U.S. DEPARTMENT OF COMMERCE
October 19, 1981 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): 945-8143 Kashvik Bay, AK

Period: August 10-12, 1981

HYDROGRAPHIC SHEET: H-9965

OPR: P-146

Locality: Shelikof Staits, Alaska

Plane of reference (mean lower low water): 10.9 ft.

Height of Mean High Water above Plane of Reference is 11.8 ft.

REMARKS: Recommended Zoning:

1. From the northeast limit of the H-sheet, southwest to a line formed by 2 points located at:

   a. latitude 58°05.5'
      longitude 154°42.0'

   b. latitude 57°51.5'
      longitude 154°16.5'

   Apply a x 1.05 range ratio.

2. From a line formed by 2 points located at;

   a. latitude 58°05.5'
   b. longitude 154°42.0'

   b. latitude 57°51.5'
      longitude 154°16.5'

   Southwest to a line formed by 2 points located at;

   a. latitude 58°01.5'
      longitude 154°51.5'

   b. latitude 57°47.0'
      longitude 154°26.0'

   Apply a x1.02 range ratio.

Continue on next Page

Chief, Datums and Information Branch

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3. From a line formed by 2 points located at;

a. latitude 58°01.5'
longitude 154°51.5'

b. latitude 57°47.0'
longitude 154°26.0'

Southwest to the southwest edge of the H-sheet.

Zone Direct

FIELD TIDE NOTE

OPR-0342-FA-81

Shelikof Strait, Alaska

Field tide reduction of soundings was based on predicted tides from Seldovia, Alaska with corrections based on tide table corrections for Katmai Bay as follows:

Time Corrections		Height Correction Ratio
High	Low	
-13 minutes	-4 minutes	X 0.72

Correctors were interpolated by the HYDROPLOT system using AM 500. All times of both predicted and recorded tides were based on Greenwich Mean Time (GMT). The predicted tides were acceptable for hydrography with no discrepancies attributable to tides errors.

The tide station at Seldovia, Alaska (945-5500) was the primary gage for the project. Levels were run by personnel from the NOAA Ship RAINIER at the beginning and end of the project.

Bristol Bubbler gage, 68A1490, was installed at the Kashvik Bay tide station, #945-8143, at 57°55'16.5"N, 155°05'37.8"W. Three wire levels were run to five benchmarks on June 10, 1981, when the gage was installed, on July 26, 1981 when the staff was repaired, and on September 1, 1981, when the gage was removed. Tide data from this station was used to control six hydrographic surveys from the FAIRWEATHER and one survey from the DAVIDSON. This gage also controlled all of field edit sheets TP-00623, 00624, and TP-00626 north of Cape Kekurnoi.

Table 1

Hydrographic Surveys Controlled by Kashvik Bay Tide Gage, #945-8143

Field No.	Registry No.	Dates
FA-10-1-81	9903	June 11 - 25
FA-10-2-81	9950	June 25 - August 6
FA-10-3-81	9956	July 22 - August 5
FA-20-2-81	9946	June 12 - August 6
FA-40-1-81	9947	June 17 - 30
FA-40-2-81	9965	August 10 - 13
DA-40-1-81	Project S-P911-DA-81	August 19 - 24

Bristol bubbler gage, 68A9333, was installed at the Puale Bay tide station, 945-8209, at 57°42.4'N, 155°23.4'W. Three wire levels were run to three benchmarks on August 25, 1981 upon installation and again on September 3, 1981 when the gage was removed. The tidal data from this gage was used to control all field edit data on Sheet TP-00622 and Sheet TP-00626, south of Cape Kekurnoi.

The Puale Bay tide station was set in 1947 to control a hydrographic survey in the area. The benchmarks are set in bedrock around a cleft in the rock which opens southwest to the sea and receives considerable surge. The orifice was set out from this cleft where the effects from the surge were minimized. The staff was exposed to the surge and staff readings were taken by averaging the water heights. The average gage to staff comparison was 10.4 feet, with the other comparisons within 1 foot of the mean.

The Puale Bay gage functioned well with only one problem. On August 27 at 0600Z, the pen ran out of ink and no data was collected between that time and 2315Z when the problem was discovered and remedied. No field edit data was gathered during this period, so the curve does not need to be interpolated.

The Kashvik Bay tide gage was set near a long ledge which extends 200 meters into Kashvik Bay from the south shore. Although this location is the best site along the entire coastline of project area, the site is barely adequate and several problems were encountered with this gage, due to the poor substrate for staff and orifice. The orifice went dry for approximately two hours per day during two periods of predicted tides less than -3.0 feet. The first time was between July 2-5, a period when no hydrography was run. The second period was between July 29 and August 2. Hydrography was run on the 29th and 30th of July and tide heights will have to be interpolated between 1600-1800Z and 1700-1900Z on these days, respectively. Interpolation of tidal data will also be necessary between 1400-2000Z on July 21, a period when the chart drive malfunctioned. This malfunction was due to the stopping of the gage's internal clock and was remedied by winding and restarting the clock.

A storm bringing winds out of the NE in excess of 50 knots hit Shelikof Strait on July 23-24. The tide station was hit particularly hard as it was on the unprotected SW side of Kashvik Bay. The tide staff had to be reinstalled on July 25 and was releveled on July 26. The levels show the change in elevation between the second staff installation and the original installation to be +.06 feet, but the gage to staff comparison decreased by .45 feet after this period (See Table 2). The investigation of the orifice on August 5 revealed that the tubing had broken away from the orifice, but had remained buried under rocks and sand after the storm. The marigram trace during and after the storm remained steady since the tubing remained attached to the bottom. Repositioning of the orifice 70 feet seaward increased the value of the gage to staff comparison by .8 feet.

During the periods of extreme low tides, the pen "bottomed out" on the paper at 1.2 feet, making it appear that the pen setting was too low to trace these minus tides. On July 30, the pen was raised seven feet on the chart paper scale in an attempt to remedy this problem. This caused a seven foot difference in the gage to staff comparison (See Table 2). Despite this correction in the pen initial, the graph still leveled out during tides lower than -3.0 feet. The problem was remedied on August 5 by moving the orifice 70 feet seaward.

Table 2

Gage - Staff Comparisons
Kashvik Bay Gage

Dates	Gage-Staff Comparison (Avg.)	Remarks
10 June - 21 July	3.4	Initial set-up
26 July - 30 July	3.1	After storm
31 July - 4 August	10.2	Changed Pen Initial +7 feet
5 August - 1 September	10.9	Moved orifice seaward 70 feet.

All tide data has been abstracted for hourly heights. Marigrams and abstracts for the period of June 10 - July 16 were transmitted to the Pacific Marine Center, Seattle, Washington on July 20, 1981.

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