

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1151  
HAWAII  
LATITUDE 21° 00' TO 21° 30'  
LONGITUDE 157° 30' TO 158° 00'  
DIAGRAM NF 4-11 OAHU

## NO ORIGINAL TEXT

### RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: Kaneohe Bay MCAS, E. Radio Tower of Three  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: H.J.S. YEAR: 1961 COUNTY: Honolulu

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

The station is the top of the easterly of three red and white painted structural steel towers at the Marine Corps Air Station at Kaneohe. The towers are just northeast of Hawaitloa Hill.

### RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

R

NAME OF STATION: KANEEOHE BAY MCAS, E. RADIO TOWER OF THREE  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: W.R. Porter YEAR: 1963 COUNTY: Honolulu

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

The station was recovered in good condition. It is the east 1 of 3 identical towers setting in a triangle pattern about 400 feet on each side, with Building No. 501 at the center. The towers are 3-legged, painted alternate red and white, about 140 feet high, and have a small rectangular platform with guard rail, on their tops. Located on the Kaneohe Marine Corps Air Station, about 1/4 mile south from the north shoreline of the base, on the west end of the golf course, and along the west side of Moffett Road.

### RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

R

NAME OF STATION: KANEEOHE BAY MCAS E RADIO TOWER OF 3  
ESTABLISHED BY: H. O. F. YEAR: 1957 STATE: Hawaii BENCH MARK(S) ALSO ☐  
RECOVERED BY: Carl A. Annis YEAR: 1969 COUNTY: Honolulu  
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 intersection station was recovered in good condition as described by W.R. Porter in 1963.

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KANEEOHE BAY E RADIO TOWER OF 3

STATE: HAWAII YEAR: 1957 THIRD ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 27' 17.84812	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 45 19.28803		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ ± ANGLE °
HI 3	5103	583,194.97	134,782.68	+ 0° 05' 22"

\* 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
	° ' "	° ' "	

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1152  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: BELLOWS AFB MICROWAVE TOWER

CHIEF OF PARTY: C.A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

Station is the top center of the tower, located on Bellows Air Force Station 1-1/2 mile north of the Village of Waimanalo. It is a 3-legged tower that has one radar dish at the top and one about 1/2 way up the tower. It is painted green and the tower is 30 feet high.

FORM C&GS-525b (12-65)

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

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: BELLOWS AFB MICROWAVE TOWER

STATE: HAWAII

YEAR: 1969

THIRD

- ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 21' 37.20037	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 43 04.36569		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	g HOR Δ g1 ANGLE *
HI 3	5103	596,002.03	70,432.42	+ 0 06' 10"

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE g HOR Δ g1 FORMULA NEGLECTING THE SECOND TERM

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

QG 152

## HORIZONTAL CONTROL DATA

QUAD 211573 STATION 1153  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### ADJUSTED HORIZONTAL CONTROL DATA

Station is the top center of the mast, located 1 1/2 north of the Village of Waimanalo and on Bellows Air Force Station. It is a 3-legged mast that is painted red and white with a bar antenna on the top and the tower is 50 feet high.

THIRD

GEODETIC LATITUDE:	21° 21' 41.35720	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 43 00.68719		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ FOR $\Delta$ BY ANGLE °
HI 3	5103	556,348.98	70,852.47	+ 0° 06' 11"

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

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

QG 153

FORM C&amp;GS-525b (12-85)

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

QG 153

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1154  
HAWAII  
LATITUDE 21° 00' TO 21° 30'  
LONGITUDE 157° 30' TO 158° 00'  
DIAGRAM NF 4-11 OAHU

### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: KAIMUKI LIBERTY HOUSE FLAGPOLE

CHIEF OF PARTY: C.A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

The station is the ball on top of the pole. Located in the southeast side of Honolulu at the Kalia Mall, it is on the northeast side of the top floor of the Liberty House Store and the pole is about 70 feet high.

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KAIMUKI LIBERTY HOUSE FLAGPOLE

STATE: HAWAII

YEAR: 1969

THIRD

-ORDER

SOURCE: G-14543

NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21° 16' 48.79770	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 47 18.20048		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\phi$ 10R $\Delta$ $\phi$ 1 ANGLE *
HI 3	5103	572,047.48	41,295.08	+ 0° 04' 37"

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

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

JRM C&GS-525b (12-68)

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

QG 154

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

# HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1155  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

## DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: KAIMUKI KAHALA TOWERS ANTENNA

CHIEF OF PARTY: C.A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

The station is the T.V. antenna on top of the elevator shaft, located at the northeast corner of the intersection of Kilauea Avenue and Kalanianaʻōle Hwy, it is a tan building that is 27 floors high.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KAIMUKI KAHALA TOWERS ANTENNA

STATE: HAWAII

YEAR: 1969

THIRD

-ORDER

SOURCE: G-14543

NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21 ° 16' 56.05586	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 47 15.47246		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ or ANGLE *
HI 3	5103	572,304.50	42,027.77	+ 0 04 38 "

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

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

QG 155

RM C&GS-525b (12-68)

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

# HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1156  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

## DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: KANEQHE RAD STA KLEI MAST

CHIEF OF PARTY: Carl A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

The station is the red light on top of the mast, which is located in the south edge of Kaneohe on a low hill. It is a standard red-and-white radio mast 220 feet high.

To reach from the junction of Likelike Highway and Kaneohe Drive, go easterly on Kaneohe Drive for 0.45 mile to the junction of Kaneohe Drive and Kakiko Street. Turn right on Kakiko Street for 0.3 mile to its junction with Namoku Street. Turn left on Namoku Street for 0.55 mile to its junction with Mokulele Drive. Turn right on Mokulele Drive for 0.6 mile to the end of the street. Turn left, uphill, for 0.2 mile to the mast on the summit.

FORM CGOS-525b (12-68)

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

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: KANEQHE RAD STA KLEI MAST

STATE: HAWAII

YEAR: 1969

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 23 ' 51.35596	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 47 33.43 868		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\phi$ OR $\Delta$ OR $\alpha$ ANGLE °
HI 3	5103	570,550.16	83,929.18	+ 0 04 32 "

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

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

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1157  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: MT TANTALUS MICROWAVE TOWER

CHIEF OF PARTY: Carl A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

The station is the top center of the tower located on Mt. Tantalus at triangulation station TANTALUS. It is about 5½ miles north of Diamond Head, and is a three-legged steel tower painted green, with two microwave dishes on the east side of the tower, which is 30 feet high.

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: MT TANTALUS MICROWAVE TOWER

STATE: HAWAII

YEAR: 1969

THIRD

-ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 20' 09.39676	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 49 04.04045		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ §1 ANGLE *
HI 3	5103	562,014.20	61,522.89	+ 0° 03' 59"

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

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

FORM CGS-525b (12-68)

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

QG 157

# HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1158  
HAWAII  
LATITUDE 21° 00' TO 21° 30'  
LONGITUDE 157° 30' TO 158° 00'  
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 528  
(11-8-55)

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

NAME OF STATION: Honolulu, Radio Station KAIM, Tower  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

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 at  
station KAIMUKI and recovered.  
Located in the Kaimuki district of Honolulu, behind the Kaimuki  
Bowl Building. Station is a slender, three-legged, girder-type steel  
mast, supported by several sets of guy-cables. Tower is painted  
alternate red and white and is 224 feet tall.

RECOVERY NOTE, INTERSECTION  
TRIANGULATION STATION

NAME OF STATION: HONOLULU RADIO STA KAIM TOWER  
ESTABLISHED BY: H. O. F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: Carl A. Annis YEAR: 1969 COUNTY: Honolulu 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:

Intersection station recovered in good condition as described  
by D. G. Rushford in 1964.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU RADIO STA KAIM TOWER

STATE: HAWAII

YEAR: 1957

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 17' 07.67118	ELEVATION:	METERS
GEODETIC LONGITUDE:	157° 48' 08.23102		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	9 10R Δ 91 ANGLE *
HI-3	5103	567,313.42	43,193.26	+ 0° 04' 18"

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE 9 10R Δ 91 FORMULA NEGLECTING THE SECOND TERM.

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971



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

# HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1159  
HAWAII  
LATITUDE 21° 00' TO 21° 30'  
LONGITUDE 157° 30' TO 158° 00'  
DIAGRAM NF 4-11 OAHU

## DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: HONOLULU CIRCLE JADE APT BLDG ANTENNA

CHIEF OF PARTY: C.A. Annis YEAR: 1969 STATE: Hawaii COUNTY: HONOLULU

Description, including sketch of object:

The station is a T.V. antenna on the southeast edge of the building; it is a round building painted green at 1139 9th avenue in Honolulu and is 16 floors high.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU C JADE APT BLDG ANT

STATE: HAWAII

YEAR: 1969

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 17' 12.71176	ELEVATION:	METERS
GEODETIC LONGITUDE:	157° 48' 17.97480		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ FOR $\Delta$ $\alpha$ ANGLE *
HI 3	5103	566,391.30	43,700.71	+ 0° 04' 15"

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

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

FORM C&GS-525b (12-68)

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

QG 155

# HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1160  
HAWAII  
LATITUDE 21° 00' TO 21° 30'  
LONGITUDE 157° 30' TO 158° 00'  
DIAGRAM NF 4-11 OAHU

HONOLULU SACRED HEART ACADEMY CROSS  
(Oahu Island, E. R. Hand, 1925).—On southeastern  
Oahu, about 1 mile inland between Honolulu and Diamond Head, the cupola  
on Sacred Heart Convent. Cupola is white, with black dome and white cross,  
and is surrounded by square white rail.

## RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

Honolulu,  
NAME OF STATION: Sacred Heart Academy, cross  
ESTABLISHED BY: E.R.H. YEAR: 1925 STATE: Hawaii  
RECOVERED BY: F.J. Tucker Jr. YEAR: 1964 COUNTY: Honolulu

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

Station was  
verified by angle at stations KAIMUKI & ROCKY HILL and recovered. It  
is a slender, iron cross, with wrought-iron scrollwork, mounted on the  
dome top of a white, octagonal, louvered cupola that sets on a square,  
white tower on the roof of the Academy of the Sacred Hearts building.  
Located in the Kaimuki district of Honolulu, on southwest side of  
Waiālae Avenue, between 5th and 6th Avenues.



## RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

Honolulu,  
NAME OF STATION: SACRED HEART ACADEMY CROSS  
ESTABLISHED BY: E. R. H. YEAR: 1925 STATE: Hawaii BENCH MARK(S) ALSO ☐  
RECOVERED BY: Carl A. Annis YEAR: 1969 COUNTY: Honolulu  
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:

Intersection station recovered in good condition as described  
by F. J. Tucker, Jr. in 1964.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU SAC HEART ACAD CROSS

STATE: HAWAII

YEAR: 1925

THIRD

—ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 17' 20.93874	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 48 33.78624		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ OR $\Delta$ OR ANGLE °
HI 3	5103	564,894.99	44,528.97	+ 0° 04' 09"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 160

QG 161

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1162  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: HONOLULU UNIV OF HAWAII ELEC ENGR LAB TOWER

CHIEF OF PARTY: Carl A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

The station is the top center of a green, four-legged tower which is pointed at the top and is 110 feet high. The tower is located in the south area of the University campus at the Electrical Engineering Lab 2 Building.

FORM C&GS-525b (12-68)

Described by \_\_\_\_\_  
U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEAN SURVEY  
COAST AND GEODETIC SURVEY

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU U HAWAII ELEC LAB TWR

STATE: HAWAII

YEAR: 1969

THIRD

— ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 18' 06.34553	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 49 17.97313		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\phi$ OR $\Delta$ $\phi$ ANGLE °
HI 3	5103	560,711.06	49,105.59	+ 0° 03' 53"

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

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

QG 162

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1163  
HAWAII  
LATITUDE  $21^{\circ} 00'$  TO  $21^{\circ} 30'$   
LONGITUDE  $157^{\circ} 30'$  TO  $158^{\circ} 00'$   
DIAGRAM NF 4-11 OAHU

### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: HONOLULU MOILIILI BUDDHIST CHURCH SPIRE

CHIEF OF PARTY: Carl A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

The station is the top of the spire of a cream-colored tower.  
The tower is located at 902 University Avenue, and the total  
height is about 60 feet.

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU MOILIILI BUDDHIST CH

STATE: HAWAII

YEAR: 1969

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	$21^{\circ} 17' 39.47113$	ELEVATION:	METERS
GEODETIC LONGITUDE:	$157^{\circ} 49' 32.84181$		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\phi$ OR $\Delta$ OR ANGLE *
HI 3	5103	559,308.05	46,392.42	+ $0^{\circ} 03' 48''$

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

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

FORM C&GS-525b (12-68)

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

QG 163

QUAD 211573 STATION 1164  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### ADJUSTED HORIZONTAL CONTROL DATA

Intersection station recovered as described by Wilbur R. Porter in 1963.

R

**-DADEN**

GEODETTIC LATITUDE:	21° 16' 37.45806	ELEVATION:	METERS
GEODETTIC LONGITUDE:	157 49 34.15721		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ OR $\Delta$ $\theta$ $\Delta$ ANGLE
HI 3	5103	559,190.55	40,135.23	+ 0° 03' 47"

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

PLANE AZIMUTH HAS BEEN COMPUTED BY THE GEODETIC FORMULA, REFLECTING THE SECOND TERM.			
TO STATION OR OBJECT	GEODETIC AZIMUTH <i>(From south)</i> 0 1 2	PLANE AZIMUTH <i>(From south)</i> 0 1 2	CODE

QG 164

QG 164

QG 165

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

# HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1166  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

## ADJUSTED HORIZONTAL CONTROL DATA

Form 526  
(11-8-65)

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

### RECOVERY NOTE, TRIANGULATION STATION

Honolulu, INTERSECTION

NAME OF STATION: Royal Hawaiian Hotel, central tower  
ESTABLISHED BY: L.G.S. YEAR: 1927 STATE: Hawaii  
RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Honolulu

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

Station was recovered. It is a ball-shaped, open-windowed cupola, with a cross mounted on it. It comprises the highest part of the Royal Hawaiian Hotel, a pink colored building, in Waikiki.

### RECOVERY NOTE, TRIANGULATION STATION

Honolulu, INTERSECTION

NAME OF STATION: ROYAL HAWAIIAN HOTEL CENTER TOWER  
ESTABLISHED BY: L. G. S. YEAR: 1927 STATE: Hawaii BENCH MARK(S) ALSO ☐  
RECOVERED BY: Carl A. Annis YEAR: 1969 COUNTY: Honolulu  
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:

Intersection station recovered in good condition as described by D. M. Whipp in 1965 except that station name has been changed from "Royal Hawaiian Hotel, central tower" to that listed above.

R

R

NAME OF STATION: HONOLULU ROYAL HAWAIIAN C TWR

STATE: HAWAII

YEAR: 1927

THIRD

-ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 16' 50.26160	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 49 54.27467		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	Bearing Angle
HI 3	5103	557,286.51	41,425.03	+ 0 03' 40"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 166





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

# HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1168  
HAWAII  
LATITUDE 21° 00' TO 21° 30'  
LONGITUDE 157° 30' TO 158° 00'  
DIAGRAM NF 4-11 OAHU

## DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: HONOLULU WAIKIKI SHORE APT SE FLAGPOLE

CHIEF OF PARTY: Carl A, Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

The station is the southeast one of two flagpoles on top of a 16-floor building located at 2161 Kalia Road in Waikiki. The flagpole intersected was the one flying the state flag.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU WAIKIKI SH APT SE FP

STATE: HAWAII

YEAR: 1969

THIRD

-ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 16' 52.55364	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 50 09.93010		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ FOR $\Delta$ $\theta$ 1 ANGLE *
HI 3	5103	555,805.65	41,654.74	+ 0° 03' 34"

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

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

FORM C&GS-525b (12-68)

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

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1169  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

(11-8-55) U. S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY  
RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: Honolulu, Kaiser Hotel, T.V. Station KHVH Tower  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: H.J.S. YEAR: 1961 COUNTY: Honolulu

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

It is the structural steel radio mast painted  
in alternate red and white section located atop the Hilton Hawaiian Village Hotel at  
Waikiki Beach.

Form 526  
(11-8-55) U. S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY  
RECOVERY NOTE, TRIANGULATION STATION  
INTERSECTION

R

NAME OF STATION: Honolulu, Kaiser Hotel, T.V. Station KHVH, Tower  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

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

Station  
was recovered in good condition. It is a 3-legged, skeleton steel  
tower, painted alternate red and white, mounted on the roof of the  
Hawaiian Village Hotel in Waikiki. Top of tower is 365 feet above  
sea level.

(C.A. Annis, 1969)--Station recovered in good condition as described.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU KAISER HOTEL KHVH TWR  
STATE: HAWAII YEAR: 1957 THIRD ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 17' 05.94730	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 50 23.55535		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ or ANGLE °
HI 3	5103	554,515.68	43,004.82	+ 0° 03' 29"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 165



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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1171  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### ADJUSTED HORIZONTAL CONTROL DATA

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY  
PUBLISHED 1978

#### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Honolulu, Ilikai Hotel, cupola  
YEAR: 1964 STATE: Hawaii COUNTY: Honolulu

CHIEF OF PARTY: D.G. Rushford

Description, including sketch of object: Station is the large cupola on the flat roof of the restaurant on top of the Ilikai Hotel. Cupola has a slightly peaked roof; the point intersected was peak of roof.  
The Ilikai Hotel is located at the northwest end of the Waikiki District, at the east side of the Ala Wai Boat Harbor. It is the largest, highest, and most prominent structure in Waikiki. It consists of 3 large wings spaced evenly around a central structure, and is 29 stories high. Top of cupola is 407 feet above sea level.

#### RECOVERY NOTE, INTERSECTION STATION

NAME OF STATION: HONOLULU ILIKAI HOTEL CUPOLA  
ESTABLISHED BY: D. G. Rushford YEAR: 1964 STATE: Hawaii BENCH MARK(S) ALSO ☐  
RECOVERED BY: Carl A. Annis YEAR: 1969 COUNTY: Honolulu  
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:

Intersection station recovered in good condition as described by D. G. Rushford in 1964,

R

NAME OF STATION: HONOLULU ILIKAI HOTEL CUPOLA

STATE: HAWAII

YEAR: 1964

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 17 ' 14.86617	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 50 28.57982		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\beta$ OR $\Delta$ ANGLE °
HI 3	5103	554,035.59	43,904.24	+ 0 ° 03' 28"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 171

# HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1172  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

U. S. COAST AND GEODETIC SURVEY  
Form 555 D

## DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Honolulu, Radio YEAR: 1963 STATE: Hawaii COUNTY: Honolulu  
Station KPOI, Tower  
CHIEF OF PARTY: Wilbur R. Porter

Description, including sketch of object: The station is the 3-legged, skeleton steel tower, painted in alternate red and white sections, the top of which is 410 feet above sea level. It is located along the south side of Ala Wai Boulevard, about midway between Kalakaua Avenue and Lipeepee St.  
NOTE: The old KHOM Radio Tower has been removed and the above-described tower was constructed early in 1963.

## INTERSECTION RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: HONOLULU RADIO STA KPOI TOWER  
ESTABLISHED BY: W. R. Porter YEAR: 1963 STATE: Hawaii BENCH MARK(S) ALSO ☐  
RECOVERED BY: Carl A. Annis YEAR: 1969 COUNTY: Honolulu  
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:

Intersection station recovered in good condition as described by Wilbur R. Porter in 1963.  
NOTE: This tower is no longer used by KGMB.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU RADIO STA KPOI TOWER

STATE: HAWAII YEAR: 1963 THIRD ORDER

SOURCE: 6-14543

GEODETIC LATITUDE:	21 ° 17' 27.99182	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 50 19.65629		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\phi$ OR $\Delta$ $\phi$ ANGLE "
HI 3	5103	554,882.15	45,229.46	+ 0 ° 03' 31 "

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1173  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### ADJUSTED HORIZONTAL CONTROL DATA

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY  
Form 532 b

#### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Honolulu, TV YEAR: 1963 STATE: Honolulu COUNTY: Honolulu  
Station KGMB, Tower  
CHIEF OF PARTY: Wilbur R. Porter

Description, including sketch of object: The station is the red obstruction light on the top of the 3-legged, skeleton steel structure which is painted in alternate red and white sections. It is located in Honolulu, 50 yards northeast of Kapiolani Blvd. and 200 yards southeast of Keaauomoku Street. The light is 443 feet above sea level.  
NOTE: The original KGMB-TV tower was torn down and the above-described tower constructed at the new location early in 1963.

#### RECOVERY NOTE, ~~RECOVERED~~ STATION INTERSECTION

NAME OF STATION: HONOLULU TV STA KGMB TOWER  
ESTABLISHED BY: Wilbur R. Porter YEAR: 1963 STATE: Hawaii BENCH MARK(S) ALSO ☐  
RECOVERED BY: Carl A. Annis YEAR: 1969 COUNTY: Honolulu  
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

R

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

The intersection station was recovered in good condition as described by W. R. Porter in 1963,

NAME OF STATION: HONOLULU TV STATION KGMB TOWER

STATE: HAWAII

YEAR: 1963

THIRD

-ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 17' 45.91618	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 50 35.84925		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ HOR $\Delta$ $\phi$ ANGLE °
HI 3	5103	553,349.01	47,036.47	+ 0° 03' 25"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 173

# HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1174  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY  
Form 585 D

## DESCRIPTION OF TRIANGULATION INTERSECTION STATION

Honolulu,  
NAME OF STATION: Ala Moana YEAR: 1963 STATE: Hawaii COUNTY: Honolulu  
Building, Obstruction Light  
CHIEF OF PARTY: Wilbur R. Porter

Description, including sketch of object: The red obstruction light mounted on top of a pipe at the exact center of the top of the La Ronde Restaurant, a circular, revolving structure built on the top of the Ala Moana Office Building, which is located in Honolulu on the south side of Kapiolani Blvd., just opposite the T-intersection of Keasamoku St. The light is 31 1/2 feet above sea level.

### RECOVERY NOTE, INTERSECTION STATION

NAME OF STATION: HONOLULU ALA MOANA BLDG OBSTR LIGHT  
ESTABLISHED BY: Wilbur R. Porter YEAR: 1963 STATE: Hawaii BENCH MARK(S) ALSO ☐  
RECOVERED BY: Carl A. Annis YEAR: 1969 COUNTY: Honolulu  
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:

Intersection station recovered in good condition as described by Wilbur R. Porter in 1963.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU ALA MOANA BLDG OBS LT

STATE: HAWAII

YEAR: 1969

THIRD

-ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 17' 45.49469	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 50 44.55004		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ G1 ANGLE *
HI 3	5103	552,526.25	46,993.13	+ 0 ° 03' 22 "

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE § 10R Δ G1 FORMULA NEGLECTING THE SECOND TERM.

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



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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1175  
HAWAII  
LATITUDE 21° 00' TO 21° 30'  
LONGITUDE 157° 30' TO 158° 00'  
DIAGRAM NF 4-11 OAHU

### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: HONOLULU 1350 ALA MOANA APT ANTENNA

CHIEF OF PARTY: Carl A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

The station is the base of the TV antenna. The building is located at 1350 Ala Moana Street in Honolulu, and it is 33 floors high.

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU 1350 ALA MOANA APT ANT

STATE: HAWAII

YEAR: 1969

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 17' 41.56829	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 02.97658		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ FOR $\Delta$ $\theta$ ANGLE *
HI-3	5103	550,784.08	46,635.64	+ 0° 03' 15"

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

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

FORM C&GS-525b (12-68)

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

QG 175

# HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1176  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526  
(11-8-55)

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

Honolulu T.V. Station  
NAME OF STATION: KHVH Tower  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: H.J.S. YEAR: 1961 COUNTY: Honolulu

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

It is the tall structural steel tower painted in alternate red - white sections which is located on the north side of Ala Moana Blvd just east of T.V. Station KONA tower. This tower is now used by T.V. Station KHVH instead of station KULA.

Form 526  
(11-8-55)

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

Honolulu, TV Station KHVH Tower  
NAME OF STATION: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Honolulu

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

Station was recovered. It is a skeleton steel tower about 350 feet high and painted alternate red and white. Located along northeast side of Ala Moana Blvd., behind the KHVH Studio, about 200 yards southeast of the KONA TV tower.

(C.A.Annis,1969)--Station recovered in good condition as described.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU TV STA KHVH TOWER

STATE: HAWAII

YEAR: 1957

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 17'44".09508	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 08.41412		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\pm$ FOR $\Delta$ $\pm$ ANGLE *
HI 3	5103	550,269.67	46,849.75	+ 0° 03' 13"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1177  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

### ADJUSTED HORIZONTAL CONTROL DATA

Form 528  
(11-8-55)

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

Honolulu T.V. Station

NAME OF STATION: KONA, Tower  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: H.J.S. YEAR: 1961 COUNTY: Honolulu

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

It is the tall structural steel, red and white painted T.V. tower on the north side of Ala Moana Blvd just west of T.V. station KHVH tower.

Form 528  
(11-8-55)

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

NAME OF STATION: Honolulu, TV Station KONA, Tower  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Honolulu

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

Station was recovered. It is a 3-legged, skeleton steel tower, about 350 feet tall and painted alternate red and white. Located opposite Ala Moana Park, about 150 yards northeast of Ala Moana Blvd., 425 yards east of Kewalo Basin and 200 yards northwest of the KULA TV tower.

(C.A. Annis, 1969)--Station recovered in good condition as described.

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

COM-DC 34314

NAME OF STATION: HONOLULU TV STATION KONA TOWER

STATE: HAWAII

YEAR: 1957

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 17' 46.96646	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 13.92633		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ OR $\Delta$ OR ANGLE *
HI 3	5103	549,748.14	47,138.98	+ 0° 03' 11"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 177

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1177  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

### ADJUSTED HORIZONTAL CONTROL DATA

Form 526  
(11-8-55)

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

Honolulu T.V. Station

NAME OF STATION: KONA, Tower  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: H.J.S. YEAR: 1961 COUNTY: Honolulu

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

It is the tall structural steel, red and white painted T.V. tower on the north side of Ala Moana Blvd just west of T.V. station KHVH tower.

Form 526  
(11-8-55)

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

NAME OF STATION: Honolulu, TV Station KONA, Tower  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: D.M. Whipp YEAR: 1965 COUNTY: Honolulu

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

Station was recovered. It is a 3-legged, skeleton steel tower, about 350 feet tall and painted alternate red and white. Located opposite Ala Moana Park, about 150 yards northeast of Ala Moana Blvd., 425 yards east of Kewalo Basin and 200 yards northwest of the KULA TV tower.

(C.A. Annis, 1969) -- Station recovered in good condition as described.

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

COMB-DC 34514

R

R

NAME OF STATION: HONOLULU TV STATION KONA TOWER

STATE: HAWAII

YEAR: 1957

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 17 ' 46.96646	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 13.92633		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ or ANGLE *
HI 3	5103	549,748.14	47,138.98	+ 0 03 11 "

\* 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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 177

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1178  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: HONOLULU MCKINLEY H SCH ADM BLDG CUPOLA

CHIEF OF PARTY: C. A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

Located in Honolulu at the intersection of King Street and Pensacola Street. The station is the spire on the Administration Building Cupola of McKinley High School

FORM C&GS-525b (12-68)  
USCOMMA-DC 86280-P68

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

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU MCKINLEY HSCH ADM CUP

STATE: HAWAII

YEAR: 1969

THIRD

-ORDER

SOURCE: 6-14543

GEODETIC LATITUDE:	21 ° 18' 07.95710	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 03.24918		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ (HOR Δ) ANGLE °
HI 3	5103	550,755.82	49,257.86	+ 0 ° 03' 15"

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

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

QG 178



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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1180  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

### ADJUSTED HORIZONTAL CONTROL DATA

U. S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY  
(11-8-55) RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: Honolulu, Mormon Church Spire  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: H.J.S. YEAR: 1961 COUNTY: Honolulu

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

The station is the center of the white concrete tower surmounted by a filigreed metal top located on the Mormon Church at the northeast corner of the intersection of Kalakaua and South Beretania Streets in Honolulu.

Form 526  
(11-8-55) U. S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY  
RECOVERY NOTE, TRIANGULATION STATION  
INTERSECTION

NAME OF STATION: Honolulu, Mormon church, Spire  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

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

Station was identified by check angle at station KAIMUKI and recovered. Located at the intersection of Kalakaua Ave. and Beretania Street in Honolulu, at the Honolulu Stake Tabernacle Mormon church. Station is the tall, slender, white tower rising above the main tabernacle buildings. The first section of the tower is square; the second section is smaller in cross-section and is of open, concrete construction. The top section is octagonal, composed of small, glass panes, and is very slender. The spire is topped by a metal staff with 3 wrought-iron circles mounted on it. Top of spire is about 125 feet above ground.

(C.A. Annis, 1969)--Station recovered in good condition as described.

NAME OF STATION: HONOLULU MORMON CHURCH SPIRE

STATE: HAWAII

YEAR: 1957

THIRD

-ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 18' 10.53013	ELEVATION	METERS
GEODETIC LONGITUDE:	157 50 20.55844		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ OR $\Delta$ OR $\angle$ *
HI 3	5103	554,792.45	49,521.45	+ 0° 03' 31"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
	0 / 1 2	0 / 1 2	

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 180

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1181  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### HONOLULU

Central Union Church (Oahu Island, E. R. Hand, 1925).—In southeastern Oahu, well inland, midway between Punchbowl and Diamond Head, a spire, unusually tall and slender arising from a cylindrical tower which itself rests upon a square tower. Has brilliant gold ornament on top.

FD-11  
U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY  
RECOVERY NOTE, TRIANGULATION STATION

Honolulu

NAME OF STATION: Central Union Church Spire

ESTABLISHED BY: E.R.H. YEAR: 1925 STATE: Hawaii

RECOVERED BY: H.J.S. YEAR: 1961 COUNTY: Honolulu

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

The station is the unusually tall slender spire rising from a cylindrical tower which rests on a square tower at the south end of central union church. The church is on the northside of S. Beretania St. about 2 blocks east of its intersection with Kalakaua Ave.

Form 326  
(11-8-55)  
U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY  
RECOVERY NOTE, TRIANGULATION STATION

Honolulu,

NAME OF STATION: Central Union Church Spire

ESTABLISHED BY: E.R.H. YEAR: 1925 STATE: Hawaii

RECOVERED BY: W.R. Porter YEAR: 1963 COUNTY: Honolulu

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 about 1-3/4 miles airline east-southeast of the Federal Building in Honolulu and in the east angle of the intersection of S. Beretania Street and Punahou Street.

Station is the tall spire rising from the south end of the Central Union Church. The gold ball on top of the spire is 155 feet above ground. The top part of the spire is a 6-sided, tan-colored structure, rising from an 8-sided, tan-colored section, which in turn sets on top of a square, grey brick structure, the top of which is 65 feet above ground.

(C.A. Annis, 1969)--Station recovered in good condition as described.

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU CENTRAL UNION CHURCH

STATE: HAWAII

YEAR: 1925

THIRD

—ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 18' 07.26945	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 50 11.42108		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	S OR Δ or ANGLE *
HI 3	5103	555,656.83	49,193.34	+ 0 03' 34"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 181



QUAD 211573 STATION 1182  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### ADJUSTED HORIZONTAL CONTROL DATA

Located at the corner of Nehoa Street and Mott-Smith Drive, in Honolulu. The point intersected is the spire atop the bell tower.

**THIRD**

- ORDER

SOURCE: G-14543

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\phi$ (OR $\Delta \phi$ ) ANGLE $^{\circ}$
HI 3	5103	554,498.67	53,348.40	+ 0° 05' 30"

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

PLANE AZIMUTH HAS BEEN COMPUTED BY THE SQUARE OF FORMULA RECEIVING THE SECOND TERM.			
TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
	D    °    '    "	D    °    '    "	

QG 182

QG 182

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



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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1184  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

HONOLULU  
NAME OF STATION: NATIONAL CEMETERY FLAGPOLE

CHIEF OF PARTY: C.A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

#### Description, including sketch of object:

The station is the gold ball on the top of the flagpole, which is located about 200 feet northwest of the entrance gate to the National Memorial Cemetery Of The Pacific; the cemetery is in the Punchbowl Crater in Honolulu and the pole is 70 feet high.

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU NATIONAL CEMETERY FP

STATE: HAWAII

YEAR: 1969

THIRD

-ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 18' 54.06659	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 50 52.59469		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\phi$ OR $\Delta$ OR $\angle$ ANGLE *
HI 3	5103	551,758.84	53,911.27	+ 0 ° 03' 19 "

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

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

FORM C&GS-5235 (12-68)

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

QG 184

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1185  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: HONOLULU ACADEMY TOWER APT ELEV SHAFT

CHIEF OF PARTY: Carl A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

Located at the corner of Ward Avenue and Green Street in Honolulu, about one-half mile southeast of Punchbowl, a 26-floor high olive-and-white building. The point intersected is the rod atop the elevator shaft.

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU ACADEMY TWR APT SHAFT

STATE: HAWAII

YEAR: 1969

THIRD

—ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 18' 34.57314	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 02.20142		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ FOR $\Delta$ $\theta$ ANGLE °
HI 3	5103	550,852.35	51,943.49	+ 0° 03' 15"

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

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

FORM C&GS-525b (12-68)  
USCOMM-DC 26280-P68

Described by

U.S. DEPARTMENT OF COMMERCE  
COAST AND GEODETIC SURVEY

QG 185

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1186  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

(11-8-85) U. S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY  
RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: Honolulu Radio Station KIKI Tower  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: H.J.S. YEAR: 1961 COUNTY: Honolulu

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

It is the tall structural steel radio mast painted in alternate red and white sections located on the west side of Ward Street, two blocks north of Ala Moana Blvd.

Form 528 U. S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY  
(11-8-85) RECOVERY NOTE, TRIANGULATION STATION  
INTERSECTION

NAME OF STATION: Honolulu Radio Station KIKI Tower  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

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

Station was recovered. It is the 3-legged, tapering, 273-foot-high, skeleton steel structure, painted alternate red and white, and located in Honolulu on the northwest side of Ward Avenue between Pohukaina and Halekauwila Streets.

(C.A.Ammis, 1969)--Station recovered in good condition as described.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU RADIO STA KIKI TOWER

STATE: HAWAII

YEAR: 1957

THIRD

-ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 17 59.41323	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 32.46836		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	S FOR Δ S1 ANGLE *
HI 3	5103	547,993.58	48,393.26	+ 0 03 04 "

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 186

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1187  
HAWAII  
LATITUDE 21° 00' TO 21° 30'  
LONGITUDE 157° 30' TO 158° 00'  
DIAGRAM NF 4-11 OAHU

### ADJUSTED HORIZONTAL CONTROL DATA

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

#### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

Honolulu, New  
NAME OF STATION: Incinerator, Stack YEAR: 1964 STATE: Hawaii COUNTY: Honolulu  
CHIEF OF PARTY: D.G. Rushford

Description, including sketch of object: Station is the large, pale green stack at the City of Honolulu incinerator plant; located about 3/4 mile south of the Federal Building in Honolulu and 0.2 mile northwest of the entrance of Kewalo Basin, in the east angle of the intersection of Olomehane Street and Ohe Street, and about 720 feet northwest of old incinerator site. Top of stack is 150 feet above mean sea level. Point intersected was center of stack.

#### RECOVERY NOTE, ~~UNRECOVERED~~ STATION INTERSECTION

NAME OF STATION: HONOLULU NEW INCINERATOR STACK  
ESTABLISHED BY: D.G. Rushford YEAR: 1964 STATE: Hawaii BENCH MARK(S) ALSO ☐  
RECOVERED BY: Carl A. Annis YEAR: 1969 COUNTY: Honolulu  
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 intersection station was recovered in good condition as described.

NAME OF STATION: HONOLULU NEW INCINERATOR STACK

STATE: HAWAII

YEAR: 1964

THIRD

-ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 17' 48.25451	ELEVATION:	METERS
GEODETIC LONGITUDE:	157° 51' 52.16170		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ § 11 ANGLE °
HI 3	5103	546,132.29	47,265.72	+ 0° 02' 57"

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE § 10R Δ § 11 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
	0 1 2	0 1 2	

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 187

# HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1188  
HAWAII  
LATITUDE 21° 00' TO 21° 30'  
LONGITUDE 157° 30' TO 158° 00'  
DIAGRAM NF 4-11 OAHU

## DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: HONOLULU TV STA KHVH MAST

CHIEF OF PARTY: Carl A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

The intersection station is located on the tip of the southeast bank of the entrance to Honolulu Harbor at the end of South Street in the south corner of the Matson container shipping yard, being a tall pole-like structure painted alternately in red and white. A red light on top of the pole was the point intersected.

FORM CG5-525b (12-66)  
USCOM-DC 30290-P60

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

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION HONOLULU TV STA KHVH MAST

STATE HAWAII

YEAR 1969

THIRD

SOURCE: G-14543

GEODETIC LATITUDE:	21° 17' 56.10393	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 52 18.31493		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	# OR Δ # ANGLE *
HI 3	5103	543,658.47	48,055.65	+ 0° 02' 48"

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

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

QG 188

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1189  
HAWAII  
LATITUDE 21° 00' TO 21° 30'  
LONGITUDE 157° 30' TO 158° 00'  
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

### ADJUSTED HORIZONTAL CONTROL DATA

Form 526  
(11-8-55)

U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY  
RECOVERY NOTE, TRIANGULATION STATION  
Honolulu, Kewalo Basin, Radio Station

NAME OF STATION: KGU TOWER  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: H.J.S. YEAR: 1961 COUNTY: Honolulu

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

It is the tall structural steel tower, painted in alternate red - white sections, located on the west side of the entrance to Kewalo Basin.

Form 526  
(11-8-55)

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

NAME OF STATION: Honolulu, Kewalo Basin, Radio Station KGU Tower  
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii  
RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

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

Station was recovered in good condition. It is a 4-legged, tapering, skeleton-steel mast, 275 feet tall and painted alternate red and white. Located about 1 mile south of downtown Honolulu, on the northwest side of entrance to Kewalo Basin boat harbor.

(C.A. Annis, 1969)--Station recovered in good condition as described.

\* Name of chief of party should be inserted here. The officer who actually visited the station should sign his name as one of the recovery notes.  
Note:—One of these lines must be used every station recovered.

CGM-DC 34914

NAME OF STATION: HONOLULU KEWALO BASIN KGU TWR

STATE: HAWAII

YEAR: 1957

THIRD

—ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 17' 41.04865	ELEVATION:	METERS
GEODETIC LONGITUDE:	157° 51' 49.16768		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	S FOR Δ R ANGLE *
HI 3	5103	546,416.05	46,538.90	+ 0° 02' 58"

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE S FOR Δ R FORMULA NEGLECTING THE SECOND TERM.

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 189



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

# HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1190  
HAWAII  
LATITUDE 21° 00' TO 21° 30'  
LONGITUDE 157° 30' TO 158° 00'  
DIAGRAM NF 4-11 OAHU

## DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: HONOLULU BOARD OF WATER SUPPLY STACK  
CHIEF OF PARTY: Carl A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

The station is the top center of the stack, located about one block southeast of the Ala Moana School, one block west of the west edge of Kewalo Basin, along the north edge of Olomehane Street. It is about 125 feet high and is a tan stack with a black ring at the top.

FORM C&GS-325b (12-68)

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

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU BOARD WTR SUPPLY STK

STATE: HAWAII YEAR: 1969 THIRD ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 18 31.87364	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 19.72506		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ HOR $\Delta$ $\theta$ ANGLE *
HI 3	5103	549,195.63	51,669.57	+ 0° 33' 09"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
	0 1 2	0 1 2	

QG 190

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1191  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

HONOLULU, NEW CITY HALL, CUPOLA (Hawaii, O.W.S., 1931)--  
Center of highest tower of the New City Hall, situated at Punch-  
bowl and S. King Streets, Honolulu.

### RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

NAME OF STATION: Honolulu, New City Hall, Cupola  
ESTABLISHED BY: O.W.S. YEAR: 1931 STATE: Hawaii  
RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

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

Station  
was recovered.  
Located in Honolulu, at southeast side of Punchbowl Street, between  
King and Hotel Streets. A square, tan colored tower rising above the  
roof-line of the City Hall Building. The top section of the tower  
is octagonal and has a low, conical, red roof.

### RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

NAME OF STATION: HONOLULU NEW CITY HALL CUPOLA  
ESTABLISHED BY: O. W. S. YEAR: 1931 STATE: Hawaii BENCH MARK(S) ALSO ☐  
RECOVERED BY: Carl A. Armis YEAR: 1969 COUNTY: Honolulu  
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 intersection station was recovered in good condition as  
described by D. G. Rushford in 1964.

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU NEW CITY HALL CUPOLA  
STATE: HAWAII YEAR: 1931 THIRD ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 18' 30.89427	ELEVATION	METERS
GEODETIC LONGITUDE:	157 51 35.57105		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	# FOR Δ R. ANGLE *
HI 3	5103	547,697.36	51,569.40	+ 0 03 05

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 191

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1192  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 528  
(11-8-85)

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

### RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

Honolulu

NAME OF STATION: Judiciary Building, flagstaff  
ESTABLISHED BY: O.B.F. YEAR: 1909 STATE: Hawaii  
RECOVERED BY: D.G. Rushford YEAR: 1964 COUNTY: Honolulu

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 at

PUNCHBOWL and recovered.

Located in Honolulu at the Judiciary Building, on the top of the short tower on the roof of the building, along the King Street side. There is a clock in each of the 4 sides of the tower. Station is the short, white flagpole.

### RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

Honolulu

NAME OF STATION: JUDICIARY BLDG FLAGSTAFF  
ESTABLISHED BY: O. B. F. YEAR: 1909  
RECOVERED BY: Carl A. Annis YEAR: 1969  
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

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

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

The intersection station was recovered in good condition as described by D. G. Rushford in 1964.

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU JUDICIARY BLDG FS

STATE: HAWAII

YEAR: 1909

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 18 ' 31.37111	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 45.36271		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	± HOR Δ S' ANGLE *
HI 3	5103	546,771.45	51,616.70	+ 0° 03' 00"

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE ± HOR Δ S' FORMULA NEGLECTING THE SECOND TERM.

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 192

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1193  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: HONOLULU IOLANI PALACE FLAGPOLE

CHIEF OF PARTY: C.A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

The station is the flagpole on top of the center tower of the palace, located 1 block north of the intersection of Mililani street and S King street.

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU IOLANI PALACE FP

STATE: HAWAII

YEAR: 1969

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 18' 35.53745	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 41.69235		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 108 Δ OF ANGLE *
HI 3	5103	547,118.14	52,037.38	+ 0 ° 03' 01 "

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE § 108 Δ (2) FORMULA NEGLECTING THE SECOND TERM.

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

FORM CGOS-525a (12-68)

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

QG 193

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1194  
HAWAII  
LATITUDE 21° 00' TO 21° 30'  
LONGITUDE 157° 30' TO 158° 00'  
DIAGRAM NF 4-11 OAHU

### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: HONOLULU HAWAIIAN TEL CO BLDG ANTENNA

CHIEF OF PARTY: C.A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

The station is the whip antenna on the short 3 leg tower on the top of the Honolulu Hawaiian Telephone Co Building. The building is located in down town Honolulu.

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU HAWAIIAN TEL BLDG ANT

STATE: HAWAII

YEAR: 1969

THIRD

-ORDER

SOURCE: G-14543

NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21° 18' 45.11400	ELEVATION:	METERS
GEODETIC LONGITUDE:	157° 51' 42.85897		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ FOR $\Delta$ $\theta$ : ANGLE *
HI 3	5103	547,006.98	53,003.55	+ 0° 03' 01"

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

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

FORM C&GS-525b (12-68)  
USCOMA-DC 30250-P68

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

QG 194

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

# HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1195  
HAWAII  
LATITUDE 21° 00' TO 21° 30'  
LONGITUDE 157° 30' TO 158° 00'  
DIAGRAM NF 4-11 OAHU

## DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: HONOLULU CASTLE AND COOKE BLDG LIGHT

CHIEF OF PARTY: Carl A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

The intersection station is located on a black building with a red light in the top center, located at the intersection of Merchants and Bishop Streets in Honolulu. The building is 22 floors high. The point intersected is the red light.

## ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU CASTLE COOKE BLDG LT

STATE: HAWAII

YEAR: 1969

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 18' 41.65082	ELEVATION:	METERS
GEODETIC LONGITUDE:	157° 51' 54.12372		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE *
HI 3	5103	545,942.14	52,653.20	+ 0° 02' 57"

\* 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

FORM C&GS-525b (12-68)  
USCOMM-DC 36290-P68

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

QG 195

## HORIZONTAL CONTROL DATA

QUAD 211573 STATION 1196  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### DESCRIPTION OF TRIANGULATION INTERSECTION STATION

Description, including sketch of object: The red obstruction light mounted on the top of the elevator shaft structure which comprises the highest point of the First Hawaiian Bank Building, located in downtown Honolulu at S. King and Bishop Streets. The light is 254 feet above sea level, and the building is at present the highest structure in downtown Honolulu.

## R

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

Intersection station recovered in good condition as described.

### ADJUSTED HORIZONTAL CONTROL DATA

THIRD

**ORDER**

GEODETIC LATITUDE:	21°18'39.90611
GEODETIC LONGITUDE:	157 51 51.86788

ELEVATION	METERS	FEET
100	300	984
200	656	2152
300	1013	3323
400	1370	4493
500	1727	5663
600	2084	6833
700	2441	7999
800	2798	9166
900	3155	10332
1000	3512	11499
1100	3869	12665
1200	4226	13831
1300	4583	15000
1400	4940	16166
1500	5297	17332
1600	5654	18499
1700	6011	19665
1800	6368	20831
1900	6725	22000
2000	7082	23166
2100	7439	24332
2200	7796	25499
2300	8153	26665
2400	8510	27831
2500	8867	29000
2600	9224	30166
2700	9581	31332
2800	9938	32499
2900	10295	33665
3000	10652	34831
3100	11009	35999
3200	11366	37165
3300	11723	38331
3400	12080	39500
3500	12437	40666
3600	12794	41832
3700	13151	42999
3800	13508	44165
3900	13865	45331
4000	14222	46500
4100	14579	47666
4200	14936	48832
4300	15293	49999
4400	15650	51165
4500	16007	52331
4600	16364	53500
4700	16721	54666
4800	17078	55832
4900	17435	56999
5000	17792	58165
5100	18149	59331
5200	18506	60500
5300	18863	61666
5400	19220	62832
5500	19577	63999
5600	19934	65165
5700	20291	66331
5800	20648	67500
5900	21005	68666
6000	21362	69832
6100	21719	70999
6200	22076	72165
6300	22433	73331
6400	22790	74500
6500	23147	75666
6600	23504	76832
6700	23861	77999
6800	24218	79165
6900	24575	80331
7000	24932	81500
7100	25289	82666
7200	25646	83832
7300	26003	84999
7400	26360	86165
7500	26717	87331
7600	27074	88500
7700	27431	89666
7800	27788	90832
7900	28145	91999
8000	28502	93165
8100	28859	94331
8200	29216	95500
8300	29573	96666
8400	29930	97832
8500	30287	98999
8600	30644	100165
8700	31001	101331
8800	31358	102500
8900	31715	103666
9000	32072	104832
9100	32429	105999
9200	32786	107165
9300	33143	108331
9400	33500	109500
9500	33857	110666
9600	34214	111832
9700	34571	112999
9800	34928	114165
9900	35285	115331
10000	35642	116500

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ OR $\Delta$ OR ANGLE
HI 3	5103	546,155.60	52,477.34	+ 0° 02' 57"

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

PLANE AZIMUTH HAS BEEN COMPUTED BY THE $\sin^2$ FORMULA NEGLECTING THE SECOND TERM			
TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE

QC 196

QG 196

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

## HORIZONTAL CONTROL DATA

by the  
National Ocean Survey  
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1197  
HAWAII  
LATITUDE 21° 00' TO 21° 30'  
LONGITUDE 157° 30' TO 158° 00'  
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

### HONOLULU

Aloha Tower (Oahu Island, E. R. Hand, 1925; J. H. Peters, 1928).—In Honolulu, at Pier 10, the great square tower, rising 190 feet above sea level, and surmounted by a 40-foot staff. Tower has light, time ball, and four clock faces.

### RECOVERY NOTE, TRIANGULATION STATION

Honolulu,  
NAME OF STATION: Aloha Tower  
ESTABLISHED BY: E.R.H. YEAR: 1925 STATE: Hawaii BENCH MARK(S) ALSO ☐  
RECOVERED BY: C.A.A. YEAR: 1969 COUNTY: Honolulu  
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 as described.

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

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU ALOHA TOWER

STATE: HAWAII

YEAR: 1925

THIRD

-ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 18' 36.75639	ELEVATION:	METERS
GEODETIC LONGITUDE:	157° 52' 07.42511		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	S OR Δ * ANGLE *
HI 3	5103	544,684.84	52,158.29	+ 0° 02' 52"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 197



QUAD 211573 STATION 1198  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

HONOLULU, HAWAIIAN ELECTRIC COMPANY, NORTHEAST STACK (Hawaii, H.O.F., 1955)--The NE one of twin stacks of the Hawaiian Electric Company is located in downtown Honolulu, on Ala Moana Boulevard, between Bishop and Richard Streets, opposite pier 7, and on the SW edge of the roof of the N one of two power plants. The 40-ft. steel stack is mounted on the 110-ft. building, making the entire height 150 ft. above ground level.

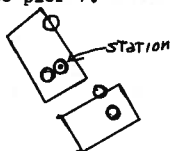
Form 526  
(11-8-68)

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

NAME OF STATION: Honolulu, Hawaiian Electric Co., N.E. Stack  
ESTABLISHED BY: H.O.F. YEAR: 1955 STATE: Hawaii  
RECOVERED BY: \*D.G. Rushford YEAR: 1964 COUNTY: Honolulu

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

Station was recovered. It is the mauka one of the two stacks on the southeast part of the roof of the northerly one of the two power plant buildings. Located at the Hawaiian Electric Co. power plant in downtown Honolulu, on Ala Moana Blvd., opposite pier 7.



\* 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.

COMM-DC 34314

### ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU HAWAII ELEC NE STK

STATE: HAWAII

YEAR: 1955

THIRD

-080F8

**SOURCE:** G-10858

GEODETIC LATITUDE:	21°18'33.277	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 52 00.095		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ FOR $\Delta$ OR $\angle$
HI 3	5103	545,378.24	51,807.80	+ 0° 02' 54"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
	0 1 2	0 1 2	

## HORIZONTAL CONTROL DATA

QUAD 211573 STATION 1199  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

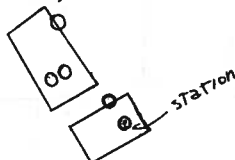
### ADJUSTED HORIZONTAL CONTROL DATA

## R

NAME OF STATION: HONOLULU HAWAII ELEC SE STACK  
STATE: HAWAII YEAR: 1955 THIRD ORDER

SOURCE: G-10858

GEODETIC LATITUDE:	21° 18' 31.526	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 57.808		FEET



Comm-DC 34314

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ FOR $\Delta$ & ANGLE $^{\circ}$
HI 3	5103	545,594.64	51,631.31	+ 0° 02' 55"

\* PLANE AZIMUTH HAS BEEN COMPUTED BY THE  $\theta = \arctan \frac{a}{b}$  FORMULA NEGLECTING THE SECOND TERM

NOTE: RESULTS HAVE BEEN COMPUTED BY THE STORE OF FORMULAS REFLECTING THE BELOW TERM.			
TO STATION OR OBJECT	GEODETTIC AZIMUTH (From south) ° ' "	PLANE AZIMUTH * (From south) ° ' "	CODE

QG 199

QG 199

## HORIZONTAL CONTROL DATA

QUAD 211573 STATION 1200  
HAWAII  
LATITUDE 21 ° 00' TO 21 ° 30'  
LONGITUDE 157 ° 30' TO 158 ° 00'  
DIAGRAM NF 4-11 OAHU

### ADJUSTED HORIZONTAL CONTROL DATA

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

NAME OF STATION: HONOLULU HAWAII ELEC SW STACK

YEAR: 1955

THIRD

-ORDER-

SOURCE: G-10858

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	$\theta$ OR $\Delta$ OR ANGLE
HI 3	5103	545,347.15	51,789.11	+ 0° 02' 54"

<sup>b</sup> PLANE AZIMUTH HAS BEEN COMPUTED BY THE  $\theta \approx \Delta \alpha$  FORMULA NEGLECTING THE SECOND TERM.

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

QG 200

\*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.

Comm-DC 34314

QG 200