

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1001
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUI

U.S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: **ALEX** STATE: **Hawaii** COUNTY: **Kauai**
 CHIEF OF PARTY: **F.L. Jeffries** YEAR: **1968** DESCRIBED BY: **R.M.M.**

NOTE. Desc.	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			
	METERS.	METERS.	OBJECT	BEARING	DISTANCE FEET METERS	DIRECTION
	1.57					
Desc. POHAKEA 1910-1928						
Desc. Reference Mark No. 2			WNW	17.59'	5.361	00 00 00.0
Desc. Azimuth Mark			NW	(1,344.30)	409.742 *	77 34 37
Desc. Reference Mark No. 1			NE	18.35'	5.594	93 16 29.0
						194 42 21

Detailed description:
 The station is located 6 miles northeast of Hanapepe, 2 miles north of Kalaeo, at the southeast corner of Alexander Reservoir, on the top of a low, narrow ridge which drops sharply on the south side.
 To reach the station from the junction of State Highway 50 and 541 in Eleele, go east on State Highway 50 for 3.6 miles to a crossroad. Turn left and go north on a gravelled road for 0.4 mile to a fork and a large stone home on the right. Take the left fork and go north on a bladed road for 0.25 mile to a board gate. Pass through the gate and continue north on the bladed road for 0.55 mile to a locked gate. Pass through the gate and continue northerly on the bladed road for 1.55 miles to a diagonal crossroad. Continue ahead on the main traveled road for 0.05 mile to a side road left. (To reach the azimuth mark, turn left and go north on a track road for 0.1 mile to a fork at the south end of the dam. Take the left fork and go 0.1 mile north along the top of the dam to the mark on the left as described.) Continue north and east on the main traveled road for 0.25 mile to the end of truck travel at power pole No. 21-9P-33. From the end of truck travel, pack north up the steep bank to the station, a distance of about 200 feet.

The station mark, a standard disk stamped ALEX 1968, is cemented in the top of a 4-inch cast iron pipe which projects 4 inches above the surface of the ground. It is 11 feet north of the edge of the bluff.

Reference mark No. 1, a standard disk stamped ALEX NO 1 1968, is cemented in the top of a 4-inch cast iron pipe which projects 8 inches above the surface of the ground. It is about the same elevation as the station mark.

Reference mark No. 2, a standard disk stamped ALEX NO 2 1968, is cemented in the top of a 4-inch cast iron pipe which projects 8 inches above the surface of the ground. It is 2 feet lower in elevation than the station mark.

The azimuth mark, a standard disk stamped ALEX 1968, is cemented in the top of a 4-inch cast iron pipe which projects 2 inches above the top of the dam. It is 62.5 feet northwest of a 1-1/2 foot diameter cement filled tile survey monument inscribed No. 4 10-11-45, 51.6 feet southwest of a 1-1/2 foot diameter cement filled tile survey monument inscribed No 5 10-11-45, 12 feet west of the center of the road on the top of the dam and 3 feet north of a 4 x 4 -inch witness post.

Note: The key to the locked gate may be obtained from the McBryde Sugar Company or the State Forest Service.

* Geodimeter traverse.

As to notes in manuals of triangulation and state publications of triangulation. † Direction-angle measured clockwise, referred to initial static. ‡ Geodesic meter only, when no trigonometric leveling is being done.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: **ALEX** STATE: **HAWAII** YEAR: **1968** ORDER: **SECOND**

SOURCE: **G-14107**

GEODETIC LATITUDE:	21° 57' 25.34343	ELEVATION:	527.1 METERS
GEODETIC LONGITUDE:	159 31 35.53095		1729 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β OR Δ OR ANGLE *
HI 4	5104	491,007.09	44,938.62	- 0 00 36

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From zenith)	PLANE AZIMUTH* (From zenith)	CODE
AZIMUTH MARK	147 59 36.5	148 00 13	5104

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 211594 STATION 1002
 HAWAII
 LATITUDE 21 ° 30' TO 22 ° 00'
 LONGITUDE 159 ° 30' TO 160 ° 00'
 DIAGRAM NF 4-6 KAUAI

DESCRIPTION OF ~~STATION~~ ^{TRAVERSE} STATION

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: **ALEX AZIMUTH MARK**

NAME OF STATION: **ALEX AZ MK**

CHIEF OF PARTY: **F.L. Jeffries** YEAR: **1968** STATE: **Hawaii** COUNTY: **Kauai**

STATE: **HAWAII**

YEAR: **1968**

SECOND

ORDER

Description, including sketch of object:

The station is located 6 miles northeast of Hanapepe, 2 miles north of Kalaheo, on the top and near the center of the dam at the Alexander Reservoir.

The azimuth mark, a standard disk stamped **ALEX 1968**, is cemented in the top of a 4-inch cast iron pipe which projects 2 inches above the top of the dam. It is 62.5 feet northwest of a 1-1/2 foot diameter cement filled tile survey monument inscribed No. 4 10-11-45, 51.6 feet southwest of a 1-1/2 foot diameter cement filled tile survey monument inscribed No. 5 10-11-45, 12 feet west of the center of the road on the top of the dam and 3 feet north of a 4 x 4-inch witness post.

A geodimeter traverse was made to triangulation station **ALEX**, distance being 409.742 meters (1,344.30 feet) northwest of station **ALEX**.

SOURCE: **G-14107**
 NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21 ° 57' 36.64029	ELEVATION:	465	METERS
GEODETIC LONGITUDE:	159 51 43.09985	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ θ' ANGLE *
HI 4	5104	490,294.79	46,078.68	- 0 00 39 "

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
POSITION DETERMINED BY TRAVERSE FROM STATION ALEX			
QF 606			

FORM CG-5-522b (1-68)
 USCOMM-DC 12810-P28

Described by _____
 U.S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

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

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1003
 HAWAII
 LATITUDE 21 ° 30' TO 22 ° 00'
 LONGITUDE 159 ° 30' TO 160 ° 00'
 DIAGRAM NF 4-6 KAUAI

NO ORIGINAL TEXT

Bay (Kauai Island, O. B. French, 1910; K. T. Adams, 1928).—On rocky point, at west side of Port Allen, 10 meters back from and 5 feet above high-water mark. Marked by drill hole in rock, and small "ahu" (cairn). Recovered in 1928 and cairn enlarged.

Form 525
 (11-9-65)

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

R

NAME OF STATION: Bay
 ESTABLISHED BY: O.B.F. YEAR: 1910 STATE: Hawaii
 RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Kauai
 Island: Kauai

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

Station is gone. The point was determined by angle check but no cairn or drill hole found.

*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 94514

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: BAY
 STATE: HAWAII YEAR: 1910 THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE: 21 ° 53 ' 48.407	ELEVATION: 1 METERS
GEODETIC LONGITUDE: 159 36 10.422	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ HOR Δ α 1 ANGLE*
HI 4	5104	465,115.23	23,059.24	- 0 ° 02 ' 18 "

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

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

QI 222

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 211594 STATION 1004
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

Cane (Kauai Island, C. L. Garner, 1926).—Near Waimea, about 100 yards below cane field, and 40 yards west of pipe line which runs to reservoir on slope above Waimea. Station is about 106 meters west of Signal Point. Marked according to note 3.

ADJUSTED HORIZONTAL CONTROL DATA

FORM 326a
 1-18-57

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

R

NAME OF STATION: CANE
 ESTABLISHED BY: C.L.G. YEAR: 1926 STATE: Hawaii
 RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Kauai
 Island: Kauai

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.5 METERS, HEIGHT OF LIGHT ABOVE STATION MARK METERS.

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
		FROM THE GROUND AT THE STATION		
Makaweli Mill chimney 1910-1926	NE	78.560	23.945	00 00 00.0
Highway Survey Marker	ESE	2612.0		265 03 19
Cliff 1926				340 18 43

Station mark was recovered by traverse from station Point 1926 and was found to be in good condition. A tie was made to an adjacent highway survey marker. A complete description follows:

Station is located about 1/2-mile north-northeast of center of Waimea, at about 290 feet elevation on point of ridge, along south side of the macadam road, at last switchback before road runs straight uphill.

To reach station from the First National Bank in Waimea, go west on State Highway 50 for 0.4 mile; turn right and go 0.45 mile; take left fork and follow winding road uphill for 0.6 mile to station on right

just before road makes left bend.

Station mark is a standard disk stamped "CANE 1926", cemented in a drill hole in bedrock 2 inches beneath ground level. It is 6 feet lower than road, at base of the roadside bank, 8 inches south of a 30-inch boulder embedded in base of bank, 21 feet south of edge of road, 33.1 feet west of a 2-inch, iron pipeline running downhill on top of ground, 78 feet southwest of a 6 x 6-inch wooden post which is the southeast 1 of 2 posts on either side of the road and 78.560 feet, in azimuth 49° 33' 29" from the Highway Survey Marker.

Highway Survey Marker is a 1/2-inch copper nail driven into the cacadam surface of the road, on centerline, midway between the two 6 x 6-inch wooden posts. A 4-inch, yellow circle is painted around the nail.

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

GEODETIC LATITUDE: 21° 57' 56.58	ELEVATION: 85 METERS
GEODETIC LONGITUDE: 159 40 02.61	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 108 Δ 91 ANGLE *
HI 4	5104	443,276.04	48,120.82	- 0° 03' 45"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE § 108 Δ 91 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
MAKAWELI MILL CHIMNEY	324 30 10	324 33 55	5104

*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.

USCOMA-DC 37175-P59

Q1 189

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 211594 STATION 1005
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUI

FORM 523
 (4-16-62)

U. S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: CANYON B (HTS) STATE: Hawaii COUNTY: Kauai
 CHIEF OF PARTY: P.C. Johnson YEAR: 1967 DESCRIBED BY: A.K.R.

NOTE: DESC	HEIGHT OF TELESCOPE ABOVE STATION MARK SURFACE-STATION MARK, UNDERGROUND-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	DIRECTION ¹
		DISTANCE			
		FEET	METERS		

The station is located on the west edge of Waimea Canyon, about 3.2 miles northeast of Kekaha, 2.6 miles north of Waimea and 0.5 mile west of the Waimea River.
 To reach the station from the U.S. Post Office at Waimea, go westerly on Waimea Road for 0.1 mile to State Highway 50. Bear right and continue westerly on State Highway 50 for 0.3 mile to Onaona Road. Turn right and go northerly on Onaona Road for 0.4 mile to a fork. Take the left fork and go northerly, uphill, along an asphalt road for 3.0 miles to the station mark on the right.
 The station mark is a Hawaii Territory Survey disk, with no stamping, set in the top of a 5-inch cast iron pipe that projects 2 inches above the surface of the ground. The mark is under a 6-foot square concrete slab that is supported on two sides by rock walls about 50 inches in height. A vertical pipe set in the center of the concrete slab supports a metal target, which may be removed to gain access to the mark. The mark is on a bank about 12 feet high, between the edge of Waimea Canyon and the asphalt road, 110 feet northeast of a large mango tree, 106 feet southwest of a telephone pole, 90 feet northwest of another telephone pole and 29 feet northeast of the center of the asphalt road.
 No azimuth mark or reference marks were established.

¹Refers to notes in manuals of triangulation and state publications of triangulation. ²Direction-angle measured clockwise, referred to initial station.
³To nearest meter only, when so trigonometric leveling is being done.

USCOMMA-DC 27171-PSB

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: CANYON B HTS
 STATE: HAWAII YEAR: 1967 SECOND ORDER

SOURCE: G-13403

GEODETIC LATITUDE: 21° 59' 45.7657	ELEVATION: 393 METERS
GEODETIC LONGITUDE: 159 40 38.7235	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ 10R Δ ϕ 1 ANGLE [*]
HI 4	5104	439,889.42	59,142.30	- 0° 03' 59"

^{*} PLANE AZIMUTH HAS BEEN COMPUTED BY THE ϕ 10R Δ ϕ 1 FORMULA NEGLECTING THE SECOND TERM.

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

QF 508

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 211594 STATION 1006
 HAWAII
 LATITUDE 21 ° 30' TO 22 ° 00'
 LONGITUDE 159 ° 30' TO 160 ° 00'
 DIAGRAM NF 4-6 KAUAI

NO ORIGINAL TEXT

Form 526
 (11-8-55)

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

R

NAME OF STATION: Cliff
 ESTABLISHED BY: C.L.G. YEAR: 1926 STATE: Hawaii
 RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Kauai
 Island: Kauai

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 and subsequently proven to be the correct point by observations made at Point 1926 and CANE 1926. A complete description follows:

Station is located about 3/4 mile east-northeast of Waimea and 1/2 mile northeast of the highway bridge over the Waimea River, on edge of brush-covered rim along east side of the Waimea River. It is 15 feet west of a large stone wall which borders a cane field and 4 feet east of edge of bluff, and is at the point where the stone wall and the road make an abrupt jog to the west.

To reach from the First National Bank in Waimea, go southeast on State Highway 50 for 0.75 mile; turn left on cane field road and go 0.4 mile to crossroad; turn left and go 0.15 mile to fork; take left fork and go 0.25 mile; turn right and go along edge of field for 0.05 mile to station on left.

Station mark is a 3/4-inch iron pipe projecting 1 inch from a 1 1/2-inch diameter concrete monument that is flush with 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.

Form 526 2-5-14

ADJUSTED HORIZONTAL CONTROL DATA

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

SOURCE: G-SP156
 NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE: 21 ° 57' 41.82	ELEVATION: METERS
GEODETIC LONGITUDE: 159 39 39.84	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ #1 ANGLE *
HI 4	5104	445,417.82	46,629.13	- 0 ° 03' 37"

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

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

Q1 211

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

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211594 STATION 1007
HAWAII
LATITUDE 21 ° 30' TO 22 ° 00'
LONGITUDE 159 ° 30' TO 160 ° 00'
DIAGRAM NF 4-6 KAUAI

NO ORIGINAL TEXT

ADJUSTED HORIZONTAL CONTROL DATA

Form 536
(11-8-58)

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

RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

Eleele,

NAME OF STATION: Catholic Church spire,
ESTABLISHED BY: H.D.K. YEAR: 1904 STATE: Hawaii
RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Kauai
Island: Kauai

R

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

Station was recovered. It is a red-roofed spire on the northwest end of an old, wooden, tan-colored church building with a red roof. Located about 0.1 mile north from the post office in Eleele, on the bluff on east side of State Highway 50, and at the south side of a new stone church building.

NAME OF STATION: ELEELE CATHOLIC CHURCH SPIRE

STATE: HAWAII

YEAR: 1904

THIRD

-ORDER

SOURCE: G-SP156

GEODETIC LATITUDE: 21 ° 54' 34.716	ELEVATION: METERS
GEODETIC LONGITUDE: 159 35 15.826	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ IOR Δ ϕ ANGLE °
HI 4	5104	470,259.52	27,728.92	- 0 ° 01' 58"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE ϕ IOR Δ ϕ 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

returned.

COM-DC 34914

QI 229

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 211594 STATION 1008
 HAWAII
 LATITUDE 21 ° 30' TO 22 ° 00'
 LONGITUDE 159 ° 30' TO 160 ° 00'
 DIAGRAM NF 4-6 KAUAI

NO ORIGINAL TEXT

ADJUSTED HORIZONTAL CONTROL DATA

RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

NAME OF STATION: **Episcopal Church spire**
 ESTABLISHED BY: **C.L.G.** YEAR: **1926** STATE: **Hawaii** BENCH MARK(S) ALSO
 RECOVERED BY: **D.M. Whipp** YEAR: **1966** COUNTY: **Kauai**
 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: **Island:Kauai**

R

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

Station was recovered, however it is the Waimea Congregational Church instead of Episcopal. A brown stone structure, built in 1853; has a brown, shingled spire on the southwest end, consisting of a square base with a truncated pyramid section on it, terminating in a wooden mast with a ball on it. Located at west end of high school buildings in Waimea.



FORM CGS-526 (1-68)
 USCOM-DC 1809-P68

U. S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

NAME OF STATION: **EPISCOPAL CHURCH SPIRE**
 STATE: **HAWAII** YEAR: **1926** **THIRD** -ORDER

SOURCE: **G-SP156**

GEODETIC LATITUDE:	21 57 41.46	ELEVATION:	METERS
GEODETIC LONGITUDE:	159 40 19.52		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ HOR Δ θ 1 ANGLE °
HI 4	5104	441,682.57	46,596.87	- 0 03 52

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

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

Q1 209

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1009
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

Flood (Kauai Island, C. L. Garner, 1926).—On the slope above Waimea, about 1 mile north by west of Waimea mill chimney, about 60 feet below Kekaha ditch, and 100 feet east of edge of gulch. Marked according to note 3.

FORM 5746
 (1-15-57)

U. S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: FLOOD
 ESTABLISHED BY: C.L.G. YEAR: 1926 STATE: Hawaii
 RECOVERED BY: D.M. Whipp YEAR: 1966 COUNTY: Kauai
 Island: Kauai

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.5 METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS.

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
Kokole Point Light 1962				00 00 00.0
Kekaha, US Army Training Station				03 12 51.6
Radio Mast (center & highest 1 of 9) 1964	WNW			
RM No. 2	WNW	34.676	10.569	11 22 46
RM No. 1	NNE	33.041	10.071	103 02 23

Station mark was recovered and found solid, however it has been scraped and part of the stamping was obliterated. The disk was re-stamped and two reference marks, number one and two, were established. A complete description follows:

Station is located about 3/4 mile northwest of Waimea and 1200 feet southwest of Hawaiian Government Survey station KIKIAOLA, at about 400 feet elevation, among kiawe trees along the southwest side of Kekaha Ditch, opposite the point where 4 iron pipes are driven into the bank. To reach station from the First National Bank in Waimea, go north-

west on State Highway 50 for 0.4 mile; turn right on paved road, past hospital, for 0.45 mile to fork; take left fork, winding upgrade, for 0.9 mile to dirt road left, at canal crossing highway. Go left on dirt road, along left side of Kekaha Ditch, for 0.15 mile to board gate. Pass through gate and continue for 0.5 mile to footbridge crossing ditch on right. Continue along ditch for 0.3 mile to station on left.

Station mark is a standard disk stamped "FLOOD 1926", cemented in a drill hole in a brown, 30-inch, oval-shaped boulder that projects 1 foot; 37 feet southwest of edge of the ditch-bank road, 51 feet southwest of edge of ditch, 30 feet south of a triangle blaze on a large tree, 65 yards southeast of a concrete wall in the ditch, 9 feet lower than road, and midway between lines extended from the first two canefield roads west of Waimea.

Reference mark number one is a standard disk stamped "FLOOD 1926 NO 1 1966", cemented in a drill hole in a 20-inch boulder that is flush with ground on uphill side and projects 6 inches on lower side. It is 5 feet southwest of edge of road, 19.5 feet southwest of edge of ditch, 11.3 feet east of the triangle blaze and 8 feet higher than station mark.

Reference mark number two is a standard disk stamped "FLOOD 1926 NO 2 1966", cemented in a drill hole in a 20-inch-diameter rock outcrop projecting 8 inches. It is 48 feet southwest of edge of road and 3 feet lower than station mark.

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

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

USCOMS-DC 5717b-P00

ADJUSTED HORIZONTAL CONTROL DATA

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

SOURCE: G-SP156

GEODETIC LATITUDE: 21° 58' 20.54"	ELEVATION: 122 METERS
GEODETIC LONGITUDE: 159° 40' 32.38"	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	B OR Δ OR ANGLE *
HI 4	5104	440,476.54	50,541.70	- 0° 03' 57"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
KOKOLE POINT LIGHT	97 11 03.8	97 15 01	5104

QI 190

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 211594 STATION 1010
 HAWAII
 LATITUDE 21 ° 30' TO 22 ° 00'
 LONGITUDE 159 ° 30' TO 160 ° 00'
 DIAGRAM NF 4-6 KAUAI

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Hanapepe, Breakwater Light

CHIEF OF PARTY: F.L. Jeffries YEAR: 1968 STATE: Hawaii COUNTY: Kauai

Description, including sketch of object: The station is located at the southwest end of the breakwater on the east side of Hanapepe Bay. It is a flashing white light mounted atop a white-painted concrete pyramid, about 25 feet in height. Point observed was the center of the light.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HANAPEPE BREAKWATER LIGHT

STATE: HAWAII YEAR: 1968 THIRD ORDER

SOURCE: G-14107

GEODETIC LATITUDE:	21 ° 53 ' 59.83839	ELEVATION	METERS
GEODETIC LONGITUDE:	159 35 37.82014		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 108 Δ #1 ANGLE*
HI 4	5104	468,186.24	24,210.77	- 0° 02' 06"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE § 108 Δ #1 FORMULA NEGLECTING THE SECOND TERM.

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

QF 621

FORM CGOS-525b (1-68)
 USCOMM-DC 18810-P48

Described by _____
 U.S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

LOST IN HURRICANE MIKI

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 211594 STATION 1011
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUI

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

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

SOURCE: G-SP156
 NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21° 56' 47.12"	ELEVATION:	METERS
GEODETIC LONGITUDE:	159 39 48.86		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ ANGLE*
HI 4	5104	444,562.85	41,110.41	- 0° 03' 40"

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

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

QI 215

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 211594 STATION 1012
 HAWAII
 LATITUDE 21 ° 30' TO 22 ° 00'
 LONGITUDE 159 ° 30' TO 160 ° 00'
 DIAGRAM NF 4-6 KAUAI

NO ORIGINAL TEXT

Ioleau (Kauai Island, H. D. King, 1904; O. B. French, 1910).—On a conspicuous cone-shaped hill of same name about 2 miles east of the McBryde plantation. Hill is clear of trees and brush, and station is on the highest part of the slightly flattened summit. Marked by 1/4-inch gas pipe.

Form 528
 (11-2-55)

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

R

NAME OF STATION: Ioleau
 ESTABLISHED BY: H.D. King YEAR: 1904 STATE: Hawaii
 RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Kauai
 Island: Kauai

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

Station is gone.

It was located on a point which now has sugar cane fields on it, at the northwest corner of Kukuioolono Park golf course.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: IOLEAU
 STATE: HAWAII YEAR: 1904 THIRD -ORDER
 SOURCE: G-SP156

GEODETIC LATITUDE:	21 ° 54 ' 12.626	ELEVATION:	189
GEODETIC LONGITUDE:	159 31 54.717	SCALED	METERS FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ 01 ANGLE *
HI 4	5104	489,196.95	25,492.53	- 0 ° 00 ' 43 "

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
	0' " "	0' " "	

* 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.

CGM-DC 343 14

QI 242

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 211594 STATION 1013
 HAWAII
 LATITUDE 21 ° 30' TO 22 ° 00'
 LONGITUDE 159 ° 30' TO 160 ° 00'
 DIAGRAM NF 46 KAUI

Kani (Kauai Island, O. B. French, 1910).—On a rounding rocky point, 1¼ miles southeast of Makaweli mill, 30 meters back from and 15 feet above high-water mark. Marked by drill hole in rock, and an "ahu" (cairn).

Form 528
 (11-8-68)
 U. S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

R

NAME OF STATION: Kani
 ESTABLISHED BY: O.B.F. YEAR: 1910 STATE: Hawaii
 RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Kauai
 Island: Kauai

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

Station is gone.

There is now a garbage dump on this section shoreline.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KANI
 STATE: HAWAII YEAR: 1910 THIRD -ORDER

SOURCE: G-SP156
 NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE: 21 ° 54 ' 33.17	ELEVATION: 0 METERS
GEODETIC LONGITUDE: 159 37 36.65	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ 10R Δ θ 1 ANGLE *
HI 4	5104	450,998.36	27,582.18	- 0 ° 02 ' 50 "

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

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

* 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

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 211594 STATION 1014
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

Keikei (Kauai Island, F. G. Engle, 1927).—On southwest coast of Kauai, 2 miles west of Kekaha, on a sandy hummock about 100 meters inshore, and 200 meters east of fence line and mouth of Nakeikei Elima ditch. A sandy road going through algeroba pasture lands, starting as a left-hand branch from the center of Kekaha village, passes within about 500 meters of station. Station marked by a bronze hydrographic disk wedged in a drill hole in a black rock or bowlder.

Form 526
 (11-8-55)

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

R

NAME OF STATION: **KEIKEI**
 ESTABLISHED BY: **F.G.E.** YEAR: **1927** STATE: **Hawaii**
 RECOVERED BY: **D.M. Whipp** YEAR: **1966** COUNTY: **Kauai**
 Island: **Kauai**

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

Station was searched for by inverse from a trial point established nearby, but could not be found and is believed destroyed. The sand ridge has receded about 4 feet inshore from where it was located.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: **KEIKEI**
 STATE: **HAWAII** YEAR: **1927** THIRD ORDER

SOURCE: **G-SP156**

GEODETIC LATITUDE:	21° 58' 29.170	ELEVATION:	4 METERS
GEODETIC LONGITUDE:	159 44 01.528	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ §1 ANGLE *
HI 4	5104	420,791.52	51,438.85	- 0° 05' 15"

* 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

* 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

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1015
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

DEPARTMENT OF COMMERCE
 U.S. COAST AND GEODETIC SURVEY
 FORM 535 D

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

Kekaha Army Training Sta ^{Highest}
 NAME OF STATION: Rad Mst YEAR: 1964 STATE: Hawaii COUNTY: Kauai
 Island: Kauai

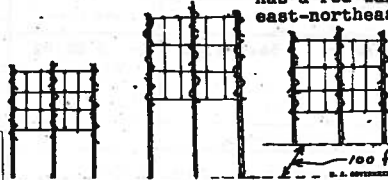
CHIEF OF PARTY: W.R. Porter

Description, including sketch of object: On west coast of Kauai, 3 miles west-northwest of Kekaha, 2-3/4 miles southeast of Bonham Airfield and about 600 yards north-northwest of Kokole Pt. Light.

Station is the center mast of 9 skeleton steel structures that set on concrete bases and are supported by guy-cables. All of the masts have zig-sag superstructures attached vertically onto them. The masts are in sets of 3 and each set has a web of cables on it.

Station is 410 feet high and the other masts of its set are 400 feet. The other 2 sets of masts are 280 feet high. The center mast of each set has a red warning light on top. The masts set on an east-northeast to west-southwest line of about 1000 feet. The easterly set is offset 100 feet northerly from the line of the other 2 sets.

The point intersected was the red light on top, which is on vertical center line of mast.



100 ft.
 U.S. GOVERNMENT PRINTING OFFICE 16-50811-1

Described by _____

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KEKAHA AR TRAINING STA RAD MST
 STATE: HAWAII YEAR: 1964 THIRD ORDER

SOURCE: G-12664

GEODETIC LATITUDE: 21° 59' 13.033	ELEVATION: METERS
GEODETIC LONGITUDE: 159 45 39.458	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ IOR Δ θ I ANGLE *
HI 4	5104	411,581.40	55,879.86	- 0° 05' 52"

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

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

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 211594 STATION 1016
 HAWAII
 LATITUDE 21 ° 30' TO 22 ° 00'
 LONGITUDE 159 ° 30' TO 160 ° 00'
 DIAGRAM NF 4-6 KAUAI

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Kekaha, USN Rad Mast Cen of N3

CHIEF OF PARTY: P.C. Johnson YEAR: 1967 STATE: Hawaii COUNTY: Kauai

Description, including sketch of object: From the intersection of State Highways 50 and 55 in Kekaha, go northwest on State Highway 50 for 2.45 miles to a road on the left. Turn left and go southwest and west along an asphalt road for 0.7 mile to the station.

The station is the center and tallest one of the most northerly group of three radio masts. It is triangular in cross-section, painted alternately red and white and is about 250 feet in height. Point observed was the top and center of the mast.

(R.W. Warner, 1970)--Mast was removed in 1969.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KEKAHA USN RAD CEN OF N3

STATE: HAWAII YEAR: 1967 SECOND ORDER

SOURCE: G-14044

GEODETIC LATITUDE:	21 ° 59' 17.1144	ELEVATION:	5	METERS
GEODETIC LONGITUDE:	159 45 38.8035	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ IOR Δ ϕ ANGLE °
HI 4	5104	411,643.70	56,291.60	- 0° 05' 52"

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

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

QF 602

FORM C&GS-525b (12-68)
 USCOMM-DC 36290-P88

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

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

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1017
 HAWAII
 LATITUDE 21 ° 30' TO 22 ° 00'
 LONGITUDE 159 ° 30' TO 160 ° 00'
 DIAGRAM NF 4-6 KAUA'I

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Kekaha, USN Rad Mast Cen of S3

CHIEF OF PARTY: P.C. Johnson YEAR: 1967 STATE: Hawaii COUNTY: Kauai

Description, including sketch of object: From the intersection of State Highways 50 and 55 in Kekaha, go northwest on State Highway 50 for 2.45 miles to a road on the left. Turn left and go southwest and west on an asphalt road for 0.7 mile to the station.

The station is the center and tallest one of the most southerly group of three radio masts. It is triangular in cross-section, painted alternately red and white and is about 250 feet in overall height. Point observed was the top and center of the mast.

(R.W.Warner, 1970)--Mast was removed in 1969.

FORM C&GS-525 (12-68)
 USCOMA-DC 30290-P69

Described by U.S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KEKAHA USN RAD CEN OF S3

STATE: HAWAII YEAR: 1967 SECOND -ORDER

SOURCE: G-14044

GEODETIC LATITUDE:	21 ° 59' 08.5698	ELEVATION:	5	METERS
GEODETIC LONGITUDE:	159 45 41.5505	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ § 1 ANGLE °
HI 4	5104	411,383.69	55,429.82	- 0° 05' 53"

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

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

QF 604

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 211594 STATION 1018
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Kekaha, USN Rad Mast Cen of 9

CHIEF OF PARTY: P.C. Johnson YEAR: 1967 STATE: Hawaii COUNTY: Kauai

Description, including sketch of object: From the intersection of State Highways 50 and 55 in Kekaha, go northwest on State Highway 50 for 2.45 miles to a road on the left. Turn left and go southwest and west on an asphalt road for 0.7 mile to the station.

The station is the center and tallest one of the center group of three radio masts. It is triangular in cross-section, painted alternately red and white and is about 300 feet in height. Point observed was the top and center of the mast.

(R.W. Warner, 1970)--Mast was removed in 1969.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KEKAHA USN RAD CEN OF 9

STATE: HAWAII YEAR: 1967 SECOND -ORDER

SOURCE: G-14044

GEODETIC LATITUDE: 21° 59' 13.0193	ELEVATION: 5 METERS
GEODETIC LONGITUDE: 159 45 39.4591	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ (OR Δ) ANGLE*
HI 4	5104	411,581.29	55,878.48	- 0° 05' 52"

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

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

FORM C&GS-325b (12-68)
 USCOM-DC 38290-P88

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

QF 603

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 211594 STATION 1019
 HAWAII
 LATITUDE 21 ° 30' TO 22 ° 00'
 LONGITUDE 159 ° 30' TO 160 ° 00'
 DIAGRAM NF 4-6 KAUI

SEE STATION RANGE F

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KIKIAOLA BOUNDARY

STATE: HAWAII

YEAR: 1967

SECOND -ORDER

SOURCE: G-13403

NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21 ° 57' 49.1433	ELEVATION:	3	METERS
GEODETIC LONGITUDE:	159 42 02.3592	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ IOR Δ ϕ 1 ANGLE °
HI 4	5104	432,002.97	47,383.94	- 0° 04' 30"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From 3000)	PLANE AZIMUTH* (From 3000)	CODE

POSITION DETERMINED BY TRAVERSE FROM STATION RANGE F

QF 525

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1020
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 46 KAUI

NO ORIGINAL TEXT

Kokole (Kauai Island, O. B. French, 1910; F. G. Engle, 1927).—On the south-west coast of Kauai, on the sand beach, 67.78 meters (222.4 feet) back from and 5 feet above high-water mark. Center of Kokole Light is 7.556 meters (24.79 feet) from the station in azimuth 182° 48'. Station is identical with old station at this point, the original mark, a 1-inch gas pipe, being replaced in 1910 by a brass bolt with cross in top set in a 6-inch cylinder of concrete. A bronze disk set in concrete platform of lighthouse is 6.439 meters (21.13 feet) from station in azimuth 183° 59'. A 1½-inch pipe in sand dune is 14.85 meters (48.72 feet) from station in azimuth 277° 43'; and another similar mark in sand dune is distant 73.61 meters (241.5 feet) in azimuth 115° 55'. Reference mark No. 2 of 1910 was recovered in 1927; it is a 1-inch gas pipe driven into the middle of a sand dune with 6 inches projecting; its distance and azimuth from the station are as follows: 46.22 feet, 97° 51'.

10-19-63) COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: **KOKOLE**
 ESTABLISHED BY: **O.B.F.** YEAR: 1910 STATE: **Hawaii**
 RECOVERED BY: **D.G. Rushford** YEAR: 1964 COUNTY: **Kauai**
 Island: **Kauai**

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

OBJECT	BEARING	DISTANCE		AZIMUTH DIRECTION
		FEET	METERS	
1927 DISTANCES AND AZIMUTHS				
Kokole Light (Center)		24.79	7.556	182 48
Reference Mark		21.13	6.439	183 59

Station mark and reference mark were recovered in good condition. Station mark was described as being a brass bolt, but is unstamped Hawaii Territorial Survey bronze disk. A USGS report states that this mark was set by the HTS in 1930. The "Type B" Hawaii Territorial Survey signal found at the station was probably also built at that time. This signal was found setting about 5 feet west from the station mark, badly cracked, but fairly level. It was learned that a tidal wave had shifted the signal. A wooden target was found in the signal, so to eliminate further erroneous use of the

station the concrete signal was completely broken apart.

The distance to the reference mark checked exactly with the old measurement, however the angle could not be checked because the station is completely obstructed by high kiawe trees. The reference pipes in the old description were not found. A complete description follows:

Station is located along the west coast of Kauai, about 3 miles west-northwest of Kekaha and 4 miles south-southeast of Bonham Airbase, on Kokole Point, by the Kokole Light.

To reach station from the junction of State Highways 50 and 55 in Kekaha, go northerly on State Highway 50 for 2.1 miles to side road left at sign "OFFICIAL DUMPING GROUND". Turn left and go 0.75 mile to firing range target building. (Sand begins here and 4-wheel-drive truck is needed). Go northwest about 250 yards on sand road to light tower and station on southwest side of high trees.

Station mark is a standard Hawaii Territorial Survey bronze disk, unstamped, set in the top of a concrete monument about 6 inches below sand level. It is 24.79 feet south from center of the light and 11.4 feet northwest of a white, fence-corner post.

Reference mark is a standard disk stamped "KOKOLE 1927", cemented in a drill hole in the southeast corner of the concrete foundation of the Kokole Light. It is about 1 foot higher than the station mark.

(continued on next page)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: **KOKOLE**

STATE: **HAWAII**

YEAR: 1910

SECOND

ORDER

SOURCE: **G-SP156**

GEODETIC LATITUDE: 21° 58' 55.454	ELEVATION: 12.02 METERS
GEODETIC LONGITUDE: 159 45 32.077	39.4 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ (OR Δ) ANGLE*
HI 4	5104	412,273.07	54,104.82	- 0° 05' 49"

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

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

DESTROYED BY
 HURRICANE INIKI

QI-034

HORIZONTAL CONTROL DATA

by the
 NATIONAL GEODETIC SURVEY
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1020

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

KOKOLE (continued)

FORM 524a
 (9-18-65)

U.S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: KOKOLE
 ESTABLISHED BY: O.B.F. YEAR: 1910 STATE: Hawaii
 RECOVERED BY: D.M. Whipp YEAR: 1966 COUNTY: Kauai
 Island: Kauai

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.5 METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS.

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
RM No. 1	N	21.112	6.435	183 59 ° AZIMUTH "
RM No. 2	WNW	12.009	3.661	114 24 41
Kokole Point Light 1962	N	24.854	7.576	182 49 11

Station mark and reference mark number one were recovered in good condition. The old Hawaiian Territorial Survey Type B signal was shifted by a tidal wave and was later demolished. The station is completely hidden among large kiawe trees.

A new reference mark, number two, was established. A complete description follows:

Station is located along the west coast of Kauai, about 3 miles west-northwest of Kekaha and 4 miles south-southeast of Bonham Airbase, on Kokole Point, by Kokole Point Light.

To reach station from the junction of State Highways 50 & 55 at Kekaha,

go northwest on State Highway 50 for 2.1 miles to side road left at sign "OFFICIAL DUMPING GROUND". Turn left and go 0.75 mile to rifle range target bunker. Bear right and follow sand road 0.2 mile; go left across rise, then right along edge of brush for 75 yards to station. NOTE: (A 4-wheel-drive vehicle is required from rifle range to station.)

Station mark is a Hawaiian Territorial Survey disk, stamped "KOKOLE 1910", set in the top of a concrete monument 4 inches below sand level. It is about 125 yards northeast of shoreline and 24.854 feet south from center of Kokole Point Light.

Reference mark number one is a standard disk stamped "KOKOLE 1 1927", cemented in a drill hole in the southeast corner of the concrete foundation of the small building under the light tower and is about 14 inches higher than station mark.

Reference mark number two is a standard disk stamped "KOKOLE 1910 NO 2 1966", set in concrete in the top of a 4-inch-diameter, cast-iron pipe that projects 5 inches above ground. It is on the high part of the sand rise seaward from the light tower, 18.7 feet southwest of southwest leg of light tower, and about 20 inches higher than station mark.

Kokole Point Light is a white, wooden, pyramidal, skeleton tower, 43 feet high.

FORM 525
 (11-8-65)

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

NAME OF STATION: KOKOLE
 ESTABLISHED BY: O.B.F. YEAR: 1910 STATE: Hawaii
 RECOVERED BY: E.H.F. YEAR: 1971 COUNTY: Kauai

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

The brass bolt with cross set in 6-inch cylinder was removed by the Hawaii Territory Survey in 1930 and replaced with a 12" x 18" concrete monument with unstamped bronze disk. A Type B-1 structure was also built over the station at this time. In 1964, R.F. Hanson recovered the station mark and found the concrete platform pushed 5-feet west of station mark and destroyed same.

The disk in concrete block has been recovered and a new Type B-1 superstructure has been built over the station. The reference mark in concrete base of Lighthouse was also recovered in good condition. R.F. Hanson's to-reach description of 1964 is adequate.

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

Coast-DC 243 14'

DESTROYED BY
 HURRICANE INIKI

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 211594 STATION 1021
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY
 FORM 535 7-59

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: **KOKOLE POINT LIGHT** YEAR: 1962 STATE: Hawaii COUNTY: Kauai
 CHIEF OF PARTY: USGS

Description, including sketch of object: Station is on the W coast of Kauai, about 4 mi. SW of Bonham ALP, about 3 mi. NW of Kekaha and about 0.3 mi. S of the US Army Radio Station Towers.
 The station is the center of the revolving light on the top of a 40 ft. wooden tower.

NOTE: Station is noted in the description for KOKOLE 1910 and tied to this station by traverse.

U. S. GOVERNMENT PRINTING OFFICE 16-50821-4

Described by _____

*UNDERMINED
 LEANING BY HIGH WAVES
 FROM HURRICANE INIKI*

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KOKOLE POINT LIGHT OBS BY USGS
 STATE: HAWAII YEAR: 1962 THIRD -ORDER

SOURCE: G-12992

GEODETIC LATITUDE:	21° 58' 55.699	ELEVATION:	METERS
GEODETIC LONGITUDE:	159 45 32.064		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 108 Δ α: ANGLE*
HI 4	5104	412,274.34	54,129.54	- 0° 05' 49"

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

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

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

QF 254

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1022
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 46 KAUAI

NO ORIGINAL TEXT

Lani (Kauai Island, O. B. French, 1910; C. L. Garner, 1926).—In the southern part of Kauai, on Puulani, a conspicuous bare, conical red hill, about 3 miles north of Eleele. The station, which is identical with the old Hawaiian Government Survey station, is at the center of the summit, and is approached by a road leading from Hanapepe village up through the cane fields and along the edge of the gulch of the west fork of the Hanapepe River. Marked originally by a 3-inch galvanized iron pipe set in cement; re-marked by standard United States Geological Survey bronze tablet set in concrete flush with surface of ground. Reference marks are as follows: No. 1, cross cut in rock at surface, 32.8 feet from station in azimuth 316° 18'; No. 2, cross cut in rock, 60.2 feet in azimuth 193° 41'; No. 3, cross cut in rock, 28.8 feet in azimuth 261° 22'. All reference marks are some 10 feet lower than station and distances given were measured on the slope. In 1926, reference mark No. 1, or No. 3 (not known which), was re-marked with United States Coast and Geodetic Survey standard disk reference mark.

(11-8-55)

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: LANI
 ESTABLISHED BY: O.B.F. YEAR: 1910 STATE: Hawaii
 RECOVERED BY: R.E.A. YEAR: 1961 COUNTY: Kauai

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

The station and one reference mark was recovered in good condition. The reference mark is stamped LANI NO 1 1926.

To reach the station from the intersection of State Route 50 and "Mio Street" in Hanapepe, go north on Mio St., through "Hanapepe Heights", to the end of pavement; continue straight ahead through cane fields to a crossroad; go straight ahead, along a fence line on right to an irrigation ditch and turn a sharp left and continue along irrigation ditch; take first right turn, crossing the irrigation ditch, and proceed to the corner of the cane field and another irrigation ditch. From this point, pack northerly, to the high point of Puu Lani and the station. A 10 minute pack.

It is possible to drive closer to the station by utilizing roadways of the Gay-Robinson Ranch, but keys must be obtained from the ranch headquarters in order to pass through locked gates.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: LANI
 ESTABLISHED BY: O.B.F. YEAR: 1910 STATE: Hawaii
 RECOVERED BY: Walter R. Helm YEAR: 1961 COUNTY: Kauai

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 not occupied, reference marks not remeasured.				

The station mark and reference marks 2 and 3 were recovered. The station mark now has a 6-foot square concrete platform around it and a 2-foot concrete monument over it. The monument has a 2-inch opening down through it and a slot under it.

To reach the station from the junction of the main street and Moi Road at the west edge of Hanapepe, go north on Moi Road for 1.45 miles to a T-intersection. Turn left and go 50 feet to a fork. Take the right fork and go 1.0 mile to a T-road. Continue straight ahead for 0.2 mile to a crossroad. Turn right and go 0.7 mile to the end of truck travel at a sharp curve in road. Pack north across irrigation canal and up hill to highest point and the station. A 10-minute pack.

(continued on next page)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: LANI
 STATE: HAWAII YEAR: 1910 SECOND ORDER
 SOURCE: G-SP156

GEODETIC LATITUDE: 21° 57' 10.740	ELEVATION: 311.86 METERS
GEODETIC LONGITUDE: 159 35 21.953	1023.2 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ ± ANGLE °
HI 4	5104	469,691.73	43,473.10	- 0° 02' 00"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
ALEX	266 02 00.3	266 04 00	5104

QI 035

HORIZONTAL CONTROL DATA

by the
 NATIONAL GEODETIC SURVEY
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1022
 LATITUDE ° ' TO ° '
 LONGITUDE ° ' TO ° '
 DIAGRAM

LANI (continued)

FORM 526a
 (2-18-59)

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

NAME OF STATION: **LANI**
 ESTABLISHED BY: **O.B. French** YEAR: **1910** STATE: **Hawaii**
 RECOVERED BY: **O.A. Burroughs** YEAR: **1962** COUNTY: **Kauai**

HEIGHT OF TELESCOPE ABOVE STATION MARK **2.00** METERS, HEIGHT OF LIGHT ABOVE STATION MARK METERS.

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
		DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION		
POHAKEA (HGS) 1910				0 00 00.0
R.M. 1	SE	(31.98)	(9.748)	36 22 28
New Mill, McBryde Sugar Co., Mill Stack	SSE	Approx. 4	miles	53 57 01.4
R.M. 2	N	(59.11)	(18.017)	273 41 07

The station mark and 2 reference marks were recovered and found to be in good condition. A new description follows:

The station is in the southern part of Kauai on Puulani, a conspicuous, conical red hill, 3 miles north of Eleele and 5 miles east of Waiimea. There are some trees on the northwest side of the station hill.

To reach the station from the junction of State Highway 50 and Moi Street, at the west side of Hanapepe, go north on Moi Street through Hanapepe Heights for 1.0 mile to the end of the paved street. Continue straight ahead, north on a field road between cane fields for 0.4 mile to a crossroad. Continue across the road bearing to the left, north, on the east side of a cane field and the west side of Kapahili Gulch for 1.1 miles to a bridge across an irrigation ditch. Turn right crossing the irrigation ditch on a cane field road and continue for 0.7 mile to the corner of the cane field and another irrigation ditch where the road turns left, west, and the end of truck travel. From this point pack northerly to the highest point and the station. A 10 minute pack. It is also possible to drive to the station by continuing on the field road west for 0.9 mile to a bridge across an irrigation ditch and a locked gate. (Key must be obtained from Gay-Robinson Ranch Headquarters at Makaweli). Pass through the gate, up hill, on a bladed road, northerly for 0.5 mile to a fork. Turn left and continue for 0.5 mile to a reverse-Y just before reaching the top of the ridge. Turn sharp right, southerly, on a track road and continue 0.4 mile to the station on the top of a small hill.

The station mark is a standard U.S. Geological Survey disk, stamping unknown, in concrete flush with the surface of the ground. The mark has a superstructure type B monument built over the mark.

Reference mark 1 is a standard disk, stamped LANI 1926, set in outcropping bedrock, flush with the surface of the ground. The mark is 5 feet lower than the station mark. Note: In 1926 reference mark 1 a cross cut in the rock was remarked with a standard reference mark disk.

Reference mark 2 is a cross cut in a 3 by 3 foot outcropping bedrock projecting 18 inches. It is 9 feet lower than the station mark.

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

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

USCOMM-DC 27173-P29

FORM 526a
 (2-18-59)

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

NAME OF STATION: **LANI**
 ESTABLISHED BY: **O.B.F.** YEAR: **1910** STATE: **Hawaii**
 RECOVERED BY: **D.M. Whipp** YEAR: **1965** COUNTY: **Kauai**
 Island: **Kauai**

HEIGHT OF TELESCOPE ABOVE STATION MARK **1.73** METERS, HEIGHT OF LIGHT ABOVE STATION MARK METERS.

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
		DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION		
POHAKEA 1910-1928				00 00 00.0
RM No. 1	ESE	31.990	9.751	36 20 08
RM No. 2	NNE	59.095	18.012	273 41 09

Station mark and reference mark number one were recovered in good condition. Reference cross number two was recovered, it was quite indistinct and a new reference mark, number two, was set at its center. A complete description follows:

Station is located about 3 miles due north of Eleele on a hill of about 1023 feet elevation, known as Puulani, which is covered with trees, except for a small bare area on the east end, where station is located. There is a cinder pit at northwest base of hill.

To reach station from the post office at Kaunakani, go west on State

Highway 50 for 0.8 mile; turn right at crossroad and follow main cane-field road northeast for 2.7 miles to locked gate on left fork. Pass through gate and continue for 1.1 miles to fork at cinder pit. Take sharp right fork and follow down along edge of trees for 0.2 mile; take left fork, up hillside, for 0.05 mile; take dim right fork and go east 0.1 mile to station on end of hill.

Station mark is a U.S. Geological Survey disk, stamped "1023", set in concrete 6 inches beneath the 6 x 6-foot, concrete platform, which is flush with ground, of a Type B-1 signal built by the Hawaii Territorial Survey in 1930.

Reference mark number one is a standard disk stamped "LANI NO 1 1926"; cemented in a drill hole, at the center of old reference cross #1, in a small, rounded, rock outcrop that projects 2 inches. It is down on the east slope of the hillside, 4.7 feet lower than station mark.

Reference mark number two is a standard disk stamped "LANI 1910 1926 NO 2 1965", cemented in a drill hole, at the center of old reference cross #2, in a 30-inch rock outcrop that projects 2 feet on the lower side. It is along the northeast edge of the hill and is 5.8 feet lower than station mark.

NOTE: Key for locked gate may be obtained at the Gay-Robinson Ranch headquarters 0.8 mile west on State Highway 50 from the Makaweli post office, thence 0.5 mile northerly on farm drive.

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

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

USCOMM-DC 27173-P29

(continued on next page)

HORIZONTAL CONTROL DATA

QUAD 211594 STATION 1022

by the
 NATIONAL GEODETIC SURVEY
 OLD HAWAIIAN DATUM

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

LANI (continued)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: LANI
 ESTABLISHED BY: O.B.F. YEAR: 1910 STATE: Hawaii BENCH MARK ALSO
 RECOVERED BY: F.L. Jeffries YEAR: 1968 COUNTY: Kauai
 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: 3.3 miles north of Hanapepe
 HEIGHT OF TELESCOPE ABOVE STATION MARK 4 FEET. HEIGHT OF LIGHT ABOVE STATION MARK 4 FEET.

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	
ALEX				00 00 00.00
Reference Mark No. 1	SE	32.01	9.757	50 12 33
Reference Mark No. 2	N	59.13	18.022	287 33 18

The station mark, reference mark No. 1 and reference mark No. 2 were recovered and found to be in good condition. The directions to both reference marks were verified but a discrepancy was noted in the distances. The distance to reference mark No. 1 was found to be .006 meter longer than the measurement obtained in 1965 and the distance to reference mark No. 2 was found to be .010 meter longer. The 1968 measurements were checked in the field and found to be correct. A new description follows:

The station is located atop a low hill that is covered with trees and brush on the west side and bare on the east, about 6.1 miles east of Waimea, 5.2 miles north-west of Kalaheo and 3.3 miles north of Hanapepe.

To reach the station from the U.S. Post Office at Hanapepe, go south on Koula Road for 0.1 mile to State Highway 50. Turn right and go west on State Highway 50 for 0.4 mile to a road on the right. Turn right, as per sign, "Hanapepe Heights" and go north for 0.05 mile to a crossroad. Continue straight ahead, north, on Moi Road for 1.0 mile to the end of the pavement. Continue straight ahead, north, on a dirt road for 0.05 mile to a crossroad. Continue straight ahead, north, for 1.1 miles to a crossroad. Turn right, crossing a bridge over an irrigation canal and go northerly for 0.8 mile to a sharp turn in the road at the corner of a cane field. Pack northerly, crossing an irrigation canal and a fence, for about 10 minutes to the top of the hill and the station mark.

The station mark is covered with a Type B superstructure and is not accessible for inspection. It is on the highest point of the hill. The instrument was plumbed over the center of the top of the pipe that supports the target.

Reference mark No. 1 is a standard disk, stamped LANI 1926 NO 1, cemented in a drill hole in a small boulder that is flush with the surface of the ground. It is about 6 feet lower in elevation than the station mark and is not visible from the station mark at instrument height.

Reference mark No. 2 is a standard disk, stamped LANI 1910 1926 NO 2 1965, cemented in a drill hole in a large boulder that projects about 18 inches above the surface of the ground. It is about 10 feet lower in elevation than the station mark and is not visible from the station mark at instrument height.

of chief of party should be inserted here. The person who actually visited the station should sign his name at the end of the entry note.

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1024
 HAWAII
 LATITUDE 21 ° 30' TO 22 ° 00'
 LONGITUDE 159 ° 30' TO 160 ° 00'
 DIAGRAM NF 4-6 KAUAI

McBryde new sugar mill, stack (Kauai Island, K. T. Adams, 1928).—Near southern coast of Kauai, 1½ miles east of Port Allen; the new stack at McBryde's new sugar mill, built in 1928. It is 225 feet tall, and 24 feet in diameter at its base, which is roughly 200 feet above sea level. It is the most prominent stack in the vicinity and when seen from seaward presents the appearance of a tall white lighthouse.

Form 525b
 (11-8-55)

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

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Mc Bryde New Sugar Mill Stack

Recovered By:

CHIEF OF PARTY: C. A. Burroughs YEAR: 1962 STATE: Hawaii COUNTY: Kauai

Description, including sketch of object:

The stack is at New Mill and 2 miles east southeast of Eleale in the southern part of Kauai. It is owned by McBryde Sugar Company. The Stack is 225 feet high, built of reinforced concrete with steel reinforcing bands on the outside. The diameter at the base is 20 feet and 11 feet 4 inches at the top. The top is painted black.

The point observed was the top center of the stack.

Form 525
 (11-8-55)

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

NAME OF STATION: McBryde new sugar mill, Stack

ESTABLISHED BY: K.T.A. YEAR: 1928 STATE: Hawaii

RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Kauai
 Island: Kauai

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

Station was recovered as described. It is a tan colored stack, with top section painted black, and is 225 feet high and 20 feet in diameter at the base. Located at the McBryde Sugar Mill in Numila Village, on State Highway 54, about 2 miles east-southeast of Hanapepe.

* 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

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MC BRYDE NEW SUGAR MILL STACK

STATE: HAWAII

YEAR: 1928

THIRD

- ORDER

SOURCE: G-SP156

GEODETIC LATITUDE	21 ° 54' 02.506	ELEVATION:	METERS
GEODETIC LONGITUDE:	159 33 42.935		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 109 Δ #1 ANGLE *
HI 4	5104	479,005.50	24,474.47	- 0 ° 01' 23"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE § 109 Δ #1 FORMULA NEGLECTING THE SECOND TERM.

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

QI 238

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1025
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

Nomilo (Kauai Island, O. B. French, 1910).—On south coast of Kauai, on a rounding bare hill about midway between Koloa and Eleele, and just west of the Nomilo Fishpond, which is just back of Makaokahai Point. The station is about 50 meters toward the sea from the highest point, on gently sloping ground, and is identical with the station of the Hawaiian Government Survey. Marked by a 1½-inch gas pipe driven into the gravelly soil. Reference marks were as follows: No. 1, cross cut in outcropping rock, distant along slope from station 37.8 feet, azimuth 304° 54'; No. 2, cross cut in outcropping rock, 30.8 feet, 327° 43'; No. 3, cross cut in rock 28.7 feet, 161° 54'.

NOMILO (Kauai County, Hawaii, O.B.F., 1910; , 1943)
 --Letter of Alexander & Baldwin, Ltd., 822 Bishop Street, Honolulu, Hawaii, dated August 12, 1943:

We have been informed that when employees of McBryde Sugar Co., Ltd., visited the Nomilo cinder quarry on August 7, 1943, they discovered that the station had disappeared as a result of quarrying operations by the U.S. Army. No warning that the destruction of this station was contemplated had been given to the McBryde Sugar Co., and consequently no measures had been taken to reference or preserve this station.

Form 526
 (11-8-65)

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

R

NAME OF STATION: NOMILO
ESTABLISHED BY: O.B.F. **YEAR:** 1910 **STATE:** Hawaii
RECOVERED BY: D.M. Whipp **YEAR:** 1965 **COUNTY:** Kauai
Island: Kauai

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

Station has been destroyed by quarrying operations. A great portion of the cinder hill on which it was located has been removed.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: NOMILO
STATE: HAWAII **YEAR:** 1910 **SECOND ORDER**

SOURCE: G-SP156

GEODETTIC LATITUDE:	21° 53' 23.694	ELEVATION:	37 METERS
GEODETTIC LONGITUDE:	159 31 54.893	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ 01 ANGLE*
HI 4	5104	489,179.35	20,554.99	- 0° 00' 43"

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

TO STATION OR OBJECT	GEODETTIC 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 is to be used for each station recovered.
 Comm-DC 343 14

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1026
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Numila, Radio Station KUA I Mast

CHIEF OF PARTY: F.L. Jeffries YEAR: 1968 STATE: Hawaii COUNTY: Kauai

Description, including sketch of object: The station is located near the south coast of Kauai, about 2.3 miles southeast of Eleele, 0.5 mile south-southeast of the village of Numila and 0.4 mile northwest of Koheo Point. The station is a guyed mast with two red lights on top and is painted alternately red and white. Height is 285 feet. Point observed was the top and center of the mast.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: NUMILA RADIO STATION KUA I MAST

STATE: HAWAII YEAR: 1968 THIRD ORDER

SOURCE: G-14107

GEODETIC LATITUDE:	21° 53' 37.28360	ELEVATION:	METERS
GEODETIC LONGITUDE:	159 33 27.06615		FEET

STATE COORDINATES (Fvvi)				
STATE & ZONE	CODE	X	Y	β DR Δ α ANGLE *
HI 4	5104	480,498.97	21,928.79	- 0 01 17"

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

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

FORM CGS-525b (1-68)
 USCOMM-DC 18810-198

Described by U.S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1027
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 46 KAUAI

Oomano (Kauai Island, F. G. Engle, 1927).—On southwest coast of Kauai, in the beach settlement of Kekaha. Reached by taking the macadam road to the beach which branches off from the main highway about ¼ mile east of the center of Kekaha village; when the beach is reached go east along the beach about 140 meters to the station. Station is 10.45 meters from mean high-water mark, is in a pile of limestone rock and concrete which protrudes ¼ foot above the sandy soil, and is marked according to note 1c, a standard disk in irregular mass of concrete. Reference mark, note 12c, a standard reference disk in bowlder, is 11.142 meters (36.56 feet) from station in azimuth 118° 22'.

OOMANO (Kauai County, Hawaii, F.G.E., 1927; Hawaiian Territorial Survey, 1932) --See previous description for method of arriving at station. Erected a Type B station over the monument in April 1932. Top of a 2-1/2-in. pipe is 31 in. above the elevation of the original bronze disk.

(11-8-55)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: OOMANO
 ESTABLISHED BY: F.G.E. YEAR: 1927 STATE: Hawaii
 RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Kauai
 Island: Kauai

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

Station mark was recovered in good condition. The reference mark was searched for by distance and angle but was not found. A complete description follows:
 Station is located along the southwest coast of Kauai, at the southernmost point of the jog in State Highway 50 at the southeast end of Kekaha village, in the sandy strip between sea and highway.
 To reach station from the post office in Kekaha, go southwest on Kala Road for 0.2 mile; turn left and go southeast on State Highway 50 for 0.85 mile to station on right.
 Station mark is a standard disk stamped "OOMANO 1927", set in concrete 6 inches beneath the surface of the 6 x 6-foot, concrete platform, which is flush with ground, of the Type B-1 signal built by the Hawaii Territorial Survey in 1930. It is 37 feet north of top of sand beach, 57 feet south of center line of highway, and across highway from the east tree of a row of 4 coconut palms.
 NOTE: All old lines are blocked by trees.

Form 526
 (11-8-55)

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

R

NAME OF STATION: OOMANO
 ESTABLISHED BY: F.G.E. YEAR: 1927 STATE: Hawaii
 RECOVERED BY: P.O. Johnson YEAR: 1967 COUNTY: Kauai

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

The station mark was recovered in good condition. Because most of the lines were obstructed, reference mark No. 1 was established and occupied. Following is a new description:
 To reach the station from the junction of State Highway 50 and 55 in Kekaha, go east on State Highway 50 for 0.9 mile to the station on the right.
 The station mark, is a standard disk stamped OOMANO 1927, set under a type B Hawaiian Territorial Survey Monument. It is 57.5 feet south of the center of State Highway 50 and 38 feet north of the high tide mark of the beach.

*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.

Comp-DC 343 14

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: OOMANO

STATE: HAWAII

YEAR: 1927

THIRD

ORDER

SOURCE: G-SP156

GEODETIC LATITUDE: 21° 57' 49.496	ELEVATION: 3.23 METERS
GEODETIC LONGITUDE: 159 42 27.743	10.6 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	GEOD. Δ ANGLE*
HI 4	5104	429,613.55	47,422.72	- 0° 04' 40"

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

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

QI 200

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1028
 HAWAII
 LATITUDE 21 ° 30' TO 22 ° 00'
 LONGITUDE 159 ° 30' TO 160 ° 00'
 DIAGRAM NF 4-6 KAUAI

FORM 525
 (6-15-65)

U. S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: OOHANO RM 1 STATE: Hawaii COUNTY: Kauai
 CHIEF OF PARTY: Phillip C. Johnson YEAR: 1967 DESCRIBED BY: R.M.M.

NOTE. Desc.	HEIGHT OF TELESCOPE ABOVE STATION MARK SURFACE-STATION MARK, UNDERGROUND-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	DISTANCE		DIRECTION ¹
			FEET	METERS	
OPAE1910 1927					00 00 00.0
OOHANO 1927			28.304	8.627	309 14 52.0

Detailed description:
 The station is located in the southeast edge of Kekaha, in a grassy area between State Highway 50 and the beach.
 To reach the station from the junction of State Highway 50 and 55 in Kekaha, go east on State Highway 50 for 0.9 mile to the station on the right as described.
 The station mark, is a standard reference mark disk stamped OOHANO NO 1 1927 1967, cemented in the top of a 4-inch galvanized pipe which projects 6 inches above the surface of the ground. It is 72 feet south of the center of State Highway 50 and 26 feet north of the high tide mark of the beach.
 OOHANO 1927, is a standard station mark disk stamped OOHANO 1927, set under a type B Hawaiian Territorial Survey Monument. It is 57.5 feet south of the center of State Highway 50 and 38 feet north of the high tide mark of the beach.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: OOHANO RM 1
 STATE: HAWAII YEAR: 1967 SECOND ORDER

SOURCE: G-13403

GEODETIC LATITUDE: 21 ° 57' 49.3239	ELEVATION: 3 METERS
GEODETIC LONGITUDE: 159 42 27.5056	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE °
HI 4	5104	429,635.91	47,405.32	- 0° 04' 40"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
OPAE	178 36 37.0	178 41 17	5104

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

QF 507

*Refers to notes in manuals of triangulation and state publications of triangulation. ¹Direction-angle measured clockwise, referred to initial station.
²To nearest meter only, when no trigonometric leveling is being done.

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1029
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

NO ORIGINAL TEXT

Papai (Kauai Island, O. B. French, 1910; C. L. Garner, 1926).—Identical with the Hawaiian Government Survey station "Puu o Papai," near the south coast of Kauai, on the west slope of Puu o Papai Crater and near its top. It is about 1½ miles "mauka" (inland) from Makaweli. Station is in a cane field, and about 100 feet west of a road which runs approximately north and south. Marked by concrete pier 10 inches square, projecting 1½ feet above ground, and centered with 1½ inch (2-inch in old description) gas pipe. Reference marks are as follows: No. 1, corner of concrete basin alongside of road and at head of wooden pipe line leading north, distant 136.1 feet on line 27° 34' from Pohakea. No. 2, cross cut in top of large stone (3 cubic feet) lying on surface of ground, distant 27.1 feet, on line 57° 10' from Pohakea. No. 3, five nails driven in the west side of fence post at edge of road, distant 111.5 feet, on line 98° 12' from Pohakea. In 1928 only reference mark No. 1 was recovered.

(11-8-55)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: PAPAII
 ESTABLISHED BY: O.B.F. YEAR: 1910 STATE: Hawaii
 RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Kauai
 Island: Kauai

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

Station is destroyed. The entire hill is planted in sugar cane except for a small plot by edge of road, on which an old observation tower stands.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PAPAII
 STATE: HAWAII YEAR: 1910 SECOND ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21° 56' 02".408	ELEVATION:	147	METERS
GEODETIC LONGITUDE:	159 36 55.828	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ or ANGLE °
HI 4	5104	460,849.25	36,583.84	- 0° 02' 35"

* 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

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

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

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211594 STATION 1030
HAWAII
LATITUDE 21 ° 30' TO 22 ° 00'
LONGITUDE 159 ° 30' TO 160 ° 00'
DIAGRAM NF 4-6 KAUAI

Paw (Kauai Island, O. B. French, 1910).—On southern coast of Kauai, on a rocky slope 1¼ miles west of Port Allen, 15 meters back from and 15 feet above high-water mark. Marked by drill hole in rock.

FORM 528
(11-8-55)

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: PAW
ESTABLISHED BY: O.B.F. YEAR: 1910 STATE: Hawaii
RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Kauai
Island: Kauai

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

Station was searched for but not found. Exact point could not be found by check angle because of kiawe trees in the area.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PAW
STATE: HAWAII YEAR: 1910 THIRD ORDER

SOURCE: G-SP156
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21 ° 54' 18.14	ELEVATION:	5 METERS
GEODETIC LONGITUDE:	159 37 03.04	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE °
HI 4	5104	460,162.18	26,063.04	- 0 ° 02' 38"

* 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

* Name of chief of party should be inserted here. The officer's name—One of

* the stations should sign his name at the end of the recovery note. station recovered.

CGS-DC 343 14

QI 219

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1031
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

NO ORIGINAL TEXT

Pohakea (Kauai Island, O. B. French, 1910; K. T. Adams, 1928).—In southern part of Kauai, about 4 miles northeast of Eleele, on a peak of same name. Identical with Hawaiian Government Survey station "Pohakea". There are three conspicuous treeless peaks close together at this point, the station being on the lowest and slightly flat-topped one towards the sea. Approached by a road which follows up the east side of Hanapepe Canyon from where main road turns east; a trail branching off to the right leads up the valley to within 1 mile of the station. Station marked by 2-inch gas pipe set in an "ahu" (cairn). Reference marks are as follows: No. 1, drill hole in soft rock at top of small precipice, about 15 feet from station in azimuth 357° 49'; No. 2, cross cut in soft rock at edge of precipice, about 20 feet, 104° 15'. Reported in 1928 that reference marks had been destroyed by weathering.

POHAKEA (Kauai County, Hawaii, O.B.F., 1910; R.E.A., 1961)-- Station was recovered in good condition. The reference marks were not recovered.

Astronomic observations were performed at this station in advance of future Hiran measurements.

To reach the station from the Eleele Post Office at the junction of state routes 541 and 50 in Eleele, go west on state route 50 for 2.1 miles to where the old highway branches left; go on the old highway for 0.1 mile to a dirt road left; proceed on dirt road, through a gate, for 0.4 mile to a fork; take a right fork and pass through a locked gate (key must be obtained from the "Gay-Robinson Ranch"), and continue on road to some branding pens and another gate. A 4-wheel drive vehicle is required beyond this point. Pass through gate and follow winding track road, turning a sharp right at two water tanks, and continue 2.4 miles to a T-road; go right to top of ridge, and then along ridge, south, about 1/2 mile to the end of truck travel. From this point, pack up ridge, south, over two treeless peaks to a third peak and station. A 15 minute pack.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: POHAKEA
 STATE: HAWAII YEAR: 1910 SECOND ORDER
 SOURCE: G-SP156

GEODETIC LATITUDE:	21° 56' 44.040	ELEVATION:	436.0 METERS
GEODETIC LONGITUDE:	159 32 38.096		1430 FEET

STATE COORDINATES (Fwi)				
STATE & ZONE	CODE	X	Y	θ IOR Δ α I ANGLE °
HI 4	5104	485,116.20	40,772.18	- 0° 00' 59"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From north)	PLANE AZIMUTH* (From north)	CODE
LAAUKAHI	272 17 47.6	272 18 47	5104

Q1 056

(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 211594 STATION 1031

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

POHAKEA (continued)

FORM 326a
(1-18-62)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: POHAKEA
ESTABLISHED BY: O.B. French YEAR: 1910 STATE: Hawaii
RECOVERED BY: C.A. Burroughs YEAR: 1962 COUNTY: Kauai

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.84 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	
LAAUKAHI (HGS) 1910 Poipu, Loran Transmitter Station, Mast	SE	Approx. 7	1 1/2 mi.	0 00 00.0 36 34 15.6
New Mill, McBryde Sugar Co., Mill Stack	SSW	Approx. 3	1 1/2 mi.	108 14 29.6

The station mark was recovered and found to be in good condition. The reference marks were searched for but were not found. A new description follows:

The station is in the southern part of Kauai, 4 miles northeast of Eleele, 5 miles northwest of Koloa and on a peak of the same name. There are three conspicuous treeless peaks close together at this point, the station being on the lowest and slightly flat-topped one towards the sea.

To reach the station from the post office in Eleele, go easterly on State Highway 50 for 2.1 miles to where the old concrete road bears left on the east side of Hanapepe Canyon. Turn left northerly for 0.1 mile to a fork and gate on the left. Pass through the gate and go northerly, east side of Hanapepe Canyon, on a track road for 0.4 mile to a locked gate on the right. (Key must be obtained from the Gay-Robinson ranch Headquarters at Makaweli). Pass through the gate and follow the track road for 0.6 mile to a gate at some corrals. Pass through two gates and continue on a track road for 0.4 mile to two water tanks. Turn right just beyond them and follow the track road for 1.5 miles to a fork. Turn right to the top of the ridge thence south along the ridge for 0.5 mile to the end of truck travel. From here pack southerly, passing to the left, east of the two highest peaks, to the third peak and station. It is a 15 minute pack.

The station mark is a standard disk, stamping unknown, set in a 12 by 12 by 18 inch deep concrete post with a superstructure type B-1 monument built over the mark. It is about 25 feet lower and 150 feet south of the highest point.

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

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

USCOMM-DC 27170-PSS

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 211594 STATION 1032
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

Point (Kauai Island, C. L. Garner, 1926).—A station of the Hawaiian Territorial survey, on the edge of a bluff line overlooking Waimea Valley in southwest Kauai. Marked by 3/4-inch iron pipe about 2 feet long set in cement.

Form 528
 (11-8-55)

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

R

NAME OF STATION: Point
 ESTABLISHED BY: C.L.G. YEAR: 1926 STATE: Hawaii
 RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Kauai
 Island: Kauai

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. It was proven to be the correct point by traverse to CANE 1926. A complete description follows:
 Station is located about 1/2-mile northeast of Waimea and 1/4-mile northwest of the Waimea River, on edge of bluff at about 278 feet elevation, and is about 75 yards southeast, slightly downslope, from a hairpin curve of road.

To reach from the First National Bank in Waimea, go west on State Highway 50 for 0.4 mile; turn right and follow Onaona Road, going up winding road, for 1.1 miles to a bare parking area on right, at end of last hairpin curve. From here pack southeast 20 yards to fence line, pass through and continue 45 yards to station.

Station is marked by a 3/4-inch iron pipe which projects 1 inch from the top of a 10-inch-diameter concrete monument flush with ground and with "1917" inscribed in the concrete. It is 61.0 feet east-southeast of a wooden, TV-antenna pole and 20 feet west of the end of a narrow rock point.

* Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
 Note.—One of these forms must be used for every station recovered. Com-DC 24514

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: POINT
 STATE: HAWAII YEAR: 1926 THIRD -ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21° 57' 56.57	ELEVATION:	85 METERS
GEODETIC LONGITUDE:	159 39 58.90	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	B OR Δ ± ANGLE °
HI 4	5104	443,625.26	48,119.43	- 0° 03' 44"

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

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

QI 191

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 211594 STATION 1033
HAWAII
LATITUDE 21 ° 30' TO 22 ° 00'
LONGITUDE 159 ° 30' TO 160 ° 00'
DIAGRAM NF 4-6 KAUAI

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
FORM 533 b

DESCRIPTION OF TRIANGULATION ~~STATION~~ POINT 3

NAME OF STATION: POINT 3 YEAR: 1962 STATE: Hawaii COUNTY: Kauai

CHIEF OF PARTY: USGS

Description, including sketch of object: Station is on a bluff, near the S coast of Kauai. It is about 1 mi. N of Waimea Village and about 0.5 mi. W of the Waimea River.

The station mark is a 3/4 in. iron pipe set in concrete projecting about 0.05 ft. above ground. The date "1917" is inscribed in the concrete. No reference marks were set.

NOTE: This station is probably "POINT 1926".

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: POINT 3 OBS BY USGS
STATE: HAWAII YEAR: 1962 THIRD ORDER

SOURCE: G-12992

GEODETIC LATITUDE:	21 ° 57' 56.613	ELEVATION:	85.0 METERS
GEODETIC LONGITUDE:	159 39 58.987		279 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	# 10R Δ #1 ANGLE °
HI 4	5104	443,617.08	48,123.78	- 0° 03' 44"

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

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

QF 253

Described by _____
U. S. GOVERNMENT PRINTING OFFICE 10-65971-1

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1034
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

NO ORIGINAL TEXT

Puolo (Kauai Island, O. B. French, 1910; **K. T. Adams, 1928).**—On south coast of Kauai, on Puolo Point, at the west side of Hanapepe Bay. Station is on the extreme southeast point of rocky ground, about 25 meters southwest of Hanapepe Lighthouse, near an old wall and small rectangular stone inclosure, and is about 10 meters back from and 5 feet above high water mark. Approached from Hanapepe village by the road leading south from the main road $\frac{1}{4}$ mile west of the village. This road runs along the edge of the bay but some distance back from it and ends in a trail just to the northeast of the station. Marked by a drill hole in a rock, and by an "ahu" (cairn) which was placed around the center pole. Reference marks were as follows: No. 1, cross cut in rock at surface of ground, 15.5 feet, azimuth 203° 28'; No. 2, cross cut in rock on surface, 25.1 feet, 291° 50'; No. 3, cross cut in rock on surface, 26.2 feet, 108° 50'. Near corner of old stone wall is 37.3 feet from station in azimuth 178° 18'; the east corner of the small stone rectangular inclosure is 58.6 feet distant in azimuth 102° 14'.

(11-8-55)

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PUOLO
 ESTABLISHED BY: O.B.F. YEAR: 1910 STATE: Hawaii
 RECOVERED BY: R.E.A. YEAR: 1961 COUNTY: Kauai

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

This station has been destroyed by wave action. A new station with the same name has been established at the same location, near the Hanapepe Light on Puolo Point, but it is doubtful whether the new station is in the exact position as the original mark.

Form 556
 (11-8-55)

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

NAME OF STATION: PUOLO
 ESTABLISHED BY: O.B.F. YEAR: 1910 STATE: Hawaii
 RECOVERED BY: R. Hashimoto, YEAR: 1962 COUNTY: Kauai

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

Letter of Mr. J.M. Dunn, Surveyor, State of Hawaii, Honolulu, Hawaii dated 5/23/62:

Station and reference marks 2 and 3 were washed away by the tidal wave of April 1, 1946. In 1959 reference mark No. 1 was found and from that mark reset the station. Also two new reference marks Nos. 3 and 4 were set.

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

Comm-NC 54314

(continued on next page)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PUOLO
 STATE: HAWAII YEAR: 1910 SECOND ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21° 53' 45.131	ELEVATION:	3 METERS
GEODETIC LONGITUDE:	159 36 26.354	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	S IOR Δ S1 ANGLE °
HI 4	5104	463,614.59	22,729.70	- 0° 02' 24"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE S IOR Δ S1 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
LANI	196 17 20.7	196 19 45	5104

QI 038

HORIZONTAL CONTROL DATA

QUAD 211594

STATION 1034

by the
 NATIONAL GEODETIC SURVEY
 OLD HAWAIIAN DATUM

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

PUOLO (continued)

FORM 526a
 (6-18-60)

U.S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PUOLO
 ESTABLISHED BY: O.B.F. YEAR: 1910 STATE: Hawaii
 RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Kauai
 Island: Kauai

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.5 METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS.
 DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION

OBJECT	BEARING	DISTANCE		DIRECTION
		FEET	METERS	
LANI 1910 1926				00 00 00.0
RM Cross # 1	NNE	15.523	4.732	07 16 33
RM No. 5	NE	77.346	23.575	29 13 32
RM Cross # 3	SE	24.273	7.399	115 44 59
RM Cross # 4	WSW	16.376	4.992	248 40 14
RM No. 4	NW	61.567	18.766	294 43 39

Station mark, reference mark No. 4 and reference crosses No. 1, 2, 3 and 4 were recovered in good condition. A new reference mark, No. 5, was established at the center of reference cross No. 2.

Station was destroyed by a tidal wave in 1946, which also destroyed reference crosses No. 2 and 3. In 1959 reference cross No. 1 was recovered by the Hawaii State Survey and a new station established from the old distance to it, however it is doubtful that the station is in exactly the same location. A complete description follows:

Station is located about 2 miles southwest of Hanapepe, on the south

end of Puolo Point, near the Puolo Point Light.

To reach station from the post office in Eleele, go west on State Highway 50 for 1.1 miles; turn left on State Highway 543 and go south 0.4 mile to fork at Port Allen Airport; take left fork, around east end of airport, and go 0.5 mile to station.

Station mark is a Hawaii Territorial Survey disk set in concrete 6 inches beneath the 6 x 6-foot, concrete platform of a Type B-1 signal. It is 24 feet south of edge of track road and 60 feet north of water line. The disk could not be examined for stamping due to a pipe which has slipped down through center of signal and is lodged on disk.

Reference mark number 4 is a standard disk stamped "PUOLO NO 4 1910", set in the top of a 12-inch-square, concrete monument projecting 4 inches. It is 9 feet south of edge of track road and 1 foot higher than station.

Reference mark number 5 is a standard disk stamped "PUOLO 1910 1928 NO 5 1965", cemented in a drill hole at the center of reference cross No. 2 in the southwest corner of the concrete foundation of the southwest leg of Puolo Point Light.

Reference cross # 1 is chiseled in the top of a 6 x 10-inch rock outcrop projecting 1 inch. It is 7 feet south of edge of track road and about 1 foot higher than station

Reference cross # 3 is chiseled in the top of a 2 x 3-foot black rock that projects 2 inches. It is about 1 foot lower than station.

Reference cross # 4 is chiseled in the top of a 2 x 4-foot, red rock flush with ground, about 1 foot higher than station.

NOTE: Reference mark number 4 is a new type, sheet metal disk and was probably set in 1961.

A 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.

16 2777-

LOST
 HURRICANE IWA

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1035
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

(8-18-69)

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

NAME OF STATION: RANGE E STATE: Hawaii COUNTY: Kauai
 CHIEF OF PARTY: P.C. Johnson YEAR: 1967 DESCRIBED BY: J.E. Sutton

NOTE	HEIGHT OF TELESCOPE ABOVE STATION MARK 1 METERS,†		HEIGHT OF LIGHT ABOVE STATION MARK 1 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		
Dec.	OBJECT	BEARING	DISTANCE		DIRECTION‡
			FEET	METERS	
18B	OHAIUULA 1964 Azimuth Mark	E	(0.3 mile)		00 00 00.00 87 35 37.2

The station is located 3.6 miles west-northwest of Kekaha, 3.4 miles south-southeast of Mana Point, 0.9 mile southwest of State Highway 50 and 0.45 mile northwest of Kokole Point.

To reach the station from the intersection of State Highways 50 and 55 in Kekaha, go northwest on State Highway 50 for 2.45 miles to a side road left and sign "U.S. Army Strategic Communication Command Station". Turn left, southwest and west on the asphalt road for 0.7 mile to a dim track road on the left, just before reaching the Communication Building. Turn left, south on the track road for 0.05 mile to a dim track road on the left and the azimuth mark. Continue southerly across country, passing to the left of the radio masts for 0.2 mile to the beach. Turn right, northwest, along the beach for 0.25 mile to the station on the right.

The station mark is a plain bronze disk, stamped RANGE E 1967, set in the top of a 4-inch pipe which projects 5 inches. It is 300 feet northeast of the water at high tide and 130 feet south of a large group of small trees.

The azimuth mark is a standard disk, stamped RANGE E 1967, set in the top of a 4-inch pipe which projects 10 inches. It is 138-1/2 feet east-northeast of a radar tower, 26-1/2 feet southwest of a large group of small trees and 17 feet northeast of the center of an east-west track road.

Note; No reference marks were established at this time.

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

USCOM-DC 27171-P88

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: RANGE E
 STATE: HAWAII YEAR: 1967 SECOND ORDER

SOURCE: G-13403

GEODETIC LATITUDE:	21° 59' 11.0147	ELEVATION:	2 METERS
GEODETIC LONGITUDE:	159 45 52.6749	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β FOR Δ R1 ANGLE*
HI 4	5104	410,337.11	55,678.33	- 0° 05' 57"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE β FOR Δ R1 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
AZIMUTH MARK	274° 26' 40.2	274° 32' 37"	5104

QF 506

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1036
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

FORM 227
 (8-18-59)

U.S. DEPARTMENT OF COMMERCE
 COAST AND GEODETIC SURVEY

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: **RANGE F** STATE: **Hawaii** COUNTY: **Kauai**
 CHIEF OF PARTY: **Phillip C. Johnson** YEAR: **1967** DESCRIBED BY: **R.N.M.**

NOTE: Desc.	HEIGHT OF TELESCOPE ABOVE STATION MARK 1 METERS, † HEIGHT OF LIGHT ABOVE STATION MARK 1 METERS.		DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION			
	SURFACE-STATION MARK, UNDERGROUND-STATION MARK		DISTANCE		DIRECTION‡	
	OBJECT	BEARING	FEET	METERS		
	OPAE 1910 1927				00 00	00.0
Desc.	Kikilaola Boundary (Reference Mark No 2)	NNE	123.15	(37.536)	29 24	38
Desc.	Azimuth Mark	ESE	(0.4 mile)		123 50	10.0
Desc.	Reference Mark No. 1	S	45.000	13.717	190 19	01

Detailed description:
 The station is in the southeast edge of Kekaha, 0.5 mile west of the Kikilaola Boat Harbor, near the beach on property owned by the state.
 To reach the station from the intersection of State Highway 50 and 55 in Kekaha, go east on State Highway 50 for 1.4 miles to the intersection of Mamoo Road. (To reach the azimuth mark from this point continue ahead on State Highway 50 for 0.4 mile to a side road right. Turn right and go south on a bladed road for 0.15 mile to the Kikilaola Boat Harbor and the azimuth mark as described on the south end of the west jetty.) Turn right and go south on an asphalt and track road for 0.1 mile to the station as described.

The station mark, a standard disk stamped RANGE F 1967, is set in the top of a 5-inch cast iron pipe which projects 8 inches above the surface of the ground. It is 49 1/2 feet north of the high tide mark, 26 feet east of the most southerly one of a row of palm trees and 17 feet east of the center of a track road.

Reference mark No. 1, a standard disk stamped RANGE F NO 1 1967, is set in the top of a 4-inch cast iron pipe which projects 5 inches above the surface of the ground. It is 51 feet southeast of the most southerly one of a row of palm trees, 29 feet east of the extended center of a track road and 5 feet north of the high tide mark.

Reference mark No. 2, is a 1 1/2-inch iron pipe cemented in a 31 x 36-inch concrete slab and projects 2 inches above the slab. It is 75 1/2 feet southeast of the southeast corner of a tennis court, 28 1/2 feet east of the center of a track road and 2 feet northeast of a sign "Caution Do Not Disturb Concrete Monument".

The azimuth mark, a standard disk stamped RANGE F 1967, is cemented in a drill hole in a large boulder in the south end of the west jetty at the Kikilaola Boat Harbor. It is 15 feet north of the south end of the jetty, 1 1/2 feet south of a 2 1/2-inch pipe which projects 6 inches above the jetty and 2.1 feet west of a 2-inch iron pipe which projects 5 inches above the jetty.

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

USCOM-DC 57171-PS8

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: **RANGE F**
 STATE: **HAWAII** YEAR: **1967** **SECOND** ORDER

SOURCE: **G-13403**

GEODETIC LATITUDE:	21° 57' 48.0221	ELEVATION:	3 METERS
GEODETIC LONGITUDE:	159 42 02.8759	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ IOR Δ #1 ANGLE
HI 4	5104	431,954.19	47,270.87	- 0° 04' 30"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From station)	PLANE AZIMUTH* (From station)	CODE
AZIMUTH MARK	297° 41' 06"	297° 45' 36"	5104

QF 509

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1037
 HAWAII
 LATITUDE 21 ° 30' TO 22 ° 00'
 LONGITUDE 159 ° 30' TO 160 ° 00'
 DIAGRAM NF 4-6 KAUAI

NO ORIGINAL TEXT

Wahiawa (Kauai Island, H. D. King, 1904; O. B. French, 1910).—Near south coast of Kauai, on gently sloping ground, at the brow of a hill of the same name, facing the sea, and 2 miles north of Nomilo. This ridgelike summit is sometimes called Puu Kapalei by the natives, and it commands an extensive view. There is a spring in a ravine about 600 feet west of the station, which is directly south of the McBryde residence. Identical with Hawaiian Government Survey station. In 1904 station reported as being marked by iron stake with three rocks each marked with a cross and each about 6 feet from the center. In 1910 the station was reported marked with a 3-inch gas pipe with fence post set alongside of it, the whole being covered by an "ahu."

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: WAHIAWA
 ESTABLISHED BY: H.D. King YEAR: 1904 STATE: Hawaii BENCH MARK(S) ALSO
 RECOVERED BY: D.M. Whipp YEAR: 1966 COUNTY: Kauai
 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: Island: Kauai

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

Station was not found. There is a mark in the vicinity which was established by the McBryde Sugar Company and consists of a 1-inch iron pin, with a cross on top and set 1 foot below ground surface. Observations were made from this point to determine the position and then a search was made on the inverted distance and azimuth from it but no mark could be located.

The McBryde mark is 38.5 feet north of the northwest corner of a park building and 8 feet east of a line extended from the west edge of the building foundation.

R

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WAHIAWA
 STATE: HAWAII YEAR: 1904 THIRD -ORDER
 SOURCE: G-SP156

GEODETIC LATITUDE:	21 ° 54' 51.246	ELEVATION:	247	METERS
GEODETIC LONGITUDE:	159 51 54.256	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ FOR Δ °' ANGLE *
HI 4	5104	489,241.17	29,389.51	- 0 ° 00' 43 "

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

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

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1038
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 46 KAUAI

Waimea Latitude Station (Kauai Island, O. B. French, 1910).—Station occupied by W. D. Alexander in 1903, and situated in the Waimea village, southwest coast of Kauai, at the remains of the pier occupied by the British Transit of Venus party in 1874, being due east of that pier a distance of 11.8 feet. Its recovery in 1910 is slightly uncertain, as the latitude pier was not recovered, but what presumably were the remains of the Transit of Venus pier were recovered, and latitude station reproduced therefrom, a concrete cylinder being set there with top about flush with surface.

WAIMEA LATITUDE STATION (Kauai County)
 Hawaii, O.B.F., 1910; Hawaiian Territorial Survey, 1932
 --Station is marked with a Type B monument without a target.

It is situated in a vegetable garden and sights to other stations are blocked by vegetation. Can be reached by taking the road to Waimea School and Waimea Hospital, and following said road to its end, the station is located about 80 ft. E of the end of the road.

There is a tradition that Captain Cook, in 1778, made observations near this point, and a mark known as "Cook's Arrow" is distant from the station 169.72 ft. in azimuth 197° 18' 30". Near this site a pier was built and occupied by the British "Transit of Venus" Expedition in 1874. In 1888, E.D. Preston of the U.S.C. & G.S., erected a pier due E 11.8 ft. of the "Transit of Venus" pier for the determination of latitude and gravity. In 1904, a station was reestablished by W.D. Alexander but all of his station marks have disappeared. The station was again reestablished in 1917 by Messrs. Thrum and Evans in their survey of Waimea Village, and was again marked in 1928 by R.M. Towill, who used the above tie from "Cook's Arrow."

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: **WAIMEA LATITUDE STATION**
 ESTABLISHED BY: **O.B.F.** YEAR: **1910** STATE: **Hawaii** BENCH MARK(S) ALSO
 RECOVERED BY: **D.M. Whipp** YEAR: **1986** COUNTY: **Kauai**
 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: **Island: Kauai**

R

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

The original station point is believed lost. There is at present a station here, consisting of an unstamped Hawaii Territorial Survey Disk, with a Type B-1 signal built over it, located in a wire corral and completely surrounded by trees.

Observations were made which indicate that the station is 7 feet east and 2.2 feet south from the correct position.

Cook's Arrow was recovered and found to be 169.8 feet from the station, in azimuth 277° 19' 38.2", (the azimuth of 197° 18' 30" given in description on page 2 of Supplement 1153 is in error.)

To reach station from the First National Bank in Waimea, go northwest on State Highway 50 for 0.4 mile; turn sharp right and go uphill 0.15 mile to a 3-way fork. Take right fork of the 3, up shaded driveway, and go 25 yards. Station is 45 feet southeast of fence on right and 50 feet south of corral gate.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: **WAIMEA LATITUDE STATION**
 STATE: **HAWAII** YEAR: **1910** THIRD -ORDER

SOURCE: **G-SP156**

GEODETIC LATITUDE:	21° 57' 36.394	ELEVATION:	18 METERS
GEODETIC LONGITUDE:	159 40 11.110	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ § 1 ANGLE °
HI 4	5104	442,473.67	46,084.79	- 0° 03' 49"

* 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

Q1 037

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

QUAD 211594 STATION 1039
 HAWAII
 LATITUDE 21° 30' TO 22° 00'
 LONGITUDE 159° 30' TO 160° 00'
 DIAGRAM NF 4-6 KAUAI

NO ORIGINAL TEXT

Wind (Kauai Island, O. B. French, 1910; C. L. Garner, 1926).—On south coast of Kauai, on a very bold rocky point about 500 meters west of Lawai Bay. Marked by a cross cut in rock.

Form 526
 (11-8-65)

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

R

NAME OF STATION: Wind
 ESTABLISHED BY: O.B.F. YEAR: 1910 STATE: Hawaii
 RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Kauai
 Island: Kauai

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

Station could not be found and is believed destroyed. The old points from which it was located are destroyed and the exact point could not be determined by angle.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WIND

STATE: HAWAII

YEAR: 1910

THIRD

ORDER

SOURCE: G-SP156

GEODETIC LATITUDE: 21° 53' 23.44	ELEVATION: 12 METERS
GEODETIC LONGITUDE: 159 30 43.28	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ OR ANGLE *
HI 4	5104	495,923.87	20,528.40	- 0° 00' 16"

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

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

* 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

QI 244