

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 - STATION 1001
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 50' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

ADJUSTED HORIZONTAL CONTROL DATA

FORM 576a
 (6-19-65)

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

R

NAME OF STATION: AHAINO
 ESTABLISHED BY: H.G.S. YEAR: 1889 STATE: Hawaii
 RECOVERED BY: H.J. Seaborg YEAR: 1962 COUNTY: Maui Island: Molokai

NAME OF STATION: AHAINO
 STATE: HAWAII YEAR: 1889 SECOND ORDER
 SOURCE: G-12734

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	

Station was recovered and found to be in good condition. The original redwood posts and witness crosses on stones were reported recovered by the Hawaii Territorial Survey in March 1930. At that time the station was re-marked and a concrete monument placed. A complete description follows: Station is located, airline, about 14 1/2 miles east of Kaunakakai, and 1 1/4 miles north-northwest of State Highway 45 and Kupeke Fishpond, on a brushy point of a ridge lying between Ahaino Gulch and Uluwini Gulch. Station elevation is about 1374 feet.

To reach from the junction of State Highways 45 and 46, just south of the Post Office in Kaunakakai, go easterly on State Highway 45 for 16.2 miles to sign on right "WAILAU TRAIL". Continue east on the highway for 1.3 miles to end of paved road at Kupeke Fishpond. Continue on the highway for 0.45 mile to a small red building on the right. Continue for 0.05 mile to a pipe gate on left, 100 yards before reaching small wooden bridge. This is end of truck travel. From here pack west-northwest across small pasture for about 150 yards to base of a brushy ridge. Follow old trail around right side of ridge and then up along top of ridge for about 1 mile to dense grove of large trees. Pass through grove and continue up ridge about 200 yards to station on brushy point.

Station mark is a Hawaii Territorial Survey bronze disk, unstamped, set in a concrete monument about 6 inches below ground surface. It is 15 yards southeast of a fence line crossing ridge. The Hawaii Territorial Survey has built a "Type B-1 Superstructure" over the station mark. This consists of a 6-foot-square, concrete and stone platform projecting about 4 inches above ground level and extending about 10 inches below ground. At the center of the platform, and over the station mark, there is a concrete pedestal 1 foot square at the base and projecting 2 feet above the platform. Through the center of the pedestal there is a 2-inch iron pipe, which allows an instrument to be plumbed over the mark and also serves as a socket for supporting a removable, red and white metal target that projects 8 feet above the platform. Access to the station mark is gained through a small depression, or tunnel, under the pedestal.

*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-P88

GEODETIC LATITUDE: 21° 05' 53.171	ELEVATION: 510 METERS
GEODETIC LONGITUDE: 156 48 04.767	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ ANGLE*
HI 2	5102	454,057.64	277,482.52	- 0 02 55

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

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

QF 324

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1003
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

U. S. COAST AND GEODETIC SURVEY
 FORM 582
 REV. AUG. 1968

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: HAUNAKO STATE: Hawaii COUNTY: Maui

CHIEF OF PARTY: C. T. Husemeyer YEAR: 1950 Described by: C. J. Hoepfel
 NOTE: HEIGHT OF TELESCOPE ABOVE STATION MARK 1.70 METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS.

OBJECT	BEARING	DISTANCE		DIRECTION:
		feet	meters	
KAHAKULOA (HGS) 1912	SW	18.833	5.741	00 00 00
		20.400	6.219	140 19 10
R. M. # 2	N			269 06 47
R. M. # 1				

The station is located on the crest of a low, brush covered, ridge which runs north and south and is eroded away to the red sandstone on its easterly side. It lies about 2.5 miles southeast of Nakalele Point, about 2 miles northwest of the village of Kahakuloa, about 0.8 mile south of the sea and about 100 yards north of a lone ironwood tree.

To reach from the intersection of Main and Market Streets, in the town of Wailuku, go northwest on the main traveled road for 14.5 miles; cross over a wooden bridge, in the village of Kahakuloa, and continue northwest for 1.05 miles; pass through a board gate into the Forest Reserve Area and continue westerly on the main traveled road for 1.0 mile; turn left and go across country, southwesterly, through the heavy brush, for 0.7 mile to the summit of a low sandstone saddle and the end of truck travel.

From this point pack northerly, along the crest of the ridge, past the lone ironwood tree, for about 200 yards to the high point of the ridge and the station.

The station is a standard disk, stamped HAUNAKO 1949, brazed to the top of a 2 3/8 inch iron pipe which projects about 4 inches.

Reference mark number 1 is a standard disk, stamped HAUNAKO NO 1 1949, brazed to the top of a 2 3/8 inch iron pipe which projects about 1 foot. It is located at about the same elevation as the station.

Reference mark number 2 is a standard disk, stamped HAUNAKO NO 2 1949, brazed to the top of a 2 3/8 inch iron pipe which projects about 1 foot. It is located about 2 feet lower than the station.

Form 526
 (11-9-55)

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

R

NAME OF STATION: HAUNAKO
 ESTABLISHED BY: C.T.H. YEAR: 1950 STATE: Hawaii
 RECOVERED BY: W.R.P. YEAR: 1960 COUNTY: Maui

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

The station and reference mark 1 were recovered in good condition as described. Due to heavy brush, Reference mark 2 was not recovered. The ironwood tree mentioned has slid partway down the sandstone bluff.

To reach the station from the wooden bridge in the village of Kahakuloa, continue north on State Highway 33 (Kahakilo Hwy) for 2.1 miles to a double board gate on left at an abandoned cattle guard. Secure the key for this gate from the Prison Camp at Olinda. Pass through the gate and parallel main road on jeep trail, turning south up draw to end of road. Then pack west up slope to summit and station.

(continued on next page)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HAUNAKO

STATE: HAWAII

YEAR: 1950

FIRST

ORDER

SOURCE: G- 9311

GEODETIC LATITUDE	21° 00' 24.256	ELEVATION	191.0 METERS
GEODETIC LONGITUDE	156 34 08.483		627 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE*
HI 2	5102	533,305.09	244,550.60	+ 0 02 06

* 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
KAHAKULOA	277 01 13.2	276 59 07	5102

QE 355

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

HAUNAKO (continued)

HORIZONTAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
OLD HAWAIIAN DATUM

QUAD 211563

STATION 1003

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

FORM 526a
(9-18-69)

U.S. DEPARTMENT OF COMMERCE
SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION HAUNAKO
ESTABLISHED BY C.T. Husemeyer YEAR: 1950 STATE: Hawaii
RECOVERED BY R.C. Munson YEAR: 1969 COUNTY: Maui
Island: Maui

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
KAHAKULOA (HGS) -----1950				00 00 00.0
R.M. No. 2	SW	18.833	5.741	140 19 10
R.M. No. 1	N	20.400	6.219	269 06 47
KAHAKULOA (HGS) 1882 ----1969				00 00 00.0
S 1950				46 15 06.2
R.M. No. 2	SW	18.837	5.742	140 18 29
R.M. No. 1	N	20.400	6.219	269 09 59

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

Station is located about 1-1/4 miles west-northwest of Kahakuloa Village and 2-1/4 miles southeast of Makalele Point Lighthouse, on a brush-covered point, at about 627 feet elevation, on the ridge along the east side of Honanana Gulch, and is about 2300 feet south of the old prison buildings that set along the road in the mouth of Honanana Gulch.

To reach station from the junction of Main and Market Streets in Wailuku, go north on Market Street, continuing on State Highway 33, for 3.6 miles to Waihee Village. Continue on the highway, which later becomes a winding, graveled road, for 10.8 miles to wooden bridge in Kahakuloa Village. Continue for 2.5 miles to corral on left. Go left, through gate, then left on old track road, gradually bearing to right, up draw, for 0.3 mile to end of truck travel. (Road is washed out and overgrown). Pack southerly along base of ridge about 1/2-mile to saddle. Go up onto ridge, then right along crest about 125 yards to station.

Station mark is a standard disk stamped "HAUNAKO 1949", set in the top of a 2-inch iron pipe that projects 1 inch from ground. It is 21 feet west of edge of bluff, 30 feet north of highest point of hill and in dense brush.

Reference mark number one is a standard disk stamped "HAUNAKO NO 1 1949", set in the top of a 2-inch iron pipe that projects 1 foot from ground, and is 14 inches lower than station mark.

Reference mark number two is a standard disk stamped "HAUNAKO NO 2 1949", set in the top of a 2-inch iron pipe that projects 8 inches from ground and is at about same elevation as 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 27178-P89

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 211563 STATION 1004
 HAWAII
 LATITUDE 21 ° 00' TO 21 ° 30'
 LONGITUDE 156 ° 30' TO 157 ° 00'
 DIAGRAM NF 4-16 MAUI

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HAUPU

STATE: HAWAII

YEAR: 1929

SECOND ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 ° 10' 11.737	ELEVATION:	512	METERS
GEODETIC LONGITUDE:	156 53 27.411	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta \text{ OR } \Delta \text{ OR } \text{ANGLE}^*$
HI 2	5102	425,583.78	303,907.65	- 0 04 52

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE $\theta \text{ OR } \Delta \text{ OR } \text{ANGLE}^*$ FORMULA NEGLECTING THE SECOND TERM.

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

QI 534

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1005
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

Haweā (Maui Island, Hawaiian Government Survey, 1882; J. C. Gauger, 1912).—On northwest coast of West Maui, in the Kaanapali District, on Haweā Point, about 30 meters northeast of Haweā Point Light. Marked by a redwood fence post projecting 4 feet above the ground. Haweā Point Light is distant 29.56 meters (97.0 feet) in azimuth 54° 30'.

DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY
 FORM 533
 (Rev. Feb. 1968)

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: Haweā
 ESTABLISHED BY: H.G.S. YEAR: 1882 STATE: Hawaii
 RECOVERED BY: C.T. Husemeyer YEAR: 1950 COUNTY: Maui

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

The station was recovered.
 The redwood post has rotted away but the concrete base for the post remains. The square hole in the concrete was filled with concrete and a standard disk stamped HAWEA 1912 was placed in the exact center of the hole. The block projects four inches above the ground.
 Reference mark No.1 is west of the station. A standard disk set in boulder projecting 2 inches above the ground, stamped HAWEA NO 1 1949.
 Reference mark No.2 is southeast of the station. A standard disk set in a boulder projecting 4 inches above the ground. Stamped HAWEA NO 2 1949.

OBJECT	DISTANCE	DIRECTION
	feet meters	
MALO 2		0 00 00.0 ✓
R.M.No.2 ✓	SE 24.03 ✓ 7.326 ✓	85 03 55.6 ✓
R.M.No.1 ✓	W 31.86 ✓ 9.710 ✓	212 10 44.4 ✓
Haweā Point Light SW ✓	97.18 ✓ 29.619 ✓	180 39 55.8 ✓

To reach from the court house in Lahaina: go northeasterly on main coast highway for 10.4 to power pole No. 260T, turn left through locked board gate and go 0.2 miles, turn right, pass to right of circle and go east 0.1 miles to light house and station.

(continued on next page)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HAWEA
 STATE: HAWAII YEAR: 1882 FIRST ORDER
 SOURCE: G- 9311

GEODETIC LATITUDE: 21 00 23.155	ELEVATION: 15.6 METERS
GEODETIC LONGITUDE: 156 40 08.423	64 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ OR ANGLE
HI 2	5102	499,201.94	244,469.35	- 0 00 03

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
MANINI	347 52 39.0	347 52 42	5102

QE 360

HORIZONTAL CONTROL DATA

by the
 NATIONAL GEODETIC SURVEY
 OLD HAWAIIAN DATUM

QUAD 211563

STATION 1005

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

HAWEA (continued)

ORM 526e
 (9-18-69)

U.S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: **HAWEA**
 ESTABLISHED BY: **HGS** YEAR: **1882** STATE: **Hawaii**
 RECOVERED BY: **R.C. Munson** YEAR: **1969** COUNTY: **Maui**
 Island: **Maui**

HEIGHT OF TELESCOPE ABOVE STATION MARK **1.51** METERS, HEIGHT OF LIGHT ABOVE STATION MARK METERS.
 DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
MANINI (HGS) 1882 -----1950 DISTANCE and DIRECTION-----				00 00 00.0
R.M. No. 1	W	31.86	9.710	98 01 46.8
R.M. No. 2	SE	24.03	7.326	330 54 58.0
MANINI (HGS) 1882 -----1969 DISTANCE and DIRECTION-----				00 00 00.0
Puukolii, Cent. Pwr. Co. stack, 1950	SSW			30 56 05.6
Hawea Point Light, 1912	SW	97.125	29.604	66 30 12.2
R.M. No. 1	W	31.839	9.705	98 02 36
R.M. No. 2	SE	24.029	7.325	330 53 10

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

Station is located about 9 miles north of Lahaina and 3/4-mile west-northwest of Honokohua Village, on Hawea Point, 97 feet northeast of Hawea Point Light.

To reach station from the post office in Lahaina, go northeast on Papalaua St. for 0.2 mile; turn left and follow State Highway 30 north-

west for 4.2 miles to Lahaina Airport on left. Continue ahead for 5.0 miles to macadam fork. Take left fork, main highway, and go 0.25 mile to locked board gate on left, at telephone pole No. 2601. (key was obtained at the pineapple company office in Honokohua Village). Pass through gate and follow track road 0.2 mile to T-junction. Turn right and go 0.1 mile to station.

Station mark is a standard disk stamped "HAWEA 1912", set in the top of a 16-inch-square, concrete monument that projects 3 inches above ground. It is in open grassy area, 15 feet west of center line of track road, 97.2 feet northeast of center of Hawea Point Light and 3 feet west of a white witness post.

Reference mark number one is a standard disk stamped "HAWEA NO 1 1949", cemented in a drill hole in bedrock that projects 2 inches above ground. It is at north edge of a naupaka brush patch and 0.8 foot lower than station mark.

Reference mark number two is a standard disk stamped "HAWEA NO 2 1949" cemented in a drill hole in a 16-inch bedrock outcrop projecting 4 inches above ground. It is 10 feet east of center line of track road and 4 inches higher 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.

USCOMMA-DC 27173-P88

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 211563 STATION 1006
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

SEE STATION HAWEA

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

(11-8-55)

NAME OF STATION: **Hawea Point Light**
 ESTABLISHED BY: **J.C.G.** YEAR: **1912** STATE: **Hawaii**
 RECOVERED BY: **H.J.S.** YEAR: **1961** COUNTY: **Maui**

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

This lighted aid to navigation is shown in the Light List, Pacific Coast, 1960 as "No. 2944 - White pyramidal skeleton tower, built 1911", was recovered in conjunction with the recovery of HAWEA (HGS) 1912 to which it is connected by traverse.

R

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: **HAWEA POINT LIGHT**
 STATE: **HAWAII** YEAR: **1912** THIRD ORDER

SOURCE: **G- 9511**

GEODETIC LATITUDE: 21° 00' 22.594	ELEVATION: _____ METERS
GEODETIC LONGITUDE: 156 40 09.257	_____ FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE*
HI 2	5102	499,122.92	244,412.75	- 0° 00' 03"

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

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

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

QE 420

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

COM-DC 34314

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211503 STATION 1007
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

Honokahau (O) (Maui Island, Hawaiian Government Survey, 1882).—On the northern shore of West Maui, Kaanapali District, land of Honokahau, on a bluff near the northernmost point of the island. Mark, no record.

DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY
 FORM 536
 (REV. Feb. 1943)
RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: HONOKAHAU - O
 ESTABLISHED BY: Hawaiian Govt. / YEAR: 1882 / STATE: Hawaii
 RECOVERED BY: G. T. Husemeyer / YEAR: 1950 / COUNTY: Maui

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

The original station was not recovered. A new station, stamped HONOKAHAU 2 1949, was established about 70 feet (computed) from the location of the original station. Two days was spent in searching for the original station.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOKAHAU-O
 STATE: HAWAII YEAR: 1882 THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 01 54.97	ELEVATION:	95	METERS
GEODETIC LONGITUDE:	156 35 58.26	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ (R Δ O) ANGLE*
HI 2	5102	522,900.23	253,737.65	+ 0 01 27"

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

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

QD 004

* 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.
 10-56420-9

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1008
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY
 FORM 853
 Rev. Aug. 1962

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: HONOKAHAU 2 STATE: Hawaii COUNTY: Maui

CHIEF OF PARTY: C. J. Husemeyer YEAR: 1950 Described by: C. J. Husemeyer

NOTE*	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 meters	DIRECTION‡
1a	Surface-station mark					
7a	Underground-station mark	1.73				
11a	MAKALOA (HGS) 1912				00.00 00	
11a	R. L. No. 1		S	51.805 15.790	60 36 03	
11a	Azimuth mark 0.3 mile		SSW		104 18 19.3	
11a	R. L. No. 2		W	69.951 21.321	149 02 23	
	Makalele Point Lighthouse 0.3 mile		E		329 28 42.1	

The station is located on Kanouou Point, about 4.5 miles northeast of the Honokahau School, about 0.3 mile west of Makalele Point Lighthouse, 55 feet northeast of a long row of ironwood trees and about 12 feet southwest of the sea bluff.

To reach from the courthouse in Lahaina; go northeast, on the paved coast highway for 10.75 miles; pass the Honokahau School and continue straight ahead, northerly, for 5.9 miles; take the left hand fork and go up grade for 0.15 mile; take the left hand fork and follow along the westerly side of a pineapple field for 0.35 mile (The azimuth mark is 40 feet northwest of this point); continue straight ahead, northeasterly, for 0.4 mile; turn left and go westerly, keeping to the left hand side of a row of ironwood trees, for 0.7 mile to the station.

The station is a standard disk, stamped HONOKAHAU 1949, set in the top of a square concrete post which projects about 1 inch.

The underground station is a standard disk, stamped HONOKAHAU 1949, set in an irregular mass of concrete 30 inches below the surface of the soil.

Reference mark number 1 is a standard disk, stamped HONOKAHAU NO 1 1949, set in the top of a square concrete post which projects about 4 inches. It is located just northeast of a row of ironwood trees and about 3 feet lower than the station.

Reference mark number 2 is a standard disk, stamped HONOKAHAU NO 2 1949, set in the top of a square concrete post which projects about 4 inches. It is located just northeast of a row of ironwood trees and about 4 feet lower than the station.

The azimuth mark is a standard disk, stamped HONOKAHAU 1949, set in the top of a square concrete post which is flush with the surface of the ground. It is located about 0.3 mile south southwest of the station, 40 feet northwest of the center of a dirt road and 1 foot west of the concrete foundation of a thermometer housing.

A 3 inch galvanized iron pipe set in concrete was recovered. This was tied off and the new station set at the same location. Computations show this was not the original station.

* 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. 16-5022-1 U. S. GOVERNMENT PRINTING OFFICE

(continued on next page)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOKAHAU 2

STATE: HAWAII YEAR: 1950 FIRST ORDER

SOURCE: G-9311

GEODETIC LATITUDE: 21° 01' 55.982	ELEVATION: 52.9 METERS
GEODETIC LONGITUDE: 156° 35' 59.558	305 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β OR Δ OR ANGLE*
HI 2	5102	522,777.22	253,835.70	+ 0° 01' 26"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
AZIMUTH MARK 1950	44° 10' 34.6	44° 09' 08"	5102
AZIMUTH MARK 1969	47° 24' 58.4	47° 23' 32"	5102

QE 357

HORIZONTAL CONTROL DATA

by the
 NATIONAL GEODETIC SURVEY
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1008

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

HONOKAHAU 2 (continued)

FORM 524a
 (8-11-68)

U. S. DEPARTMENT OF COMMERCE
 AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: HONOKAHAU 2
 ESTABLISHED BY: C.T. Husemeyer YEAR: 1950 STATE: Hawaii
 RECOVERED BY: R.C. Munson YEAR: 1969 COUNTY: Maui
 Island: Maui

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.74 METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS.

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
KAHAKULOA (HGS) 1882				00 00 00.0
R.M. No. 1	S	51.794	15.787	60 36 54
Azimuth Mark 1950 1969	SW	0.4	mile	107 32 42.5
R.M. No. 2	W	69.937	21.317	149 01 33.1
Nakalele Point Light 1950	E			329 28 41.5

Station mark and both reference marks were recovered in good condition. The azimuth mark was not found and is believed destroyed. The station mark was found under a 14-inch cover of dirt and sod, so a new surface mark was set above it. A new azimuth mark was also established and a witness post was set. A complete description follows:

Station is located about 4 miles northeast of Honokahua Village and 1/2-mile west of Nakalele Point Lighthouse, on the north edge of the northernmost pineapple field on the island, at about 305 feet elevation, in a narrow, long, grassy strip between edge of bluff and the row of

ironwood trees bordering the pineapple field.

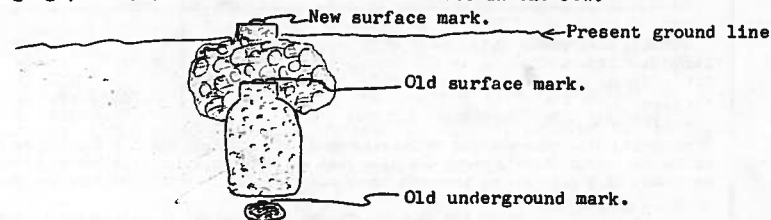
To reach station from the post office in Lahaina, go northeast on Papalaua Street for 0.2 mile; turn left and go north on State Highway 30 for 15.8 miles to the Honokahau Stream bridge. Continue, upgrade, for 0.35 mile to side road right. Go right for 0.2 mile; take left fork and go 0.1 mile to top of grade. Continue ahead, along left edge of pineapple field, for 0.25 mile; take right fork, crossing field, for 0.1 mile to azimuth mark on left, at southeast end of ironwood tree row. Continue, along edge of gulch, for 0.15 mile to fork; take right fork and follow diagonal road across field for 0.3 mile to wide gap in ironwood trees, and station 50 feet beyond.

Station mark is a standard disk stamped "HONOKAHAU 2 1950 1969", set in the top of a 10-inch-square, concrete monument that projects 6 inches from ground. It is 10 feet southwest from edge of bluff, 65 feet northeast of pineapple field perimeter road, 60 yards northwest of a large, deep, drainage chute running out from field, and 3 feet northeast of a white witness post.

Reference mark number one is a standard disk stamped "HONOKAHAU NO 1 1949", set in the top of a 10-inch-square, concrete monument that projects 2 inches from ground. It is in the northeast edge of the ironwood row, 33 feet northeast of pineapple perimeter road and 1-1/2 feet lower than station mark.

Reference mark number two is a standard disk stamped "HONOKAHAU NO 2 1949", set in the top of an 8 x 10-inch concrete monument that projects 2 inches from ground. It is at the northwest edge of the gap in ironwood row, 26 feet northeast of edge of pineapple field perimeter road and 5.9 feet lower than station mark.

Azimuth mark is a standard disk stamped "HONOKAHAU 2 1950 1969", set in the top of a 10-inch-square, concrete monument that projects 8 inches from ground. It is at the south end of a deep gulch, and in the southeast end of a row of ironwood trees; 17 feet north of center line of pineapple field perimeter road, 280 feet south-southwest of a rain gauge, and 3.5 feet northwest of first tree in the row.



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

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

USCOMMA-DC 27172-P88

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1009
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

Honomuni (Molokai Island, Hawaiian Government Survey; E. R. Hand, 1915; R. W. Woodworth, 1925).—On southeast coast of Molokai, on Honomuni Point, a flat grassy point about 1½ miles east from Pukoo Wharf. An isolated clump of lauhala trees very plainly marks this point. Station is on fence line, about 40 meters back from high-water mark. From the small conical unpainted steeple close to and just below the government road the station bears N. 68° E., 410 meters; from the nearer of the two red houses on the beach and belonging to Bowen it bears S. 35° W., 475 meters; and from the cottage of Kiohinu (a native) it bears S. 30° E., 100 meters. Subsurface mark is a bottle. Surface mark is a concrete monument with standard United States Coast and Geodetic Survey bronze disk, note 6½.

HONOMUNI (Maui County, Hawaii, E.R.H., 1915; O.W.S., 1931)
 --Station is on the S coast of Molokai Island. It was recovered as described. The Territorial Government has remarked the station according to Note 14 B.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: HONOMUNI
 ESTABLISHED BY: E.R.H. YEAR: 1915 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 was recovered in good condition.

Station is located about 7 miles northeast of the wharf at Karalo, about 0.2 mile south of State Route 45, and about 40 meters north of the high water line. Station is in the southeast corner of a pasture, about 7 feet west of a fence line. A standard station disk, unstarred, and set in the top of a concrete post. A Territory of Hawaii Type B1 structure is built over the station. The visibility from the station is obstructed in all directions except to the north.

To reach the station from the junction of State Routes 45 and 46 at the post office in Kaunakakai, go 20.8 miles southeast on State Route 45 to drive on right, turn right and go about 0.1 mile south to house on left and gate in fence line on right, turn right and follow fence line south about 0.1 mile to station.

* 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: HONOMUNI
 STATE: HAWAII YEAR: 1915 SECOND ORDER
 SOURCE: G-12754

GEODETIC LATITUDE: 21° 05' 12.037	ELEVATION SCALED: 2 METERS
GEODETIC LONGITUDE: 156 46 41.077	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE *
HI 2	5102	462,019.52	273,628.90	- 0 02' 24"

* 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

QF 522

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 211563 STATION 1010
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

ADJUSTED HORIZONTAL CONTROL DATA

Form 526
 (11-8-55)

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

R

NAME OF STATION: HONOULI
 ESTABLISHED BY: E.R.H. YEAR: 1915 STATE: Hawaii
 RECOVERED BY: H.J. Seaborg YEAR: 1962 COUNTY: Maui
 Island: Molokai

NAME OF STATION: HONOULI
 STATE: HAWAII YEAR: 1915 SECOND ORDER

SOURCE: G-SP156

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 recovered. A description obtained from the Hawaii State Surveyor's Office describes the station as having been a 3 x 4 redwood post referenced by crosses on 3 stones. It also states that the station was searched for in 1933 and reported destroyed when the field was ploughed for pineapple planting. The hill is now used for pasture land. The station is believed to be lost.

GEODETIC LATITUDE:	21° 07' 57.299	ELEVATION:	237	METERS
GEODETIC LONGITUDE:	156 44 51.106	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE*
HI 2	5102	472,440.81	288,278.69	- 0° 01' 45"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ OR Δ OR θ 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. COMB-DC 34314

QI 501

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 211563 STATION 1011
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HUMU

STATE: HAWAII

YEAR: 1925

THIRD

ORDER

SOURCE: G-SPI56

GEODETIC LATITUDE:	21 10' 14.66	ELEVATION:	METERS
GEODETIC LONGITUDE:	156 48 32.13		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β OR Δ OR ANGLE
HI 2	5102	451,530.53	304,170.29	- 0 03 05

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

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

Q1 524

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 211563 STATION 1012
 HAWAII
 LATITUDE 21 ° 00' TO 21 ° 30'
 LONGITUDE 156 ° 30' TO 157 ° 00'
 DIAGRAM NF 4-16 MAUI

Form 526
 (11-8-85)

U. S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY
 DESCRIPTION OF TRIANGULATION STATION

R

NAME OF STATION: IRON PIPE NR STA MAKAKUPAIA 2
 ESTABLISHED BY: H.J. Seaborg 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:

Only description available was one obtained from the State of Hawaii Survey Office, which stated that the station was marked by a redwood post and referenced by 3 crosses on stones.

Station and two of the crosses were recovered. The station is now marked by a 1-inch iron pipe that projects 2-1/2 feet above ground. The cross to west of station has apparently been destroyed by bulldozer work. A check of the measurements to the two crosses indicates a misplacement of the pipe by about 10 inches. Because the station is in a bulldozer road a new station, MAKAKUPAIA 2, was established in a safer location about 18 feet south-southeast. See description for that station.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: IRON PIPE NR STA MAKAKUPAIA 2
 STATE: HAWAII YEAR: 1962 SECOND ORDER

SOURCE: G-12734
 NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE	21 ° 06' 58.892	ELEVATION	756
GEODETIC LONGITUDE	156 57 11.341	SCALED	METERS FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ OR ANGLE *
HI 2	5102	402,355.05	284,484.59	- 0° 06' 12"

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

* 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. COGS-DC 34314

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
POSITION DETERMINED BY TRAVERSE FROM STATION MAKAKUPAIA 2			

QF 331

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 41563 STATION 1013
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

Kaapahu (Maui County, Hawaii, R. W. Woodworth, 1925).—In southeastern part of Molokai, on a prominent knob atop a high ridge which runs due north from Kamalo, rising between the deep valleys of Kamalo and Kapualei. Marked by a 4 by 4 inch redwood post, over which is a 6-foot cairn of stones. From Kamalo this cairn is readily distinguishable without the aid of glasses.

KAAPAHU (Maui County, Hawaii, R.W.W., 1925; O.W.S., 1930).—Station is located on the S coast of Molokai Island. It was observed on from ONINI. Cairn was seen. There appeared to be a pole in the center of the cairn.

COAST AND GEODETIC SURVEY
RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: KAAPAHU
 ESTABLISHED BY: R.W.W. YEAR: 1925 STATE: Hawaii
 RECOVERED BY: H.L. Seeborg YEAR: 1952 COUNTY: Maui Island: Molokai

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		DIRECTION			
		FEET	METERS				

Station was recovered and the cairn found to have been removed and the station marked by an iron pipe which is solid but is bent horizontal with the ground. A complete description follows:

Station is located, airline, about 9 miles east of Keunakakai, and 3 miles north of Kamalo Wharf, on the south slope of a prominent bare topped mountain of about 3250 feet elevation that lies between the deep, rugged valleys of Kamalo and Kapualei, and is at the head of a steep narrow ridge.

To reach from the junction of State Highways 45 and 46, just south of the post office in Keunakakai, go east on State Highway 45 for 10.2 miles to a side road left. 30 yards after crossing a large concrete culvert and 0.55 mile before reaching Kamalo Wharf. Turn left, through gate, and go 0.05 mile; turn left into dry wash, then go right northerly up wash for 0.1 mile to end of truck travel. Pack northerly up dry wash for about 1-1/4 miles to where it comes near the west side of the point of the ridge on the right. Go east, out of wash, and climb up to top of ridge, then follow along top of ridge about 1-3/4 miles to top of the prominent dome top and station.

Station mark is a 1-1/2 inch iron pipe set into the ground. It is bent to a horizontal position.

Two reference crosses were recovered. The east-northeast cross is 1-1/2 feet from station. West-northwest cross is 4 feet from station.

An old redwood post and a large metal cylinder target are laying on the ground near station, as well as several old target poles.

*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-OC 27179-P89

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KAAPAHU
 STATE: HAWAII YEAR: 1925 SECOND ORDER
 SOURCE: G-SP156

GEODETIC LATITUDE: 21° 05' 40.308	ELEVATION: 1059 METERS
GEODETIC LONGITUDE: 156 52 53.709	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	# HOR Δ ◊ ANGLE *
HI 2	5102	426,736.44	276,517.44	- 0 04 39

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE # HOR Δ ◊ 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 211563 STATION 1014
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

Kahakuloa (Maui Island, Hawaiian Government Survey, 1882; J. C. Gauger, 1912).—On northeast coast of West Maui, in Kaanapali District, on the summit of Koae, the conspicuous hill forming Kahakuloa Point. The station is a trifle below and about 5 meters westward from the highest point on the hill. Marked by a 2-inch galvanized iron pipe filled with concrete and projecting 1 foot above the surface. A cairn of stones was built over the point. This is presumably the station established by the Hawaiian Government Survey in 1882, though the present marking is of much more recent date.

RECOVERY NOTE, TRIANGULATION STATION

DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY
 FORM 528
 (Rev. Feb. 1968)

NAME OF STATION: **Kahakuloa** STATE: **Hawaii** COUNTY: **Maui**
 ESTABLISHED BY: **Hawaiian G.S.** YEAR: **1882** LOCALITY: **Kaanapali**
 RECOVERED BY: **V.S.Seward** YEAR: **1929**

Detailed statement as to the fitness of the original description: Original description good.
 Original mark replaced by a 3 inch pipe filled with concrete and 1 foot above the ground.

New Mark: Standard Type B Hawaii Territory Survey Triangulation Station Monument.

RECOVERY NOTE, TRIANGULATION STATION

DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY
 FORM 528
 (Rev. Feb. 1968)

NAME OF STATION: **KAHAKULOA** STATE: **Hawaii**
 ESTABLISHED BY: **H.G.S.** YEAR: **1882**
 RECOVERED BY: **C.T.Husemeyer** YEAR: **1950** COUNTY: **Maui**

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 as described.
 To reach from the Post Office at Kahului: go northeast on coast road toward Kahakuloa Village for 14.7; turn right into saddle between two prominent hills and go 0.05 miles to foot of hill on left. From here peak northwest to top of sharp point and station.

OBJECT	DISTANCE	DIRECTION
HAK 1912	miles 0 00 00.00	
Nakalele Point Light House	3.5	170 14 23.42

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: **KAHAKULOA** STATE: **Hawaii** BENCH MARK(S) ALSO
 ESTABLISHED BY: **HGS** YEAR: **1882**
 RECOVERED BY: **R.C. Munson** YEAR: **1969** COUNTY: **Maui**
 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: **Island: Maui**

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 about 8 miles north-northwest of Wailuku and 1/2-mile northeast of Kahakuloa Village, on Kahakuloa Head, a prominent, steep-sided, rocky promontory of about 636 feet elevation.

To reach station from the junction of Main and Market Streets in Wailuku, go north on Market Street (also State Highway 33) for 3.6 miles to Waihee Village. Continue on the highway for 10.3 miles to hill on right, in pasture. Pack northerly, across pasture, and up steep hill, about 1/4-mile to station.

Station is marked with a Type B signal, and a red and white metal target extends about 7 feet above the concrete platform.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: **KAHAKULOA**
 STATE: **HAWAII** YEAR: **1882** FIRST ORDER

SOURCE: **G- 9311**

GEODETIC LATITUDE: 21° 00' 15.574	ELEVATION: 193.8 METERS
GEODETIC LONGITUDE: 156 32 53.455	65c FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ or ANGLE
HI 2	5102	540,414.41	243,719.45	+ 0° 02' 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
HAK	313 12 03.8	313 09 31	5102

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1015
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY
 FORM 835
 Rev. Aug. 1962

DESCRIPTION OF TRIANGULATION STATION

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

NOTE*	HEIGHT OF TELESCOPE ABOVE STATION MARK	1.44 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		DIRECTION †
			feet	meters	° ' "
	MAPULEHU 1915				00 00 00.00
	RM No.1	S	23.33	7.113	28 33 45-
	RM No.2	N	22.04	6.718	207 40 36-

Detailed description here

Station is located, airline, about 13 miles east of Kaunakakai, 2 miles west-northwest of Kupeke Fishpond and 1 mile north-northwest of State Highway 45, at an elevation of about 1400 feet on a steep, bare slope that lies on the west side of Mapulehu Stream. It is about 1/2 mile south of the point where Kahau Gulch and Kapuna Gulch converge into Mapulehu Stream, and 150 yards south of north point of pasture, where a fence line converges with the northeast rim of the slope.

To reach from the junction of State Highways 45 & 46, just south of the post office in Kaunakakai, go east on State Highway 45 for 16.2 miles to a sign on right, "WAILAU TRAIL", opposite a board gate and side road left. Go left, through gate and go north for 0.1 mile to fork opposite the north one of two barns. Take dim left fork and go 0.05 mile to old gate under trees. Pass through gate and follow steep jeep road up slope for 0.6 mile to old gate. Pass through gate and

continue for 0.3 mile to wash. Detour up to right around wash and then continue on road, winding upgrade, for 0.6 mile to fence line. Turn right and follow washed out road northerly upgrade for 0.45 mile to T-fence junction with board gate in the east-west fence, and station.

Station mark is a standard disk, stamped "KAHAU 1962", brazed to the top of a 1-1/2-inch iron pipe that is set in cement and projects 4 inches above ground. It is 48.3 feet north-northwest of a triangle base on the T-fence junction post and 2.6 feet east-northeast of the fence line.

Reference mark one is a standard disk stamped "KAHAU NO 1 1962", brazed to the top of a 1-inch iron pipe that is set in cement and projects about 4 inches above ground. It is 2-1/2 feet east-northeast of the fence line, 26 feet north-northwest of the T-fence junction and about 5 feet lower than station.

Reference mark two is a standard disk stamped "KAHAU NO 2 1962", brazed to the top of a 1-inch iron pipe that is set in cement and projects about 4 inches above ground. It is 2-1/2 feet east-northeast of fence line and about 4-1/2 feet higher than the station.

Station MAPULEHU 1925 will serve as the azimuth mark.

NOTE: A 4-wheel-drive vehicle is required to drive to station.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KAHAU
 STATE: HAWAII YEAR: 1962 SECOND ORDER
 SOURCE: G-12734

GEODETIC LATITUDE: 21° 05' 08.769	ELEVATION: 421 METERS
GEODETIC LONGITUDE: 156° 49' 22.241	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ #1 ANGLE *
HI 2	5102	440,757.55	273,312.00	~ 0 35 22 "

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
MAPULEHU	312 33 15.5	312 36 38	5102

QF 325

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1016
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

ADJUSTED HORIZONTAL CONTROL DATA

DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY
 Form 523
 Rev. Aug. 1963

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: **KAHIO** STATE: **Hawaii** COUNTY: **MauI**

CHIEF OF PARTY: **Harold J. Seaborg** YEAR: **1962** Described by: **R.F. Hanson**

HEIGHT OF TELESCOPE ABOVE STATION MARK: **1.36 METERS.1** 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			
		OBJECT	BEARING	DISTANCE	
			feet	meters	
12c		PUU KAPELE (HQS) 1885.	N 25.03	7.630	00 00 00.00
12c		RM 1	S 20.26	6.177	274 31 28
		RM 2	S (0.25 mile)		293 56 46.2
		Molokai Lighthouse			

Detailed description:

Station is located on the north tip of Lakanalua Peninsula, about 1-3/4 miles north-northeast of the village of Kalaupapa and about 250 yards east-northeast of the northeast end of the Kalaupapa airport, at the northwest corner of a small clear area.

To reach from the Coast Guard headquarters about 1/4 mile southeast of the Kalaupapa airport office, go 0.1 mile to a cattleguard. Cross cattleguard and go right for 50 yards along fence to corner. Turn right and go east on track road for 0.15 mile to cattleguard, on left 1 of 3 forks. Cross cattleguard and go 0.05 mile to fork. Take dim left fork and go 0.05 mile to small clear area. Turn sharp left and go 30 yards to station on right.

Station mark is a standard disk stamped "KAHIO 1962", cemented in a drill hole in a 2 x 4-foot, black lava outcrop that projects 10 inches above ground. It is 50 yards west of an old stone house and stone wall on the northeast point, and 15 yards south of edge of bluff.

Reference mark number one is a standard disk stamped "KAHIO NO 1 1962", cemented in a drill hole in a 4 x 8-foot black lava outcrop that projects 1 foot above ground. It is about 1-1/2 feet higher than the station.

Reference mark number two is a standard disk stamped "KAHIO NO 2 1962", cemented in a drill hole in a 16-inch-diameter, bedrock outcrop that projects 8 inches above ground. It is at the south edge of the clearing and about 1 foot lower than the station.

Station KAUHAKO will serve as the azimuth mark.

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: **KAHIO** BENCH MARK(S) ALSO

ESTABLISHED BY: **H. J. Seaborg** YEAR: **1962** STATE: **Hawaii**

RECOVERED BY: **R. L. Newsom** YEAR: **1969** COUNTY: **MauI**

AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

1 2/3 NMI northeast of Kalaupapa

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

Station and Reference Marks No. 1 and No. 2 were recovered in apparent same condition as described in the original description. Reference Mark No. 2 was apparently battered and inclined when set. Stampings on all marks were deepened as necessary.

NAME OF STATION: **KAHIO** YEAR: **1962** SECOND ORDER

STATE: **HAWAII**

SOURCE: **G-12734**

GEODETIC LATITUDE:	21° 12' 56.865"	ELEVATION	b	METERS
GEODETIC LONGITUDE:	156° 58' 17.756"	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE *
HI 2	5102	396,132.62	320,614.27	- 0 36 37

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
PUU KAPELE	80 34 20.0	80 40 57	5102

QF 310

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1018
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

Kalanikaula (Maui County, Hawaii, E. R. Hand, 1915).—On the eastern shore of Molokai, on highest point of a well defined, grassy hill above and southeast of the village of Halawa. This hill shows up from the sea as a knob at the right end of a ridge trending south-southwest. There is a large kukui grove (light green) on this ridge, seen from the sea. It is about 200 meters from the station, and bears south-southwest. Station marked underground by a bottle. Surface mark is standard disk in concrete monument described in note 6½.

(11-9-65)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: KALANIKAULA
 ESTABLISHED BY: E.R.Hand YEAR: 1915 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 and found to be in good condition, new description follows:
 Station is located, airline, about 3/4 mile east of the village of Halawa and 1 mile west of the extreme east tip of Molokai Island on the summit of a prominent hill on property of the Puu O Hoku Ranch. This hill is about 795 feet in elevation and is covered by a dense growth of ironwood trees about 25 feet high.

To reach station from the Puu O Hoku Ranch headquarters, about 1 mile southeast of Halawa, go northeasterly on field road for 0.55 mile to a board gate. Pass through gate and continue for 0.25 mile. Go left, leaving the road, and go 0.05 mile to fence corner at base of hill. Cross fence and walk northerly through trees for about 200 yards to top of hill and station.

Station mark is a standard Territory Survey disk unstamped, set in the top of an 8-inch-square, concrete monument that projects about 1 foot above ground. It is about 10 yards southeast of a fence line.

View is obstructed in all directions by the trees.

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

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KALANIKAULA
 STATE: HAWAII YEAR: 1915 SECOND ORDER
 SOURCE: G-SP156

GEODETTIC LATITUDE:	21 09 26.348	ELEVATION:	242	METERS
GEODETTIC LONGITUDE:	156 43 44.892	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE *
HI 2	5102	478,713.66	299,278.32	- 0 01 21

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

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

Q1 505

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1020
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

FORM 526a
 (9-18-69)

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

R

NAME OF STATION: KALAWAO
 ESTABLISHED BY: HCS YEAR: 1890 STATE: Hawaii Island: Molokai
 RECOVERED BY: Harold J. Seaborg YEAR: 1962 COUNTY: Maui

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
PUU KAPELE (HGS) 1885				00 00 000
RM 1	NE	18.76	5.717	126 05 27-
RM 2	SSW	18.26	5.566	319 02 15-

Only description available was one obtained from the State of Hawaii Survey office, which stated that the original station mark was a large tripod signal, referenced by 3 crosses on stones. Station was recovered and found to be marked with a U.S. Navy hydrographical survey bronze disk. Only 1 of the 3 crosses on stones was recovered. A complete description follows:

Station is located near the north tip of Lakanalua Peninsula, at the site of the U.S. Coast Guard lighthouse, about 1-1/2 miles northeast of the village of Kalaupapa, on a low, rocky knoll of 105 feet elevation.

To reach from the Coast Guard headquarters, about 1/4 mile southeast of the Kalaupapa airport office, walk easterly on concrete sidewalk up slope about 200 yards to lighthouse and station.

Station mark is a U.S. Navy Hydrographical Survey bronze disk, stamped "KALAWAO 1937 1957", set in the top of a stone and concrete monument that is 2 feet in diameter at the bottom and 1 1/2 inches on top, and projecting 16 inches above ground. It is 12.9 feet southwest of a white concrete water tank and 100 feet southwest of the lighthouse.

Station Kauhako will serve as the azimuth mark

Reference mark No. 1 is a standard disk stamped, KALAWAO NO 1 1962 cemented in a drill hole in the concrete base of a water reservoir about 1.5 feet lower than the station,

Reference mark No. 2 is a standard disk stamped, KALAWAO NO 2 1962 cemented in a drill hole in bedrock and about 2 feet lower than the station.

*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-P89

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION KALAWAO
 STATE HAWAII YEAR 1890 SECOND ORDER

SOURCE G-12734

GEODETIC LATITUDE: 21 12' 44.686	ELEVATION: 32 METERS
GEODETIC LONGITUDE: 156 58 21.582	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ or ANGLE
HI 2	5102	595,772.03	319,386.14	- 0 06' 39"

* 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
PUU KAPELE	82 08 54.6	82 15 34	5102

QF 297

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 2115b3 STATION 1021
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

KALUAHA (Maui County, Hawaii, R.W.W., 1925, J.M.D., 1931)
 --Portion of the original red wood post was found, also the original reference marks. Brass triangle was not found.

Station was remarked with a Hawaii Territory Survey standard disk set in a 4-in. cast-iron pipe which was embedded in an 18-in. square (at the top) concrete monument 3 ft. in the ground. The station is in a big patch of uluhi fern about 6400 ft. mauka of the Kaluaaha Protestant Church.

(19-14-89)

COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

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

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		DIRECTION
		FEET	METERS	

Station was recovered and found to be in good condition. A complete description follows:

Station is located, airline, about 12-1/2 miles east of Kaunakakai, 2-1/2 miles west-northwest of Kupeke Fishpond, and 1-1/4 miles north-northwest of the Kaluaaha church, at an elevation of about 1800 feet on the slope of a narrow ridge that lies between Kaluaaha Gulch and Kalona Gulch.

To reach from the junction of State Highways 45 and 46, just south of the post office in Kaunakakai, go east on State Highway 45 for 15.4 miles to the Kaluaaha church on the left, a large red building with high spire. From here pack northerly up steep, narrow ridge for about 1-1/4 miles to station 30 yards before reaching more dense brush and ferns.

The station mark is a Hawaii Territorial Survey bronze disk, unstamped, set in the top of a 12-inch-square, concrete monument about 10 inches above ground. The concrete, on two sides of the monument, extends upward about 1 foot above the mark, supporting a large metal cylinder target that projects about 7 feet above the ground.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KALUAHA
 STATE: HAWAII YEAR: 1925 SECOND ORDER
 SOURCE: G-SP156

GEODETIC LATITUDE: 21° 05' 14.138	ELEVATION: 549 METERS
GEODETIC LONGITUDE: 156 49 47.495	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β OR Δ OR ANGLE*
HI 2	5102	444,366.63	273,856.10	- 0° 03' 31"

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

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

Q1 462

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211563 STATION 1022
HAWAII
LATITUDE 21 ° 00' TO 21 ° 30'
LONGITUDE 156 ° 30' TO 157 ° 00'
DIAGRAM NF 4-16 MAUI

Kaluaaha Church (Molokai Island, Hawaiian Government Survey, R. W. Woodworth, 1925).—The prominent spire of the large concrete Protestant Church located near the shore road 1½ miles west from Pukoo Wharf near Kaopahina Fish Pond.

(11-8-66)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: KALUAHA CHURCH
ESTABLISHED BY: RWW YEAR: 1925 STATE: Hawaii
RECOVERED BY: H.J. Seaborg YEAR: 1962 COUNTY: Maui Molokai Island

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.

Station is the high, red-painted, wooden spire of the large, concrete, Protestant Church, which is located about 13-1/2 miles airline east of Kaunakakai and 1 mile east-northeast of the Kilohana School.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KALUAHA CHURCH
STATE: HAWAII YEAR: 1925 THIRD ORDER

SOURCE: G-SPI56
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21 ° 04 ' 14.06	ELEVATION:	METERS
GEODETIC LONGITUDE:	156 49 23.37		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	PERCENT ANGLE *
HI 2	5202	446,645.22	267,792.29	- 0 03 23

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE PERCENT ANGLE 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.

FORM DC 34314

QI 495

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1023
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

ADJUSTED HORIZONTAL CONTROL DATA

FORM 526a
 (8-18-69)

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

R

NAME OF STATION: KALUAHAUONI
 ESTABLISHED BY: HCS YEAR: 1890 STATE: Hawaii Island: Molokai
 RECOVERED BY: Harold J. Seaborg YEAR: 1962 COUNTY: MAUI

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.67 METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS.

DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION				
OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	

Only description available was one obtained from the State Of Hawaii Survey office, which did not describe the station mark but stated that it was referenced by 3 crosses on stones. A pipe in concrete was recovered, also 2 reference crosses and the station was identified by measurements to the crosses. A complete description follows:

Station is located, airline, about 7 miles northeast of kaunakakai, 3-3/4 miles southeast of kalaupapa, and 2-1/4 miles east-northeast of the Molokai Forestry Camp, on the north slope of a brushy hill of about 3288 feet elevation at the edge of the pali along the southwest side of waikolu Stream.

To reach from the junction of State Highways 45 and 46, just south of the post office in kaunakakai, go westerly on State Highway 46 for 3.7 miles to crossroad at ready-mix plant on left. Turn right and go east on graded road for 0.25 mile to a cattleguard. Cross and continue for 2.9 miles to a fork. Take left fork and go 0.75 mile to a cattleguard. Cross and continue for 2.4 miles to the forestry camp buildings. Bear right and follow forest road for 1.15 miles to tank and reservoir on left. Continue for 2.2 miles to a white, historical plaque on left. Continue ahead for 0.4 mile to a fork. Take left fork, leaving main road, and go northerly for 0.55 mile to an alternate fork. Take either road and continue downgrade, finally swinging right and going southeast, and then north along ridge, for 1.9 miles to end of road in a small clearing on top of hill. From here pack northerly, down across saddle and then up top of hill and station, a distance of about 1/4 mile.

Station mark is a 1-1/2-inch iron pipe that projects 16 inches above ground. It is set in a mass of concrete that is flush with the ground. "AEM JULY 1931" is inscribed in the concrete. A large metal cylinder target, 8 inches in diameter and 40 inches long is mounted on a 1-inch iron pipe set into the station mark pipe. Top of target is about 9 feet above ground.

Measurements to crosses are as follows:	Old measurement	New Measurement
Southwest Cross	3.5 feet	3.45 feet
West-northwest Cross	4.1 feet	4.0 feet.

NOTE: A 4-wheel-drive vehicle is required. Packing time about 10 minutes.

NAME OF STATION: KALUAHAUONI
 STATE: HAWAII YEAR: 1890 SECOND ORDER

SOURCE: G-12734

GEODETIC LATITUDE:	21° 05' 22.309	ELEVATION	554	METERS
GEODETIC LONGITUDE:	156 56 27.268	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ ρ ANGLE °
HI 2	5102	406,552.78	298,947.33	- 0° 05' 56"

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

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

QF 305

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

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

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1024
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

ADJUSTED HORIZONTAL CONTROL DATA

FORM 526a
 (6-18-59)

U. S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

R

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

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		DIRECTION
		FEET	METERS	

A pipe set in concrete was recovered.

Complete description follows:

Station is located, airline, about 5-1/2 miles northeast of Kaunakakai, 3-3/4 miles southeast of Malaupapa, 1 mile east of the Lolokai Forestry Camp, and 1/4 mile north of the forestry road, on the summit of a hill of about 2900 feet elevation that is heavily covered with brush and small trees and has 2 Norfolk Island Pines and 1 eucalyptus tree on its east side. These 3 trees are about 40 feet high and are quite prominent, the rest of the growth being about 20 feet high.

To reach from the junction of State Highways 45 and 46, just south of the post office in Kaunakakai, go westerly on State Highway 46 for 3.7 miles to crossroad just east of a ready-mix plant. Turn right and go easterly on graded road for 0.25 mile to cattleguard. Cross and continue for 2.9 miles to fork. Take left fork and go 0.75 mile to cattleguard. Cross and continue for 2.4 miles to the forestry camp buildings. Bear right and follow forest road for 1.15 miles to reservoir and large tank on left. Continue ahead for 0.4 mile to board gate. Pass through and continue for 0.55 mile to side road left at two forest service bulletin boards on left. Turn left and go northerly for 0.45 mile to end of truck travel at two triangle blazes, one on each side of road. From here pack due west along old blazed route along a property line for about 1/4 mile to station.

Station is marked by a 1-1/2-inch iron pipe that projects 2 feet above ground. It is set in concrete monument 12 inches square and about 4 inches below ground surface. The word "KALUAOLOHE" is inscribed in the concrete in a circle around the pipe. An 8-inch-diameter metal cylinder target, 40 inches long, is mounted on a 1-inch iron pipe which is set into the station pipe. The top of the target is about 9 feet above ground.

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

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

USCGM-DC 2717b-P59

NAME OF STATION: KALUAOLOHE

STATE: HAWAII YEAR: 1925 THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE	21° 08' 41.01"	ELEVATION	METERS
GEODETIC LONGITUDE	156° 57' 28.89"		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE *
HI 2	5102	400,712.43	294,790.83	- 0° 06' 18"

* 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

QI 551

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 211563 STATION 1025
 HAWAII
 LATITUDE 21 ° 00' TO 21 ° 30'
 LONGITUDE 156 ° 30' TO 157 ° 00'
 DIAGRAM NF 4-16 MAUI

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KAMAKOU

STATE: HAWAII

YEAR: 1925

THIRD

ORDER

SOURCE: G-SP156

GEODETIC LATITUDE: 21 ° 06 ' 37.57	ELEVATION: 1515 METERS
GEODETIC LONGITUDE: 156 52 17.38	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	# OR Δ or ANGLE *
HI 2	5102	450,183.93	282,290.32	- 0 ° 04 ' 26 "

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

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

QI 541

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 211563 STATION 1026
 HAWAII
 LATITUDE 21° 30' TO 21° 30'
 LONGITUDE 156° 50' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

ADJUSTED HORIZONTAL CONTROL DATA

Form 525
 (11-8-65)

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

R

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

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

SOURCE: G-SP156

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

As stated in the description of KAMALO 2 the remains of a post was recovered and the new point marked by a 3/4-inch pipe set alongside of it. This post was undoubtedly the original station as the latitude of KAMALO and KAMALO 2 correspond exactly, and the longitude of the two differ by only 1/100th of a second.

A later description of KAMALO 2, written in 1930 states that a "Type B" signal was constructed to mark the station. The basic part of this signal is a 6-foot-square, concrete platform resting on the ground, which would necessitate the removal of the old post and also the pipe, so the original station point can be considered lost. Station KAMALO 2 was recovered and found to be shifted out of position by the action of storm waves. See 1962 recovery description for that station.

GEODETIC LATITUDE:	21° 03' 07.32	ELEVATION:	METERS
GEODETIC LONGITUDE:	156 53 21.38		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE *
HI 2	5102	424,094.66	261,085.43	- 0 04 48 "

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From θ or Δ)	PLANE AZIMUTH (From θ or Δ)	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. COM-DC 94314

Q1 486

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1027
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

Kamalo 2 (Molokai Island, R. W. Woodworth, 1925).—On the southern coast of Molokai, west of Kamalo, and near the east end of the Kamahuehue fish pond. Station marked by a ¼-inch iron pipe set firmly in the ground alongside the remains of a wooden post, which is possibly the original station mark. The pipe projects about 1 foot above the ground. The reference marks are two standard United States Coast and Geodetic Survey disks cemented into the near-by inshore walls of the fishpond. No. 1 is 8.52 meters (28.0 feet) from station in azimuth 281° 35'; and No. 2, 7.45 meters (24.4 feet), 45° 01'.

KAMALO 2 (Maui County, Hawaii, R.W.W., 1925; O.W.S., 1930)
 --Station is on the S coast of Molokai Island. Location of station is as described. The Territorial Government has remarked the station according to Note 14 B. A concrete platform rests on the ground and projects about 12 in. above it. A signal post is carried in the concrete post over the station mark, which is in a tunnel under the post. The mark is a bronze disk with a cross in the center lettered Hawaiian Territorial Survey.

(11-8-55)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: KAMALO 2
 ESTABLISHED BY: R.W. Woodworth YEAR: 1925 STATE: Hawaii
 RECOVERED BY: W.R. Porter YEAR: 1961 COUNTY: Maui

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

The station was recovered as described. The original fish pond is now filled from shore to the rock wall. The concrete platform had settled off plumb and was broken. The concrete observing platform and signal were removed to allow an instrument to be set up over the mark.

The reference mark is a standard disk unstamped and set in cement between rocks in the rock wall. The rocks are loose in this wall.

OBJECT	DISTANCE		DIRECTION
	Meters	Feet	
PUU PAPA I 1915			0° 00' 00.0"
RM (unstamped)	8.422	27.62	142 54 18.5

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

Com-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KAMALO 2
 STATE: HAWAII YEAR: 1925 THIRD ORDER

SOURCE: G-SP156
 NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE	21° 05' 07.32	ELEVATION	i	METERS
GEODETIC LONGITUDE	156 53 21.37	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	B OR Δ OR Δ C
HI 2	5102	424,095.61	261,085.43	- 0 04 48

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
PUU PAPA I	138 50 20	138 55 08	5102

QI 485

(continued on next page)

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 211563 STATION 1027

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

KAMALO 2 (continued)

FORM 526a
12-18-63

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

R

NAME OF STATION: KAMALO 2
ESTABLISHED BY: R.W. Woodworth YEAR: 1925 STATE: Hawaii
RECOVERED BY: H.J. Seaborg YEAR: 1962 COUNTY: Maui
Island: Molokai

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		DIRECTION
		FEET	METERS	

Station was recovered and found to have been moved by the action of severe storm waves. Reference mark number 1 was recovered in good condition. Reference mark number 2 was not found.

Original station mark was a pipe in concrete block. In 1930 the Hawaii Territorial Survey replaced this mark with a bronze disk set in top of a 6-inch-diameter concrete post. Over the mark they built a "Type B-1 Superstructure". This consists of a 6-foot square concrete platform projecting about 1 foot above ground and extending about 1 foot below ground level.

This concrete platform, carrying the station mark in its center, was found setting on a tilt to the east, in mud in several inches of water and appears to be gradually settling on this angle into the mud as indicated by the following measurements to reference mark number 1.

<u>1925</u>	<u>1961</u>	<u>1962</u>
28.0 ft. (8.52 m)	27.62 ft. (8.42 m)	27.53 ft. (8.392 m)

The station should be considered unuseable.

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: Kamalo 2
ESTABLISHED BY: R.W.W. YEAR: 1925 STATE: Hawaii BENCH MARK(S) ALSO
COVERED BY: U.S.G.S. YEAR: 1968 COUNTY: Maui
LINE DISTANCE AND DIRECTION FROM NEAREST TOWN: On the southern coast of Molokai, west of Kamalo

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

ation not found after reported tilted in the mud in 1962.

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

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1028
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

ADJUSTED HORIZONTAL CONTROL DATA

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: **KANEIAMOA**
 ESTABLISHED BY: **R.W.W.** YEAR: **1925** STATE: **Hawaii** BENCH MARK(S) ALSO
 RECOVERED BY: **R.L. Newsom** YEAR: **1968** COUNTY: **Maui**

R

AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:
6.1 miles bearing 103° from Kalupapa, Molokai

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

Station is on Umilehi Pt., 0.26 miles south of Mokohola Island, on eastern tip of Pelekunu Bay. To reach station a landing can be made by small boat in the protection of Pelekunu Bay. Climb 200 feet from sea level to the highest point of the more westward of two projections of Umilehi Point. Station is marked by a badly rusted galvanized one inch steel pipe projecting one foot above a concrete base set in the ground. No reference marks were found.

NAME OF STATION: **KANEIAMOA**
 STATE: **HAWAII** YEAR: **1925** **SECOND** ORDER

SOURCE: **G-SP15c**

GEODETIC LATITUDE:	21° 10' 11.306	ELEVATION	46	METERS
GEODETIC LONGITUDE:	156 52 45.645	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ R ANGLE *
HI 2	5102	427,536.62	303,858.72	- 0° 04' 37"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE ϕ OR Δ R 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 211563 STATION 1029
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

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: LACHU
 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:

The only description available was one obtained from the State of Hawaii Survey office, which stated that the original mark was a redwood post. A 1-1/2-inch iron pipe in concrete was recovered and is believed to be the station mark.

Station is located, airline, about 4-1/2 miles east-northeast of Kaulaumu, 2 miles north-northeast of Kaunakakai and 3/4 mile east of Meyer Lake, on the south one of two grassy, round-topped hills of 2425 feet elevation.

To reach from the main crossroad in Kaulaumu, go east-northeast on State Highway 17 for 2.7 miles to end of paved road. Continue ahead on graded highway for 0.75 mile to left turn in road and a locked metal gate on track road ahead. Pass through gate and go 0.45 mile to gate just after crossing draw. Pass through gate and continue for 0.35 mile to metal gate at Meyer Lake. Pass through gate and continue for 0.45 mile to gate. Pass through gate and go left on track road for 0.3 mile to fork just after passing through board gate. Take right fork and go 0.35 mile along fence line, then go left, cross-country for 0.05 mile to station on top of bare hill.

The wire projects about 6 inches above ground and is on highest point of hill.

NOTE: Key for locked gate may be obtained at the Molokai Ranch office
 K unakakai.

* 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: KAOHU
 STATE: HAWAII YEAR: 1925 THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21° 05' 55.02	ELEVATION:	METERS
GEODETIC LONGITUDE:	156 58 16.12		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE °
HI 2	5102	356,255.95	302,266.51	- 0° 36' 36"

* 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

QI 552

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1030
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

OF COMMERCE
 NATIONAL OCEANIC AND ATMOSPHERIC SURVEY
 FORM 523
 Rev. Aug. 1963

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: KAPUUPOI 2 STATE: Hawaii COUNTY: Maui
 Island: Molokai
 Described by: J. R. Shea

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

NOTE	HEIGHT OF TELESCOPE ABOVE STATION MARK 1.52 METERS	DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION			
		BEARING	DISTANCE		DIRECTION
			feet	meters	
1	Surface-station mark, Underground-station mark				
7					
	KAWAIKAPU 2 1962				00 00 00.00
11	RM 1	N	27.99	8.530	104.34 10-
11	RM 2	E	31.78	9.688	201.49 31-

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION KAPUUPOI 2
 STATE HAWAII YEAR 1962 SECOND ORDER

SOURCE: G-12734

GEODETIC LATITUDE:	21° 09' 43.226	ELEVATION	b4 METERS
GEODETIC LONGITUDE:	156 42 53.506	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	∠ HOR ∠ V ANGLE
HI 2	5102	483,540.08	300,975.53	- 0 01 03

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE ∠ HOR ∠ V FORMULA NEGLECTING THE SECOND TERM

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
KAWAIKAPU 2	95 47 50.8	95 48 54	5102

The station is located on the PUU O HOKU Ranch and at the extreme northeast end of Molokai Island near the edge of the north cliff. To reach the station from the junction of State Highways 45 & 46 just south of the Post Office in Kaunakakai, go easterly and north on State Highway 45 for 29.0 miles to the gas pumps at buildings of the Puu O Hoku Ranch, at a crossroad. Turn right and go easterly for 0.2 mile to a fork just left of the houses. Take left fork, through board gate and go 0.55 mile to a board gate. Pass through and continue 0.3 mile to board gate number 3. Pass through gate and continue 0.15 mile to dim right fork. Take the right fork and go downgrade on track road for 0.3 mile to board gate. Pass through gate and continue downgrade through pasture, picking way between the grass rows, for 0.6 mile to station on the extreme northeast point of the island.

The station is a standard disk stamped, KAPUUPOI 2 1962, set in the top of a round concrete post that projects 1 inch, 7 feet north-north-west of a white witness post.

Reference mark No. 1 is a standard disk stamped, KAPUUPOI 2 NO 1 1962, set in the top of a round concrete post that is flush with the surface of the ground.

Reference mark No. 2 is a standard disk stamped, KAPUUPOI 2 NO 2 1962, set in the top of a round concrete post that projects 3 inches and is about 3 feet lower than the station.

Station PUU O HOKU will serve as the azimuth.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: KAPUUPOI 2
 ESTABLISHED BY: H. J. Seaborg YEAR: 1962 STATE: Hawaii BENCH MARK(S) ALSO
 RECOVERED BY: R. L. Newsom YEAR: 1968 COUNTY: Maui

APPROXIMATE DISTANCE AND DIRECTION FROM NEAREST TOWN:
 0.3 miles NE of PUKOO, Molokai

Detailed statement as to the fitness of the original description: including marks found, stampings, changes made, and other pertinent facts:
 Recovered in good condition as previously described except for white witness post which was out of the ground and in a displaced position. RM 2 was recovered in good condition. No search was made for RM 1.

R

QF 516

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1031
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

ADJUSTED HORIZONTAL CONTROL DATA

FORM 526a
 (6-18-69)

U.S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: **KAUHAKO**
 ESTABLISHED BY: **HGS** YEAR: **1890** STATE: **Hawaii** Island: **Molokai**
 RECOVERED BY: **Harold J. Seaborg** YEAR: **1962** COUNTY: **Maui**

HEIGHT OF TELESCOPE ABOVE STATION MARK **1.4** METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS.
 DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
KAHIO				00 00 00.00
RM 1	SE	18.50	5.638	186 14 06
RM 2	SW	34.56	10.553	238 48 48
Molokai Lighthouse	N	(1.5 miles)		357 45 57.1

Only description available was one obtained from the State of Hawaii Survey office, which stated that the original station mark was a 4 x 4 redwood post reinforced by 3 crosses on stones. The station was recovered and found to be now marked by a pipe set in concrete. Two of the 3 crosses were recovered. Two reference marks were established. A complete description follows:

Station is located about in the exact south-central part of Makanalua Peninsula, about 1 mile due east of the village of Kalaupapa and on the west rim of Kauhako Crater, an extinct volcano. There is a large white cross and several burial vaults on the summit of the hill.

To reach from the post office in Kalaupapa, go easterly on main paved road for 0.25 mile to end of paved road. Continue east on gravelled road for 0.7 mile to a white shack on right. Continue ahead for 0.35 mile to a side road left and sign "KAUHAKO CRATER". Turn left and go upgrade on track road for 0.05 mile to fork. Take left fork and go 0.3 mile to top and station on right.

Station mark is a 1-1/2-inch iron pipe set in a 2-foot-diameter mass of concrete and projecting about 4 inches above ground. A 1-inch iron pipe is driven into the station pipe and projects about 2 feet above the ground. It is 35.2 feet east-northeast of the white cross and near edge of crater rim.

Reference mark number one is a standard disk stamped "KAUHAKO NO 1 1962", cemented in a bedrock outcrop at about same elevation as station.

Reference mark number two is a standard disk stamped "KAUHAKO NO 2 1962", cemented in a drill hole in the concrete foundation of the white cross. It is at the east side of the cross, about 2 feet above ground level and about 3 feet lower than the station.

East cross is 5.7 feet from station.

Southwest cross is 7.5 feet from station.

Station KALAWAO will serve as the azimuth mark.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: **KAUHAKO**
 ESTABLISHED BY: **Haw. Geod. Sur.** YEAR: **1890** STATE: **Hawaii** BENCH MARK(S) ALSO
 RECOVERED BY: **R.L. Newsom** YEAR: **1969** COUNTY: **Maui** ISLAND: **Molokai**

AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

3/4 NMI east from Kalaupapa

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

The Station and Reference Marks No. 1 and No. 2 were recovered in apparent good condition as described in the 1962 Recovery Description of H.J. Seaborg with the exception that the chiseled cross to the east is at a distance of 5.9 feet.

R

NAME OF STATION: **KAUHAKO**

STATE: **HAWAII**

YEAR: **1890**

SECOND ORDER

SOURCE: **G-12734**

GEODETIC LATITUDE:	21° 11' 24.740	ELEVATION:	123 METERS
GEODETIC LONGITUDE:	156 58 15.250	SCALED:	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	PLON Δ R ANGLE
HI 2	5102	396,355.66	311,318.74	- 0 06 36

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
KAHIO	178 30 56.9	178 37 33	5102

R

QF 296

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211503 STATION 1032
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

ADJUSTED HORIZONTAL CONTROL DATA

FORM 574a
 (8-18-80)

U. S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: KAULAHUKI
 ESTABLISHED BY: HCS YEAR: 1890 STATE: Hawaii
 RECOVERED BY: Harold J. Seaborg YEAR: 1962 COUNTY: Maui Island: Molokai

NAME OF STATION: KAULAHUKI

STATE: HAWAII

YEAR: 1890

SECOND

-ORDER

SOURCE: G-12734

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.86 METERS, HEIGHT OF LIGHT ABOVE STATION MARK METERS.

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	

Only description available was one obtained from the State of Hawaii Survey office which stated that original station mark was a redwood post referenced by 3 crosses on stones. It was recovered in 1930 and the post replaced by a bronze H.T.S. disk with a "Type B-1 Superstructure" built over it. Station and 3 reference crosses were recovered and found in good condition. A complete description follows:

Station is located, airline, about 6-1/2 miles east-northeast of Kaunakakai, 5-1/2 miles southeast of Kalaupapa, and 3 miles east-southeast of the Moloka 1 Forestry Camp, on the summit of a prominent hill of about 3753 feet elevation that has an east-west bulldozed road running over the summit, and has some scattered small trees on the west slope.

To reach from the junction of State Highways 45 & 46, just south of the post-office in Kaunakakai, go west on State Highway 46 for 3.7 miles to a crossroad at ready-mix plant on left. Turn right and go east for 0.25 mile to cattleguard. Cross and continue for 2.9 miles to a fork. Take left fork and continue for 0.75 mile to cattleguard. Cross and continue for 2.35 miles to forestry camp buildings. Bear right and follow forest road for 3.4 miles to a white, historical plaque on left. Continue ahead for 0.9 mile to dim side road right. Turn right and follow bulldozed road southwest up along ridge for 0.5 mile to top of hill and station on left.

Station mark is a Hawaii Territorial Survey disk set in concrete about 8 inches below ground surface, and is unstamped. It is 12 feet south of south edge of road. The Type B-1 superstructure is a 6-foot-square, concrete platform about flush with the ground, with the station mark at the center. At the center of the platform is a concrete pedestal projecting 26 inches above the platform. Through the center of the pedestal there is a 2-1/2-inch iron pipe which allows an instrument to be plumbed over the mark and also serves as a socket for supporting a removable, red and white metal target which projects 8 feet above the ground.

West-northwest cross is 4.2 feet from station.

Northeast cross is 3.9 feet from station.

South cross is 3.8 feet from station.

NOTE: A 4-wheel-drive vehicle is required to drive last 1/2 mile to station.

GEODETIC LATITUDE	21° 07' 49.170	ELEVATION	1144 METERS
GEODETIC LONGITUDE	156° 55' 50.381	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	B OR Δ & ANGLE *
HI 2	5102	410,057.02	289,544.08	- 0 05' 43"

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

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

QF 307

* 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-P89

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 211563 STATION 1033
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

ADJUSTED HORIZONTAL CONTROL DATA

NO TEXT

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

SOURCE: G-SP156

GEODETTIC LATITUDE:	21° 07' 03.95	ELEVATION:	421 METERS
GEODETTIC LONGITUDE:	156 53 18.94	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ FOR Δ θ ANGLE *
HI 2	5102	424,359.04	284,959.74	- 0 04 48

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

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

Q1 536

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1034
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

Form 526
 (11-8-85)

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

R

NAME OF STATION: KAUPIKIAWA
 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:

The only description available was one obtained from the State of Hawaii Survey Office, which stated that the original station mark was a 4 x 6-inch red-wood post referenced by 3 crosses on stones. Station and 2 of the reference crosses were recovered and station identified by measurements to the crosses, however the station is now marked by an iron pipe. A complete description follows:
 Station is located about 1-3/4 miles airline east-northeast of the village of Kalaupapa, along the east coast of Mokolai Peninsula.
 To reach from the post office in Kalaupapa, go east on paved road for 0.95 mile to white shack on right. Continue for 1.35 miles to fork. Take left fork, passing through gate, and go northeasterly on track road for 0.55 mile to old concrete foundation. Continue on road along coast for 0.8 mile to station on right.
 Station is marked by a 1-1/2-inch iron pipe projecting 2 inches above ground. It is 6 feet west-southwest of a 4-foot black boulder, 75 yards west of cliff edge, 15 yards east of center line of road, and is covered by a 4-foot cairn.
 Distances to crosses are as follows: North cross, 5.6 feet. East-northeast cross 5.7 feet. The southwest cross was not recovered.

RECOVERY NOTE, TRIANGULATION STATION

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

AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

1 3/4 Miles east-northeast of village of Kalaupapa.

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

Station and two reference crosses recovered in good condition as described.
 Southwest cross was not recovered.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KAUPIKIAWA

STATE: HAWAII

YEAR: 1925

THIRD

ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 11' 47.158	ELEVATION:	METERS
GEODETIC LONGITUDE:	156 57 20.141		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ FOR Δ OR ANGLE *
HI 2	5102	401,574.82	313,568.85	- 0 06 10 "

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

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

Q1 555

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211503 STATION 1035
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

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: KAWAIKAPU
 ESTABLISHED BY: E.R.H. YEAR: 1915 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:

Only description available was one obtained from the State of Hawaii Survey Office, which stated that the station was marked by a 4 x 6 redwood post, referenced by 3 crosses on stones. A search was made but no marks could be recovered. This hill has been bulldozed off and developed for pasture land by the Puu O Hoku Ranch and the station is believed to have been destroyed in the process. A new station, KAWAIKAPU 2, was established in the approximate location. See description for that station.

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

COM-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KAWAIKAPU

STATE: HAWAII

YEAR: 1915

SECOND

-ORDER

SOURCE: G-SP156

GEODETIC LATITUDE: 21° 09' 57.859	ELEVATION: 446 METERS
GEODETIC LONGITUDE: 156 45 26.044	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE *
HI 2	5102	469,141.30	302,462.23	- 0° 01' 58"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From <i>subst</i>)	PLANE AZIMUTH * (From <i>subst</i>)	CODE

QI 506

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1036
 HAWAII
 LATITUDE 21 ° 00' TO 21 ° 30'
 LONGITUDE 156 ° 30' TO 157 ° 00'
 DIAGRAM NF 4-16 MAUI

DEPARTMENT OF COMMERCE
 T AND GEODETIC SURVEY
 Form 522
 Rev. Aug. 1963

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: KAWAIKAPU 2 STATE: Hawaii COUNTY: Maui
 Island: Molokai
 Described by: R.F. Hanson

CHIEF OF PARTY: Harold J. Seaborg YEAR: 1962

NOTE*	HEIGHT OF TELESCOPE ABOVE STATION MARK METERS.1	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			
			BEARING	DISTANCE		DIRECTION
	Surface-station mark		feet	meters		
	Underground-station mark					
	KAPUPOI 2	NNE	44.692	13.623	00 00 00.0	
	R.M. No. 2	E	42.222	12.870	269 04 37	
	R.M. No. 1				335 28 19	

Station is located, airline, about 1 mile west-northwest of the old village of Halawa and 2 miles northwest of the Puu O Hoku Ranch buildings, on property of the Puu O Hoku Ranch and on the summit of a prominent, round-topped hill of about 1465 feet elevation that has an east-west row of 5 macadamia trees across its top and a north-south fence line hidden by a growth of guava bushes along the west side of the top.

To reach from the crossroad at the entrance to the Puu O Hoku Ranch headquarters, go north on State Highway 45 for 2.7 miles to bottom of grade at old church. Turn back sharp left for 0.05 mile to fork. Take right fork and go 0.1 mile to concrete bridge and end of truck travel. Pack northeast on beach road for about 1/4 mile to gate at fence corner. Pass through gate and continue on road for about 1/4 mile to fence corner on left. Continue on washed out road winding up canyon for about 1 mile

to gate at top of grade. Pass through gate and follow road about 1 mile southwest to top of grade just below hill on left. Go left, off of road, and follow southerly along fence line to top of hill and station, a distance of about 150 yards.

Station mark is a standard disk stamped "KAWAIKAPU 2 1962", brazed to the top of a 1-inch iron pipe that projects 8 inches above ground. It is 43.1 feet south-southwest of the 2nd tree from the east end of the tree row.

Reference mark one is a standard disk stamped "KAWAIKAPU 2 NO 1 1962", brazed to the top of a 1-inch iron pipe that projects 6 inches above ground. It is 3 feet south of the eastern-most tree of the row and at same elevation as station.

Reference mark two is a standard disk stamped "KAWAIKAPU 2 NO 2 1962", brazed to the top of a 1-inch iron pipe that projects 6 inches above ground. It is 5.0 feet east-southeast of the 3rd tree from the east end of the tree row and at same elevation as station.

Station PUU O HOKU 1915 will serve as the azimuth mark.

NOTE: Packing time about 2 hours.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KAWAIKAPU 2
 STATE: HAWAII YEAR: 1962 SECOND - ORDER

SOURCE: G-12734

GEODETIC LATITUDE	21 09 57.739	ELEVATION	446 METERS
GEODETIC LONGITUDE	156 45 26.482	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 108 Δ 61 ANGLE *
HI 2	5102	469,059.84	302,450.14	- 0 01 58

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE § 108 Δ 61 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
KAPUPOI 2	275 46 55.7	275 48 54	5102

QF 315

* Refers to note (1) to nearest mm
 manuals of triangulation and state publications of triangulation. (Direction-angle measured clockwise, referred to 11°
 16-58872-1 U. S. GOVERNMENT PRINTING OFFICE

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1037
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

- Keawanui (Molokai Island, R. W. Woodworth, 1925).—On the southern coast of Molokai, on the sand shore at the end of the Keawanui fishpond wall where the wall joins the long spit extending to the south. Station is the center of a 2-inch iron pipe projecting 1 foot above the larger triangular concrete base in which it is set. This mark is one of several permanent marks placed in the vicinity by the Board of Harbor Commissioners in a recent survey of the harbor bordering Keawanui Pond on the west. Reference mark No. 1 is a standard bronze tablet with arrow pointing toward station set in the center of top of an irregular mass of concrete, note 11c; it is 9.013 meters (29.57 feet) from station in azimuth 159° 42'. Reference mark No. 2 is a standard bronze tablet with arrow pointing towards the station set in the center of the top of a square block or post of concrete, note 11a. It is 9.372 meters (30.75 feet) from station in azimuth 306° 47'.

KEAWANUI (Maui County, Hawaii, R.W.W., 1925; O.W.S., 1930).
 --Station is on the S coast of Molokai Island. It was recovered as described except that changes in the description are as follows:

On the sand shore at the S end of the Keawanui West fishpond wall, where the wall joins the long spit extending to the S. There is a house 30 m. SE of the station. No reference marks were found. Reference mark 1 is gone, as the imprint of one side of the disk was found in a small mass of concrete.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KEAWANUI
 STATE: HAWAII YEAR: 1925 SECOND ORDER
 SOURCE: G-12734

GEODETIC LATITUDE:	21° 03' 18.088	ELEVATION SCALED	1 METERS
GEODETIC LONGITUDE:	156 51 11.341		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	δ OR Δ ° ANGLE *
HI 2	5102	436,413.04	262,156.06	- 0° 04' 01"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From 1925)	PLANE AZIMUTH * (From 1925)	CODE
RAYKAMA	77 04 36.7	77 08 38	5102

QF 326

(continued on next page)

HORIZONTAL CONTROL DATA

by the
 NATIONAL GEODETIC SURVEY
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1037

LATITUDE 0 ' TO 0 '
 LONGITUDE 0 ' TO 0 '
 DIAGRAM

KEAWANUI (continued)

FORM 526a
 (1-18-61)

U.S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

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

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
RAYKAMA 1961				00° 00' 00"
RM 4	NNW	122.96	37.480	80 03 31 "
RM 3	SE	12.41	3.780	238 12 57 "

Station mark was recovered and found to be in good condition. Reference mark two was found laying on top of the ground near its original location. Reference mark one was not recovered as some of the spit to north of station mark has been washed away by storm waves. Two new reference marks were established. A complete description follows:

Station is located, airline, about 11-1/2 miles east-southeast of Kaunakakai, 1-1/2 miles east of Kamalo Wharf, 1/2 mile south-southeast of State Highway 45 and on the spit at the south end of the Keawanui west fishpond wall, where the spit and rock wall join at the south end of the fishpond.

To reach from the junction of State Highways 45 & 46, just south of the post office in Kaunakakai, go east on State Highway 45 for 10.7 miles to a sharp left curve in highway at Kamalo Wharf on right. Continue on the highway for 2.85 miles to a gravel right fork straight ahead, just before crossing a small wooden bridge on left curve in highway. Take right fork and go 0.1 mile to a board gate on left. Pass through gate and follow track road southwest for 0.3 mile to end of truck travel at small pond by fence corner. Walk southwesterly along right side of stone wall for about 1/4 mile to curve in spit. Go right, northwest, along shore of pond about 100 yards to junction of north tip of spit with south end of rock wall and station.

Station mark is a 2-inch iron pipe projecting about 8 inches above ground. It is set in a triangle shaped concrete monument that projects about 2 inches above ground and is 10 inches on each side. Letters "P 2" are inscribed in top of the monument. It is 8 feet south-southeast of the south end of the rock wall, 3-1/2 feet north of a dim trail and 6 feet north of a lone post.

Reference mark three is a standard disk stamped "KEAWANUI NO 3 1925 1962", brazed to the top of a 1-inch iron pipe that is set in concrete and projects about 8 inches above ground. It is 12 feet east-southeast of the lone post, 3 feet south-west of the high tide shoreline, 2 inches west of a 2 x 4 stake and about 6 inches lower than station.

Reference mark four is a standard disk, stamped "KEAWANUI NO 4 1925 1962", cemented in a drill hole in the southeast concrete bulkhead of a gate in the fish-pond wall. It is at same elevation as station.

Station RAYKAMA 1961 will serve as the azimuth 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.

USCGM-DC 178-P89

U.S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: KEAWANUI
 ESTABLISHED BY: R.W. Woodworth YEAR: 1925 STATE: Hawaii
 RECOVERED BY: L.P. Woodcock YEAR: 1965 COUNTY: Maui
 ISLAND: Molokai

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
				0 ' "

This station mark was found in very poor condition and should be considered lost. The mark, a 2-inch iron pipe extending about eight inches from a triangular concrete slab inscribed "P 2", has obviously been disturbed. The slab has a pronounced westward tilt and rests precariously on the seaward edge of Keawanui fishpond wall. Reference marks one and two were not recovered. Reference mark three was found in good condition 12.25 feet SSE of the station mark alongside the rock wall where it terminates against the spit. Reference mark four was found

as described. Apparently that part of the spit occupied by the station has been washed away by the sea, and the rock wall has subsequently been extended to include the station location.

*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.

USCGM-DC 37178-P89

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1039
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY
 FORM 535
 Rev. Aug. 1963

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: **KEPONO** STATE: **Hawaii** COUNTY: **Mau**
 Island: **Molokai**
 Described by: **J. R. Shea**

CHIEF OF PARTY: **H. J. Seaborg** YEAR: **1962**
 HEIGHT OF TELESCOPE ABOVE STATION MARK: **1.55 METERS.1**
 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	0	1	2
4	Surface-station mark, Underground-station mark						
		OBJECT	BEARING				
		NOKOHOLA 2 1962			00	00	00.00
12c	RM 1	SW	55.85	17.025	43	55	11 -
12c	RM 2	NW	40.99	12.439	239	30	56 -
17c	Azimuth mark	NNW	(Approx 0.4)	249	31	03.8	

The station is located about 2.4 miles east southeast of Kalaupapa, about 0.1 mile northeast of the two churches at Kalawao and about 0.1 miles northwest of the Lions Park at Kalawao.

To reach the station from the Post Office in Kalaupapa, go easterly for 0.25 mile to the end of the pavement, continue on graveled road for 1.05 miles to Haukaho Crater road on the left, continue straight ahead east and southeast for 1.6 miles to where road makes a sharp turn to the southeast, turn left and go 0.1 mile on the northeast side of the fence line to the station.

Station is a standard disk stamped, KEPONO 1962, cemented in a drill hole in a 18 x 30 inch boulder that projects about 6 inches, 55 feet southeast of the southeast edge of a 4 foot stone wall, 13.5 feet

northeast of the fence line.

Reference mark No. 1 is a standard disk stamped, KEPONO NO 1 1962, cemented in a drill hole in a 18 x 36 inch boulder that projects about 1 foot, 12.7 feet northeast of the fence line and about level with the station.

Reference mark No. 2 is a standard disk stamped, KEPONO NO 2 1962, cemented in a drill hole in a 4 x 4 foot boulder that projects about 8 inches, 16.8 feet southeast of the southeast edge of a 4 foot stone wall 25 feet northeast of the fence line and about level with the station.

To reach the azimuth mark from the Haukaho Crater road, Continue straight ahead east and southeast for 0.9 mile to side road on left, take side road that leads to the left for about 0.35 mile to a large concrete foundation, the azimuth mark is a standard disk stamped, KEPONO 1960, cemented in a drill hole in a boulder that projects 14 inches and near the southwest corner of the concrete foundation.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: **KEPONO** BENCH MARK(S) ALSO
 ESTABLISHED BY: **H.J.S.** YEAR: **1962** STATE: **Hawaii**
 RECOVERED BY: **R.L.N.** YEAR: **1967** COUNTY: **Mau**
 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: **Island: Molokai**

2.4 Miles east-southeast of Kalaupapa

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 in good condition as described.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: **KEPONO**
 STATE: **HAWAII** YEAR: **1962** SECOND ORDER

SOURCE: **G-12734**

GEODETIC LATITUDE:	21° 10' 49.082	ELEVATION:	21 METERS
GEODETIC LONGITUDE:	156 56 58.532	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ 10R Δ 01 ANGLE °
HI 2	5102	403,628.09	307,707.51	- 0° 06' 08"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ 10R Δ 01 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
AZIMUTH MARK	164° 13' 38.8"	164° 19' 47"	5102

GF 312

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1040
 HAWAII
 LATITUDE 21 ° 00' TO 21 ° 30'
 LONGITUDE 156 ° 30' TO 157 ° 00'
 DIAGRAM NF 4-16 MAUI

U. S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY
 DESCRIPTION OF TRIANGULATION STATION

R

NAME OF STATION: KIKIPUA
 ESTABLISHED BY: H. J. Seaborg
 STATE: Hawaii YEAR: 1962
 COUNTY: Maui MOLOKAI ISLAND

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

A pipe set in concrete was recovered and it is believed to be the old station mark. A complete description follows:
 Station is located, airline, about 12 miles east of Kalaupapa, 4-1/4 miles west-northwest of old village of Halawa, and 1-3/4 miles east-northeast of the mouth of Wailau Stream; on a low, rock bluff on the west end of Kikipua Point.
 The mark is a very rusted pipe, set in concrete and projecting 8 inches above ground. The bluff has eroded away until the mark is at its extreme edge and is in danger of being lost soon.
 A new station, KIKIPUA 2, was established 8 feet southeast of the mark. See description for that station.

* 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: KIKIPUA
 STATE: HAWAII YEAR: 1962 SECOND ORDER

SOURCE: G-12754
 NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21 ° 10' 41.578	ELEVATION:	12 METERS
GEODETIC LONGITUDE:	156 48 25.383	SCALED	FEET

STATE COORDINATES (Fvt)				
STATE & ZONE	CODE	X	Y	# IOR Δ #1 ANGLE °
HI 2	5102	452,171.50	306,885.61	- 0° 03' 03"

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

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

POSITION DETERMINED BY TRAVERSE FROM STATION KIKIPUA 2

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1041
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY
 Form 835
 Rev. Aug. 1962

DESCRIPTION OF TRIANGULATION STATION

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

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		DIRECTION!
			feet	meters	
4	Surface-station mark, Underground-station mark				
	MOKOHOLA 2	WNW			00 00 00.0
	Molokai Lighthouse	SSW			15 27 53.2
12c	R.M. No. 1	SSW	45.751	13.946	293 32 56.8
12c	R.M. No. 2	WSW	62.538	19.062	352 57 28

Station is located, airline about 12 miles east of Kalaupapa, 1/2 miles west-northwest of old settlement of Halawa, and 1-3/4 miles east-northeast of the mouth of Wailau Stream and start of the Wailau Trail, on the west end of Kikipua Point, a very rocky, rounded beach that borders a tree-covered slope running down to the water from the steep cliffs.

Station may be reached by boat by landing down beach to southeast from station in the cove where the beach is not so rocky; then pack northwest along beach to west end and station. Can also be reached by helicopter by setting one skid on rocks but is too rocky and sidling to shut down.

Station is on the east end of a small bluff about 30 feet above water, in the northeast corner of a rectangular rock enclosure; 8.9 feet northeast of a triangle blaze on a tree, 9.1 feet west-southwest of the northeast corner of the enclosure, 5 feet south of edge of bluff and 88 feet east of west end of the bluff, which is slightly higher than station. The mark is a standard disk, stamped "KIKIPUA 2 1962", cemented in a drill hole in a 12-inch boulder that is flush with surrounding rocks.

Reference mark one is a standard disk stamped "KIKIPUA 2 NO 1 1962", cemented in a drill hole in the east end of a 4 x 8-foot boulder that projects about 3 feet above ground. It is 4 feet south of a triangle blaze on a tree, 25 feet south of a stone wall and about 1-1/2 feet higher than the station.

Reference mark two is a standard disk stamped "KIKIPUA 2 NO 2 1962", cemented in a drill hole in a 16-inch boulder that projects about 6 inches above ground. It is 12.5 feet north of a triangle blaze on a tree, 4 feet south of north edge of bluff, across small draw from station, and at about same elevation as station.

* Refer to notes in manuals of triangulation and state publications of triangulation. 1 Direction-angle measured clockwise, referred to initial station.
 † To nearest meter only, when no trigonometric leveling is being done. 16-60202-1 U. S. GOVERNMENT PRINTING OFFICE

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KIKIPUA 2
 STATE: HAWAII YEAR: 1962 SECOND ORDER
 SOURCE: G-12734

GEODETIC LATITUDE:	21° 10' 41.527	ELEVATION:	12 METERS
GEODETIC LONGITUDE:	156° 48' 25.318	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β 10R Δ 01 ANGLE*
HI 2	5102	452,177.64	306,880.46	- 0° 03' 03"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE β 10R Δ 01 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
MOKOHOLA 2	87° 06' 13.0"	87° 09' 16"	5102

QF 313

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1043
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY
 FORM 535
 Rev. Aug. 1968

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: KUMIMI 2 STATE: Hawaii COUNTY: Maui
 Island: Molokai
 Described by: J. R. Shea

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

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.33 METERS.1 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	BEARING	DISTANCE		DIRECTION: ° ' "
				feet	meters	
		OBJECT				
		PUL MANO (HGS) 1890				00 00 00.00
12c	RM 1		NW	21.82	6.658	72 38 26
12c	RM 2		SW	37.48	11.425	345 09 59

The station is located about 16 miles airline northeast from Kaunakakai, 1 mile northeast of Waialua and about 100 yards northeast of the road on the southeast edge of a small cliff.

To reach the station from the junction of State Highways 45 & 46 just south of the Post Office in Kaunakakai. Go easterly on State Highway 45 for 23.8 miles to where the road curves sharply to the north, there is a graded area for parking at this spot also. From this point pack north for about 100 yards and the station on the southeast edge of the cliff.

The station is a standard disk stamped, KUMIMI 2 1962, brazed to the top of a iron pipe that is set in concrete and projects about 6 inches

Reference mark No.1 is a standard disk stamped, KUMIMI 2 NO 1 1962, cemented in a drill hole in a boulder that projects about 1 foot on the south side.

Reference mark No. 2 is a standard disk stamped, KUMIMI 2 NO 2 1962, cemented in a drill hole in a boulder that is flush with the surface of the ground

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION KUMIMI 2
 STATE HAWAII YEAR 1962 SECOND ORDER

SOURCE: G-12734

GEODETIC LATITUDE	21° 06' 40.375	ELEVATION	21 METERS
GEODETIC LONGITUDE	156 44 50.851	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ FOR Δ θ: ANGLE °
HI 2	5102	472,462.04	282,535.38	- 0 01 45

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
PUL MANO HGS	70 42 22.4	70 44 07	5102

QF 320

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211563 STATION 1044
HAWAII
LATITUDE 21 ° 00' TO 21 ° 30'
LONGITUDE 156 ° 30' TO 157 ° 00'
DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

KUPEKE (MauI County, Hawaii, E.R.H., 1915; H.T.S., 1930)

--Station is on a sand bar just inside of a fishpond wall, close to Buchanan's fish net house.

Found a square iron bar at the station agreeing with the two remaining witness crosses on rocks in a wall. The other witness cross is lost.

Built a concrete monument with an Hawaii Territory Survey standard bronze disk, set about 4 in. below the original surface; monument is 1 ft. square, extending 2 ft. below ground surface. Superstructure, type B1, of reinforced concrete 4 in. above the ground surface, with edges extending 9 in. below the ground, 9 in. thick all around, with rocks piled all around.

This station is valuable for local work, but has never been established with precision, azimuths having been determined to only the nearest minute. Its importance and convenient location justify more accurate determination of location. Visibility of all adjacent stations is good except AHAINO, which is obscured by Buchanan's house (about 12- by 12-ft.). It is cheaper to move the house, and agreeable to owner, than to build the station higher or to establish a new location.

(O.W.S., 1931)

is at the W end of a large fishpond wall just E of Dukoo. There is a greenhouse about 8 m. N of the station. Station mark is a standard disk set in concrete. The Territory has marked the station according to Note 14 B.

(11-8-55)

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: KUPEKE
ESTABLISHED BY: E.R.H. YEAR: 1915 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:
Station was recovered in good condition as described.

Station is located about 5.7 miles northeast of the wharf at Kanalo, on a prominent point of land at the southeast corner of Kupeke Fishpond, about 15 feet south of a small beach cot are, and at the north edge of a stone riprap around the point.

To reach the station from the junction of State Routes 45 and 46 at the post office in Kaunakakai, go 19.0 miles southeast on State Route 45 to gate and drive on right (the east one of two gates close together), turn right go 0.15 mile south to end of drive at small beach cottage and station.

State survey monument, Type B now over station.

* 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: KUPEKE
STATE: HAWAII YEAR: 1915 THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 ° 04 ' 32.22	ELEVATION:	METERS
GEODETIC LONGITUDE:	156 47 39.55		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE
HI 2	5102	456,479.12	269,615.76	- 0 02 45

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

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

QI 509

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 2115c3 STATION 1046
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

ADJUSTED HORIZONTAL CONTROL DATA

Form 526
 (11-8-55)

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

R

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

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

A search of the area was made but no mark of any kind was found.
 In order to carry a tellurometer traverse along the north coast of the island a new station was established, but since it was not known definitely that it was in the immediate vicinity of the location of old station LELEMAKO it was named KIOKIO. Subsequent computations show station KIOKIO to be established within a few feet of the original location of LELEMAKO.
 See description for KIOKIO.

NAME OF STATION LELEMAKO

STATE HAWAII

YEAR 1925

THIRD

ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21° 10' 25.264	ELEVATION:	METERS
GEODETIC LONGITUDE:	156 46 33.191		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE*
HI 2	5102	462,788.01	305,231.25	- 0° 02' 22"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ OR Δ OR θ 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.

COMS-DC 34314

Q1 519

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1047
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

Lupehu (Molokai Island, Hawaiian Government Survey; E. R. Hand, 1915).—Near southeastern coast of Molokai, on a small but well defined hill about 100 meters from the sea, and about midway between the gulch known as Honouimaleo (dry), and the one where the government road leaves the sea, bending in toward Halawa village. The sharp pinnacle, painted, standing on water's edge outside of government road on the west side of Honouimaloo Gulch (cove) bears S. 25° W. from the station, distant 660 meters. Subsurface mark is a short length of pipe set upright. Surface mark is concrete monument and standard bronze disk as described in note 6½. Station covered by a painted cairn; 20 meters east of the station is a telephone pole.

LUPEHU (Maui County, Hawaii, E.R.H., 1915; O.W.S., 1931)
 --Station is on the S coast
 of Molokai Island. It was recovered as described. The cairn was rebuilt and whitewashed.

(16-16-58)

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: LUPEHU
 ESTABLISHED BY: E. R. Hand YEAR: 1915 STATE: Hawaii Island: Molokai
 RECOVERED BY: H. J. Seaborg YEAR: 1962 COUNTY: Maui

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.11 METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS.

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
KUMIMI 2 1962	NW	29.10	8.870	00 00 00.00
RM 2	NE	12.62	3.846	105 48 50
RM 1				204 01 46

Station was recovered and found to be in good condition, two new reference marks were established.

A complete description follows.

To reach the station from the junction of State Highways 45 & 46 just south of the Post Office in Kaunakakai. Go easterly on State Highway 45 for 25.5 miles to the station on the left and about 100 feet above the road.

The station is a standard disk stamped, LUPEHU, set in the top of a concrete pedestal that projects 15 inches, 8.7 feet west of a white witness post.

Reference mark No. 2 is a standard disk stamped, LUPEHU NO 2 1962, cemented in a drill hole in a boulder that projects 2.5 feet 1.9 feet south of small pine tree.

Reference mark No. 1 is a standard disk stamped, LUPEHU NO 1 1962 cemented in a drill hole in a boulder that is flush with the surface of the ground, 7 feet north of the witness post.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: LUPEHU
 STATE: HAWAII YEAR: 1915 SECOND ORDER
 SOURCE: G-12734

GEODETIC LATITUDE: 21 07 11.803	ELEVATION: 46 METERS
GEODETIC LONGITUDE: 156 44 19.755	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β OR Δ ANGLE
HI 2	5102	475,407.67	285,704.86	- 0 01 34

* 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
KUMIMI 2	42 52 37.7	42 54 12	5102

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 211563 STATION 1048
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 156° 30' TO 157° 00'
DIAGRAM NF 4-16 MAUI

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: **MAKAKUPAIA**
STATE: **HAWAII** YEAR: **1925** SECOND ORDER

SOURCE: **G-SP15c**

GEODETIC LATITUDE: 21° 06' 58.867	ELEVATION 79c METERS
GEODETIC LONGITUDE: 156 57 11.246	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ θ ANGLE*
HI 2	5102	402,364.04	284,482.05	- 0° 06' 12"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From α or β)	PLANE AZIMUTH* (From α or β)	CODE

Q1 454

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1049
 HAWAII
 LATITUDE 21° 00' TO 21° 30'
 LONGITUDE 156° 30' TO 157° 00'
 DIAGRAM NF 4-16 MAUI

DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY
 FORM 535
 Rev. Aug. 1962

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: **MAKAKUPAIA 2** STATE: **Hawaii** COUNTY: **Maui**
 Island: **Molokai**

CHIEF OF PARTY: **Harold J. Seaborg** YEAR: **1962** Described by:

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			
	1.40 METERS.†		DISTANCE		DIRECTION‡	
	Surface-station mark, Underground-station mark		feet	meters		
		OBJECT	BEARING			
		HALEAHI	NNE	17.15	5.227	
		Iron Pipe	NE	15.38	4.690	
12		RM 1	SW	40.02	12.200	
12		RM 2				

Detailed description

Station is located, airline, about 5 miles east-northeast of Kaunakakai, 6-1/4 miles southeast of Kualapuu and 3 miles north-northeast of State Highway 45, on the south end of a hill of 2670 feet elevation that is known as Ooa.

To reach from the junction of State Highways 45 & 46, just south of the post office in Kaunakakai, go east on State Highway 45 for 1.55 miles to a side road left, opposite a large building on right. Turn left on paved road and go north up steep hill for 0.4 mile to where paved road turns right. Continue ahead on track road for 0.05 mile to metal gate at a black water tank. Pass through gate and follow road to right for 0.3 mile to dim left fork. Take left fork and follow this narrow, rough, rocky road for 4.0 miles to a gate on hillside. Pass through gate and continue on road upgrade for 0.8 mile to a reverse-Y on right. Turn sharp right and follow track road southerly along top of hill for 0.2 mile to dim fork,

at south end of hill. Take right fork, old bulldozer road, for 20 yards to station on left at rocky point of knoll.

Station mark is a standard disk stamped "MAKAKUPAIA 2 1962", cemented in a drill hole in a 3-foot-diameter bedrock outcrop that projects about 1 foot above ground. It is 5 feet east of the east edge of the bulldozer road, 30 feet west of an old road grade, 12 feet southwest of the rocky point that is highest point of knoll, and 10.3 feet south of a white witness post.

Reference mark one is a standard disk stamped "MAKAKUPAIA 2 NO 1 1962", cemented in a drill hole in a bedrock ledge. It is 6 feet north-northwest of, and 1 foot lower than the highest point of the knoll and about 3 feet higher than the station.

Reference mark two is a standard disk stamped "MAKAKUPAIA 2 NO 2 1962", cemented in a drill hole in a 4-foot-diameter bedrock outcrop that projects about 3 feet above ground. It is 10 feet west of west edge of bulldozer road and is in the last noticeable rock outcrop on the slope of the hill. The mark is about 4 feet lower than the station.

Station ONINI 1915 will serve as the azimuth mark.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: **MAKAKUPAIA 2**
 STATE: **HAWAII** YEAR: **1962** SECOND ORDER

SOURCE **G-12734**

GEODETIC LATITUDE:	21° 06' 58.730	ELEVATION:	756 METERS
GEODETIC LONGITUDE:	156 57 11.398	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ RI ANGLE*
HI 2	5102	402,349.63	284,468.25	- 0° 06' 12"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
HALEAHI	67 48 56.8	67 55 09	5102

QF 306

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211563 STATION 1050
 HAWAII
 LATITUDE 21 ° 00' TO 21 ° 30'
 LONGITUDE 156 ° 30' TO 157 ° 00'
 DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

Malo (Maui Island, Hawaiian Government Survey, 1882; J. C. Gauger, 1912).—On northwest coast of Maui, on Cape Lipoa, in the northern part of Kaanapali District, in land of Honolulu, on top of a grassy knoll 250 meters from the shore on Lipoa Point. Marked by a 3-inch galvanized iron pipe set in a block of concrete.

DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY
 FORM NO. 538
 (REV. FEB. 1943)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: MALO
 ESTABLISHED BY: Hawaiian G.S. Year: 1882 STATE: Hawaii
 RECOVERED BY: C.T. Husemeyer Year: 1950 COUNTY: Maui

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

Station was not recovered. Pipe found at sight and subsequently used as MALO 2 is not the original point. Top of knoll has evidently been graded to a flat surface. No assurance or evidence that the mark found was the original.

* 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.

16-70469-6

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MALO

STATE: HAWAII

YEAR: 1882

THIRD

ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 ° 01' 31.88	ELEVATION:	41 METERS
GEODETIC LONGITUDE:	156 38 28.22	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ § 1 ANGLE °
HI 2	5102	508,694.76	251,403.91	+ 0 ° 00' 33"

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

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

Q0 002