

DATE: January 6, 1983

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): 945-2296 Whitestone Harbor, Alaska

Period: October 15-17, 1982

HYDROGRAPHIC SHEET: H-10060

OPR: 0362

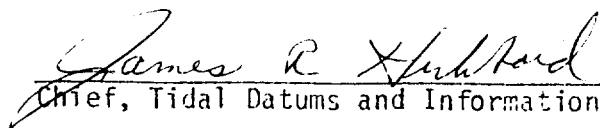
Locality: Hawk Inlet, Alaska

Plane of reference (mean lower low water): -3.60 ft.

Height of Mean High Water above Plane of Reference is 13.9 ft.

REMARKS: Recommended Zoning:

Zone Direct


Chief, Tidal Datums and Information Branch

✓
FIELD TIDE NOTE
OPR-0362-DA-82
DA-10-5-82
H-10060
HAWK INLET, ALASKA

Tide data was collected for application to Hydroplot and Bathymetric Swath Survey System (BS³) soundings in the vicinity of the proposed cable route between Hawk Inlet, Alaska and Whitestone Harbor, Alaska. Change No. 1 to Project Instructions OPR 0362-DA-82 required the installation of the Tide Measurement Subsystem (TMS) in conjunction with the required tide gage.

Project Instructions called for a tide gage installation in the vicinity of Hawk Inlet. Because the Hawk Inlet side of Chatham Strait offers no protected sites suitable for the gage/TMS installation permission to use an alternate site in Whitestone Harbor was requested; permission was granted through CPML on 13 October 1982.

Bristol Bubbler S/N 64A 11032 and TMS Box E, S/N 212027 were deployed on the south shore of Whitestone Harbor near a log dumping facility at 50° 03.8'N., 135° 05.5'W. Station reference number 945-2296 originally assigned to the Hawk Inlet station was used at this location.

Slight difficulty was encountered when installing the gage since the pen could not be adjusted to read zero. Some manipulation of the pen recording linkage was necessary to bring the pen closer to the zero line; final adjustments were then made with the adjusting screw. This apparently solved the problem. However, post-project scanning of the marigram showed that for several high tides the tidal maxima had not been recorded, and a straight line was drawn instead of the typical sinusoidal curve. The missing part of the curve was a small fraction of the total marigram data (less than 1.0 feet of tidal difference). The missing portions of the marigram were easily interpolated. The cause of the problem has not been resolved.

Hourly heights of tide were abstracted from the marigram. The gage clock was four minutes slow when the gage was removed after 5 days of operation. The time error was distributed linearly throughout the period.

Based on 4 staff to gage comparisons for the JD 286 - JD 291 observation period, including the mean of 13 observations made during the gage installation test, a marigram reading of 13.5 feet corresponds to 0.0 feet on the tide staff.

Three temporary benchmarks consisting of 3/8" eyebolts screwed into 1/2" lead shields set in holes drilled into bedrock were established on JD 286. Third order class 1 levels were run from the tide staff to the benchmarks prior to the start of survey operations. The benchmarks were again leveled at the completion of survey operations, and removed. Elevations agreed with JD 286 results.

Field reduction of Hydroplot and BS³ soundings for DA-10-5-82 are based on daily predicted tides for Juneau, Alaska (Reference Station 945-2210). Program AM 500, "Predicted Tides Generator", 11/10/72 version) was used to produce ASCII and BINARY Predicted Tide Tapes for Hydroplot operations. Hydroplot soundings on the final field sheet are corrected for predicted tides at 0.2 fathom intervals.

The following tide correctors were applied to the reference station at Juneau for use as preliminary tidal zoning as directed in the Project Instructions:

<u>Time Corrector</u>		<u>Height</u>
<u>High Water</u>	<u>Low Water</u>	<u>Ratio</u>
0 minutes	+6 minutes	x0.92

The tide staff at the reference tide station at Juneau, AK was connected to three benchmarks by third order, class 1 levels on 8 October 1981. Benchmarks 22, 19 and 8 were observed and results compared with historical data provided by Pacific Tides Party. The observed differences of elevation between the staff stop and BM 22, and between BM 22 and BM 19 agrees with historic values. The difference of elevation between BM 19 and the primary benchmark (BM 8) continues to increase, suggesting that BM 22 and 19 are settling. The most recent results show a difference of elevation that is 4 cm greater than the 1975 values, the earliest data provided.

TMS Operation

The Tide Measurement Subsystem (TMS) is a tide telemetry system utilizing a standard Bristol bubbler-type tide gage as input and which permits the BS³ to apply actual tide corrections in real time. The TMS is connected to the orifice tubing leading from a bubbler gage to its submerged orifice. Tide information is transmitted continually by the unit to a shipboard TMS receiver. TMS data was not applied during data acquisition because a datum is required in order to meaningfully reduce observed depths. Predicted tides were used during data acquisition, but the TMS was permitted to operate in order to exercise the system. The ship board TMS receiver

failed after one day of BS³ operations. It is suspected that radio transmissions made from the ship's Sunair transmitter during TMS data acquisition overloaded the system, leading to receiver failure (the shore station continued to operate). The receiver was quickly repaired by ship's ET's.

Two additional systems were air freighted to the DAVIDSON from PMC, but were received in a damaged condition and were not available for use.

Respectfully submitted,

Donald A. Sawyer

for Eric G. Hawk, ENS., NOAA
Tides Officer

Approved and forwarded,

James M. Wintermyre

James M. Wintermyre, CDR
Commanding Officer
NOAA Ship DAVIDSON