9/9/83

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 161-2396 Waimanalo, HI
161-2480 Mokuoloe, HI
161-2702 Laiemaloo, HI

Period: October 13 - November 27, 1982

HYDROGRAPHIC SHEET: H-10058

OPR: T126

Locality: East Coast, Island of Oahu, Hawaii

Plane of reference (mean lower low water): 161-2396=2.22 feet
161-2480=2.80 feet
161-2702=9.95 feet

Height of Mean High Water above Plane of Reference is 161-2396=1.4 feet
161-2480=1.7 feet
161-2702=1.7 feet

REMARKS: Recommended Zoning:

1. North of latitude 21° 31.0' Zone direct on 161-2702 Laiemaloo, HI. For J day 286-299, tide gage at 161-2702 Laiemaloo was not installed zone direct on 161-2480 Mokuoloe, HI.
2. South of 21° 31.0' to 21° 27.5' zone direct on 161-2480 Mokuoloe, HI.
3. South of 21°27.5'
   a) East of longitude 157°45.5' zone direct on 161-2396 Wiamanalo, HI.
   b) West of 157°45.5' zone direct on 161-2480 Mokuoloe, HI.

*This supersedes form 712 dated August 4, 1983.

Chief, Datums and Information Branch

Field Tide Note

OPR-T126-FA-82

Island of Oahu, Hawaiian Islands

Field tide reduction of sounding was based on predicted tides from Honolulu, Oahu. Correctors were interpolated by the Hydroplot system using program AM 500. All times of both predicted and recorded tides were based on Universal Coordinated Time (UCT). Predicted tides were acceptable for hydrography with no discrepancies attributable to tide errors.

Honolulu Standard Gauge (161-2340)

The permanent tide station at Honolulu, Oahu (161-2340) was the primary controlling gauge for project OPR-T126-FA-82, Island of Oahu. Levels were run by FAIRWEATHER personnel at the beginning and end of the project. Opening levels run on 7 October 1982 (JD 280) to four existing benchmarks were closed to 4.3 mm over the entire run of .49 km. Closing levels, run on 23 November 1982 (JD 327) to the same four benchmarks were closed to 5.0 mm over the entire run of .50 km. No changes in elevation were observed during hydrographic operations. Tide marigrams from station 161-2340 (Honolulu) will be transmitted by the local tide observer in charge of this station.

Mokuoloe Island Subordinate Gauge (161-2480)

The permanent tide station located on Mokuoloe Island (161-2480) was used for controlling the entire survey area along the northeast coast of Oahu. Opening and closing levels were run by FAIRWEATHER personnel to three existing benchmarks at the beginning and end of the project. Opening levels run on 8 October 1982 (JD 281) were closed to 2.1 mm over a run of .49 km. Closing levels, run on 24 November 1982 (JD 328) were closed to 2.0 mm over a run of .50 km. No changes in elevation were observed during hydrographic operations. Tide marigrams will be transmitted by the local tide observer in charge of this station.

Laiemaloo Subordinate Gauge (161-2702)

Tide station Laiemaloo (161-2702) was used to control survey operations run between Kaoio Point and longitude 158°00.0'W along the northeast coast of Oahu. A 1-10 foot scale Metercraft bubbler tide gauge (#7601-7536-34) was installed on 25 October 1982 (JD 298). Two gauge problems developed (see Tide Gauge Problems section) which were field corrected. The gauge then functioned properly until removal on 22 November 1982 (JD 326). Opening and closing levels were run by FAIRWEATHER personnel to five existing benchmarks. Opening levels, run on 26 October 1982 (JD 299) closed to 7 mm over a run of 3.0 km. Closing levels, run on 22 November 1982 (JD 326) closed to 4 mm over the 3.0 km run. An apparent shift in the tide gauge orifice of 4 mm downward was discovered after the running of the closing levels. The orifice movement is a result of the heavy surf conditions in this area. The apparent orifice movement of 4 mm downward is not significant enough that correctors be applied to tide data from this station.

Waimanalo Subordinate Gauge (161-2396)

Tide station Waimanalo (161-2396) was used to control survey operations from the southern limit of hydrography northward to Makapu Point on the northeast coast of Oahu. Investigation of the historical tide station site proved that all the historical benchmarks had been destroyed by recent construction and renovations. A new tide station site, and five new benchmarks were established on the University of Hawaii pier located approximately one mile south of the historical site. Five benchmarks stamped 2376A - 2376E consecutively, were set in the northern cement curb along the length of the pier, running shoreward from the tide gauge location. State survey mark U-11, located at the western limit of the pier, was included in the leveling runs, opening levels, run on 12 October 1982 (JD 285) to all six marks, closed to 1.3 mm over a run of .65 km. Closing levels, run on 24 November 1982 (JD 328) to the same marks, closed to 1.8 mm over a .65 km run. No changes in elevation were seen during hydrographic operations. A 1-10 foot scale Metercraft bubbler gauge (#7601-7536-31) was installed on 11 October 1982 (JD 284) and ran well until removed on 29 November 1982 (JD 333).

Gauge Problems

Laiemaloo Tide Gauge (161-2702)

On 27 October 1982 (JD 300) tide gauge #7601-7536-34 located at tide station Laiemaloo (161-2702) began to malfunction. An interrupted pen trace, caused by corroded pen pivots on the recording mechanism of the gauge, was randomly seen between Julian dates 300 to 312. All periods of lost tidal trace were recoverable by interpolation of the marigram and no hydrography was lost as a result of this malfunction.

Table 1, Periods of Interrupted Tidal Trace, is a listing by Julian dates of periods in which no tidal trace was recorded on the marigram.

On 06 November 1982 (JD 310), gauge #7601-7536-34 located at station Laiemaloo (161-2702) was found to be jammed. No tidal record was gathered between 0100, 4 November 1982 (JD 308) to 0200, 6 November 1982 (JD 310). No hydrography, controlled by this gauge, was run during this period.

Table 1

Times of Lost Tidal Record

Laiemaloo Tide Station (161-2702)

Julian Day	Times (+10)
300	1928-1936
300	1939-2155
301	0945-0950
301	1533-1600
301	1945-2250
301	2315-2340
302	0650-0725
302	0825-0905
302/303	2110-0135
303	0720-1345
303/304	2025-0120
304	0225-0305

Table 1 continued

Julian Day	Times (+10)
304	0631-0708
304	0840-0850
304	0930-1450
304/305	2345-0000
305	1017-1235
307	1058-1735
307	2117-2143
307	2215-2232
312	2020-2035

Miscellaneous

All tidal records were based on a +10 time meridan corresponding to Universal Coordinated Time (UCT).

On 23 November 1982 (JD 327) Hurricane Iwa struck the islands of Oahu, Kauai, and Niihau. A tidal surge of 3-5 feet was predicted for the area on and around these islands. Although the gauge located at station Laiemaloo (161-2702) was removed prior to the hurricane and station Wiamanalo (161-2376) showed no sign of tidal surge, a close inspection of data from both permanent gauge sites should be made on this date to see if either location experienced a tidal surge.

Because the tidal records from the permanent gauge sites will not be transmitted until a later date by the local tide observers, a comparison between adjacent tide gauges could not be made, and should be performed at a later date when all tidal records are available. A recommendation for zoning and time correctors could not be made for the same reasons.

For station Laiemaloo gauge, zero was equivalent to 0.880 feet (0.268 meters) on the adjacent staff. Gauge zero for station Wiamanalo was equivalent to 1.420 feet (-0.433 meters) on the adjacent tide staff. Gauge to staff comparisons for both permenent sites should be taken from historical data because records from both sites were unavailable for determination.

The gauge at station Laiemaloo (161-2702) was only under operation for a period of 28 days. Its removal was necessitated by the approach of Hurricane Iwa.

Times of hydrography abstracts are appended to this field note.

Submitted by:

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

ABSTRACT OF TIME OF HYDROGRAPHY AND/OR FIELD EDIT

Date 2 DEC. 82

Project No. OPR-T126-FA-82

Vessel 2025

Date of Survey 13 OCT. 82 - 27 NOV. 82

Registry No. H-10058

Field Sheet No. FA10-8-82

Field Sheet is Complete/~~Incomplete~~

J.D.	Time (Z)	J.D.	Time (Z)
286	172120	286	210140
287	164600	287	235245
288	165640	288	231630
290	195230	290	225300
293	233449	294	011559
306	002557	306	003359
323	181720	324	004118
329	220659	—	—

J.D.	Time (Z)	J.D.	Time (Z)

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ABSTRACT OF TIME OF HYDROGRAPHY AND/OR FIELD EDIT

Date 2 DEC. 82

Project No. OPR-T126-FA-82

Vessel 2024

Date of Survey 13OCT82 – 27NOV.82

Field Sheet No. FA 10-8-82

Registry No. H-10058

Field Sheet is Complete/~~Incomplete~~

J.D.	Time (Z)		J.D.	Time (Z)
286	173656	–	286	230154
287	171752	–	288	000405
288	172804	–	288	191554
291	194556	–	291	201413
294	192858	–	294	195601
304	225733	–	304	232256
306	002800	–	—	—
307	011100	–	307	021330

J.D.	Time (Z)		J.D.	Time (Z)

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Field Sheet is Complete/~~Incomplete~~

J.D.	Time (Z)		J.D.	Time (Z)
289	200536	–	290	012941
329	233811	–	330	000743
331	214557	–	331	215051

J.D.	Time (Z)		J.D.	Time (Z)