## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM 0 201552 STATION 1001
HAHAII
LATITUDE 20 °00' TO 20 °50'
LONGITUDE 155 °00' TO 155 °30'
DIAGRAM NE 5-1,5 HAWAII

NO TEXT

#### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION AHUALOA

STATE HAWAII

YEAR 1877

THIRD

ORDER

SOURCE G-SP156

0EODETIC LATITUDE 20 05 16.320 GEODETIC LONGITUDE 155 29 21.892	ELEVATION	METERS
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STATE COORDINATES (Feet)				
STATE & ZONE	CODE	x	٧	O OH A B ANGLE
HI 1	5101	503,632.25	455,583.62	+ 0 00 13
				-

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (Frem seath)	PLANE AZIMUTH * (From smith)	CODE
	16 ' "	00 E	
			ĺ

Q0 365

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM

STATION 1002 0 201552 HAWAI I LATITUDE 20 °00' TO 20 °30' LONGITUDE 155 00' TO 155 030' DIAGRAM NE 5-1,5 HAWAII

## NO ORIGINAL TEXT

Au (Hawaii Island, Hawaiian Government Survey, 1877; K. T. Adams, 1928).—
On the north coast of Hawaii, near Honokaa. Reached from Honokaa by going west along the Honokaa Sugar Co. railroad, and after crossing four bridges, continuing on along the railroad for approximately 1,000 feet to the first ridge reached just before coming to a deep cut in the railroad embankment. Follow up this ridge to a sugar-cane flume just above which will be found the station. A cane field is on the east side of the ridge, and a ditch runs down the ridge 10 feet west of the station. A wooden flume runs along the face of the hill 100 feet below the station. There are no trees on this ridge, but a ridge with ironwood trees on it is ¼ mile to the east. Honokaa stack bears S. 80° E. Station marked by a 3-inch gas pipe projecting 2 feet above the center of a concrete base which is 3 feet square and stands 1 foot above the ground.

#### ADJUSTED HORIZONTAL CONTROL DATA

HAWAII

YEAR 1877

THIRD

SOURCE G-SP156

GEODETIC LATITUDE	20	06 06.200	ELEVATION	198	METERS
OLOGETIC CHITTODE	155	29 34.915	SCALED		
GEODETIC LONGITUDE	155	29 34.913	SCALED		FEET

STATE & ZONE	CODE	×	¥	y IOR A BI ANGLE
11 1	5101	502,390.75	460,615.55	+ 0 00 09

PLANE AZIMUTH HAS BEEN COMPUTED BY THE  $\, heta\,$  OR  $\Delta\,$  OF FORMULA NEGLECTING THE SECOND TERM.

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		(From smith) (From smith)

QD 367

# HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM 0 201552 STATION 1003
HAMAII
LATITUDE 20 00' TO 20 30'
LONGITUDE 155 00' TO 155 30'
DIAGRAM NE 5:1,5 HAWAII

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION C

STATE HAWAII

YEAR 1902

THIRD

SOURCE G-SP150

GEODETIC LATITUDE	20 00 53.0 155 16 28.	METERS FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	×	Y	P OR A GI ANGLE
HI 1	5101	577,379.09	429,081.43	+ 0°04°38

PLANE AZIMUTH HAS BEEN COMPUTED BY THE & TORA OF FORMULA NEGLECTING THE SECOND TERM

TO STATION OR OBJECT	GEODETIC AZIMUTH	PLANE AZIMUTH *	сов
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Q0 357

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM

0 201552 HAWAII LATITUDE 20 ° 30' TO 20 ° 30' LONGITUDE 155 ° 30' TO 155 ° 30' DIAGRAM NE 5-1,5 HAWAII

U. COLITAGE DESCRIPTION OF TRIANGULATION INTERSECTION STATION

Honokaa, Hawaiian Name of Station: Tel. Co. Micro- Year: 1967 State: Hawaii wave tower

COUNTY: Hawaii Island: Hawaii

CHIEF OF PARTY: D.M. Whipp

Description, including sketch of object:

Located in the northern part of the island, in the town of
Honokaa, in the northwest angle of the intersection of Mamane St.
and Ilima St., at northwest side of a Hawaiian Telephone Co. building.
Station is the center of a 3-legged, skeleton-steel tower 150 feet
tall, painted alternate red and white, 20 feet on each side at the
base and tapering to about 4 feet at the top. There is no obstruction light on the tower. Center of tower is 18 feet northwest of
edge of building and 85 feet northeast of center line of Mamane St.

 	Described by

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION HONDKAA HAWAIIAN TEL MICROWAVE

THIRD

SOURCE G-13903

GEODETIC LATITUDE 23 34 50 . GEODETIC LONGITUDE 155 28 00 .	 METERS FEET

STATE & ZONE	CODE	×	¥	HOR A . A.GLE
4I 1	5131	511,408.28	453,009.34	+ 0 00 41

RA 4 FORMULA NEGLECTING THE SECOND TERM

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

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM Q 201552 STATION 1005
HAWAII
LATITUDE 20 °00' TO 20 °30'
LONGITUDE 155 °00' TO 155 °30'
DIAGRAM NE 5-1.5 HAWAII

·····	FORM 895 by. Aug. 1990 HONOKAA/STA	SUGAR CO. MILL, OK STATE:		AII COUNTY:	HAMAKUA DISTI HAMAII	lot
HIEF OF	PARTY: L. C. WILDE	A YEAR: 194	g	Described by:	d. J. HOEPE	PEL
NOTE,*	HEIGHT OF TELESCOPE ABOVE STAT	OR MARK MET	Eds.t	HEIGHT OF LIGHT ABOY	E STATION MARK	METERS
100	Surface-station mark, DI Underground-station mark	STANCES AND DIRECTION WHICH		MARK, REFERENCE M OM THE GROUND AT		OBJECTS
	OBJECT		BEARING	DISTANCE	DIRECT	TON
		17		feet mete	,	,
	This station was	located by in	tersection	n.		
whi	feet in height an ch is about 15 fee The station pany Mill, about 1 okaa Landing and 2	is located or .0 mile north	about 15 : n the eas of Honok	feet in heightern side of as, about 0	the Honokas	Buger
NAME OF			RIANGULATION INTERSECT: stack	ON STATION ION		R
ESTABLE RECOVE	F STATION: HONOKAA Sug ISHED BY: L.C. Wilder RED BY: D.M. Whipp DISTANCE AND DIRECTION PRO	ar Co. Mill, YEAR: 1948 YEAR: 1966	INTERSECT: stack state:	ION Hawaii <sub>Bench</sub> Hawaii	MARK(5) ALSO	R
ESTABLI RECOVE AIRLINE	F STATION: HONOKAS SUG ISHED BY: L.C. Wilder RED BY: D.M. Whipp DISTANCE AND DIRECTION FROM	ar Co. Mill, YEAR: 1948 YEAR: 1966	INTERSECT: stack STATE:   COUNTY:   Island:	ION Hawaii <sub>Bench</sub> Hawaii Hawaii		R
ESTABLI RECOVE AIRLINE Detailed	STATION: Honokaa Sug ISHED BY: L.C. Wilder RED BY: D.M. Whipp	ar Co. Mill, YEAR: 1948 YEAR: 1966 M NEAREST TOWN:  iginal description; includio	INTERSECT: stack  STATE:   COUNTY:   Island:   Island:   STATE:   Island:	ION  Hawaii  Hawaii  Hawaii  Hawaii  Janpings, changes mad	e, and other pertinent fac	
ESTABLI RECOVE AIRLINE Detailed	r STATION. HONOKAA SUG ISHED BY: L.C. Wilder RED BY: D.M. Whipp DISTANCE AND DIRECTION FROM STATEMENT AS TO the finness of the or Station was rec he Honokaa Sugar M	ar Co. Mill, YEAR: 1948 YEAR: 1966 M NEAREST TOWN:  iginal description; includio	INTERSECT: stack  STATE:   COUNTY:   Island:   Island:   se marks (ound, see B the tal.)	Hawaii BENCH! Hawaii Hawaii Hawaii Ampings, changes mad l black stee about l mile	e, and other pertinent fac	
ESTABLI RECOVE AIRLINE Detailed	P STATION: HONOKAA SUG SHEED BY: L.C. Wilder RED BY: D.M. Whipp DISTANCE AND DIRECTION PROI STATEMENT AS TO the finess of the o Station was rec the Honokaa Sugar M	ar Co. Mill, YEAR: 1948 YEAR: 1966 A NEAREST TOWN: iniginal description; including overed. It 1: 1111 at Haina	INTERSECT: stack  STATE:   COUNTY   Island:	Hawaii BENCH! Hawaii Hawaii Hawaii Ampings, changes mad l black stee about l mile	e, and other pertinent fac	
ESTABLISH RECOVER AIRLINE Detailed  ti	r STATION: HONOKAA Sugar Monokaa M	ar Co. Mill, YEAR: 1948 YEAR: 1966 A NEAREST TOWN: iniginal description; including overed. It 1: 1111 at Haina	INTERSECT: stack  STATE:   COUNTY   Island:	Hawaii Hawaii Hawaii Hawaii Hawaii Ampings, changes mad l black stee about l mile	e, and other pertinent fac	
ESTABLIR RECOVER AIRLINE Detailed  t:  AME OF S TABLISH COVERE	V STATION: HONOKAA Sugar MED BY: L.C. Wilder RED BY: D.M. Whipp DISTANCE AND DIRECTION PROISE STATION WAS THE HONOKAA Sugar MED BY: L.C. Wilder DBY: J.M. Collom	ar Co. Mill, YEAR: 1948 YEAR: 1966 ANEAREST TOWN:  Itiginal description; including overed. It 1: 1111 at Haina  COVERY NOTE, TRI YEAR: 1948 YEAR: 1948 YEAR: 1969	INTERSECT: stack  STATE: COUNTY: Island: Island: Island: Village, IANGULATION RCP	Hawaii Hawaii Hawaii Hawaii Hawaii Ampings, changes mad 1 black stee about 1 mile	e, and other periinent fac el stack at e north of Ho	
ESTABLISH RECOVER AIRLINE Detailed  t  ME OF S TABLISH COVERE	r STATION: HONOKAA Sugar Monokaa M	ar Co. Mill, YEAR: 1948 YEAR: 1966 ANEAREST TOWN:  Itiginal description; including overed. It 1: 1111 at Haina  COVERY NOTE, TRI YEAR: 1948 YEAR: 1948 YEAR: 1969	INTERSECT: stack  STATE: COUNTY: Island: Islan	Hawaii Hawaii Hawaii Hawaii Hawaii Ampings, changes mad 1 black stee about 1 mile	e, and other periinent fac el stack at e north of Ho	
ESTABLISH RECOVERE AIRLINE Detailed  ti  MB OF 5 TABLISH COVERE	V STATION: HONOKAA Sugar MED BY: L.C. Wilder RED BY: D.M. Whipp DISTANCE AND DIRECTION PROISE STATION WAS THE HONOKAA Sugar MED BY: L.C. Wilder DBY: J.M. Collom	ar Co. Mill, YEAR: 1948 YEAR: 1966 M NEAREST TOWN:  Iginal description; including OVERED. It 1: 1111 at Haina  ECOVERY NOTE, TRI YEAR: 1918 YEAR: 1969 JEAREST TOWN:	INTERSECT: stack  STATE: COUNTY: Island: Islan	Hawaii Hawaii Hawaii Hawaii Ampings, changes mad l black stee about l mile N STATION	e, and other periinent facel stack at so north of Ho	R

ADJUSTED HORIZONTAL CONTROL DATA

MAME OF STATION	HONOKAA	SUGAR	CO	MILL	STACK	

STATE: HAWAII YEAR: 1966 THIRD ORD

SOURCE. G-13903

GEODETIC LATITUDE: 20 °05 '47.6544 GEODETIC LONGITUDE: 155 28 13.8910	ELEVATION	METERS FEET
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STATE COORDINATES (Feet)						
ANGLE	e HORA di	<b>Y</b>	×	CODE	STATE & ZONE	
00 37	+ 0 00	458,745.48	510,113.17	5101	HI 1	
	+ 0 0	458,745.48	510,113.17	2101	HI I	

PLANE AZIMUTH HAS BEEN COMPUTED BY THE # HER & 4 FORMULA NEGLECTING THE SECOND TERM.

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

QF 495

FORM C&GS-526 (8-64)

U.S. DEPARTMENT OF COMMERCE ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM

R

0 201552 STATION 1006 HAWAII LATITUDE 20 °00' TO 20 °30' LONGITUDE 155 ° 00' TO 155 ° 30' DIAGRAM NE 5-1,5 HAWAII

# NO ORIGINAL TEXT

Humuula (Hawaii Island, Hawaiian Government Survey, 1877; E. R. Hand, 1913).—On northeast coast of Hawaii, in East Hamakua, land of Humuula, on the northwest side of Kaawalii Gulch, about 1,350 meters above the government road, on a conspicuous round-topped, cane-covered hill called Puu Lanai. It appears to be the highest point on the northwest side of gulch when viewed from the cliff edge or road. It is reached by following one of the trails leading from the government road up the hill on the northwest side of the gulch. Marked by a copper triangle underground, over which is a concrete post 1 foot in diameter with a copper plate of the United States Geological Survey in top. RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: Humuula State: Hawaii County: Hawaii Established Br: Hawaiian Govt ybas: 1877 Localitt: Humuula, North Hillo, Hawaii. Recovered By: C.L.MurrayYear: 1929

Detailed statement as to the fitness of the original description: The mark found at this station was a U.S.G.S. Bronze tablet set in concrete on the top of cylindrical concrete block set firmly in the ground and marked on the top with the letters A.B.L. This station has been remonumented with a Type B-1 concrete monument by Chas. L. Murray of the Hawaii Territory Survey in Sept., 1930. Humbula Trig is situated on the northeast coast of Hawaii, North Hilo, land of Humuula, on the northwest side of Kawalii Gulch, about 4000 feet above the main government road, on a conspicuous round-topped hill covered with cane and called Puu Ianai. It appears to be the highest hill on the northwest side of Kawalii Gulch. The best approach to this station is along a plantation road about 1/3 mile east of Ookala Village. This road goes up along the west side of a small gulch about 1/3 mile crossing it and going along the east side another 1/3 mile and then turns to the left (east) reaching a gulch at about 2000 feet. Cross the gulch and follow up the east side of this gulch along a plantation trail about 1/3 of a mile to a point opposite the high hill upon which the station is situated. Ascend the hill along one of the cane furrows.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: HUMUULA STATE: Hawaii County: Hawaii ESTABLISHED BY: H.G.S. YEAR: 1877 LOCALITY: North Hilo RECOVERED BY: C.T. Husemeyer YEAR: 1949

Detailed statement as to the fitness of the original description:

Form 596

Located on the northeast coast of Hawaii, in North Hilo district, land of Humnula, on the northwest side of Kaawalii Gulch, about 1,350 meters above the government road, on a conspicuous round topped, cane covered hill called Puu Lanai. It appears to be the highest point on the northwest side of the gulch when viewed from the cliff edge or road.

The original station was marked by the Hawaiian Government Survey. In 1911 the station was recovered by W.H.Barringer and remarked by a bronze Geological Survey tablet centered over old mark, in top of concrete post one foot in diameter. Old mark is a burried copper triangle. In 1938 the Hawaii Territory Survey placed a type B monument over the station. A six foot square concrete platform projecting one foot above the ground. A two inch pipe with a metal target is centered over the mark. The center of this pipe was used as the station.

From the post office at Hilo: go north on the coast highway for 26.5 miles to the Laupahoehoe post office. Continue ahead on main highway for 5.6 miles. Here turn left on paved came road and go southerly for 0.6 mile take left fork and go 0.9 mile, turn right on road up hill and on left side of a wash and go 0.5 mile and bear left to ETT. Pack east, toward ocean, down level topped ridge through a cane field for about 350 feet to station.

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

(continued on next page)

#### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HUMUUL A

STATE HAWAII

YEAR. 1877

SECOND

SDURCE. G- 9279

GEODETIC LATITUDE:	20 °00 ′05. 515 155 16 47. 581	ELEVATION.	330.9 1086	METERS FEET

STATE COORDINATES (Feet)					
STATE & ZONE	CODE	x-	· ·	8 IOR A BI ANGLE	
HI 1	5101	575,532.38	424,278.61	+ 0°04'31	
	n 32 -	7			

PLANE AZIMUTH HAS BEEN COMPUTED BY THE  $\, heta\,$  or  $\Delta\,$   $\,$  formula neglecting the second term

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

## HORIZONTAL CONTROL DATA

by the

NATIONAL GEODETIC SURVEY

OLD HAWAIIAN DATUM

HUMUULA (continued)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: HUMUULA

ESTABLISHED BY: H.G.S. YEAR: 1877

RECOVERED BY: D.M. Whipp YEAR: 1966

AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

STATE: Hawaii BENCH MARK(S) ALSO 
COUNTY: Hawaii

Island: Hawaii

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. There is now a tall microwave relay tower on the hill near the station. A complete description follows:

Station is located about 1-1/4 miles south-southeast of Ookala and 3/4-mile south-southwest of State Highway 19, on a rounded hill in cane fields on southeast side of Kachaoha Gulch, at about 1086 feet elevation. To reach station from the post office in Laupahoehoe, go northwest

for 0.1 mile; turn left and continue northwest, on State Highway 19, for 4.2 miles to fork at Ookala; continue ahead on the highway for 0.55 mile to diagonal, paved crossroad at power pole No. 86. Turn left and go 0.3 mile to crossroad. Turn left, through long cut, and go 0.15 mile to landing strip; continue ahead, along landing strip, for 0.3 mile to side road right, 25 yards beyond end of the strip and on southeast side of gulch. Turn right and go up steep cane road along left side of gulch for 0.5 mile to diagonal crossroad. Turn left and go northeast, down slight grade, for 0.1 mile to micro-wave tower on right. Continue ahead on cane road for 135 feet to station on left in cane field.

Station mark is a U.S. Geological Survey disk, faintly stamped "1085", set in the top of a 12-inch-diameter, concrete monument about 1-1/2 feet above field level. A type B-1 signal is centered over the mark, with the 6-foot-square, concrete platform extending 2 feet above ground. The station mark is at the bottom of a rectangular depression 8 x 30 inches and about 8 inches deep. It is 18 feet northwest of center line of cane road, 135 feet north-northeast of the micro-wave tower, and 49 feet northeast of the north 1 of 2 60-foot-tall, wooden, antenna poles with a transformer pole between them and an 8-foot-square, green, metal shack by them.

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM

R

Q 201552 STATION 1007
HAMAII
LONGTUDE 20 00' TO 20 30'
LONGTUDE 155 00' TO 155 30'
DIAGRAM NE 5:15 HAWAII

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U. S.	COAST	AND	GEO	OETIC	SURVEY
		Fo:	m l	525	
	U.S.	EPARTMI U. S. COAST	U. S. COAST AND	U. S. COAST AND GEO	U. S. COAST AND GEODETIC Form 585

#### DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: IKI CHIEF OF PARTY: 0. W.	Swainson;	STATE: Hawa		nty:	Hawaii.
Surface-station mark,	Note,*	DISTANCES AND	DIRECTIONS TO REFERENCE	MARKS AND PROM	INENT OBJECTS
Underground-station mark,	Note,*	09/601		DIRECTION	AZIMUTH
Reference mark,	Note,*			0 , 0	0 / /
Reference mark, Witness mark,	Note,*				
Witness mark,	Note,*			A 15 A 16	
Height of signal above station	mark meters.				
Height of telescope above star Detailed descriptions					

Station is center of 3" pipe embedded in a triangular mass of concrete, and projecting about 12" above the surface of the concrete. It is located on a prominent tree covered knoll about 5/8 mile East of Honokaa Stack. Station is reached by leaving the Honakaa manner of the second sugarcaned loading platform is reached, station is just inland from this platform. Station Kaao Iki established by Honokaa Plantation is center of triangular mass of concrete mentioned above.

#### RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: IKI
ESTABLISHED DY: O.W. SWAINSON YEAR: 1932 STATE: HAWAII BENCH MARK(S) ALSO 
RECOVERED BY: D.M. Whipp YEAR: 1966 COUNTY: HAWAII
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: ISland: HAWAII

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

Station was recovered in poor condition, partially destroyed.

A 6-inch-diameter, concrete-filled, iron pipe was found, tilted slightly due to being bumped by machinery during cane-field cultivation. Nearby, the length of 3-inch iron pipe, originally marking the station, was found, and also 2 large chunks of concrete with the imprint of both pipes in them, indicating that the 6-inch pipe had been the anchor supporting the 3-inch station pipe. After reconstructing station by straightening the 6-inch pipe and setting the concrete chunks in place an angle check was made, indicating this to be the correct point.

Since it was located in the edge of a cane field a new station

Since it was located in the edge of a cane field a new station, IKI 2, was established nearby and the 6-inch pipe was removed from the field.

See description for IKI 2.

FORM C&G3-526 (1-65)

U.S. DEPARTMENT OF COMMERCE

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION IKI

STATE HAWAII

YEAR 1932

THIRD

SOURCE: G- 1085

GEODETIC LATITUDE: GEODETIC LONGITUDE:	20 °05 '40.'99 155 27 34.39	SCALED	154	METERS FEET

8 IOR A 41 ANGLE
+ 0 00 50

PLANE AZIMUTH HAS BEEN COMPUTED BY THE # IOR A # FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From 188/b)	PLANE AZIMUTH *	con
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## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM

METERS.

STATION 1008 0 201552 TIAWAH 20 °00' TO 20 °30' LONGITUDE 155 000' TO 155 030' DIAGRAM NE 5-1,5 HAWAII

Name of Station: IKI 2

Iь

12a

DESCRIPTION OF TRIANGULATION STATION

Hawaii

COUNTY: Hawaii Island: Hawaii

CHIEF OF PARTY: D.M. Whipp 1966 HEIGHT OF TELESCOPE ABOVE STATION WARK 1.45 METERS.1 Surface-station mark, Underground-station mark

Described by: R.F. Hanson HEIGHT OF LIGHT ABOVE STATION WARK

DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS
WHICH CAN BE SEEN FROM THE GROUND AT THE STATION DISTANCE DIRECTION : BEARING 00.00 Honokaa, Honokaa Sugar Co. Mill, stack, 1948 20 33 50.6 5.706 18 NE 18.720 130 Paauhau, Paauhau Sugar Co., stack, 1913 202 16 09.3 ESE

desc. RM No. 2

KUILEI (HGS) 1877

RM No. 1

SSE 13.932 4.247 261 27 14

Station is located about 1-1/4 miles northeast of Honokaa and 3/4 mile east of the Honokaa Sugar Mill at Haina, at about 506 feet elevation, along the east edge of a low ridge that is planted in sugar cane, just above the old railroad grade (now a track road). There are scattered ironwood trees along the east slope of the ridge.

To reach station from the post office in Honokaa, go southeast on the main street for 0.4 mile; turn left on Ohelo Street and go downhill for 0.35 mile to fork where macadam road curves right. Continue ahead on field road downhill for 0.2 mile to paved crossroad. Continue downhill for 0.3 mile to second paved crossroad. Turn left and go 0.1 mile

to paved, diagonal crossroad. Turn sharp right and go 0.05 mile; turn left on field road and go downgrade along east side of ridge for 0.15 mile; turn left up steep, grassy track road and go 30 yards to top of ridge; turn right and go 0.25 mile to end of ridge and station on right.

Station mark is a standard disk stamped "IKI 2 1966", set in the top

of a 12-inch-diameter, concrete monument that projects 4 inches. It is located in grassy area along east side of cane field; 14 feet east of edge of field road, 13 feet north-northwest of a 12-inch ironwood tree, 2-1/2 feet south of a white witness post, 8 feet west of where hill breaks sharply down to east, and 60 feet south from point where ridge end drops steeply down to north.

Reference mark number one is a standard disk stamped "IKI 2 NO 1 1966" cemented in a drill hole in a 16-inch-square bedrock ledge outcrop, projecting 2 feet on lower side. It is 12 feet east of a clump of small ironwood trees and 4 feet lower than station mark.

Reference mark number two is a standard disk stamped "IKI 2 NO 2 1966" set in the top of a concrete-filled, 4-inch, iron pipe that is set in concrete and projects 4 inches. It is 18 feet east of edge of road, 4 feet southwest of the 12-inch ironwood tree, and about 1 foot lower than station mark.

#### RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: IKI 2 STATE: Hawaii Bench MARK(S) ALSO ESTABLISHED BY: D.M. Whin YEAR: 1966 YEAR: 1969 COUNTY: Hawail RECOVERED BY: J. "I. Collom

AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

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

Station recovered in mond condition. 1966 description adequate.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION IKI 2

YEAR 1966

THIRD

ORDER

SOURCE G-13903

20 05 40.7771 154 SCALED METERS GEODETIC LATITUDE 155 27 34.2467 FEET GEODETIC LONGITUDE

STATE & ZONE	CODE	×	Y	0 IGH A BI ANGLE
11 1	5101	513,891.82	458,052.47	+ 0°00′50

\* BI ANS AZIMUTH HAS BEEN COMPUTED BY THE A IDR A GI FORMULA NEGLECTING THE SECOND TERM

TO STATION OR OBJECT	GEODETIC AZIMUTH (From sauth)	PLANE AZIMUTH * (From south)	CODE
KUILEI HGS	79 50 33.8	79 49 44	5101
		ga Bitt	

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

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM Q 201552 STATION 1009

HAWAII

LATITUDE 20 °00' TO 20 °30'

LONGITUDE 155 °00' TO 155 °30'

DIAGRAM NE 5-1,5 HAWAII

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION I SAAC

STATE HAWAII

YEAR 1877

THIRD

-ORDER

SOURCE G-SP156

GEODETIC LONGITUDE: 155 27 34.425	GEODETIC LATITUDE	20 05 41.643 155 27 34.425	ELEVATION:	MFTERS FEET
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STATE COORDINATES (Feet)				
STATE & ZONE	CODE	x	1 m == / <b>v</b> =	8 OR A STANGLE
HI 1	5101	513,874.80	458.139.82	+ 0 00 50

PLANE AZIMUTH HAS BEEN COMPUTED BY THE | heta| OR  $\Delta$  | heta| FORMULA NEGLECTING THE SECOND TERM,

TO STATION OR OBJECT	GEODETIC AZIMUTH (From touth)	PLANE AZIMUTH *	CODE
	8)		
		-	

QO 368

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM

0 201552 STATION 1010 HAWAII LATITUDE 20 °00' TO 20 °30' LONGITUDE 155 °00' TO 155 °30' DIAGRAM NE 5-1,5 HAWAII

## NO ORIGINAL TEXT

DEPARTMENT OF COMMERCE
U. C. COAST AND GEODETIC PURVEY
FORES 536

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: KAAO

ESTABLISHED BY: H.G.S. YEAR: 1877 STATE: RECOVERED BY: L. C. Wilder YEAR: 1948 COUNTY:

HAWAII

Detailed statement as to the fitness of the original description:

This station has been monumented, by Hawaii Territory Survey, in 1938, with concrete instrument platform and metal pole and target. Recovery of the old station in 1938 is assumed.

Station is located on a flat ridge overgrown with guava brush, 200 to 300 yards east of the southern part of the grounds of the Honokaa public school, which is on the south side of the main highway, about 1/3 mile east of the junction of the roads to Hilo and Waimea. Drive through the back of the school grounds and continue east on an old road, 200 to 300 yards to the first ridge, then walk about 100 yards south up the ridge (a very flat ridge).

\* Name of chief of party should be inserted here. The officer who actually visited the station should sign his norm meeting series Norm.—One of these forms must be used for every station recovered. M-2518-2 R

STATE HAWAII

YEAR 1877

THIRD

SOURCE G-SP156

GEODETIC LATITUDE	20 °04 '39.748 155 27 57.210	ELEVATION	METERS FEET
GEODETIC LONGITUDE			

ADJUSTED HORIZONTAL CONTROL DATA

STATE & ZONE	CODE	×	Y	# OH △ d) ANGLE
HI 1	5101	511,704.43	451,895.24	+ 0 00 42

PLANE AZIMUTH HAS BEEN COMPUTED BY THE # IDRA 41 FORMULA NEGLECTING THE SECOND TERM

TO STATION OR DBJECT	GEODÉTIC AZIMUTH (From seath)	PLANE AZIMUTH *	CODE

QD 364

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM

R

Q 201552 STATION 1011
HAWAII
LATITUDE 20 °00' TO 20 °30'
LONGITUDE 155 °00' TO 155 °30'
DIAGRAM NE 5-1.5 HAWAII

# NO ORIGINAL TEXT

Kaholo (Hawaii Island, Hawaiian Government Survey, 1877; E. R. Hand, 1913).—On northeastern coast of Hawaii, in Hannakua District, on a not very well defined hill close to the government road and on its upper side, between Ookala and Kukaiau post offices, and 1½ miles from the former in a direct line. It is a short distance east of the Keehia public school, a small and shabby building on the upper side of the road. To reach station, start at this school and proceed toward Ookala (or eastward) about 330 meters, where there is a private road going directly up the hill; turn along this private road for 190 meters, then turn at right angles to the left (or N. 65° E.) and go 75 meters through the cane to station. Marked by a copper plate of the United States Geological Survey set in concrete inside an iron pipe about 8 inches in diameter; pipe is of thin iron and has ragged edges projecting a few inches above ground. Station is surrounded by a great pile of bowlders.

DEPARTMENT OF COMMERCE
U. B. COMST AND GENOTIC SMINEY
RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: KAHOLO STATE: Hawaii County: Hawaii Recovered by: C.T. Husemeyer Year: 1949

Detailed statement as to the fitness of the original description:

Original description follows; Station mark, a concrete block 9 or 10 inches in diameter and 3 1/2 feet long encased in a corrigated iron tube, the top marked with a triangle and three considerable stones are dug in the ground around the station. 128 feet above the government road and 1200 feet along road, west of Maonakomalie Gulch on a rise from which an extensive view can be had. Nov. 1 1899 station was restored by J.S.Emerson, Fresent station mark is a concrete cylinder 9 inches in diameter set in rammed stones, sand and cement above which it projects 2 1/10 feet.

In 1914 E.K. Hand described the station as follows; on the northeastern coast of Hawaii, in Hamakau District on a not very well defined hill close to the government road and on its upper side, between Ookala and Kakaiau post offices, and 1/2 mile from the former in a direct line. Marked by a copper plate of the U.S. Geological Survey set in concrete inside an iron pipe about 8 inches in diameter.

In 1929 the Hawaii Territory Survey reported the station mark recovered as a drill hole in a triangle in concrete cylinder. At this time a six loot square concrete platform mounted on four foot high masonry work supports was placed over the station. A three inch iron pipe in the center permits plumbing to the station.

In 1949 the station was recovered as; a Hawaii Territory Survey disk set in a concrete cylinder 9 inches in diameter and projecting about two feet above the ground, the cylinder is surrounded by a mass of concrete and lava boulders. No record can be found of this mark being set. It appears to be the same concrete cylinder as recovered and monumented in 1929.

To reach from the Post Office at Hilo: go northerly on the coast highway for 31.9 miles to the Ookala Post Office, continue ahead on highway for 2.0 miles, turn left on paved plantation road and go 0.2 miles. From here pack southeasterly through cane field for about 150 yards to station.

(continued on next page)

#### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION KAHOLO

STATE, HAWAII

YEAR: 1877

SECOND

OND \_

SOURCE: G- 9279

GEODETIC LATITUDE:	20 01 01.963 155 18 32.630	ELEVATION	291.2	METERS
GEODETIC LONGITODE			,,,	PECI

STATE & ZONE	CODE	×	•	O OR A A ANGLE
4I 1	5101	565,545.80	429,960.94	+ 0 03 55

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE # OR A G FORMULA NEGLECTING THE SECOND TERM

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH *	CODE
	the face		
		_	
	l		

## HORIZONTAL CONTROL DATA

NATIONAL GEODETIC SURVEY OLD HAWAIIAN DATUM

QUAD 201552 STATION 1011 TO LATITUDE LONGITUDE DIAGRAM

KAHOLO (continued)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: KAHOLO YEAR: 1877 STATE: Hawaii BENCH MARK(S) ALSO ESTABLISHED BY: HGS 1966 RECOVERED BY: D.M. Whipp YEAR:

COUNTY: Hawaii Island: Hawaii AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

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

Station mark was recovered in good condition. A complete description follows:

Station is located about 1-1/2 miles west of Ookala and 700 feet south of State Highway 19, at about 955 feet elevation, on a flat rise in cane field, 250 feet east of the main cane-field road that runs upgrade between

Reehia and Kaholo Gulches, and 350 feet north-northeast of a crossroad.

To reach station from the post office at Laupahoehoe, go northwest 0.1 mile; turn left and continue northwest, on State Highway 19, for 6.7 miles to macadam side road left, on curve of highway. Turn left and go southerly upgrade for 0.15 mile to end of truck travel about 75 yards before cross-

road. Walk east 250 feet to high point and station.

Station mark is an unstamped Hawaii Territory Survey disk, set in the top of an 8-inch-diameter, concrete monument that projects 3 inches from the top of a stone and concrete cairn about 2-1/2 feet high and 4 feet across at the base. A Type A signal is centered over the mark, with the 6-foot-square, concrete platform 4 feet above ground. A red and white metal target extends about 8 feet above the platform.

Torne CEG-528 (1-44) No reference marks established as cane is Used and the control of the signal.

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: KAHOLO ESTABLISHED BY: HGS

RECOVERED BY: J. N. Collom

YEAR: 1977 YEAR: 1969

STATE: Hawaii COUNTY: Hawaii

BENCH MARK(S) ALSO

AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

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

Station recovered in good condition. 1966 description adequate.

FORM C&G\$-526 (1-44)

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

## HORIZONTAL CONTROL DATA

National Ocean Survey OLD HAWAIIAN DATUM Q 201552 STATION 1012 HAWAII LATITUDE 20 °00' TO 20 °30' LONGITUDE 155 °00' TO 155 °30' DIAGRAM NE 5-1,5 HAWAII

#### DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: KAU STATE: Hawaii CHIEF OF PARTY: D.M. Whinn 1067 YEAR!

COUNTY: Hawaii Island: Hawaii

NOTE,		METERS.1	HEIGHT OF I	IGHT ABOVE STAT			METERS	;.
1b 7a	Surface-station mark, Underground-station mark DISTANCES AND DIRECT	TIONS TO AZIMU CH CAN BE SEEN	TH MARK, REFI FROM THE GR	ERENCE MARKS OUND AT THE S	AND PROTATION	MINEN	T OBJECTS	
	OBJECT	BEARING	DIST	ANCE		DIRECT	TION:	1
12c 12c	KOHOLALELE (HGS) 1877 RM No. 2 RM No. 1 Paauilo, Stack, 1948	NE ESE	4.282 8.904	1.306	00 126 267 329	00 31 29 26	00.0 56 45 49.1	1

Station is located in the northern part of the island, about 2 miles northwest of Paauilo, 3/4-mile northeast of State Highway and 1/4-mile southwest of the sea, at about 400 feet elevation, between Kaumoali and Kaunamano Gulches, on a small grassy and rocky knoll on the southwest and higher end of a brushy rim overlooking next cane field to northwest, which is about 40 feet lower.

To reach station from the post office at Paauilo, go northwest on State Highway 19 for 1.8 miles to crossroad. Turn right and go 0.15 mile to T-junction; turn left and go 0.05 mile; turn right, opposite a cemetery, and go downgrade 0.7 mile to T-junction. Turn left and go 0.35 mile to side road right, just after crossing concrete bridge. Turn right

and follow cane road 0.1 mile, then go left 0.05 mile on cane road to end of road and station.

Station mark is a standard disk stamped "KAU 1967", set in the top of a 2-foot-diameter mass of concrete flush with surrounding rocks. It is on southeast slope of the knoll, on small, flat area among rocks, 20 feet northeast of, and about 5 feet lower, than highest point of knoll, and is 3 feet southwest of a white witness post.

Reference mark number one is a standard disk stamped "KAU NO 1 1967". cemented in a drill hole in a 3-foot boulder that projects 2-1/2 feet above ground. It is 0.4 foot higher than station mark.

Reference mark number two is a standard disk stamped "KAU NO 2 1967", cemented in a drill hole in the northeast tip of a large rock that projects about 4 feet higher than station mark. It is about 15 feet northeasteast from high point of knoll.

NOTE: Underground station mark is a standard disk stamped "KAU 1967", set in concrete about 3 feet beneath ground level.

NOTE: This station is about 125 yards northeast of point where station KAUMOALI 2 1948 was located, and was established to replace it since it was destroyed.

als of triangulation and state put referred to initial static

#### ADJUSTED HORIZONTAL CONTROL DATA

1967 YEAR

SECOND

SOURCE G-13903

GEODETIC LATITUDE	20 04 00.9460 155 25 46.9843	SCALED	22 METERS

STATE COORDINATES (Feet)						
STATE & ZONE	CODE	×	•	P OR A 41 ANGLE		
HI 1	5101	535,558.57	447,990.66	+ 0 02 08		
		-				

PLANE AZIMUTH HAS BEEN COMPUTED BY THE  $A = 0.07 \Delta$  G. FORMULA NEGLECTING THE SECOND TERM

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH *  (From weath)	CODE
KOHOLALELE	322 38 44.3	322 36 36	5101

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM 0 201552 STATION 1013
HAWAII
LATITUDE 20 00' TO 20 30'
LONGITUDE 155 00' TO 155 30'
DIAGRAM NE 5-1.5 MAWAII

DEPARTMENT OF COMMERC U. S. COAST AND GEODETIC SURVEY POUTS 525

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: KAUMOALI 2

STATE:

HAWATI COUNTY:

HAWAII

HIEF OF						scribed by: C.		rray	NETE	
	Surface-station mark, Underground-station mark	DISTANCES	AND DIRECTION WHICH O	ONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECT I CAN BE SEEN FROM THE GROUND AT THE STATION						
				BEARING	D197	DISTANCE		DIRECTION:		
	OI	NECT		BEARING -		feet meters		23,000,1000		
	MAHAKUOLO 2						. 0	00	00	
	R.M. No. 1	N			41,20	12,558	59	05	36.	
	R.M. No. 2				52.06	15,868	236	53	59.	
				1						

Established by the U.S.C. & G.S. in 1948. The station is located at Hamakua District in the northern part of the Island of Hawaii 1.8 miles west of Pasuilo Village, 0.35 mile inland from the coast.

The station is marked by a standard disk set in a concrete block about 18 inches square imbedded in the ground and extending above the ground about 8 inches. It is located on the west side of Kaumoali Gulch on a fairly prominent flat rise of land overlooking the coastal area.

The old H.T.S. station "Kaumoali" is located several hundred feet away and was not searched for or tied in due to intervening high came.

The two reference marks are cemented in drill holes in solid out-cropping boulders on the gulch bank.

To reach the station proceed west from Pasuilo Village along the main road to Honokas a distance of about 1.8 miles then continue downward toward the sea on a plantation gravel road about 0.7 mile and turn left on the plantation main lower road for a distance of about 0.3 mile at which point is an old wooden bridge crossing Kaumoali Gulch. Follow down the west bank of Kaumoali Gulch about 150 feet to the station.

DEPARTMENT OF COMMERCE U. S. COAST AND GENOTIC SURVEY FORM 526 (Rev. Feb. 1963)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: KAUMOALI 2

EGYABLISHED BY: L.C. Wilder YEAR: 1948 State: RECOVERED BY: Chas. L. Murray YEAR: 1950 County:

Hawaii Hawaii

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

The triangulation was reported as disturbed by the Hamakus Mill Company.

The station was reestablished within 0.01 foot of its original location by measurements and angle observations from the two reference marks.

The original disk was set in a concrete block about 24 inches square but with a heavier base. Two heavy rails were placed between the station and the existing roadway. Otherwise, the original description is unchanged.

The reestablishment of the station was done under the supervision of Mr. Chas. L. Murray of the Territorial Survey Department.

(continued on next page)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION KAUMOALI 2

STATE HAWAII

YEAR 1948

SECOND

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SOURCE G- 9279

GEODETIC LONGITUDE 100 20 40-149 457	GEODETIC LATITUDE	20 03 55.954 155 23 45.749	ELEVATION	133.3	METERS FEET
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STATE COORDINATES (Feet)							
STATE & ZONE	CODE	×	4 7 THE	# IOH & BI ANGLE			
HI 1	5101	535,676.64	447,487.13	+ 0 02 08			
		The same of the sa					

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH *  (From couth)	CODE
MAHAKUOLO 2	125 19 51.4	125 17 43	5101

## HORIZONTAL CONTROL DATA

NATIONAL GEODETIC SURVEY OLD HAWAHAN DATUM

QUAD 201552 STATION 1013 TO LONGITUDE DIAGRAM

KAUMOALI 2 (continued)

RECOVERY NOTE, TRIANGULATION STATION

KAUMOALI 2 NAME OF STATION: L.C. Wilder YEAR: 1948 STATE: Hawaii BENCH MARK(S) ALSO D.M. Whipp YEAR: 1966 COUNTY: Hawaii RECOVERED BY: AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: Island: Hawaii

Detailed statement as to the fitness of the original description; including marks found, statement as to the fitness of the original description;

Station is destroyed. The ridge has been cleared off and planted in sugar cane. Station monument was found pushed nearly out of ground by machinery; a search was made for an underground mark but none was found. The station had apparently been built up over an old survey point because a 2-1/2-inch iron pipe was found extending from the bottom of the concrete

Reference mark number one was recovered in good condition. A search was made for reference mark number two by distance and angle but it was

was made for reference mark number two by distance and angle out it was not found and is believed destroyed by machinery.

Reference mark number one is a standard disk stamped "1 1948", cemented in a drill hole in a 12-inch boulder flush with ground. It is 21 feet east of center line of field road and 6 feet west of edge of ridge,

where road begins to drop downgrade to north.

To reach from the post office in Laupahoehoe, go northwest 0.1 mile; turn left and go northwest on State Highway 19 for 11.2 miles to fork in Paauilo village; continue ahead on the highway for 1.6 miles to paved side road right. Turn right and go 0.15 mile to T-junction. Turn left and go 0.05 mile to side road right, by cemetery. Turn right and go down long hill for 0.7 mile to T-junction. Turn left and go 0.35 mile to side road right, just after crossing bridge across Kaumoali Stream. Turn right and go north 200 feet along west side of gulch to crest of hill.

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM

R

Q 201552 STATION 1014

HAWAI 1
LATITUDE 20 °00' TO 20 °30'
LONGITUDE 155 °00' TO 155 °30'

DIAGRAM NE 5-1.5 HAWAII

## NO ORIGINAL TEXT

Koholalele (Hawaii Island, Hawaiian Government Survey, 1877; E. R. Hand, 1913).—Near northeastern coast of Hawaii, in the central part of Hamakua district, on the eastern summit of Puu Piele, a conspicuous hogback hill trending north and south which is seen ½ mile above the government road, between the post offices of Kukaiau and Paauilo. The lower or seaward end of this hill is covered with bushes. To reach the station start at the large schoolhouse, red, trimmed with white, and go along the government road toward Kukaiau, passing the road down to Paauilo mill; a few yards farther on take the trail which leads up the hill. When on top the hill will be seen to consist of two parallel hogbacks; the station is on the highest point of the east hogback. The hill is on range with the Paauilo sugar mill and the red and white schoolhouse. Station marked by a concrete cylinder about 8 inches in diameter projecting some 4 inches above surface of ground with copper plate of the United States Geological Survey in top. It is surrounded by a pile of small bowlders. Reference mark is station Water, an octagonal water tank on the lower end of the west hogback. It is about 80 meters from station bearing N. 29° W.

EPARTMENT OF COMMERCE RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: KOHOLALELE

HAWAII

ESTABLISHED BY: Hawaiian Govt. Year: 1877 STATE: RECOVERED BY: \*L. C. Wilder Year: 1948 COUNTY: HAWAII

Detailed statement as to the fitness of the original description: The original station was not recovered. It is not known how the 1877 station was marked. In 1913 E. R. Hand reported recovering a U. S. Geological Survey disk set in the top of an 8 inch concrete cylinder. About 1929 the Territory Survey Department reported recovering a 4 inch iron pipe which was set in concrete. Also in 1929 the Territory Survey constructed a concrete platform, 6 feet square and 4 feet high, over the station. The present survey has recovered a 4 inch iron pipe which projects 4 inches from a concrete base which is 1 1/2 inches high. No disk was found in the pipe. A new description follows—

The station is located on the crest of a low north-south ridge; about 5 miles west of Ookala, about 2.5 miles southeast of Paauilo, 2.5 miles west southwest of Popoloau Point, about 200 yards south of three old water tanks and about 100 yards north of a heavy growth of timber.

tanks and about 100 yards north of a heavy growth of timber.

The station is the center of a 2 1/2 inch iron pipe which projects 10 inches from the top of a concrete platform. The top of this pipe is 26 inches higher than the top of the pipe which marks the old station.

No reference marks were set at this station.

To reach the station from the post office at Pasuilo; go south and east, on the road which leads toward Hilo, for 2.3 miles. Turn right, go westerly for about 100 feet, turn left and go south and west, on a paved road, for 1.8 miles; turn right, onto a dirt road, and go westerly for 0.2 mile; pass through a board gate and follow a field road northwesterly for 0.2 mile; pass under a power line and continue northwesterly, up a steep grade, for 0.1 mile to the crest of the ridge and the station.

Object

Direction

Distance

PAAUHAU (metal target) NW 00 00 00 KOHOLO E 157 33 25.1 KIHE (metal target) 8 256 50 55.7

An early recovery note reports; Original station recovered by W.H. Barringer in March 1911. Remarked by bronze tablet set over old mark in top of concrete post. Elevation stamped 1506.

(continued on next page)

#### ADJUSTED HORIZONTAL CONTROL DATA

KOHGLALELE

STATE: HAWAII

YEAR 1877

SECOND

----

SOURCE: G- 9279

| GEODETIC LATITUDE: 23 01 20.025 | ELEVATION 460.5 WETERS | 155 21 37.527 | 1511 | FEET

STATE COORDINATES (Peri)						
CODE	×	V	B OR A BLANGLE			
5101	547,912.91	431,825.98	+ 0 02 52			

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE BOOK A FORMULA NEGLECTING THE SECOND TERM

TO STATION OR OBJECT	GEODETIC AZIMUTH	PLANE AZIMUTH	COOF
OPIHILALA	145 26 10.1	145 23 18	5101

JUN 1978

HORIZONTAL CONTROL DATA by the

QUAD 201552

LATITUDE

LONGITUDE

STATION 1014

NATIONAL GEODETIC SURVEY

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

KOHOLALELE (continued)

U.S. DEPARTMENT OF COMMERCE

OLD HAWAIIAN DATUM

RECOVERY NOTE, TRIANGULATION STATION

KOHOLALELE

FORM 5260 19-18-591

RECOVERED BY:

NAME OF STATION HGS ESTABLISHED BY D.M. Whipp

YEAR: 1877 YEAR: 1966

STATE:

Hawaii Island: Hawaii

HEIGHT OF LIGHT ABOVE STATION MARK

GHT OF TELESCOPE ABOVE STATION MARK DISTANCES AND DIRECTIONS TO AZIMU	TH MARK, F		KS AND PROMINI	ENT OBJECTS WH		BE SEE	н
			DIST	ANCE			
OBJECT		BEARING	FEET	METERS	0	IRECTI	ON
OPIHILALA (HGS) 1949 RM No. 1 RM No. 2		N S	19.598 44.197	5.974 13.472	00 29 209	00 47 47	00.0 45 42

Station mark was recovered in good condition. Two reference marks

were established. A complete description follows:
Station is located about 1-1/2 miles southeast of Paauilo and 1 mile southwest of State Highway 19, at about 1541 feet elevation, on a low, narrow, north-south ridge covered with ironwood trees, between cane fields.

To reach station from the post office at Laupahoehoe, go northwest 0.1 mile; turn left, and continue northwest, on State Highway 19, for 9.4 miles to Kukaiau Village; continue on the highway for 0.4 mile to cross-road at power pole #175. Turn left, past curved stone wall, and go upgrade 1.1 miles to crossroad. Turn right and go 0.15 mile, crossing a

dip and passing under power line, to crest of ridge and end of truck travel. Walk north along ridge for about 75 yards to station.

Station mark is a U.S. Geological Survey disk stamped "1506", set in concrete 12 inches down inside of a 4-inch iron pipe which projects about 2 inches from the top of a 16-inch-diameter concrete monument that extends 16 inches above ground. NOTE: The pipe is usually filled with water and debris and mark cannot be seen. Station is 48 feet north of a triangle blaze on a 12-inch ironwood. A Type A signal built by the Hawaii Territorial Survey is centered over the mark, with the 6-foot-square concrete platform & feet above ground. A red and white metal target extends about 8 feet above the platform.

Reference mark number one is a standard disk stamped "KOHOLALELE HGS 1877 NO 1 1966", brazed to the top of a 2-inch iron pipe that is set in concrete and projects 6 inches above ground. It is 6 feet west-northwest of a 6-inch ironwood tree and 2-1/2 feet lower than station mark.

Reference mark number two is a standard disk stamped "KOHOLALELE HGS 1877 NO 2 1966", brazed to the top of a 2-inch iron pipe that is set in concrete and projects 6 inches above ground. It is 4 feet northwest of the 12-inch tree with triangle blaze and 1-1/2 feet higher than station mark.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: KOHOLALELE

HGS D.M. Whipp RECOVERED BY:

YEAR: YEAR: 1967 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

STATE: Hawaii COUNTY Island · Hawaii

Hawaii Bench MARK(S) ALSO

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

Station was recovered as described in 1966 and all marks found in good condition.

DIAGRAM

## HORIZONTAL CONTROL DATA

National Ocean Survey OLD HAWAIIAN DATUM

0 201552 STATION 1015 LATITUDE 20 °00' TO 20 °30' LONGITUDE 155 °00' TO 155 °30' DIAGRAM NE 5-1.5 HAWAII

NAME OF STATION: KUKUI

DESCRIPTION OF TRIANGULATION STATION

STATE: Hawaii

COUNTY: Hawaii Island: Hawaii

CHIEF OF PARTY: D.M. Whipp YEAR: 1967 Described by: R.F. Hanson NOTE, HEIGHT OF TELESCOPE ABOVE STATION MARK 1.5 METERS. HEIGHT OF LIGHT ABOVE STATION MARK Surface-station mark, Underground-station mark DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS 1a WHICH CAN BE SEEN FROM THE GROUND AT THE STATION 7a

BEARIN PAAUHAU (HGS) 1877 00.0 RM No. 2 NW 32 53 55 12 13.245 4.038 56 Paauilo, Stack, 1948 ESE 177 55.2 RM No. 1 ESE 9.687 2,953 184

Station is located in the northern part of the island, about 2-3/4 miles west-northwest of Paauilo, along the southwest side of State Highway 19, above a very high cutbank on a prominent hill planted in sugar cane, between Kukuilamalamahii and Waikaalulu Gulches. The cutbank is about 90 feet high and has a fringe of small ironwoods along the edge.

To reach station from the post office at Paquilo, go northwesterly on State Highway 19 for 3.25 miles to crossroad at power pole 64. Turn left and go upgrade on main cane field road for 0.15 mile; take left fork and follow winding field road for 0.2 mile to top of hill and station on left.

Station mark is a standard disk stamped "KUKUI 1967", set in the top of a 10-inch-square, concrete monument that projects 5 inches.

It is at north end of cane field, in line with the ironwood trees, in tall grass, 7 feet southwest of edge of cutbank and 3 feet east of a white witness post.

Underground mark is a standard disk stamped "KUKUI 1967", set in concrete about 3 feet below ground level.

Reference mark number one is a standard disk stamped "KUKUI NO 1 1967", set in cement in the top of a 3-inch, iron pipe that is set in concrete and projects 3 inches above ground. It is among the small ironwoods, 5 feet southwest of edge of cutbank and about 1 foot lower

than station mark. Reference mark number two is a standard disk stamped "KUKUI NO 2 1967", set in cement in the top of a 2-inch, iron pipe that is set in concrete and projects 4 inches above ground. It is in grassy area, 5 feet southwest of edge of cutbank and at same elevation as station mark.

NOTE: This station was established to replace destroyed station KUKUILAMALAMAHEE 1948, which was located on high point of the hill, about 300 feet to southwest.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION KUKUI

HANAII

1967

SECOND

SOURCE G-13903

GEODETIC LATITUDE: 20 03 38.9182 GEODETIC LONGITUDE: 155 24 42.4953	SCALED 2	CD METERS
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STATE COORDINATES (First)					
STATE & ZONE	CODE	×		A DEQ 4 ANGLE	
Hī 1	5101	530,268.03	445,765.42	+ 0 01 49	

PLANE AZIMUTH HAS BEEN COMPUTED BY THE A 108 A Q FORMULA NEGLECTIVE VICENCE OF THE

TO STATION OR OBJECT	GEODETIC AZIMUTH	PLANE AZIMUTH *	CODE
PAAUHAU	100 14 35.3	100 12 46	5101

QF 492

referred to initial stat

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM

STATION 1016 0 201552 HAMAI 1 LATITUDE 20 °00' TO 20 °30' LONGITUDE 155 °00' TO 155 °30' DIAGRAM NE 5-1,5 HAWAII

DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY FORM 515 Bet. Aug. 1948

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATIONKUKUILANALAMAHEE STATE:

HAWAII COUNTY:

HAWAII YEAR: 1948

Described by: C. L. Murray

CHIEF OF PARTY: L.C. WILDER UCICUT OF LIGHT ARRYS STATION WARK

NOTE,	HEIGHT OF TELESCOPE ABOVE		ERS.1		LIGHT ABOVE STAT			METERS.
-	Surface-station mark, Underground-station mark	DISTANCES AND DIRECTION	IS TO AZIMU CAN BE SEEN	TH MARK, REF FROM THE GE	ERENCE MARKS OUND AT THE S	AND PROP	HINENT	OBJECTS
İ			BEARING	D15T	ANCE		DIRECT	ION 1
	OI OI	NECT	BEARING	foot	metere			
	MAHAKUOLO 2 R. M. No. 1 R. M. No. 2	E SE		100.16 125.34	30.529 38.205	0 113 148	00 19 04	00 00.4 58.5

An old H.T.S. station located in the Hamakua District in the northern part of the Island of Hawaii 2.6 miles west of Paguilo Village and 1.3 miles inland from the sea. Situated on a prominent hill just above the government main road, 100 feet west of a line of eucalyptus trees and is surrounded by cane.

The old station mark, a circular concrete post firmly imbedded in the ground was found. A standard disk was cemented in a drillhole in the middle of the concrete post. The disk is stamped "Kukuilamalamahee 1948". A small cairn of stones covers the station mark.

Two reference marks cemented in the tops of 2-inch pipes three feet long and driven solidly in the ground are located near a fence line running north and south along the line of eucalyptus trees.

To reach the station from Paguilo Village drive westerly along the main government road to Honokaa a distance of about 2.8 miles and turn left up a plantation road that goes up the easterly side of the hill to the cane field surrounding the station. The hill is the only prominent hill in the vicinity and can be identified by the line of eucalyptus trees on the east slope.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: KUKUILAMALAMAHEE

ESTABLISHED BY: L.C. Wilder YEAR: 1948 RECOVERED BY: D.M. Whipp

YEAR: 1967 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

STATE Hawaii BENCH MARK(S) ALSO COUNTY: Hawaii

Island: Hawaii

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 angle, but was not found, and is believed to have been destroyed by cultivation. The row of trees mentioned in original description was recently removed and the reference marks are also gone.

A new station, KUKUI, was established nearby in April, 1967; see description for that station.

FORM C&G\$-526 (1-65)

U.S. DEPARTMENT OF COMMERCE

R

#### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION KUKUILAMALAMAHEE

STATE HAWAII

YEAR 1948

SECOND

SOURCE. G- 9279

20 03 35.891 286. J VETERS ELEVATION GEODETIC LATITUDE 958 155 24 43.818 FFET GEODETIC LONGITUDE

STATE & ZONE	CODE	ĸ	*	H RA A A LE
41 1	5101	530,142.10	445,459.96	+ 0 01 49

PLANE AZIMUTH HAS BEEN COMPUTED BY THE & IDR & OF FORMULA NEGLECTING THE SECOND TERM

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From worth)	COD€
MAHAKUOLO 2	153 22 16.2	153 20 27	5101

QE 180

NOAA FORM 76-31 (11-76)

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM

Q 201552 STATION 1017 HAWAII LANGITUDE 20 °00' TO 20 °30' LONGITUDE 155 °00' TO 155 °30' DIAGRAM NE 5-1,5 HAWAII

Landing (Hawaii Island, E. R. Hand, 1913).—On northeast coast of Hawaii, at Koholalele Landing, which is between Paauilo and Kukaiau sugar mills, the cast end, at gable, of large freight house. The building stands on the west side of the inclined railway which runs down to derrick and small-boat landing. The north, west, and south sides are white; the east end, or station end, is black. This cast end, which is directly at track, is supported on nine 6 by 8 inch uprights, each resting on a stone set in the ground. The central stone, being directly under the station, serves as a mark. There is talk of removing all the buildings at this landing because of the new railroad. These foundation stones should permit the recovery of the station, which is well situated for an offshore hydrographic signal. Landing is easily made at concrete pier. graphic signal. Landing is easily made at concrete pier.

RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

NAME OF STATION Landing ESTABLISHED BY E.R.H. RECOVERED BY: D.M. Whipp

YEAR: 1913 YEAR, 1966 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

STATE:

Hawaii BENCH MARK(S) ALSG COUNTY: Hawaii Island: Hawaii

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

Station is destroyed. All buildings have been removed from old landing site and it is now overgrown with large ironwood trees.

FORM C&GS-526 (1-65)

U.S. DEPARTMENT OF COMMERCE

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION LANDING

STATE: HAWAII

YEAR 1913

THIRD

SOURCE G-92184

DEODETIC LATITUDE 23 03 03.22 DEODETIC LONGITUDE 155 20 54.04	SCALED	50	METERS FEET
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STATE COORDINATES (FWI)						
STATE & ZONE	CODE	×	٧	# IOR A SI ANGLE		
HI 1	5101	551,992.99	442,179.70	+ 0°03′07		
				1		

PLANE AZIMUTH HAS BEEN COMPUTED BY THE  $|\theta|$  FORMULA NEGLECTING THE SECOND TERM

TO STATION OR OBJECT	GEODETIC AZIMUTH (Fram touth)	PLANE AZIMUTH * (From winifi)	CODE
		2 4 7	
	=		
		i i	

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM Q 201552 STATION 1018
HAWAII LATITUDE 20 000' TO 20 30'
LONGITUDE 155 00' TO 155 30'
DIAGRAM NE 5-1.5 HAWAII

DEPARTMENT OF COMMERCE
U. S. COAST AND GEOCETIC SURVEY
FORTH 525

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: MAHAKUOLO 2

STATE:

HAWAII COUNTY:

HAWAII

CHIEF OF	PARTY: L. C. W11		948 TERS.1		ribed by: C.		rray	METERS
	Surface-station mark, Underground-station mark	DISTANCES AND DIRECTION	NS TO AZIMUT CAN BE SEEN	H MARK, REFE FROM THE GRO	RENCE MARKS / OUND AT THE ST	AND PROP	AINENT	OBJECTS
	-	WECT	BEARING -	DISTANCE		DIRECTION		ON:
	0.	SEC.	BEARING	foot	meters		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
	KUKUILAMAL	AMAHEE			4711	°	óo	oo -
	R. M. No.	S MM		13.90	4.237	183	34	05.7
	R. M. No.			51.40	15.665	324	28	15.2

Established by U.S.C. & G.S. in 1948 and is located in the Hamakua District on the northern part of the Island of Hawaii one mile east of Pasuhau Mill and O.15 mile inland from the coast.

The station is located on a fairly prominent rise of land in a small rocky waste area surrounded by cane and is in the same vicinity of the old H.T.S. station "Mahakuolo" which is lost. "Mahakuolo 2" is marked with a standard disk cemented in drill-hole in solid rock and stamped "Mahakuolo 2 1948".

Reference Mark No. 1 is cemented in drill-hole on top of a square concrete box from which a concrete ditch runs in a southerly direction.

Reference Mark No. 2 is comented in a drill-hole in solid rock about three feet lower than the station.

To reach the station from Honokaa Village proceed easterly along the main road to Hilo a distance of about 1.5 miles to the road which turns down to Pasuhau Mill. This road follows the east bank of a deep gulch for about a mile then turns right about one half mile more to Pasuhau Mill. Just before reaching the mill turn right into a deep gulch and continue along a plantation road running parallel to the sea for about 0.7 mile to a 2-foot concrete ditch running down towards the sea. Walk down the ditch about 700 feet along a gradual slope to a sharp drop in the terrain. From this point turn west 50 feet into the cane field to the station.

RECOVERY NOTE, TRIANGULATION STATION

F

NAME OF STATION: MAHAKUOLO 2
ESTABLISHED BY: L.C. Wilder

YEAR: 1948 YEAR: 1967 STATE: Hawaii

BENCH MARK(S) ALSO

RECOVERED BY: D. M. Whipp YEAR: 15
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

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

Station was destroyed and replaced by MAHAKUOLO 3 1967 which is about 50 feet northwest.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MAHAKUOLO 2

STATE HAWAII

YEAR 1948

SECOND

IND ...

SOURCE G- 9279

| GEODETICLATITUDE | 20 05 07.338 | ELEVATION | 81.2 VETERS | GEODETICLONGITUDE | 155 25 32.348 | 266 FEET

	STATE COORDINATES (Fret		
CODE	* *	Y	PIOR A BI ANGLE
5101	525,511.55	454,683.07	+ 0 01 32
		CODE X	CODE X Y

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE # OR A 4 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From vanil-)	CODE
KUKUILAMALAMAHEE	333 21 59.6	333 20 28	5 <b>1</b> 01

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM 0 201552 STATION 1019
HAWAII
LATITUDE 20 000' TO 20 030'
LONGITUDE 155 000' TO 155 030'
DIAGRAM NE 5-1,5 HAWAII

U. S. COAST AND GEODETIC SURVEY
FORM 825

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: MAHAKUOLO 3 Hawaii COUNTY: Hawaii Island: Hawaii CHIEF OF PARTY: D.M. Whipp 1967 Described by: R.F. Hanson NOTE, HEIGHT OF TELESCOPE ABOVE STATION WARK 1.5 METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS. IЪ 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 7a DISTANCE REARING DIRECTION : KAU 00.0 28 23 51.45 103 52 38.43 354 08 34.4 KUKUI SE PAAUHAU (HGS) 1877 SW Paauilo, Stack, 1948 ESE

Station is located in the northern part of the island, about 1 mile east of Paauhau Village and 700 feet inland from seaccast, on a slightly rounded high point in a cane field, just before hill breaks quite steeply down to northeast.

To reach station from the post office in Paauilo, go northwest on State Highway 19 for 4.9 miles to paved crossroad at highway sign "ELEV 1000 FEET". Turn right and go downgrade for 1.3 miles to T-junction. Turn sharp right and go 0.25 mile to side road left (this is the 5th cane road going left). Turn sharp left and go 0.15 mile to end of truck travel 57 feet before break in cane road where it begins very steep drop down to northeast. Walk left, northwest, across cane field for 62 feet to station.

Station mark is a standard disk stamped "MAHAKUOLO 3 1967", set in the top of a 12-inch-diameter, concrete monument that projects 1 inch above ground. It is 62.0 feet northwest of center line of cane road, 400 feet southwest, upgrade, from ironwood trees along edge of field, and 15 inches northeast of a 2-inch, iron pipe that is 15 feet high and has a red metal flag with yellow diamond in center mounted on top. The pipe is set in a mass of concrete about 2 feet square. An old section of concrete slab 3 feet long extends on an angle from the ground 2 feet northwest of station mark.

Underground mark is a standard disk stamped "MAHAKUOLO 3 1967", set in concrete about 3 feet below ground level.

No reference marks were established as sugar cane is planted up to station all around.

NOTE: This station was established to replace destroyed station MAHAKUOLO 2 1948 which was about 50 feet northwest.

ADJUSTED HORIZONTAL CONTROL DATA

NAME DE STATION MAHAKUOLO 3

STATE HAWAII

1967

SECUND

OADER

SOURCE: G-13903

GEODETIC LATITUDE 23 35 37.0163 ELEVATION 81 METERS GEODETIC LONGITUDE 155 25 31.9165 SCALED FEET

STATE & ZONE	CODE	×	Y	# 10H A HE ANGLE
H 1	5101	525,552.69	454,650.63	+ 0 01 32

PLANE AZIMUTH HAS BEEN COMPUTED BY THE \$ IOR \$41 FORMULA NEGLECTING THE SECOND TERM

TO STATION OR OBJECT	GEODETIC AZIMUTH (From seath)	PLANE AZIMUTH *	CODE
KAU	303 40 24.6	303 38 53	5101
	or in the second		

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM 0 201552 STATION 1020
HAWAII
LATITUDE 20 000' TO 20 30'
LONGITUDE 155 000' TO 155 30'
DIAGRAM NE 5-1.5 HAWAII

DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY FORTH 585 Ed. July, 1939	DESCRIPTIO	N OF T	RIANGULATION	STATION		
NAME OF STATION: NEW			Hawaii	Coun		Hawaii
CHIEF OF PARTY: 0. W. S	mains on,	YEAR:	1932 LOCALITY:	North C	cast of Han	waii.
Surface-station mark,	Note,*	DISTANCE	ES AND DIRECTIONS TO	REFERENCE N	ARKS AND PROM	INENT OBJECTS
Underground-station mark,	Note,*		OBJECT	DISTANCE	DIRECTION	AZIMUTH
Reference mark,	Note,*					0 , 0
Reference mark,	Note,*					
Witness mark,	Note,*					
Witness mark,	Note,*					
Height of signal above station ma-	rk meters.					
Height of telescope above station	mark meters.					
Detailed description:						'

Station mark is a standard disk embedded in a mass of concrete projecting about 6" above the ground. It is located about 200 metres inland from the shore line and about 5/8 mile East of Honokaa Stack. It is about 600 metres north of station IKI and is reached by following along the irrigation ditch and line of trees, running from IKI northward to the shore. There is a small break in the trees where the station is located.

#### RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: NEW
ESTABLISHED BY: 0.W.S. YEAR: 1932 STATE: Hawaii bench Mark(s) Also AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: Island: Hawaii

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 machinery. The concrete monument, with disk in top, was found laying on top of the ground. Disk was removed from monument at this time.

FORM C&G\$-526 (1-68)

COAST AND GEODETIC SURVEY

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION NEW

STATE HAWAII

YEAR 1932

THIRD

....

SOURCE G- 1085

GEODETIC LATITUDE	20 06 00.65 155 27 31.34	SCALED 6	7 METERS

		STATE COORDINATES (Feet	•	
STATE & ZONE	COOF	н	· •	# GR A O ANGLE
HI 1	51 01	514,196.95	460,057.37	+ 0 00 51
	1			

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

TO STATION OR OBJECT	GEODETIC AZIMUTH	PLANE AZIMUTH*	CODE
		100 (20)	
		l i	

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM

0 201552 HAWAII LATITUDE 20 °00' TO 20 °30' LONGITUDE 155 °00' TO 155 °30' DIAGRAM NE 5-1,5 HAWAII

## NO ORIGINAL TEXT

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: Ookala, stack

ESTABLISHED BY: E.R.H. RECOVERED BY: D.M. Whipp

YEAR: 1913 YEAR: 1966 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

STATE: Hawaii BENCH MARK(8) ALSO COUNTY: Hawaii Island: Hawaii

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, however it is to be removed soon, as the Ookala Sugar Mill has been enlarged, and a slightly shorter stack has been built at the new plant a short distance north of station.

FORM C&GS-526 (1-68)

U.S. DEPARTMENT OF COMMERCE COAST AND GEODETIC SURVEY

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION OOF ALA STACK

STATE HAWAII

THIRD

SOURCE G-92184

GEODETIC LATITUDE	20 °01 '11.970 155 17 10.609	ELEVATION:	METERS FEET

		STATE COORDINATES (Feet		
ATE & ZONE	CODE	25	٧	9 108 A 41 ANGLE
	5101	573,565.85	430,575.51	+ 0 04 23
	3202			

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

TO STATION OR OBJECT	GEODETIC AZIMUTH	PLANE AZIMUTH "	CODE
	* ' "		
	All Property and the		

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM 0 201552 STATION 1022
HAHAII
LATITUDE 20 °00' TO 20 °30'
LONGITUDE 155 °00' TO 155 °30'
DIAGRAM NE 5-1.5 HAWAII

# NO ORIGINAL TEXT

DEPARTMENT OF COMMERCE
IL A DAMF ARE SENTER OWNER.

NAME OF STATION: Opinilala

STATE: Hawaii County: Hawaii

ESTABLISHED BY: H.G.S. YBAR: 1881

RECOVERED BY: \*\* Chas.L. \*\* Murrayyram: 1938\*\*

LOCALITY: Pasuilo, Hamakua, Hawaii

Detailed statement as to the Streem of the original description:
Location of Station: On the upper bank of the Government main road thru
Pasuilo village. The station is located near the top of the long concrete
stairway leading to the Japanese school lot.

Old Station mark found: 10" cylindrical concrete monument marked with  $\Delta$  and drill hole in center of same.

New station mark: H.T.S. Type D monument(Triangular concrete monument 7 1/2ft on each side with 2 1/2" pipe 2 feet long set on steel legs over the old mark which is left exposed to view. A standard metal target is set in the 2 1/2" pipe.

DEPARTMENT OF COMMERCE U. S. COAST AND GEDOFTIC SURVEY FORM 525 Rev. Aug. 1948 RECOVERY OF TRIANGULATION STATION

HAWATI COUNTY: HAWATI NAME OF STATION: OPINILALA STATE: Established By: H.G.S. CHIEF OF PARTY: L. C. WILDER Year: 1881 Year: 1948 Described by: C. L. MURRAY NOTE, HEIGHT OF TELESCOPE ABOVE STATION MARK METERS.1 HEIGHT OF LIGHT ABOVE STATION MARK DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS Surface-station mark, Underground-station mark WHICH CAN BE SEEN FROM THE GROUND AT THE STATION DISTANCE OBJECT DIRECTION KOHOLALELE R. M. No. 1 SW 48.08 14.655 102 26

This station is an old Hawaiian Government station established in 1881. It is located in Pacuilo village, Hamakua, Hawaii on the high road out directly above the middle of the business part of the village and about 200 feet east of the postoffice. At the top of a long concrete stairway up the roadbank southwest and 45 feet distant from the station. The station is marked by a concrete monument 10 inches in diameter, the top of which is marked with a triangle cut, with a drill hole in the center. Surrounding the mark is a triangular slab of concrete feet on each side, with a 2½ inch pipe 2 feet long set on steel legs, cemented in place over the old mark which is exposed to view.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION. OP I HILALA

STATE HAWAII

YEAR. 1881

SECOND

UD GN

SOURCE: G- 9279

GEODETIC LATITUDE. 20 02 40.827  GEODETIC LONGITUDE 155 22 35.995	VATION	253.0 830	METERS FEET
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STATE & ZONE	CODE	x	Υ	e on A a Avelt
HI 1	5101	542,331.76	439,912.71	+ 0 02 52

PLANE AZIMUTH HAS BEEN COMPUTED BY THE # OR A 4 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From worth)	PLANE AZIMUTH	¢oo€
KOHOLALELE	325 25 50.1	325 23 18	5101
	de la		

QE 182

(continued on next page)

## HORIZONTAL CONTROL DATA

NATIONAL GEODETIC SURVEY OLD HAWAIIAN DATUM

STATION 1022 QUAD 201552 LATITUDE TΩ LONGITUDE TO DIAGRAM

R

OPINILALA (continued)

FORM 5264

U.S. DEPARTMENT OF COMMERCE COAST AND GEODETIC SURVEY

#### RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: OPIHILALA YEAR: 1881 ESTABLISHED BY: H.G.S. STATE: D.M. Whipp RECOVERED BY: YEAR: 1966 Hawaii COUNTY: Island: Hawaii

HEIGHT OF TELESCOPE ABOVE STATION MARK 1.63 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 DISTANCE OBJECT PEET METERS and DIRECTION ---KOHOLALELE (HGS) 1877-----1948 DESTANCE ÓΟ 00.0 R.M. No. 1 SW 48.08 | 14.655 | 102 26 32 KOHOLALELE (HGS) 1877-----1966 DISTANCE and DIRECTION---00 00 00.0 75.570 23.034 05 26 48.065 14.650 102 27 RM NO. 2 -SE 26 RM No. 1 WSW 02

Station and RM No. 1 were recovered in good condition. An additional reference mark was established. A complete description follows; Station is located in Paguilo village, in the northwest corner of the lawn at the north end of the cemetery at the Hongwanji Buddhist Church, on top of the high cutbank above the business section of town, and 45 feet east of the top of the long concrete stairway coming up from the

street below.

To reach from the post office in Laupahoehoe, go northwest 0.1 mile; turn left onto State Highway 19 and continue northwest for 11.2 miles to fork in Paguilo village. Turn left off highway and go northwest on the main street for 0.1 mile to narrow macadam driveway on left, just west of the school driveway. Turn left and follow driveway upgrade for 0.05 mile to macadam parking area. Continue ahead across north edge of lawn for 100 feet to station.

Station is marked by a 1-inch drill hole in the center of a 9-inch diameter concrete monument that projects 2 inches above the center of a triangular concrete platform that is 7 feet on each side and flush with ground. A 2-1/2-inch iron pipe, supported by 3 iron legs embedded in the concrete platform, is mounted vertically over the mark and supports a metal target. Station is 68 feet north of an iron cemetery fence, 230 feet northwest of center of church front entrance, 7-1/2 feet west-northwest of a line extended from the southeast side of the Higgshi Gift Shop, and about 350 feet north-northwest of the county water tank.

Reference mark number one is a standard disk stamped "1 1948", cemented in a drill hole in the west end of the concrete approach at head of the long stairway, 6 inches in from edge of concrete and partly covered by a 2-inch water pipe. The mark is 1.56 feet higher than station. Reference mark number two is a standard disk stamped "OPIHILALA HGS"

1948 NO 2 1966", cemented in a drill hole in the top of a 10-inch-square concrete block flush with ground. It is 21.5 feet east of the southeast corner of the iron cemetery fence, 33 feet west-northwest of edge of macadam parking area, 6 inches lower than station mark, and at the base of the bank above which the cemetery is located.

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

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: OPINILALA ESTABLISHED BY: H.G.S. YEAR: 1881 STATE: HAWAII BENCH MARK(S) ALSO

RECOVERED BY: R. B. MELBY YEAR: 1978 COUNTY: HAWAII AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts; THE STATION AND REFERENCE MARK 1 AND 2 WERE RECOVERED IN GOOD CONDITION AS

DESCRIBED IN 1966. THE METAL SIGNAL OVER THE STATION IS BADLY RUSTED.

NOAA FORM 76-165 IOLD CAGS MEN WU. S. GOVERNMENT PRINTING OFFICE: 1976--665661/1133 REGION NO.

U. S. DEPARTMENT OF COMMERCE NATIONAL OCEAN SURVEY

<sup>&</sup>quot;Name ...tef on party should be inserted here. The officer who actually visited the station should sign his name at the enof the recovery note.

## HORIZONTAL CONTROL DATA

National Ocean Survey OLD HAWAIIAN DATUM 0 201552 STATION 1023 IIAWAH LATITUDE 20 °00' TO 20 °30' LONGITUDE 155 000' TO 155 030' DIAGRAM NE 5-1,5 HAWAII

## NO ORIGINAL TEXT

Pasuhau (Hawaii Island, Hawaiian Government Survey, 1877; E. R. Hand, 1913).—On northern coast of Hawaii, in Hamakua District, in land of Pasuhau, 150 meters northwest of the Weha-Paauhau Gulch, on a poorly defined flat-topped hill which rises gently to the southeast of the plantation camp called "Paauhau Mauka" and which is about 1/2 mile from the station. "Paauhau Mauka" is about 1/4 mile above the main government road, about 11/4 miles inshore from the Paauhau mill, and between Honokaa and Paauha post offices. To reach station, proceed along the government road from either Honokaa or Paauha post office until the road is reached which turns down to Paauhau post office and mill; 150 meters from this road intersection toward Paaulio post office (or to the northeast) is a road leading up the mountain; 400 meters up this road is the camp "Paauliau Mauka." Continue along, crossing the plantation railroad, and about 140 meters beyond the tracks is a road turning left to a yellow house, occupied in 1913 by Dr. S. R. Brown, Paahau plantation. Follow this road until it turns into a yard, proceed along outside of fence in front of house and along trail into cane in same direction as fence, in all go about 430 meters from the road intersection then direction as fence; in all go about 430 meters from the road intersection, then turn to left at right angles and proceed 50 meters to station. From the station "Paauhau Mauka" bears N. 35° W., distant about ½ mile; Doctor Brown's house bears N. 15° E. distant about 275 meters. Original mark was a granite post set in concrete. Now marked by concrete cylinder, 6 inches in diameter, its top flush with ground, and centered with a copper plate, United States Geological Survey. A cairn was built over the station.

DEPARTMENT OF COMMERCE
U. S. COAST AND SESSETIC SURVEY
FORM 596 RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PAAUHAU

ESTABLISHED BY: Hawaiian Govt. YEAR: 1877 STATE: RECOVERED BY: \* L. C. Wilder YEAR: 1948 COUNTY: HAWAII

Detailed statement as to the Stness of the original description: The original station, a granite post set in concrete, was not recovered. In 1913 Mr. E. R. Hand of the U. S. C. & G. S. reported recovering a bronze disk of the U. S. Geological Survey. In 1929 the Hawaiian Government Survey reported recovering a Survey bronze disk. Also in 1929 the Hawaiian Government Survey surrounded the station disk by A 6 foot square slab of concrete which projects about 1 foot above the soil.
A 2 1/2 inch iron pipe projects about 16 inches from the top of this platform and was used as the station on this 1948 survey. A new description follows—

The station is located in a cane field about 2 miles southeast of Honokaa, about 2 miles south southwest of Paauhau, about 0.6 mile west of the road which runs between Hilo and Honokaa, about 500 feet northwest of The Weha Paauhau Gulch and about 300 feet southeast of a field road.

To reach from the post office in Honokaa; go southeasterly, on the road which leads toward Hilo, for 0.4 mile; continue straight ahead, southeasterly, for 0.6 mile; take the left hand fork and go southeasterly, toward Hilo, for 0.7 mile to a concrete overpass; cross over the overpass, turn right, onto a dirt road, and go southerly for 0.2 mile to a T road intersection; turn left, southeast, and go 0.1 mile; turn right, south, and go 0.3 mile to the end of truck travel. From this point pack southeasterly, through a cane field, for about 300 feet to the station.

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

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

R

(continued on next page)

#### ADJUSTED HORIZONTAL CONTROL DATA

PAAUHAU

STATE HAWAII

1877

SECOND

SOURCE G- 9279

GEDDETIC LATITUDE	 00.487 48.883	FLEVATION	412.7 1554	METERS

STATE & ZONE	CODE	x	•	# CR A B ANGLE
HI 1	5101	518,218.67	447,936.22	+ 0 01 06

PLANE AZIMUTH HAS BEEN COMPUTED BY THE ~ heta OR  $\Delta$  ~ heta FORMULA NEGLECTING THE SECOND TERM

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH	CODE
KUILEI	110 58 44.6	110 57 39	5101

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

R

QUAD 201552

STATION 1023

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

PAAUHAU (continued)

The station is the center of a 2 1/2 inch iron pipe which projects about 18 inches from the top of a 6 foot square concrete platform. The platform projects about 1 foot above the soil.

No reference marks were set at this station.

Object	Distance	Dir	ecti	on
KUILEI (metal target) Paguhau Stack (Paguhau S KOHOLO (metal target) KOHOLALELE (metal target	<b>:</b> )	00 89 179 187	12 50 31	00 08.3 10.3 13.2
	1			

An early recovery note reports; Original station recovered by #.H. Barringer in March 1911. Remarked by bronze tablet centered in top of original granite post. Elevation stamped 1348.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PAAUHAU

ESTABLISHED BY: HGS YEAR: 1877 STATE: HAWRII BENCH MARK(B) ALSO 
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

ISLAND: HAWRII BENCH MARK(B) ALSO 

COUNTY: HAWRII

ISLAND: HAWRII HAWRII

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

Station was recovered in poor condition. The Type B-l signal was found to have been pushed about 6 feet north by cane-field machinery, and the station mark, a USGS disk, could be seen in a 7-inch, oval-shaped rock laying in the depression in the center of the concrete platform. Further investigation proved the "rock" to be the top part of the original granite post, snapped off at it's 5-inch-diameter neck. The granite post was found very solidly embedded in a large mass of concrete and not shifted. A new station mark was set in the top of the granite post. No reference marks were set because sugar cane is planted up to the station on all sides. A complete description follows:

Station is located in came field, about 2 miles southeast of Honokaa and 1/2-mile southeast of the junction of State Highways 19 and 24, at about 1354 feet elevation, along the west side of Kahawailiilii Gulch, 1/4 mile southwest of a church and cemetery.

To reach station from Paauilo. go west on State Highway 19 for 5.3 miles to crossroad at milepost "HILO 39 MI". Turn left, go 25 yards and turn left again; go east 0.35 mile to fork by gas station. Take right fork and go 0.1 mile to old church. Pass along right side of church and cemetery and follow field road up along west side of gulch for 0.3 mile to end of truck travel. Walk westerly across cane field about 250 yards to station.

Station mark is a standard disk stamped "PAAUHAU HGS 1877 1966", cemented in a drill hole in the center of the 5-inch-diameter neck on top of an 8-inch-square granite post that is set in a large mass of concrete about 4 feet in diameter and flush with ground. The mark projects about 1 inch above concrete.

NOTE: Officials of the Paauhau Sugar Co. plan to re-establish the 6-foot-square concrete platform of the Type B-1 signal over the station mark after the present sugar cane crop is harvested about March, 1968.



RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: PARUHAU

ESTABLISHED BY: HGS

YEAR: 1877 STATE: Hawaii BENCH MARK(S) ALSO 
RECOVERED BY: D.M. Whipp YEAR: 1967 COUNTY: Hawaii

AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: Island: Hawaii

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

Station was recovered in good condition as described in 1966.

FORM C&GS-526 (1-65)

COAST AND GEODETIC SURVEY

R

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM

GEODETIC LATITUDE

GEODETIC LONGITUDE

Q 201552 STATION 1024
HAWAII
LATITUDE 20 °00' TO 20 °30'
LONGITUDE 155 °00' TO 155 °30'
DIAGRAM NE 5-1,5 HAWAII

ELEVATION.

METERS

FEET

NO TEXT

#### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION. PAAUHAU	HURCH	
STATE, HAWAII	YEAR: 1877	THIRD
SOURCE G-SP156		

		STATE COORDINATES (Feet		
STATE & ZONE	CODE	ж	. •	e IOR∆ dI ANGLE
HI 1	5101	517,136.47	449,372.75	+ 0 01 02

PLANE AZIMUTH HAS BEEN COMPUTED BY THE | heta| OR  $\Delta$  OF FORMULA NEGLECTING THE SECOND TERM.

20 04 14.730 155 27 00.231

TO STATION OR OBJECT	GEODETIC AZIMUTH	PLANE AZIMUTH *	CODE

QO 369

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM

STATION 1025 201552 20 °00' TO 20 °30' LONGITUDE 155 ° 30' TO 155 °30' DIAGRAM NE 5-1,5 HAWAII

## NO ORIGINAL TEXT

DEPARTMENT OF COMMERCE U. 6. SOLET AND SERVEY EVEYEY FORTH 526

RECOVERY NOTE, TRIANGULATION STATION

COUNTY: Hawaii ESTABLISHED DY: E.R. Hand YEAR: 1913 LOCALITY: Northern Coast Hawaii Island. RECOVERED BY: \* O. W. Swain Son, Year: 1932 NAME OF STATION: PAAUHAU SUGAR CO STACKSTATE: Hawaii

Detailed statement as to the fitness of the original description:

Station recovered and found in good condition. Station is a grey metal stack owned by Panuhau Sugar Plantation located on northern coast of Island of

Hawaii, about 1/2 mile inland.

RECOVERY DESCRIPTION OF TRIANGULATION STATION

DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY FORD 525 Ray, Aug. 1945 PAAUHAU SUGAR CO., BTACK STATE: NAME OF STATION:

HAMAKUA DISTRICT

HAWATT COUNTY: HAWATT

Established by: E.R. Hand, 1913 CHIEF OF PARTY: L. C. WILDER

Described by: C. J. HOEPPEL

HEIGHT OF LIGHT ABOVE STATION MARK METERS. METERS. HEIGHT OF TELESCOPE ABOVE STATION MARK DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND FROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION Surface-station mark, Underground-station mark DISTANCE BEARIN This station was located by intersection.

The station is the center of a black steel stack about 7 feet in diameter and about 130 feet in height.

The stack is located on a stone platform on the southeast side of the Paauhau Sugar Company boiler house.

The station is about 2.0 miles east northeast of Honokaa and about 0.2 mile southwest of Pasuhau Landing.

RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

Paauhau Sugar Co., stack

NAME OF STATION ESTABLISHED BY: D.M. Whipp YEAR, 1966

E.R. Hand

AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

YEAR: 1913

STATE: Hawaii BENCH MARK(S) ALSO Hawa1i COUNTY:

Island: Hawaii

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

Station was recovered. It is the tall silver stack with black top section, located at the Paauhau Sugar Mill at Paauhau village.

#### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION PAAUHAU SUGAR CJ STACK

STATE HAWAII

YEAR 1915

THIRD

SOURCE G- 9279

20 05 24.916 METER ELEVATION GEODETIC LATITUDE 155 26 16.037 FEET GEODETIC LONGITUDE

				B OR A B ANGLE
STATE & ZONE	CODE	×	Ψ	9 0 2 0 110
HI 1	5101	521,346.62	456,454.67	+ 0 01 17
	1			

PLANE AZIMUTH HAS BEEN COMPUTED BY THE BORA & FORMULA NEGLECTING THE SECOND TERM

TO STATION OR DBJECT	GEODETIC AZIMUTH	PLANE AZIMUTH* (From south)	CODE
		(0)	

# HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM 0 201552 STATION 1026 HAWAII LATITUDE 20 °00' TO 20 °30' LONGITUDE 155 °00' TO 155 °30' DIAGRAM NE 51,5 HAWAII

NO TEXT

#### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION PAAUILO STACK

STATE HAWAII

YEAR 1913

THIRD

ORDER

SOURCE G-SP156
ND OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE	20 03 15.56	ELEVATION	METERS
GEODETIC LONGITUDE	155 21 47.85		FEET

STATE & ZONE	CODE	×	*	H OR A BI ANGLE
HI 1	5101	546,919.08	443,420.20	+ 0 02 49

\*PLANE AZIMUTH HAS BEEN COMPUTED BY THE  $\,\, heta\,$  TORAL A FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From touth)	PLANE AZIMUTH *	CODE
	10	190	

QO 362

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM Q 201552 STATION 102'
HAMAII
LATITUDE 20 00' TO 20 30'
LONGITUDE 155 00' TO 155 30'
DIAGRAM NE 5-1,5 HAWAII

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION PARUILO STACK

STATE HAWAII

YEAR 1948

THIRD

Dente

SOURCE G- 9279

GEODETIC LATITUDE	20 03 15.155 155 21 47.630	ELEVATION	WETERS
GEODETIC LONGITUDE	133 21 41.630	A TANK THE RESIDENCE OF THE PARTY OF THE PAR	FEET

STATE & ZONE	CODE	×	*	p IDR △ di ANGLE
11 1	5101	546,940.09	443,379.36	+ 0 02 45

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE ~ heta HIR  $\Delta$  4 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH	PLANE AZIMUTH (Fram smalls)	cooe
		0 / 1	

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM 0 201552 STATION 1028 LATITUDE 20 °00' TO 20 °30' LONGITUDE 155 °00' TO 155 °30' DIAGRAM NE 5-1.5 HAWAII

Pohakuhaku (Hawaii Island, E. R. Hand, 1913).—On northeast coast of Hawaii, about 1½ miles west-northwest from Paauilo sugar mill, on a pronounced rise crowned with a great quantity of jagged rock and outcroppings, and about 25 meters back from the edge of the cliff; this is the highest point of the cliffs in this vicinity. This is a rounded point, and to the west-northwest the shore line curves inward, forming a cove across which the stack of Paauhau sugar mill is seen, bearing N. 75° W. Station marked by cross cut deeply into the rock outcrop. It is about 3 feet above the gressy slope and is surrounded by a whitecrop. It is about 3 feet above the grassy slope, and is surrounded by a whitewashed cairn of stones built up to a height of 5 feet. A triangle cut in the outcrop is 0.7 meter from the station, bearing N. 65° E.

RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

Pohakuhaku E.R.H. NAME OF STATION: ESTABLISHED BY:

D.M. Whipp

YEAR: 1913 STATE: Hawaii BENCH MARK(S) ALSO COUNTY: Hawaii YEAR: 1966 Island: Hawaii AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

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

Station was searched for but not found. A large pile of rock was found in the vicinity, however neither of the described marks in rock were found under it and there was no evidence of the rocks having been whitewashed. This area is now covered with large ironwood trees.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION POHAKUHAKU

STATE HAWAII

YEAR 1913

THIRD

SOURCE G-92184

GEODETIC LATITUDE 20 03 58.870 GEODETIC LONGITUDE: 155 23 04.944	SCALED	62	METERS FEET
--	--------	----	----------------

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	×	٧	# OR A PI ANGLE
HI 1	5101	539,566.31	447,783.86	+ 0 02 22

PLANE AZIMUTH HAS BEEN COMPUTED BY THE  $\, heta\,$  OR  $\Delta\,$  OF FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUT∺ (From south)	PLANE AZIMUTH * (From initle)	CODE
		]	
		1	

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM 0 201552 STATION 1029
HAWAII
LATITUDE 20 000' TO 20 030'
LONGITUDE 155 000' TO 155 030'
DIAGRAM NE 5-1,5 MAWAII

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PUU LIOLIO

STATE: HAWAII

YEAR 1877

THIRD

owner.

SOURCE: G-SP156

GEODÉTIC LATITUDE:	20 °03 ′15.723	ELEVATION	METERS
GEODETIC LONGITUDE	155 27 00.824		FEET

STATE & ZONE	CODE	x	Y	# OH A BI ANGLE
II 1	5101	517,081.71	443,420.00	+ 0°01′01

 $^{\circ}$  PLANE AZIMUTH HAS BEEN COMPUTED BY THE | heta| GRA | heta| FORMULA NEGLECTING THE SECOND TERM,

TO STATION OR OBJECT	GEODETIC AZIMUTH	PLANE AZIMUTH (From south)	COD
	400		

QD 363

## HORIZONTAL CONTROL DATA

by the National Ocean Survey OLD HAWAIIAN DATUM 0 201552 STATION 1030
HAWAII
LATITUDE 20 °00' TO 20 °30'
LONGITUDE 155 °00' TO 155 °30'
DIAGRAM NE 5-1.5 HAWAII

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION WAIPUNALEI

STATE HAWAII

YEAR 1902

THIRD

- 08

SOURCE G-SP156

GEODETIC LATITUDE	20 00 06.677 155 15 21.379	ELEVATION	METERS FEET

				d and a wall
STATE & ZONE	CODE	×	· · · · · · · · · · · · · · · · · · ·	P GHEAT WINDLE
I 1	5101	583,791.20	424,407.28	+ 0 05 01

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE | heta| UR  $\Delta$  =+ FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZ:MUTH (Fram south)	PLANE AZIMUTH * (From santh)	CODE

Q0 356