

DATE: May 21, 1982

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): 161-7737 Upolu Point, HI

Period: October 29 - December 3, 1981

HYDROGRAPHIC SHEET: H-9983

OPR: T126

Locality: Northeast Coast, Island of Hawaii

Plane of reference (mean lower low water): 3.8 ft.

Height of Mean High Water above Plane of Reference is 1.6 ft.

REMARKS: Recommended Zoning:

1. East of longitude $155^{\circ}35'$ apply ± 20 minute time correction and $\times 1.22$ range ratio.
2. West of $155^{\circ}35'$, zone direct.


Chief, Tidal Datums and Information Branch

Field tide reduction of soundings was based on predicted tides from Honolulu, Hawaii, corrected to Hilo, Hawaii, and were interpolated by PDP 8/e computer utilizing AM 500 (version dated 11/10/72). All times of both predicted and recorded tides are GMT.

In addition to the permanent Hilo, Hawaii tide gage (161-7760) used for the project, one Metercraft bubbler tide gage was installed in the project area. Its location and period of operation are as follows:

<u>Site</u>	<u>Location</u>	<u>Period</u>
Upolu Point	20°15.2' N 155°53.4' W	65 days* (28 September - 4 December)

*(see discussion in next section)

UPOLU POINT (161-7737)

Gage (S/N 7601-753634) was installed on September 26 and began operation on September 28, 1981.

The first staff support structure was knocked out by high surf on October 7, 1981 at approximately 1700 GMT (Although data after 0600Z on 10/7 was not retrievable). A much heavier, stronger structure was installed on October 10, 1981 and data collection resumed at 0206 GMT on that date. This does not seriously affect the data because, as per section 5.8.2. of Project Instructions OPR-T126-RA-81, the hydrography run on these days was ship hydro done in greater than 100 fathoms (with the exception of 4 soundings, none of which was shoaler than 77 fathoms). This new staff and orifice support structure withstood occasional high surf batterings which completely inundated the entire structure.

It should be noted here that, when the gage and staff support structure were removed on December 4, 1981, the U-bolt which secured the orifice to the

angle iron support was missing. It is not known when the U-bolt broke off. The next point of attachment to the support was roughly 20 inches higher along the tubing. (See illustration on next page). This would have permitted movement of the orifice with the surge. The motion would tend to dampen the wave action, resulting in a tide height lower than it should be. An inspection of the marigrams yields no apparent evidence of the degree of this motion.

Similarly, an inspection of the gage/staff difference shows no differences indicative of significant orifice movement.

During the period of September 28 to October 7, the original staff read 13.2 ft. greater than the marigram. During the remaining period of October 10 through December 4, the new staff read 7.6 ft. greater than the marigram. The marigram speed of the gage proved to be somewhat erratic, calling for the tide observer to almost continually reset the chart at each observation. Additionally, the observer tried to adjust the speed of the marigram drive on October 31, Nov. 2, Nov. 3, and Nov. 7 with little or no success.

HILO (161-7760)

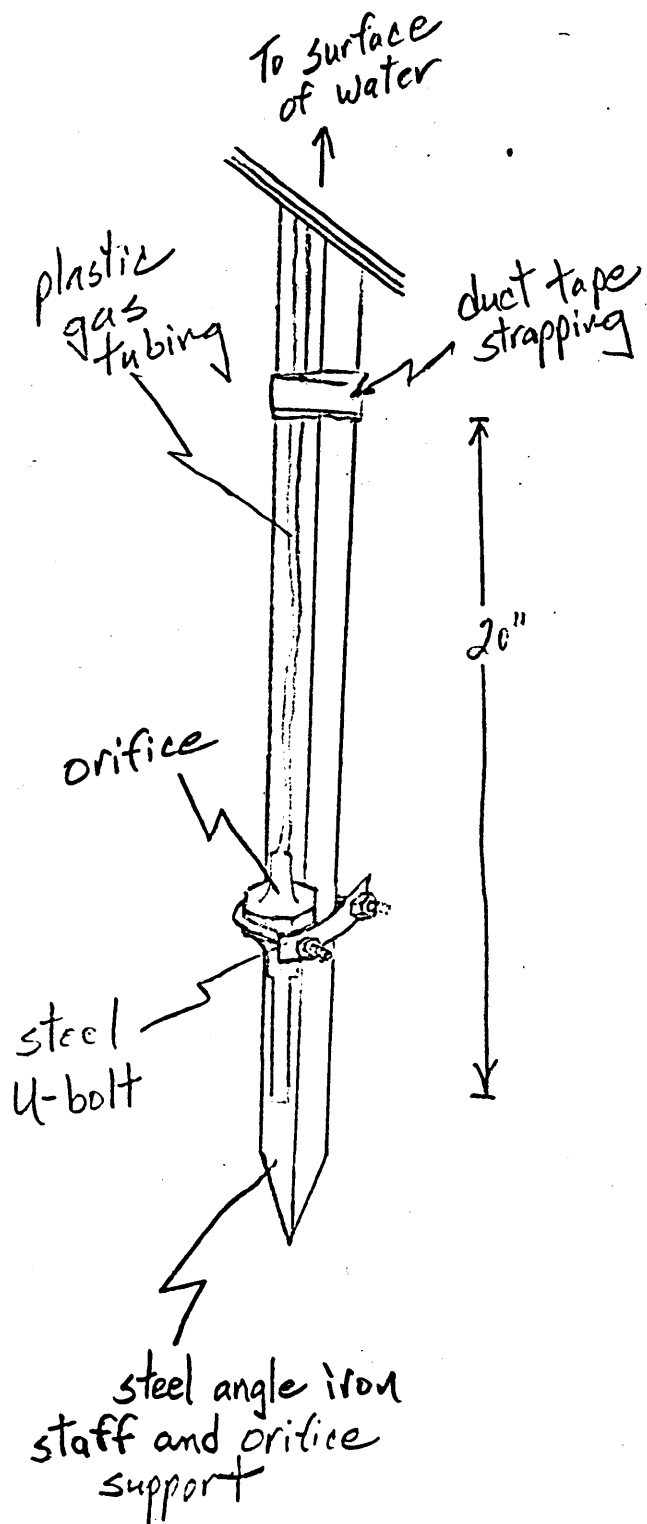
This gage (S/N 7601 A1469M11) is a primary gage installed and maintained by the Pacific Tides Party. It is permanently installed at $19^{\circ}44.0' N$, $155^{\circ}3.5' W$. Levels were run before and after the project but, aside from that, there was no work done with the gage.

LEVELS

UPOLU POINT

An inspection of the gage levels run at installation and at removal yields the following:

AT INSTALLATION



UPON REMOVAL

