

9165

9165

Diag. Cht. No. 9302, 9370 & 9380

FORM C&GS-504	
U.S. DEPARTMENT OF COMMERCE ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION COAST AND GEODETIC SURVEY	
DESCRIPTIVE REPORT	
Type of Survey	ConShelf
Field No. RA-100-5-70	Office No. H-9165
LOCALITY	
State	Alaska
General locality	Bering Sea
Locality	Norton Sound & St. Lawrence Is.
1970	
CHIEF OF PARTY	
Roger F. Lanier, Captain, NOAA	
LIBRARY & ARCHIVES	
DATE	7-6-71

H-9165

etc
1370
1370

916

Applied to state 10/28/71

Cal
Check for Motive to Mourners TAB 10/5/72

HYDROGRAPHIC TITLE SHEET

H-9165

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

FIELD NO.

See Remarks
RA-100-5-70

State Alaska
 General locality Bering Sea
 Locality Norton Sound to St. Lawrence Island
 Scale See Remarks Date of survey 7/5/70 - 9/18/70
 Instructions dated 10 March 1970 Project No. OPR-483
 Vessel NOAA Ship RAINIER
 Chief of party Roger F. Lanier, Captain, NOAA
 Surveyed by Ship Personnel
 Soundings taken by echo sounder, hand lead, pole DE-723 Survey Fathometers 819& 822
 Graphic record scaled by Ship Personnel
 Graphic record checked by Ship Personnel
 Protracted by ^{Pos. ver.} PMC Personnel Automated plot by PMC
 Soundings penciled by PMC Personnel chts
9300
9370
9220
 Soundings in ~~1000's~~ feet at ~~MLW~~ MLLW 9370
9220

REMARKS:

Register No.	Field No.	Scale
H-9163	RA-100-2-70	1:100,000
H-9048	RA-100-3-70	"
H-9164	RA-100-4-70	"
H-9165	RA-100-5-70	"
H-9166	RA-100-6-70	"
H-9026	--	"
-	RA-1714NA-70	1:243,000 approx.
-	RA-1714NB-70	"

DJK

DESCRIPTIVE REPORT

TO

ACCOMPANY

HYDROGRAPHIC SURVEYS

H-9163	Field No. RA-100-2-70
H-9048	Field No. RA-100-3-70
H-9164	Field No. RA-100-4-70
H-9165	Field No. RA-100-5-70
H-9166	Field No. RA-100-6-70
H-9026	-----
-----	1714NA
-----	1714NB

SCALE OF SURVEY: Basic= 1:100,000
1714NA & 1714NB= 1:243,000 approx.

1970

NOAA SHIP RAINIER

ROGER F. LANIER, CAPTAIN, NOAA

COMMANDING OFFICER

A. PROJECT

Project number: OPR-483
Original instructions dated: 10 March 1970
Change Number One dated: 16 March 1970
Change Number Two dated: 19 June 1970

B. AREA SURVEYED

This survey included all of Norton Sound, the area deeper than six fathoms adjoining the Yukon River Delta, and a strip 30 miles in a North-South direction from the Yukon River Delta to St. Lawrence Island. The approximate limits of the survey are as follows:

N. Limit	S. Limit	E. Limit	W. Limit	Line Spacing
64° 20'N	63° 40'N	161° 30'W	164° 00'W	5 nm
64° 20'N	63° 40'N	164° 00'W	166° 00'W	15 nm
63° 50'N	63° 35'N	164° 00'W	165° 30'W	1 nm
63° 35'N	63° 10'N	164° 10'W	164° 25'W	1 nm
63° 30'N	63° 00'N	164° 25'W	168° 50'W	1 nm

Inclusive dates for this survey are 5 July to 18 September 1970. See Special Note on page 13a.

The following is a listing of prior and contemporary surveys covering areas that were surveyed in 1970.

Prior surveys:

Prior Sheet #	Scale	Date	1970 Surveys
H-8124	1:40,000	1954	H-9163
8122	1:20,000	1954	H-9163
2507	1:100,000	1900	1714NA & NB, H-9166, 9026
7115	1:800,000	1950	H-9163
2620	1:40,000	1902	H-9163
2462	1:200,000	1899	H-9048, 9026, 9164, 9165, 9166, 1714NA & NB.

Contemporary surveys:

Cont. Sheet #	Scale	Date	1970 Survey
H-9048	1:100,000	1969	H-9163, 9048, 9164
9164	"	1970	H-9148, 9166
9025	"	1969	H-9164, 9026
9026	"	1969	H-9164, 9026
9022	"	1969	H-9026
9166	"	1970	H-9026, 9065
9165	"	1970	H-9166

C. SOUNDING VESSEL

The data on all the sheets included in this report was collected by the NOAA Ship RAINIER.

D. SOUNDING EQUIPMENT

Raytheon DE-723 (serial nos. 822 & 819) Fathometers were used exclusively during this survey.

For methods used to determine echo sounder corrections see Special Report On Echo Sounder Corrections, OPR-483, 1970.

Care was exercised to insure that any misadjustment or misalignment of the Fathometers would not affect the quality of the soundings obtained on the survey. Frequent underway checks were made on the initial setting, A-F check, and fine arc readings, and the results were later abstracted. These findings are included in the Report on Echo Sounder Corrections mentioned above.

E. SMOOTH SHEETS

The smooth sheet projections and the smooth plot of this survey will be machine plotted by the Electronic Data Processing Branch, Pacific Marine Center.

There will be no 1714NA and 1714NB smooth sheets. The smooth plot of lines run on these sheets will be put on the 1:100,000 sheets covering the same area.

F. CONTROL

The control for all sheets except 1714NA and 1714NB was Range-Range Hi-Fix, frequency 1799.6 KHZ. Control for 1714NA and NB was Loran C.

See the special Hi-Fix Report, OPR-483, 1970 for a discussion of the Hi-Fix calibration methods and an abstract of the actual calibrations.

Relative accuracy of the Hi-Fix positions should be considered to be plus or minus one lane (83m). This figure reflects the difficulty that was experienced in maintaining an accurate lane count, and also the ambiguity that was apparent in the values of the calibration buoys.

Frequent loss of lane count was suffered because of Hi-Fix equipment failures. The RAINIER's Electronics Technicians, in most instances, were able to restore the signal with a minimum time loss. The ship was usually able to restore the lane count by carefully scanning the stripchart recorder. When this was not possible, the ship proceeded to recalibrate.

The great distance from the shore stations was also a factor in the difficulty of maintaining an accurate lane count. This was especially true on sheets H-9163 and H-9048 where the distances ranged up to 180 miles. The Hi-Fix Manual, while discussing Baseline (Master-Slave) distance, states that "A good working maximum over seawater in average to good noise conditions is 50 miles, but this can be stretched a little under good conditions." The loss of signal due to random noise and the weakness of the signal was a serious problem, especially on sheets H-9163 and H-9048. This was most noticeable during the hours between sunset and sunrise.

The excessive distance, and the correspondingly weak signal between the ship and the shore stations, caused numerous lane jumps resulting in gains and losses in the lane count. In many instances the proper corrections could be applied and survey operations continued. It was often necessary, however, when the signal was lost completely, to break line and make a long, time consuming trip to the nearest calibration buoy.

The ambiguity in the lane count of the calibration buoy is adequately treated in the Hi-Fix Calibration Report. It is, however, appropriate to discuss the resulting field problem and the solution in this report.

The ship always calibrated, ran the designated lines, and attempted to carry the lane count to a final calibration. Several times the ship found that after carrying a strong lane count through to a final calibration the

result would differ by one lane. This problem was compounded when the lane count was not as strong due to lane losses or gains. The situation was resolved by holding the strongest calibration.

Absolute accuracy, assuming a proper lane count, should be excellent in areas of good intersection. A check was made on a baseline crossing, position 121 on sheet H-9026, which confirmed within 1.5 meters the computed geodetic distance between the two shore stations. See appendix B for the actual computation.

A control problem worthy of specific notice occurred on sheet H-9165. At position 35 the lane count was lost completely. The signal returned at position 52 and a tentative lane count was established based on the D.R. position. After calibration, the correct count was backed up to position 52. The positions between where the count was lost and where it resumed were then plotted on time and course.

The baseline was crossed several times on sheets H-9166 and H-9026. These crossings were plotted by holding the rate with the lowest reading, time, and course. Difficulty was experienced only on sheet H-9026 between positions 108 and 128. A considerable jump was encountered in the vicinity of the baseline which was probably caused by inaccuracies in the Hi-Fix range rings as drawn on the boat sheet. Soundings were omitted on the boat sheet in the problem area. There should be little difficulty in plotting them on the smooth sheet.

The following is some information about the two shore stations used in this survey:

Shore Station	Pattern	Location	Method of Location
SHER, 1969	P1	Stuart Is.	2nd order triang.
RUBE, 1969	P2	Cape Nome	2nd order triang.

See the Triangulation Report, OPR-483, 1970 for a more detailed discussion of the method of location of the above stations and for the location of stations used for control of the calibrations.

Sheets 1714NA and 1714NB were plotted using Loran C control while Hi-Fix was not operational. The quality of the Loran C positions for the area covered by these sheets was relatively good. Two ten micro-second jumps were encountered, but easily resolved by radar fixes. A relatively minor amount of smoothing of positions was necessary to remove the inherent inaccuracies in the Loran control. Positions shown on these sheets may be considered accurate to approximately 0.3nm.

G. SHORELINE

Because of the nature of this bathymetric survey no shoreline investigation was made. All shoreline shown on the boat sheets has been generalized from charts of the area. No attempt was made to define the low water line.

H. CROSSLINES

Crosslines on all the sheets in this survey have been adversely affected by the lack of adequate tide reducers. The tides problem is treated in the tide zoning and correspondence sections of the Tide Report, OPR-483, 1970; therefore no attempt will be made to discuss it here.

The flat, shallow bottom in the Norton Sound area most likely compounded the discrepancies at crossings since a strong wind would tend to pile up water in certain sections. Whenever an apparently bad crossing was found an examination of the fathogram, DCU printout, and position information was made.

The following is a breakdown by boat sheet of the crossing investigations:

Sheet H-9163

Crosslines amounted to 28.6% of the total miles run. Crossings on this sheet looked very good. Approximately 90% of them fall into the zero to two foot range. The maximum discrepancy encountered was five feet.

The five foot crossing occurred at positions 335 and 1117. A check of the fathogram did not reveal the cause of the discrepancy and both lines have good crossings before and after this location. It is assumed that tides will resolve most of the five foot difference.

Sheet H-9048

Crosslines amounted to 10.2% of the total miles run. Approximately 80% of the crossings fell into the zero to two foot range, 15% were three feet, and the remaining 5% was four feet. All discrepancies appear to be caused by tides.

Special problems were encountered while drawing the depth curves. In the Southeastern quarter of the sheet the tides seem to have had a relatively large effect on the soundings. This caused large "wiggles" in the depth curves. These "wiggles" were extensively investigated and no apparent cause, other than tides, could be found. The Southeastern quarter adjoins the Yukon Delta, and a large pile up of water could be expected due to wind action in this area.

Sheet H-9164

Crosslines amounted to 13.7% of the total miles run. Crosslines on this sheet were not as good as on the two sheets previously discussed. This is probably due to the increased shoaling on H-9164. The crossings, however, show reasonably good consistency. Approximately 50% of the crossings fell into the zero to two foot range and the remaining 50% were in the three to four foot range.

The apparent jump in the eleven fathom depth curve seems to be the result of the tides problem.

Sheet H-9165

Crosslines amounted to 24.1% of the total miles run. This statistic, however, means very little because of the wide spacing of the lines. All crossings fall into the zero to two foot range except for one which is three feet.

Sheet H-9166

Crosslines amounted to 36.9% of the total miles run. Again, this figure is misleading because of the wide line spacing. All crossings fell into the zero to two foot range.

Sheet H-9026

There were no crosslines on this sheet. One crossing was experienced revealing a three foot discrepancy.

Sheet 1714NA

One of the three lines on this sheet may be considered a crossline. This amounted to 18.3% of the total mileage. The two crossings looked very good.

Sheet 1714NB

Crosslines were nearly equal to the main scheme lines on this sheet. They amounted to 49.9% of the total miles run. The crossings look excellent in view of Loran C control and the tide problem. Roughly 80% are in the zero to two foot range and most of the remaining crossings disagree by three feet.

An examination of the fathogram at two apparently bad crossings reveals discrepancies of only three feet. These crossings occur at position 378 between positions 525 and 526 and at position 528 between positions 358 and 359. The crossings appear bad only because of the sampling rate for selecting soundings to put on the sheet.

I. JUNCTIONS

Sheet H-9163

The junction with prior survey H-8122 (1954) is very sketchy because of the limited common area. A comparison of soundings looks fairly good. Most of the soundings on H-9163 are from one to four feet deeper than those on H-8122. This is to be expected since the new soundings have not been reduced for tides.

The junction with contemporary survey H-9024 is generally good. In most cases the soundings from H-9163 are two to three feet deeper because of tides.

The junction with contemporary survey H-9048 (1969) is quite extensive and appears to be very good. On survey H-9163 some of the H-9048 lines were split. Also, other H-9048 lines served as crosslines and provided an excellent opportunity for comparison. The lines that were split were generally two to three feet shoaler than the new lines because of tide. This discrepancy was represented by "wiggles" in the depth curves when crossing the lines run on H-9048. The lines run on H-9048 which crossed the 1970 work showed good general agreement (zero to four feet).

Although sheet H-9163 adjoins sheets H-9025 and H-9024, the surveys do not junction. The five mile gap between H-9163 and the other two surveys is covered on sheets H-9048 (1969) and H-9027.

The junction with sheet H-9048 (1970) to the East is excellent. This is to be expected from work of the same party during the same field season.

Sheet H-9048

The junction with sheet H-9048 (1969) is very extensive and appears to be very good. Comparison on lines split shows the new work, which was not reduced for tides, to be generally two to three feet deeper. Crosslines show the same pattern, except in the Southwest quadrant where the 1970 depths seem to be slightly shoaler. The expected discrepancy of two to three feet is represented on the boat sheet by displacement of the depth curves in affected areas.

Junction to the North is with H-9048 (1969) only.

Junction to the East with H-9164 is difficult to evaluate. The adjoining lines are running parallel to the contour lines in this area. The depths compare reasonably well, but there seems to be some difficulty between $63^{\circ}25'N$ and $63^{\circ}30'N$. The depths on sheet H-9048 appear to be approximately five feet deeper. This may be another tides problem, but it is suspected that at

least part of the difficulty lies in the plotting of the Hi-Fix arcs for station RUBE on sheet H-9164. It is felt that RUBE is plotted from four to six lanes low and that this problem will be resolved on the smooth sheet.

Sheet H-9164

Junction with soundings from H-9025 to the Northwest is almost perfect. Most comparisons fall in the zero to one foot range. The effect of the tide was probably minimal in this area.

The junction to the North with soundings from H-9026 (1969) is also very good. Almost all comparisons are in the zero to two foot range. The soundings from H-9026, however, appear to be deeper than those on H-9164. This must be another manifestation of the tide problem. Without accurate tides information it is difficult to attribute this discrepancy to any other cause. Little evidence of a deep of 61 feet occurring in Latitude $63^{\circ} 48' N$ and Longitude $164^{\circ} 45' W$ on sheet H-9026 was found on H-9164.

There is no junction to the East.

Sheet H-9165

This sheet adjoins only sheet H-9166. Because of the wide line spacing of the lines on both sheets no adequate comparison of this junction can be made.

Sheet H-9166

There are no adequate junctions for comparison purposes even though this sheet adjoins H-9164, H-9165, and H-9026.

Sheet H-9026

This sheet covers the same area as H-9026 (1969) but there is no area of junction.

Soundings on the one section of line that extends into H-9025 appear to be approximately two feet deeper than those on H-9025. This, again, may be attributed to tides.

There are no common areas between H-9022 and H-9026 even though they are adjacent.

Sheets 1714NA and 1714NB

The lines on these sheets will be smooth plotted on the 1:100,000 scale sheets on which the lines fall. It is anticipated that the comparison of the work done on the OS sheets can best be accomplished after the smooth plot is completed.

J. COMPARISON WITH PRIOR SURVEYS

There was no presurvey review for this survey.

Sheet H-9163

The junction with H-8122, 1:20,000, 1954, is discussed in section I.

The comparison with H-8124, although very limited, and more of a junction than a prior survey, is generally good.

Prior survey H-2620, 1:40,000, 1902, also has only a limited area for comparison. The comparison that was obtained, however, is inconsistent. Some soundings agree to the foot, while others vary by as much as ten or twelve feet. This is probably due to the age of H-2620 and the methods and equipment available in 1902.

Comparison with H-7115, 1:800,000, 1950, appears to be generally good. It is difficult to evaluate due to the large scale differences and limited area coverage.

Sheet H-9048

Comparison with survey H-2462, 1:200,000, 1899, is remarkably good. Soundings compare generally between three to seven feet.

Sheet H-9164

Comparison with survey H-2462, 1:200,000, 1899, reveals a difference of up to ten feet in the Southwest section of H-9164 and zero to two feet in the Northern portion. Generally, the prior survey looks very good.

Sheet H-9165

Comparison with H-2462 is very good. Differences of from zero to three feet were encountered.

Sheet H-9166

Soundings on H-2462 compare very well with the soundings on this sheet.

Soundings on H-2507, 1:100,000, 1900, are generally five feet shoaler than those on H-9166. This discrepancy will be reduced when tides are applied to H-9166.

Sheet H-9026

The comparison of soundings on H-2507 with H-9026 varies considerably. On the Western part of H-9026 there

is practically no discrepancy. However, when the comparison is made East of Longitude $164^{\circ}35'W$ the soundings from H-9026 fall from six to fourteen feet shoaler. This area is in the vicinity of the SHER-RUBE baseline, but due to the relatively flat bottom, even a large position error should not affect the soundings much.

Sheet 1714NA

The one crossing to compare with H-2462 is correct to the foot on a very flat bottom.

The soundings on H-2507 are one to six feet shoaler than those on 1714NA. This is based on four crossings.

Sheet 1714NB

A comparison of 1714NB with H-2507 tends to confirm the discrepancy found on H-9026 when it was compared with the same prior survey. On H-9026 a difference of fourteen feet was found in the vicinity of $64^{\circ}07'N$ and $164^{\circ}35'W$. A difference of ten feet was found in the same area of 1714NB. All other areas look very good. Most differences at crossings are from zero to four feet.

Comparison with H-2462, 1:200,000, 1899, shows generally good agreement with isolated discrepancies of eight to ten feet.

K. COMPARISON WITH CHART

Sheet H-9163 (RA-100-2-70) compares very well with C&GS 9302, 1:1,534,076, 21st Edition, October 28, 1968. This chart has essentially the same soundings as H.O. 5822, 1:928,770, 1st Edition, January 1952; revised August 25, 1969. The twin-peaked shoaling to 73 feet in latitude $63^{\circ}23'N$ and longitude $168^{\circ}25'W$ is not shown on the chart and falls within 0.2nm of a charted 22 fathom sounding. Also, the numerous soundings 10 fathoms or less in longitude 168° to $168^{\circ}20'$ on the chart are not reflected on the boatsheet. The least depth recorded in this area was 61 feet occurring at latitude $62^{\circ}15'N$ and longitude $168^{\circ}12'W$. This sounding is defined by the depth curves on the boatsheet as the high point of a relatively short ridge instead of being a part of the extensive ridge (approximately 25nm long) shown on the chart.

Sheet H-9048 (RA-100-3-70) shows good general agreement with C&GS 9302, 1:1,534,076, 21st Edition, October 28, 1968. Soundings on the boatsheet in the Southwest corner, near the Yukon River Delta appear to be two fathoms shoaler than those on the chart and the ten fathom curve on the chart is therefore displaced. The 10 fathom sounding shown in latitude $63^{\circ}08'N$ and longitude $166^{\circ}48'W$ falls in an area of 90 foot soundings on the boatsheet. There is, however, an area approximately seven miles due west of the above location in which depths of roughly 13 fathoms are found on the boatsheet. Soundings shown on the chart to the West and Southwest of the 10 fathom sounding appear to be from 4 to 10 fathoms deeper than those on H-9048.

Sheet H-9164 (RA-100-4-70) indicates shoaler depths, some differences as great as ten feet, in the Southwest section of the boatsheet when compared to C&GS Chart 9370 (4th Edition, December 27, 1964, scale 1:300,000). The Northwest section of the boatsheet agrees within a few feet of the charted depths. Soundings in the Northeastern portion of the survey are very close to charted depths.

Sheet H-9026 was compared with C&GS 9370, the same chart as referenced in the previous paragraph. The few soundings that could be compared agreed within a few feet of each other, the boatsheet showing greater depths. This probably will be reconciled after tide correctors are applied.

Sheet H-9166 (RA-100-6-70) when compared with C&GS 9370 showed general agreement except for one area. No indication is shown by the boatsheet soundings of a shoal consisting of 33 to 35 foot depths in position $63^{\circ}39'N$, $163^{\circ}20'W$. Other soundings on the sheet agree within a few feet with chart depths.

Sheet H-9165 (RA-100-5-70) had a number of soundings that varied as much as nine feet with depths charted on C&GS 9370. Most of the boatsheet soundings were within a few feet of charted depths.

Ocean Survey Sheets 1714NA and 1714NB were compared with C&GS 9380 (9th Edition, Feb. 14, 1970, scale 1:400,000). No major discrepancies were seen between boat sheet soundings and charted depths.

L. ADEQUACY OF SURVEY

In areas of one mile spacing this survey is considered complete and adequate for the purposes of CONSHELF mapping. In all other areas the survey is considered adequate for use in the CONSHELF mapping program.

M. AIDS TO NAVIGATION

The U.S. Coast Guard aids to navigation used in this survey were the Nome Breakwater Light, Snake River Range Lights, Rocky Point Light, Cape Darby Light, and Egg Island Light. These aids adequately serve the navigation purposes for which they were established. We also used the Nome Airport Beacon for navigation purposes.

N. STATISTICS

Sheet	# of pos.	Area(sq.nm.)	Nm. of Lines	# of Bot. Samp.	# of Ocea. Sta
H-9163	1415	1200	1463	6	1
H-9048	1394	1584	1359	0	1
H-9164	963	850	902	0	0
H-9165	274	*	257	12	0
H-9166	235	*	249	18	1
H-9026	141	*	163	0	0
1714NA	103	*	208	-	-
1714NB	483	*	1007	-	-
* These sheets cover 3600 sq.nm. of line at about five five mile spacing.					
TOTALS	5008	7231	5608	36	3

The following are totals of nautical miles of line run for all sheets covered in this report:

Bathymetry	5600
Magnetics	5608
Gravity	5598
SRP	2050

There were three tide stations in the OPR-483 project area. They were of the portable bubbler gage type installed for the field season. The stations were on Northeast Cape, Nome, and Stuart Island. (See Tide Note in appendix)

O. MISCELLANEOUS

Three land based magnetic stations were set up at Umalakleet, Nome, and Northeast Cape, and operated during this survey. There was also a Magnetometer Buoy moored at latitude $63^{\circ}55'N$ and longitude $166^{\circ}53'W$. This data is being processed by the Marine Geophysics Group of The Geomagnetism Division.

An interesting bottom feature appears on sheet H-9163 located at $63^{\circ}23'N$ and $168^{\circ}25'W$. It is a mound with twin peaks rising some 50 feet above the surrounding sea floor. This feature should be developed in future hydrographic surveys of the area.

P. REFERENCES TO REPORTS

1. Special Report on Echo Sounder Corrections, Opr.-483, 1970.
2. Hi-Fix Report, Opr.-483, 1970.
3. Triangulation Report, Opr.-483, 1970. Forwarded (20 Nov. 70)
4. Tide Report, Opr.483, 1970. Forwarded (16 Oct. 70)
5. Gravity Report, Operations 1970, Field Season Forwarded (30 Oct. 70)
6. Seismic Reflection Profile Report, NOAA Ship Rainier, 1970.

Respectfully Submitted

Edward M. Gelb

Edward Gelb
Lt. NOAA

Ronald Smolowitz
Ronald Smolowitz
Ens. NOAA

SEPARATES FOLLOWING TEXT

SPECIAL NOTE

On 5 July a portable tide gage was installed in Nome and the installation of the Cape Nome shore camp began. The original Hi-Fix equipment could not be made operational. The ship began collecting useful data on 30 July, on sheets covered by this report, using Loran control. The Hi-Fix equipment was replaced by the Hi-Fix gear from the MACARTHUR and Hi-Fix controlled lines were run starting on 11 August. See the Hi-Fix Report, OPR-483, 1970, for a more complete discussion of the Hi-Fix problems.

TIDE NOTE

Three 0-20 foot Bristol Bubbler tide gages were established in the project area covered by this report. The locations of the gages were as follows:

Nome	64° 30.0'N
	165° 31.0'W
Stuart Island	63° 37.7'N
	162° 25.0'W
Northeast Cape	63° 20.0'N
	168° 56.6'W

All the gages were set to 150° W time. Reference planes and zoning are to be established by Tides Division, Rockville and PMC. No reducers were applied to the boat sheet soundings by ship personnel. For the justification for not applying the reducers and for a discussion of the related tides problem see the Tide Report, CPR-483, 1970.

The USC&GSS SURVEYOR experienced much difficulty with tide reducers and tide zones in the same general area in 1968 and 1969.

In an effort to resolve the problem a new bottom-mounted deep sea tide gage was deployed in August 1970 at Lat. 63°55'N Long. 166°53'W. On returning later to retrieve the gage, the surface buoy marking the location was gone, presumably due to bad weather. Attempts to retrieve the gage by grappling were not successful.

TIDE NOTE FOR HYDROGRAPHIC SHEET

April 14, 1971

~~XXXXXXXXXXXXXX~~ Pacific Marine Center

Plane of reference approved in Tide Tape Printout
~~values of periodic records for~~

~~HYDROGRAPHIC SHEET~~ OPR 483

Locality: Norton Sound, Alaska

Year
~~Chief of Party:~~ 1970

Plane of reference is mean lower low water

Tide Station Used (Form C&GS-681):

Nome

Height of Mean High Water above Plane of Reference is as follows:

1.6 feet

Remarks

J. M. Symons
Chief, Tides and Currents Branch

TIDE NOTE FOR HYDROGRAPHIC SHEET

April 16, 1971

~~Nautical Chart Division~~ Pacific Marine Center

Plane of reference approved in
~~volume of sounding records for~~ Tide Tape Printout

~~HYDROGRAPHIC SHEET~~ OPR 483

Locality: Norton Sound, Alaska

Year
~~Station Name~~ 1970

Plane of reference is mean lower low water

Tide Station Used (Form C&GS-681):

N.E. Cape, St. Lawrence I.
S.W. Cape, " " "
Stuart Island

Height of Mean High Water above Plane of Reference is as follows:

N.E. Cape, St. Lawrence I.	=	2.0	ft.
S.W. Cape, " " "		1.6	"
Stuart Island		3.8	"

Remarks

L.C. Wharton

for/ Chief, Tides and Currents Branch



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, Md. 20852

Date: March 5, 1971
Reply to Attn of: C331W-72-MCFOE
Subject: Tidal Data, Norton Sound, Alaska
Ref: Memorandum Dated January 20, 1971
To: Chief, Processing Division, CFS3
Pacific Marine Center

Listed below are planes of reference, Greenwich lunitidal intervals and tidal planes for the four tide stations occupied in Norton Sound in 1970.

Location	HWI Hrs.	LWI Hrs.	Mn ft.	GT ft.	MLLW on Tide Staff (ft.)
Nome	12.46	8.16 (20.58)	---	1.6	1.8 Staff #1 4.3 " #2
NE. Cape St. Lawrence I.	9.42	3.91	2.0	2.5	2.2
SW. Cape St. Lawrence I.	4.12	9.81	1.6	2.1	3.0
Stuart Island	7.04	3.27	---	3.8	0.8

L. C. Wharton
L. C. Wharton
Tides & Currents Branch
Oceanography Division
National Ocean Survey

DATA PROCESSING NOTE

EQUIPMENT

Time, position control, gravity, magnetics, and depth were recorded by the DCU and recorded by a teletypewriter unit. The depths were fed into the DCU by a hand logger. This hand logger also contained the button to put the five minute timing marks on the gravity records.

All tapes with the exception of the raw data tapes were produced on flexowriters using electronic data loggers C&GS 65-4 and 63-118.

PROCEDURES

The raw data tapes were made using the following DCU record format:

Time	Pat.1	Pat.2	Depth	Mag. & Grav.
0400	078923	068243	0420	097984583210

Pattern 1 and Pattern 2 represent Hi-Fix lane counts except when Loran was being used. In most cases the Loran was encoded but the control was such as to make the Loran readings almost valueless.

The depths were delayed one minute on the print-out because they were entered by means of a manually operated depth logger.

It was necessary to polarize the magnetometer at one minute intervals because the twenty second polarization rate would not work. This resulted in magnetics data which is delayed by one minute on the printout, i.e. the reading for 0830 will be found at 0831.

For information concerning the gravity data see the Special Report on Gravity Operations, 1970 Field Season, NOAA Ship RAINIER. It should be noted that the DCU had trouble with the second gravity digit from the right. The ships personnel corrected this in the relogging of the tapes.

After the fathograms were scanned the raw data printouts were checked and corrections were noted on the original printout. The tapes were rerun to make the necessary corrections. The new printouts were then scanned to insure that all the required changes had been made.

The DCU format for corrector tapes was modified to include GP's on the Loran controlled sheets.

Hi-Fix format:

Time	Ind	Sndg	Pos.#	Day	Ft	R1C	R2C	Spec.	Param.
040000	00	0650	0001	180	0	000200	000100	0501	011 011

Loran format

Time Ind Sndg Pos.# Day Ft Lat. Long. Spec. Param.
040000 00 0650 0001 180 0 063275 169294 0501 011 011
For more information on DCU logging see Appendix A.

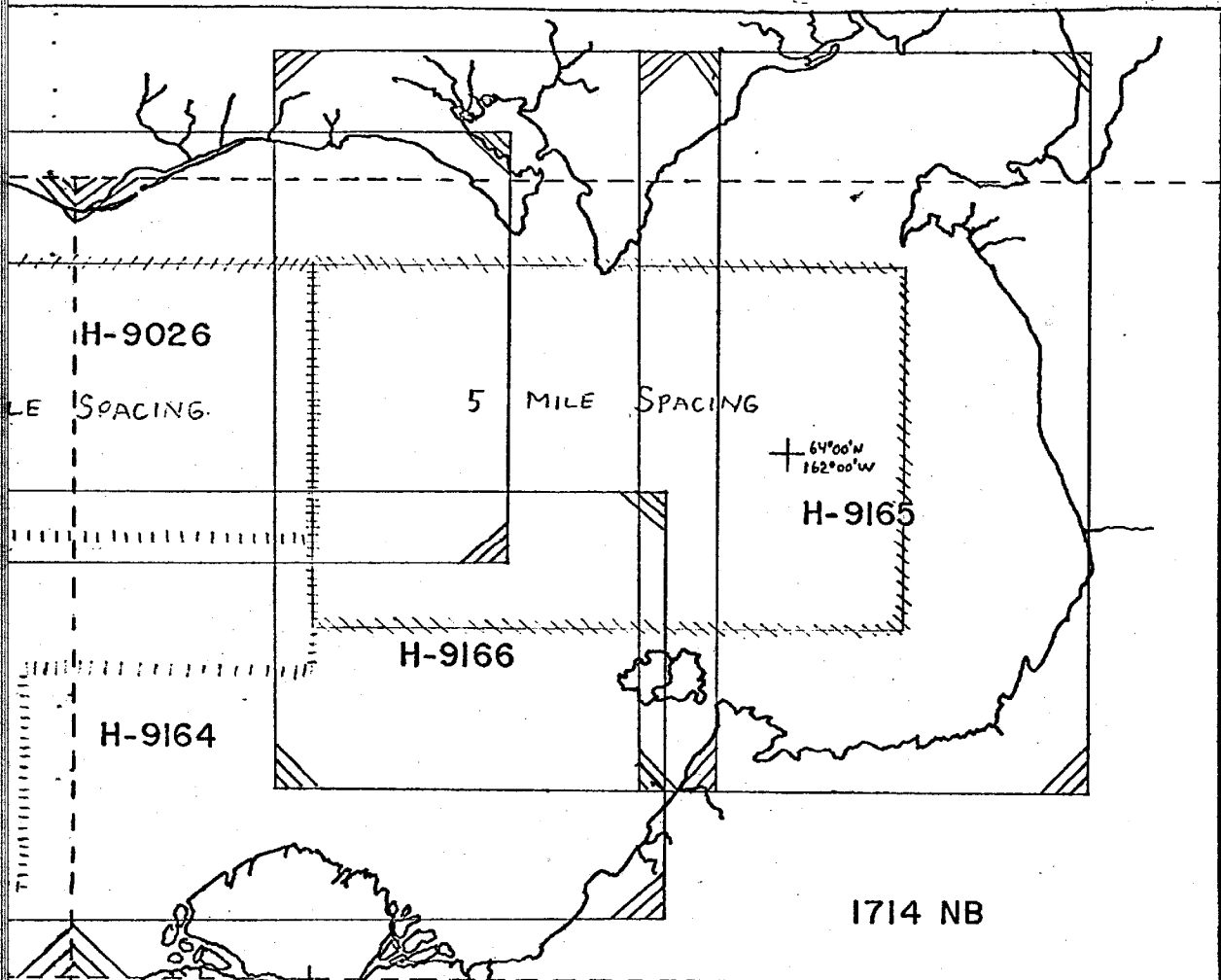
The sheets covered by this report require no velocity correction tapes since calculations indicated that velocity corrections were zero. The TC/TI tape was produced in accordance with the dual indicator format listed on page 68 of the Instruction Manual for Automated Hydrographic Surveys (Revised 1968).

Bottom samples were logged on the basis of latitude and longitude in accordance with the sample format for Visual Hydro Signal Control Data found on page 24 of the manual discussed above. The seconds of latitude and longitude are in units of arc and the field for the name of station is filled by the word "bot".

It was found, after all the data had been logged, that the required modification to the teletypewriter for dropping the parity punch when used with the DCU had not been made. This necessitated rerunning all the raw data tapes through a teletypewriter with the required modification, thereby eliminating all parity punches.

BOTTOM SAMPLE NOTE

During CPR-483 a three man party from the U.S. Geological Survey came aboard to conduct a one week bottom sampling and seismic profiling survey of the Norton Sound and St. Lawrence Island area. The GP's of samples taken in areas covered by the sheets in this survey were recorded and the information was then plotted on the boat sheets. The actual samples were removed from the ship by the Geological Survey personnel for further study.

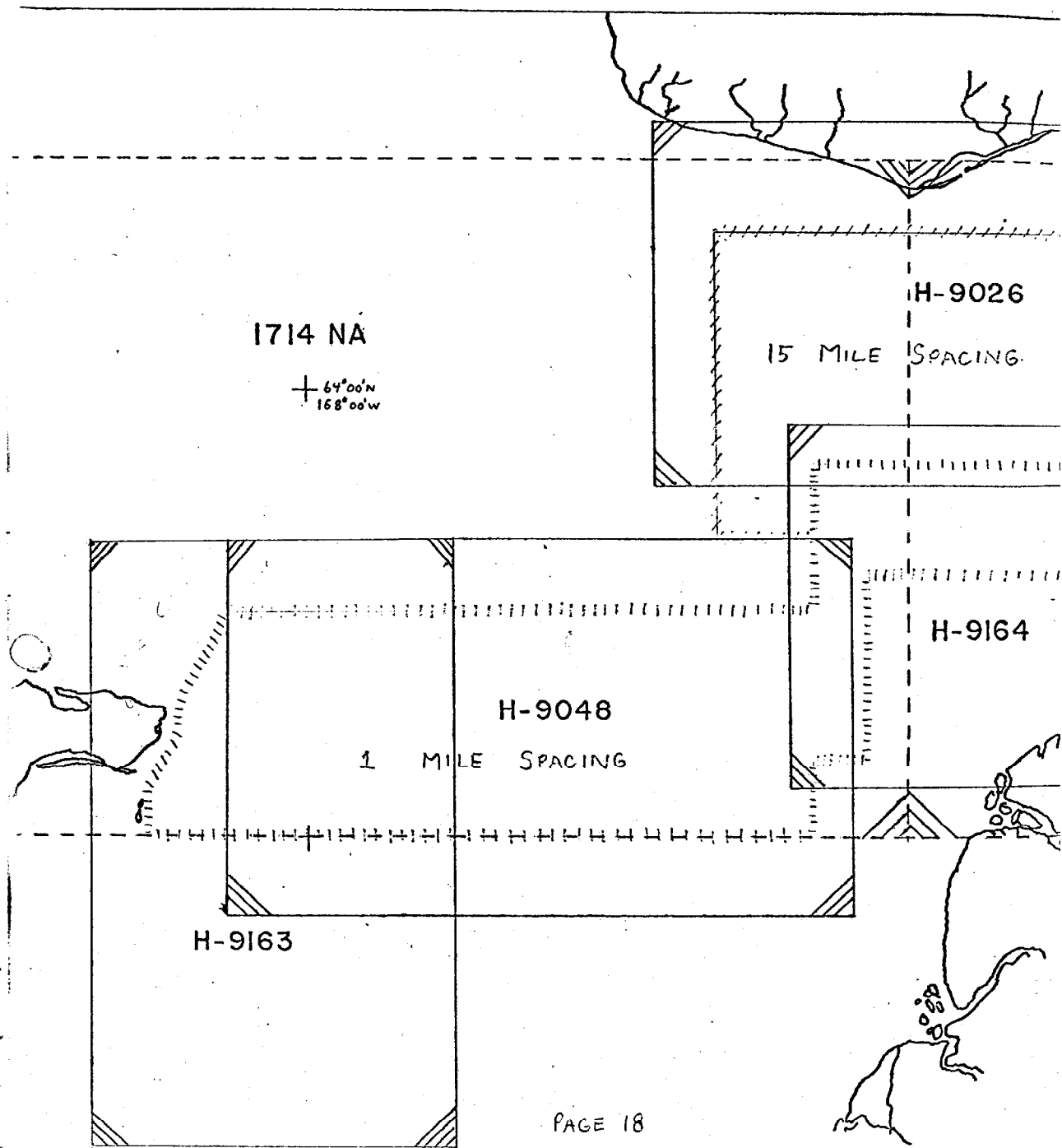


OPR-483
NORTON SOUND, ALASKA
BOAT SHEET LAYOUT

NOAA SHIP RAINIER 1970

OVERLAY ON CHART 9302

18



1714 NA

+ 64°00'N
168°00'W

H-9026

15 MILE SPACING

H-9164

H-9048

1 MILE SPACING

H-9163

APPENDIX A

by sounding interval (in seconds).

For example, 0503 with a 20 second DCU sampling rate provides 1 minute soundings and 5 minute positions.

- #2 - First two digits are magnetic sampling frequency determined in the same manner as the sounding frequency. Last digit is the raw data tape indicator, 0 - soundings in whole units, 1 - soundings in units and tenths
- #3 - First two digits are gravity sampling frequency, determined in the same manner as the sounding frequency. Last digit is sounding data source indicator, 0 - soundings from automatic digital depth sounding.
1 - soundings entered by thumbwheel with one ~~or two word~~ delay.

Long words are logged:

1. At beginning of each day to change the day
2. When there is a change in any parameter from column 21 through 52.
3. When there is a change of position number for reasons other than standard interval from previous position.

Short words are to add in between sndgs or correct sndgs. The sounding recorded with the long word must also be the correct sounding.

*The time for beginning a new day is always 000000. The computer does not recognize 240000.

APPENDIX B

BASELINE CROSSING COMPUTATION

$$V = 299,792.5 \times 10^3 \text{ M/SEC}$$

$$F = 1799 \times 10^3$$

SHEET H-9026

POS. 121

SHER = 1207.91 LANES

RUBE = 574.74 LANES

TOTAL = 1782.65 LANES

$$\text{LANE WIDTH} = W = V/2F = 299,792.5/3598$$

$$W = 83.322 \text{ M/LANE}$$

$$\text{BASELINE DIST.} = (\text{TOTAL LANES}) \times (W)$$

$$= 1782.65 \times 83.322$$

$$= 148,534.0 \text{ M}$$

$$\text{COMPUTED DIST.} = 148,535.5 \text{ M}$$

DIFFERENCE

1.5 M

538.5

423.4

1161

Table 1. Initial and Draft Corrections, OPR-483

Sheet No. H-9162 (RA-100-1-70)

Time	Draft	Initial	Day	Time	Draft	Initial	Day
0325	13.7	0	172	2025	13.6	0	174
0355		-0.1		2132		-0.1	
0425		0		2239		0	
0534		-0.1		2300		-0.1	
0752		-0.2		2340		-0.2	
1010		-0.3		0020		-0.3	175
1121		0		0100		-0.4	
1407		-0.1		0122		0	
1939		-0.2		0134		-0.1	
2226		0		0158		-0.2	
2300		0.1		0222		-0.3	
2335		0		0236		0	
0008		-0.1	173	0300		-0.1	
0042		0		0325		0	
0117		-0.1		0655		0.1	
0153		0		1024		0	
0155		-0.1		1036		-0.1	
0159		-0.2		1100		-0.2	
0202		0		1115		0	
0222		-0.1		1149		-0.1	
0243		0		1224		0	
0623		0.1		0300	13.2	0	183
1343		0.2		0340		0	
1726		0		0828		-0.1	
1738		0.1		1317		0	
1750		0		1500	13.1	0.1	
1753		-0.1		1759		0	
1757		-0.2		2240		0	
1800		0		0000	12.9	0	184
1805		0.1		0058		0.1	
1815		0.2		0156		0	
1821		0		1742		-0.1	262
1918		-0.1		1745		0	
2016		0		1800		0	
2038		-0.1		1830		-0.1	
2122		-0.2		1833		0	
2206		-0.3		2002		-0.1	
2226		0		2011		0	
0125		0	174	0117		-0.1	263
0448		-0.1		0119		0	
0810		0		0125		-0.1	
1500	13.6			0138		-0.2	
1742		0.1		0145		0	
				1042		-0.1	
				1045		0	

Table 1 (cont'd)

Sheet No. RA-100-2-70
(H-9163)

Time	Draft	Initial	Day	Time	Draft	Initial	Day
1655	13.4	0	223	0153		0	
1717		0.1		0554		-0.1	
1739		0		0600	13.0		
1753		0		0955		0	
1812		0.1		1721		0.1	
1851		0.2		1843		0.2	
1910		0		1923		0	
2026		-0.1		2154		-0.1	
2259		-0.2		2242		-0.2	
0015		0	224	2307		0	
0018		0		0000	12.9	0	242
0251		0.1		1200	12.8		
0757		0.2		1800	13.1		255
1030		0					
1043		0					
1200	13.5						
0635		-0.1	225				
0745		-0.2					
0820		0					
0845		0					
0657		0.1					
1500	13.7						
1742		0.2					
1805		0					
1815		0					
0440	13.2		237				
1500	13.1						
2120		-0.2					
2130		0					
2158		-0.1					
2253		-0.2					
2320		0					
2346		0					
1337		-0.1	238				
1642		-0.2					
1815		0					
1830		0					
1915		0	240				
2149		-0.1					
0022		0	241				
0108		0.1					

Table 1 (cont'd)

Sheet No. RA-100-3-70
(H-9048)

Time	Draft	Initial	Day
0600	13.1	0	238
0613		-0.1	
0638		-0.2	
0703		-0.3	
0716		0	
0918		-0.1	
1119		0	
0406		0.1	239
0633		0	
0846		-0.1	
1100		0	
0745	12.9	0	242
1105	13.1		244
1529		-0.1	
1953		0	
0148		-0.1	245
0600	13.2		
0743		0	
0755		0.1	
0820		0.2	
0833		0	
0841		0.1	
0857		0.2	
0905		0	
1100	13.3		
1725	13.2	0	251
1938		-0.1	
2152		0	
0205		0.1	253
0410		0	
1738		-0.1	
1921		0	
2145		-0.1	
0025		0	255
0700	13.1		
1057		-0.1	
1510		0	

Sheet No. RA-100-4-70
(H-9164)

Time	Draft	Initial	Day
0248	13.3	0	246
0249		-0.1	
0251		-0.2	
0252		0	
0353		-0.1	
0450		0	
0630		0.1	
0810		0	
0821		0.1	
0832		0	
0924		-0.1	
1017		0	
1705		0.1	
2353		0	
0000		0	247
0002		-0.1	
0006		-0.2	
0009		0	
0317		0.1	
0624		0	
0630		0	
0631		0.1	
0632		0	
0641		0	
1335		0.1	
1805		0.2	
2021		0	
1450	13.2	0	252
0505		0	253
0745		-0.1	
1025		0	
1120		-0.1	
1215		0	
1052		0	254
1055	13.1		256
1200	12.9	0	257

Table 1 (cont'd)

Sheet No. RA-100-6-70
(H-9166)

Time	Draft	Initial	Day
0545	12.8	0	243
0411	12.9	0	258
0315		0	259
0433		0.1	
0550		0	
0555		0.1	
0600		0	
0605		0	
0657		-0.1	
0748		0	
0949		-0.1	
1149		0	
1155		-0.1	
1200		0	

Sheet No. H-9023

1000	13.8	0	168
022		-0.1	
108		-0.2	
1130		0	
1151		-0.1	
1212		0	
0600	13.7	0	172
0608		-0.1	
0623		-0.2	
0638		-0.3	
0646		0	
0711		0.1	
0736		0	
0833		-0.1	
0930		0	
1052		-0.1	
1213		0	
1224		-0.1	
1246		-0.2	
1258		0	
0000		0	173
0625	13.9	0	183

Sheet No. H-9026

Time	Draft	Initial	Day
1040	12.9	0	243
2235	13.3	0	245
0000		0	246
1805	12.9	0	257
1809		0	
1850		-0.1	
1931		0	

Sheet No. RA-100-5-70
(H-9165)

0235	12.8	0	243
0600	12.9	0	258
1200		0	
1240		-0.1	
1320		0	
0000	13.0	0	259
0022		-0.1	
0107		-0.2	
0129		0	

Sheet No. H-9027

1420	12.9	0	262
0200		0	263
0230		-0.1	
0330		-0.2	
0400		0	
0500	12.8		
0529		-0.1	
0626		-0.2	
0655		0	
0703		-0.1	
0710		0	
0745		-0.1	
0855		-0.2	
0930		0	

Table 1 (cont'd)

Sheet No. 1714-NA

Time	Draft	Initial	Day
1606	13.7	0	211
0300	13.8	0	212
0645		-0.1	
1030		0	
1102		0	
1135		-0.1	
1208		0	
1220		0	
1723		-0.1	
2227		0	
2228		-0.2	
2229		0	

Sheet No. 1714-NB

Time	Draft	Initial	Day
0250	13.8	0	211
0735		-0.1	
1220		0	
1239		0	
0500	13.6		217
1200		0	
1413		-0.1	
1840		-0.2	
2053		0	
2100		0	
1500	13.7	0	218
0300	13.5	0	219
0805		0	220
0829		-0.1	
0853		0	
1029		0.1	
1206		0	
1250		0.1	
1333		0	
1702		0	
1703		0.1	
1705		0.2	
1707		0.3	
1709		0	
1800		0	
0605		0	221
0805		-0.1	
1205		-0.2	
1405		0	
1413		-0.1	
1429		-0.2	
1438		0	
1443		-0.1	
1453		-0.2	
1458		0	
1520		0.1	
1543		0	
1800	13.6	0	
0140	13.0	0	260
0600		0	
0730	12.9	0	
0330		0	261
1740		0	

Table 1 (cont'd)

Sheet No. 1814-NC

Time	Draft	Initial	Day
0350	13.7	0	173
0418		-0.1	
0512		-0.2	
0540		0	
0610		-0.1	
0639		0	
0700		-0.1	
0720		0	
0759		-0.1	
0835		0	
0839		0.1	
0847		0.2	
0850		0	
0854		-0.1	
0857		0	
0859		-0.1	
0901		-0.2	
0903		-0.3	
0906		0	
0911		-0.1	
0921		-0.2	
0926		0	
0959		-0.1	
1032		0	
1037		-0.1	
1042		0	
1051		0.1	
1100		0	
1122		-0.1	
1145		0	
1205		-0.1	
1226		0	
1346		-0.1	
1505		0	
0855		0	174
1004		-0.1	
1224		-0.2	
1332		0	
1500	13.6	0	
1510		0.1	
1520		0	
1540		-0.1	
1601		0	

Table 2 (cont'd)

Sheet No. H-9164 (RA-100-4-70)

Day	Time	Correction
246	0600	0.1
	1200	-0.2
	1800	-0.2
247	0000	-0.4
	0600	0
	1120	0
252	1800	0
	1450	-0.2
	1800	0.1
253	0505	-0.2
	0600	0
	1200	0.2
254	1052	-0.1
	1200	0
	1800	0.2
256	1055	0
	1800	0.2
	1200	0
257	0640	0
	1200	0

Sheet No. H-9165 (RA-100-5-70)

243	0235	0
258	0600	0
	1200	-0.1
	1800	0
259	0000	0

Sheet No. H-9166 (RA-100-6-70)

243	0600	-0.2
258	0411	0
	0555	0
	0600	-0.2
259	1200	0

Sheet No. H-9023

Day	Time	Correction
168	1000	0.2
	1200	-0.1
	1410	0
172	0600	-0.2
	1200	0
	1830	-0.1
173	0000	-0.1
	183	0625

Sheet No. H-9026

243	1200	-0.2
245	2235	-0.1
246	0000	0
257	1805	0
258	0025	0.2

Sheet No. H-9027

262	1420	0
263	0600	0.1

Sheet No. 1714-NA

211	1800	-0.2
212	0300	0
	0600	0.1
	1200	0.1
	1800	0

Table 2. Computed Arc Correction, OPR-483

Sheet No. H-9162 (RA-100-1-70)

Day	Time	Correction
172	0325	0
173	0000	-0.1
	1800	-0.1
174	0600	-0.2
175	0815	-0.1
	1200	0.2
183	0340	-0.2
	0600	0
	1200	-0.1
	1800	-0.2
	2325	-0.1
184	0335	0.1
262	1800	0.2
263	0000	-0.1

Sheet No. H-9163 (RA-100-2-70)

223	1655	0
	1800	0
224	0000	-0.2
	0600	0.2
	1200	0
	1800	0.1
225	0030	0.5
	0600	0
	1635	-0.1
	1800	0
226	0000	0.2
	0600	0.1
	1105	0
	1515	0
237	0440	-0.1
	1645	0.1
	2120	0
238	0000	0
	1205	-0.3
	1800	-0.1
	2210	0
239	0000	0
240	1415	0
	1915	-0.1
241	1109	-0.2
	0600	0

Sheet No. H-9163 (cont'd)

Day	Time	Correction
	0932	0
	1200	-0.1
	1640	0.2
	1800	-0.2
	2130	0
242	0112	-0.6
	0121	-0.3
255	1800	0.2

Sheet No. H-9048
(RA-100-3-70)

238	0600	-0.2
	1200	0
239	0600	0
	1200	0
240	0425	0
	0600	0
242	0745	-0.1
244	1105	-0.2
	1800	-0.1
245	0000	0
	0600	-0.2
	1200	-0.3
251	1725	0
252	0000	-0.1
253	0000	0
	1556	-0.3
	1800	-0.2
254	0000	-0.1
	0600	0
	1550	-0.3
	1800	0
	1905	0
255	0000	0
	0600	0
	1200	0.2

Table 2 (cont'd)

Sheet No. 1714-NB

Day	Time	Correction
211	0250	0
	0600	0
	1200	0
217	0500	0
	1200	0
	1800	0
218	0000	0
	0600	-0.2
	1200	0
219	1800	0
	0300	0
	0600	0
220	1200	0.1
	0805	0.2
	1200	0
221	1800	0.2
	0605	0.1
	1200	0.1
260	1800	0.1
	0140	0
	0600	0
261	1200	0
	0330	0.5
	0600	0
	1200	0

Sheet No. 1814-NC

Day	Time	Correction
173	0600	-0.1
	1200	0
174	1200	-0.1
	1800	0

Table 3. Phase Corrections, OPR-483

Fathometer No. 819

Scale Change	Correction
A-B	-0.02
B-C	-0.01
C-D	-0.06
D-E	0.07
E-F	0.00

Fathometer No. 822

Scale Change	Correction
A-B	-0.02
B-C	-0.01
C-D	0.03
D-E	-0.04
E-F	0.10

HI-FIX LANE CORRECTIONS

LANE CORRECTIONS

SHEET 1 OF 4

FORM C&GS-817
(10-66)

PLOTting ABSTRACT ELECTRONIC CONTROL

U.S. DEPARTMENT OF COMMERCE
ESSA
COAST AND GEODETIC SURVEY

SHIP RAINIER

SHEET NO. H-9165
(RA-100-5-70) DATE _____

DAY _____

POS. NO.	TIME (Z)	SLIP-TIME DAY	COURSE	LOG	LOG DIST.	STATION		REMARKS
						<u>SHER</u> STATUTE MILES MICROSECONDS LANES	<u>RUBE</u> STATUTE MILES MICROSECONDS LANES	
								LINE CONTINUED FROM RA-100-6-70 POS # 42
								RUBE CORR +1 ENTERED TO CORRECT TO ENDING CALIBRATION
15	0555	258				0	+1	LB
	0737					0	+1	
	0738					-2		
	0739					-6		
	0740					-11		
	0741					-15		
	0742					-20		
	0743					-24		
	0744					-28		
	0745					-33		
	0746					-37		
	0747					-42		
	0748					-46		
	0749					-50		
	0750					-55		
	0751					-59		
	0752					-63		
	0753					-68		
	0754					-72		
	0755					-76		
	0756					-81		
	0757					-85		
	0758					-89		
	0759	258				-94	+1	

LANE CORRECTIONS

SHEET 2 OF 4

FORM C&GS-817
(10-66)

PLOTING ABSTRACT ELECTRONIC CONTROL

U.S. DEPARTMENT OF COMMERCE
ESSA
COAST AND GEODETIC SURVEY

H-9165

SHIP RAINIER

SHEET NO. RA-100-5-70 DATE _____ DAY _____

POS. NO.	TIME (Z)	COURSE TIME DAY	COURSE	LOG	LOG DIST.	STATION <u>SNEB</u>	STATION <u>RUBE</u>	REMARKS
						STATUTE-MILES MICROSECONDS LANES	STATUTE-MILES MICROSECONDS LANES	
	0800	258				-98	+1	
	0801					-102		
	0802					-106		
	0803					-111		
	0804					-115		
	0805					-119		
	0806					-126		
	0807					-128		
	0808					-132		
	0809					-136		
	0810					-140		
	0811					-144		
	0812					-148		
	0813					-152		
	0814					-157		
	0815					-161		
	0816					-165		
	0817					-169		
	0818					-173		
	0819					-177		
	0820					-181		
	0821					-186		
	0822					-190		
	0823					-194		
	0824					-198		
	0825	258				-202	+1	

LANE CORRECTIONS

SHEET 3 OF 4

FORM C&GS-817
(10-66)

PLOTTING ABSTRACT ELECTRONIC CONTROL

U.S. DEPARTMENT OF COMMERCE
ESSA
COAST AND GEODETIC SURVEY

SHIP RAINIER

SHEET NO. (RA-100-5-70) DATE H-9165

DAY _____

POS. NO.	TIME (Z)	SUNNY TIME DAY	COURSE	LOG	LOG DIST.	STATION <u>SHER</u>		STATION <u>RUBE</u>		REMARKS
						STATUTE MILES	MICROSECONDS-LANES	STATUTE MILES	MICROSECONDS-LANES	
	0826	258				-206		+1		
	0827					-210				
	0828					-214				
	0829					-218				
	0830					-222				
	0831					-226		+1		
	0832					-230		0		
	0833					-234				
	0834					-238				
	0835					-242				
	0836					-246				
	0837					-250				
	0838					-253				
	0839					-257				
	0840					-261		0		
	0841					-265		-2		
	0842					-269		-2		
	0843					-273		-3		
	0844					-277				
	0845					-281				
	0846					-285				
	0847					-289				
	0848					-291				
	0849					-295				
	0850					-299				
	0851					-303				
	0852	258				-307		-3		

LANE CORRECTIONS

SHEET 4 OF 4

FORM C&GS-817
(10-66)

PLOTING ABSTRACT ELECTRONIC CONTROL

U.S. DEPARTMENT OF COMMERCE
ESSA
COAST AND GEODETIC SURVEY

H-9165

SHIP RAINIER

SHEET NO. (RA-100-5-70) DATE _____

DAY _____

POS. NO.	TIME (Z)	ELPS TIME DAY	COURSE	LOG	LOG DIST.	STATION <u>SHER</u>	STATION <u>RUBE</u>	REMARKS
						STATUTE MILES MICROSECONDS LANES	STATUTE MILES MICROSECONDS LANES	
	0853	258				-310	-3	
	0854					-314		
	0855					-318		
	0856					-322		
	0857					-325		
	0858					-329		
	0859					-333		
	0900					-335		
	0905					-5	-3	
	1053					+57	+1	
	1102					+1	+1	
135	1530					+1	+1	LBKS
	1611					+1	+1	STUART IS. CALIBRATION
	1628					0	0	DIALS RESET
136	1700					0	0	LR
	2245					-16	0	
	2246					-30	0	
	2247					-33	0	
	2248	258				0	0	SHER DIAL RESET
262	0315	259				0	0	LBKS
								LINE CONTINUED RA-100-6-70 #43

LIST OF SIGNALS

The following triangulation stations were used in this survey as calibration signals:

<u>Station</u>	<u>Location</u>
SHER (1969)	Stuart Island
WEST (1899)	
STUART MOUNTIAN (1898)	

Nome

RUBE (1969)
CAPE (1944)
CAPE AZIMUTH MARK (1944)
NOME C.A.A. RADIO RANGE (1944)
NGME AIRPORT WINDSOCK EAST POLE (1968)
AIRPORT BEACON NOME AIRPORT (1968)
NOME RADIO STATION KICY TOWER (1968)
VOR NOME OME (1968)

The following triangulation stations were established by the RAINIER, for signal purposes, on Stuart Island.

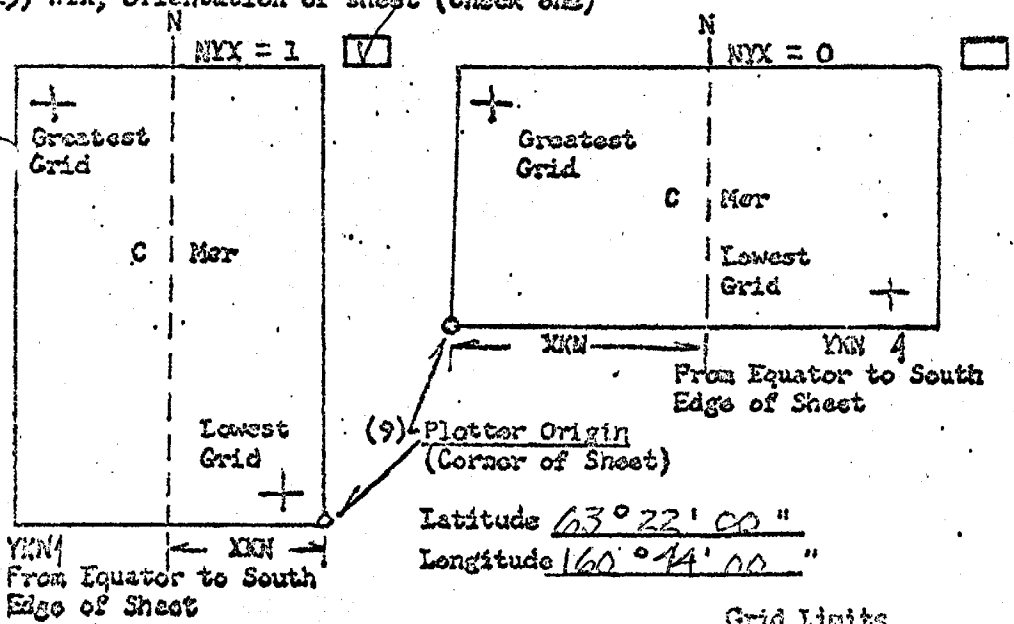
TEE-PEE (1970)
RA-1-70 (1970)

FORM #1's and FORM #3's

<u>Sheet letter</u>	<u>H Number</u>
G	H-9026
K	H-9048
P	H-9166
Q	H-9164
R	H-9165
T	H-9163
L,N,U	Calibration

NOTE: The frequency was changed from
1618.65 kc. to 1799.6 kc.

- (1) Project No. OPR 483
- (2) M No. 9165
- (3) ~~Field~~ ^{Sheet} No. R
- (4) Requested by _____
- (5) Ship or Office RAINIER
- (6) Date Required 1 APRIL 1970
- (7) Visual Ft.(0) or Fathoms (1) (8) Electronic (fill out form #9)
- (10) XKN (SP 5) Distance from CMER to East Edge (NYX = 1) or West Edge (NYX = 0). (Origin) 46699.2 Meters
- (11) YKN (SP 241) Distance from Equator to South Edge of Sheet. (Origin) 7029,056.817 Meters
- (12) Central Meridian 161° 40' 00"
- (13) Survey Scale 1:100,000
- (14) Size of Sheet (Check one) 36x60 42x60
- (15) NYX, Orientation of sheet (Check one)



		Grid Limits	
(16) Greatest Latitude	<u>64° 40' 00"</u>	(Projection Line Interval Page 4 Hydro Manual)	
(17) Lowest Latitude	<u>63° 25' 00"</u>	(19) <u>5' 00"</u>	
(18) Difference	<u>1° 15' 00"</u>	(20) <u>15</u>	XCN
(21) Greatest Longitude	<u>162° 30' 00"</u>		
(22) Lowest Longitude	<u>160° 45' 00"</u>	(24) <u>5' 00"</u>	
(23) Difference	<u>1° 45' 00"</u>	(25) <u>21</u>	XCN

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

- (RANGE - RANGE)
- (1) Project No. OPR 483 (2) N. No. 9165 (3) ^{Sheet} Field No. R
- (4) Type of Control: SHORAN, RAYDIST, HI-FIX, RADAR
 Frequency (for conversion of RAYDIST or HI-FIX lanes to meters) 1618.65 KC/5
- (5) RANGE ONE (R1) SHER Latitude 63° 37' 48.755"
 Station Name Stuart Island Longitude 162° 31' 03.256"
- (6) RANGE TWO (R2) RUBE Latitude 64° 26' 32.190"
 Station Name Cape Nome Longitude 164° 55' 28.591"
- (7) Azimuth from R1 to R2 128° 42' 55.77"
- (8) Baseline Length in Meters 148,535.5 M.
- (9) Location of survey with respect to Electronic Baseline: CHECK ONE
 (To determine: imagine an observer standing at R1 and looking directly at R2 --- if the survey area is to the observer's LEFT then A is negative; if the survey area is to the observer's RIGHT then A is positive.)

 -A (minus) +A (plus)

- (10) if SHORAN corrections are applied by the equation, $K(X) + C = D$, where K is SHORAN distance and D is true distance, enter the Constant Coefficients of the equations here:

K(R1) , C(R1) , K(R2) , C(R2) .

- (11) Number of Velocity Tables to be used:

None, One, More than one.

- (12) This form is submitted only as an aid in preparing a boat sheet projection.

 This form applies to all data on this survey.

This form applies to part of the data on this survey -

Time and Date limitations: From To

Position Number Limitations: From To

This is Form #3 Sheet # 1 of 2 Sheets for this survey.

- (13) Other Remarks: These intersections are to be plotted on a sheet separate from those of the Stuart I. - N.E. Cape Station Pair

(1) Project No. OPR 483 (4) Requested by _____
 (2) N No. _____ (5) Ship or Office RAINIER
 (3) ~~Sheet~~ No. L (6) Date Required 1 April 1970
 (7) Visual Ft. (0) or Fathoms (1) (8) Electronic (fill out form 36)

(10) XKN (SP 5) Distance from CMER to East Edge (NYX = 1) _____ Meters
 or West Edge (NYX = 0). (Origin)

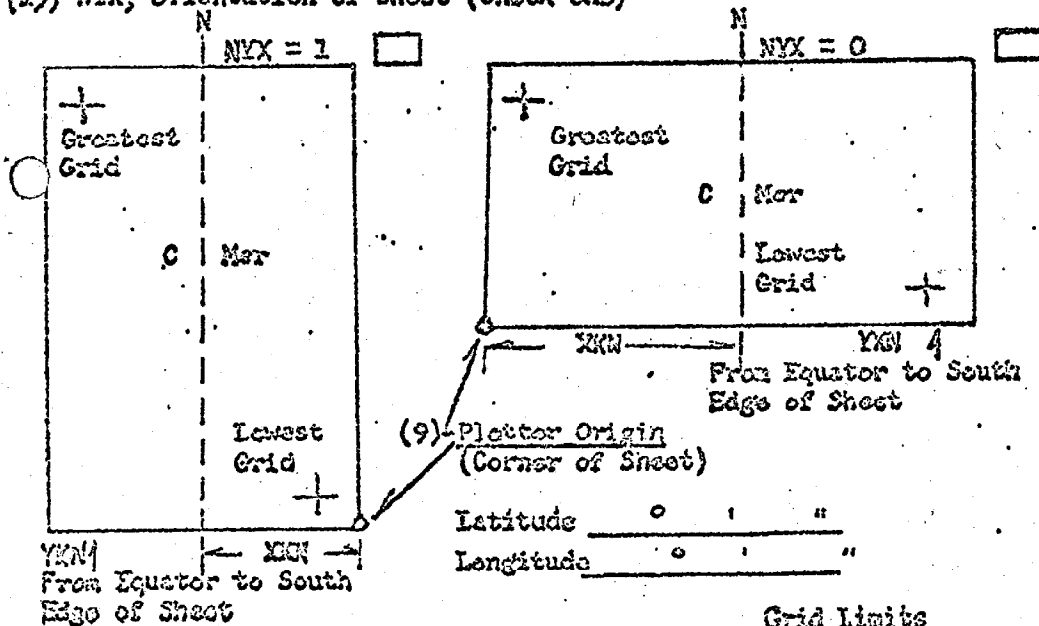
(11) YKV (SP 2/L) Distance from Equator to South Edge of Sheet. (Origin) _____ Meters

(12) Central Meridian _____ " 0 1 "

(13) Survey Scale _____ 1: _____

(14) Size of Sheet (Check one) 36x60 42x60

(15) NYX, Orientation of sheet (Check one)



BMB 1951
 63° 19' 00.422" N
 168° 56' 30.052" W

Use all other GPs on original Calibration Sheet

Grid Limits	
(16) Greatest Latitude	_____ " (Projection Line Interval Page 4 Hydro Manual)
(17) Lowest Latitude	_____ "
(18) Difference	_____ "
(19)	_____ "
(20)	_____ XKN
(21) Greatest Longitude	_____ "
(22) Lowest Longitude	_____ "
(23) Difference	_____ " (24) _____ "
(25)	_____ XKN

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

- (RANGE - RANGE)
- (1) Project No. OPR 433 (2) N. No. _____ (3) Sheet 1 Page No. L
- (4) Type of Control: _____ SHORAN, _____ RAYDIST, HI-FIX, _____ RADAR
 Frequency (for conversion of RAYDIST or HI-FIX lines to meters) 168.65 KC/S
- (5) RANGE ONE (R1): SHER Latitude 63° 37' 42.755"
 Station Name Stuart Island Longitude 162° 31' 03.256"
- (6) RANGE TWO (R2): DEL Latitude 63° 19' 39.358"
 Station Name N.F. Cape Longitude 168° 58' 06.450"
- (7) Azimuth from R1 to R2 86° 56' 12.05"
- (8) Baseline Length in Meters 323,146.0 M.
- (9) Location of survey with respect to Electronic Baseline: CHECK ONE
 (To determine: imagine an observer standing at R1 and looking directly at R2 --- if the survey area is to the observer's LEFT then A is negative; if the survey area is to the observer's RIGHT then A is positive.)
 _____ -A (minus) +A (plus)
- (10) If SHORAN corrections are applied by the equation, $K(R) + C = D$, where K is SHORAN distance and D is true distance, enter the Constant Coefficients of the equations here:
 K(R1) _____, C(R1) _____, K(R2) _____, C(R2) _____
- (11) Number of Velocity Tables to be used:
 None, _____ One, _____ More than one.
- (12) This form is submitted only as an aid in preparing a boat sheet projection.
 This form applies to all data on this survey.
 _____ This form applies to part of the data on this survey -
 Time and Date limitations: From _____ To _____
 Position Number Limitations: From _____ To _____
 This is Form #3 Sheet # 1 of 1 Sheets for this survey.
- (13) Other Remarks:

(1) Project No. OPR 483

(4) Requested by _____

(2) H No. _____

(5) Ship or Office RAINIER

(3) ^{Sheet} Sheet No. N

(6) Date Required 1 April 1970

(7) Visual Ft. (0) or Fathoms (1) (0) Electronic (fill out form #3)

(10) XKN (SP 5) Distance from OMER to East Edge (NYX = 1) or West Edge (NYX = 0). (Origin) _____ Meters

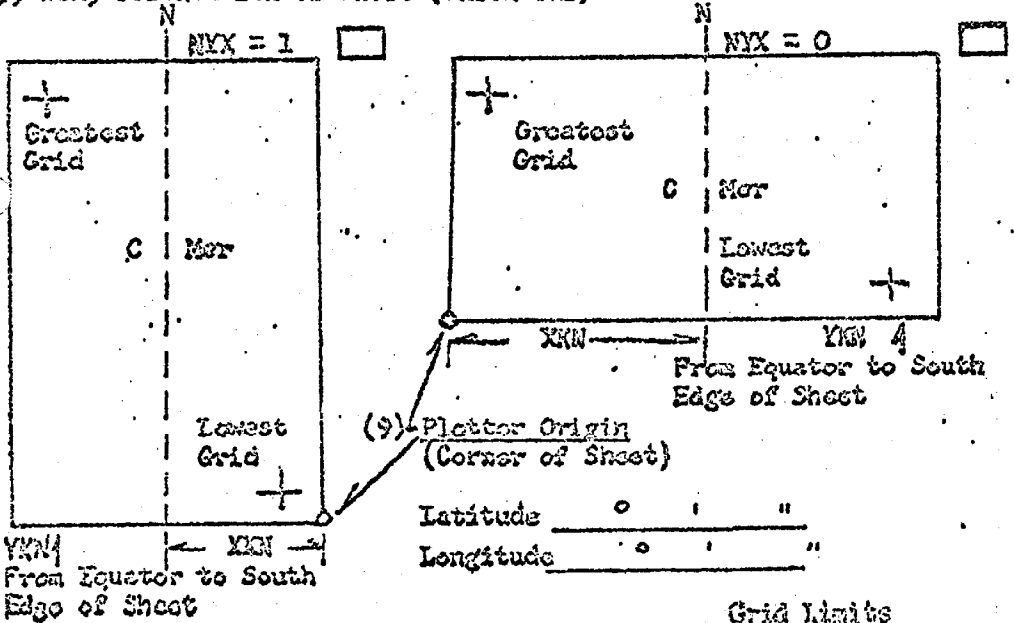
(11) YKN (SP 241) Distance from Equator to South Edge of Sheet. (Origin) _____ Meters

(12) Central Meridian _____ " "

(13) Survey Scale _____ 1: _____

(14) Size of Sheet (Check one) 36x60 42x60

(15) NYX, Orientation of sheet (Check one)



		Grid Limits	
(16)	Greatest Latitude	_____ " "	(Projection Line Interval Page 4 Hydro Manual)
(17)	Lowest Latitude	_____ " "	(19) _____ " "
(18)	Difference	_____ " "	(20) _____ YSM
(21)	Greatest Longitude	_____ " "	
(22)	Lowest Longitude	_____ " "	(24) _____ " "
(23)	Difference	_____ " "	(25) _____ YSM

COMPUTER PARAMETERS FOR ELECTRONICALLY COMPENSATED SURVEYS

- (1) Project No. OPR 483 (2) N. No. _____ (3) ^{Sheet} Field No. N
- (4) Type of Control: SHORAN, RAYDIST, HI-FIX, RADAR
 Frequency (for conversion of RAYDIST or HI-FIX lanes to meters) 148.65 KC/S
- (5) RANGE ONE (R1) SHER Latitude 63° 37' 42.755"
 Station Name Stuart Island Longitude 162° 31' 03.256"
- (6) RANGE TWO (R2) RUBE Latitude 64° 26' 37.190"
 Station Name Cap. Name Longitude 161° 55' 28.591"

- (7) Azimuth from R1 to R2 128° 42' 55.77"
- (8) Baseline Length in Meters 148,535.5 M.

(9) Location of survey with respect to Electronic Baseline: CHECK ONE
 (To determine: imagine an observer standing at R1 and looking directly at R2 --- if the survey area is to the observer's LEFT then A is negative; if the survey area is to the observer's RIGHT then A is positive.)

-A (minus) _____ +A (plus)

(10) If SHORAN corrections are applied by the equation, $K(R) + C = D$, where K is SHORAN distance and D is true distance, enter the Constant Coefficients of the equations here:

K(R1) _____, C(R1) _____, K(R2) _____, C(R2) _____.

(11) Number of Velocity Tables to be used:

None, _____ One, _____ More than one.

(12) This form is submitted only as an aid in preparing a boat sheet projection.

This form applies to all data on this survey.

_____ This form applies to part of the data on this survey -

Time and Date limitations: From _____ To _____

Position Number Limitations: From _____ To _____

This is Form 73 Sheet # _____ of _____ Sheets for this survey.

(13) Other Remarks:

(1) Project No. OPR 483

(4) Requested by _____

(2) H No. _____

(5) Ship or Office RAINIER

(3) ~~Field~~ ^{Sheet} No. U

(6) Date Required 1 April 1970

(7) Visual Ft. (0) or Fathoms (1) (3) Electronic (fill out form 48)

(10) XKN (SP 5) Distance from CMER to East Edge (NYX = 1) or West Edge (NYX = 0). (Origin) 29832.6 Meters

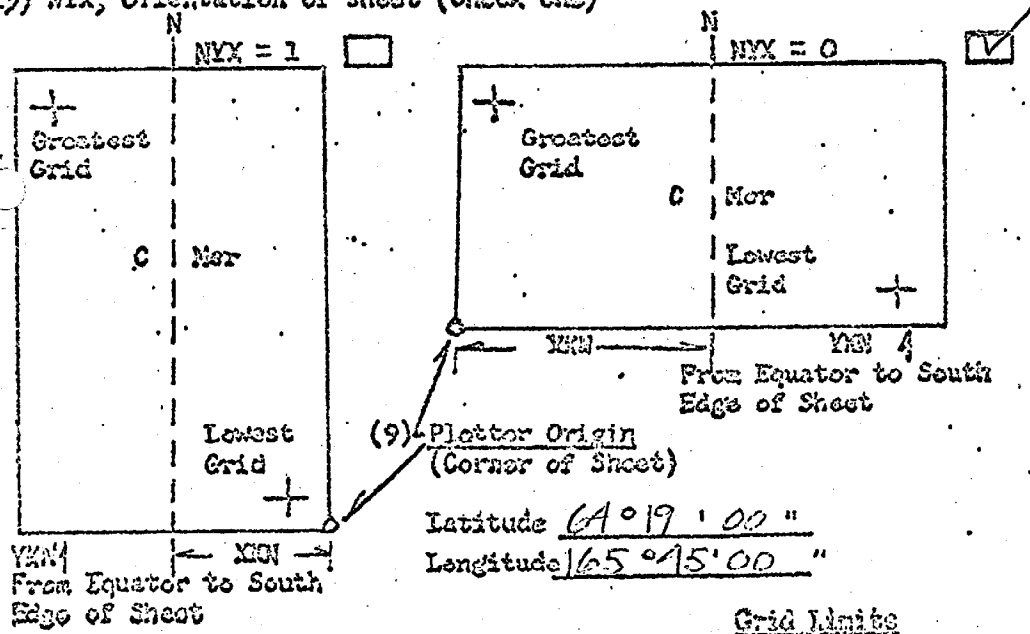
(11) YKN (SP 241) Distance from Equator to South Edge of Sheet. (Origin) 7,134,960.766 Meters

(12) Central Meridian 165° 08' 00"

(13) Survey Scale 1:40,000

(14) Size of Sheet (Check one) 35x60 42x60

(15) NYX, Orientation of sheet (Check one)



Grid Limits

(16) Greatest Latitude	<u>61° 38' 00"</u>	(Projection Line Interval Page 4 Hydro Manual)
(17) Lowest Latitude	<u>61° 20' 00"</u>	
(18) Difference	<u>18' 00"</u>	(19) <u>2' 00"</u>
		(20) <u>9</u> XGN
(21) Greatest Longitude	<u>165° 44' 00"</u>	
(22) Lowest Longitude	<u>164° 30' 00"</u>	(24) <u>2' 00"</u>
(23) Difference	<u>1° 14' 00"</u>	(25) <u>37</u> XGN

(over)

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

- (1) Project No. OPR 483 (2) N. No. _____ (3) ~~Sheet~~ Field No. 10
- (4) Type of Control: _____ SHORAN, _____ RAYDIST, HI-FIX, _____ RADAR
 Frequency (for conversion of RAYDIST or HI-FIX lanes to meters) 1618.65 KC/5
- (5) RANGE ONE (R1) SHER Latitude 63° 37' 42.755"
 Station Name Stuart Island Longitude 162° 31' 03.256"
- (6) RANGE TWO (R2) RUBE Latitude 61° 26' 32.170"
 Station Name Cap. Nove Longitude 161° 55' 28.591"
- (7) Azimuth from R1 to R2 128° 42' 55.77"
- (8) Baseline Length in Meters 148,535.5 M.
- (9) Location of survey with respect to Electronic Baseline: CHECK ONE
 (To determine: imagine an observer standing at R1 and looking directly at R2 --- if the survey area is to the observer's LEFT then A is negative; if the survey area is to the observer's RIGHT then A is positive.)

-A (minus) _____ +A (plus)

- (10) if SHORAN corrections are applied by the equation, $K(X) + C = D$, where X is SHORAN distance and D is true distance, enter the Constant Coefficients of the equations here:

K(R1) _____, C(R1) _____, K(R2) _____, C(R2) _____.

- (11) Number of Velocity Tables to be used:
 None, _____ One, _____ More than one.
- (12) This form is submitted only as an aid in preparing a boat sheet projection.

This form applies to all data on this survey.
 _____ This form applies to part of the data on this survey -

Time and Date limitations: From _____ To _____
 Position Number Limitations: From _____ To _____

This is Form #3 Sheet # 1 of 1 Sheets for this survey.

- (13) Other Remarks:

FORM #3's FOR HYDRO

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

(RANGE - RANGE)

- (1) Project No. OPR-483 (2) N. No. 9165 (3) Field No. RA-100-5-70
- (4) Type of Control: SHORAN, RAYDIST, HI-FIX, RADAR
 Frequency (for conversion of RAYDIST or HI-FIX lanes to meters) 1799.6
- (5) RANGE ONE (R1) Latitude 63° 37' 42.755"
 Station Name SHER 1969 Longitude 162° 31' 03.256"
- (6) RANGE TWO (R2) Latitude 64° 26' 32.190"
 Station Name RUBE 1969 Longitude 164° 55' 28.591"
- (7) Azimuth from R1 to R2 128° 42' 55.77"
- (8) Baseline Length in Meters 148,535.50 M.
- (9) Location of survey with respect to Electronic Baseline: CHECK ONE
 (To determine: imagine an observer standing at R1 and looking directly at R2 --- if the survey area is to the observer's LEFT then A is negative; if the survey area is to the observer's RIGHT then A is positive.)

 -A (minus) +A (plus)

- (10) if SHORAN corrections are applied by the equation, $K(X) + C = D$, where X is SHORAN distance and D is true distance, enter the Constant Coefficients of the equations here:

K(R1) , C(R1) , K(R2) , C(R2) .

- (11) Number of Velocity Tables to be used:

None, One, More than one.

- (12) This form is submitted only as an aid in preparing a boat sheet projection.

This form applies to all data on this survey.

 This form applies to part of the data on this survey -

Time and Date limitations: From To

Position Number Limitations: From To

This is Form #3 Sheet # / of / Sheets for this survey.

- (13) Other Remarks:

APPROVAL SHEET

Hydrographic procedures were observed and the boat sheets were examined daily during the execution of this survey.

The plotted positions on the boat sheets and the accompanying records have been examined by me; this survey has been found to be complete and adequate within the limitations imposed by control, and is approved.

Roger F. Lanier
Roger F. Lanier
Captain, NOAA

PROCESSING NOTES

H-9026, H-9048, H-9163, H-9164, H-9165, H-9166, H-9179
OPR-483, Norton Sound, Alaska

H-9026

Tide reducers for this sheet were based on the Nome Gage direct. Little trouble was encountered on this sheet except for one line crossing the baseline between SHER and RUBE which would not compute and had to be plotted and scaled manually. Soundings from 1970 work agree well with the 1969 work by the SURVEYOR.

H-9048

Tide reducers for this sheet were based on the N.E. Cape Gage East of 167°W with a +2 hour corr'n for time and ratio of 1.0, West of 167°W the tides from N.E. Cape were used without correction. This is consistent with the corrections used in 1969.

There are some soundinglines on this sheet which do not agree with the major number of lines which are out of agreement by three feet. In general the agreement is from zero to two feet at crossings.

H-9163

Tide reducers for this survey are based on the N.E. Cape Gage direct. The soundings on this survey appear in satisfactory agreement

H-9164

No tide corrections were used for this survey. The sheet was first tried using corrections derived from the Stuart Island Gage with various corrections for time and height; none of which gave as satisfactory results as the soundings that were applied with correction. There were some lines, especially the last day worked, that did require an arbitrary correction of about a foot to get within a two foot limit at crossings. It would appear that this area may be, as shown in the 1904 Annual Report by the Superintendent of the Coast and Geodetic Survey on cotidal zones of the North Pacific Ocean and Bering Sea, an area of no tide.

The soundings at crossings and junctions are in satisfactory agreement.

H-9165

Tide reducers for this sheet were from the Stuart Island Gage direct for that part of the sheet lying south of Lat 64°N and for that part lying north of 64°N , adding two hours.

Soundings at crossings and junction soundings are in reasonable agreement.

H-9166

Tide reducers for this sheet were also from the Stuart Island Gage direct for that part of the survey that lies south of Lat 64°N and plus two hours for that part lying north of Lat 64°N .

The soundings at what crossings there are appear to agree within two feet.

H-9179

This survey was combined with H-9180 and plotted on the scale of 1:250,000. The tide reducers were taken directly from the gage at Nome for that part of the sheet west of 165°W and from Stuart Island plus two hours for that part which was east of 165°W. Soundings at crossings appear to be in agreement.

MISCELLANEOUS

Since the depths on the smooth sheets were so close to those on the boat sheets, no attempt was made to compare with the charts listed in the hydrographer's report.

One thousand forty three man-hours were used in processing five thousand two hundred eight positions on these sheets; 119 on H-9026, 348 on H-9048, 146 on H-9163, 256 on H-9164, 61 on H-9165, 65 on H-9166 and 48 on H-9179.

Respectfully submitted,

William M. Martin
Supervisory Carto. Tech.

GEOGRAPHIC NAMES

Survey No. H-9165

Name on Survey	Source											
	A	B	C	D	E	F	G	H	K			
Bering Sea												1
Norton Bay												2
Norton Sound												3
												4
												5
												6
												7
												8
												9
												10
												11
												12
												13
												14
												15
												16
												17
												18
												19
												20
												21
												22
												23
												24
												25
												26
												27

PREPARED BY

Frank W. Roberts
CARTOGRAPHIC TECHNICIAN

APPROVED BY

Ch. Joseph Wright
CHIEF GEOGRAPHER

HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. 9165

RECORDS ACCOMPANYING SURVEY: To be completed when survey is registered.

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET & PNO		1	BOAT SHEETS		1	
DESCRIPTIVE REPORT			OVERLAYS		3	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES			1			
CAHIERS						
VOLUMES						
BOXES						

T-SHEET PRINTS (List)

SPECIAL REPORTS (List)

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS			TOTALS
	PRE-VERIFICATION	VERIFICATION	REVIEW	
POSITIONS ON SHEET				
POSITIONS CHECKED				
POSITIONS REVISED				
DEPTH SOUNDINGS REVISED				
DEPTH SOUNDINGS ERRONEOUSLY SPACED				
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED				
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS				
JUNCTIONS				
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS				
SPECIAL ADJUSTMENTS				
ALL OTHER WORK				
TOTALS				
PRE-VERIFICATION BY	BEGINNING DATE		ENDING DATE	
VERIFICATION BY	BEGINNING DATE		ENDING DATE	
REVIEW BY	BEGINNING DATE		ENDING DATE	

See D.R. Proc. office
NOTES

VERIFIER'S REPORT
HYDROGRAPHIC SURVEY, H-9165

INSTRUCTIONS - This form serves to identify items of a check list in verification together with items which are separately reported to the Reviewer. The form is not to be forwarded to the Reviewer. A report, which is prepared for the Reviewer, should identify items by number and letter and will be filed in the Descriptive Report until the survey is reviewed.

CL - Check List Items: should be checked as having been completed during the verification processes.

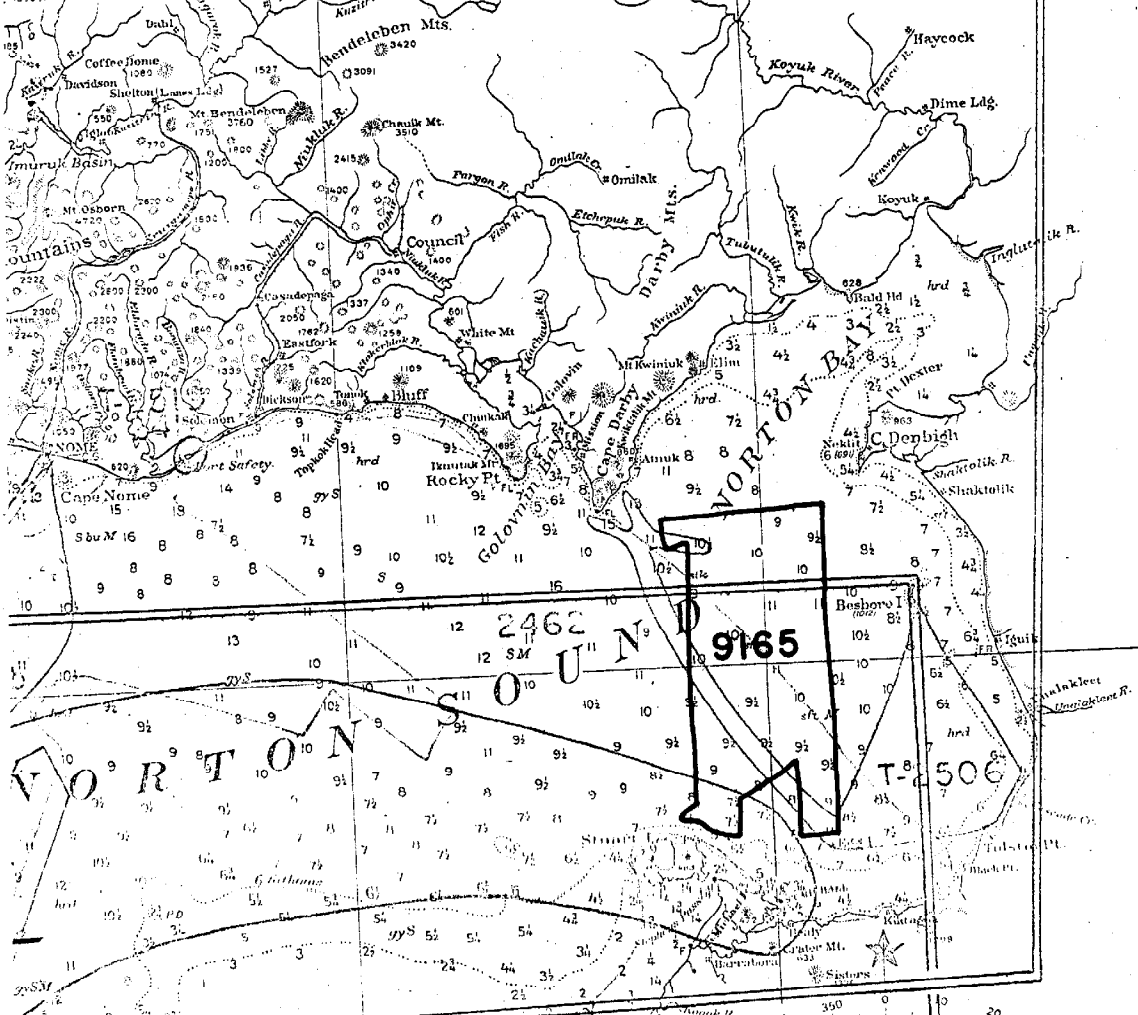
R - Report Item: This column refers to those items reported to the reviewer and is used to indicate the items discussed.

Part I - DESCRIPTIVE REPORT	CL	R	Part III - JUNCTIONS (Continued)	CL	R		
<p>Note: The verifier should first read the Descriptive Report for general information and problems.</p> <p>1. The Descriptive Report was consulted, paragraphs checked if found satisfactory, and notations were made in soft black pencil regarding action taken. Remarks Required: -- None</p>			<p>10. Junctions with contemporary surveys were satisfactory except as follows: Remarks Required: -- Consider conditions after adjustments have been made; note adjustments made. Make special notes of Butt junctions and areas which are SUPERSEDED.</p>				
<p>2. Soundings originating with the survey and mentioned in the Descriptive Report have been verified and checked in soft black pencil, including latitude and longitude, together with position identification. Remarks Required: -- None</p>			<p>Part IV - VOLUMES</p> <p>11. All items affecting the plotting of the survey which are entered in the remarks columns of the sounding records were noted and check marked. In all cases appropriate action was taken and exceptions noted in the volumes. Remarks Required: -- None</p>				
<p>3. All reference to survey sheets mentioned in the Descriptive Report should include registry number and year. Remarks Required: -- None</p>				<p>12. Condition of sounding records was satisfactory except as follows: Remarks Required: -- Mention deficiencies in completeness of notes or actions for the following: (a) rocks (b) line turns (c) position values of beginning and ending of lines (d) bar check or velocity correctors (e) time recording (f) notes or markings on fathograms (g) was reduction of soundings accurately done? (h) was scanning accurate? (i) were peaks at uneven intervals missed? (j) were stamps completed? (k) references to adjacent features</p>			
<p>Part II - SHORELINE AND SIGNALS</p> <p>4. Source of shoreline signals Remarks Required: -- List all surveys a. Give earliest and latest dates of photographs b. Field inspection date c. Field Edit date d. Reviewed-Unreviewed</p>			<p>Part V - PROTRACTING</p> <p>13. All positions verified instrumentally were check marked in color in the sounding records, and verifier initialed the processing stamp. Remarks Required: -- None</p>				
<p>5. The transfer of contemporary topographic information was carefully examined and reconciled with the hydrography. Remarks Required: -- Discuss remaining differences.</p>					<p>14. The protracting and plotting of all unsatisfactory crossings were verified. Remarks Required: -- None</p>		
<p>6. The plotting of all triangulation stations, topographic stations and hydrographic signals has been checked and noted in processing stamp No. 42 on the smooth sheet. Remarks Required: -- None</p>						<p>15. All detached positions locating critical soundings, rocks, buoys, breakers, obstructions, kelp, etc., were verified and the position numbers are legible. Remarks Required: -- None</p>	
<p>7. Objects on which signals are located and which fall outside of the high-water line have been described on the sheet. Remarks Required: -- List those signals still unidentified.</p>							
<p>Part III - JUNCTIONS</p> <p>Note: Make a cursory comparison preliminary to inking soundings in area of overlap.</p> <p>8. All junctions of contemporary or overlapping sheets were transferred in colored ink and overlapping curves were made identical. Remarks Required: -- None</p>							
<p>9. The notation in slanted lettering "JOINS H--- (19)" was added in colored ink for all verified contemporary adjoining or overlapping sheets. Those not verified are shown in pencil. Remarks Required: -- None</p>							

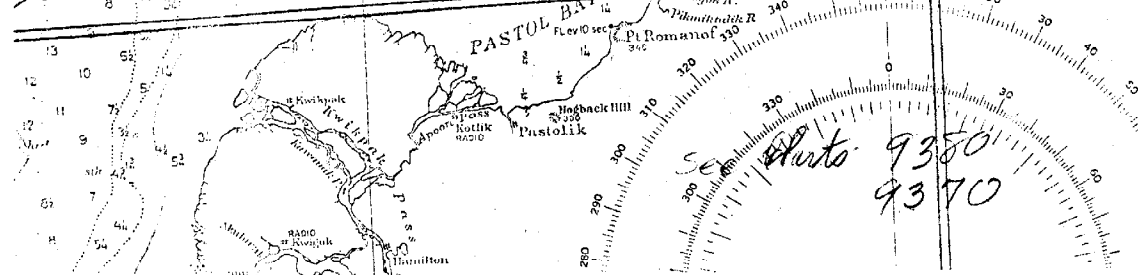
Part V - PROTRACTING (Continued)	CL	R	Part VIII - AIDS TO NAVIGATION	CL	R
<p>16. The protracting was satisfactory except as follows:</p> <p>Remarks Required: -- Refers to protracting in general except for specific faults repeated often, or faults in control information, which required considerable replotting or adjustments.</p>			<p>26. All fixed aids located together with those on the contemporary topographic sheets, have been shown on the survey.</p> <p>Remarks Required: -- Conflicts of any nature listed.</p>		
<p>17. The protractor has been checked within the last three months.</p> <p>Remarks Required: -- Date of check, type of protractor and number.</p>			<p>27. All floating aids listed in the Descriptive Report should be verified and checked in soft black pencil, including latitude and longitude and position identification.</p> <p>Remarks Required: -- None</p>		
<p>Part VI - SOUNDINGS</p> <p>18. All soundings are clear and legible, and critical soundings are a little larger than adjacent soundings.</p> <p>Remarks Required: -- None</p>			<p>Part IX - BOATSHEET</p> <p>28. The boat sheet was constantly compared with the smooth sheet with reference to notes, position of sounding lines and supplemental information.</p> <p>Remarks Required: -- None</p>		
<p>19. Sounding line crossings were satisfactory except as follows:</p> <p>Remarks Required: -- Discuss adjustments.</p>			<p>29. Heights of rocks awash were correctly reduced and compared with topographic information.</p> <p>Remarks Required: -- Note excessive conflicts with topographic information.</p>		
<p>20. The spacing of soundings as recorded in the records was closely followed;</p> <p>Remarks Required: -- None</p>			<p>Part X - GENERAL</p> <p>30. All information on the sheet is shown in accordance with figures 82 and 83 in the Hydrographic Manual (Pub. 20-2).</p> <p>Remarks Required: -- None</p>		
<p>21. The scanning, reduction, spacing, plotting of questionable soundings have been verified.</p> <p>Remarks Required: -- None</p>			<p>31. Unnecessary pencil notes have been removed from the sheet.</p> <p>Remarks Required: -- None</p>		
<p>22. The smooth plotting of soundings was satisfactory except as follows:</p> <p>Remarks Required: -- Refer to legibility, errors in spacing, and errors in numbers - but not to errors in scanning.</p>			<p>32. Degree, minute values and symbols have been checked; also electronic distance arcs have been properly identified and checked on the smooth sheet.</p> <p>Remarks Required: -- None</p>		
<p>Part VII - CURVES</p> <p>23. The depth curves have been inspected before inking.</p> <p>Remarks Required: -- By whom was the penciled curves inspected.</p> <p>24. The low-water line and delineation of shoal areas have been properly shown in accordance with the following:</p> <ul style="list-style-type: none"> a. From T-Sheet in dotted black lines b. From soundings in orange c. Approximate position of sketched curve is dashed orange d. Approximate position of shoal area not sounded in black dashed <p>Remarks Required: -- None</p>			<p>33. The bottom characteristics are adequately shown.</p> <p>Remarks Required: -- None</p> <p>Part XI - NOTES TO THE REVIEWER</p> <p>34. Unresolved discrepancies and questionable soundings.</p>		
<p>25. Depth curves were satisfactory except as follows: (This statement should not refer to the manner in which the curves were drawn).</p> <p>Remarks Required: -- Indicate areas where curves could not be drawn completely because of lack of soundings. For some inshore areas a general statement is sufficient.</p>			<p>35. Notation of discrepancies with photogrammetric survey inserted in report of unreviewed photogrammetric survey or on copy.</p> <p>36. Supplemental information.</p>		
Verified by				Date	

Contour interval 100 feet
by keeping from 1 to 1 1/2 miles from shore.

SEWARD PENINSULA



NORTON SOUND



set Photo 93801
9370

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. N-9165

INSTRUCTIONS

- A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
- 1. Letter all information.
- 2. In "Remarks" column cross out words that do not apply.
- 3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
9302	11-3-71	C.S. Forbe	Full Part Before After Verification Review Inspection Signed Via Drawing No. <i>Examined for critical corrections only</i>
9370	11-3-71	C.S. Forbes	Full Part Before After Verification Review Inspection Signed Via Drawing No. <i>Examined for critical corrections only.</i>
9384	11-4-71	C.S. Forbes	Full Part Before After Verification Review Inspection Signed Via Drawing No. <i>Examined for critical corrections only.</i>
9380	2/15/73	James Graham	Full Part Before After Verification Review Inspection Signed Via Drawing No. 12 <i>Revised misc. sdgs. 2nd curves</i>
9302	3/15/73	James Graham	Full Part Before After Verification Review Inspection Signed Via Drawing No. 19 <i>App'd misc corrections thru cht. 9380 aug #12</i>
9370	10/31/73	E. Frey	Full Part Before After Verification Review Inspection Signed Via Drawing No. <i>App'd some sdgs & depth curves. Filled in some holidays</i>
16240 (9370)	10/24/77	KAVIS	Full Part Before After Verification Review Inspection Signed Via Drawing No. 9 <i>EXAM - NO CORR FINAL APP OF CAT 1 SURVEY</i>
16666	4/17/96	D.H. HALLINAN	Full Part Before After Verification Review Inspection Signed Via Drawing No. <i>CONSIDER ADEQUATELY APPLIED</i>
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.