

HYDROGRAPHIC TITLE SHEET

H-9624

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-40-1-76

State ALASKA

General locality Hinchinbrook Entrance

Locality Southwest Approach to Hinchinbrook Entrance

Scale 1:40,000

Date of survey ¹⁰ June 8 to July 1, 1976

Instructions dated March 17, 1976

Project No. OPR-999

Vessel NOAA Ship DAVIDSON CSS-31 (3130)

Chief of party C. Andreasen, Commander, NOAA

Surveyed by Ship's Officers R.C. Arnold, M. Kennedy, G.E. Wheaton, S.S. Snyder, M.C. Wencker

Soundings taken by echo sounder, hand lead, pole Ross Finline, Model 5000

Graphic record scaled by Ship's Personnel

Graphic record checked by Ship's Personnel

Positions verified

~~checked~~ by Donald E. Zimmer/James L. Stringham automated plot by PMC/Kynetics Plotter

Soundings

Verification by Donald E. Zimmer and James L. Stringham

Soundings in fathoms 100 at MLW MLLW

REMARKS: Survey Time Zone: 000° GMT

Mean Survey Longitude: 147° 05.00' W

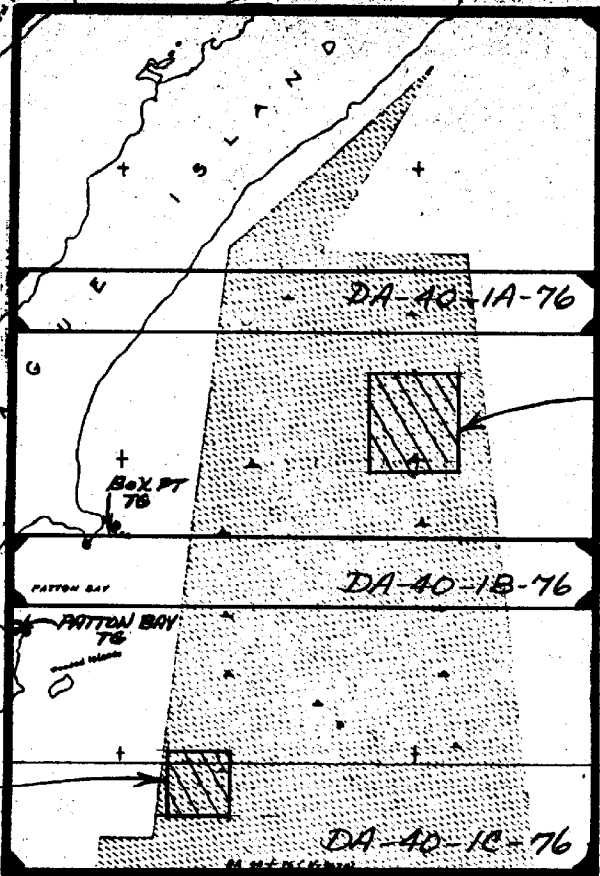
Final Field Sheet is complete.

Applied to sheet 1412/77
[Signature]

PROGRESS SKETCH
OPR-999-DA-76
NAVIGABLE AREA SURVEY
 Hinchnbrook Entrance to Middleton Island,
 Gulf of Alaska

Scale: Chart 16700

NOAA SHIP DAVIDSON(CSS-31)
 CDR. C. ANDREASEN, Cmdg.

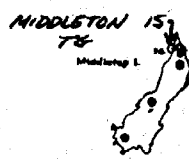
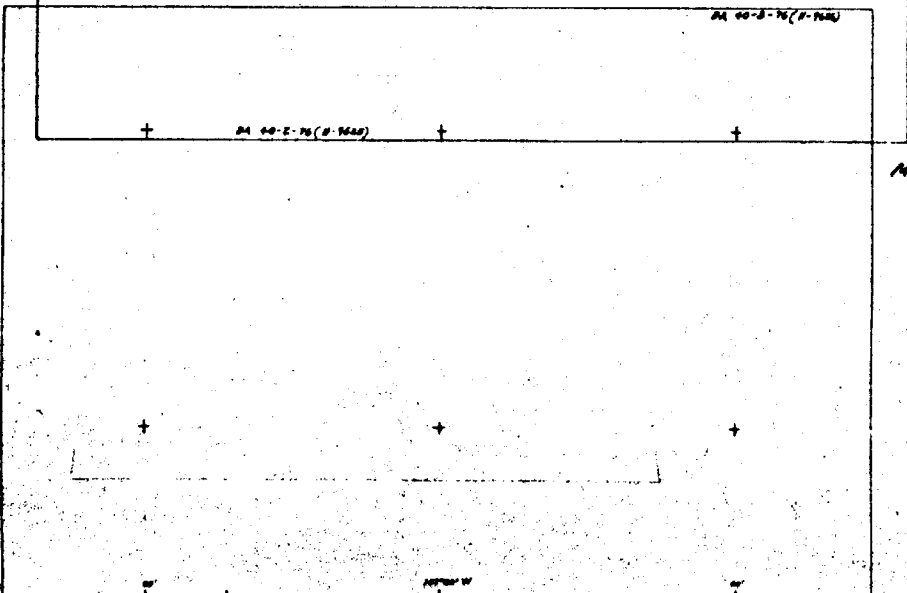


INSET #1

JUNE		
0000		L. N. M. SOUNDING LINE
040		30 N. M. SOUNDING
-		L. N. M. TRIANGULATION
3		TIDE GAGE
10		BOTTOM SAMPLES
11		MARBUK / GALINITY CAST
18		TR. STA. RECOVERED
8		BENCH MARK ESTABLISHED
7		BENCH MARK RECOVERED

INSET #2

H-9624



A. PROJECT

Navigable area survey DA-40-1-76 was accomplished under Project Instructions OPR-999-DA-76 dated 17 March 1976, and Change No. 1 dated 24 March 1976. ✓

B. AREA SURVEYED

The area surveyed lies in the Gulf of Alaska off the eastern coast of Montague Island, extending from 5.5 miles southwest of Zaikof Point to 7.7 miles southeast of Jeanie Point. No coastline is included within the project area. ✓

Hydrography was conducted within limits defined as follows: From 60° 07.3'N/147° 12.9'W northeast to 60°13.3'N/146°59.0'W, then southwest to 60°07.0'N/147°06.5'W, east to 60° 07.0' N/ 146°56.7' W, south southeast to 59°48.0'N/146°52.2'W, west to 59°48.0'N/147°17.5'W and returning north northeast to 60°07.3'N/ 147°12.9' W. ✓

Tide gage installations and geodetic control recovery to support hydrography were begun 6 June and completed 9 June. Hydrography commenced 10 June and was completed 1 July. ✓

C. SOUNDING VESSELS

Only one vessel, the ship, vessel #3130, was used for this survey. ✓

D. SOUNDING EQUIPMENT

A Ross Fineline Model 5000 fathometer (s/n 1080, transceiver s/n 1081) linked with a digitizer (s/n 1048) was used for the entire survey, in depths from 25 to 153 fms. 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 tape. ✓

Soundings on the smooth field sheets have been corrected for transducer depth and predicted tides. Transducer depth was determined from leadline checks made 9 June and 17 June. The TRA computed was 1.8 fathoms. Abstracts of leadline checks and draft readings are appended. Variations in transducer depth resulting from ship heave were corrected during the fathogram scanning and editing process. Predicted tides were based on station Patton Bay #1659 and computed at 0.5 fathom intervals. Bubbler tide gages were installed by the DAVIDSON at Box Point, Patton Bay, and Middleton Island for the duration of the project. See the Field Tide Note. ✓

Soundings on the field sheets have not been corrected for velocity. Nansen casts were taken on 20 June and 14 July from which ✓

velocity correctors have been determined. See the Velocity Cor-
rector Note. ✓

E. HYDROGRAPHIC SHEETS

The three field sheets comprising this survey were prepared at a scale of 1:40,000 using the HYDROPLOT system on the DAVIDSON. The computer sheets were referred to, from north to south, as DA-40-1A-76, DA-40-1B-76 and DA-40-1C-76. In addition two 1:10,000 scale in-
set sheets were prepared to clarify development of the peaks near 60°01.0'N/147°00.0'W on DA-40-1B-76 and near 59°49.0'N/147°14.5'W on DA-40-1C-76. ✓

F. CONTROL STATIONS

Thirteen existing triangulation stations were recovered at Patton Bay and Middleton Island for calibration of the Raydist system. HINCH 1972 RM 1 was recovered at Cape Hinchinbrook for Raydist station 001. To serve as Raydist station 002, SPIT 2 RM 2, 1967-1976 was established and monumented on Middleton Island using third order methods from nearby existing control. Geodetic computations are appended. Refer to the Signal List for geodetic positions of all stations. All computations were based on the North American 1927 Datum. ✓

G. HYDROGRAPHIC POSITION CONTROL

Electronic position control was maintained for this survey with a mobile range-range DR-S Raydist system. Visual calibrations were conducted at least daily when weather permitted at Patton Bay. No lane jumps or other malfunctions were experienced during the period of this survey. For details of the Raydist system and calibration methods see the Electronic Control Note. ✓

H. SHORELINE

Shoreline details on the field sheets were scaled from Chart 16700, 16th edition and from prior survey H-5461. No field edit was performed as a part of this survey. ✓

I. CROSSLINES

Crosslines comprised 7.1% of the total miles of hydrography. Cross-
line soundings were in excellent agreement with main scheme hydro-
graphy. ✓

J. JUNCTIONS

Junction was made with contemporary survey H-9386, DA-20-2-73. Soundings from H-9386 are inked on field sheet DA-40-1A-76 in red. This survey junctions very well with H-9386; sounding differences are never greater than one fathom. ✓

K. COMPARISON WITH PRIOR SURVEYS

Selected soundings from prior surveys are inked on the field sheet as follows: H-3024 (brown), H-5454 (orange), and H-5461 (violet). These surveys were all referenced to the Valdez Datum. Positions for the representative soundings plotted on the field sheets have been adjusted to the North American 1927 Datum.

This survey compares satisfactorily with H-3024 (1909), scale 1:200,000. Approximately 75% of the soundings from H-3024 differ by no more than 5 fathoms. Larger differences occur primarily in the areas of steep relief. In most cases, the present survey depths are shoaler than those reported in H-3024. Discrepancies may be explained by the differences between sounding and positioning techniques used for a survey in 1909 and those used for a survey today.

Agreement between this survey and H-5454 (1933), scale 1:80,000, is good. Depths reported in H-5454 average about one fathom deeper than those of the present survey. Differences are no greater than three fathoms for 95% of soundings taken from H-5454. Larger differences are apparent primarily in the areas of steep or rugged relief found in the eastern and western portions of the survey area.

This survey agrees very well with H-5461 (1933), scale 1:20,000. On the average, soundings from H-5461 are less than one fathom deeper than those from the present survey. 99 percent of soundings taken from H-5461 differ by no more than three fathoms.

L. COMPARISON WITH THE CHART

The largest scale chart of the entire survey area is Prince William Sound, 16700, 16th edition: January 31, 1976, scale 1:200,000. Representative soundings from the chart are inked on the field sheet in green.

Recorded depths from this survey are generally shoaler than those of the chart throughout the survey area. Approximately 90% of charted depths agree within three fathoms of those found by this survey. The remaining 10% includes charted depths up to 12 fathoms deeper than this survey and are found primarily in regions of steep or rugged relief. One charted depth is significantly shoaler than that of this survey: 78 fm charted at $59^{\circ}56.5'N/146^{\circ}58.7'W$, where the present survey found 83 fms. ~~brought forward to present survey 4-26-77 from H-5454(1933), 78 fm. sdg. discredited by present survey 7/85.~~

The region of the 28 fathom shoal, the only Presurvey Review item for investigation, located at $60^{\circ}01.3'N/146^{\circ}59.7'W$ on Chart 16700 was developed between latitudes $60^{\circ}00'N$ and $60^{\circ}03'N$ and longitudes $147^{\circ}02'W$ and $146^{\circ}58'W$. A series of sounding lines were run east-west at 180 meter spacing, splitting the main scheme hydrography chart the least depth of 27 fms. found on the present survey.

in this region. Lines were also run north-south at 180 meter spacing. This revealed five areas with peaks which were further developed by running north-south sounding lines at 25 meter spacing over the areas until the peaks were delineated. The following least depths were determined:

34 fm at 60° 01' 57"N/147° 00' 40" W
~~35-34~~ fm at 60° 01' 46"N/146° 59' 01" W
32 fm at 60° 01' 02"N/146° 58' 48" W
~~27-26~~ fm at 60° 00' 56"N/146° 59' 13" W
36 fm at 60° 00' 32"N/147° 00' 46" W

Four peaks in the vicinity of 59°49.0'N/147°14.5'W were developed in the same way as those discussed above with north-south sounding lines at 25 meter spacing. The following least depths were determined:

~~30-29~~ fm at 59° 49' 18"N/147° 13' 54" W
~~31-30~~ fm at 59° 49' 21"N/147° 14' 03" W
~~31-30~~ fm at 59° 49' 14"N/147° 14' 07" W
~~30-29~~ fm at 59° 48' 40"N/147° 14' 42" W

M. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede previous surveys ~~H-2612,~~
~~H-5460,~~ H-3024, H-5454, and H-5461 for charting.

N. AIDS TO NAVIGATION

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

O. STATISTICS

Total positions: 1656
Nautical miles of sounding lines: 1273.8
Square nautical miles of hydrography: 205.6
Temporary tide stations: 3
Nansen casts for temperature and salinity: 2
Bottom samples: 14

P. MISCELLANEOUS

There were no position numbers 0452, 0592, 0593, 1385-87, or 1631.

Positions and soundings not plotted on main scheme field sheets DA-40-1B-76 and DA-40-1C-76 were:

DA-40-1B-76

INSET 1

Positions 1040-1115, JD 172 (North and South lines)
Positions 1415-1471, JD 177 (25 meter spacing, north & south lines)
Positions 1632-1663, JD 184 (25 meter spacing, north & south lines)

(Positions and soundings not plotted on main scheme field sheets, continued):

DA-40-1C-76:

INSET 2

Positions 1472-1554, JD 181 (North and South lines)

Positions 1573-1630, JD 184 (North and South lines)

Q. RECOMMENDATIONS

This survey is complete. No additional field work is recommended. ✓

R. DATA PROCESSING PROCEDURES

Computer PDP8/e (s/n 09492) was linked with a COMLOT DP3 plotter (s/n 5445-5) and HYDROLOT controller (s/n 700018) for fix computation and plotting of soundings. Data was gathered using program RK-111 (version 1-30-76). Data was edited with program AM-602 (version 5-21-75) and tapes were checked for format errors with RK-330 (version 3-12-76). Final sounding plots were made with the shipboard HYDROLOT system using RK-211 (version 1-15-76). Calibrations were computed with RK-561 (version 9-16-74). Geodetic computation for SPIT 2, RM2, 1967-1976 was accomplished with RK-407 (version 10-23-75). ✓

S. REFERENCES TO REPORTS

Field Tide Note

OPR-999-DA-76

Electronic Control Note

OPR-999-DA-76 ✓

Horizontal Control Note

OPR-999-DA-76

Velocity Corrector Note

OPR-999-DA-76

Respectfully submitted,

M. Christine Wencker
M. Christine Wencker,
LTJG, NOAA

Approved by:

Christian Andreasen
Christian Andreasen
CDR, NOAA

ELECTRONIC CONTROL NOTE

NOAA Ship DAVIDSON
OPR-999-DA-76
Hinchinbrook Entrance to Middleton Island,
Gulf of Alaska

INTRODUCTION

A Hastings-Raydist Type DR-S medium range radio positioning system, operating in the range-range mode, was used for navigational control of hydrography. A mean frequency of 3306.45 KHz was used for computer programs (lane width 45.316 meters). Electronic equipment was installed as follows:

DAVIDSON (Vessel #3130)

Transmitter	Model #TA-96, s/n 22
Navigator	Model #2A-67A, s/n 47
Strip Chart Recorder	Model #RB-15, s/n 15
Hazlow Computer-Navigation Interface	s/n 33
35 foot whip antenna	

HINCHINBROOK ISLAND

Transmitter Model #AA-60A, s/n 234
30 foot triangular tower, plus a 30 foot whip antenna
Red shore station: Located at triangulation station
HINCH, RM 1, 1972.

MIDDLETON ISLAND

Transmitter Model #AA-60, s/n 15
30 foot triangular tower, plus a 30 foot whip antenna
Green shore station: Located at triangulation station
SPIT 2, RM2, 1967-1976.

The station sites were selected so as to obtain acceptable arc inter-sections (i.e., thirty degrees to one hundred fifty degrees). All signal paths to the project area were entirely over water. Strong signals were received throughout the survey area. Shore power was available at both shore station sites.

Minimal problems with the Raydist system were encountered during this project. During the entire period of operation the ship experienced only one lane jump which prevented an ending calibration check. This hydrography was rerun. The lane jump was caused by taking the ship within five miles of the Middleton Island Raydist station; thus, inadvertently violating the prohibition (as described in the Raydist manual) against approaching a Raydist station such that the ratio of the distance between the ship and the closer station and the distance between the ship and the further station is less than 1/5. Theoretically DAVIDSON should not have been able to pass within 10 miles of either shore station; however, as noted DAVIDSON did not experience lane jumps at ranges greater than 5 miles. This phenomenon was again experienced prior to "tear down" when, at a range of 4 miles from the Middleton Island Raydist site, the ship's navigator

tracked the nearby Middleton Island Raydist station on both the red and the green rates.

A minor problem encountered with the ship's strip chart recorder was the less than ideal trace generated by the green pen. Although the trace at times looks very erratic, the signal input was very good throughout the project. The poor trace was caused by dirt in the pen's drive mechanism.

SYSTEM CALIBRATIONS

Calibrations were performed as often as practical. A minimum of three sets of visual three-point sextant fixes with check angles were observed simultaneously with RAYDIST rates. These three sets were then meaned to obtain the correctors. The correctors on the Electronic Corrector Tape reflect a mean of the pre-survey and the post-survey correctors for each portion of hydrography. Shown below is the summary of system calibrations.

SYSTEM CALIBRATION ABSTRACT

J.D.	Time (Z)	Pattern		Mean		Range Fix No.	Sheet No.
		I	II	I	II		
162	1700	+0.25	+0.24				
163	0600	+0.34	+0.19	+0.28	+0.22	0001-0144	1
163	0600	+0.34	+0.19				
163	2000	+0.50	+0.14	+0.42	+0.16	0145-0301	1
167	1830	-0.03	+0.28				
168	0900	Verification of lanes only					
170	1715	-0.37	+0.06	-0.20	+0.17	0302-0609	1
170	1830	+0.17	-0.11				
171	0115	+0.17	-0.19	+0.17	-0.15	0610-0680	1
171	0115	+0.17	-0.19				
171	1430	+0.11	0.00	+0.14	-0.10	0681-0832	1
171	1545	+0.14	+0.05				
172	1745	+0.16	-0.10	+0.15	-0.02	0833-1115	1
172	1745	+0.16	-0.10				
173	1715	+0.29	-0.12	+0.22	-0.11	1116-1384	1
173	1715	+0.29	-0.12			1388-1414	1
174	2145	+0.09	-0.10	+0.19	-0.11	0001-0274	2
174	2245	+0.10	-0.09				
175	1830	+0.15	-0.05	+0.12	-0.07	0275-0465	2

175	2000	+0.15	-0.05				
176	2045	+0.11	-0.03	+0.13	-0.04	0466-0728	2
176	2130	+0.02	+0.10				
177	1345	+0.06	-0.18	+0.04	-0.04	1415-1471	1
181	0715	0.00	-0.16				
181	2230	+0.04	-0.22	+0.02	-0.19	1472-1554	1
182	2330	+0.07	-0.12				
184	0000	+0.06	-0.12	+0.06	-0.12	0820-1075	2
184	0000	+0.06	-0.12				
184	0500	+0.12	-0.09	+0.09	-0.10	1573-1630	1
184	0500	+0.12	-0.09				
184	0800	+0.06	-0.28	+0.09	-0.18	1632-1663	1
188	1300	-0.01	+0.58				
189	1700	-0.12	+0.79	-0.06	+0.68	1076-1369	2
189	1755	-0.04	-0.27			1370-1454	2
191	2300	+0.07	-0.16	+0.02	-0.22	0001-0513	3
192	0000	-0.04	-0.10			1455-1485	2
193	2130	+0.06	-0.27	+0.01	-0.18	0514-0987	3
193	2240	+0.11	-0.12				
196	1310	+0.10	-0.04	+0.10	-0.08	0988-1489	3

Respectfully submitted,

Steven S. Snyder
 Steven S. Snyder
 ENS, NOAA

Approved by:

Christian Andreasen
 Christian Andreasen
 CDR, NOAA

HORIZONTAL CONTROL NOTE

NOAA Ship DAVIDSON
OPR-999-DA-76
Cape Hinchinbrook Entrance to Middleton Island,
Gulf of Alaska

INTRODUCTION

This note describes horizontal control operations conducted by personnel of the NOAA Ship DAVIDSON in the Gulf of Alaska. These operations were performed between June and July 1976 in support of Navigable Area Survey, OPR-999-DA-76, and applies to the following field sheets:

DA-40-1-76 (H-9624)
DA-40-2-76 (H-9625)
DA-40-3-76 (H-9626)

Upon arrival of the DAVIDSON at Middleton Island, the initial reconnaissance party found SPIT 2, 1967 and SPIT 2, RM1, 1967, but neither mark could be used for the RAYDIST site. Both marks protrude from the steep embankment of an eroding cliff and could not be occupied with a surveying instrument. Thus, a new point was established for the RAYDIST site, SPIT 2, RM2, 1967-1976.

METHODS

A point on fairly level ground about 45 feet from the edge of the cliff was selected for the RAYDIST site, SPIT 2, RM2, 1967-1976. The point was located by taping the horizontal distances which form the triangle, SPIT 2, 1967 -- SPIT 2, RM 1, 1967 -- and SPIT 2, RM2, 1967-1976. As a check, SPIT 2, RM2, 1967-1976 was occupied with a T-2 (#19302), and directions were observed to two intersection stations (Middleton Island H. Marker Mast, 1965 and Airport Beacon, Middleton Island Airport, 1965) and to SPIT 2, RM1, 1967 and SPIT 2, 1967. Since the resection formed by these angles is not a particularly strong configuration, the position of SPIT 2, RM2, 1967-1976 was taken from the side-side-side computation using the three taped distances.

Thirteen (13) triangulation stations were recovered during this project.

SPIT 2, RM2, 1967-1976 was used as the green RAYDIST site (002) and HINCH, RM1, 1972 was used as the red RAYDIST site (001) throughout the project.

RECOMMENDATIONS

In all probability, continued erosion of the shoreline will render the area of SPIT 2 useless within a very few years. Prior to the beginning of any future projects in this area that will need an

electronic control site at the north end of Middleton Island, a new point should be located much further inshore from the beach by traversing to the grassy area southeast of SPIT 2. The old shore power connection which terminated in a shack on skids near SPIT 2 is no longer available because the shack burned. This caused us to run more than 1200 feet of cable to the nearest electrical connection. A site should be selected closer to the power outlet to eliminate having to run such a long cable with resultant power line loss. At this writing, it is possible to "hitch" a ride to Middleton Island via the FAA contracted plane (Chitina Air) which flies mail to the island on Mondays from Cordova, Alaska. It is also possible to obtain a place to stay on the island from the FAA, but they advised us to bring our own food supplies. It is difficult to support operations on Middleton Island from seaward. The exposed position of the island leaves relatively few good days for launching boats or making beach landings. The FAA was extremely helpful in providing vehicles to move our heavier equipment once we had made the beach landings.

Submitted by,

Christian Andreasen

Christian Andreasen
CDR, NOAA

VELOCITY AND TRA CORRECTIONS NOTE

NOAA Ship DAVIDSON
Cape Hinchinbrook Entrance
to
Middleton Island,
Gulf of Alaska
OPR-999-DA-76

To provide the velocity corrections for hydrographic survey OPR-999-DA-76, two Nansen casts were conducted as specified by the Hydrographic Manual, Section 4.9.5. The velocity corrections will apply to the following field sheets:

DA-40-1-76 (H-9624)
DA-40-2-76 (H-9625)
DA-40-3-76 (H-9626)

The Nansen cast station numbers, dates, and positions are as follows:

<u>Station Number</u>	<u>Date</u>	<u>Latitude/Longitude</u>
002	20 June 76	59° 51' 00" N 147° 05' 00" W
003	13 July 76	59° 39' 30" N 147° 04' 00" 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. The Velocity Corrections were then calculated from the reduced temperature and salinity data using computer program RK 530, Layer Correction to Velocity (6/25/74 version). The results were plotted, and the resulting Velocity Corrections vs. Depth curve was used to extract velocity correctors from the linear curve at 0.2 fathom intervals.

Vertical casts were made on 9 June 1976 and 17 June 1976 to calculate the TRA Correction as specified by the Hydrographic Manual, Section 4.9.5.1.2. Also, draft comparisons were made as fuel was consumed, in order to determine any substantial changes in the draft. The TRA Correction for the NOAA Ship DAVIDSON is 1.8 fm.

Respectfully submitted,

Gerald E. Wheaton
Gerald E. Wheaton
ENS, NOAA

Approved by:

Christian Andreasen
Christian Andreasen
CDR, NOAA

OPR-999-DA-76
NOAA Ship DAVIDSON (3130)

VELOCITY CORRECTIONS

From JD 162 to JD 179:

<u>Correction (fm)</u>	<u>To Depth (fm)</u>
0.0	9.0
0.2	36.0
0.4	70.0
0.6	98.0
0.8	120.0
1.0	144.0

From JD 180 to JD 196:

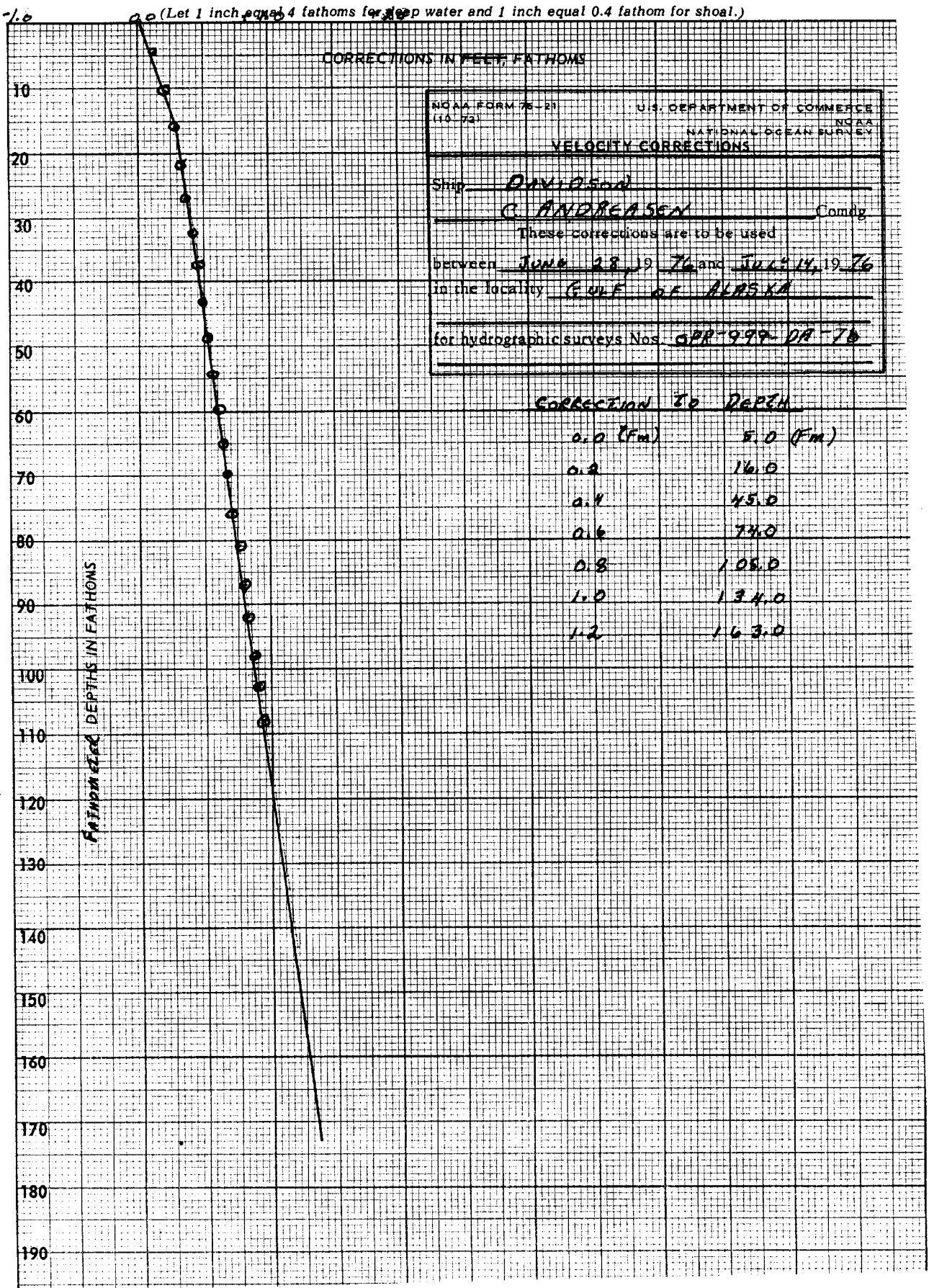
<u>Correction (fm)</u>	<u>To Depth (fm)</u>
0.0	5.0
0.2	16.0
0.4	45.0
0.6	74.0
0.8	105.0
1.0	134.0
1.2	163.0

TRA CORRECTION

From JD 162 to JD 196:

<u>Correction (fm)</u>
1.8

(For deep water add a 0 to these figures)



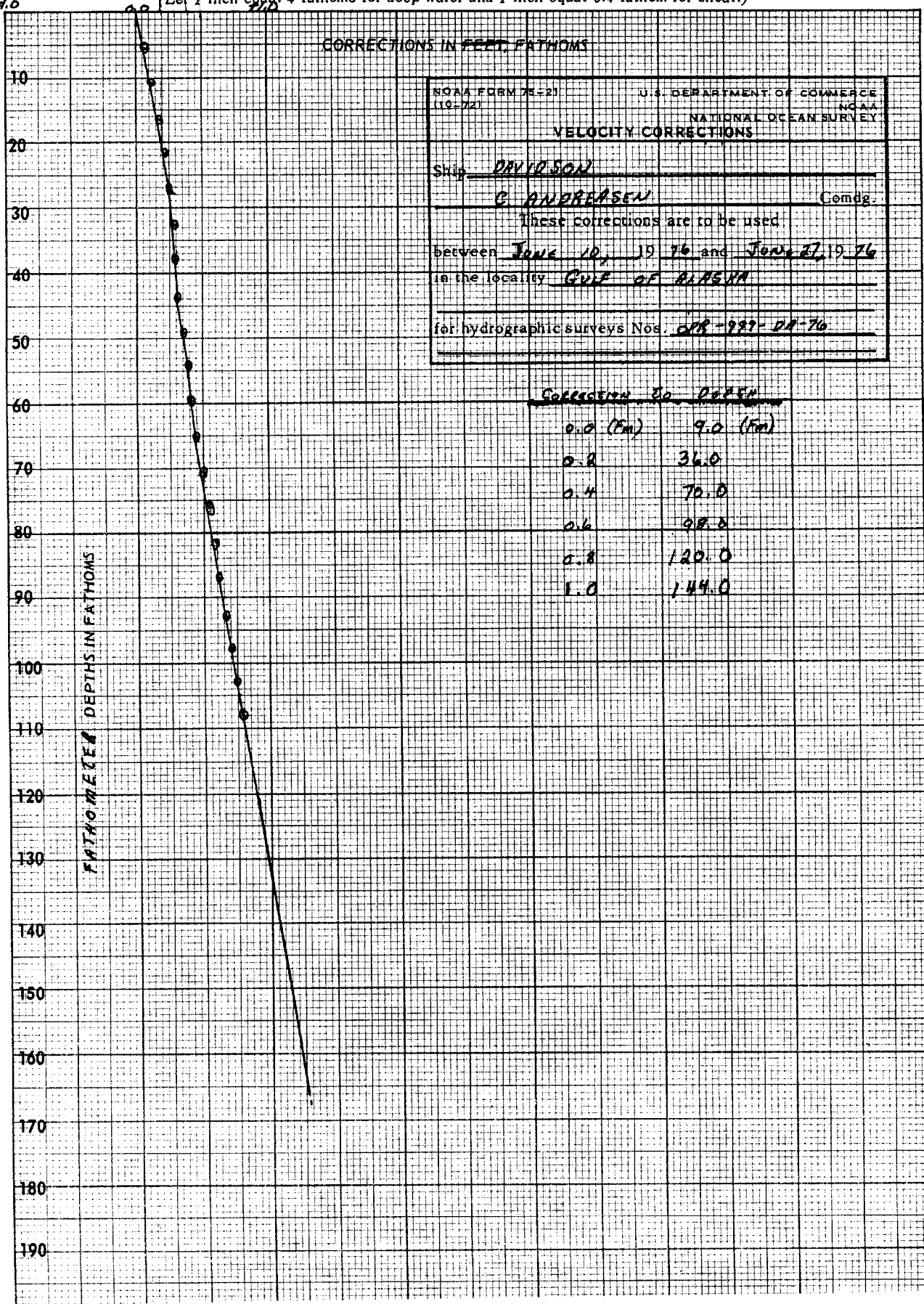
7.0 (Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

CORRECTIONS IN FEET, FATHOMS

NOAA FORM 75-21 (10-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEAN SURVEY	
VELOCITY CORRECTIONS		
Ship <u>DAVIDSON</u>		Comdg. <u>C. ANDREASEN</u>
These corrections are to be used between <u>JUNE 10, 1976</u> and <u>JUNE 27, 1976</u> in the locality <u>GULF OF ALASKA</u>		
for hydrographic surveys Nos. <u>OPR-999-DA-76</u>		

CORRECTION TO DEPTH	DEPTH
0.0 (Fm)	9.0 (Fm)
0.2	36.0
0.4	72.0
0.6	108.0
0.8	144.0
1.0	180.0

(For deep water add a 0 to these figures)



FIELD TIDE NOTE

OPR-999-DA-76

HINCHINBROOK ENTRANCE TO MIDDLETON ISLAND

Field tide reductions of soundings on the Final Field sheets are based on Cordova predicted tides, corrected to #1659 Patton Bay for sheets DA-40-1-76 and DA-40-2-76, and #1645 Middleton Island for sheet DA-40-3-76. They were interpolated using the PDP 8/e computer and program AM500. All times of both predicted and recorded tides are based on Greenwich Mean Time.

Three Bristol Bubbler tide gages were installed in the project area. Location and operation periods are:

<u>SITE</u>	<u>LOCATION</u>	<u>PERIOD</u>
Patton Bay 945-4574	59° 54.4' N 147° 27.0' W	6 June - 14 July
Box Point 945-4544	59° 57.7' N 147° 20.5' W	9 June - 14 July
Middleton Island 945-4224	59° 27.7' N 146° 18.6' W	8 June - 15 July

Patton Bay

Gage S/N 67A10294 and staff were installed and began operation on 6 June 1976. At the time of installation, the tubing appeared to be blocked. After purging failed to clear it, the gage was left running and cleared itself at 0840Z, 7 June. At 1740Z, 9 June, the time was found to have been set 2 hours fast initially. The time was reset at 1840Z, 9 June. When checked on 15 June at 0053Z the clock had gained approximately 1 hour and 25 minutes in 5 days and 7 hours (about 15 minutes a day). The time was reset to Alaskan Daylight Time at 1604 ADT, 15 June. The paper came off the sprockets at 0300 ADT, 16 June. Therefore, the trace is displaced until checked on 18 June at 1954Z. At this point, it was also found that again the clock had gained 5 hours and 40 minutes in 2 days and 19 hours. The paper was pulled for inspection on 18 June. The trace was found to have a short period sawtooth on a falling tide and a long period sawtooth on a rising tide. The sawtooth

was not due to a faulty setting of the dampening valve. The tubing was inspected and a slice was found in the tubing just above the orifice. It was repaired and the orifice reset. The gage was restarted at 2245Z, 18 June on GMT time. The sawtooth pattern continued despite the repair to the tubing. The paper was again found off the sprockets at 1847Z, 20 June. The clock had gained 1 hour in 1 day and 22 hours. Needless to say, the gage was not in good working condition. NOAA Ship MCARTHUR also had the same problems with their gages as is seen in the attached letter. The gage had not been used previously in the field this year. Due to the problems encountered with the gage (faulty time mechanism, sprockets not adjusted correctly for the paper, sawtooth trace, staff and gage comparisons varying by a foot, and a slice in the tubing) hourly heights were not taken from the marigram except on Julian Days 162 and 163 when hydrography was begun, requiring supporting tidal data. The time gain was variable during this period and simple mathematics (minutes gained ÷ hours = minutes/hour adjustment) were used to determine the hourly adjustment between time checks. The Box Point tide gage was in operation during all other periods of hydrography when the Patton Bay tide gage developed all the problems.

Gage S/N 64A11028 was installed on 20 June 1976 to replace gage S/N 67A10294. On 21 June it was found that the sawtooth trace still persisted. The bubble rate was increased to 200+ bubbles per minute and the trace smoothed out. We could find no reason for the sawtooth trace appearing. Continuous records were obtained until the gage and staff were removed on 14 July 1976.

20 June to 21 June: 0.0' on staff = 6.0' on gage
21 June to 14 July: 0.0' on staff = 6.2' on gage

Box Point

Gage S/N 723275 and staff were installed and began operating on 9 June 1976. Continuous records were obtained until 0315Z, 11 June when the supply roll of paper slipped out of the housing and jammed until 1912Z, 15 June. The time was reset to Alaskan Daylight Time and the gage restarted. When checked on 18 June at 1806Z the gage had gained 40 minutes. The timing mechanism was adjusted on 20 June to run 12 minutes slower per day. A good trace was obtained until the gage and staff were removed on 14 July 1976. Readings on the marigram are 6.6' higher than the staff readings.

Middleton Island

Accolades to the DAVIDSON on this one! It appears from the records that we are the first group in history to successfully operate a gage and staff for the entire duration of a project off Middleton Island. Thanks to the hints given by the SURVEYOR's 1972 report plus a lot of hard work by roughly 10 people (3 leveling, 1 installing the gage, 2 divers, plus 4 people doing a lot of digging) the installation succeeded.

Gage S/N 67A16203 and staff were installed and began operating on 8 June 1976. When the gage was checked on 0445Z, 13 June, the clock gained 45 minutes (approximately 12 minutes per day). The time was then reset one-half hour slow by mistake. When checked on 0100Z, 16 June, the gage had gained 35 minutes. The time and trace were stable after that point until a new roll of paper was installed on 30 June at 1817Z. By 3 July the clock was 1 hour 30 minutes fast (which means the clock lost time), and on 9 July the clock was 1 hour and 20 minutes fast (the clock gained time). The contracted tide observer never reset the clock. Although there was not a steady gain or loss of time, a good trace was obtained. The time was reset at 2215Z, 12 July by DAVIDSON personnel when the clock was found 2 hours and 50 minutes fast. By 1815Z, 15 July, the gage again had gained approximately 25 minutes. The gage was removed on 15 July. Readings on the marigram are 8.7' higher than the staff readings.

Leveling

The Patton Bay staff was leveled to five bench marks. They are three newly established bench marks and two recovered bench marks established in 1956, BM 1 and BM 2. Closing leveling on removal of the gage indicated no staff movement.

The Box Point staff was leveled to five bench marks. They are three newly established bench marks and two recovered bench marks established in 1972, BM 5 and BM 6. Closing leveling on removal of the gage indicated no staff movement.

The Middleton Island staff was leveled to five bench marks. They are two newly established bench marks and three recovered bench marks established in 1964, BM 4, BM 5, and BM 6. Closing leveling on removal of the gage indicated no staff movement.

Respectfully submitted,

for *Maureen C. Kenny*
Maureen Kenny
ENS, NOAA

Approved and forwarded,

Christian Andreasen
Christian Andreasen
CDR, NOAA

10/7/76

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): Box Point, AK

Period: June 10 - July 2, 1976

HYDROGRAPHIC SHEET: H-9624

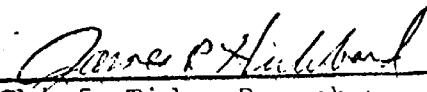
OPR: 999

Locality: East of Montague Island

Plane of reference (mean lower low water): 2.8 ft.

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

Remarks: Zone direct.



for Chief, Tides Branch

GEOGRAPHIC NAMES

Survey No.

H-9624

Name on Survey	Source of Name										No.
	A	B	C	D	E	F	G	H	K		
HINCHINBROOK ENTRANCE	X	(TITLE)									1
MONTAGUE ISLAND	X										2
<i>GULF OF ALASKA</i>											3
											4
											5
											6
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											25
											26

APPROVED

Mrs. E. Harrington

STAFF GEOGRAPHER

C5142

9 Sept 1977

HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. H-9624

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET with smooth PNO & EXCESS overlay		1	BOAT SHEETS (5, parts, mylar)		1 2	
DESCRIPTIVE REPORT		1	OVERLAYS (preliminary)		3 2	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES			1-smooth P/0			
CAHIERS	2-with	printouts				
VOLUMES	1					
BOXES						Sawtooth rec, 1-box
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			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				1345
POSITIONS CHECKED		1345		
POSITIONS REVISED		0		
DEPTH SOUNDINGS REVISED		140		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		0		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		0		
	TIME (MANHOURS)			
Verification of Control		8		
Verification of Positions		28		
Verification of Soundings		105		
Smooth Sheet Compilation		20		
ALL OTHER WORK	3	16	HIT	8
TOTALS	3	177		
PRE-VERIFICATION BY	BEGINNING DATE		ENDING DATE	
James S. Green, Chief, Verification Branch	8/28/76		8/28/76	
VERIFICATION BY	BEGINNING DATE		ENDING DATE	
Donald E. Zimmer, James S. Springham, Cart Techns	10/12/76		1/10/77	
REVIEW BY	BEGINNING DATE		ENDING DATE	
SGT. F.P. SAULSBURY - 27 hrs			4-26-77	

Baumgardner 9-21-77 4 hrs

REGISTRY NO. H-9624(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-9624

Information for Future Presurvey Reviews

None

<u>Position Index</u>		<u>Bottom Change</u>	<u>Use</u>	<u>Resurvey</u>
<u>Lat.</u>	<u>Long.</u>	<u>Index</u>	<u>Index</u>	<u>Cycle</u>
595	1472	2	1	50 years

The remaining area of the survey has depths in excess of 20 fathoms and is on a 50-year resurvey cycle.

Verifier's Report

DA-40-1-76

H-9624

This survey was verified and plotted at the Pacific Marine Center, Seattle, Washington. Information relating to this survey is provided as specified in Chapter 6 of the Provisional Hydrographic Manual.

I. INTRODUCTION

This is a navigable area survey done by the DAVIDSON in the Hinchinbrook Entrance to Prince William Sound, Alaska during the summer of 1976. The Hastings Raydist Electronic positioning equipment was used for position control. Sounding equipment consisted of the Ross Fineline Fathometer Model 5000 and a Ross Digitizer (S/N 1048).

There were no critical problems encountered in the verification of this survey.

Projection parameters used to prepare the boatsheet have been revised to center the hydrography on the smooth sheet. Parameters used by PMC are appended in the smooth printout. All correctors used to plot and reduce sounding on H-9624 can be located in the smooth printout.

Field tide reductions of soundings are based on Cordova predicted tides corrected to Patton Bay. Soundings on the smooth sheet are reduced from a bubbler tide gage installed at Box Point, Montague Island and were approved by Tide Division, Rockville, MD.

This survey is a very good navigable area survey, adequate to supersede common areas of prior surveys and charted hydrography.

II. CONTROL AND SHORELINE

This is a navigable area survey and there is no shoreline within the sheet limits. See Ship Report, Sections F and G, for an adequate description of the horizontal control.

III. HYDROGRAPHY

The basic hydrography incorporated in this survey is adequate to delineate the bottom configuration and to determine least depths. There were no major difficulties in the verification of the main scheme soundings, and the cross-lines are in good agreement. Two insets, for development of shoal areas, were provided with the field records. This data was verified and significant soundings selected for plotting on the smooth sheet. The remaining development data is not plotted in final form but is retained in the hydrographic records. There are fourteen (14) bottom samples in this survey.

IV. CONDITION OF SURVEY AND COMPLIANCE WITH PROJECT INSTRUCTIONS

The hydrographic records, overlays, smooth sheet, and reports are adequate and conform to the Provisional Hydrographic Manual.

This survey adequately complies with the project instructions dated 17 March 1976 and change #1 dated 24 March 1976.

The pre-survey review items were adequately disposed of in Paragraph L of the Descriptive Report.

Marginal notes on raw data printouts and fathograms are excellent and were helpful in the verification of this survey.

V. JUNCTIONS

This survey junctions to the northeast with contemporary survey H-9386, 1973 and to the south with contemporary survey H-9625, 1976. Soundings and depth curves are in excellent agreement. The junction notes are inked accordingly.

VI. COMPARISON WITH PRIOR SURVEYS

This survey was compared with the following prior surveys.

H-5461, 1:20,000 (1933). Comparison of soundings overall was good. Soundings differed by no more than 1 to 3 fathoms. These differences occur primarily in the areas of steep relief. This survey falls in the northwest section of H-9624.

H-5454, 1:40,000 (1933). Agreement between comparison sounding was good to within 1 to 3 fathoms. This difference being in areas of steep relief. This survey covers the south eastern portion of H-9624.

H-3024, 1:200,000 (1909). Soundings agree within five fathoms throughout the survey. There are some larger differences; however, these being accountable due to the areas of steep relief and the date H-3024 was surveyed. This survey covers the northern portion of H-9624.

H-2612, 1:40,000 (1902). Comparison of soundings is good to within five fathoms. There are some larger differences; however, those being because of the areas of steep relief and the date of H-2612. This survey covers the southeastern portion of H-9624.

H-9624 supersedes ^{H-5460,} H-5461, H-5454, H-3024, and H-2612 in areas of common hydrography.

VII. COMPARISON WITH CHART

Comparison was made with Chart 16700 (C&GS 8551) 16th Edition, January 31, 1976, scale 1:200,000. Soundings were in good agreement. It is recommended the present hydrography supersede charted hydrography in the area.

There is an undetermined 99 fathom sounding located at 146°58'00" and 59°49'10". It differs by 10 fathoms from plotted soundings on H-5454 and this survey. It is possible that it is an 89 fathom sounding plotted as 99. Due to the scale difference of the chart, it is difficult to determine the exact position. This sounding is superseded by data from this survey.

VIII. ADDITIONAL FIELD WORK

This survey is considered a very good navigable area survey and supersedes charted information in the area. No additional field work is recommended.


IX. NOTES TO COMPILER

The signal list is at the beginning of the position printout.

The tide corrector printout is in the fathogram and raw data cahier.

This survey was verified by Donald Zimmer, Cartographic Technician, a verifier trainee, under ^{my} supervision.

Respectfully submitted,


James L. Stringham
Cartographic Technician
January 10, 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: 11 February 1977

To: Eugene A. Taylor, RADM
Director, PMC


From: 
Donald E. Nortrup, LCDR
Chief, Processing Division

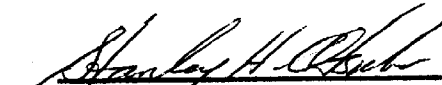
Subject: PMC Hydrographic Survey Inspection Team Report, H-9624

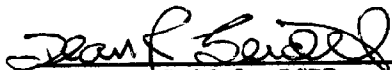
This survey is a navigable area survey of the approach to Hinchinbrook Entrance, off Montague Is., AK. The survey was conducted by NOAA Ship DAVIDSON in June 1976 in compliance with Project Instructions OPR-999, dated 17 March 1976.

This is a well executed survey. Delineation of the shoal area at $60^{\circ}01'N$, $147^{\circ}00'W$ was exceptionally well done. Only least depth soundings from the 25 meter spaced lines are depicted on the smooth sheet. It would have been desirable to have had 200 meter spaced east-west lines over the general area of the shoal at $59^{\circ}49.3'N$, $147^{\circ}14'W$ as was done at the northern shoal. This would have provided a more confident delineation of the areal extent of the shoal. Least depth determination was well done except for a 39-fathom sounding at $59^{\circ}48.9'N$, $147^{\circ}15.4'W$. This sounding is inshore of apparently lesser depths which were well developed by 25 meter line spacing. Only least depth soundings from the 25 meter spaced lines are depicted on the smooth sheet. It should be noted that this southern shoal area contains soundings considerably shoaler than charted depths and the shoal lies considerably farther to the east than is indicated by the chart.

The inspection team finds H-9624 to be a very good navigable area survey, adequate for charting and to supersede common areas of prior surveys. Administrative approval is recommended.


Donald E. Nortrup, LCDR


Stanley H. Otsubo


Dean R. Seidel, LCDR

ADMINISTRATIVE APPROVAL

H-9624

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



Eugene A. Taylor, RADM
Director, Pacific Marine Center

2/15/77

Date



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

C352

April 26, 1977

a 2 Patrol
TO: A. J. Patrick
Chief, Marine Surveys Division
THRU: Chief, Quality Control Branch
FROM: F. P. Saulsbury *F. P. Saulsbury*
Quality Evaluator
SUBJECT: Quality Control Report for H-9624 (1976), Alaska, Hinchinbrook
Entrance, Southwest Approach to Hinchinbrook Entrance

Survey H-9624 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, 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 except as follows:

1. In the area north of latitude 60°07' legibility of soundings would have been increased by excessing alternate soundings or by plotting the soundings normal to the projection lines.
2. Minor revisions and additions of depth curves were effected during quality control inspection.
3. Due to a paucity of bottom characteristics on the present survey, several were brought forward from prior surveys.
4. Approximately 8 feet of uplift, noticeable in prior survey comparisons, occurred in this area due to the effects of the "Good Friday Earthquake" of 1964. A minus 8 feet correction was added to soundings carried forward to the survey from H-5454 (1933).

cc:
C351

