9653

Diag. Cht. No. 8201-3

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

(HYDROGRAPHIC)

Type of Survey HYDROGRAPHIC

Field No. DA-10-6-76

Office No. H-9653

LOCALITY

State ALASKA

General Locality SUMNER STRAIT

Locality RYNDA ISLAND AND VICINITY

1976

CHIEF OF PARTY
C. Andreasen

LIBRARY & ARCHIVES

DATE November 17, 1977

☆ U.S. GOV. PRINTING OFFICE: 1976—669-441

9653

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-9653

HYDROGRAPHIC TITLE SHEET

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.

DA-10-6-76

State Alaska

General locality Summer Strait

Locality Rynda Island and Vicinity

Scale 1:10,000 Date of survey 1 October - 17 October 1976

Instructions dated 10 June 1976 Project No. OPR-448-DA-76

Vessel Launch DA-2 (3132) Davidson

Chief of party C. Andreasen, CDR, NOAA

Surveyed by Gerald E. Wheaton, ENS, Maureen R. Kenny, ENS, Ship's Personnel-Steven S. Snyder, ENS and Russell C. Arnold, LCDR

Soundings taken by echo sounder, ~~hand lead, pole~~ Ross 5000 Fineline

Graphic record scaled by Ship's Personnel

Graphic record checked by Ship's Personnel

Positions verified ~~XXXXXXXX~~by Sandor Feher Automated plot by PMC Xynetics Plotter

Soundings Verification by Sandor Feher

Soundings in fathoms ~~XXXX~~ and tenths at ~~XXXX~~ MLLW

REMARKS: Survey Time Zone: 000° GMT

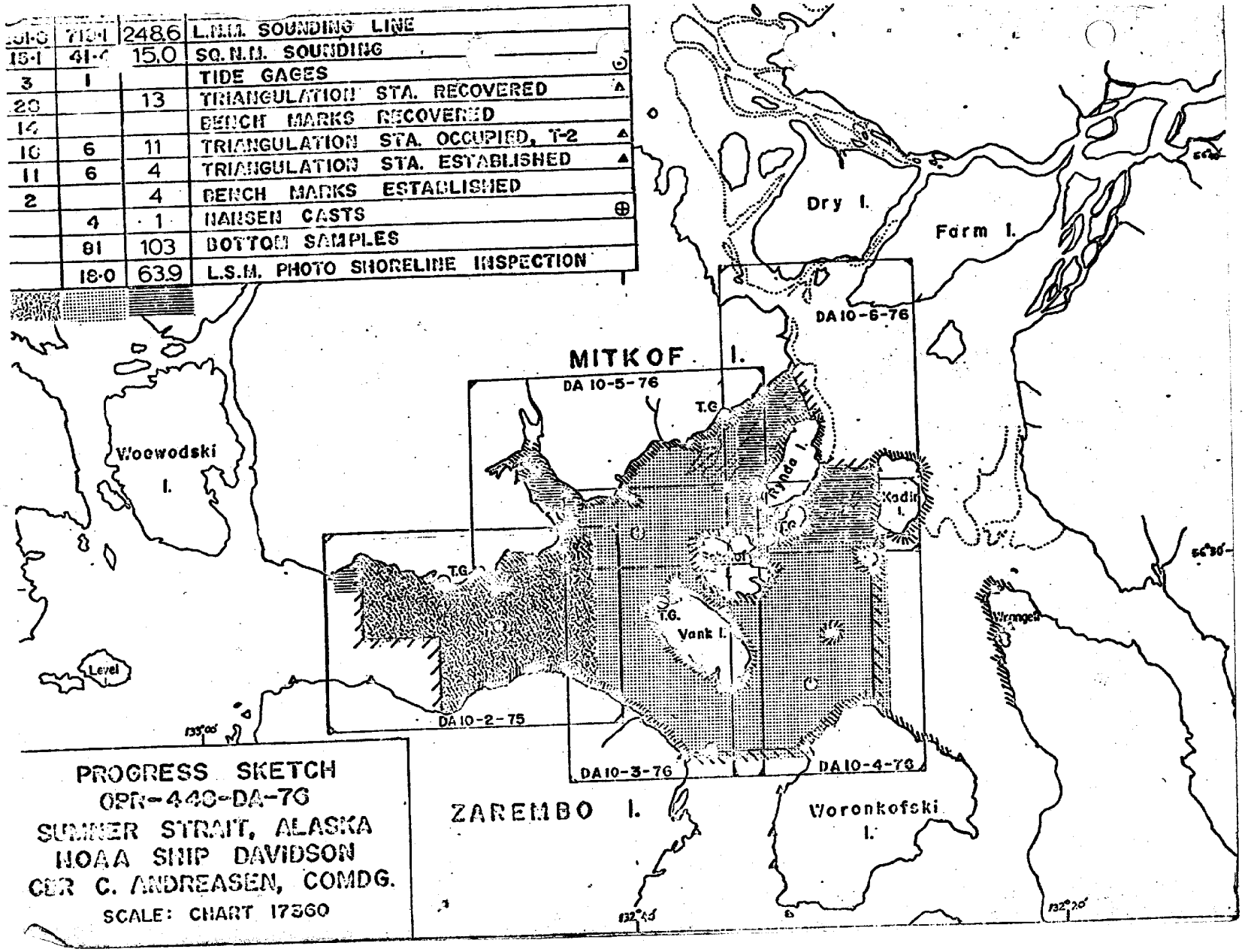
Mean Survey Longitude: 132° 31' 30"W

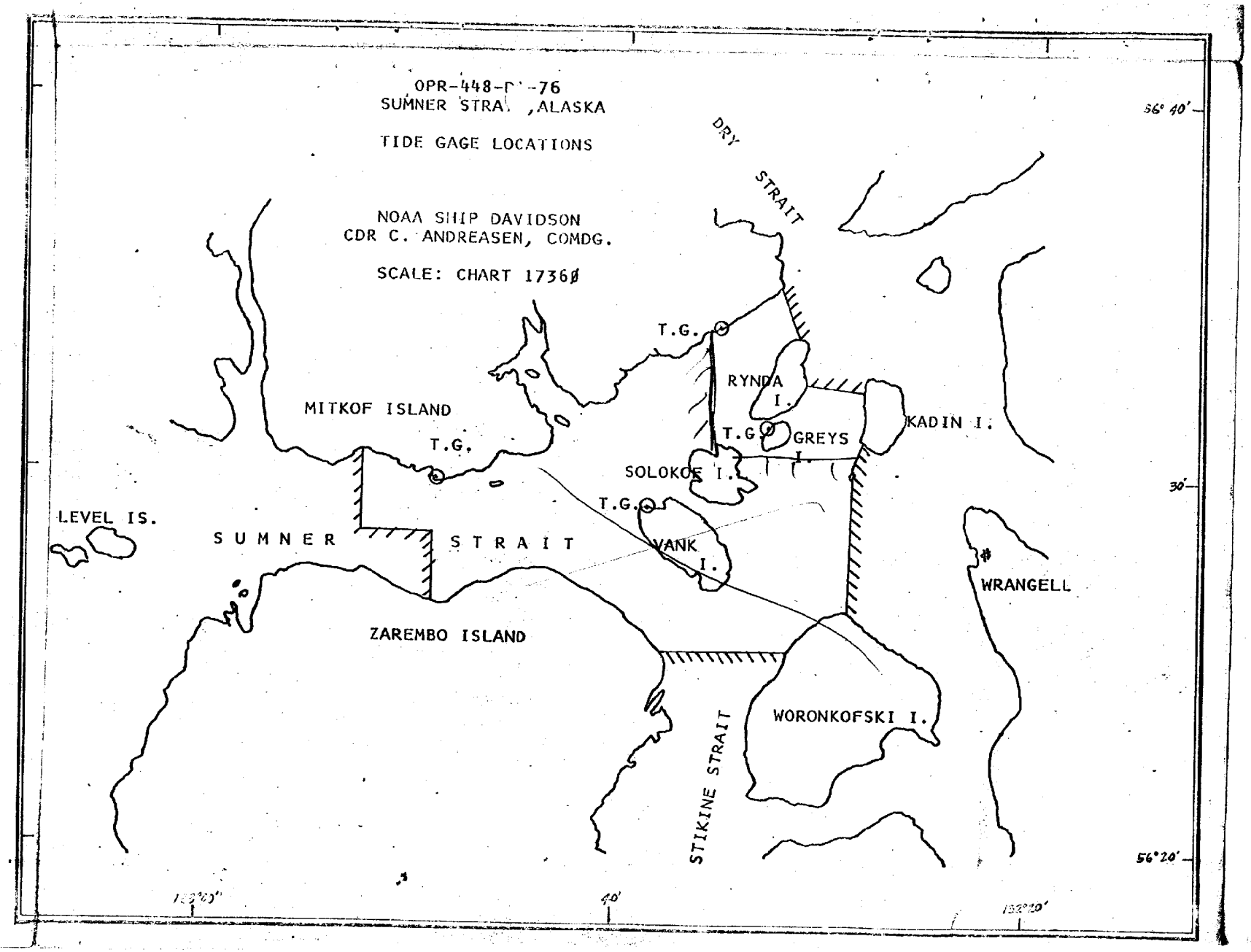
Field sheet is complete

Appvd to standards
3-22-78 WT

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1976—665-661/1222 REGION NO. 6


L.N.M. SOUNDING LINE
SQ.N.M. SOUNDING
TIDE GAGES
TRIANGULATION STA. RECOVERED
BENCH MARKS RECOVERED
TRIANGULATION STA. OCCUPIED, T-2
TRIANGULATION STA. ESTABLISHED
BENCH MARKS ESTABLISHED
NANSEN CASTS
BOTTOM SAMPLES
L.S.M. PHOTO SHORELINE INSPECTION
Dry I.
Farm I.
DA 10-6-76
MITKOF I.
DA 10-5-76
T.G.
Woewodski I.
Kadin I.
T.G.
T.G.
Vank I.
Level I.
DA 10-2-75
DA 10-3-76
DA 10-4-76
ZAREMBO I.
Woronkofski I.
PROGRESS SKETCH
OPR-440-DA-76
SUMNER STRAIT, ALASKA
NOAA SHIP DAVIDSON
CDR C. ANDREASEN, COMDG.
SCALE: CHART 17360


OPR-448-D'-76
SUMNER STRA , ALASKA
TIDE GAGE LOCATIONS
NOAA SHIP DAVIDSON
CDR C. ANDREASEN, COMDG.
SCALE: CHART 17360
DRY STRAIT
56° 40'
T.G.
RYNDA I.
MITKOF ISLAND
T.G.
T.G.
GREYS I.
KADIN I.
SOLOKOF I.
T.G.
30'
LEVEL IS.
SUMNER STRAIT
VANK I.
WRANGELL
ZAREMBO ISLAND
WORONKOFSKI I.
STIKINE STRAIT
56°20'
132°20'
40'
132°20'

A. PROJECT

Survey H-9653 (DA-10-6-76) was accomplished in accordance with Project Instructions OPR-448-DA-76, Sumner Strait, Alaska, dated 10 June 1976, and Change No. 1 dated 23 July 1976.

B. AREA SURVEYED

The area surveyed is the southern portion of Dry Strait at its junction with Sumner Strait. The survey is bounded on the east by Kadin Island and longitude 132°28'00"W, on the west by longitude 132°35'00"W, on the south by latitude 56°30'30"N and on the north by Mitkof Island and a line drawn between latitude 56°35'00"N, longitude 132° 32'30"W, and latitude 56°33'45"N, longitude 132°31'30"W for that portion of hydrography conducted between Mitkof and Rynda Islands. The northern limit for hydrography run between Rynda and Kadin Islands is latitude 56°32'30"N.

The survey began on ~~19 August~~ 1 OCTOBER and was completed on ~~21~~ 17 October 1976.

C. SOUNDING VESSELS

Launch DA-2, vessel number 3132, was used as a sounding platform for the survey. The color blue was used in data recording and preliminary computer plots.

D. SOUNDING EQUIPMENT

The launch was equipped with a Ross Fineline fathometer, model 5000. The fathometer, digitizer and transceiver all have serial number 1077.

The fathometer was used in depths ranging from 0.3 to 52.5 fathoms. The fathogram initial was maintained at zero. Phase checks were made at least daily. All fathograms were scanned and compared to digitized depths. Additions (peaks and deeps) and corrections were edited into the master data tapes.

Soundings have been corrected for transducer depth and predicted tides. The transducer depth, 0.3 fathom, was determined from bar checks. Tides were computed from daily predicted tides for Ketchikan, corrected to #1432 Greys Island, as shown in Tide Tables West Coast of North and South America, 1976. Tide gage requirements were

fulfilled by tide gages that were installed and maintained by DAVIDSON personnel at Greys Island and Dry Strait. Tide gages were also installed at Vank Island and Point Howe. (Refer to Field Tide Note.)

Soundings on the Final Field Sheets have not been corrected for velocity. A Nansen cast was taken by DAVIDSON on 5 October 1976 at latitude 56°30.7'N, longitude 132°33.6'W. Bar checks were taken twice daily to determine TRA corrections for the launches. (See appended Corrections to Echo Sounders Report.)

E. HYDROGRAPHIC SHEETS

The field sheets for this survey were prepared using the HYDROPLOT system on the DAVIDSON. A PDP 8/e computer (S/N 09492) was linked with a COMPLOT DP3 plotter (S/N 5445-5) for computation and plotting.

Two 1:10,000 computer sheets comprise this survey. These sheets are referred to from west to east as DA-10-6A-76 and DA-10-6B-76.

F. CONTROL STATIONS

MINI-RANGER transponders were located at recovered triangulation stations KAD 1916, LEE 1916, RYN 1916, GREY 1916, FIVE MILE 1893 and WILL 1916, and at newly established triangulation stations SOK 2 1976, SNIDE 1976, ROBIN 1976, BELLA 1976, CONNIE 1976, BETH 1976 and ANNEKE 1976. (See appended Horizontal Control Note.) Refer to the Signal List for geodetic positions of all stations.

Computations are based on the North American 1927 Datum.

G. HYDROGRAPHIC POSITION CONTROL

A Motorola MINI-RANGER III positioning system, in the range-range mode, was used for hydrography. Display Console S/N 707 and Transceiver unit S/N 721 were used in DA-2.

Transponders used were:

Code 1	S/N 723
Code 2	S/N 771
Code 3	S/N 772
Code 4	S/N 773

Hydrography was run using range-azimuth control methods on 6 October 1976 (JD 280) in the channel between Rynda Island

and Greys Island encompassing .2 square nautical mile. This system employed a Motorola MINI-RANGER III for range and a Wild T-2 for azimuth.

Correctors for the MINI-RANGER's were determined from baseline calibrations made on 17 September and 8 October, and were confirmed through field calibration checks. Field calibration checks were made by comparing the MINI-RANGER's readout with the mean of three, three-point visual fixes to triangulation stations. Calibration checks were conducted at the beginning and ending of the day, or whenever a new MINI-RANGER transponder pairing was used. Mean correctors derived from the two baseline calibrations have been applied to the positions on the Final Field Sheets. (Refer to Electronic Control Note.)

H. SHORELINE

The shoreline for this survey was derived from manuscripts TP-00554 and TP-00555. ✓

The shoreline was verified by Field Edit methods. Foreshore and offshore features were located by three-point fixes and check fixes to triangulation stations during Field Edit, and by MINI-RANGER fixes during hydrography. All field edit fixes have been treated as hydrographic detached positions. (Refer to Field Edit Report OPR-448-DA-76.)

I. CROSSLINES

Crosslines comprised 11.1% of the total miles of sounding lines. In most cases the crossline soundings were in excellent agreement with main scheme hydrography. ✓

Some problems with crossline agreement with main scheme work were encountered in the mud flats region of Dry Strait, on either side of Rynda Island. It was suspected that the actual tides in the vicinity of these mud flats lagged behind the predicted tides for Greys Island, which were used to obtain tide reducers for hydrography. Therefore, a temporary tide gage was installed at triangulation station BELLA 1976 on the east side of Mitkof Island, which borders the Dry Strait mud flats. A comparison of the results obtained from this tide gage and those obtained from the Greys Island tide gage confirmed that there is a definite tidal lag in the region of the mud flats which is most pronounced near high tide. The crosslines in question were run at high tide or shortly thereafter, while the main scheme hydrography was run on a rising tide, when the tide lag

was less pronounced, causing crossline soundings to be deeper in each case.

A comparison of predicted tides for Greys Island versus actual tides obtained from the tide gage installed there revealed close agreement.

J. JUNCTIONS

This survey junctions in the east with contemporary survey H-8621 (1961). Selected soundings from this survey are inked on the Final Field Sheet DA-10-6B-76 in green. All soundings agree well with the present survey.

This survey also junctions with contemporary surveys DA-10-4-76 in the south and DA-10-5-76 in the west. No junction soundings from these surveys are shown because hydrography on those sheets was run concurrently with this survey. Comparison between the Final Field Sheets from the surveys reveals excellent agreement.

K. COMPARISON WITH PRIOR SURVEYS

Selected soundings from the 1:80,000 scale prior surveys, H-1804 (1887) and H-1742 (1886), are plotted in brown and red, respectively.

The soundings of this survey and the prior surveys compared well. Both agreed within one fathom except in the following cases:

H-1742 - At latitude 56°31.15'N, longitude 132°34.45'W there is a 49 fathom sounding. The present survey recorded 43 fathoms. - 49 fms 200 meters west on present survey

H-1804 - At latitude 56°32.34'N, longitude 132°34.54'W there is a 7 ~~fathom~~ feet sounding in an area of 3 fathom depths on the present survey.

These discrepancies may be due to the scale differences of the two surveys (1:80,000 versus 1:10,000), and the improved surveying methods and equipment used on the present survey. In addition, the mud flats in Dry Strait are probably changing and filling in with silt from the Stikine River. concur

L. COMPARISON WITH THE CHART

The largest scale chart of the surveyed area is Chart

Number 17382, Zarembo Island and Approaches (Scale 1:80,000, 10th edition, 6 September 1975). Selected soundings from this chart were inked on the Final Field Sheet in violet.

These representative soundings agree within one fathom except in the area west of Greys and Rynda Islands. There is a charted *4½ fathom channel that runs parallel to the western shore of Rynda Island. No evidence of this channel was found in the present survey. However, there is a small channel slightly to the west of the charted one that is generally only 2½ fathoms deep. The water in Dry Strait is very silty because of the high rate of sediment transport of the Stikine River. Much of this sediment is being deposited in the survey area. *Channel has shifted approx 200 meters westward & shoaled to 3½ fm. depths.

4¼ fm sdg from BP-16513-14

At latitude 56°30.85'N, longitude 132°34.43'W there is a 33 fathom sounding charted. The present survey found 37-40 fathoms in this area. This may be due to the scale differences of the two surveys (1:80,000 to 1:10,000). The charted sounding is one tenth of a mile from a 33 fathom sounding.

33 fms from H-1804

M. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede all prior surveys. ✓

N. AIDS TO NAVIGATION SEE VERIFIERS REPORT

There were no fixed or floating aids to navigation within the survey area. ✓

O. STATISTICS

Vessel: 3132

Total Number of Positions	1264
Linear Sounding Miles (nm)	213.5
Square Nautical Miles	9.1

✓

P. MISCELLANEOUS

Four bottom samples were taken in the project area. ✓

All soundings, including peaks and deeps, are included on the master data tape. However, some soundings were not plotted on the Final Field Sheets in congested areas.

There are many floating logs and deadheads in the area. In the mud flats, they get stuck in the mud at low tide and become a hazard to navigation as they tend to stay just below the surface.

Local knowledge is definitely needed to traverse Dry Strait. Small tug boats towing log booms and fishing vessels navigate through this area at times of high water.

R. AUTOMATED DATA PROCESSING

Launch DA-2 (3132) data was gathered using a Ross Fine-line Model 5000 digitizing fathometer and the HYDROPLOT system in conjunction with program RK-111 (version 1/30/76). The serial numbers of the equipment are as follows:

Digital PDP 8/e	HYDROPLOT Controller	HSR
10744	700022	11823

The computer programs used to process this survey were:

		Version Date
RK-111	Range-Range Real Time HYDROPLOT	1/30/76
RK-201	Grid, Signal and Lattice Plot	4/18/75
RK-211	Range-Range Plot	1/15/76
RK-212	Visual Station Table Load and Plot	4/01/75
RK-216	Range Azimuth Position and Sounding Plot	2/14/75
RK-300	Utility Computations	5/22/75
RK-330	Reformat and Data Check	3/12/75
RK-407	Geodetic Inverse/Direct Computation	10/23/75
RK-409	Geodetic Utility Package	9/05/73
AM-500	Predicted Tides Generator	11/10/72
RK-530	Layer Correction to Velocity	6/25/74
AM-602	Elinore - Line Oriented Editor	5/21/75

S. REFERENCES TO REPORTS

Corrections to Echo Sounders Report
Electronic Control Note
Field Edit Report
Field Tide Note
Horizontal Control Note

Submitted by:

Maureen R. Kenny
Maureen R. Kenny
ENS, NOAA

Approved and Forwarded by:

Christian Andreasen
Christian Andreasen
CDR, NOAA
Commanding Officer

FIELD TIDE NOTE

Sumner Strait, Alaska
OPR-448-DA-76
August-October 1976

Field tide reductions of soundings on the Final Field Sheets, DA-10-3-76, DA-10-4-76, DA-10-5-76 and DA-10-6-76, are based on Ketchikan predicted tides, found in Tide Tables, West Coast of North and South America 1976, corrected to #1432 Greys Island, Sumner Strait. Final Field Sheet DA-10-2-75 is based on Ketchikan predicted tides corrected to #1431 St. John Harbor, Zarembo Island. They were interpolated using the PDP 8/e computer and program AM-500. All times of both predicted and observed tides are based on Greenwich Mean Time.

Three Bristol Bubbler tide gages were installed in the project area as per the project instructions. During the project, it was observed that the tides in the vicinity of Dry Strait lagged behind the predicted tides; therefore a tide gage was installed in Dry Strait near triangulation station BELLA 1976 on Mitkof Island. The information obtained from this gage applies only to Field Sheets DA-10-5-76 and DA-10-6-76. Location and operational periods of the four gages are as follows:

Site	Location	Period
Greys Island 945-1238	56°31.3'N 132°32.5'W	19 August-21 October
Point Howe 945-1224	56°29.7'N 132°49.0'W	19 August-21 October
Vank Island 945-1218	56°29.2'N 132°39.0'W	19 August-21 October
Dry Strait temporary gage	56°33.8'N 132°35.3'W	23 September-18 October

Greys Island

Gage S/N 64A11028 and staff were installed on 19 August 1976. Good continuous records were obtained until removal on 21 October 1976 except for one period when the paper jammed from 0640Z, 5 October until 1603Z, 7 October. Readings on the marigram are 6.0 feet higher than the staff readings.

Point Howe

Gage S/N 68A9333 and staff were installed on 19 August 1976. Good continuous records were obtained until 1610Z, 17 September when the paper stopped advancing because the paper withdrew from the drive mechanism's sprocket teeth. The paper was reset on 21 September at 1700Z. The gage worked well until the paper jammed again at 0945Z, 6 October. The gage was restarted at 1740Z, 7 October and continuous good records were obtained until removal on 21 October 1976. Readings on the marigram are 4.6 feet higher than the staff readings.

Vank Island

Gage S/N 64A11032 and staff were installed on 19 August 1976. The high tides were not recorded until 25 August because of an insufficient bubble rate. The bubble rate was increased to 200+ bubbles/minute, and this corrected the problem. An attempt was made on 27 August to lower the flow rate below 200 bubbles/minute, but the high tides again failed to be recorded. On 28 August, the higher bubble rate was resumed, and, in consequence, the high tides began to be recorded again. The paper came off the drive sprockets at 0900Z, 27 August. This condition was corrected at 1745Z, 27 August. This was compensated for while scaling hourly heights. The gage appears to have a faulty clock mechanism. The clock varied from one hour fast to thirty five minutes slow in one day, even with adjustments to the chart drive speed regulator. The clock's erratic rate was compensated for while scaling to obtain hourly heights by performing a linear interpolation between clock errors at two known times. The clock's erratic rate settled down on 13 September. High tide traces were lost from 2100Z, 12 October until 1600Z, 13 October. This problem was corrected and good traces were obtained until the gage was removed on 21 October 1976. Readings on the marigram are 6.6 feet higher than the staff readings.

Dry Strait

Gage S/N 723275 and staff were installed on 23 September 1976. From the time of installation until 0200Z, 27 September and from 2300Z, 29 September until 1600Z, 30 September, the high tides were not recorded due to an insufficient flow rate. The bubble rate was in-

creased to 192 bubbles/minute and a good trace was obtained until 2200Z, 10 October--except for a period from 0730Z, 5 October to 2042Z, 5 October when high tides were again lost. No complete tide cycles were recorded from this point on until removal of the gage on 18 October. On 14 October a leak was found around the threaded plug of the transparent bubble chamber. The plug was tightened, but this did not prove to be the cause of the problem. The time was set 30 minutes slow at 2042Z, 5 October until 1500Z, 6 October.

23 Sept. to 30 Sept.:	0.0' on staff=	5.4' on gage
4 Oct. to 5 Oct. :	0.0' on staff=	6.8' on gage
6 Oct. to 18 Oct. :	0.0' on staff=	10.0' on gage

See discussion on the leveling of the Dry Strait tide gage installation.

A comparison of actual tides from the Greys Island tide gage and the Dry Strait tide gage showed that there is a definite time lag between the two gages. The Dry Strait tide gage fell more slowly after high tide. This could account for the fact that certain crosslines on sheets DA-10-5-76 and DA-10-6-76 did not agree with main scheme hydrography, since most hydrography was run at higher tide levels. It appears that tides on the mud flats generally lag behind the actual tides at Greys Island. The predicted tides and actual tides from Greys Island agree well.

Leveling

The Greys Island tide staff was initially leveled to four bench marks on 24 August 1976. The marks consist of two newly established bench marks and two recovered bench marks established in 1972 named BM 1 and BM 3. BM 2 could not be found. It may be under a pile of newly fallen rock. The staff was again leveled to on 1 September when a skiff backed into it. The staff was found to have moved .013 feet. Closing leveling on 18 October indicated no staff movement.

On 24 August the Point Howe tide staff was leveled to five recovered bench marks that were established in 1975. Closing leveling on 18 October indicated no staff movement.

On 28 August 1976 the Vank Island tide staff was leveled to five recovered bench marks that were established in 1975 and triangulation station MOVE 1916--together with the triangulation station's two reference marks. Closing leveling on 18 October indicated no staff movement.

On 23 September the Dry Strait tide staff was leveled to three newly established bench marks: triangulation station BELLA 1976, BELLA RM 1 1976 and BELLA RM 2 1976. The staff was found destroyed on 30 September. A new staff was installed and leveled to on 4 October. The new staff was found destroyed on 5 October. It is assumed that logs destroyed the staffs during periods of very high tides. A third staff was installed and leveled to on 6 October. Closing leveling on 18 October indicated no staff movement.

Submitted by:

Maureen R. Kenny

Maureen R. Kenny
ENS, NOAA

Approved and Forwarded by:

Christian Andreasen

Christian Andreasen
CDR, NOAA
Commanding Officer

HORIZONTAL CONTROL NOTE

OPR-448-DA-76
Sumner Strait
Southeast Alaska

INTRODUCTION

To control field operations on OPR-448-DA-76, a total of 41 third order horizontal control stations were recovered within the project area. Twenty one third order stations were established by DAVIDSON personnel. An additional 5 third order stations were temporarily established, but were not monumented, and therefore are not described. See the appended Triangulation Sketch. A list of the names and dates for all stations recovered and established is appended.

METHODS

Three methods were used to locate stations. They are: 1) single triangle; 2) intersection; and 3) traverse. Twenty of the 21 monumented stations and 5 temporary stations that were established were located by observing a single triangle and computing the triangle using a PDP 8/e computer and Program RK-409, Geodetic Utility Package (Ver. 4/12/73).

Three stations, POINT ANCON LIGHT 1976, WRANGELL AIRPORT BEACON 1976 and WRANGELL BREAKWATER LIGHT 1976, were established by intersection from three or more known stations.

Two stations, FIVE MILE ISLAND LIGHT 1976 and WORONKOFSKI PT DAY BCN 1976, were established by traversing to FIVE MILE 1893 and LARGE 2 1922, respectively. The positions of these two stations were then checked by intersection.

All geodetic position computations were performed using a PDP 8/e computer and Program RK-407, Geodetic Direct and Inverse Computations (Ver. 8/15/74).

One distance was measured with two Tellurometer CA-1000 distance measuring units to obtain the distance required to compute the TEMP PT 3 - TEMP PT 4 - TEMP PT 5 triangle.

Submitted by:

Russell C. Arnold
LCDR, NOAA

Approved and Forwarded by:

Christian Andreasen
CDR, NOAA
Commanding Officer

Stations Recovered

1. BANK 1954
2. BLACK 1929
3. BOULDER 1916
4. CRAIG POINT LIGHT 1973
5. DEER 1916
6. DIM 1916
7. DUCK 1916
8. EDGE 1954
9. FIELD 1922
10. FIVE MILE 1893
11. FLATS 1954
12. FORT WRANGELL NORTH BASE 2 1886-1937
13. FORT WRANGELL SOUTH BASE 2 1886-1937
14. GAFF 1954
15. GREY 1916
16. HIGH 1916
17. KAD 1916
18. KADIN 1929
19. KAHDIN 1954
20. KOF 1916
21. LARGE 2 1922
22. LEDGE 2 1954
23. LEE 1916
24. LITHOGRAPH 1893
25. LOW POINT DAYBEACON 1975
26. MILE 1916
27. MOVE 1916
28. OFF 1916
29. OIL DOCK REEF DAYBEACON 1929
30. POINT BLAQUIERE BEACON 1929
31. QUARTZ 1916
32. REM 1916
33. ROUND 1954
34. RYN 1916
35. RYNDA 1922-1929
36. SLOPE 1916
37. STATION ISLAND LIGHT 1975
38. VANK ISLAND LIGHT 1973
39. WILL 1916
40. WRANGELL B.M. 6 1954
41. WRANGELL STANDPIPE 1970

Stations Established

1. ANNEKE 1976
2. BELLA 1976
3. BETH 1976
4. CHRIS 1976
5. CONNIE 1976
6. ERIC 1976
7. FIVE MILE ISLAND LIGHT 1976
8. MIGHTY 1976
9. MO 1976
10. OTTO 1976
11. POINT ANCON LIGHT 1976
12. ROBIN 1976
13. SNIDE 1976
14. SOK 2 1976
15. STATION IS LT 1976
16. STEPHI 1976
17. TWO TREE IS LT 1976
18. WEDGE 2 1976
19. WORONKOFSKI PT DAY BCN 1976
20. WRANGELL AIRPORT BEACON 1976
21. WRANGELL BREAKWATER LIGHT 1976

Temporary Stations Established

1. TEMP PT 1
2. TEMP PT 2
3. TEMP PT 3
4. TEMP PT 4
5. TEMP PT 5

ELECTRONIC CONTROL NOTE

NOAA Ship DAVIDSON
OPR-448-DA-76
Sumner Strait, Southeast Alaska

INTRODUCTION

Navigational control of hydrography for survey DA-10-6-76 was by Motorola MINI-RANGER. The project area is heavily wooded and provided no reflective surfaces. As a result, no multipath returns and little interference were encountered. Maximum ranges were under six miles. Stations were selected so as to maintain acceptable arc intersections (i.e. thirty to one hundred fifty degrees). Line of sight requirements were met throughout the project area.

BASELINE CALIBRATIONS

Baseline calibrations were accomplished in accordance with PMC OPORDER instructions. Two MINI-RANGER calibrations were performed--one prior to beginning the survey and one following completion. The pre-survey and post-survey calibrations were both carried out in Ketchikan, Alaska, from the Coast Guard Pier, across water, to a site approximately 1300 meters away on the northeastern shore of Pennock Island. The baseline was measured with a Tellurometer, Model Number CA-1000. The results of these calibrations are tabulated below. The maximum difference between beginning and ending correctors for the Console/R-T unit that was used is three meters. This is within the accuracy requirements and the repeatability of the MINI-RANGER system.

FIELD CALIBRATION CORRECTORS

Field calibrations were performed before and after each day, or portion of a day, that hydrography was run. A minimum of three visual three-point sextant fixes were observed simultaneously with MINI-RANGER patterns. Correctors from these fixes were meaned to obtain the Daily Calibration Correctors (DCC). All DCC's are within six meters of the Baseline Calibration Correctors.

Console/R-T unit 707/721 with codes 1, 2, 3 and 4 was used for this survey. Shown below is the summary of baseline calibrations and daily field calibrations.

BASELINE CALIBRATION CORRECTORS

Console/R-T unit	xpndr code	corrector 9/17/76	corrector 10/8/76	mean corrector
707/721	1	0	0	0
	2	-1	-2	-2
	3	-1	-1	-1
	4	0	+1	0

DAILY CALIBRATION CORRECTOR ABSTRACT

17 September - 8 October Console/R-T unit 707/721

Calib. No. / Code	1	2	3	4	5	6	7	8	9	10	11
1	+1	0	+1	0	0	+4	+2	0	+2	+4	-4
2	+2	+2	0	-3	-5	0	0	-2	0	-1	-1
3	+1	-2	-4	-5	-1	-6	-3	-1	+1	0	
4	-2	+2	+1	+1	-2	+2	+5	+2	+1	+1	

Calib. No. / Code	12	13	14	mean
1	+2			+1
2	-2	+3	-4	-1
3				-2
4				+1

Submitted by:

Steven S. Snyder
Steven S. Snyder
ENS, NOAA

Approved and Forwarded by:

Christian Andreasen
Christian Andreasen
CDR, NOAA
Commanding Officer

CORRECTIONS TO ECHO SOUNDERS REPORT

NOAA Ship DAVIDSON
OPR-448-DA-76
Sumner Strait, Alaska

To provide the velocity corrections for hydrography on survey OPR-448-DA-76, Sumner Strait, a NANSEN cast was conducted as specified by the Hydrographic Manual, Section 4.9.5. The velocity corrections will apply to field sheet DA-10-6-76 (H-9653). The cast was taken on 5 October 1976 at latitude 56°30.7'N and longitude 132°33.6'W.

The temperature corrections were calculated using a Culbertson Slide Rule. Calibration corrections supplied by the NOIC, Northwest Regional Calibration Center, determined during the February 10, 1976 calibration of the reversing thermometers, were also applied to the field data. The Sea Water Temperature and Density Reduction Tables were used to calculate salinity at 15°C from density measured with hydrometers #6680-A and #213. The Velocity Corrections were then calculated from the reduced temperature and salinity data using program RK-530, Layer Correction to Velocity (version 6/25/74). The results were plotted, and the resulting Velocity Correction vs. Depth curve was used to extract velocity correctors from the linear curve at 0.2 fathom intervals.

Bar check data was collected at least twice daily to calculate the TRA corrections for the sounding vessel as specified by the Hydrographic Manual, Section 4.9.5.1.1. The results of the bar checks were averaged for the launch. The TRA correction for vessel DA-2 (3132) is 0.3 fathom.

Submitted by:

Gerald E. Wheaton
ENS, NOAA

Approved and Forwarded by:

Christian Andreasen
CDR, NOAA
Commanding Officer

Velocity Correction Abstract

Sumner Strait, Alaska
OPR-448-DA-76
(H-9653)

Correction	to	Depth
0.0 (fm)		9.0 (fm)
+0.2		26.5
0.4		44.0
0.6		63.0

TRA Correction

Vessel	Transducer Draft	Day
DA-2 (3132)	0.3 fm	All

(Let 1 inch equals fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

-10 0.0 4.0

CORRECTIONS IN ~~FEET~~ FATHOMS — Fathoms

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190

FATHOMS DEPTHS IN FATHOMS

(For deep water add a 0 to these figures)

NOAA FORM 76-21 (10-72) — U.S. DEPARTMENT OF COMMERCE — NOAA — NATIONAL OCEAN SURVEY

VELOCITY CORRECTIONS

Ship DAVIDSON

C. ANDREASEN Comdg.

These corrections are to be used

between 1 Oct 19 76 and 6 Oct 19 76

in the locality SUMNER STRAIT, AK.

for hydrographic surveys Nos. OPR-448-PA-76

(CH-76-SA) OPR-448-PA-76

Correction to Depth	
0.0 (Fm)	9.0 (Fm)
0.2	24.5
0.4	44.0
0.6	62.0

GEOGRAPHIC NAMES

Survey No.

H-9653

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	
GREYS ISLAND ✓	17382									1
KADIN ISLAND ✓	17382									2
KOKNUK FLATS ✓	17360									3
RYNDA ISLAND ✓	17382									4
SOKOLOF ISLAND ✓	17382									5
~~DRY STRAIT~~										6
MITKOF ISLAND ✓										7
SUMNER STRAIT ✓										8
										9
										10
										11
										12
										13
										14
										15
					APPROVED					16
					Chas. L. Harrington					17
					STAFF GEOGRAPHER- CS1 x2					18
					5 Dec. 1977					19
										20
										21
										22
										23
										24
										25

2/18/77

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for Form 362

Tide Station Used (NOAA Form 77-12): Dry Strait
Greys Island

Period: October 1 - 6, 1976

HYDROGRAPHIC SHEET: H-9653

OPR: 448

Locality: Sumner Strait - Dry Strait, Alaska

Plane of reference (mean lower low water): 8.0 ft. - Dry Strait
4.4 ft. - Greys Island

Height of Mean High Water above Plane of Reference is
14.8 ft. - Greys Island 15.0 ft. - Dry Strait

Remarks: Recommended zoning:
(1) West of Rynda Island and north of 56°32' zone direct on Dry Strait.
(2) For the remainder of the sheet zone direct on Greys Island.

James E. Hubbard
for Chief, Tides Branch

NOAA FORM 77-27
(9-72)
(PRESC. BY HYDROGRAPHIC MANUAL 20-2, 6-94, 7-13)

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

HYDROGRAPHIC SURVEY STATISTICS

HYDROGRAPHIC SURVEY NO. H-9653

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET with PNO & excess overlay	2 1	BOAT SHEETS (mylar)	2
DESCRIPTIVE REPORT	1	OVERLAYS (preliminary)	4 6

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES			1-Smooth & Fleece			
AHIERS	1		1 -filed with depth records			
VOLUMES	1					
BOXES						

T-SHEET PRINTS (List) TP-554, TP-555, Unreviewed Class I Manuscripts - not recieved at registration mcr 11/17/77

SPECIAL REPORTS (List)

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				1270
POSITIONS CHECKED		1270		
POSITIONS REVISED		1		
DEPTH SOUNDINGS REVISED		48		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		Ø		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		Ø		
	TIME (MANHOURS)			
Verification of Control	2			
Verification of Positions		11		
Verification of Soundings		43		
Smooth Sheet Compilation		120		
ALL OTHER WORK		8	HIT 10	
TOTALS		182		

	BEGINNING DATE	ENDING DATE
PRE-VERIFICATION BY James S. Green	12/11/76	12/11/76
VERIFICATION BY Sandor A. Feher S. A. Feher	ØB/22/77	1Ø/11/77
REVIEW BY QC.I. - F.P. SAULSBURY - 12/1/77 - 44hrs - DREngle 12/20/77 6 hrs		

Baumgardner 4hrs 2-24-78

* U.S. G.P.O. 1972-769-562/439 REG.#6

REGISTRY NO. H-9653(1976)

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey, the following shall be completed:

CARDS CORRECTED

DATE_____ TIME REQUIRED_____ INITIALS_____

REMARKS:

REGISTRY NO. _____

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE_____ TIME REQUIRED_____ INITIALS_____

REMARKS:

H-9653 (1976)

(Information) (Items) for Future Presurvey Reviews

none

Position Index		Bottom Change	Use	Resurvey
Lat.	Long.	Index	Index	Cycle
563	1323	3	1	50 years
563	1324	3	1	50 years

PACIFIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO: H-9653 FIELD NO: DA-1Ø-6-76

Alaska, Sumner Strait, Rynda Island and Vicinity

SURVEYED: October 1976

SCALE: 1:1Ø,ØØØ PROJECT NO: OPR-448-DA-76

SOUNDINGS: Fathometer CONTROL: Mini-Ranger

Chief of Party.....C. Andreasen, CDR
Surveyed by.....Ship's Personnel
Automated plot by.....PMC Xynetics Plotter
Verified by.....Sandor A. Feher
October 11, 1977

I. INTRODUCTION

H-9653, 1976 is a very good Navigational Area Survey conducted by NOAA Ship DAVIDSON during October 1976. The area surveyed is the southern junction with Dry Strait in the vicinity of Rynda Island. Motorola Mini-Ranger in the range-range and range-azimuth modes were used to control the hydrography. This survey is adequate to supersede the common areas of prior surveys and the charted hydrography. with the addition of items carried forward from prior surveys.

Project parameters used to prepare the boatsheet have been revised to center the hydrography on the smooth sheet. Parameters used by PMC are appended to the smooth printout. The signal listing and all correctors, except tides, are also included in the smooth printout.

Field sheet soundings were based on Ketchikan predicted tides, corrected to #K132 Greys Island, Sumner Straits. Smooth sheet soundings are zoned on approved tides from Dry Strait and Grey's Island guages. Tide correctors utilized for the smooth sheet can be found in the cahier with the hydrographic records.

No unusual problems were encountered during the verification of this survey.

II. CONTROL AND SHORELINE

The Descriptive Report adequately covers in Sections F and G, the control used for hydrography and no additional comments are needed at this time. ✓

Shoreline and details along the shoreline were compiled from Class I Unreviewed Photogrammetric Manuscripts TP-554, TP-555. Photography was flown in June 1972 and field edit was accomplished in October 1976. ✓ as it appears on the boatsheet from the Class III manuscript, was subsequently revised by field edit as it appears

The shoreline ~~from~~ of Rynda Island ~~did change considerably~~ on the Class I manuscript. ~~compared to the Class III manuscript~~. Greys Island shoreline was also ~~changed~~ revised, but less considerably, while there was no ~~change~~ revision in the shoreline of Kadin Island. ✓

The photogrammetric compiler did not depict numerous rocks and ledges on the manuscript; however, the rocks and ledges were ~~brought forward~~ transferred from the hydrographic final field sheet and shown on the final smooth sheet. The rocks along the shoreline of Rynda Island that fall within the foul areas are not shown; however, their detached positions are plotted in the foul area in the final smooth sheet. The ledge and islet shown at Latitude 56°31.88'N, Longitude 132°28.45' was reduced to an elevation of 15 ft. MLLW on the Class I manuscript; however, the field edit shows an elevation of 15 ft. above MHW. The elevation for this island was corrected in line with the field edit information and shown in red as 15 ft. See Q.C. critique items 1 & 2

III. HYDROGRAPHY

Crosslines agree with the main scheme hydrography very well, within a fathom in deeps. In the shallows, the crosslines are deeper compared with the main scheme work, these ambiguities are explained in Section I, in the Descriptive Report. ✓

One detached position 8008 plots on the final smooth sheet and on the final field sheet above the MHW line. The records have been examined and assumed to be incorrect, the signals used to verify this position are located off the sheet. It is assumed that this rock would fall within the foul zone just off the nearby shoreline. concur

The basic hydrography is adequate to delineate the bottom configuration and to determine least depths. The construction of depth curves on the smooth sheet is complete except for the inshore areas where the navigational area survey concepts were utilized. See Q.C. critique item 5.

IV. CONDITION OF SURVEY

The hydrographic records, overlays, smooth sheet, and reports are adequate and conform to the requirements of the PHM, except bottom sample density is inadequate. concur

In this survey only four bottom samples are indicated. ✓ Additional B.C.'s were carried fwd. from prior survey during O.C.I.

V. JUNCTIONS

At the west, the survey junctions with contemporary survey H-9652, 1:10,000 (1976) and in the south with H-9651, 1:10,000 (1976). Both surveys presently are in the final verification processing stage and, therefore, effective junctions were accomplished. At the east, an adequate junction was effected with H-8621, 1:10,000 (1961); however, since H-8621 has*not been verified, the junction notes remain in pencil. On the north and northwest portion of the sheet, no contemporary surveys exist. *H-8621 (1961) is verified & reviewed & junctioned during O.C.I.

VI. COMPARISON WITH PRIOR SURVEYS

Comparison was made with prior surveys H-1804 (1887) and H-1742 (1886), both surveys are 1:80,000 scale and use the South Eastern Alaska Datum. Soundings from these prior surveys agree well with the current survey, except in two places as pointed out in Section K of the Descriptive Report. See O.C.I. Critique Items 6 & 7

H-9653 supersedes H-1804 and H-1742 for the areas of common coverage.

There are no pre-survey review items for this survey. ✓

VII. COMPARISON WITH CHARTS

This survey was compared with Chart 17382, 10th Ed., September 1975, the largest scale chart of the surveyed area. Soundings indicated by circles originate from H-1804 (1887), while one sounding identified by a square originates from H-1742 (1886). All other soundings originate from unknown sources. Chart 17360, which is a continuation of Chart 17382, was also compared, soundings were identified as mentioned above.

On the charts, a shoal sounding of 3 fathoms is shown at 56° 30.6$\frac{8'}{7}$'N and 132°28.38'W; the source of this sounding is unknown. The present survey H-9653 does not disapprove its existence; it failed to adequately develop this area; therefore, it is recommended that the source of this sounding be investigated and carried forward for charting purposes. See O.C. Critique Item 6a.

This area cleared by 44' on H-3946 W.D. (1916). Area east of this cleared by 21' on H-3946 W.D. (1916) - Shoalest depth found in this area on H-3946 W.D. is 22' or 3.7 fm.

There are numerous rocks and ledges that are not shown on the charts because of their small scale; however, they are indicated on the final smooth sheet. The charted hydrography for the area of this survey generally originates from H-1804 (1887). This survey is adequate to supersede the charted hydrography for the area of common coverage.

Point Blaquiere Beacon is shown on the final smooth sheet as a triangulation point at 56°35'04.32"N and 132°32'27.24"; this point also serves as an aid to navigation. The aid is both a light and day beacon.

VIII. COMPLIANCE WITH PROJECT INSTRUCTIONS

This survey complies with the Project Instructions, dated June 10, 1976, except in the density of bottom sampling. Bottom characteristics were obtained only on four places.

IX. ADDITIONAL FIELD WORK

Additional field work is not required for the area covered by this survey.

This is a very good navigable area survey, adequate to supersede the prior survey and to be the source of charted hydrography.

X. NOTES TO THE COMPILER

This survey was verified and the smooth sheet compiled by Sandor A. Faher, a verifier trainee, under my supervision.

Respectfully submitted,

Marden G. Sanders
for

Richard D. Lynn
Team Leader, Cartographic Technician
October 31, 1977

Examined and approved,

James S. Green
Chief, Verification Branch

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY, Pacific Marine Center
1801 Fairview Ave. E., Seattle, WA 98102

Date: 4 November 1977

To: Eugene A. Taylor, RADM
Director, PMC

From: Glen R. Schaefer, CDR
Chief, Processing Division

Subject: PMC Hydrographic Survey Inspection Team Report - H-9653

This survey is a navigable area survey of Sumner Strait, Alaska, Rynda Island and vicinity. This survey was conducted by NOAA Ship DAVIDSON in 1976 in accordance with Project Instructions OPR-448-DA-76, dated 10 June 1976 and Change No. 1, dated 23 July 1976.

In accordance with the Provisional Hydrographic Manual, the survey is deficient in the number of bottom samples taken. This deficiency does not warrant scheduling of additional field work.

A charted 3 fathom depth at Latitude 56°30.6'N and Longitude 132°28.38'W was not developed in the survey. The source of this 3 fathom depth is unknown. Therefore, it is recommended that it be carried forward for charting purposes unless the source can be determined by the compiler and satisfactorily discredited.

see Q.C. critique Item 6

The inspection team finds survey H-9653 to be a very good navigable area survey, adequate to supersede common areas of prior surveys and charted hydrography. Administrative approval is recommended.

Glen R. Schaefer, CDR

John C. Albright, LCDR

James W. Steensland

Stanley H. Otsubo

APPROVAL SHEET

FOR

SURVEY H-9653

A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position print-out has been made. A new final sounding print-out has been made.

B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic Manual. Exceptions are listed in the verifier's report.

Date: 10/21/77

Signed: [signature]

Title: Chief, Verification Branch

ADMINISTRATIVE APPROVAL
H-9653

The smooth sheet and reports of this survey have been examined and the survey is adequate for charting and to supersede common areas of prior surveys.

Eugene A. Taylor

Eugene A. Taylor, RADM
Director
Pacific Marine Center

7 NOV 1977

Date

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

C352

December 1, 1977

TO: A. J. Patrick
Chief, Marine Surveys Division

THRU: Chief, Quality Control Branch

FROM: F. P. Saulsbury
Quality Evaluator

SUBJECT: Quality Control Report for H-9653 (1976) Alaska, Sumner Strait, Rynda Island and Vicinity

Survey H-9653 was inspected to evaluate the accuracy and adequacy of the survey with respect to data acquisition, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, shoreline transfer, smooth plotting, decisions and actions taken by the verifier, and the cartographic presentation of data. In general, it was found to conform to the National Ocean Survey's standards and requirements. The following is a discussion of additions and revisions accomplished during Quality Control Inspection and notes of clarification to the chart compiler:

1. The three rocks awash in the vicinity of lat. 56°32.30', long. 132°33.60' were enclosed within a reef symbol from information in the survey records.

2. Three foul areas in the vicinity of lat. 56°32.75', long. 132°33.00' were revised to ledges with rock awash symbols and elevations denoting high points on the ledges from information in the survey records.

3. Depth curves were revised where soundings supported a more definitive portrayal of bottom configuration.

4. In the junction with H-9652 (1976) on the west overlapping curves were made coincidental. The junction on the east with H-8621 (1961) was made. The junction on the south with H-9651 (1976) will be checked in the inspection of that survey.

5. Inadequate development of the rocky shoal in the vicinity of lat. 56°30.68', long. 156°28.30' was atoned for by bringing forward least depths from prior surveys H-8148 (1954) and H-3946 W.D. (1916) previously overlooked in the comparison with prior surveys.

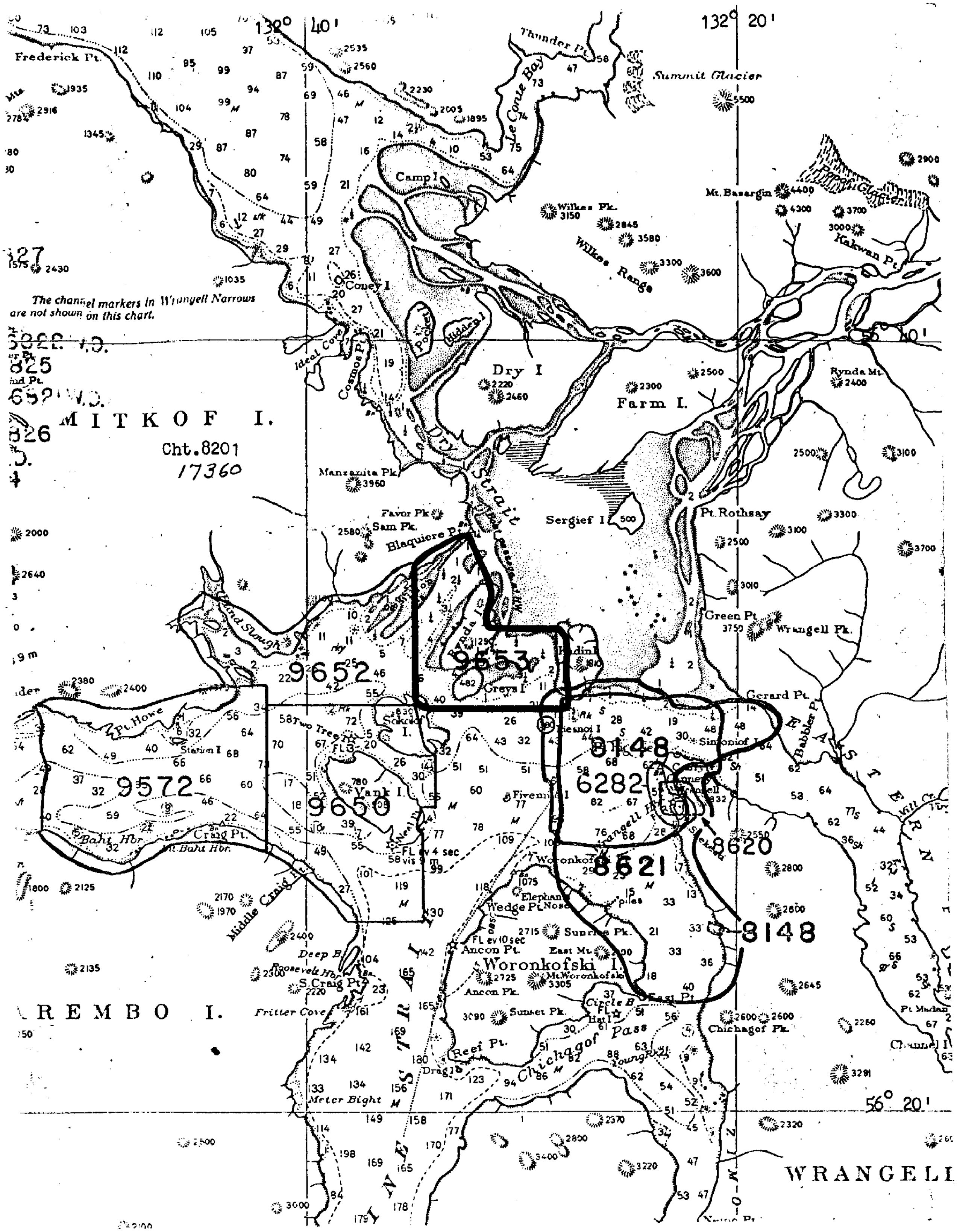
6. The 3-fathom sounding previously addressed in section VII of the Verifier's Report as charted in lat. 56°30.68', long. 132°28.38' from an unknown source is considered to originate with H-3946 W.D. (1916) as a 3.7-fathom sounding and is erroneously charted about 70 meters west of its true position. This 3.7-fathom sounding, cleared by a 21-foot drag, has been brought forward to the present survey and should be charted as the least depth on this rocky shoal.

7. Effective drag depths and soundings on H-3946 W.D. (1916) are in contradiction with the present survey at the southern extremes of the "flats" between Greys and Kadin Islands where sediment from Stikine River is extending these "flats" southward. Maximum deposition is noted in the vicinity of lat. 56°31.25', long. 132°28.70' where the 5-fathom depth curve is now 120 meters southward of its former position. General shoaling and shifting of rises and natural channels throughout the "flats" area are evident. Depths from the present survey along the offshore edge of the "flats" should be accepted and effective drag depths and conflicting prior soundings disregarded in this area.

8. The islet charted in lat. 56°32.85', long. 132°33.00' probably originates with class III photogrammetric manuscript T-00554, does not appear on the class I manuscript and is considered nonexistent.

9. The two islets charted in the vicinity of lat. 56°32.30', long. 132°33.60' probably originate with class III photogrammetric manuscript T-00554, appear as three rocks awash on the class I manuscript and should be charted as shown on the present survey.

10. With the addition of some shoal soundings and bottom characteristics brought forward, the present survey is adequate to supersede the prior surveys within the common area.



132° 40'
132° 20'
Frederick Pt.
Thunder Pt.
Le Conte Bay
Summit Glacier
Camp I.
Mt. Basargin
Wilkes Pk.
Wilkes Range
Kakwan Pt.
The channel markers in Wrangell Narrows are not shown on this chart.
Coney I.
Ideal Cove
Cosmos Pt.
Dry I.
Farm I.
Rynda Mt.
MITKOF I.
Cht. 8201
17360
Dry Strait
Manzanita Pk.
Favor Pk.
Sam Pk.
Blaquiere Pt.
Sergief I.
Pt. Rothsay
Green Pt.
Wrangell Pk.
9652
9653
Greys I.
Gerard Pt.
Pt. Howe
9572
Station I.
Two Tree I.
Vank I.
9650
8148
6282
Baht Hbr.
Craig Pt.
8621
8620
Woronkofski I.
Wedge Pt.
Elephant Nose
Sunrise Pk.
Middle Craig Pt.
Ancon Pt.
Ancon Pk.
Deep B.
Roosevelt Hbr.
S. Craig Pt.
East Pt.
Circle B.
Chichagof Pass
Chichagof Pk.
ZAREMBO I.
Fritter Cove
Sunset Pk.
Reef Pt.
Meter Bight
56° 20'
WRANGELL

FORM C&GS-8352
(3-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. 9653

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
8201	9/5/78	KANIS	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via
~~17382~~	~~9-5-78~~		Drawing No. 27 Examined directly for critical
			Corrections
17382 8160	9-5-78	SAGER	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via
			Drawing ~~No~~ AID PROOF NO. 15 - Critical corrections only.
			Revised shoal area west of RYNDA ISLAND.
17384 8165	9-5-78	SAGER	~~Full~~ Part ~~Before~~ After Verification Review Inspection Signed Via
			Drawing No. Examined for critical corrections
17384	5-7-79	HAUSMAN	Full ~~Part Before After Verification Review~~ Inspection Signed Via
			Drawing No. 3. A Kadin rock west of 132°28'(BP 89089-
			Advance T. Sheet) was disproved by BP. 100534.
17382	1/8/81	Nautor	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 15
17360	7/6/81	Nautor	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 29 thru 17382
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975.

USCOMM-DC 8558-P63