent sand dune in the vicinity, 19 feet above and 15 meters back from high-water mark. No keawi trees grow within 8 meters of station. Mark is a standard United States Coast and Geodetic Survey bronze disk set in top of concrete post 6 inches square projecting 1 foot above surrounding sand. Reference marks, standard bronze tablets with arrows pointing toward station, note 12b, were placed in the immovable bedrock fringing the beach, the distance between the marks being 24.075 meters (78.99 feet). The distances between the station and the reference marks were measured on the slope, the station end of the tape being held 5 feet above the mark. Azimuths and distances were: No. 1, 22.605 meters (74.16 feet) (on slope), 320° 11'; No. 2, 24.078 meters (79.00 feet) (on slope), 28° 09'.

(11-8-85)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: WHITE  
 ESTABLISHED BY: R.W.W. YEAR: 1925 STATE: Hawaii  
 RECOVERED BY: H.J.S. YEAR: 1962 COUNTY: Maui

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

The station has been destroyed. The top 18 inches of the concrete post with disk was found broken off and lying on the surface of the sand. The sand had probably eroded away from around the post. A small section of the concrete post is still in place. Reference mark 1 was searched for but not recovered. Reference mark 2 was recovered in good condition. It is located about 41 feet from the base of the sand hill and is washed at mean high water.

The station could still be used for hydrographic surveys.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WHITE  
 STATE: HAWAII YEAR: 1925 THIRD ORDER  
 SOURCE: G-SP156

GEODETIC LATITUDE:	21° 05' 34.813	ELEVATION:	3	METERS
GEODETIC LONGITUDE:	157° 13' 18.828	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE °
HI 2	5102	310,724.44	276,243.63	- 0° 11' 59"

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

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

\* 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.