8301

Diag. Cht. Nos.8802-3,8859, & 8860-3.

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. PF-2856 *Office No.* H-8301

LOCALITY

State Alaska

General locality North Side Alaska Peninsula

Locality Vicinity of Neumann Island

1956

CHIEF OF PARTY

J. Bowie

LIBRARY & ARCHIVES

DATE March 8, 1958

B-1870-1 (1)

8301

Form 537
(Ed. June 1946)

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

REGISTER No. H-8301

Field No. PF-2856

State Alaska

General locality North Side Alaska Peninsula

Locality Vicinity of Neumann Island ~~Entrance to Izembek and Moffet Bays~~

Scale 1:20,000 Date of survey 28 July - 10 August 1956

Instructions dated 20 Dec. 1954; 21 Oct. 1955

Vessel Launches 1, 2, 3, 4 of Ship PATHFINDER

Chief of party John Bowie

Surveyed by F.X. Popper, W.E. Randall, J.O. Boyer, G.W. Thompson

Soundings taken by ~~fathometer~~ graphic recorder, ~~hand lead or pole~~

Fathograms scaled by Ship's personnel

Fathograms checked by Ship's Officers

Protracted by R.D. Bernard

Soundings penciled by R.D. Bernard

Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW AND ARE TRUE DEPTHS

REMARKS:

U. S. GOVERNMENT PRINTING OFFICE 777032

DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHIC SURVEY

H-8301 (PF-2856)

NORTH SIDE ALASKA, PENINSULA

Scale 1:20,000
Date: 8 July - 11 August 1956

Ship PATHFINDER
John Bowie, Comdg.

A. PROJECT

This survey is a part of Project 13750. Original Instructions were dated 20 December 1954; Supplemental Instructions, 21 October 1955. Both sets of instructions were issued by the Director.

B. SURVEY LIMITS AND DATES

This survey includes the entrance to Izembek and Moffet ~~Bays~~ Lagoons, the navigable channels of Moffet ~~Bay~~ Lagoon and eastern Izembek ~~Bay~~ Lagoon, and the adjoining offshore waters from Lat. 55° - 26!0, Long. 162° - 38!0 northward to Lat. 55° - 27!5, Long. 162° - 40!0; westward to Lat. 55° - 26!0, Long. 162° - 53!0; and southward to the shore.

The survey joins contemporary survey H-8302(PF-4156) scale 1:40,000 to the north and H-8297(PF-2256) scale 1:20,000 to the west. The northeastern limit is in an unsurveyed area.

Hydrography was conducted from 8 July through 11 August 1956.

C. VESSEL AND EQUIPMENT

Hydrography was conducted by launches operating from the ship, using 808 type graphic recorders.

Launch #1 operated in the eastern part of Izembek ~~Bay~~ Lagoon using fathometer No. 74.

Launch #2 operated in Moffet ~~Bay~~ Lagoon using fathometer No. 46.

Launch #3 operated in the entrance using fathometer No. 61.

Launch #4 operated in Izembek ~~Bay~~ Lagoon and along the outer coast using fathometer No. 52.

The normal-speed turning radii is about 20 meters. Most inside work was done at reduced speed because the launches frequently ran aground.

All sounding was done on the "A" scale.

D. TIDE AND CURRENT STATIONS

Tide stations were maintained at Amak Island and Grant Pt. (Izembek ~~Bay~~ lagoon) to control hydrography. Off this sheet

The surveyed area was divided into three tidal zones. Zone "A" included the outside, open water areas; Zone "B" included the entranceway; and Zone "C" included Moffet ~~Bay~~ lagoon and the eastern part of Izembek ~~Bay~~ lagoon. (See Tide Note).

Zone "A" uses Amak Tides.

Zone "B" uses a mean of the tides of Zone "A" and Zone "C".

Zone "C" uses Grant Pt. tides corrected according to information supplied by the Washington Office. The corrections applied are:

Time = Grant Pt. minus 0.5 hr.
High Water = Grant Pt. plus 0.5 ft.
Low Water = Grant Pt.

Because hydrography commenced on this sheet prior to installing the Grant Pt. tide gage, Zone "C" tides for July 28, 29 and 30 were obtained indirectly from the Amak tide gage. The graphs and computations for this are included in the Tide Note.

E. SMOOTH SHEET

The smooth sheet was hand-constructed by ship personnel. Shoreline was traced from shoreline sheets T-11472, 73, 74 and 75 at the same scale.

The revised shoreline ~~at Moffet Pt.~~ SW of Moffet Pt. at Lennox Island and Neumann Island was determined by the hydrographers while running beach lines.

Signals on the sheet were located by theodolite or sextant utilizing triangulation stations and one photogrammetrically-located temporary station (TUT).

F. CONTROL STATIONS

The following control stations were utilized:

1. BLA is BLAINE, 1952 (Sylar) triangulation.
2. EYE, temporary signal located by theodolite 3-pt. fix; topo quality.
3. KID, hydro, sextant.
4. MOF, shoran station, temporary, short traverse from MOFFET, 1952.
5. MOFFET, 1952 (Sylar) triangulation. (Also Ref. Sta. on Smooth Sheet) {Lat. 55°27'20.095" (621.5m.) Long. 162°34'41.558" (730.4m.)

(Lat. 55°14'26.596"(822.5m.)
Long. 162°59'45.509"(804.1m.)

6. NAP, shoran station centered over GLAZENAP, 1952 (Sylar) triangulation; station off sheet; shoran arcs computed on sheet.

7. PAT-1 and PAT-2, positions of ship while acting as shoran station; positions recorded in sounding volumes. (See also special Shoran Report.)

8. PER is OPERL S.W. BASE, 1952 (Sylar) triangulation.

9. SAY, hydro, sextant.

10. TUT, temporary topo, located photogrammetrically in field using office photos; final position scaled from blackline impression of T-11472, Lat. 55° - 23' + 1703 (-153)m; Long. 162° - 44' + 740(-316)m.

11. YOU, hydro, sextant.

12. ZEE, hydro, sextant.

G. SHORELINE AND TOPOGRAPHY

Shoreline was traced from shoreline sheets T-11472, 73, 74 and 75. Revisions of shoreline were made by the hydrographers where necessary by noting distances to the shoreline while sounding. Revision was necessary only at the entrance to the bays.

The low-water line was defined by sounding where surf and bottom gradient permitted launches to operate.

H. SOUNDINGS

Depths were measured by 808 type graphic recorders. Corrections were determined by bar checks.

A Fathometer Report has been submitted for this project. Special Report 151.

I. CONTROL OF HYDROGRAPHY

Hydrography was controlled by shoran where possible. Station MOF was used with station NAP, PAT-1 or PAT-2 to provide shoran fixes. Shoran corrections were obtained by taking simultaneous shoran and visual fixes. The data and results are in the sounding volumes.

Where shoran control was not possible, visual control consisting of 3-pt. sextant fixes, was used.

A Shoran Calibration Report has been submitted for this project. **See "SHORAN NOTE" attached.** Special Report 152.

J. ADEQUACY OF SURVEY

The survey is complete and adequate for charting purposes. Junctions are satisfactory with H-8297 (PF-2256) to the west and with H-8302 (PF-4156) to the north. The northeastern limit of the survey is in an unsurveyed area.

K. CROSSLINES

There are 49.7 miles of crosslines, constituting about 11.4 percent of the total hydrography. Crossings are in good agreement.

L. COMPARISON WITH PRIOR SURVEYS

There are no prior surveys in this area.

M. COMPARISON WITH CHARTS

Charts Nos. 8802 scale 1:1,000,000 date 52-12/29, No. 8860 scale 1:300,000 date 53-7/20, and No. 9302 scale 1:1,500,000 date 52-12/8 show no soundings in the area surveyed. No other charts are available.

N. DANGERS AND SHOALS

There are no specific dangers or shoals in the area. The entrance to the bays consists of a narrow channel between shoals. Breakers usually cover the shoals.

The inside areas include extensive mud flats and shoal areas. The hydrography defines the channels among the shoals.

No rock areas exist within the limits of the survey.

O. COAST PILOT INFORMATION

Coast Pilot Information has been submitted as a separate report for this project. A copy is attached.

P. AIDS TO NAVIGATION

No aids exist in the area surveyed. During the fishing season, fishermen buoy the entrance channel with 50-gallon drum buoys.

Q. LANDMARKS FOR CHARTS

No landmarks exist within the limits of the survey.

R. GEOGRAPHIC NAMES

A Geographic Names Report has been submitted separately for the project.

S. SILTED AREAS

The bottom is generally fine black sand. Lack of prior surveys prevents silting determination. Tidal currents maintain the channels.

U. MISCELLANEOUS

The depth over the bar in the main entrance channel is two fathoms. Inside, the channel deepens to five fathoms and then rapidly shoals to depths of one or two fathoms as it branches into the various minor channels of Moffet ~~Bay~~ Lagoon and eastern Izembek ~~Bay~~ Lagoon.

During the fishing season, small craft anchor inside Moffet Bay to seek protection from storms.

Z. TABULATION OF APPLICABLE DATA

Tidal Data
Fathometer Report
Shoran Report

Coast Pilot Report
Geographic Names Report

Respectfully submitted,

William E. Randall

William E. Randall
LCDR, C&GS

Approved and forwarded:

John Bowie

John Bowie
CAPT, C&GS
Comdg. Ship PATHFINDER

SHORAN NOTE

FOR HYDROGRAPHIC SURVEY

H-8301 (PF-2856)

At the beginning of sounding operations a buoy was planted and located with a visual 3-point fix. It was believed that the buoy might be needed for calibration of shoran because of expected long periods of limited visibilty.

Launch 4 used this means for obtaining shoran corrections for a, b, and c days. Later in the survey, 17 days lapsed between c and d days, it was possible to get visual fixes. Corrections determined from these were used for the remaining portion of the survey.

Due to the large scope of the buoy and difficulty in obtaining consistant readings, it was known that this system was not giving accurate results. It was felt, however, that if no other method were available, the results so obtained would be better than none.

In plotting the smooth sheet it became evident that work dependent upon corrections determined usingthe calibration buoy was out of position. All shoran distances were corrected an additional -0.01 miles for these days to make the work consistant with work of other days and other launches. This also made the inshore hydrography agree with the hydrographer's rough estimation of distances off triangulation and topographic stations. Smooth depth curves can now be drawn and crosslines are in good agreement.

John O. Boyer

John O. Boyer
LCDR, USC&GS

Recommended for approval :

J. T. Jarman

J. T. Jarman
CDR, USC&GS
In Charge of Processing
Seattle Ships' Base

TABLE NO. 1

STATISTICS FOR HYDROGRAPHIC SURVEY

H-8301 (PF-2856)

	Vol.	Day	Date	Pos	Stat. Mi.	Wire Sdg.
Launch #1	X	a	30 July	7	1.1	0
					1.1	
Launch #2	VII	a	28 July	94	12.2	0
		b	29 July	108	16.4	0
		c	30 July	97	12.5	0
		d	9 August	62	6.3	0
	IX	d	9 August	70	6.6	0
		e	10 August	78	13.9	0
					67.8	
Launch #3	VI	a	28 July	117	40.7	0
		b	29 July	62	17.4	8
	VII	c	9 August	109	23.7	0
		d	10 August	92	18.5	0
					100.3	
Launch #4	I	a	8 July	36	9.4	0
		b	10 July	148	47.4	0
		c	11 July	64	13.5	0
	II	c	11 July	45	15.8	0
		d	28 July	131	52.0	0
	III	e	29 July	114	36.6	0
		f	30 July	79	16.2	0
		g	9 August	130	16.4	0
	IV	g	9 August	10	1.8	0
		h	10 August	159	26.2	0
		j	11 August	204	22.8	0
	V	j	11 August	22	3.4	0
					261.5	

TOTAL STATUTE MILES: 430.7

TIDE NOTE

FOR HYDROGRAPHIC SURVEY

H-8301 (PF-2856)

Tide gages at Amak Island, Lat. 55° - 24!81, Long. 163° - 06!90, and Grant Pt. (Izembek Bay), Lat. 55° - 16!15, Long. 162° - 54!05 furnished the corrections used to reduce soundings.

The smooth sheet was divided into three tidal zones to provide appropriate corrections throughout the area surveyed.

Zone A includes the offshore hydrography; the tides are Amak, uncorrected.

Zone B includes the main entrance to the ~~bays~~ lagoons and is within the following bounds: Signal KID to Lat. 55° - 26!40, Long. 162° - 39!55, then to Lat. 55° - 26!90, Long. 162° - 38!00, then to signal YOU, then along the shore to signal ZEE, then to Lat. 55° - 23!04, Long. 162° - 40!25, then to Lat. 55° - 23!44, Long. 162° - 41!18, then to signal KID. The tide is a mean of the tides for zones A and C.

Zone C includes Moffet ~~Bay~~ Lagoon and the eastern portions of Izembek ~~Bay~~ Lagoon. The tide according the Washington Office is as follows:

Time = Grant Point minus 0.5 hrs.
High Water = Grant Point plus 0.5 ft.
Low Water = Grant Point

Hydrography was commenced on this sheet prior to installing a tide gage at Grant Point. Consequently, tides for July 28, 29 and 30 were obtained indirectly from Amak. The following method was used:

Simultaneous observations at Amak and Grant Pt. were compared from August 2 through 19. The mean differences in times and heights of HW's and LW's were determined. It was noted that the daily differences in HW's (both HHW and LHW) as to time and height varied only slightly from the mean. Thus to obtain any particular Grant Pt. time and height of HHW (or LHW) only the mean differences need be applied to the Amak observed HHW (or LHW).

The height differences in HLW and LLW varied considerably during the period of simultaneous observations. Because of this a mean correction could not be applied to Amak tides to obtain the Grant Pt. HLW's and LLW's. Instead, the actual HLW's and LLW's of both stations were plotted on graph paper and the curves drawn between successive HLW's at Amak, LLW's at Amak, HLW's at Grant Pt. and LLW's at Grant Pt. These curves showed the trend of the tide rather than the actual tides. (See graphs on following pages.) By projecting the Grant Pt. curves through the period of no observations, in general conformity with the

corresponding Amak curves, it was possible to determine the approximate HLW's and LLW's at Grant Pt.

The LW time differences did not vary much so a mean time difference was applied to Amak to get the times of LW at Grant Pt.

The tide curves for Grant Pt. were drawn on the basis of the above, namely:

Time of HHW and LHW = Amak + 1.4 hrs.
Height of HHW and LHW = Amak - 3.2 ft.
Time of HLW and LLW = Amak + 2.3 hrs.
Height of HLW = scaled from projected Grant Pt. HLW curve
Height of LLW = scaled from projected Grant Pt. LLW curve

Of course the curves actually drawn to obtain the tide reducers for zone C were corrected additionally by the amounts specified by the Washington Office. (See under Zone C above.)

Amak MLLW = 2.5 ft. on staff.
Grant Pt. MLLW = 3.2 ft. on staff.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 248
Ed. May, 1928

TIDES : Comparison of Simultaneous Observations

A) Subordinate station Grant Point, Izembek Lagoon, Alaska Lat. 55° 16.15 N Long. 162° 54.05 W
(B) Standard station Amak Island, Alaska Lat. 55° 24.81 N Long. 163° 06.90 W
Chief of party John Bowie Time Meridian: (A) 150 W (B) 150 W

DATE. Year. 1956 Mo. D.	(A) STATION. Time of— HW. Hours.	(A) STATION. Time of— LW. Hours.	(B) STATION. Time of— HW. Hours.	(B) STATION. Time of— LW. Hours.	(A)−(B) Time difference. HW. Hours.	(A)−(B) Time difference. LW. Hours.	(A) STATION. Height of— HW. Feet.	(A) STATION. Height of— LW. Feet.	(B) STATION. Height of— HW. Feet.	(B) STATION. Height of— LW. Feet.	(A)−(B) Height difference. HW. Feet.	(A)−(B) Height difference. LW. Feet.
Aug 2												
	17.7	22.4	16.0	20.7	1.7	1.7	3.6	2.3	6.3	4.5	-2.7	-2.2
3	3.4		02.0		1.4		4.6		7.4		-2.8	
4												
	18.9	13.3	17.5	10.5	1.4	2.8	3.7	-0.9	6.8	-1.9	-3.1	+1.0
5	4.6	0.2	3.7	22.8	0.9	1.4	4.0	1.9	7.1	4.0	-3.1	-2.1
	19.7	14.1	18.1	11.1	1.6	3.0	3.8	-0.8	7.1	-1.7	-3.3	+0.9
6	6.5	1.7	4.8	23.8	1.7	1.9	3.9	1.5	7.2	3.5	-3.3	-2.0
	20.4	14.9	18.9	12.2	1.5	2.7	4.1	-0.7	7.6	-1.3	-3.5	+0.6
7	6.9	2.4	6.0	0.8	0.9	1.6	3.9	1.4	7.1	3.0	-3.2	-1.6
	21.3	15.0	19.8	13.2	1.5	1.8	4.3	-0.5	7.8	-1.0	-3.5	+0.5
8	9.0	4.4	7.5	2.2	1.5	2.2	3.7	1.0	6.7	1.9	-3.0	-0.9
	21.9	16.6	20.5	14.0	1.4	2.6	4.3	-0.4	7.9	-0.6	-3.6	+0.2
							HHW.	HLW.	HHW.	HLW.	HHW.	HLW.
Sums												
Means												
							LHW.	LLW.	LHW.	LLW.	LHW.	LLW.
Sums												
Means												

	HW.	LW.	
(1)=			=Mean difference in time of high and low water respectively.
(2)=			=Correction for difference in longitude. (Table on back of form.)
(3)=			=(1)+(2)=Mean difference in high and low water intervals, respectively.

Feet.

(4)= =Mean HHW height at (A).
(5)= =Mean HLW height at (A).
(6)= =Mean LHW height at (A).
(7)= =Mean LLW height at (A).
(8)= =(4)−(6)=2DHQ at (A).
(9)= =(5)−(7)=2DLQ at (A).
(10)= =½[(4)+(6)]=Mean HW height at (A).
(11)= =½[(5)+(7)]=Mean LW height at (A).
(12)= =(10)−(11)=Mn at (A).
(13)= =½[(10)+(11)]=MTL at (A).

(14)= =Mean HHW difference.
(15)= =Mean HLW difference.
(16)= =Mean LHW difference.
(17)= =Mean LLW difference.
(18)= =(14)−(16)=2DHQ difference.
(19)= =(15)−(17)=2DLQ difference.
(20)= =½[(14)+(16)]=Mean HW difference.
(21)= =½[(15)+(17)]=Mean LW difference.
(22)= =(20)−(21)=Mn difference.
(23)= =½[(20)+(21)]=MTL difference.

(24)= =(12)+[(12)−(22)]=Mn ratio.
(25)= =(8)+[(8)−(18)]=DHQ ratio.
(26)= =(9)+[(9)−(19)]=DLQ ratio.

Results from comparison of Stations A and B. Length of Series.	HWI. Hours.	LWI. Hours.	MTL. Feet.	Mn. Feet.	DHQ. Feet.	DLQ. Feet.
Accepted values for standard station, from						
Differences and ratios: (3), (23), (24), (25), (26)				×	×	×
Corrected values for subordinate station						

Mean LW on staff at subordinate station=MTL−½Mn =feet.
Mean LLW on staff at subordinate station=MTL−½Mn−DLQ=feet.

Computed by , (Date.) Verified by , (Date.)

EXPLANATION OF FORM 248.

This form is designed for the comparison of tides at a subordinate station for which tidal results are sought, with the tides observed simultaneously at a standard station for which tidal constants are known.

For short series of observations the high and low waters observed at the subordinate station may be tabulated immediately in this form, in which case it will be unnecessary to tabulate them also in Form 138.

The time and height differences are to be obtained by subtracting the values at the standard station from the values at the subordinate station, and the results entered with proper signs in the columns indicated.

Find the sums and means of columns of time difference, height of tide at both stations, and height difference. For stations on the Pacific coast, where the plane of reference is mean lower low water, the heights of the higher high, lower high, higher low, and lower low waters are to be summed separately, the higher highs and lower lows being indicated by pencil check marks. For stations on the Atlantic coast, where the plane of reference is mean low water, the heights of the high waters may be all combined into a single sum, and similarly the low water heights; the headings of their sums being made to read HW and LW, respectively, by striking out the extra letters. Mean results for time and height should be carried to two decimals places, and ratios to three decimal places. If any individual difference varies greatly from the apparent average, and an examination of the original record fails to show an error, that difference should not be included in the sum; and such a value should be encircled to show that it has been rejected.

For stations on the Atlantic coast omit (4) to (9), (14) to (19), (25), (26), and the computation of DHQ and DLQ at the bottom of the form. Take (10)=mean high water height at the subordinate station, (11)=mean low water height at subordinate station, (20)=mean high water difference, and (21)=mean low water difference.

For stations on the Pacific coast, the lower part of the form should be filled out completely as indicated.

The correction for difference in longitude (2) may be obtained from the following table. Find the difference in longitude by subtracting the longitude of the subordinate station from the longitude of the standard station, considering west as positive and east as negative. The correction has the same sign as the resulting difference of longitudes.

If the kind of time used at the two stations is different, apply this difference, expressed in hours, to the difference in the time of tide as directly obtained, adding if the time meridian of the subordinate station is west of the time meridian of the standard station, and subtracting if the time meridian of the subordinate station is east of that of the standard station.

Correction for difference in longitude.

Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.
′	*Hour.*	′	*Hour.*	°	*Hour.*	°	*Hour.*	°	*Hour.*	°	*Hour.*	°	*Hour.*	°	*Hour.*
1	0.001	31	0.036	1	0.069	31	2.139	61	4.209	91	6.279	121	8.349	151	10.420
2	0.002	32	0.037	2	0.138	32	2.208	62	4.278	92	6.348	122	8.418	152	10.489
3	0.003	33	0.038	3	0.207	33	2.277	63	4.347	93	6.417	123	8.487	153	10.558
4	0.005	34	0.039	4	0.276	34	2.346	64	4.416	94	6.486	124	8.556	154	10.627
5	0.006	35	0.040	5	0.345	35	2.415	65	4.485	95	6.555	125	8.625	155	10.696
6	0.007	36	0.041	6	0.414	36	2.484	66	4.554	96	6.624	126	8.694	156	10.765
7	0.008	37	0.043	7	0.483	37	2.553	67	4.623	97	6.693	127	8.763	157	10.834
8	0.009	38	0.044	8	0.552	38	2.622	68	4.692	98	6.762	128	8.832	158	10.903
9	0.010	39	0.045	9	0.621	39	2.691	69	4.761	99	6.831	129	8.901	159	10.972
10	0.012	40	0.046	10	0.690	40	2.760	70	4.830	100	6.900	130	8.970	160	11.041
11	0.013	41	0.047	11	0.759	41	2.829	71	4.899	101	6.969	131	9.039	161	11.110
12	0.014	42	0.048	12	0.828	42	2.898	72	4.968	102	7.038	132	9.108	162	11.179
13	0.015	43	0.049	13	0.897	43	2.967	73	5.037	103	7.107	133	9.177	163	11.248
14	0.016	44	0.051	14	0.966	44	3.036	74	5.106	104	7.176	134	9.246	164	11.317
15	0.017	45	0.052	15	1.035	45	3.105	75	5.175	105	7.245	135	9.315	165	11.386
16	0.018	46	0.053	16	1.104	46	3.174	76	5.244	106	7.314	136	9.384	166	11.455
17	0.020	47	0.054	17	1.173	47	3.243	77	5.313	107	7.383	137	9.453	167	11.524
18	0.021	48	0.055	18	1.242	48	3.312	78	5.382	108	7.452	138	9.522	168	11.593
19	0.022	49	0.056	19	1.311	49	3.381	79	5.451	109	7.521	139	9.591	169	11.662
20	0.023	50	0.058	20	1.380	50	3.450	80	5.520	110	7.590	140	9.660	170	11.731
21	0.024	51	0.059	21	1.449	51	3.519	81	5.589	111	7.659	141	9.729	171	11.800
22	0.025	52	0.060	22	1.518	52	3.588	82	5.658	112	7.728	142	9.798	172	11.869
23	0.026	53	0.061	23	1.587	53	3.657	83	5.727	113	7.797	143	9.867	173	11.938
24	0.028	54	0.062	24	1.656	54	3.726	84	5.796	114	7.866	144	9.936	174	12.007
25	0.029	55	0.063	25	1.725	55	3.795	85	5.865	115	7.935	145	10.005	175	12.076
26	0.030	56	0.064	26	1.794	56	3.864	86	5.934	116	8.004	146	10.074	176	12.145
27	0.031	57	0.066	27	1.863	57	3.933	87	6.003	117	8.073	147	10.143	177	12.214
28	0.032	58	0.067	28	1.932	58	4.002	88	6.072	118	8.142	148	10.212	178	12.283
29	0.033	59	0.068	29	2.001	59	4.071	89	6.141	119	8.211	149	10.281	179	12.352
30	0.035	60	0.069	30	2.070	60	4.140	90	6.210	120	8.280	150	10.351	180	12.421

U. S. GOVERNMENT PRINTING OFFICE: 1947 O - 728504

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 248
Ed. May, 1928

TIDES: Comparison of Simultaneous Observations

A) Subordinate station Grant Point, Izembek ~~Bay~~ Lagoon, Alaska Lat. 55° 16!15 N Long. 162° 54!05 W
(B) Standard station Amak Island, Alaska Lat. 55° 24!81 N Long. 163° 06!90 W
Chief of party John Bowie Time Meridian: (A) 150 W (B) 150 W

DATE. Year.	(A) STATION. Time of—		(B) STATION. Time of—		(A)–(B) Time difference.		(A) STATION. Height of—		(B) STATION. Height of—		(A)–(B) Height difference.	
	HW.	LW.	HW.	LW.	HW.	LW.	HW.	LW.	HW.	LW.	HW.	LW.
Mo. D.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
Aug. 9	10.3	5.7	8.8	2.9	1.5	2.8	3.3	0.4	6.6	0.7	-3.3	-0.3
	22.8	17.6	21.4	15.2	1.4	2.4	4.2	-0.5	7.7	0.0	-3.5	-0.5
10	11.5	6.8	10.1	4.0	1.4	2.8	3.2	0.0	6.5	-0.3	-3.3	+0.3
	23.7	18.4	22.0	16.2	1.7	2.2	4.2	0.0	7.6	0.7	-3.4	-0.7
11	12.8	7.9	11.2	5.0	1.6	2.9	3.4	-0.3	6.7	-0.9	-3.3	+0.6
	. .	19.3	. .	17.2		2.1		0.2		1.5		-1.3
12	0.4	8.5	23.2	5.8	1.2	2.7	4.2	-0.4	7.7	-0.9	-3.5	+0.5
	13.8	20.4	12.8	18.3	1.0	2.1	3.7	1.2	7.1	2.6	-3.4	-1.4
13	1.3	9.8	0.1	6.7	1.2	3.1	4.4	-0.1	7.7	-0.7	-3.3	+0.6
	15.0	21.3	13.4	19.2	1.6	2.1	4.2	1.6	7.5	3.2	-3.3	-1.6
14	2.1	10.4	0.6	7.6	1.5	2.8	4.2	0.0	7.7	-0.4	-3.5	+0.4
	16.1	22.1	14.6	20.4	1.5	1.7	4.5	2.2	7.9	3.9	-3.4	-1.7
15	3.1	11.4	1.5	8.5	1.6	2.9	4.6	0.5	7.5	-0.2	-2.9	+0.7
	17.1	23.2	15.4	21.1	1.7	2.1	4.6	2.4	7.6	4.0	-3.0	-1.6
							HHW.	HLW.	HHW.	HLW.	HHW.	HLW.
Sums												
Means												
							LHW.	LLW.	LHW.	LLW.	LHW.	LLW.
Sums												
Means												

HW. LW.
(1)=_____ | _____=Mean difference in time of high and low water respectively.
(2)=_____ | _____=Correction for difference in longitude. (Table on back of form.)
(3)=_____ | _____=(1)+(2)=Mean difference in high and low water intervals, respectively.
Feet.

(4)=_____=Mean HHW height at (A).
(5)=_____=Mean HLW height at (A).
(6)=_____=Mean LHW height at (A).
(7)=_____=Mean LLW height at (A).
(8)=_____=(4)−(6)=2DHQ at (A).
(9)=_____=(5)−(7)=2DLQ at (A).
(10)=_____=½[(4)+(6)]=Mean HW height at (A).
(11)=_____=½[(5)+(7)]=Mean LW height at (A).
(12)=_____=(10)−(11)=Mn at (A).
(13)=_____=½[(10)+(11)]=MTL at (A).

(14)=_____=Mean HHW difference.
(15)=_____=Mean HLW difference.
(16)=_____=Mean LHW difference.
(17)=_____=Mean LLW difference.
(18)=_____=(14)−(16)=2DHQ difference.
(19)=_____=(15)−(17)=2DLQ difference.
(20)=_____=½[(14)+(16)]=Mean HW difference.
(21)=_____=½[(15)+(17)]=Mean LW difference.
(22)=_____=(20)−(21)=Mn difference.
(23)=_____=½[(20)+(21)]=MTL difference.

(24)=_____=(12)+[(12)−(22)]=Mn ratio.
(25)=_____=(8)+[(8)−(18)]=DHQ ratio.
(26)=_____=(9)+[(9)−(19)]=DLQ ratio.

Results from comparison of Stations A and B. Length of Series.	HWI. Hours.	LWI. Hours.	MTL. Feet.	Mn. Feet.	DHQ. Feet.	DLQ. Feet.
Accepted values for standard station, from						
Differences and ratios: (3), (23), (24), (25), (26)				×	×	×
Corrected values for subordinate station						

Mean LW on staff at subordinate station=MTL−½Mn =_____feet.
Mean LLW on staff at subordinate station=MTL−½Mn−DLQ=_____feet.

Computed by _____, _____ (Date.) Verified by _____, _____ (Date.)

EXPLANATION OF FORM 248.

This form is designed for the comparison of tides at a subordinate station for which tidal results are sought, with the tides observed simultaneously at a standard station for which tidal constants are known.

For short series of observations the high and low waters observed at the subordinate station may be tabulated immediately in this form, in which case it will be unnecessary to tabulate them also in Form 138.

The time and height differences are to be obtained by subtracting the values at the standard station from the values at the subordinate station, and the results entered with proper signs in the columns indicated.

Find the sums and means of columns of time difference, height of tide at both stations, and height difference. For stations on the Pacific coast, where the plane of reference is mean lower low water, the heights of the higher high, lower high, higher low, and lower low waters are to be summed separately, the higher highs and lower lows being indicated by pencil check marks. For stations on the Atlantic coast, where the plane of reference is mean low water, the heights of the high waters may be all combined into a single sum, and similarly the low water heights; the headings of their sums being made to read HW and LW, respectively, by striking out the extra letters. Mean results for time and height should be carried to two decimals places, and ratios to three decimal places. If any individual difference varies greatly from the apparent average, and an examination of the original record fails to show an error, that difference should not be included in the sum; and such a value should be encircled to show that it has been rejected.

For stations on the Atlantic coast omit (4) to (9), (14) to (19), (25), (26), and the computation of DHQ and DLQ at the bottom of the form. Take (10)=mean high water height at the subordinate station, (11)=mean low water height at subordinate station, (20)=mean high water difference, and (21)=mean low water difference.

For stations on the Pacific coast, the lower part of the form should be filled out completely as indicated.

The correction for difference in longitude (2) may be obtained from the following table. Find the difference in longitude by subtracting the longitude of the subordinate station from the longitude of the standard station, considering west as positive and east as negative. The correction has the same sign as the resulting difference of longitudes.

If the kind of time used at the two stations is different, apply this difference, expressed in hours, to the difference in the time of tide as directly obtained, adding if the time meridian of the subordinate station is west of the time meridian of the standard station, and subtracting if the time meridian of the subordinate station is east of that of the standard station.

Correction for difference in longitude.

Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.
′	*Hour.*	′	*Hour.*	°	*Hour.*	°	*Hour.*	°	*Hour.*	°	*Hour.*	°	*Hour.*	°	*Hour.*
1	0.001	31	0.036	1	0.069	31	2.139	61	4.209	91	6.279	121	8.349	151	10.420
2	0.002	32	0.037	2	0.138	32	2.208	62	4.278	92	6.348	122	8.418	152	10.489
3	0.003	33	0.038	3	0.207	33	2.277	63	4.347	93	6.417	123	8.487	153	10.558
4	0.005	34	0.039	4	0.276	34	2.346	64	4.416	94	6.486	124	8.556	154	10.627
5	0.006	35	0.040	5	0.345	35	2.415	65	4.485	95	6.555	125	8.625	155	10.696
6	0.007	36	0.041	6	0.414	36	2.484	66	4.554	96	6.624	126	8.694	156	10.765
7	0.008	37	0.043	7	0.483	37	2.553	67	4.623	97	6.693	127	8.763	157	10.834
8	0.009	38	0.044	8	0.552	38	2.622	68	4.692	98	6.762	128	8.832	158	10.903
9	0.010	39	0.045	9	0.621	39	2.691	69	4.761	99	6.831	129	8.901	159	10.972
10	0.012	40	0.046	10	0.690	40	2.760	70	4.830	100	6.900	130	8.970	160	11.041
11	0.013	41	0.047	11	0.759	41	2.829	71	4.899	101	6.969	131	9.039	161	11.110
12	0.014	42	0.048	12	0.828	42	2.898	72	4.968	102	7.038	132	9.108	162	11.179
13	0.015	43	0.049	13	0.897	43	2.967	73	5.037	103	7.107	133	9.177	163	11.248
14	0.016	44	0.051	14	0.966	44	3.036	74	5.106	104	7.176	134	9.246	164	11.317
15	0.017	45	0.052	15	1.035	45	3.105	75	5.175	105	7.245	135	9.315	165	11.386
16	0.018	46	0.053	16	1.104	46	3.174	76	5.244	106	7.314	136	9.384	166	11.455
17	0.020	47	0.054	17	1.173	47	3.243	77	5.313	107	7.383	137	9.453	167	11.524
18	0.021	48	0.055	18	1.242	48	3.312	78	5.382	108	7.452	138	9.522	168	11.593
19	0.022	49	0.056	19	1.311	49	3.381	79	5.451	109	7.521	139	9.591	169	11.662
20	0.023	50	0.058	20	1.380	50	3.450	80	5.520	110	7.590	140	9.660	170	11.731
21	0.024	51	0.059	21	1.449	51	3.519	81	5.589	111	7.659	141	9.729	171	11.800
22	0.025	52	0.060	22	1.518	52	3.588	82	5.658	112	7.728	142	9.798	172	11.869
23	0.026	53	0.061	23	1.587	53	3.657	83	5.727	113	7.797	143	9.867	173	11.938
24	0.028	54	0.062	24	1.656	54	3.726	84	5.796	114	7.866	144	9.936	174	12.007
25	0.029	55	0.063	25	1.725	55	3.795	85	5.865	115	7.935	145	10.005	175	12.076
26	0.030	56	0.064	26	1.794	56	3.864	86	5.934	116	8.004	146	10.074	176	12.145
27	0.031	57	0.066	27	1.863	57	3.933	87	6.003	117	8.073	147	10.143	177	12.214
28	0.032	58	0.067	28	1.932	58	4.002	88	6.072	118	8.142	148	10.212	178	12.283
29	0.033	59	0.068	29	2.001	59	4.071	89	6.141	119	8.211	149	10.281	179	12.352
30	0.035	60	0.069	30	2.070	60	4.140	90	6.210	120	8.280	150	10.351	180	12.421

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DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 248
Ed. May, 1928

TIDES : Comparison of Simultaneous Observations

A) Subordinate station Grant Point, Izembek Lagoon, Alaska Lat. 55° 16!15 N Long. 162° 54!05 W
(B) Standard station Amak Island, Alaska Lat. 55° 24!81 N Long. 163° 06!90 W
Chief of party John Bowie Time Meridian: (A) 150 W (B) 150 W

DATE. Year.	(A) STATION. Time of—		(B) STATION. Time of—		(A)—(B) Time difference.		(A) STATION. Height of—		(B) STATION. Height of—		(A)—(B) Height difference.	
	HW.	LW.	HW.	LW.	HW.	LW.	HW.	LW.	HW.	LW.	HW.	LW.
Mo. D.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.
Aug. 16	3.5	12.2	2.1	9.5	1.4	2.7	4.3	0.1	7.1	-0.2	-2.8	+0.3
	18.1	23.7	16.4	22.1	1.7	1.6	4.1	2.2	7.2	4.0	-3.1	-1.8
17	4.0	12.6	2.6	10.0	1.4	2.6	3.6	-0.5	6.5	0.0	-2.9	-0.5
	19.0		17.3		1.7		4.2		7.2		-3.0	
18	4.8	0.5	3.3	22.7	1.5	1.8	3.9	2.5	6.6	4.6	-2.7	-2.1
	19.7	13.3	18.3	10.8	1.4	2.5	4.5	-0.1	7.5	0.7	-3.0	+0.8
19	5.6	1.4	4.3	0.0	1.3	1.4	4.1	2.8	6.6	5.0	-2.5	-2.2
		14.0		11.7		2.3		0.3		1.3		-1.0
							HHW.	HLW.	HHW.	HLW.	HHW.	HLW.
Sums											92.7	-21.3
Means											- 3.20	- 1.52
							LHW.	LLW.	LHW.	LLW.	LHW.	LLW.
Sums												+ 4.8
Means												+ 0.34

	HW.	LW.	
(1)=			=Mean difference in time of high and low water respectively.
(2)=			=Correction for difference in longitude. (Table on back of form.)
(3)=	1.44 Feet.	2.32	=(1)+(2)=Mean difference in high and low water intervals, respectively.

(4)= =Mean HHW height at (A). (5)= Feet. =Mean HLW height at (A).
(6)= =Mean LHW height at (A). (7)= =Mean LLW height at (A).
(8)= =(4)−(6)=2DHQ at (A). (9)= =(5)−(7)=2DLQ at (A).
(10)= =½[(4)+(6)]=Mean HW height at (A). (11)= =½[(5)+(7)]=Mean LW height at (A).
(12)= =(10)−(11)=Mn at (A). (13)= =½[(10)+(11)]=MTL at (A).

(14)= =Mean HHW difference. (15)= =Mean HLW difference.
(16)= =Mean LHW difference. (17)= =Mean LLW difference.
(18)= =(14)−(16)=2DHQ difference. (19)= =(15)−(17)=2DLQ difference.
(20)= =½[(14)+(16)]=Mean HW difference. (21)= =½[(15)+(17)]=Mean LW difference.
(22)= =(20)−(21)=Mn difference. (23)= =½[(20)+(21)]=MTL difference.

(24)= =(12)+[(12)−(22)]=Mn ratio. (25)= =(8)+[(8)−(18)]=DHQ ratio.
(26)= =(9)+[(9)−(19)]=DLQ ratio.

Results from comparison of Stations A and B. Length of Series.	HWI. Hours.	LWI. Hours.	MTL. Feet.	Mn. Feet.	DHQ. Feet.	DLQ. Feet.
Accepted values for standard station, from						
Differences and ratios: (3), (23), (24), (25), (26)				×	×	×
Corrected values for subordinate station						

Mean LW on staff at subordinate station=MTL−½Mn =.....feet.
Mean LLW on staff at subordinate station=MTL−½Mn−DLQ=.....feet.

Computed by ....., ... (Date.) Verified by ....., ... (Date.)

EXPLANATION OF FORM 248.

This form is designed for the comparison of tides at a subordinate station for which tidal results are sought, with the tides observed simultaneously at a standard station for which tidal constants are known.

For short series of observations the high and low waters observed at the subordinate station may be tabulated immediately in this form, in which case it will be unnecessary to tabulate them also in Form 138.

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Find the sums and means of columns of time difference, height of tide at both stations, and height difference. For stations on the Pacific coast, where the plane of reference is mean lower low water, the heights of the higher high, lower high, higher low, and lower low waters are to be summed separately, the higher highs and lower lows being indicated by pencil check marks. For stations on the Atlantic coast, where the plane of reference is mean low water, the heights of the high waters may be all combined into a single sum, and similarly the low water heights; the headings of their sums being made to read HW and LW, respectively, by striking out the extra letters. Mean results for time and height should be carried to two decimals places, and ratios to three decimal places. If any individual difference varies greatly from the apparent average, and an examination of the original record fails to show an error, that difference should not be included in the sum; and such a value should be encircled to show that it has been rejected.

For stations on the Atlantic coast omit (4) to (9), (14) to (19), (25), (26), and the computation of DHQ and DLQ at the bottom of the form. Take (10)=mean high water height at the subordinate station, (11)=mean low water height at subordinate station, (20)=mean high water difference, and (21)=mean low water difference.

For stations on the Pacific coast, the lower part of the form should be filled out completely as indicated.

The correction for difference in longitude (2) may be obtained from the following table. Find the difference in longitude by subtracting the longitude of the subordinate station from the longitude of the standard station, considering west as positive and east as negative. The correction has the same sign as the resulting difference of longitudes.

If the kind of time used at the two stations is different, apply this difference, expressed in hours, to the difference in the time of tide as directly obtained, adding if the time meridian of the subordinate station is west of the time meridian of the standard station, and subtracting if the time meridian of the subordinate station is east of that of the standard station.

Correction for difference in longitude.

Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.	Difference.	Correction.
′	*Hour.*	′	*Hour.*	°	*Hour.*	°	*Hour.*	°	*Hour.*	°	*Hour.*	°	*Hour.*	°	*Hour.*	°	*Hour.*
1	0.001	31	0.036	1	0.069	31	2.139	61	4.209	91	6.279	121	8.349	151	10.420		
2	0.002	32	0.037	2	0.138	32	2.208	62	4.278	92	6.348	122	8.418	152	10.489		
3	0.003	33	0.038	3	0.207	33	2.277	63	4.347	93	6.417	123	8.487	153	10.558		
4	0.005	34	0.039	4	0.276	34	2.346	64	4.416	94	6.486	124	8.556	154	10.627		
5	0.006	35	0.040	5	0.345	35	2.415	65	4.485	95	6.555	125	8.625	155	10.696		
6	0.007	36	0.041	6	0.414	36	2.484	66	4.554	96	6.624	126	8.694	156	10.765		
7	0.008	37	0.043	7	0.483	37	2.553	67	4.623	97	6.693	127	8.763	157	10.834		
8	0.009	38	0.044	8	0.552	38	2.622	68	4.692	98	6.762	128	8.832	158	10.903		
9	0.010	39	0.045	9	0.621	39	2.691	69	4.761	99	6.831	129	8.901	159	10.972		
10	0.012	40	0.046	10	0.690	40	2.760	70	4.830	100	6.900	130	8.970	160	11.041		
11	0.013	41	0.047	11	0.759	41	2.829	71	4.899	101	6.969	131	9.039	161	11.110		
12	0.014	42	0.048	12	0.828	42	2.898	72	4.968	102	7.038	132	9.108	162	11.179		
13	0.015	43	0.049	13	0.897	43	2.967	73	5.037	103	7.107	133	9.177	163	11.248		
14	0.016	44	0.051	14	0.966	44	3.036	74	5.106	104	7.176	134	9.246	164	11.317		
15	0.017	45	0.052	15	1.035	45	3.105	75	5.175	105	7.245	135	9.315	165	11.386		
16	0.018	46	0.053	16	1.104	46	3.174	76	5.244	106	7.314	136	9.384	166	11.455		
17	0.020	47	0.054	17	1.173	47	3.243	77	5.313	107	7.383	137	9.453	167	11.524		
18	0.021	48	0.055	18	1.242	48	3.312	78	5.382	108	7.452	138	9.522	168	11.593		
19	0.022	49	0.056	19	1.311	49	3.381	79	5.451	109	7.521	139	9.591	169	11.662		
20	0.023	50	0.058	20	1.380	50	3.450	80	5.520	110	7.590	140	9.660	170	11.731		
21	0.024	51	0.059	21	1.449	51	3.519	81	5.589	111	7.659	141	9.729	171	11.800		
22	0.025	52	0.060	22	1.518	52	3.588	82	5.658	112	7.728	142	9.798	172	11.869		
23	0.026	53	0.061	23	1.587	53	3.657	83	5.727	113	7.797	143	9.867	173	11.938		
24	0.028	54	0.062	24	1.656	54	3.726	84	5.796	114	7.866	144	9.936	174	12.007		
25	0.029	55	0.063	25	1.725	55	3.795	85	5.865	115	7.935	145	10.005	175	12.076		
26	0.030	56	0.064	26	1.794	56	3.864	86	5.934	116	8.004	146	10.074	176	12.145		
27	0.031	57	0.066	27	1.863	57	3.933	87	6.003	117	8.073	147	10.143	177	12.214		
28	0.032	58	0.067	28	1.932	58	4.002	88	6.072	118	8.142	148	10.212	178	12.283		
29	0.033	59	0.068	29	2.001	59	4.071	89	6.141	119	8.211	149	10.281	179	12.352		
30	0.035	60	0.069	30	2.070	60	4.140	90	6.210	120	8.280	150	10.351	180	12.421		

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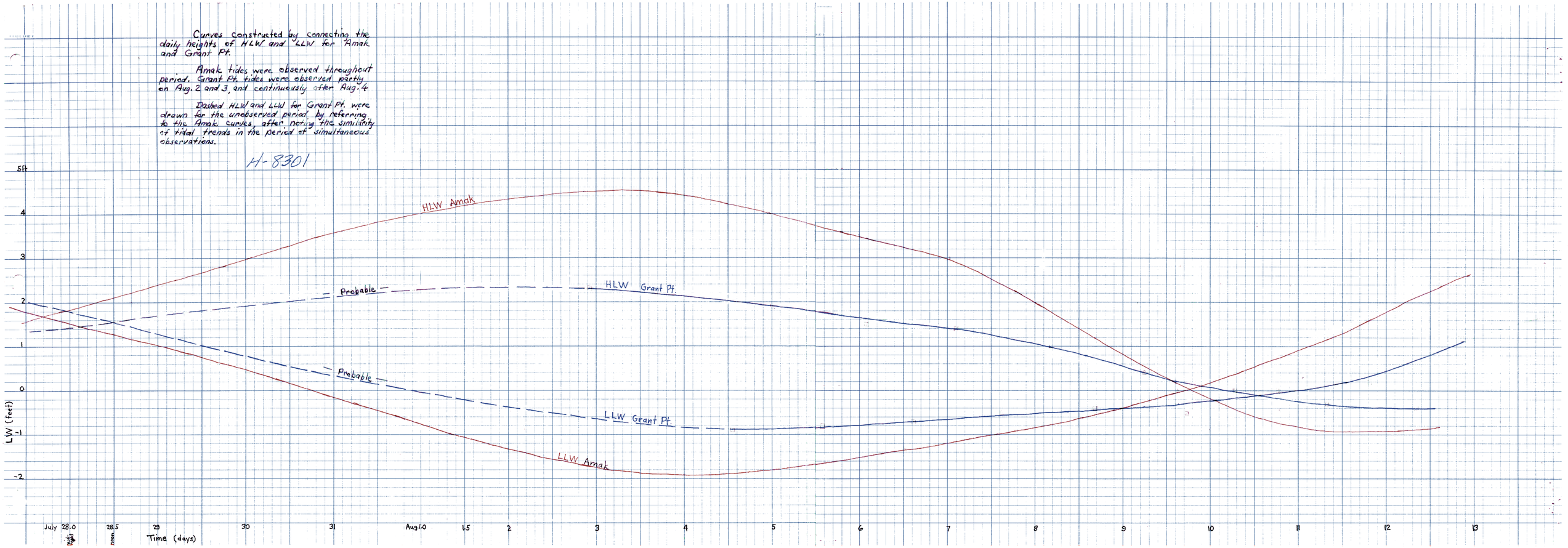
Curves constructed by connecting the daily heights of HLW and LLW for Amak and Grant Pt.

Amak tides were observed throughout period. Grant Pt. tides were observed partly on Aug. 2 and 3, and continuously after Aug. 4

Dashed HLW and LLW for Grant Pt. were drawn for the unobserved period by referring to the Amak curves, after noting the similarity of tidal trends in the period of simultaneous observations.

H-8301



H-8301

TIDE CURVES

Showing HLW's and LLW's for Amak Id. and Grant Pt. tide stations during period of simultaneous observations & projected to show the probable HLW's and LLW's at Grant Pt. during the period of no observations.

COAST PILOT NOTES

SHIP PATHFINDER

PROJECT CS-13750, JUNE - SEPT. 1956

SHEETS 2256, 2556, 2756, 2856

The following is submitted to supersede the text in the U. S. Coast Pilot - Alaska - Part II - Yakutat Bay to Arctic Ocean - Fifth (1947) Edition from Line 41, Page 510 through Line 10, Page 512.

From Isanotski Strait to Cape Glazenap, about 19 miles, the coast retains the same general direction. It is low with grassy bluffs in places, 50 to 100 feet high.

Cape Glazenap (lat. 55° 15' n., Long. 163° 01' W) is prominent in that it is higher - 175 feet - than any part of the coast in this general locality. This high land marks the southwest entrance to Izembek Lagoon.

Izembek Lagoon covers a large area bordered mostly by low marshes. It is crossed in many directions by sloughs of shallow depths. Most of the lagoon is bare or awash at low tide. The bottom is mud and sand. The channels that exist are difficult to follow except at low tide stages and is not recommended for craft drawing more than 3 or 4 feet.

The entrance channel at Cape Glazenap is narrow and shifting. Breakers make out for about 1 mile off the entrance. In 1956 the channel depth was 1 fathom. It is between breakers and lies close to Cape Galzenap. Fishermen mark the entrance to the channel by a gas drum buoy during the summer.

The wreck of an old schooner is a conspicuous landmark.

The channel from Cape Glazenap to Grant Point is narrow and crooked. Local knowledge should be obtained before entering Izembek Lagoon.

Glen and Operl Islands are low,narrow, grass covered islands extending between Cape Glazenap and Moffet Point along the northwest side of Izembek Lagoon.

Lights from the radio towers at Cold Bay are visible for about 20 miles on clear nights.

AMAK ISLAND TO PORT MOLLER

CHART 8802

Amak Island is of volcanic origin, 1791 feet in height and almost round. Its north-south width is 2.4 miles; east-west width 2.0 miles. The beaches are mostly huge boulders and bluffs except at the south, where there is a small flat. A small airstrip was built here during World War II. There is foul ground off the north side of the island; several rocks and reefs and Sealion Rock, 2-1/2 miles to the northwest. The latter is 95 feet high and its southern slope occupied by an extensive rookery of sea lions.

Amak Island is 10 miles N.N.W. of Cape Glasenap. The passage between Amak Island and the islands bordering Isembek Lagoon is clear and is the usual track for small vessels and fishing boats. Depths in the center of the passage are 10 fathoms or better. Currents are about 2 knots. A reef lies off the southeast end of Amak Island. It extends eastward 1/3 mile and bares on low tides. This reef should be given a wide berth.

No anchorages are recommended but in emergencies, small craft can obtain a little protection from westerly weather by anchoring in the lee of the east side.

SEALION ROCK LIGHT, 92 feet above the water, is located near the top of Sealion Rock. It is a weak light and not visible from the south as the top of the small white box structure is several feet lower than the high point of the rock.

MOFFET POINT is a curving sandy hook with sand dunes 40 to 60 feet in height. A channel between Operl Island and Moffet Point leads into the northeastern part of Isembek Lagoon. The channel leads through breakers and during the summer is marked by gas drum buoys by local fishermen. In 1956 the depth over the bar was 2 fathoms. Passage should not be attempted without local knowledge and only then with small boats of 3 or 4 feet draft.

MOFFET LAGOON is shallow and crossed by numerous gulleys. The bottom is sand and mud, and bares over an extensive area at low tide. Moffet Lagoon joins Isembek Lagoon via an opening between Moffet Point and Blaine Point. Joshua Green River empties into Moffet Lagoon.

JOHN BOWIE
CAPTAIN, C&GS
COMDG. SHIP PATHFINDER

APPROVAL SHEET

HYDROGRAPHIC SURVEY H-8301 (PF-2856)

This survey was done under my close supervision. I consider this survey complete and adequate for charting. No additional work is recommended within the area covered.

for John Bowie JOB

John Bowie
CAPT, C&GS
Comdg. Ship PATHFINDER

GEOGRAPHIC NAMES

Survey No. H-8301

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
Alaska Peninsula										1
Bristol Bay										2
Izembek ~~Bay~~ Lagoon										3
~~Lennox Island~~ — omit L.H 12/1/56 L S.S.										4
Moffet ~~Bay~~ Lagoon										5
Moffet Point										6
Neumann Island										7
Strawberry Point										8
				4-4-57 GJW						9
				1-12-58 LA						10
										11
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										27

M 234

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. 8391....

Records accompanying survey:

Boat sheets ..3..; sounding vols. 10...; wire drag vols. .....;

bomb vols. .....; graphic recorder rolls 7-Envelopes.

special reports, etc. 1-Smooth sheet with tracing, and 1-Descriptive Report. 2-Special Reports with Shoran and Fathometer Corrections, see Descriptive Report H-8297.....

The following statistics will be submitted with the cartographer's report on the sheet:

Number of positions on sheet		2038
Number of positions checked		224
Number of positions revised		13
Number of soundings revised (refers to depth only)		48
Number of soundings erroneously spaced		9
Number of signals erroneously plotted or transferred		0
Topographic details	Time	16
Junctions	Time	8
Verification of soundings from graphic record	Time	18

Verification by E. F. Pace ..... Total time 204 Date 11-10-58

Reviewed by ..... Time 15 Date 12/2/58

M-2232-1

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-8301 FIELD NO. PF 2856

Alaska - North Side Alaska Peninsula
Vicinity of Neumann Island

Surveyed: July-August 1956 Scale 1:20,000

Project No. 13750

Soundings:

808 Depth Recorders

Control:

Shoran
Sextant fixes on shore signals

Chief of Party - John Bowie
Surveyed by - F. X. Popper, W. E. Randall, J. O. Boyer, G. W. Thompson
Protracted by - R. D. Bernard
Soundings plotted by - R. D. Bernard
Verified and inked by - E. F. Pace
Reviewed by - L. S. Straw Date 21 November 1958
Inspected by - R. H. Carstens

1. Shoreline and Control

The shoreline originates with the unreviewed air photographic surveys T-11472, T-11473, T-11474, and T-11475 of 1952-56 except for the north shoreline of Neumann Island and the vicinity of Moffet Point where, because of continual natural changes, the shoreline was subsequently determined by the hydrographer and is shown by a dashed red line on the smooth sheet.

The source of the control is given in the Descriptive Report.

2. Sounding Line Crossings

The sounding line crossings are adequate.

3. Depth Curves and Bottom Characteristics

The usual depth curves outside of Izembek Lagoon and Moffet Lagoon were adequately developed. The bottom is irregular from the high water line to the 3-fathom curve and is characterized by fine black sand.

The entrance channel is apparently subject to considerable changes in respect to depth and location. At the time of the present survey the depth over the bar in lat. 55° 26.35', long. 162° 40.90' was about two fathoms.

Izembek Lagoon and Moffet Lagoon include extensive areas of mud and sand which are awash at low tide and are crossed in many directions by shallow meandering channels. Only the deepest channels could be surveyed and they are depicted generally by dashed depth curves. Where conflicts or changes in the bottom were not indicated by the soundings, the low water line is supplemented by the black dotted curve from the air photographic surveys.

4. Junctions with Contemporary Surveys

The junctions with H-8297 (1956) on the west and H-8302 (1956) on the north are adequate. There is no contemporary survey adjoining on the northeast.

5. Comparison with Prior Surveys

There are no prior surveys by this Bureau in this area.

6. Comparison with Chart 8860 (latest print date 3/24/58)
8802 (latest print date 9/29/58)

A. Hydrography

No hydrography is charted within the limits of the present survey.

B. Topography

The island charted off Moffet Point on Chart 8802 has connected to the mainland and is shown as a peninsula on the present survey. Neumann Island has been joined with another small island on the southwest which in effect extends its length about one mile.

C. Aids to Navigation

There are no official aids to navigation within the limits of the present survey.

7. Condition of Survey

a. The sounding records and the Descriptive Report are complete and comprehensive.

b. The smooth plotting was well done.

c. Because of the character of the entrance area, the location of the low-water line could not be completely determined by the hydrographer.

8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions.

9. Additional Field Work

This survey is considered basic and no additional work is recommended.

Examined and approved:

Max G. Ricketts
Chief, Nautical Chart Branch

Ernest B. Lewey
Chief, Division of Charts

Lorin F. Woodcock
Chief, Hydrography Branch

Samuel B. Grenell
Chief, Division of Coastal Surveys

KA C

Form 712
(11-30-55)

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

Chart Division: R. H. Carstens: 9 April 1957

Plane of reference approved in
10 volumes of sounding records for

HYDROGRAPHIC SHEET 8301

Locality Alaska Peninsula, North Side

Chief of Party: J. Bowie in 1956

Plane of reference is mean lower low water reading

2.5 ft. on tide staff at Amak Island

16.4 ft. below B.M. 2 (1941)

3.2 ft. on tide staff at Grant Point

11.6 ft. below B.M. 1 (1943)

Height of mean high water above plane of reference is:

Amak Island = 6.9 ft.

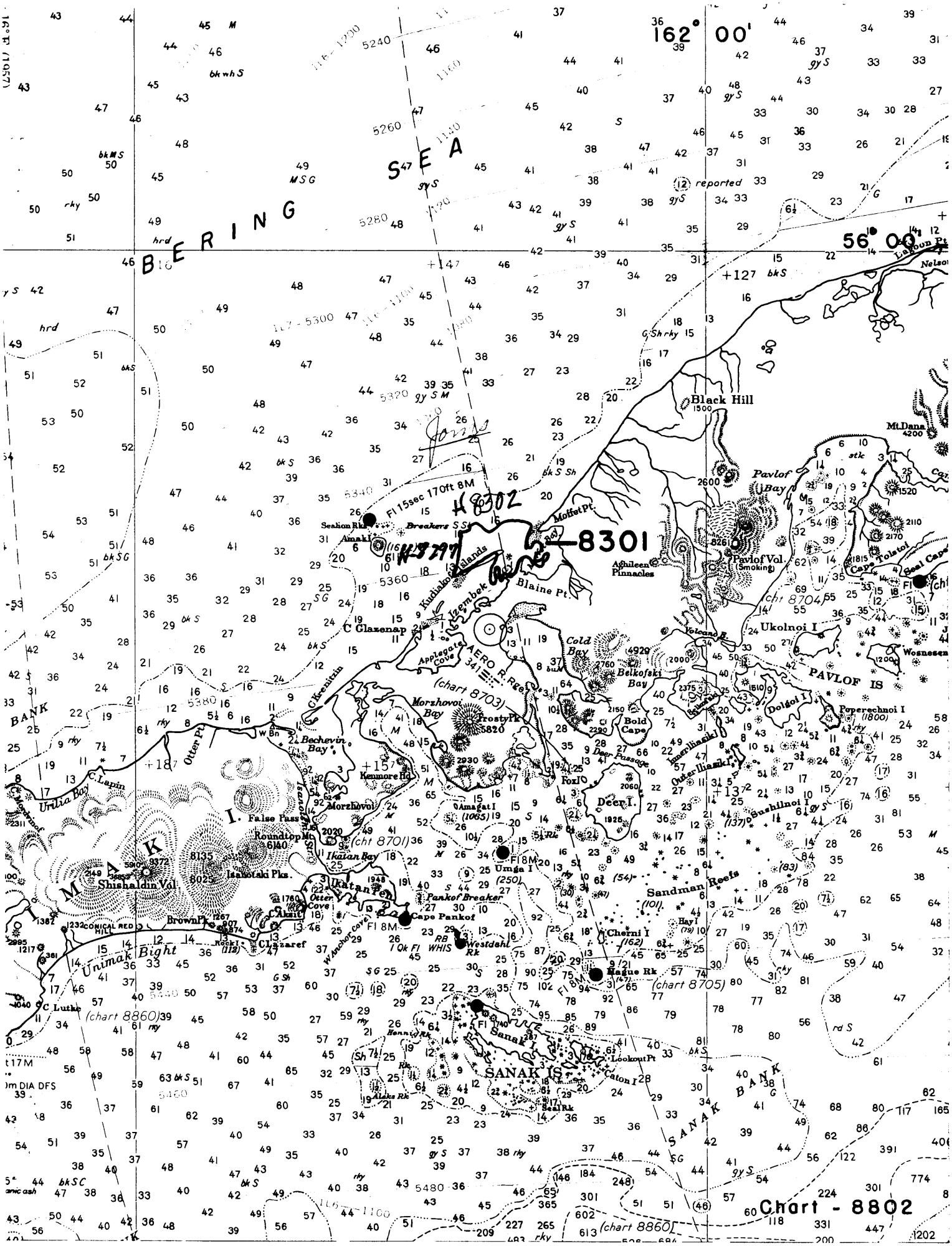
Grant Point = 4.7 ft.

Condition of records satisfactory except as noted below:

William Shafus
Signature

Chief, Tides Branch

Comm-DC 34330


162° 00'
56° 00'
BERING SEA
Black Hill
1500
Mt Dana
4200
Pavlof Bay
Pavlof Vol.
(smoking)
Moffet Pt.
Blaine Pt.
Seahorn Rk
Amaki
Breakers
Fl 15sec 17ft 8M
Aghileen Pinnacles
Kudiakof Islands
Izembek
C Glazenap
Applegate Cove
AERO
R. Rge
(chart 8703)
Cold Bay
Belkofski Bay
Volcano B
Ukolnoi I
PAVLOF IS
Dolgoi I
Popercchnoi I
(1800)
Bold Cape
Deer Passage
Deer I.
Outer Iliaski
Inner Iliaski
Sushilnoi I
Morzhovoi Bay
Frosty Pk
5820
Bechevin Bay
W Bn
Otter Pt
C Lapin
Urilia Bay
Kennore Hd
Morzhovoi
Amagat I
(1065)
Fl 8M
Umga I
(250)
Sandman Reefs
(101)
Hay I
(79)
Cherni I
(162)
Ikatan Bay
Round Top Mt
2140
Ikatan Pk
2020
Isanotski Pks.
8135
8025
Shishaldin Vol
9372
Ikatan Pen
Otter Cove
Pankof Breaker
Cape Pankof
Fl 8M
Westdahl Rk
RB WHIS
W Anchor Cove
Alaska
Brown Pk
1267
CONICAL RED HILL
Unimak Bight
C Lazaref
C Lutke
(chart 8860)
(chart 8701)
(chart 8705)
Hague Rk
Sanak I
SANAK IS
Lookout Pt
Eaton I
Alaka Rk
Sail Rk
SANAK BANK
Chart - 8802
8301
H8302
H8297