

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: September 7, 1988

MARINE CENTER: Pacific

OPR: 0358

HYDROGRAPHIC SHEET: H-10265

LOCALITY: Point Agassiz to Cape Strait, Frederick Sound, AK

TIME PERIOD: April 11 - May 18, 1988

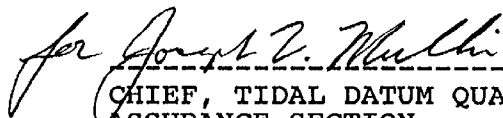
TIDE STATION(S) USED: 945-1558 Cape Strait, AK

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 5.33 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 14.5 ft.

REMARKS: RECOMMENDED ZONING

1. Zone Direct

  
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CHIEF, TIDAL DATUM QUALITY  
ASSURANCE SECTION

## FIELD TIDE NOTE

### OPR-O358-RA-88, Frederick Sound, Alaska

OPR-O358-RA-88, Frederick Sound Alaska, includes three hydrographic surveys which were completed during April-May 1988. H-10265 (Sheet B), H-10269 (Sheet C), and H-10272 (Sheet D) are the affected surveys. Field-tide reduction of soundings was based on predicted tides computed with program AM 500, Predicted Tide Generator, by using the predicted tides for the Juneau, Alaska, tide station (945-2210). Three corrector zones were prescribed for the project area, but as an aid in processing logistics, only two sets of correctors were used. The corrector set which covered the most area of a particular survey was applied. The table below shows the small difference between the corrector sets.

Sheet	Time Correction		Height Ratio
	High Water	Low Water	
NONE	-0hr 15min	-0hr 10min	0.98
B,C	-0hr 15min	-0hr 10min	0.95
D	-0hr 15min	-0hr 10min	0.91

Near the beginning and end of the project, leveling was conducted at the Juneau tide station to connect three bench marks with the staff. The opening levels were conducted by RAINIER personnel on April 15 and closing levels were conducted by FAIRWEATHER personnel and will be submitted separately.

The following tide station was installed in the project area:

#### CAPE STRAIT, FREDERICK SOUND, ALASKA (945-1559)

Geographic Locale - 56° 59.9' N, 133° 05.6' W

Installation Date - April 10, 1988

Removal Date - May 18, 1988

Gage Type - Bristol bubbler (S/N 67A-16205) with a backup Bristol bubbler (S/N 73A-235). The gages were placed on a wooden trestle behind the Cape Strait light structure. The orifices were attached to a steel plate which was anchored to the bottom with four-foot sand anchors. Below the surf zone, tubing was anchored with rocks and chain. Above the surf zone, the tubing was secured to the bedrock with eye bolts.

Staff - The staff was 12 feet long made of four-inch aluminum angle iron with vitrified scale. It was secured to bedrock with 2x4 wooden braces and angle iron located 50 feet north of BM 1559 B. The staff stop was a stainless steel hex machine bolt located at 16.120 ft on the staff.

Staff Zero/Gage Zero

Gage # 67A-16205

Before 4/23: 0.64

After 4/23: 1.68

Gage # 73A-235

Before 4/23: 1.18

After 4/23: 1.87

Gage Time - Universal Coordinated Time

Bench Marks - Five bench marks were recovered at this station: 1559 A 1987, 1559 B 1987, 1559 C 1987, 1559 D 1987, and 1559 E 1987. The five bench marks were connected in the initial and final leveling.

Levels - Installation levels were completed on April 10, connecting the five bench marks mentioned above. Final levels were completed on May 18. The initial and final levels agreed to within 0.002 m.

Marigram Records -

GAGE # 67A-16205: Marigram records are continuous:

<u>FROM</u>	<u>TO</u>
4/10/88 @ 2212	4/16/88 @ 1502
4/16/88 @ 1630	4/17/88 @ 1535
4/17/88 @ 1725	4/18/88 @ 1620
4/18/88 @ 1800	4/22/88 @ 2305
4/22/88 @ 2300	4/23/88 @ 1735
4/23/88 @ 1824	4/27/88 @ 1653
4/27/88 @ 1711	5/10/88 @ 1940
5/10/88 @ 1933	5/18/88 @ 2105

GAGE # 73A-235: Marigram records are continuous:

<u>FROM</u>	<u>TO</u>
4/10/88 @ 2211	4/11/88 @ 1659
4/11/88 @ 1724	4/12/88 @ 1839
4/12/88 @ 1845	4/14/88 @ 1918
4/14/88 @ 1930	4/16/88 @ 1712
4/16/88 @ 1825	4/17/88 @ 1940
4/17/88 @ 2125	4/18/88 @ 2232
4/18/88 @ 2355	4/19/88 @ 1639
4/19/88 @ 1720	4/19/88 @ 2242
4/19/88 @ 2300	4/20/88 @ 1935
4/20/88 @ 1947	4/23/88 @ 1730
4/23/88 @ 1824	4/27/88 @ 1648
4/27/88 @ 1650	5/3/88 @ 1755
5/3/88 @ 1800	5/5/88 @ 2250
5/5/88 @ 2256	5/12/88 @ 2022
5/12/88 @ 2025	5/14/88 @ 0140
5/17/88 @ 2130	5/18/88 @ 2036

## Station Problems

On April 20, the chart drive from gage 73A-235 was replaced with a new chart drive (S/N: 210102) after having repeated problems keeping time and paper alignment.

Due to an extreme spring low tide, the orifices were exposed during the following dates and times (differences in time occur because of correct time and gage time adjustments):

	<u>#73A-235</u>	<u>#67A-16205</u>
	Gage Time	Gage Time
April 16	1710 to 1825	1500 to 1630
April 17	1940 to 2127	1530 to 1730
April 18	2230 to 2355	1620 to 1800
April 19		1720 to 1815

No hydrographic data were collected from April 16 to April 18. Because the orifice on gage 73A-235 was set slightly deeper than the orifice on gage 67A-16205, no tide data were lost on April 19. Inspection of the marigram records revealed that the tide trace did not fall to zero upon exposure. Gage 67A-16205 fell to 1.0 feet, and gage 73A-235 fell to 2.5 feet upon exposure. Therefore, on April 23, RAINIER personnel brought the orifices to the surface to calibrate a zero trace. Before calibrating, the gages were exposed to atmosphere and read the same as when previously exposed during the spring low tides. The orifices were then placed at a deeper depth to avoid exposure during spring low tides. Three hour observations were made on the morning of April 24.

On May 14, at approximately 0140 the paper in gage 73A-235 jammed. This caused a loss of data until May 17 at 2130, when the paper was replaced. During the same time interval the primary gage (67A-16205) functioned normally.