

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

Q 201561 STATION 1202
HAWAII
LATITUDE 20° 30' TO 21° 00'
LONGITUDE 156° 30' TO 156° 30'
DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

ADJUSTED HORIZONTAL CONTROL DATA

STATEMENT OF COMMERCE
NAUTICAL AND GEODETIC SURVEY
FORM 822
Rev. Aug. 1968

RECOVERY
DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: SHORE D STATE: Hawaii COUNTY: Maui
Established By: HGS Year: 1881
Chief of Party: C.T.H. Year: 1950 Described by: G.B.G.

NOTE	HEIGHT OF TELESCOPE ABOVE STATION MARK METERS	HEIGHT OF LIGHT ABOVE STATION MARK METERS	DISTANCES TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION		
			BEARING	FEET	DIRECTION
1a	Surface-station mark				
7a	Underground-station mark				
	OBJECT				
12c	PIHOE HGS 1950		NE	51.88	0 00 00
12a	Reference Mark No.1		SE	40.10	128 55 07
	Reference Mark No.2			12.221	212 40 00

Station was established by the Hawaiian Government Survey in 1881 and described as follows: On southern coast of East Maui, in eastern part of Kahikinui District, south of Lualailua Hills. Marked by iron stake in caln of stones.

The station was recovered as described. The iron stake was removed and replaced by a standard disk set in a square topped concrete post projecting 6 inches. Stamped SHORE D 1950. The iron stake was tied off and the new mark set at the same location.

The under ground mark is a standard disk set in concrete 36 inches below the surface, stamped SHORE D 1950.

Reference mark No.1 is a standard disk set in a large buried boulder projecting 2 feet above the ground. Stamped SHORE D 1950.

Reference mark No.2 is a standard disk set in rock outcrop projecting 3 feet above the ground. Stamped SHORE D 1950.
To reach from the Makena Post Office: go easterly for 4.0 miles to junction of roads above prison camp, continue ahead on main highway for 3.6 miles, turn right onto dim road and go 0.2 miles to a locked gate at north side of stone corral. Continue ahead on track road down hill to coast, turn left and follow dim tracks along coast for 1.3 miles to station near low rock walls.

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

NAME OF STATION: SHORE D
Established by: H.G.S. Year: 1881 State: Hawaii
Recovered by: H.J.S. Year: 1961 County: Maui

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

The station was recovered in good condition as described by C.T.H. in 1950. Both reference marks were recovered. To reach the station from State Highway 31, secure key to gate from the Ulapalakua Ranch Office at Makena Post Office and store.

NAME OF STATION: SHORE D

STATE: HAWAII

YEAR 1881

FIRST

ORDER

SOURCE: G- 9311

GEODETIC LATITUDE:	20 35 12.118	ELEVATION:	8.1 METERS
GEODETIC LONGITUDE:	156 18 04.999		27 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ θ ANGLE
HI 2	5102	624,958.01	92,160.32	+ 0° 07' 42"

* 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
AZIMUTH MARK 1968	91 34 45.3	91 27 03	5102

QE 250

(continued on next page)

HORIZONTAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
OLD HAWAIIAN DATUM

QUAD 201561 STATION 1202
LATITUDE ° ' TO ° '
LONGITUDE ° ' TO ° '
DIAGRAM

SHORE D (continued)

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: SHORE D
ESTABLISHED BY: HGS
RECOVERED BY: R.C. Munson
YEAR: 1881
STATE: Hawaii
COUNTY: Maui
Island: Maui

HEIGHT OF TELESCOPE ABOVE STATION MARK		1.49 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				
LUALAILUA (HGS) 1879	-----1950	DISTANCE	and DIRECTION	00	00	00.0	
R.M. No. 1	NE	51.88	15.811	76	29	08	
R.M. No. 2	SE	40.10	12.221	160	14	01	
LUALAILUA (HGS) 1879	-----1968	DISTANCE	and DIRECTION	00	00	00.0	
R.M. No. 1	NE	51.875	15.812	76	30	00	
R.M. No. 2	SE	40.096	12.222	160	13	56	
Azimuth mark	W	(About 1/4-mile)		287	35	26.5	

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

Station is located about 7-3/4 miles southeast of Ulupalakua, 2 miles south of the Lualailua Hills, along south coast of the island, on Kiakaana Point, on a low, grassy rise.

To reach station from the post office at Ulupalakua, go southeast on State Highway 37 for 0.85 mile; take right fork and follow Highway 31 for 6.3 miles to a dim crossroad just before reaching the Lualailua Hills. Go

right for 0.15 mile; take right fork and go 0.15 mile to locked gate. (Key was obtained from Mr. Stephen Ferreira at Kula). Pass through gate and go 1.75 miles to T-junction. Go left 0.65 mile to sea coast. Follow road left 0.2 mile to wire gate. Pass through gate and continue for 0.55 mile to right angle turn and azimuth mark on right. Continue on track road for 0.35 mile to station.

Station mark is a standard disk stamped "SHORE D 1950", set in the top of a 10-inch-square, concrete monument that projects 3 inches from ground. It is 40 feet south of track road, 67 feet south of the south end of a 12 x 27-foot stone enclosure, and about 75 feet north from sea. There is at present a large hydrographic-survey signal over the station.

Reference mark number one is a standard disk stamped "SHORE D NO 1 1950", cemented in a drill hole in the west end of a large, 5 x 9-foot bread-loaf rock formation that projects 3 feet above ground. It is 7 feet south of center line of track road and 2.7 feet lower than station mark.

Reference mark number two is a standard disk stamped "SHORE D NO 2 1950", cemented in a drill hole in a lava outcrop that projects 16 inches from ground. It is 14 feet northwest of a stone fence corner and 2.6 feet lower than station mark.

Azimuth mark is a standard disk stamped "SHORE D 1950 1968", cemented in a drill hole in a 5-foot-diameter boulder that projects 3 feet above ground. It is 28.5 feet west of the west end of a short, high, stone wall, 85 yards west of track road, about 100 yards southwest of the right-angle turn in the road, and about 80 yards north of a large cairn that sets near the sea.

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

Q 201561 STATION 1203
HAWAII
LATITUDE 20 °30' TO 21 °00'
LONGITUDE 156 °00' TO 156 °30'
DIAGRAM NF 4-16 MAUI

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: SHORE N

STATE: HAWAII

YEAR: 1912

THIRD

ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	20 °37'53.673	ELEVATION:	METERS
GEODETIC LONGITUDE:	156 11 51.039		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ * ANGLE *
HI 2	5102	660,421.44	138,550.70	+ 0 35 55 "

* 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

QO 105

JUN 1976

by the
National Ocean Survey
OLD HAWAIIAN DATUM

Q 201561

STATION 1205

HAWAII

LATITUDE 20 030' TO 21 000'

LONGITUDE 156° 00' TO 156° 03.3'

DIAGRAM NF 4-16 MAUI

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: STONE

STATE HAWAII

YEAR 1904

THIRD

ORDER

SOURCE: G-SP150

SOURCE: 0 SP190
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE 20° 39' 29.94"

ELEVATION.

METHODS

NOTE

STATE COORDINATES (Feet)

STATE & ZONE

2258

HI 2

51.23

575 264 25

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

TO STATION OR OBJECT:

GEODETIC AZIMUTH

BLANK ATTEMPT:

QO 132

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

Q 201561 STATION 1206
HAWAII
LATITUDE 20 ° 30' TO 21 ° 00'
LONGITUDE 156 ° 00' TO 156 ° 30'
DIAGRAM NF 4-16 MAUI

SEE STATION KOOLAU

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION SURVEY MARK NEAR KOOLAU

STATE HAWAII

YEAR 1950

SECOND - ORDER

SOURCE: G- 9311
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	20 45 51.004	ELEVATION:	2281	METERS
GEODETIC LONGITUDE:	156 13 32.102	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ HOR Δ DI ANGLE *
HI 2	5102	650,691.05	156,682.44	+ 0 09 23

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

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

QE 438

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

SEE STATION KAMOA

HORIZONTAL CONTROL DATA

by the
 National Ocean Survey
 OLD HAWAIIAN DATUM

Q 201561 STATION 1207
 HAWAII
 LATITUDE 20 °30' TO 21 °00'
 LONGITUDE 156 °00' TO 156 °30'
 DIAGRAM NF 4-16 MAUI

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: TANK

STATE: HAWAII

YEAR: 1965

THIRD

ORDER

SOURCE: G-12664

NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	20 °42' 39.834	ELEVATION:	METERS
GEODETIC LONGITUDE:	156 26 31.808		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ FOR Δ & ANGLE *
HI 2	5102	576,723.52	137,242.88	+ 0 04 46

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

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

POSITION DETERMINED BY TRAVERSE FROM STATION KAMOA

QF 576

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

0 201561 STATION 1208
HAWAII
LATITUDE 20° 30' TO 21° 00'
LONGITUDE 156° 00' TO 156° 30'
DIAGRAM NF 4-16 MAUI

Tug (Maui Island, J. C. Gauger, 1912).—On northwest coast of Maui, in Wailuku District, near the end of a sandstone ridge southeast of Waihee village and 550 meters north by east of station Hay, and 80 meters back from the beach. It is on the spur which approaches nearest the shore line and commands a view of the coast line both north and south of the station. This is a plantation survey station. Marked by a 5-inch drain tile pipe cemented flange end down into the sandstone rock with about 5 inches projecting above surface. Pipe is filled with concrete and centered with standard bronze disk.

RECOVERY NOTE, TRIANGULATION STATION.

U.S. DEPARTMENT OF COMMERCE,
U. S. COAST AND GEODETIC SURVEY,
Form 536.

NAME OF STATION: TUG STATE: HAWAII COUNTY: MAUI
ESTABLISHED BY: J. C. GAUGER YEAR: 1912 LOCALITY: WAILUKU DISTRICT
RECOVERED BY: K. T. ADAMS YEAR: 1929

Detailed statement as to the fitness of the original description: Found as described.

A golf course is under construction about the foot of the hill on which Tug is located. The entrance to the course is about 350 meters southeast of the station. A wooden water tank is about 175 meters further up the slope of the sand hill.

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

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: TUG
ESTABLISHED BY: J. C. G. YEAR: 1912 STATE: Hawaii
RECOVERED BY: W. R. P. YEAR: 1960 COUNTY: Maui

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

The station was recovered. It is located on the hill just west of the ninth tee at Waiehu Public Golf Course. The north, south and east sides of the hill have been graded away and the station has been left on a pinnacle of sand. The mark has been exposed to a height of one ft. and the large concrete base is flush with the ground but is solid. The pipe surrounding the concrete in which the mark is set projects about 8 inches above the disk.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: TUG
ESTABLISHED BY: J. C. Gauger YEAR: 1912 STATE: Hawaii BENCH MARK(S) ALSO ☐
RECOVERED BY: R. C. Munson YEAR: 1968 COUNTY: Maui
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: Island: Maui

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

Station was found destroyed. The sand hill is wearing away due to wind erosion and the concrete monument was laying at the foot of the hill.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: TUG
STATE: HAWAII YEAR: 1912 THIRD ORDER

SOURCE: G-52183

GEODETIC LATITUDE:	20° 55' 46.338	ELEVATION:	18 METERS
GEODETIC LONGITUDE:	156° 29' 52.651	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ 10R Δ 01 ANGLE *
HI 2	5102	557,573.93	216,570.89	+ 0° 03' 37"

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

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

QF 027

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

Q 201561 STATION 1210
HAWAII
LATITUDE 20 ° 30' TO 21 ° 00'
LONGITUDE 156 ° 00' TO 156 ° 30'
DIAGRAM NF 4-16 MAUI

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
Form 833
Rev. Aug. 1964

DESCRIPTION OF TRIANGULATION STATION

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

CHIEF OF PARTY: G.T. Husemeyer	YEAR: 1950	Described by: G.B.G.																																
HEIGHT OF TELESCOPE ABOVE STATION MARK 1.27 METERS	HEIGHT OF LIGHT ABOVE STATION MARK 0.97 METERS																																	
<table border="1"> <thead> <tr> <th rowspan="2">NOTE*</th> <th rowspan="2">OBJECT</th> <th rowspan="2">BEARING</th> <th colspan="2">DISTANCE</th> <th rowspan="2">DIRECTION</th> </tr> <tr> <th>feet</th> <th>meters</th> </tr> </thead> <tbody> <tr> <td>1b</td> <td>Surface-station mark, Undergound-station mark</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>PIIHOLO HGS 1871</td> <td>NE</td> <td>18.13</td> <td>5.527</td> <td>0 00 00.0</td> </tr> <tr> <td></td> <td>pipe Reference mark No.1</td> <td>S</td> <td>31.50</td> <td>9.599</td> <td>145 17 15-</td> </tr> <tr> <td></td> <td>pipe Reference mark No.2</td> <td></td> <td></td> <td></td> <td>282 53 09-</td> </tr> </tbody> </table>			NOTE*	OBJECT	BEARING	DISTANCE		DIRECTION	feet	meters	1b	Surface-station mark, Undergound-station mark						PIIHOLO HGS 1871	NE	18.13	5.527	0 00 00.0		pipe Reference mark No.1	S	31.50	9.599	145 17 15-		pipe Reference mark No.2				282 53 09-
NOTE*	OBJECT	BEARING				DISTANCE			DIRECTION																									
			feet	meters																														
1b	Surface-station mark, Undergound-station mark																																	
	PIIHOLO HGS 1871	NE	18.13	5.527	0 00 00.0																													
	pipe Reference mark No.1	S	31.50	9.599	145 17 15-																													
	pipe Reference mark No.2				282 53 09-																													

Located in northern Maui, about six miles southeast of Haiku, on the northwest end of a prominent wooded hill in Monopou, Makawao District, about 5 miles due south of the sea shore at Halehaku. The station was established by Maui Agricultural Co. A concrete post with a two inch pipe in the center. A standard disk stamped ULALENA 2 was cemented in the center of the pipe.

Reference mark No.1 is a standard disk welded to the top of a 2 1/2 inch iron pipe projecting one foot, stamped ULALENA 2 NO 1 1949.

Reference mark No.2 is a standard disk welded to a 2 1/2 inch iron pipe projecting one foot, stamped ULALENA 2 NO 2 1949.

To reach from the Post Office at Haiku: go east on Hana road for 8.0 miles to Hoolawa Wash, turn right through gate and follow bladed road southerly for 2.5 miles to fork. From here pack south along ridges to top of hill and station.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: ULALENA 2
ESTABLISHED BY: C.T. Husemeyer YEAR: 1950 STATE: Hawaii BENCH MARK(S) ALSO ☐
RECOVERED BY: R.C. Munson YEAR: 1968 COUNTY: Maui
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: Island: Maui

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

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

Station is located about 5-1/2 miles southeast of Haiku and 1-1/4 miles south of the Wailoa Ditch, on a timbered hill of about 2153 feet elevation that projects sharply above the general terrain and is quite prominent. This hill has very tall trees on top, and also a heavy cover of ferns and other vegetation over 6 feet high, and station is difficult to locate.

To reach station from the main intersection in Paia, go east on State Highway 36 for 11.9 miles to Hoolawa Gulch and a side road right. Turn sharp right, through board gate, and go upgrade for 0.3 mile to locked gate (key was obtained at the E.M.I. Office in Upper Paia). Pass through gate and continue for 2.0 miles to fork and end of truck travel. Pack southerly up along ridge about 1-3/4 miles to station. NOTE: The ridge is covered with uluhe fern and station is very difficult to reach.

Station mark is a standard disk stamped "ULALENA 2 1949", set in the top of a 2-1/2-inch iron pipe that projects 2 inches from the top of a 12-inch-square, concrete monument which projects 5 inches from the ground. It is located well down on the northwest end of the long, narrow top of the hill, about 20 feet lower than the highest point; 30 feet south of a large, gnarled koa tree and 32 feet north of the large, horizontal koa tree under which RM 2 is located.

Reference mark number one is a standard disk stamped "ULALENA 2 NO 1 1949", set in the top of a 2-1/2-inch iron pipe that projects 1 foot from ground and is 2 feet lower than station mark. It is 5.524 m (18.121 ft.) from station, in azimuth 214° 49' 26".

Reference mark number two is a standard disk stamped "ULALENA 2 NO 2 1949", set in the top of a 2-1/2-inch iron pipe projecting 1 foot from ground and about 5 feet higher than station mark; set under the large, horizontal trunk of a koa tree. It is 9.632 m (31.600 ft.) from station, in azimuth 352° 25' 20".

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: ULALENA 2
STATE: HAWAII YEAR: 1950 FIRST ORDER

SOURCE: G- 9311

GEODETIC LATITUDE: 20 52 12.568	ELEVATION: 656.2 METERS
GEODETIC LONGITUDE: 156 15 16.978	215.5 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ANGLE
HI 2	5102	640,639.85	195,153.14	+ 0 38 48

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
PIIHOLO	69 32 10.6	69 23 23	5102

QE 313

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

0 201561 STATION 1211
HAWAII
LATITUDE 20 ° 30' TO 21 ° 00'
LONGITUDE 156 ° 00' TO 156 ° 30'
DIAGRAM NF 4-16 MAUI

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: UMA

STATE: HAWAII

YEAR: 1904

THIRD

ORDER

SOURCE: G-SP156

GEODETIC LATITUDE	20 ° 38' 30.96	ELEVATION	METERS
GEODETIC LONGITUDE	156 17 41.49		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β OR Δ OR α ANGLE *
HI 2	5102	627,125.78	112,226.51	+ 0 07' 52"

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

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

00 155

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

0 201561 STATION 1212
HAWAII
LATITUDE 20 ° 30' TO 21 ° 00'
LONGITUDE 156 ° 00' TO 156 ° 30'
DIAGRAM NF 4-16 MAUI

NO. ORIGINAL TEXT

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: VON
ESTABLISHED BY: A.L. Wardwell YEAR: 1962 STATE: Hawaii BENCH MARK(S) ALSO ☐
RECOVERED BY: R.C. Munson YEAR: 1968 COUNTY: Maui
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: Island: Maui

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

Station was recovered and identified by an angle check. Located about 7-1/2 miles south of the Kihei post office and 2-1/2 miles north of Puu Olai, along the seacoast, on a brushy point at the Von Tempky home.

To reach station from the post office at Kihei, go south on State Highway 31 for 6.1 miles to end of macadam road; continue, on graded road, for 1.85 miles to track side road right, between power poles 26 and 27, about 50 yards before the last 1 of 3 windmills along makai side of road. Go right on track road for 0.1 mile to seacoast and end of road. Pack about 100 feet west to station.

Station is marked by a 1-inch, iron pipe projecting 14 inches from ground. It is on the narrow, flat part of the brushy tip, inside tree line, 16 feet east from bare rock beach, 10 feet south of north edge of point and a 6-foot drop down to rock beach, and 105 feet west of the track road.

There is a 3-foot cairn built over the pipe.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: VON

STATE: HAWAII

YEAR: 1962

THIRD

-ORDER

SOURCE: G-12955

GEODETIC LATITUDE:	20 40 53.929	ELEVATION:	METERS
GEODETIC LONGITUDE:	156 26 49.214		FEET

STATE COORDINATES (feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE *
HI 2	5102	575,088.33	124,538.10	+ 0 04 39 "

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

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

QF 267

HORIZONTAL CONTROL DATA

Q 201561 STATION 1213
HAWAII
LATITUDE 20 °30' TO 21 °00'
LONGITUDE 156 °00' TO 156 °30'
DIAGRAM
NF 4-16 MAUI

ADJUSTED HORIZONTAL CONTROL DATA

SECOND

ORDER

GEODETIC LATITUDE: 20° 44' 15.417 GEODETIC LONGITUDE: 156 07 35.060	ELEVATION: 2243 SCALED	METERS FEET
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STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	SIDE OF TRIANGLE*
HI 2	5102	684,607.14	147,141.24	+ 0° 11' 29"

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

VALUES ARE COMPUTED BY THE USE OF FORMULA NEGLECTING THE SECOND TERM			
TO STATION OR OBJECT	GEODETTIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE

QD 038

00 038

HORIZONTAL CONTROL DATA

1. Name of Project: _____

2. Date of Survey: _____

3. Name of Surveyor: _____

4. Name of Station: _____

5. Name of Instrument: _____

6. Name of Observer: _____

7. Name of Recorder: _____

8. Name of Assistant: _____

9. Name of Station: _____

10. Name of Instrument: _____

11. Name of Observer: _____

12. Name of Recorder: _____

13. Name of Assistant: _____

14. Name of Station: _____

15. Name of Instrument: _____

16. Name of Observer: _____

17. Name of Recorder: _____

18. Name of Assistant: _____

19. Name of Station: _____

20. Name of Instrument: _____

21. Name of Observer: _____

22. Name of Recorder: _____

23. Name of Assistant: _____

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

0 201561 STATION 1214
HAWAII
LATITUDE 20° 30' TO 21° 00'
LONGITUDE 156° 00' TO 156° 30'
DIAGRAM NF 4-16 MAUI

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: WAIAKOA STATE: Hawaii COUNTY: Maui
CHIEF OF PARTY: C.T.Husemeyer YEAR: 1950 DESCRIBED BY: G.B.Grimm

NOTE*	HEIGHT OF TELESCOPE ABOVE STATION MARK 5.57 METERS, HEIGHT OF LIGHT ABOVE STATION MARK 5.27 METERS.						
1a	SURFACE-STATION MARK,		DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT				
7a	UNDERGROUND-STATION MARK		OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION				
	OBJECT		BEARING	DISTANCE		DIRECTION	
				FEET	METERS		
12c	KAMOA					0	00 00.00
	Reference Mark No. 2		S	35.03	10.680	3	09 24.6
	Light House, McGregor Pt.		W	5 miles		96	24 16.35
	Azimuth Mark		WNW	0.2 mile		122	40 25.72
12c	Reference Mark No. 1		N	35.87	10.934	181	46 43.9

Detailed description:

Located on the south coast of Central Maui, Wailuku District, about one mile, airline, northeast of the Kihei Post Office, and about one mile in from the shore, in an open fenced enclosure leased by the C.A.A., in a fence line 477 feet south southeast of the southeast corner of a fence around the Range Finder building, a standard disk set in the top of a 12 inch square concrete post projecting six inches, stamped WAIAKOA 1950. The underground mark is set in concrete 30 inches below the surface, stamped WAIAKOA 1950. Reference mark No. 1 is north of the station, a standard disk set in a boulder 18 inches west of the fence and flush with the ground, stamped WAIAKOA NO 1 1950. Reference mark No. 2 is south of the station, a standard disk set in a boulder 18 inches west of the fence and flush with the ground, stamped WAIAKOA NO 2 1950. Azimuth mark is 0.2 mile west northwest of the station, 30 feet north of the center of the road at a point where road curves down hill, a standard disk set in a boulder flush with the ground, stamped WAIAKOA 1950. To reach from the Post Office at Kihei, bear left from highway and go east for 200 feet, take right fork and go east for 0.5 mile, turn left and go north for 0.3 mile, turn left through iron gate, go 0.2 mile then turn right across country to fence and station near old shack.

OPN 526
11-8-55)

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

NAME OF STATION: WAIAKOA
ESTABLISHED BY: C.T.H. YEAR: 1950 STATE: Hawaii
RECOVERED BY: H.J.S. YEAR: 1961 COUNTY: Maui

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

The station, both reference marks, the azimuth mark and the southeast corner of the fence around the F.A.A. range finder building (now dismantled) were recovered in good condition as described. A new "to reach" follows:
From the store and Post Office at Kihei, go south along Highway 31 for 0.5 mile to a paved road left. Turn left and go 0.1 mile to a crossroad and "STOP" sign. Continue straight ahead for 0.3 mile to the iron gate in the fence surrounding the F.A.A. reservation. Pass through the gate and follow the paved road for 0.2 mile to the abandoned F.A.A. site. Turn right across country to south reservation fence and the station. The old shack mentioned in the 1950 description is gone.

(continued on next page)

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

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WAIAKOA
STATE: HAWAII YEAR: 1950 FIRST ORDER

SOURCE: G- 9311

GEODETIC LATITUDE:	20° 46' 44.205	ELEVATION:	39.4 METERS
GEODETIC LONGITUDE:	156° 27' 09.228		125 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	INTERIOR ANGLE *
HI 2	5102	573,138.51	161,892.73	+ 0° 04' 33"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE INTERIOR ANGLE FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
AZIMUTH MARK	117° 45' 13.4	117° 38' 40"	5102

Q6 301

HORIZONTAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
OLD HAWAIIAN DATUM

QUAD 201561 STATION 1214
LATITUDE ° ' TO ° '
LONGITUDE ° ' TO ° '
DIAGRAM

WAIAKOA (continued)

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: WAIAKOA
ESTABLISHED BY: C.T. Husemeyer YEAR: 1950 STATE: Hawaii
RECOVERED BY: R.C. Munson YEAR: 1968 COUNTY: Maui
Island: Maui

HEIGHT OF TELESCOPE ABOVE STATION MARK		1.55 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				
PUU O KALI (HGS) 1879 ----1950 DISTANCE		and DIRECTION----		00	00	00.0	
R.M. No. 2	S	35.03	10.680	51	03	30	
Azimuth Mark	WNW	0.2 mile		170	34	30.8	
R.M. No. 1	N	35.87	10.934	229	40	49	
PUU O KALI (HGS) 1879 ----1968 DISTANCE		and DIRECTION----		00	00	00.0	
R.M. No. 2	S	35.026	10.677	51	00	25	
McGregor Point Light 1950	W			144	18	20.6	
Azimuth Mark	WNW (Approx. 0.2 mile)			170	34	40.6	
R.M. No. 1	N	35.876	10.936	229	43	44	

Station was recovered and all marks found in good condition. The C.A.A. buildings are gone. A complete description follows:

Station is located about 1 mile southeast of the Kihei post office and 3/4-mile east from the sea, at about 129 feet elevation, on a flat-topped rise in grassy land, 217 feet west of center line of Noe Street, 477 feet south-southeast of an old, white-painted, board-fence enclosure, and in a north-south fence line.

To reach station from the post office at Kihei, go south on State Highway 31 for 0.5 mile; turn left and go east on Ohukai St. for 0.45 mile to second crossroad; continue ahead for 0.35 mile; turn left and go north on Noe St. for 0.1 mile to power pole No. 2 on left. Go left, cross-country, for 200 feet to station.

Station mark is a standard disk stamped "WAIAKOA 1950", set in the top of a 10-inch-square, concrete monument that projects 4 inches. It is 3 feet north of a white witness post and 201.5 feet west of power pole No. 2.

Reference mark number one is a standard disk stamped "WAIAKOA NO 1 1950", cemented in a drill hole in bedrock flush with ground, 1 foot west of the fence line and 0.4 foot higher than station mark.

Reference mark number two is a standard disk stamped "WAIAKOA NO 2 1950", cemented in a drill hole in a small bedrock outcrop that projects 3 inches. It is 1-1/2 feet west of the fence line and 0.25 foot lower than station mark.

Azimuth mark is a standard disk stamped "WAIAKOA 1950", cemented in a drill hole in bedrock flush with ground. It is 37 feet north of the center line of the old, C.A.A. macadam road, 4 feet northeast of a cairn,, at the upper end of a right curve of the road.

To reach azimuth mark from the second crossroad, mentioned above, pass through wire mesh gate on left and follow narrow macadam road northwest for 0.15 mile to top of the right curve, and mark on left.

HORIZONTAL CONTROL DATA

Q 201561 STATION 1215
HAWAII
LATITUDE 20 ° 30' TO 21 ° 00'
LONGITUDE 156 ° 00' TO 156 ° 30'
DIAGRAM NF 4-16 MAUI

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 555 b

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WAIAKOA HOLY GHOST CATH CHURCH

YEAR 1950

THIRD

ORDER

Description, including sketch of object:

The station is the top and center of the spire on the roof of the Holy Ghost Church (Catholic). The church is a wooden octagonal structure which is 84 feet in height. It lies 0.2 mile north of the Waiakoa Post Office and 100 feet west of the paved highway.

SOURCE: G- 9311

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

NAME OF STATION: **Maialoa, Holy Ghost Catholic Church, spire**
 ESTABLISHED BY: **C.T. Husemeyer** YEAR: **1950** STATE: **Hawaii** BENCH MARK(S) ALSO ☐
 RECOVERED BY: **R.C. Munson** YEAR: **1968** COUNTY: **Mau**
 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: **Island: Maui**

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

Station was identified by angle from various points, and recovered. Located about 4 miles south of Pukalani, just above old Highway 37, at Pulehu. Station is the center of the spire of the church, a very prominent, octagonal structure, with silver roof and white walls; about 84 feet high and with a cross on peak of spire.

R

GEODETIC LATITUDE: 20° 45' 57.781 GEODETIC LONGITUDE: 156° 19' 48.128	ELEVATION METERS FEET
--	-----------------------------

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ HOR Δ ANGLE $^{\circ}$
HI 2	5102	015,004.51	157,260.32	+ 0° 07' 10"

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

CORRECTED BY THE SECOND TERM FORMULA REFLECTING THE SECOND TERM.			
TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE

QE 415

QE 415

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

0 201561 STATION 1216
HAWAII
LATITUDE 20 ° 30' TO 21 ° 00'
LONGITUDE 156 ° 00' TO 156 ° 30'
DIAGRAM NF 4-16 MAUI

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WAIELI

STATE HAWAII

YEAR: 1904

THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	20 ° 40' 34.63	ELEVATION:	METERS
GEODETIC LONGITUDE:	156 02 20.60		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ θ 1 ANGLE *
HI 2	5102	714,541.74	124,972.91	+ 0 13 18 "

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

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

QO 172

JUN 1976
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

Q 201561 STATION 1217
HAWAII
LATITUDE 20 °30' TO 21 °00'
LONGITUDE 156 °00' TO 156 °30'
DIAGRAM NF 4-16 MAUI

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WAIKAPU

STATE: HAWAII

YEAR: 1912

THIRD

-ORDER

SOURCE: G-SP156

NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	20 °52'48.08	ELEVATION	METERS
GEODETIC LONGITUDE:	156 29 33.29		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE *
HI 2	5102	559,428.77	198,588.05	+ 0 03 43

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

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

QD 070

QO 130

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

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

0 201561 STATION 1219
HAWAII
LATITUDE 20° 30' TO 21° 00'
LONGITUDE 156° 00' TO 156° 30'
DIAGRAM NF 4-16 MAUI

NO ORIGINAL TEXT

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODESIC SURVEY
FORM 520

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: WAILUKU

ESTABLISHED BY: F.W. Perkins YEAR: 1899 STATE: Hawaii
RECOVERED BY: C.T. Husemeyer YEAR: 1950 COUNTY: Maui

Detailed statement as to the status of the original description:

On the northwest coast of Maui, in Wailuku District, on the sand stone ridge on the east side of Iao Valley, about 465 meters southwest from the rear range day beacon which is on the same ridge. The station is on a little rise in the ridge, and is marked by a bronze nail driven into the sandstone, and covered with a small cairn of stones. Station was searched for but not recovered. It has been destroyed by grading for a building.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: WAILUKU

ESTABLISHED BY: F.W. Perkins YEAR: 1899 STATE: Hawaii BENCH MARK(S) ALSO ☐
RECOVERED BY: R.C. Munson YEAR: 1968 COUNTY: Maui
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: Island: Maui

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

Station is gone. This ridge now has homes on it.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WAILUKU

STATE: HAWAII

YEAR: 1899

THIRD

ORDER

SOURCE: G-92183

GEODETIC LATITUDE:	20° 53' 58.980	ELEVATION	61	METERS
GEODETIC LONGITUDE:	156° 29' 35.783	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	# OR Δ or ANGLE
HI 2	5102	559,184.65	205,741.02	+ 0 33 43

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

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

QF 325

NOT A FINAL CONTROL COPY

NO ORIGINAL TEXT

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

0 201561 STATION 1220
HAWAII
LATITUDE 20 ° 30' TO 21 ° 00'
LONGITUDE 156 ° 00' TO 156 ° 30'
DIAGRAM NF 4-16 MAUI

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: WAILUKU EAST BASE STATE: Hawaii COUNTY: Maui
CHIEF OF PARTY: C.T. Husemeyer YEAR: 1950 DESCRIBED BY: C.J. Hoepfel

NOTE	HEIGHT OF TELESCOPE ABOVE STATION MARK	HEIGHT OF LIGHT ABOVE STATION MARK	DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION	METERS
1a	SURFACE-STATION MARK			
7a	UNDERGROUND-STATION MARK			
	OBJECT	BEARING	DISTANCE	DIRECTION
			FEET	METERS
	LUKE 1912			
	Wailuku Mast, (Radio Station KMVI)			00 00 00 "
12c	R. M. No. 1	NW	4.5 miles	10 00 31.6
pipe	R. M. No. 2	NNE	79.439 24.213	78 52 23
	Puunene Airport Beacon	SE	150.469 45.863	195 43 45
		SW	3.0 miles	281 14 52.2

Detailed description:

The station is located on waste cane land which lies about 5 miles north northeast of Kihei, about 4 miles southeast of Wailuku, 1.75 miles east of the highway which runs between Kahului and Kihei, 59 feet northwest of a T road intersection, 33 feet west of a lone tree, 28 feet northeast of a small tin shack and 28 feet north of a concrete irrigation ditch.

To reach from the post office at Kahului, go southeast for 1.8 miles to the Puunene Village; turn right and go south on the road which leads to Kihei for 1.65 miles; turn left onto a graded road and go easterly for 1.75 miles to the station on the left hand side of the road.

The station is a standard disk, stamped WAILUKU EAST BASE 1949, set in the top of a square concrete post which projects about 4 inches.

The underground station is a standard disk, stamped WAILUKU EAST BASE 1949, set into an irregular mass of concrete which is about 30 inches below the surface of the soil.

Reference mark number 1 is a standard disk, stamped WAILUKU E BASE NO 1 1949, set into a drill hole in a boulder which is flush with the surface of the ground. It is located 28 feet west of an irrigation ditch and about 5 feet lower than the station.

Reference mark number 2 is a standard disk, stamped WAILUKU E BASE NO 2 1949, cemented in the top and center of a 10 inch iron pipe which projects about 4 inches. It is located at about the same elevation as the station and 50 feet south of the center of a graded road.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WAILUKU EAST BASE
STATE: HAWAII YEAR: 1950 FIRST ORDER

SOURCE: G- 9311

GEODETIC LATITUDE:	20 ° 50' 50.763	ELEVATION:	74.7 METERS
GEODETIC LONGITUDE:	156 26 19.238		245 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ θ ANGLE °
HI 2	5102	577,846.90	186,774.74	+ 0 04 52 "

* 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
LUKE	122 26 54.3	122 22 02	5102

QE 302

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

US

(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 201561

STATION 1220

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

WAILUKU EAST BASE (continued)

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: WAILUKU EAST BASE
ESTABLISHED BY: C.T. Husemeyer YEAR: 1950 STATE: Hawaii
RECOVERED BY: R.C. Munson YEAR: 1968 COUNTY: Maui
Island: Maui

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	DIRECTION		
		FEET	METERS				
LUKE 1912 -----1950 DISTANCE and					00	00	00.0
Wailuku Mast, (Radio Station KMVI)	NW				10	00	31.6
R.M. No. 1	NNE	79.439	24.213		78	52	23
R.M. No. 2	SE	150.469	45.863		195	43	45
LUKE 1912 -----1968 DISTANCE and					00	00	00.0
Kahului, Radio Sta. KMVI, mast	NW				10	00	28.8
R.M. No. 1	NNE	79.419	24.208		78	52	18
R.M. No. 2	SE	150.348	(45.826)		195	43	39

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

Station is located about 1-3/4 miles southeast of Puunene, 6 miles southwest of Pala, and 1-3/4 miles east of the junction of State Highway 35 and 40; along the north side of Highway 40, a graded road, on a brush-covered rise at about 245 feet elevation, where the road begins dropping down towards Spanish Road, about 0.4 mile to the east.

To reach station from the Kahului Shopping Center, go southerly on State Highway 35 for 1.9 miles to Puunene; continue on Highway 35 for 1.7 miles to intersection with Highway 40. Turn left and go east on Highway 40 for 1.75 miles to station on left, at a T-road intersection.

Station mark is a standard disk stamped "WAILUKU EAST BASE 1949", set in the top of an 8-inch-square, concrete monument that projects 4 inches above ground. It is in tall koa brush, 32 feet west of a large, lone, kiawe tree, 46 feet north of center line of the highway, 61 feet northwest of the intersection of the highway with a T-road running south, 30 feet north-northwest of a T-intersection of canals, and 2 feet north of a white witness post.

Reference mark number one is a standard disk stamped "WAILUKU EAST BASE NO 1 1949", cemented in a drill hole in a boulder flush with the ground, 4 feet west of the base of a dirt bank, 28 feet west of an irrigation canal, and 2.8 feet lower than station mark.

Reference mark number two is a standard disk stamped "WAILUKU EAST BASE NO 2 1949", set in the top of a 10-inch-diameter pipe filled with concrete and projecting 4 inches above ground. It is on top of the brush-covered rise on south side of highway, 90 feet southeast of the intersection of center lines of the highway and the T-road south, and is 3.5 feet higher than station mark.

QE 385

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

Q 201561 STATION 1222
HAWAII
LATITUDE 20 °30' TO 21 °00'
LONGITUDE 156 °00' TO 156 °30'
DIAGRAM NF 4-16 MAUI

ADJUSTED HORIZONTAL CONTROL DATA

DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC SURVEY
Form 533
Rev. Aug. 1968

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION:	WAILUKU EAST BASE A 2		STATE:	Hawaii	COUNTY:	Maui
CHIEF OF PARTY:	R. C. Munson		YEAR:	1968	Island:	Maui
NOTE:	HEIGHT OF TELESCOPE ABOVE STATION MARK 1.5 METERS		HEIGHT OF LIGHT ABOVE STATION MARK METERS			
1a	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		
	LUKE 1912				00 00 00.0	
	Chiseled Cross (RM No.2)	N	26.356	8.033	68 57 08	
	WAILUKU EAST BASE 1950	E			137 50 22.2	
	R.M. No. 1	SW	47.783	14.565	273 36 50	
	WAILUKU EAST BASE A (HTS) 1950	WSW	85.968	26.203	312 16 20.9	

Station is located about 1-1/2 miles south-southeast of Puunene and 1 mile east of State Highway 35, along the south edge of Highway 40, where it crosses Haiku Ditch.

To reach station from the post office in Puunene, go west on Hansen Rd. for 0.1 mile; turn left and go southerly on State Highway 35 for 1.75 miles to crossroad; turn left and go east on Highway 40 for 1.1 miles to station.

Station mark is a standard disk stamped "WAILUKU EAST BASE A 2 1968", set in the top of a 10-inch-square, concrete monument that projects 4 inches from ground. It is on the narrow bank on west side of canal, 5 feet south of west end of the south concrete bridge rail, 13.5 feet

south of center line of bridge and highway, 11 feet east of center line of field road, 3 feet west of west edge of canal and 1.8 feet southeast of a white witness post.

Reference mark number one is a standard disk stamped "WAILUKU E BASE A 2 NO 1 1968", cemented in a drill hole in the south end of a stone and concrete irrigation canal abutment, flush with ground. It is 13 feet west of center line of field road and about 3 feet lower than station.

Reference mark number two is a 3-inch cross chiseled into the top of the west end of the north concrete bridge rail, about 30 inches higher than road and station. The figures "EL. 178.61" are chiseled into the face of the concrete rail, just below the cross.

NAME OF STATION: WAILUKU EAST BASE A 2
STATE: HAWAII
YEAR: 1968
THIRD ORDER

SOURCE G-12664
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE	20 50 48.21823	ELEVATION	53.3 METERS
GEODETIC LONGITUDE	156 26 55.72198		175 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ 10R Δ θ 1 ANGLE
HI 2	5102	574,386.83	186,513.21	+ 0 04 39

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE $\theta 10R \Delta \theta 1$ FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
LUKE	127 54 49.8	127 50 11	5102

POSITION DETERMINED BY TRAVERSE FROM STATION WAILUKU E BAS A

HORIZONTAL CONTROL DATA

Q 201561 STATION 1223
HAWAII
LATITUDE 20 °30' TO 21 °00'
LONGITUDE 156 °00' TO 156 °30'
DIAGRAM NF 4-16 MAUI

ADJUSTED HORIZONTAL CONTROL DATA

YEAR: 1950

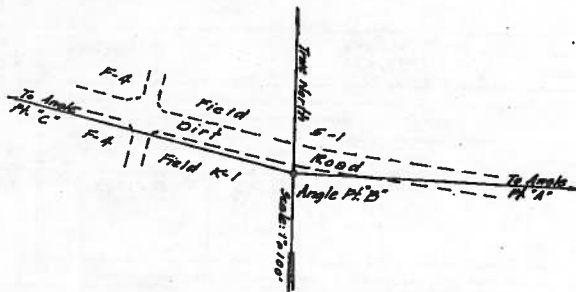
THIRD -ORDER

GEODETIC LATITUDE:	20 50' 48.879	ELEVATION:	42.0 METERS
GEODETIC LONGITUDE:	156 27 29.317		138 FEET

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

FORMULA REFLECTING THE SECOND TERM			
TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE

QE 38b



R

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

Station destroyed by Hawaiian Commercial & Sugar Co.

R

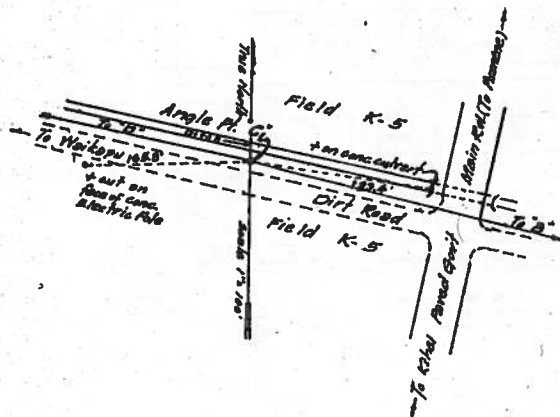
Detailed statement as to the fitness of the original description, including marks found, stampings, changes made, and other pertinent facts:

Station was searched for but not found. The road has been widened in this vicinity and the mark is believed to be destroyed.

QE 386

Q 201561 STATION 1224
HAWAII
LATITUDE 20 °30' TO 21 °00'
LONGITUDE 156 °00' TO 156 °30'
DIAGRAM NF 4-16 MAUI

WAILUKU EAST BASE C (HTS) (Maui County, Hawaii, C.T. Husemeyer, 1950)--The station is located 215 feet west of the center of the intersection of the old, graded road which runs between Waikapu and Kula and the paved highway which runs between Puunene and Kihei, 17 feet north of the center of a graded road, 7 feet south of the edge of a dirt irrigation ditch and just south of Field F-5. The station is a standard Territory Survey disk, stamped WAILUKU EAST BASE C 1950, set in the top of a cylindrical concrete post which projects about 1 inch. This disk was also tied in by first order levels on the Puunene-Kihei line.



RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: WAILUKU EAST BASE C (HTS)
ESTABLISHED BY: C.T. Husemeyer YEAR: 1950 STATE: Hawaii BENCH MARK(S) ALSO ☐
RECOVERED BY: R.C. Munson YEAR: 1968 COUNTY: Maui
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: Island: Maui

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

Station was found destroyed; the monument has been pushed from the ground by road equipment, so the disk was removed at this time.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WAILUKU EAST BASE C HTS

STATE: HAWAII

YEAR 19 50

THIRD

PAGE#

SOURCE: G- 9311

GEODETTIC LATITUDE: 20 50 55.349 GEODETTIC LONGITUDE: 156 27 57.130	ELEVATION: 33.71 METERS 110.6 FEET
--	---------------------------------------

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	# OR Δ & ANGLE
HI 2	5102	568,561.52	187,225.07	+ 0 04 17

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

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE $\sin \Delta \theta$ FORMULA NEGLECTING THE SECOND TERM.			
TO STATION OR OBJECT	GEODETIC AZIMUTH (From $\sin \Delta \theta$)	PLANE AZIMUTH* (From $\sin \Delta \theta$)	CODE

QE 387

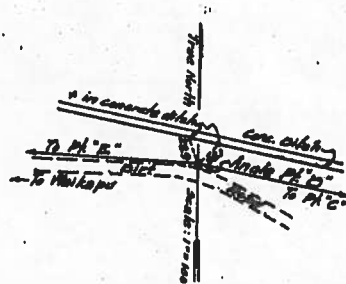
QE 387

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

Q 201561 STATION 1225
HAWAII
LATITUDE 20° 30' TO 21° 00'
LONGITUDE 156° 00' TO 156° 30'
DIAGRAM NF 4-16 MAUI

WAILUKU EAST BASE D (HTS) (Maui County, Hawaii, C.T. Husemeyer, 1950)--The station is located on the north side of the old, graded road which runs between Waikapu and Kula. It is 1.0 mile west of the paved highway which runs between Puunene and Kihei, 25 feet south of the center of a concrete irrigation ditch, 18 feet north of the center of a graded road and on the south side of Field H-7. The station is a standard Territory Survey disk, stamped WAILUKU EAST BASE D 1950, set in the top of a cylindrical concrete post which projects about 1 foot.



RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: WAILUKU EAST BASE D (HTS)

ESTABLISHED BY: C.T. Husemeyer YEAR: 1950

RECOVERED BY: R.C. Munson YEAR: 1968

AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

STATE: Hawaii BENCH MARK(S) ALSO ☐
COUNTY: Maui
Island: Maui

R

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

Station mark was recovered and found to be projecting excessively from ground, however, it was straight, so was lowered and re-enforced with a mass of concrete around the base of the monument, and a witness post was established. A complete description follows:

Station is located about 2 miles southwest of Puunene and 1-3/4 miles east of Waikapu, along the north side of Highway 40, in the narrow, koa-covered strip between the road and an irrigation canal.

To reach station from the junction of State Highways 30 and 40 in Waikapu, go east on Highway 40, a dirt road, for 1.9 miles to station on left.

Station mark is a Hawaii Territory Survey disk, stamped "WAILUKU EAST BASE D 1950", set in the top of a 10-inch-diameter, concrete monument projecting 1 foot. It is 17 feet north of center line of road, 23.8 feet south of south wall of the canal, 27.79 feet southeast of a 3-inch, chiseled cross in the top of the south wall of the canal, 135 feet east of power pole No. 11, and 1 foot east of a white witness post.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WAILUKU EAST BASE D HTS

STATE: HAWAII

YEAR: 1950

THIRD

ORDER

SOURCE: G- 9311

GEODETIC LATITUDE:	20 51 05.859	ELEVATION:	48.3 METERS
GEODETIC LONGITUDE:	156 28 50.787		158 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	# OR Δ # ANGLE
HI 2	5102	563,471.11	188,279.32	+ 0 33 58

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

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

QE 388

HORIZONTAL CONTROL DATA

1. Name of Project

2. Date of Survey



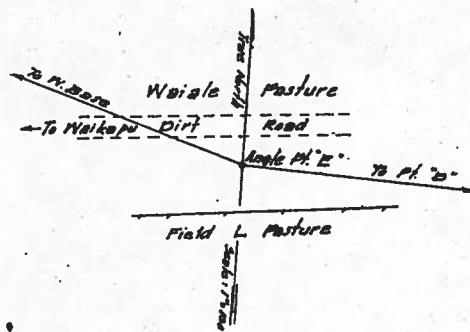
3. Description of Control Point

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

Q 201561 STATION 1226
HAWAII
LATITUDE 20 °30' TO 21 °00'
LONGITUDE 156 °00' TO 156 °30'
DIAGRAM NF 4-16 MAUI

WAILUKU EAST BASE E (HTS) (Maui County, Hawaii, C.T. Husemeyer, 1950)--The station is located on the south side of the old, graded road which runs between Waikapu and Kula. It is 1.4 miles west of the highway which runs between Puunene and Kihei, 62 feet north of a wire fence which marks the boundary line of Field L Pasture and in sandy soil which is subject to shifting.
The station is a standard Territory Survey disk, stamped WAILUKU EAST BASE E 1950, set in the top of a cylindrical concrete post which projects about 1 foot.



ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WAILUKU EAST BASE E HTS

STATE: HAWAII

YEAR 1950

THIRD

ORDER

SOURCE: G- 9311

GEODETIC LATITUDE	20 °51'06.656	ELEVATION	58.4 METERS
GEODETIC LONGITUDE	156 29 11.537		192 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	B OR Δ S. ANGLE *
HI 2	5102	561,502.99	188,361.53	+ 0 03'51"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (from south)	PLANE AZIMUTH *	CODE
WAILUKU EAST BASE D HTS	272 27 29.0	272 23 38	5102

QE 389

(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 201561 STATION 1226

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

WAILUKU EAST BASE E (HTS) (continued)

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: WAILUKU EAST BASE E (HTS)
ESTABLISHED BY: C.T. Husemeyer YEAR: 1950 STATE: Hawaii
RECOVERED BY: R.C. Munson YEAR: 1968 COUNTY: Maui
Island: Maui

HEIGHT OF TELESCOPE ABOVE STATION MARK		1.54 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	°	'	"		
WAILUKU EAST BASE D (HTS) 1950				00	00	00.0		
R.M. No. 2	S	47.420	14.555	88	43	37		
R.M. No. 1	N	89.850	27.387	268	47	51		

Station was found, by traverse from WAILUKU EAST BASE D, under a 2-foot cover of sand. The area around the mark was leveled off, 2 reference marks were established, and a witness post was set. A complete description follows:

Station is located about 1.3 miles east-southeast of Waikapu, along the south side of Highway 40, in a 90-foot-wide brushy strip between road and a fence line, and at the south side of a low sand hill about 3 feet higher than the station mark.

To reach station from the junction of State Highways 30 and 40 in Waikapu, go east on Highway 40 for 1.5 miles to station on right.

Station mark is a Hawaii Territory Survey disk, stamped "WAILUKU E BASE E 1950", set in the top of a 10-inch-diameter, concrete monument that projects 3 inches above ground. It is 550 feet west of a canal, 49.5 feet north of fence-line, 41 feet south of center line of road, and 18 inches east of a white witness post.

Reference mark number one is a standard disk stamped "WAILUKU E BASE E 1950 NO 1 1968", set in the top of a 2-inch iron pipe that is set in concrete and projects 4 inches above ground. It is 49 feet north of center line of road, 8 inches south of fence line, and 0.5 foot higher than station mark.

Reference mark number two is a standard disk stamped "WAILUKU E BASE E 1950 NO 2 1968", set in the top of a 10-inch-diameter, concrete monument that projects 6 inches from ground. It is 2 inches north of fence line and 3 feet lower than station mark.

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

Q 2015e1 STATION 1227
HAWAII
LATITUDE 20 °30' TO 21 °00'
LONGITUDE 156 °00' TO 156 °30'
DIAGRAM NF 4-16 MAUI

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: WAILUKU WEST BASE STATE: Hawaii COUNTY: Maui
CHIEF OF PARTY: C.T.Husemeyer YEAR: 1950 DESCRIBED BY: G.B.Grimm

NOTE.	HEIGHT OF TELESCOPE ABOVE STATION MARK	SURFACE-STATION MARK, UNDERGROUND-STATION MARK	DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION	BEARING	DISTANCE		DIRECTION
					FEET	METERS	
1a	3.17 METERS.1						
7a							
11b		LUKE 1912					0 00 00.00
		KMVI Antenna		NNE	3 miles		15 19 42.28
		Reference Mark No. 2		NNE	245.88	74.945	19 42 28.5
		Puunene, North Stack, Puunene mill		ENE	3 miles		68 51 25.48
11a		Maui Airport, Landing Beacon		SE	3.5 miles		132 11 23.42
		Reference Mark No. 1		W	41.47	12.640	270 26 53.1

Detailed description:

Located in central Maui, Wailuku District, about 3 miles air-line southwest of Puunene and about 0.5 mile south of Waikapu Village, at a prominent intersection in brush covered country at the south edge of a cane field. On the southeast end of a low sandstone ridge 150 feet northwest of the intersection.

Station is a standard disk set in a concrete post projecting six inches. It is 8 feet north of the sheer edge of the ridge, stamped WAILUKU WEST BASE 1949.

Reference mark No. 1 is west of and about 4 feet lower than the station. A standard disk set in a concrete post, stamped WAILUKU WEST BASE NO 1 1949.

Reference mark No. 2 is north northeast of the station. A standard disk set in an iron pipe that is in the center of a concrete cylinder projecting 4 inches. This was a plantation station. Disk is stamped WAILUKU WEST BASE NO 2 1949.

To reach from the post office at Kahului, go west one block, turn left and go southeast 1.9 miles to intersection in Puunene, turn right and go south on paved road toward airport for 1.7 miles, turn right at small green pump house and go west for 2.3 miles to intersection and station.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: WAILUKU WEST BASE
ESTABLISHED BY: C.T. Husemeyer YEAR: 1950 STATE: Hawaii BENCH MARK(S) ALSO ☐
RECOVERED BY: R.C. Munson YEAR: 1968 COUNTY: Maui
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: Island; Maui

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

A trial point was established in the vicinity and the location of the station determined by inverse computation from this point, and was then proven by angle checks, but the mark was not found. A search was also made for the reference marks at the published distance and angles but they were not found. Considerable bulldozing has been done along the entire hill-top and all marks were probably destroyed then.

¹ Refers to notes in manuals of triangulation and state publications of triangulation. ² Direction-angle measured clockwise, referred to initial station.
³ To nearest meter only, when no trigonometric leveling is being done.

USCGM-3C 27171-

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: WAILUKU WEST BASE
STATE: HAWAII YEAR: 1950 FIRST ORDER

SOURCE G- 9311

GEODETIC LATITUDE	20 51 19.733	ELEVATION	98.7 METERS
GEODETIC LONGITUDE	156 29 57.061		324 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	PLANE AZIMUTH ANGLE *
H1 2	5102	557,183.93	189,672.19	+ 0 03 35

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
LUKE	180 11 17.6	180 07 43	5102

POSITION DETERMINED BY TRAVERSE FROM STATION WAILUKU E BASE
AND CHECKED BY ADDITIONAL OBSERVATIONS

QE 303

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

0 201561 STATION 1228
HAWAII
LATITUDE 20° 30' TO 21° 30'
LONGITUDE 156° 00' TO 156° 30'
DIAGRAM NF 4-16 MAUI

ADJUSTED HORIZONTAL CONTROL DATA

NO TEXT

NAME OF STATION WAIOPAI-PUU

STATE HAWAII

YEAR 1934

THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE	20° 39' 53.52	ELEVATION	METERS
GEODETIC LONGITUDE	156° 13' 37.96		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ FOR Δ OF ANGLE *
HI 2	5102	650,232.97	120,613.79	+ 0 09' 18"

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

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

QQ 163

