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

TIDE NOTE FOR HYDROGRAPHIC SHEET

DATE: March 16, 1987

Marine Center: Pacific

OPR: 0183

Hydrographic Sheet: H-10229

Locality: Kelp Bay, Alaska

Time Period: October 9 - 31, 1986

Tide Station Used: 945-1761 South Arm, Kelp Bay, Alaska

Plane of Reference (Mean Lower Low Water): 0.54 Ft.

Height of Mean High Water Above Plane of Reference: 13.0 Ft.

Remarks: Recommended Zoning:

Zone Direct

for Brian K. Lee

Chief, Tidal Datum Quality
Assurance Section

Kelp Bay, Alaska
Field Tide Note
1986 Field Season

The tide gage located at Juneau, Alaska (945-2210) served as the reference station for the predicted tides used for correctors on survey H-10229 as specified by Project Instructions OPR-0183-FA-86.

The controlling tide station is Juneau, Alaska (945-2210).

Predicted tide correctors were interpolated aboard the FAIRWEATHER using data from the 1986 West Coast Tide Tables and program AM 500 dated November 10, 1972. All correctors calculated were based on zone correctors supplied by the project instructions and tabulated below.

Time Correction		Height Correction
High Water	Low Water	Range Ratio
-0hr 15min	-0hr 10min	x 0.84

All times of predicted and reported tides are expressed in Universal Coordinated Time. Predicted tides were acceptable for hydrography with no discrepancies in the data attributable to tide errors.

Three Bristol analog tide gages (range of 0-30 feet) were installed at two locations in support of survey H-10229. Location and period of operation are as follows:

SITE	LOCATION	PERIOD
PORTAGE POINT, KELP BAY 945-1796	57/19/54N 134/55/24W	15-31 October (S/N 73A-231) 8-31 October (S/N 67A-16201)
SOUTH ARM, KELP BAY 945-1761	57/16/42N 135/00/36W	10-31 October (S/N 73A-229)

PORTAGE POINT

Gage (serial number 67A-16201) was installed on the west side of the point that separates Middle Arm from Portage Arm in Kelp Bay on October 8, 1986 (DN 281). When it was discovered that the staff to gage comparisons had been varying on this gage, a second gage (serial number 73A-231) was installed on October 15, 1986 (DN 288) to run concurrently. Both gages were removed on October 31, 1986.

The orifices at the Portage Point station were bolted to separate rocks, both approximately six inches above the bay floor, and the tubing was led across the bottom and weighted with rocks along its length. The staff was bolted to a 2x4 with stainless steel lag bolts. The staff was bolted to a rock face at the 3.2-foot and 4.3-foot marks; braced by a strongback at the

8-foot level with two guy wires which led from the top of the graduated staff to eyebolts set in rock. Zero of the tide staff equals 9.3 feet on the gage (serial number 73A-231). No final value from staff-gage comparisons was possible for the malfunctioning gage. A discussion of each gage follows.

GAGE 67A-16201

On October 13, 1986 (DN 286), a review of the staff to gage comparison noted a 1-foot difference from previous staff to gage comparisons. Subsequent staff to gage comparisons eliminated the possibility of personnel misreading the staff. To investigate this discrepancy, comparisons were made every 12-minute for 12 hours. For the high water to high water on October 14, 1986, staff to gage differences on the falling tide varied from 6.5 to 7.6 feet, and on the rising tide from 6.6 to 7.0 feet. For staff readings, swell and wave action averaged approximately 0.3 feet on the falling tide and 0.1 feet on the rising tide.

Other staff to gage differences observed are as follows:

DATE	STAFF TO GAGE DIFFERENCES (FT)	TIDE STATUS
9 Oct (3-hour obs.)	6.4	rising
11 Oct	7.3	falling
12 Oct	7.0	just past low tide
13 Oct	6.1	rising
13 Oct (6 hours later)	7.4	falling
14 Oct	6.1	rising

To see if the dampening valve was adjusted incorrectly, the valve was opened further on October 15 at 0900 UTC; observations were made later that day. During the rising tide, the staff to gage difference ranged from 6.7 to 7.0 feet for a 3-hour observation. During the falling tide, differences ranged from 6.8 to 7.4 feet.

A review of the October 14 observations showed that the gage appeared to lag behind the actual water level only on the falling tide and never reached the actual low tide before rising.

Another gage (S/N 73A-231) was installed adjacent to the first gage on the afternoon of October 15, and a new 3-hour observation was done in tandem with the old gage on October 16. Staff to gage comparisons were relatively constant for the new gage only.

GAGE 73A-231

At 1800 UTC October 25, 1986 (DN 298), the speed on the clock mechanism was decreased after it was discovered that it had gained eleven minutes in two days. There were no other problems.

SOUTH ARM

Gage (serial number 73A 229) was installed on the west side of South Arm on October 10, 1986 (DN 283) and was removed on October 31, 1986 (DN 304).

The orifice at the South Arm station was bolted to a rock approximately six inches above the bay floor, and the tubing was wired to the cliff face below low water. The staff consisted of a plastic scale in 2-foot sections, screwed to a 2x4 with 1 1/2-inch brass screws; bolted to the rock face at the 0.5-foot and 6.2-foot marks, and wired to the rock face from the 12-foot mark. Zero of the tide staff equals 8.0 feet on the gage.

The South Arm gage ran smoothly with no problems throughout the period of surveying.

LEVELS

Opening levels for Portage Point were run on October 9, 1986 (DN 282) to five recovered standard NOS brass disks, one eyebolt (a temporary benchmark), and a geodetic survey disk. Closing levels were run on October 31, 1986 (DN 304) over the same run. A maximum error of 0.003m between benchmark set-ups was obtained for opening levels and 0.002m for closing levels. A difference of 0.002m was obtained between the opening and closing levels for the segment from the staff to the temporary benchmark.

Opening levels for South Arm were run on October 10, 1986 (DN 283) to three eyebolts (temporary benchmarks), and were rerun on October 21, after it was discovered that the difference between forward and backward runs exceeded allowable limits. Closing levels were run on October 31, 1986 (DN 304) over the same run. A maximum error of 0.001m between benchmark set-ups was obtained for opening levels and 0.002m for closing levels. A difference of 0.002m was obtained between the opening and closing levels for the segment from the staff to the first temporary benchmark.

ZONING RECOMMENDATIONS

None

RECOMMENDATIONS

It is recommended that the data from the malfunctioning gage at Portage Point (serial number 67A-16201) not be used to compute tide reducers. For hydrographic data collected October 10 through October 15, South Arm tide data should be used to compute tide reducers. Both gages can be used as needed for tide reducers after that date. Tide data for hydrography run on October 9 will need to be extrapolated using the South Arm gage.