

QG 201

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1202
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

HONOLULU, HAWAIIAN ELECTRIC COMPANY, NORTHWEST STACK (Hawaii, H.O.F., 1955)--The NW stack 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 N corner of the roof of the NW 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.

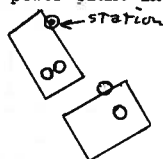
Form 528
(11-8-65)

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

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

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

Station was recovered. It is the most northerly one of the 5 stacks at the power plant and is on the north corner of the north building of the two. Located at the Hawaiian Electric Co. power plant in downtown Honolulu, on Ala Moana Blvd., opposite pier 7.



(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 34214

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU HAWAII ELEC NW STACK

STATE: HAWAII

YEAR: 1955

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 18' 34.70478	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 52 00.25620		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ or ANGLE *
HI 3	5103	545,362.88	51,951.85	+ 0° 02' 54"

* 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 202

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 1203
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: HAWAIIAN GRAIN CORP ELEV

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

Description, including sketch of object:

The intersection is located on a large elevator with 16 round bins, and with one high shaft on the north end and a smaller shed on the south end. The elevator is located at 701 North Nimitz Highway in Honolulu. The point intersected is the south end of the small shed.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU HAWAIIAN GRAIN ELEV

STATE: HAWAII

YEAR: 1969

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 18 ' 53.79370	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 52 19.73503		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE *
HI 3	5103	543,519.09	53,876.38	+ 0 02 47 *

* 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-325 (12-68)
USCOMMA-DC 38290-P89

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

QG 203

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 1204
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 ZEN BUDDHIST MISSION CENTER TOWER

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

Description, including sketch of object:

The station is the top of the spire on the tallest and center tower of the Honolulu Zen Buddhist Mission of Hawaii and Bonsai Garden. It is located at 1708 Nuuanu Avenue in Honolulu and is about 100 feet high.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU BUDDHIST MISS CEN TWR

STATE: HAWAII

YEAR: 1969

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE: 21 19 17.36358	ELEVATION: METERS
GEODETIC LONGITUDE: 157 51 27.19455	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ OR ANGLE *
HI 3	5103	548,485.19	56,258.82	+ 0° 03' 07"

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

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

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 204

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 1205
HAWAII
LATITUDE 21 ° 00' TO 21 ° 30'
LONGITUDE 157 ° 30' TO 158 ° 00'
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 538
(11-8-65)

RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

Honolulu,

NAME OF STATION: American Cannery Tank
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 the silver, elevated, water tank, located at the American Can Co. plant in the Iwilei District of Honolulu. It is about 130 feet high and sets about 600 feet east from the prominent, elevated, "pineapple" tank; these two are the only elevated tanks in Honolulu.

RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

NAME OF STATION: HONOLULU, AMERICAN CANNERY WATER TANK
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.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU AMERICAN CANNERY TANK

STATE: HAWAII

YEAR: 1927

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 19' 12.56815	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 52 20.86065		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	S OR Δ S' ANGLE °
HI 3	5103	543,411.50	55,770.62	+ 0 ° 02' 47"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE S OR 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 205

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1206
HAWAII
LATITUDE 21 ° 00' TO 21 ° 30'
LONGITUDE 157 ° 30' TO 158 ° 00'
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526
(11-8-68)

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

Honolulu,
NAME OF STATION: Hawaiian Pineapple Co., tank
ESTABLISHED BY: L.G.S. YEAR: 1928 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 the large elevated tank, a replica of a pineapple, mounted atop 4 steel legs, located in the Iwilei District of Honolulu at the Dole Pineapple Company cannery.
Top of tank is about 195 feet above ground.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: HONOLULU HAWAIIAN PINEAPPLE COMPANY TANK
ESTABLISHED BY: L.G.S. YEAR: 1928 STATE: HAWAII BENCH MARK(S) ALSO ☐
RECOVERED BY: P.D.C. YEAR: 1978 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 STATION WAS RECOVERED AS DESCRIBED AND IN GOOD CONDITION.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU HAWAIIAN PINEAPPLE TK

STATE: HAWAII

YEAR: 1928

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 19' 12.52143	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 52 26.59531		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	S FOR Δ Δ: ANGLE °
HI 3	5103	542,869.29	55,765.47	+ 0° 02' 45"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From 1928)	PLANE AZIMUTH * (From 1928)	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 1207
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 KALANIHUIA APT BLDG ELEV SHAFT

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

Description, including sketch of object:

The station is the base of a short rod on the top of the elevator shaft;
the building is located at 1220 Aala street and it is 15 floors high.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU KALANIHUIA APT SHAFT

STATE: HAWAII YEAR: 1969 THIRD ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 19' 09.24810	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 51 56.05861		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ FOR $\Delta \theta$ ANGLE *
HI 3	5103	545,756.81	55,437.58	+ 0 ° 02' 56 "

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ 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
ESSA
COAST AND GEODETIC SURVEY

QG 207

MM 3844-34321

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573

STATION 1208

HAWAII

LATITUDE 21° 00' TO 21° 30'

LONGITUDE 167 8 30/ TO 168 8 00/

DIAGRAM NO. 111 - 0145

ADJUSTED HORIZONTAL CONTROL DATA

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

NAME OF STATION: HONOLULU RADIO STA KCCN MAST

STATE: HAWAII I

YEAR: 1969

THIRD

-ORDER

Located between Nimitz Highway and Dillingham Boulevard at the Kapalama Drainage Canal and at the south end of Hart Street, in Honolulu. About 140 feet high, a three-legged steel structure painted in alternate bands of red and white. The point intersected is the red light atop the mast.

SOURCE: G-14543

GEODETIC LATITUDE:	21° 19' 27.42453	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 52 46.50551		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ (OR Δ θ ANGLE)
HI 3	5103	540,985.64	57,267.71	+ 0° 02' 38"

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

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

QG 208

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

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

QG 208

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 1209
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: KAPALAMA INCIN PLANT STACK
CHIEF OF PARTY: Carl A. Annis YEAR: 1969 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

Located at Kokea and North King Streets at the Kapalama dumping area. A tan stack 141 feet high.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HONOLULU KAPALAMA INCIN STACK
STATE: HAWAII YEAR: 1969 THIRD ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 19 ' 32.42495	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 52 21.18467		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ FOR Δ ϕ ANGLE *
HI 3	5103	543,379.24	57,774.14	+ 0 02 47 "

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

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

FORM C&GS-5235 (12-68)
USCOMA-DC 38290-P68

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

QG 209

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1210
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

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: Honolulu, Board of Water Supply, Stack
ESTABLISHED BY: Terr. of Hawaii 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. Located about 1-3/4 miles northwest of the center of Honolulu, in the south angle of crossroad intersection of King and Houghtailing Streets, at the Kalihi Pumping Station of the Honolulu Board of Water Supply.
Station is a concrete stack 100 feet tall, painted green, with a black section at the top.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: Honolulu, Board of Water Supply, Stack
ESTABLISHED BY: Terr. of Hawaii 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:

Station was recovered, located about 1-3/4 miles northwest of the center of Honolulu, in the south angle of crossroad intersection at King Street and Waiakamilo Road, at the Kalihi Pumping Station of the Honolulu Board of Water Supply.

The station is a concrete stack 100 feet tall, painted green, with a black section at the top.

R

R

NAME OF STATION: HONOLULU BOARD WTR SUPPLY STK

STATE: HAWAII

YEAR: 1957

THIRD

-ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 19 51.74816	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 52 28.51866		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ ° OR Δ ° ANGLE *
HI 3	5103	542,684.29	59,723.27	+ 0 ° 02' 44"

* 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

QUAD 211573 STATION 1211
HAWAII
LATITUDE 21 ° 00' TO 21 ° 30'
LONGITUDE 157 ° 30' TO 158 ° 00'
DIAGRAM NF 4-11 OAHU

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 1212
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526
(11-8-65)

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

NAME OF STATION: Hickam AFB, Control Tower
ESTABLISHED BY: HTS 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 from Ewa Church and recovered. It is located at the center of Hickam Air Force Base, 0.65 mile east-southeast from the base Operations Building, along the north side of wide taxi-way and about 125 yards southwest from Building No. 4, which is the southernmost building in a north-south row of 7 very large, prominent, hangar-type structures.

Station is an octagonal, glass-enclosed room mounted atop 4 square, concrete legs. Roof of control tower is about 80 feet above ground. A pair of red obstruction lights are mounted on a single metal pole about 10 feet above top of roof. Point intersected was center of control tower.

Form 526
(11-8-65)

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

NAME OF STATION: Hickam A.F.B. Control Tower
ESTABLISHED BY: HTS YEAR: 1957 STATE: Hawaii
RECOVERED BY: C.A.A. YEAR: 1969 COUNTY: Honolulu

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.

R

R

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HICKAM AFB CONTROL TOWER

STATE: HAWAII

YEAR: 1957

THIRD

-ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 20' 10.07705	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 56 56.79686		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ 01 ANGLE *
HI 3	5103	517,319.92	61,558.45	+ 0° 01' 07"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 212

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 1213
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

R

NAME OF STATION: Hickam AFB, Water Tower
ESTABLISHED BY: HTS YEAR: 1957 STATE: Hawaii
RECOVERED BY: W.R. Porter 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 from

EWA CHURCH.

Located at the extreme northwest corner of Hickam Air Force Base, at the southeast side of the Hickam Elementary School, in the center of a circular driveway. Shown on USGS map as "Hickam School Tower".

Station is octagonal, concrete structure, tapering slightly, with a large external concrete rib running up each angle or corner. There are several windows scattered around sides of the tower. The tower is topped by 2 octagonal, stepped-down sections, the top one being a glassed-in observation cupola, with a red obstruction light on center of its top. There is a double door on southeast side of tower. Inside of tower there is a plate steel standpipe for water storage. The tower is building No. 1013-5A and is about 45 feet in diameter at the base, and 165 feet high.

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: Hickam AFB, Water Tower
ESTABLISHED BY: HTS YEAR: 1957 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.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: HICKAM AFB WATER TOWER

STATE: HAWAII

YEAR: 1957

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE	21 ° 20 ' 45.63055	ELEVATION:	METERS
GEODETIC LONGITUDE	157 57 53.72225		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ & ANGLE °
HI 3	5103	511,937.42	65,144.30	+ 0 ° 00 ' 46 "

* 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

QG 213

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1214
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

PEARL HARBOR WATER TANK "B" (Hawaii, E.R.H., 1925)--
In S Oahu, on E side of entrance to Pearl Harbor, a water tank,
gray, on high steel frame. Has superstructure.

RECOVERY NOTE, TRIANGULATION STATION

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 836
(Rev. Feb. 1968)
NAME OF STATION: PEARL HARBOR WATER TANK "B"
ESTABLISHED BY: E.R.H. YEAR: 1925 STATE: Hawaii
RECOVERED BY: J.L.H. YEAR: 1956 COUNTY: Honolulu

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

Station is inside PEARL HARBOR NAVY BASE, on the south
side of Avenue 'D' on South side of building 64. It is
on orange and white checked water tank with superstructure
(house). Radio Mast on top of house.

RECOVERY NOTE, TRIANGULATION STATION INTERSECTION

NAME OF STATION: Pearl Harbor Water Tank "B"
ESTABLISHED BY: E.R.H. YEAR: 1925 STATE: Hawaii
RECOVERED BY: W.R. Porter YEAR: 1963 COUNTY: Honolulu

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

Station was recovered. It is on the Pearl Harbor Navy Base, in
the south angle of the intersection of Avenue "D" and 7th Avenue, at
the southwest side of building No. 64 and near the northwest end of
building No. 64A (the Navy Post Office building).
Station is large, orange and white checked, water tank mounted
atop 8 steel girder legs. There is a glass enclosed control booth on
top of the tank, with a large mast with cross-arm extending above it.
Top of control booth is about 170 feet above ground.

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

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PEARL HARBOR WATER TANK B

STATE: HAWAII

YEAR: 1925

THIRD

--ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 21' 14.78889	ELEVATION:	METERS
GEODETIC LONGITUDE:	157° 57' 26.74759		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 109 Δ §1 ANGLE °
HI 3	5103	514,486.63	68,086.99	+ 0° 00' 56"

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

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

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 1215
HAWAII
LATITUDE 21 ° 00' TO 21 ° 30'
LONGITUDE 157 ° 30' TO 158 ° 00'
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 328
(11-8-58)

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

R

NAME OF STATION: Pearl Harbor, Ford Island, Control Tower
ESTABLISHED BY: H.O.F. YEAR: 1957 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 identified by angle at SALT LAKE & EWA CHURCH Triangulation Stations, and recovered. It is a tall, enclosed tower, or standpipe, painted alternate red and white, with an octagonal, glass-enclosed, observation room mounted on top. The tower is about 195 feet high and has an external stairway running up the east side.



RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: PEARL HARBOR FORD ISLAND CONTROL TOWER
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 F. J. Tucker in 1964.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: PEARL HARBOR FORD IS CONT TWR

STATE: HAWAII

YEAR: 1957

THIRD

ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21 ° 21 ' 49.64400	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 57 51.24237		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ #1 ANGLE °
HI 3	5103	512,170.39	71,603.27	+ 0° 00' 47"

* 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

THESE DATA OBTAINED FROM ADJUSTMENT OF OCT 1971

QG 215

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

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1216
HAWAII
LATITUDE 21° 30' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: ALIAMANU HONO LULU BOARD OF WATER SUPPLY TANK

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

Description, including sketch of object: Not described.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: ALIAMANU BOARD WTR TK

STATE: HAWAII

YEAR: 1969

THIRD

-ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 21' 26.97976	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 54 56.91199		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ ϕ ANGLE *
HI 3	5103	528,649.63	69,322.75	+ 0° 01' 50"

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

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

FORM C&GS-525b (12-69)

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

QS 216

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

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1217
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: EWA AIR FORCE CALIB TOWER

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 tower, located about 1.75 miles south of the intersection of Waipio Access Road and Farrington Highway, about 1.5 miles south of the Navy dry dock, and on Waipio Peninsula. It is a 4 x 8 - foot square four-legged structure about 210 feet high bolted to a concrete pad about six inches thick, with calibration targets on top of the tower.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: EWA AIR FORCE CALIB TOWER

STATE: HAWAII

YEAR: 1969

THIRD

- ORDER

SOURCE: G-14543

GEODETIC LATITUDE:	21° 22' 20.44175	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 59 27.02906		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ ϕ ANGLE °
HI 3	5103	503,116.29	74,709.47	+ 0° 00' 12"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE ϕ OR Δ ϕ 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 OCEANOGRAPHY SURVEY

QG 217

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 1218
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 525
Rev. Aug. 1963

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: 171 (USN)

STATE: Hawaii

COUNTY: Honolulu

CHIEF OF PARTY: W.R. Porter

YEAR: 1960

Described by: D.R. Tomlinson

NOTE*	HEIGHT OF TELESCOPE ABOVE STATION MARK METERS.	HEIGHT OF LIGHT ABOVE STATION MARK METERS.	DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION			
			OBJECT	BEARING	DISTANCE feet meters	DIRECTION:
Desc.	Surface-station mark,		WAIPIO UKA 1873 1927			0 00 00.0
Desc.	Underground-station mark		RM 1	ESE	27.08	69 58 14
Desc.			RM 2	NNW	25.48	312 35 04

Station is located in the Pearl Harbor Shipyard, on the roof of building 171 near the south corner.

Station mark is United States Navy bronze disk, stamped 171, cemented in the top of a 5 inch square concrete post projecting 2 inches.

Reference mark 1 is a standard disk, stamped 171 USN NO 1 1960, cemented in a drill hole in the southeast edge of the building.

Reference mark 2 is a standard disk, stamped 171 USN NO 2 1960, cemented in a drill hole in the west corner of the building.

Form 525
(11-8-65)

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

R

NAME OF STATION: 171 (USN)

ESTABLISHED BY: W.R. Porter YEAR: 1960 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 as described and all marks found in good condition.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: 171 USN

STATE: HAWAII

YEAR: 1960

SECOND

ORDER

SOURCE: G-12191

GEODETIC LATITUDE:	21° 21' 15.923	ELEVATION:	1	METERS
GEODETIC LONGITUDE:	157° 57' 50.925	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ OR ANGLE
HI 3	5103	512,201.16	68,200.85	+ 0° 00' 47"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
WAIPIO UKA	155° 03' 05.4	155° 02' 18"	5103

* 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.

CGS-DC 34314

QF 234

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1220
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 526
Rev. Aug. 1968

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: 387 (USN)

STATE: Hawaii

COUNTY: Honolulu

CHIEF OF PARTY: W.R. Porter

YEAR: 1960

Described by: D.R. Tomlinson

NOTE: HEIGHT OF TELESCOPE ABOVE STATION MARK 1 METERS. HEIGHT OF LIGHT ABOVE STATION MARK METERS.

Desc.	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	
		No reference marks established.				

Station is located on the top of building 387, in the Pearl Harbor Shipyard.
The station mark is a bronze tablet fastened to the east corner of the roof
opening. The tablet is stamped 387.

Form 526
(11-8-68)

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

NAME OF STATION: 387 (USN)

ESTABLISHED BY: W.R. Porter YEAR: 1960 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 and found 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 was used on the recovery note.
NOTE.—One of these forms must be used for every station recovered.

COM-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: 387 USN

STATE: HAWAII

YEAR: 1960

SECOND

SOURCE: G-12191

GEODETIC LATITUDE: 21° 21' 01.942	ELEVATION: 3 METERS
GEODETIC LONGITUDE: 157 58 06.098	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	± 10R Δ ± 1 ANGLE *
HI-3	5103	510,767.18	66,789.87	+ 0° 00' 42"

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

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

QF 236

NOV 1979
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 1221
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT A OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD -ORDER
SOURCE: G-15809

GEODETIC LATITUDE:	21° 25' 33.32683	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 45 34.78749		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ FOR Δ ϕ ANGLE *
HI 3	5103	581,747.01	94,234.10	+ 0° 05' 16"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 001

NOV 1979
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 1222
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT AA

OBS BY NGS

STATE: HAWAII

YEAR: 1976

THIRD

-ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21° 25' 46.10499	ELEVATION:	METERS
GEODETIC LONGITUDE:	157° 45' 42.91733		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ 10R Δ ϕ 1 ANGLE °
HI 3	5103	580,976.92	95,522.25	+ 0° 05' 13"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 002

NOV 1979
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 1223
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT C OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21° 24' 46.97209	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 46 06.64861		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ θ 1 ANGLE *
HI 3	5103	578,743.59	89,552.34	+ 0° 05' 04"

* 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
THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979			
K9 003			

NOV 1979
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 1224
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT D OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD
-ORDER

SOURCE: 6-15809

GEODETIC LATITUDE:	21° 24' 27.80050	ELEVATION:	METERS
GEODETIC LONGITUDE:	157° 46' 29.67873		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 108 Δ § 1 ANGLE *
HI 3	5103	576,570.24	87,614.75	+ 0° 04' 56"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 004

NOV 1979
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 1225
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT E OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD
-ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21° 24' 23.61150	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 46 51.39802		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	# HOR Δ BI ANGLE *
HI 3	5103	574,518.48	87,189.17	+ 0° 04' 48"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE # HOR Δ BI FORMULA NEGLECTING THE SECOND TERM.

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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 005

NOV 1979
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 1226
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT G OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD -ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21°25'49.88774	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 47 45.07878		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	S IOR Δ S1 ANGLE *
HI 3	5103	569,434.61	95,887.66	+ 0° 04' 29"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 006

NOV 1979
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 1227
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT I OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD ORDER
SOURCE: G-15809

GEODETIC LATITUDE:	21° 26' 53.68340	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 49 31.50585		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ ϕ 1 ANGLE *
HI 3	5103	559,372.29	102,312.55	+ 0° 03' 50"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE ϕ OR Δ ϕ 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 AUG 1979			
K9 007			

NOV 1979
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 1228
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT J OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21° 26' 34.08649	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 48 56.61086		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ FOR Δ ϕ ANGLE *
HI 3	5103	562,671.07	100,338.98	+ 0° 04' 03"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 008

NOV 1979
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 1229
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT K

OBS BY NGS

STATE: HAWAII

YEAR: 1976

THIRD

ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21° 26' 58.92509	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 49 22.81427		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ θ ANGLE
HI 3	5103	560,192.77	102,842.36	+ 0° 03' 53"

* 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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 009

NOV 1979
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 1230
HAWAII
LATITUDE 21 ° 00' TO 21 ° 30'
LONGITUDE 157 ° 30' TO 158 ° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT L OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD
--ORDER

SOURCE: 6-15809

GEODETIC LATITUDE:	21 ° 27' 08.74659	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 49 18.12006		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	S OR Δ S1 ANGLE *
HI 3	5103	560,635.09	103,833.87	+ 0° 03' 55"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE S OR 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 AUG 1979

K9 010

NOV 1979
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 1231
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT M OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: 6-15809

GEODETIC LATITUDE:	21° 27' 14.54054	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 49 11.33091		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ FOR Δ ϕ ANGLE $^{\circ}$
HI 3	5103	561,275.75	104,419.21	+ 0° 03' 57"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH $^{\circ}$ (From south)	CODE

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 011

NOV 1979
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 1232
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT N OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD -ORDER

6-15809
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21° 25' 32.73296	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 47 46.73179		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ FOR Δ ϕ ANGLE *
HI 3	5103	569,280.68	94,156.53	+ 0° 04' 28"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 012

NOV 1979
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 1233
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT 0

OBS BY NGS

STATE: HAWAII

YEAR: 1976

THIRD

-ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21°26'11.66029	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 47 26.09021		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ (OR Δ) θ 1 ANGLE *
HI 3	5108	571,225.70	98,086.90	+ 0° 04' 36"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 513

NOV 1979
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 1234
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT P OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21° 27' 00.81656	ELEVATION:	METERS
GEODETIC LONGITUDE:	157° 49' 39.91101		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ HOR Δ α: ANGLE °
HI 3	5103	558,577.48	103,031.42	+ 0° 03' 47"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 014

NOV 1979
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 1235
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT Q OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD -ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21° 27' 08.54807	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 49 51.87480		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ § 1 ANGLE *
HI 3	5103	557,446.47	103,810.30	+ 0° 03' 42"

* 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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 015

NOV 1979
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 1236
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA ADJUSTMENT BY NGS

NAME OF STATION: AERO OBSTRUCTION LT R OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21° 27' 18.29490	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 49 58.44781		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ OR ANGLE *
HI 3	5103	556,824.50	104,793.10	+ 0° 03' 40"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
	0 1 2 3 4 5 6 7 8 9 10 11 12	0 1 2 3 4 5 6 7 8 9 10 11 12	

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 016

NOV 1979
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 1237
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: AERO OBSTRUCTION LT S OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21° 27' 23.99913	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 50 01.11386		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	S - OR Δ 41 ANGLE *
HI 3	5103	556,572.04	105,368.39	+ 0° 03' 39"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE S - OR Δ 41 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH *	CODE
THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979			
K9 017			

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
Old Hawaiian Datum

QUAD 211573 STATION 1238
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

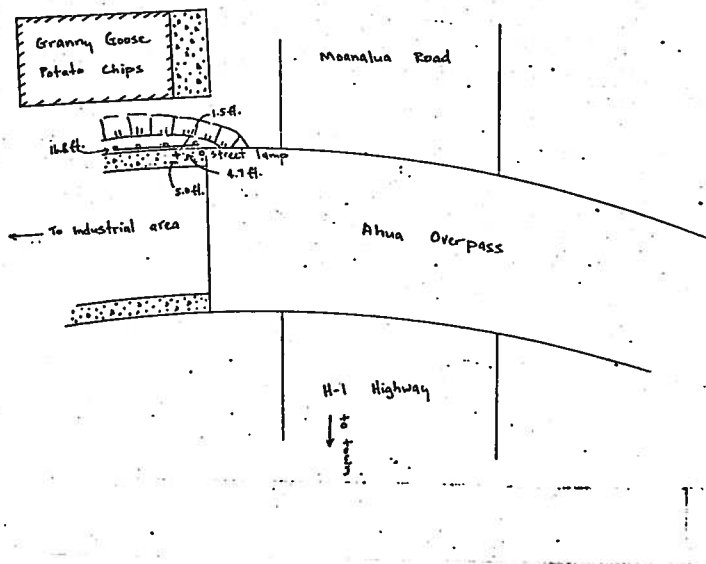
DESCRIPTION OF SURVEY MARK

NAME OF STATION: Ahua Overpass STATE: Hawaii COUNTY: Honolulu
NEAREST TOWN:
ESTABLISHED BY: State of Hawaii DATE: 1971
DESCRIBED BY: Richard M. Itoh SURFACE MARK: "+" On Concrete Sidewalk

Station is located in Moanalua District, Honolulu on the north side of the Ahua Overpass over H-1 Highway.

To reach station from the intersection of Kamehameha Highway and Middle Street go northeasterly on Middle Street for 0.5 of a mile to the Middle Street Overpass over H-1 Highway and also the Middle Street - Kawa Street Intersection. Turn left into Kawa Street and proceed 0.55 of a mile northwesterly on Kawa Street to the Ahua Overpass on the left. Continue on the Ahua Overpass over H-1 Highway for 0.15 of a mile to the station on the right.

Station mark is a "+" cut on the concrete sidewalk on the north side of the Overpass and on the west end. Ties from station are: NW 1.5 ft., to edge of sidewalk, NE 4.7 ft., to a street lamp post, SE 5.0 ft., to edge of curb, W 16.8 ft., to end of wooden guard rail.



ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: AHUA OVERPASS OBS BY WIDT
STATE: HAWAII YEAR: 1971 THIRD ORDER

SOURCE: 6-15752

GEODETIC LATITUDE:	21° 20' 50.60519	ELEVATION:	8	METERS
GEODETIC LONGITUDE:	157° 53' 44.40531	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ FOR Δ θ ANGLE °
HI 3	5103	535,505.81	65,656.68	+ 0° 02' 17"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
STATE SURVEY 1-8F	289° 40' 47.9	289° 38' 31"	5103

THESE DATA OBTAINED FROM ADJUSTMENT OF SEP 1979

RL 140

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 1239
HAWAII
LATITUDE $21^{\circ} 00'$ TO $21^{\circ} 30'$
LONGITUDE $157^{\circ} 30'$ TO $158^{\circ} 00'$
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

AIEA MILL STACK (Hawaii, E.R.H., 1925; L.G.B., 1927) --
In 8 Oahu, NE of Pearl Harbor, an iron steel-colored stack ris-
ing from a large structure (sugar mill) of same color.

Form 528
(11-8-65)

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

R

NAME OF STATION: Aiea Mill Stack
ESTABLISHED BY: E.R.H. YEAR: 1925 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. Located at the C and H Sugar Mill in Aiea. Stack is
about 150 feet tall and is now painted buff, with the top section
painted black.

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: AIEA MILL STACK
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: In City of Honolulu, Hawaii

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.

FORM C&GS-528 (9-65)
USCOMM-DC 26486-P66

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

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: AIEA MILL STACK

STATE: HAWAII

YEAR: 1925

THIRD

ORDER

SOURCE: G- 558

GEODETIC LATITUDE:	21°22'59.239	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 55 46.891		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ ϕ ANGLE *
HI 3	5103	523,921.16	78,629.35	+ 0° 01' 32"

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

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

QF 004

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 1240
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
PORTAL 816
Rev. Oct., 1955

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: Akaka
CHIEF OF PARTY: L.G.S.

STATE: Hawaii COUNTY: Honolulu
YEAR: 1928 LOCALITY:

Surface-station mark, Note,*
Underground-station mark, Note,*
Reference mark, Note,*
Reference mark, Note,*
Azimuth mark, Note,*
Witness mark, Note,*

Height of light above station mark meters.
Height of telescope above station mark meters.

Detailed description: Old mark consisting of a 2-inch pipe in ground was recovered but found to be loose. It was replaced by a standard bronze disk (Territory Survey) set in concrete in a 5-inch cast iron pipe, which was imbedded in the ground. A concrete shoulder was placed around the pipe near the surface.

DISTANCES AND DIRECTIONS TO REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND			
OBJECT	DISTANCE	DIRECTION	AZIMUTH

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
PORTAL 816
(Rev. Feb. 1945)

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: AKAKA

ESTABLISHED BY: LGS

RECOVERED BY: JLN

YEAR: 1928 STATE: Hawaii

YEAR: 1956 COUNTY: Honolulu

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

Station is on Oahu Island, SE of Honolulu in Manoa Valley. To reach station proceed on E. Manoa Drive for 1.7 miles to the Lin Yee Chung Cemetery; go through the cemetery to the small circular drive at its North end. Station is 91 feet North of circular drive. It is a type 'A' mark.

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

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

R

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: AKAKA

STATE: HAWAII

YEAR: 1928

SECOND

—ORDER

SOURCE: G- 7448

GEODETIC LATITUDE:	21° 19' 21.976	ELEVATION:	99 METERS
GEODETIC LONGITUDE:	157° 48' 14.126	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ HOR Δ RI ANGLE *
HI-3	5103	566,739.07	56,743.82	+ 0° 04' 17"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
PUU PIA	217° 51' 57.0"	217° 47' 40"	5103

QE 012

(continued on next page)

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

HORIZONTAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1240

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

AKAKA (continued)

Form 524a
(9-15-59)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: AKAKA
ESTABLISHED BY: L.G.S.
RECOVERED BY: W.R. Porter
YEAR: 1928
STATE: Hawaii
YEAR: 1963
COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK 2.52 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 PIA 1928				00 00 00.0
R.M. No. 1	NE	21.000	6.402	09 11 49
R.M. No. 2	SW	32.239	9.827	189 12 22

Station was recovered in good condition. The station mark was previously described as being a Hawaiian Territorial Survey bronze disk, however a large iron yoke which is part of the Type A signal, rests almost on the mark so it could not be examined for stamping. Two new reference marks, numbers one and two, were set. A complete description follows:

Station is located about 4 miles airline northeast of the Federal Building in Honolulu, in the Woodlawn District, just above an old, Chinese cemetery, on a tree-covered point of a narrow-topped ridge along the southeast side of Manoa Valley.

To reach station from the U.S. Post Office Sub Station No. 5 in Manoa, go northeast on E. Manoa Rd. for 0.65 mile; take left fork and go 0.1 mile to cemetery entrance. Pass through gate and go 0.15 mile to end of cemetery drive at northeast end of cemetery. Walk northeast along ridge about 20 yards to station.

Station mark is a Hawaiian Territorial Survey bronze disk, set in concrete in the top of a 5-inch, cast-iron pipe that projects 6 inches above ground and has a concrete collar 3 inches below its top. It is 45 feet northeast from the last grave at the northeast end of the cemetery. A "Type A", Hawaiian Territorial Survey signal is centered over the mark, with the concrete platform 3 feet above ground and the red and white metal target extending 6 feet above the platform.

Reference mark number one is a standard disk stamped "AKAKA NO 1 1928 1963", brased to the top of a 1-1/2-inch, iron pipe that is set in cement and projects 6 inches above ground. It is 3 feet northwest of old boulder row, at southeast edge of trail, 20 feet southwest of a lone, metal, fence post, and 1 foot higher than station mark.

Reference mark number two is a standard disk stamped "AKAKA NO 2 1928 1963", brased to the top of a 1-1/2-inch, iron pipe that is set in cement and projects 4 inches above ground. It is set in trail to station; 17 feet northeast of a large, square, iron fence post; 13 feet northeast of center of concrete, water-meter box, 21 feet northeast of small cutbank at northeast end of last grave, and 3.5 feet lower than station mark.

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

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

USCOMB-DC 87179-P69

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 1241
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

BALLOON HANGAR (Hawaii, E.R.H., 1925)--In S Oahu, on E
side of Pearl Harbor entrance, at Fort Kamehameha. A balloon
hangar standing isolated in a low grassy flat.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: BALLOON HANGAR

STATE: HAWAII

YEAR: 1925

THIRD

-ORDER

SOURCE: G- 558

GEODETIC LATITUDE:	21° 19' 24.531	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 57 09.078		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ FOR Δ θ ANGLE °
HI 3	5103	516,160.25	56,962.53	+ 0° 01' 02"

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

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

QF 005

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 1242
HAWAII
LATITUDE 21 ° 00' TO 21 ° 30'
LONGITUDE 157 ° 30' TO 158 ° 00'
DIAGRAM NF 4-11 OAHU

SEE STATION KEWALO

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: BENCH MARK B 5

STATE: HAWAII

YEAR: 1963

SECOND

-ORDER

SOURCE: C-12664

NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21 ° 17' 50.886	ELEVATION:	1.84 METERS
GEODETIC LONGITUDE:	157 51 36.793		6.0 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE *
HI 3	5103	547,585.40	47,532.50	+ 0 03' 03"

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

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

QF 559

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 1243
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
PUB. 505
Rev. Oct. 1953

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: BENCH MARK K 2
CHIEF OF PARTY: L.G.S.

STATE: Hawaii COUNTY: Honolulu
YEAR: 1928 LOCALITY:

Surface-station mark, Note,*
Underground-station mark, Note,*
Reference mark, Note,*
Reference mark, Note,*
Azimuth mark, Note,*
Witness mark, Note,*

Height of light above station mark meters.
Height of telescope above station mark meters.

Detailed description: A standard Coast and Geodetic Survey bench mark set in concrete pier, standard K 2, just inside of fence corner of golf course at southeast corner of junction of Waialae and Isenberg roads.

DISTANCES AND DIRECTIONS TO REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND			
OBJECT	DISTANCE	DIRECTION	AZIMUTH

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
PUB. 506
(Rev. Feb. 1955)

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: BENCH MARK K 2

ESTABLISHED BY: L.G.S. YEAR: 1928 STATE: Hawaii

RECOVERED BY: H.O.F. YEAR: 1955 COUNTY: Honolulu

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

The mark was recovered in good condition. A new description follows:
Near the intersection of Waialae Avenue and Kealaolu Avenue, across the avenue from Joe Fatt's Restaurant, 60 feet east of the easterly gas pumping platform of a service station, 28 feet east of the center-line of Kealaolu Avenue extended, 7 feet south of the edge of a concrete sidewalk, on the northwest edge of a triangular shaped dirt and grass plot, and 14 inches below the surface of the ground, contained in a 8-inch circular cast iron pipe, covered with a smooth cover flush with the ground. The pipe rests upon a rock cribbing surrounding the mark. A cross has been chiseled in top of the mark, partially obliterating the K.

According to the Territorial Highway Department this mark was never disturbed when new construction was being done. However, it should be used with caution.

* 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: BENCH MARK K 2

STATE: HAWAII

YEAR: 1928

SECOND

—ORDER

SOURCE: G- 7448

GEODETIC LATITUDE: 21° 16' 52.612	ELEVATION: 15.63 METERS
GEODETIC LONGITUDE: 157 47 12.202	51.3 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ OR ANGLE *
HI 3	5103	572,614.27	41,680.71	+ 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
KAIMUKI	89 28 22.8	89 23 44	5103

QE 013

(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 211573

STATION 1243

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

BENCH MARK K 2 (continued)

FORM 526a
(8-18-59)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: BENCH MARK K 2
ESTABLISHED BY: LG.S. YEAR: 1928 STATE: Hawaii
RECOVERED BY: W.R. Porter YEAR: 1963 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK		METERS		HEIGHT OF LIGHT ABOVE STATION MARK		METERS	
DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION							
OBJECT	BEARING	DISTANCE		DIRECTION			
		FEET	METERS	° ' "			
KAIMUKI 1872-1927				00	00	00.0	
R.M. No. 2	WNW	15.198	4.633	37	22	50	
R.M. No. 1	ENE	58.131	17.719	179	10	12	

Station mark was recovered and found in good condition. Two new reference marks, numbers one and two, were established. A complete description follows:

Station is located about 5-1/4 miles airline east-southeast of the Federal Building in Honolulu and 1-3/4 miles west of Aina Haina; along the south side of Kalanianaʻole Highway, at the northwest tip of the Waiʻalae Golf Course, in a small, triangle-shaped, grassy plot at the northeast corner of a Flying "A" Service Station lot, and in the west angle of the intersection of Kalanianaʻole Highway and Kealaolu Ave.

To reach station from the traffic light at the intersection of West Hind Drive and Kalanianaʻole Highway in Aina Haina, go west on Kalanianaʻole Highway for 1.9 miles to station on left.

Station mark is a standard bench mark disk, stamped "K2", set in the top of a concrete monument about 1 foot below ground level. Access to the mark is had by removing a smooth-topped, 8-inch-diameter, iron hand-hole cover from the top of an iron casing which is flush with ground level. The mark is 45 feet east of easternmost gas pump of the service station, 29 feet northeast of the extended center line of Kealaolu Ave, 28 feet west-southwest of street signpost "KEALAOLU AVE-WAILAE AVE", 15 feet south of south curb line of Waiʻalae Ave, 6 feet west-southwest of the center of a large manhole cover with "WATER" embossed on it.

Reference mark number one is a standard disk stamped "BM K2 NO 1 1928 1963", cemented in a drill hole in the concrete sidewalk on east side of Kealaolu Ave, 4.5 feet east-northeast of street sign "KEALAOLU AVE-KALANIANAʻOLE HWY", 7 feet east of pointed end of sidewalk, 6 inches north of edge of sidewalk, and about 1-1/2 feet higher than station mark.

Reference mark number two is a standard disk stamped "BM K2 NO 2 1928 1963", cemented in a drill hole in the sidewalk in front of the service station, 6 inches north of edge of sidewalk, 3.7 feet northwest of a metal light pole, 9-1/2 feet southwest of a power pole, 17 feet east of large manhole cover in sidewalk, and about 1-1/2 feet higher than station mark.

NOTE: A cross chiseled in the center of the disk (station), has the letter "K" partly obliterated.

*Name of chief of party should be inserted here. The officer who actually visited the station should sign and date the recovery note.

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

USCOMNAVY

1-1968

NOV 1979
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 1244
HAWAII
LATITUDE 21 ° 00' TO 21 ° 30'
LONGITUDE 157 ° 30' TO 158 ° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA ADJUSTMENT BY NGS

NAME OF STATION: CALIB SITE 1 OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21 ° 26' 09.98875	ELEVATION	1	METERS
GEODETIC LONGITUDE:	157 47 20.43846	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	S - OR Δ - 1 ANGLE *
HI 3	5103	571,759.88	97,918.95	+ 0° 04' 38"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE S - OR Δ - 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 AUG 1979

N9 018

NOV 1979
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 1245
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: CALIB SITE 2 OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21°26'26.38214	ELEVATION	0	METERS
GEODETIC LONGITUDE:	157 46 05.35832	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ OR ANGLE *
HI 3	5103	578,850.68	99,583.08	+ 0° 05' 05"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
PAPAA 2	332° 06' 01.3	332° 00' 56"	5103

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

POSITION DETERMINED BY RESECTION

K9 019

NOV 1979
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 1246
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: CALIB SITE 3 OBS BY NGS
STATE: HAWAII YEAR: 1976 THIRD -ORDER

SOURCE: G-15809

GEODETIC LATITUDE:	21° 26' 34.89682	ELEVATION:	0	METERS
GEODETIC LONGITUDE:	157 47 39.77502	SCALED		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ HOR Δ ϕ ANGLE *
HI 3	5103	569,929.75	100,429.77	+ 0° 04' 31"

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

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

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 020

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1247
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 526e
(8-18-69)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: CAPE
ESTABLISHED BY: HTS YEAR: 1952 STATE: Hawaii
RECOVERED BY: W.R. Porter YEAR: 1964 COUNTY: Honolulu

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

DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION					
OBJECT	BEARING	DISTANCE		DIRECTION	
		FEET	METERS		
US MON NO 1 1952				00 00 00.0	
R.M. No. 2	S	17.715	5.400	27 38 54	
NE Corner of Beach Shack	NW	260.5		160 59 15	
Kaneche Bay, MCAS, Hawaii					
Hill Beacon 1952	NW			168 16 14	
R.M. No. 1	E	21.505	6.555	300 02 02	

Station mark was recovered in poor condition. It consisted of a 3/4-inch iron pipe, driven into sandstone bedrock under beach sand, and surrounded near the top with a mass of concrete about 1 foot deep. The sand had eroded away until all of the concrete was exposed. A check run was taken which showed that the mark was at its original location so it was re-marked. Two reference marks, numbers one and two, were established. A complete description follows:

Station is located about 2 miles north of Kailua, on Kapoho Point, where the shoreline turns from south to westerly, running towards the

mouth of Kawainui Canal.

To reach station from the traffic light at the junction of Mokapu Rd. and Kaneche Bay Dr. at the north end of Kailua, go northeast on Mokapu Rd. for 0.45 mile; take right fork and go 0.1 mile on Old Mokapu Rd.; take right fork and go 0.15 mile on Kaimalino St. to locked chain gate at end of street (key may be obtained at the Kaneche Ranch Co. office at Castle Junction). Pass through gate and keep right, on track road, for 0.15 mile to station on the point.

Station mark is a standard disk stamped "CAPE 1952 1964", set in the top of a 12-inch-square, concrete monument that projects 3 inches. It is 45 feet northwest of extreme tip of the shoreline ledge-rock, 10 feet northwest from inshore line of the bedrock, and 260.5 feet southeast of northeast corner of green beach shack.

Reference mark number one is a standard disk stamped "CAPE RM 1 1952 1964", cemented in a drill hole in bedrock, 6 feet west from water edge and about 1 foot lower than station mark.

Reference mark number two is a standard disk stamped "CAPE RM 2 1952 1964", cemented in a drill hole in bedrock, 6 feet northwest of water edge, 30 feet west of extreme tip of point, and about 1 foot lower than station.

Beach shack is a board structure with gable roof, about 18 x 24 feet, and painted dark green. It sets 55 feet northeast from water line.

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

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

USCOMMA-DC 27175-P88

(continued on next page)

NAME OF STATION: CAPE

OBS BY HTS

STATE: HAWAII

YEAR: 1952

THIRD

-ORDER

SOURCE: G-11968

GEODETIC LATITUDE:	21° 25' 38.832	ELEVATION:	METERS
GEODETIC LONGITUDE:	157° 44' 31.062		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR Δ ANGLE *
HI 3	5103	587,767.03	94,799.14	+ 0° 05' 39"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH (From south)	CODE
US MON NO 1	336° 59' 23.2	336° 53' 44"	5103

QF 203

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

CAPE (continued)

HORIZONTAL CONTROL DATA

by the
NATIONAL GEODETIC SURVEY
OLD HAWAIIAN DATUM

QUAD 211573

STATION 1247

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

FORM 326a
(9-18-69)

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

R

NAME OF STATION: CAPE
ESTABLISHED BY: HTS YEAR: 1952 STATE: Hawaii
RECOVERED BY: D.M. Whipp YEAR: 1966 COUNTY: Honolulu
Island: Oahu

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

DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION						
OBJECT	BEARING	DISTANCE		DIRECTION		
		FEET	METERS			
US MON NO. 1 1952				00	00	00.0
RM No. 3	WSW	31.086	9.476	96	18	47
Kaneohe Bay, MCAS, Hawaii Iloa						
Hill, Beacon 1952	NW			168	16	16.2
RM No. 1	E	21.506	6.555	300	02	36

Station mark and reference mark number one were recovered in good condition. Reference mark number two had been destroyed so a new reference mark, number three, was established. The green beach shack is gone and there is now a brown beach home in a slightly different location. A complete description follows:

Station is located on Kapohe Point, about 2 miles north of Kailua, where the shoreline turns from south to westerly, running towards the mouth of Kawaiunui Canal.

To reach station from the traffic light at the junction of Mokapu

Rd. and Kaneohe Bay Drive at the north end of Kailua, go northeast on Mokapu Rd. for 0.45 mile; take right fork and go 0.1 mile on Old Mokapu Rd.; take right fork and go 0.15 mile on Kaimalino St. to locked chain gate at end of street (key may be obtained at the Kaneohe Ranch Co. office at Castle Junction). Pass through gate and keep right, on track road, for 0.15 mile to station at shoreline.

Station mark is a standard disk stamped "CAPE 1952 1964", set in the top of a 12-inch-square, concrete monument projecting 1 inch from the sand. It is 45 feet northwest of extreme tip of the point, 10 feet northwest from inshore edge of the bedrock, 5 feet southeast of a rock outcrop at edge of slightly higher sand rise, and about 85 yards southeast of a brown house.

Reference mark number one is a standard disk stamped "CAPE RM 1 1952 1964", cemented in a drill hole in bedrock, 6 feet west from water edge and about 1 foot lower than station mark.

Reference mark number three is a standard disk stamped "CAPE 1952 NO 3 1966", cemented in a drill hole in a coral bedrock knob at edge of sand line, 7 feet north of water line, projecting about 8 inches above sand and at about same elevation as station.

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

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

USCGM-DC 27178-P59

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1248
HAWAII
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

CASTLE (Hawaii, H.A.P., 1932)--Station is located about 700 meters almost due W of Mokapu. It is on a small knoll at the foot of the rise to Mokapu.

Station mark is a standard disk set in concrete.

Reference mark is a standard disk set in a drill hole in a boulder.

OBJECT	DISTANCE	DIRECTION
MOKAPU	meters	0°00'00"0
Ref.Mk.	36.35	241 48
High water	37.0	240

COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: CASTLE
ESTABLISHED BY: H.A.P. YEAR: 1932 STATE: Hawaii
RECOVERED BY: W.R. Porter YEAR: 1963 COUNTY: Honolulu

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	
PAPAA 2 1932	-----1932 DISTANCE and	DIRECTION	36.35	00 00 00.0
Ref. Mk.				134 55 18
PAPAA 2 1932	-----1963 DISTANCE and	DIRECTION		00 00 00.0
R.M. No. 1		NNW	118.580 (36.143)	134 54 08

Station mark and reference mark were both recovered and found in good condition. A complete description follows:

Station is located on the Kaneohe Marine Corps Air Station, at the west side of the base of Ulupau Head, at the north end of a group of new, cement-block houses (built in late 1963), on the edge of a grassy bank about 40 feet above sea level. The bank drops down steeply to the coral bedrock shoreline just north of the station.

To reach station from the Base Administration Building (Bldg. No 215), go northeast on E Street for 0.2 mile; turn right and go east on Mokapu

Road for 0.4 mile; take left fork and go 0.9 mile on Lawrence Road; go left on Bancroft Drive for 0.25 mile; go left on Pond Road for 0.1 mile; take left fork and go north 0.1 mile to north end of loop road at west end of the north row of houses, near edge of bank, and station.

Station mark is a standard disk stamped "CASTLE 1932", set in the top of a 10-inch-square, concrete monument that projects 3 inches above ground. It is 1-1/2 feet north of an old mesh fence, 4.5 feet east of a jog in the fence line, 27.5 feet north-northwest of the northwest corner of the westernmost house in the row, and between the fence and a low, naupaka-covered point.

Reference mark number one is a standard disk, unstamped, cemented in a drill hole in the coral bedrock shore at base of the steep, grassy bank. It is 50 feet north-northeast of an old, cement-block bin setting in the base of the bank and is 32.9 feet lower than station mark.

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: CASTLE
ESTABLISHED BY: H.A.P. YEAR: 1932 STATE: Hawaii BENCH MARK(S) ALSO ☐
RECOVERED BY: C.K.T. YEAR: 1976 COUNTY: Honolulu
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: at Kaneohe Marine Corps Air Station

* 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 now 1/4 foot north of a woven wire fence line and about 22 feet north of the northwest corner of house # 2276.

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: CASTLE

STATE: HAWAII

YEAR: 1932

THIRD

ORDER

SOURCE: G- 9889

GEODETIC LATITUDE: 21° 27' 31.003	ELEVATION: 12 METERS
GEODETIC LONGITUDE: 157° 44' 29.468	SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	# FOR Δ & 1 ANGLE *
HI 3	5103	587,898.97	106,117.58	+ 0° 05' 40"

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

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
PAPAA 2	27° 13' 51.1"	27° 08' 11"	5103

QF 160

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1250
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

NAME OF STATION: COOLIDGE
ESTABLISHED BY: HTS 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:

A "Type C" signal established by the Hawaii Territorial Survey was recovered in good condition. A complete description follows:

Station is located about 1 mile southwest of the center of Kaneohe and 1/4 mile northwest of Likelike Highway, at about 284 feet elevation on the south end of a tree-covered ridge overlooking the State Hospital grounds to the west, and above a green water reservoir.

To reach station from the fire station in Kaneohe, go west on Pelaka Rd. for 0.4 mile; go left on Kapunahala Rd. for 0.1 mile; go left on Kaneke St. for 0.25 mile; go right on Kulukeoe St. for 0.2 mile to locked gate at drive to reservoir on right. Go up this road for 0.1 mile to end of road. Walk up slope about 100 yards, then go left along top of ridge about 130 yards to station.

Station is center of 2-1/2-inch pipe that projects 2 feet from the center of a 5-foot-square concrete platform flush with ground. It is 17 feet east of a jog in fence line and 25 yards south of a grove of large eucalyptus trees. A red and white, removable, metal target is set into the pipe and extends 7 feet above the platform.

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

COM-DC 343 14

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: COOLIDGE

OBS BY HTS

STATE: HAWAII

YEAR: 1957

THIRD

-ORDER

SOURCE: G-11968

GEODETIC LATITUDE:	21 ° 24' 31.321	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 48 42.581		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	§ 10R Δ § 1 ANGLE °
HI 3	5105	564,011.35	87,953.44	+ 0 ° 04' 07 "

* 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
	0 ° 1' 0 "	0 ° 1' 0 "	

QF 210