9792

Diag.Cht. No. 8201-4

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-10-4-78

Office No. H-9792

LOCALITY

State ..... Alaska

General Locality ..... Wrangell Narrows

Locality ..... Mountain Pt. to Northern Entrance

19 78

CHIEF OF PARTY
C.W. Hayes

LIBRARY & ARCHIVES

DATE ..... Sept. 25, 1980

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

CHARTS
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NOAA FORM 77-28 (11-72) | U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION | REGISTER NO.

HYDROGRAPHIC TITLE SHEET

H-9792

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-10-4-78

State: Alaska

General locality: Wrangell Narrows

Locality: Mountain Point to Northern Entrance

Scale: 1:10,000 Date of survey: 27 Sep to 12 Oct 1978

Instructions dated: 27 June 1978 Project No.: OPR-0325-DA-78

Vessel: NOAA Ship DAVIDSON (3130) and Launch DA-2 (3132)

Chief of party: C. William Hayes, Commander, NOAA

Surveyed by: ENS Timothy Peasley

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

Graphic record scaled by: Ship's personnel

Graphic record checked by: Ship's personnel

Position verification by: Todd M. Stansbury Automated plot by: PMC Xynetics Plotter

Sounding verified by: Richard Shipley

Soundings in: fathoms and tenths ~~feet~~ at MLW MLLW

REMARKS: Time Zone GMT

Survey Complete

Misc. items have been removed from the D.R and are filed with the field records

Applied to stn's.
5-8-81 -WJT

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

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

DESCRIPTIVE REPORT

to accompany ~~Basic~~ *Navigable Area* Hydrographic Survey

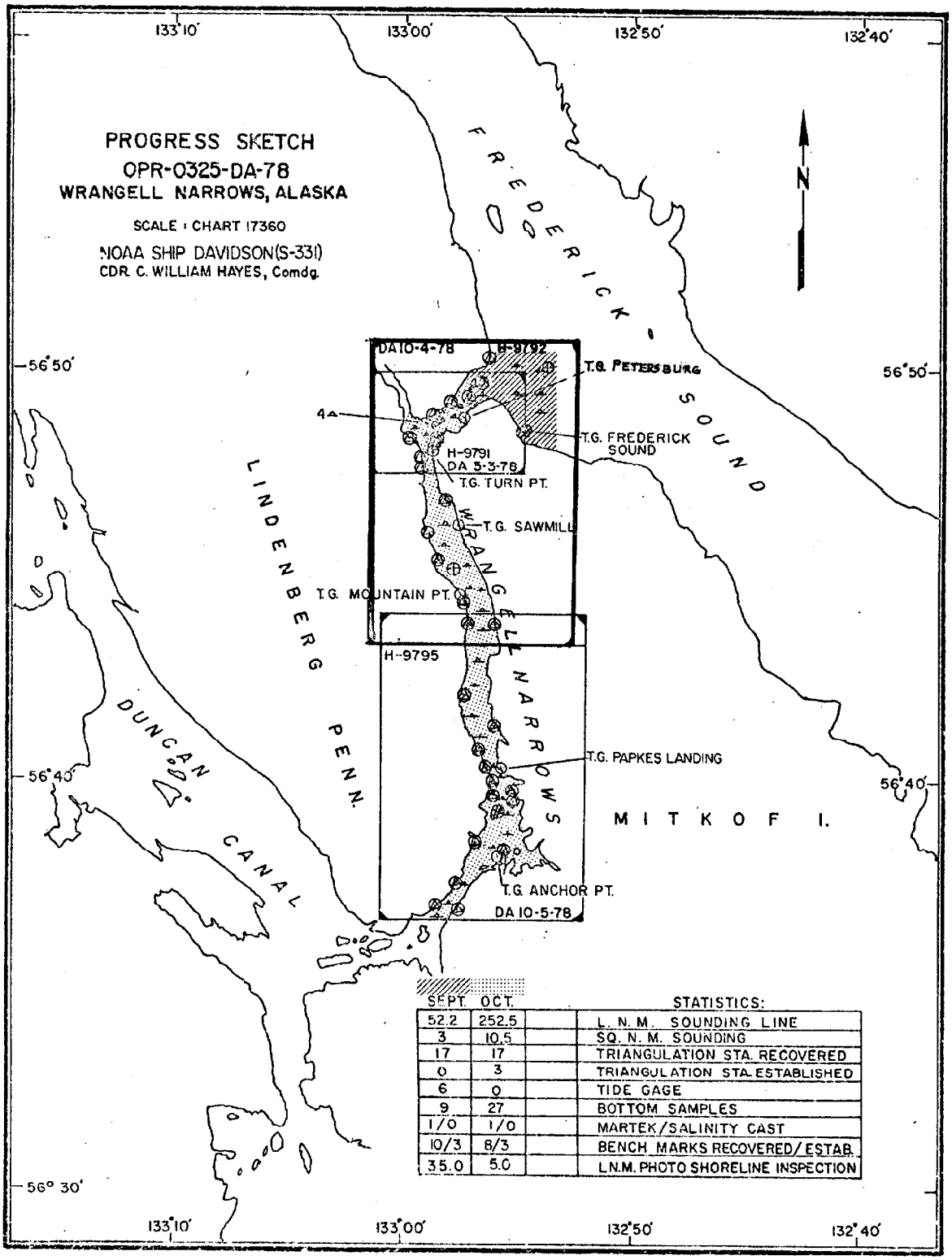
H-9792 (DA-10-4-78)

Scale 1:10,000

Year 1978

Vessel ..... NOAA Ship DAVIDSON

Chief of Party .... C. William Hayes, CDR, NOAA



SEPT.	OCT.		STATISTICS:
52.2	252.5		L. N. M. SOUNDING LINE
3	10.5		SQ. N. M. SOUNDING
17	17		TRIANGULATION STA. RECOVERED
0	3		TRIANGULATION STA. ESTABLISHED
6	0		TIDE GAGE
9	27		BOTTOM SAMPLES
1/0	1/0		MARTEK/SALINITY CAST
10/3	8/3		BENCH MARKS RECOVERED/ESTAB.
35.0	5.0		L.N.M. PHOTO SHORELINE INSPECTION

A. PROJECT:

Survey H-9792 was accomplished in accordance with Project Instructions OPR-0325-DA-78, Wrangell Narrows, Alaska, dated 27 June 1978 and Changes Nos. 1 and 2, dated 31 July 1978 and 21 August 1978, respectively; and in accordance with Basic Guidelines for Navigable Area Surveys, dated 24 June 1977, except as modified by the above project instructions.

B. AREA SURVEYED:

The area surveyed is in two parts and located in or near the northern end of Wrangell Narrows. The southern portion of the survey area is bounded on the north and south by latitudes 56° 48'N and 56° 43'30"N respectively, and on the east and west by the east and west shores of Wrangell Narrows. The northern portion of the surveyed area is bounded on the north by latitude 56°50'23"N; on the east by longitude 132°53'30"W; on the west by 132°56'30"W and the shore of Frederick Sound; and on the south by the shores of Frederick Sound and the southern shoreline at the entrance to Wrangell Narrows.

Hydrography was begun on 27 September 1978 and was completed on 12 October 1978.

C. SOUNDING VESSELS:

Vessel No. 3132 (DA-2) was used as the sounding platform for the survey and the color blue was used in data recording and preliminary computer plots. Vessel No. 3130 (NOAA Ship DAVIDSON) was employed for the taking of bottom samples, data records are in black.

D. SOUNDING EQUIPMENT:

The sounding vessel was equipped with a Ross Fineline Fathometer, Model 5000; the fathometer was used in depths ranging from less than one to 99 fathoms. Vessel No. 3130 (DAVIDSON) used a Raytheon Model DE-723 (S/N 1284) echo sounder to obtain sounding at the time of bottom sampling. Serial numbers of vessel 3132 (DA-2) sounding equipment are as follows:

Equipment	S/N
Fathometer	1080
Digitizer	1077
Tranceiver	1077

Phase calibrations were conducted on a daily basis. In Wrangell Narrows, the morning procedure was every 10 fathoms from 0 to 100 fathoms, since no depths greater than 24 fathoms were encountered in the Narrows. The ending (afternoon) phase calibration was done at midscale for scale A (0-50 fathoms). The midscale calibration provides a check on the possibility of a change in scale initials during the day. In Frederick Sound, where surveyed depths ranged to 99 fathoms, morning calibrations were every 10 fathoms to at least 100 fathoms (usually to 150 fathoms). The afternoon phase calibrations were midscale (30 and 80 fathoms) for the two shallowest fathom scales. The phase was adjusted so the midscale depths were correct; however, due to variations in the dimension of the fathometer paper, the trace initial varied between zero and 0.3 fathoms.

All fathograms were scanned daily and compared to digitized depths. Additional soundings (peaks and deeps) and corrections were placed on a corrector tape each day.

Soundings have been corrected for tranducer depth (TRA) and predicted tides. The sounding vessel's TRA was computed from bar checks taken twice daily, weather permitting; for vessel No. 3132 (launch DA-2), the TRA is +0.3 fm (refer to the Corrections to Echo Sounders Report). Tide correctors were computed from daily predicted tides for Ketchikan corrected to Petersburg (#1437 in Tide Tables, 1978). Tide predictions were provided by the Oceanographic Division, Tides and Water Levels Branch, National Ocean Survey, Rockville, Maryland. Correctors were computed at 0.2-fathom intervals and used both "on line" during hydrography and for smooth plotting. A 30-day A.D.R. tide gage was installed by DAVIDSON Personnel on the Petersburg Fisheries Pier. Three "time of hydro" bubbler tide gages were installed by the DAVIDSON at Turn Point, Sawmill Cove and on the shore of Frederick Sound (to control the northern portion of the survey). Refer to Field Tide Note.

Soundings on the Final Field Sheets have not been corrected for velocity. Correctors determined from a Martek cast taken on 29 September should be used to correct the hydrography of this survey. Refer to Echo Sounders Report.

E. HYDROGRAPHIC SHEETS:

Field sheets for the survey were prepared using the HYDROPLOT system on the DAVIDSON. A PDP 8/e (S/N 10744) utilizing a Complot DP-3 plotter (S/N 5445-6) was used to produce the sheets.

The survey is comprised of two 1:10,000 scale computer sheets, the north DA-10-4A-78 and the south DA-10-4B-78. In addition, an overlay of soundings of the central channel and western near shore areas just north of Mountain Point, has been made to eliminate congestion of soundings due to developments.

F. CONTROL STATIONS

Eleven third order triangulation stations were recovered for this survey. USE 2, 1902 RM 1 1929 was used as a Mini-Ranger Station. A short tape traverse was used to compute the third-order geodetic position. During hydrography on DA-10-4A-78, a Mini-Ranger transponder was mistakenly set up on what was believed to be triangulation station USE 2. (It was not the station, but was very close to where an old reference mark should have been.) The data was then plotted on the preliminary plot using the geodetic position of USE 2. After the error was discovered, a third order geodetic position was established by traverse for the erroneous mark. This new position, (signal list #004), which was the actual location of the Mini-Ranger transponder, was then used to plot the data on the Final Field Sheet. Stations recovered were as follows:

Triangulations Stations Recovered

E 1910
USE 2 1902
LEW 1910
USE 12 1902
USE 14 1902
BLUNT 1929
USE 18 1902
USE 20 1902
USE 22 1902
USE 24 1902
USE 25 1902

Refer to the Signal List for geodetic positions of all stations. Refer to Horizontal Control Note. See also Electronic Control Report. Computations are based on the North American 1927 datum.

G. HYDROGRAPHIC POSITION CONTROL

Vessel No. 3132 (DA-2) used the Motorola MINI-RANGER III positioning system in both of the range-range and range-azimuth modes for the electronic positioning of hydrography.

The following is a list of the control equipment used:

Vessel #	Tranceiver S/N	Display Console S/N
3132 (DA-2)	721	707

	Code 1	Code 2	Code 3	Code 4
Transceiver:	723	771	772	773

Calibration checks of the Mini-Ranger systems were done at least twice daily. The checks were done utilizing visual three-point sextant fixes using signals on the shorelines of Frederick Sound and Wrangell Narrows. For the Mini-Ranger system checks, rates from the sextant fix (using RK300, utility computations, ver. 2/10/76) were compared to observed rates on the console, at the time of the fix. The difference between computed and observed rates were always within ±5 meters of the current baseline correctors. Current baseline correctors were used as daily correctors for preliminary plotting; for smooth plotting, however, correctors were taken as the average of the two baseline correctors bracketing the time of hydrography. Baseline calibrations were conducted on 25 September (JD 268) in Ketchikan, Alaska and on 7 November (JD 311) in Seattle, Washington, at NOAA's Pacific Marine Center. Signal strengths were observed and recorded frequently. If they fell below the minimum accepted signal strengths as determined by baseline calibrations, the soundings were "time and coursed." (Refer to Electronic Control Report.)

H. SHORELINE:

The shoreline details were transfered to the Final Field Sheets from Class III manuscripts TP-00437 and TP-00438. All shoreline details have been field edited and applied to the appropriate Class III manuscripts of this area. See the Field Edit Reports and referenced shoreline manuscripts.

I. CROSSLINES:

Crosslines comprised 11% of the total miles of hydrography. Crossline soundings are in excellent agreement, generally within 1 fathom of the main scheme hydrography. Crossline soundings are plotted in red on the Final Field Sheet.

J. JUNCTIONS:

This survey was not required to junction with any prior surveys. However, this survey does junction with the two contemporary

surveys H-9791 and H-9795. Comparison of soundings on the two contemporary surveys and this survey show excellent agreement, generally within 1 fathom.

K. COMPARISON WITH PRIOR SURVEYS:

Only one unnumbered presurvey review item exists within the limits of this survey. It is two soundings (3 3/4 and 3 1/2 fathom) which are enclosed by a dashed circle in the vicinity of 56°46'30"N and 132°58'23"W. After the running of adequate survey development over this area, it is evident that these two soundings agree very well, within 0.5 fathom, with this survey's soundings. The two soundings of this unnumbered presurvey review item were verified by this survey.

See verifier report Section 6.

Selected soundings from prior surveys were plotted in the following representative colors on the Final Field Sheet:

Survey	Scale	Date	Color
H-1806	1:80,000	1887	Brown
H-4955	1:5,000	1929	Red
H-4961	1:10,000	1929	Green

Survey H-1806 can be compared on a sounding-for-sounding basis. H-1806 agrees well with this survey, usually within 3 fathoms. H-4955 agrees well with this survey. Most soundings agree within 3 or less fathoms. H-4961 also agrees with this survey within 3 or less fathoms except in two areas. These areas lie along the west shoreline of Wrangell Narrows (near latitude 56°47'57"N, longitude 132°59'12"W and 56°47'12"N, longitude 132°59'09"W). The bottom topography has been built up in these two areas due to the formation of mud stream deltas.

There are two small areas on the southern sheet which were not surveyed because of impracticality. These two areas are in or near Scow Bay, (south of Petersburg) in Wrangell Narrows. ~~The~~ The first (most north) area, is in the vicinity of 56°46'52"N, 132°58'30"W, was not surveyed because of a submerged wire rope running from a moored log raft. The raft supports a bucket dredge system. There was no way to determine at what depth the wire rope crossed the unsurveyed area. Consequently, for reasons of launch safety in a high current area, this area was not surveyed. See JD 275, hydrographic fixes 4644 to 4659. See also Class III manuscript TP-00437, hydrofix 4645 (JD 275) for location of the above mentioned log raft (which supports seaward end of wire ropes).

The second area which was not practical to survey is bounded on the north by latitude 56°46'38"N and on the south by 56°46'15"N. This area is along the east shore of Wrangell Narrows. The reasons for not surveying were: the presence of variable size log storage floating booms, which at the time of the survey covered the unsurveyable areas around the sawmill (approximately latitude 56°46'35"N); the small hole just south of the sawmill (south of hydrographic fix 5004 from this survey, H-9792), was filled with transient barge traffic which blocked survey efforts here.

In some areas of the survey the exact 1 fathom curve has not been determined; such as, from latitude 56°47'15"N to latitude 56°47'40"N on both sides of the channel. The channel banks are steep here in the above area. The survey launch would have grounded in a high current area; this was not deemed safe, thus the best obtainable delineation (as near as possible) of the one fathom curve was obtained. The same problem as above of surveying near steep shores is also apparent from latitude 56°44'50"N, south to the southern survey area limit on the west shore; it also appears near the east shore from the southern survey limits to latitude 56°44'43"N. In the vicinities of latitude 56°45'10"N and 56°47'10"N, there are areas of broad fan-shaped mud flats. The water in these areas is also muddied from river/stream flow. The bottom is not therefore visible making close survey work to follow depth curves extremely difficult. In these areas the 1 fathom curve zigzags east and west several meters because of stream rutting. Every effort was made to obtain soundings to 1 fathom or shallower, but in some instances it was impossible, especially on other than extreme high tides.

On the northern sheet of this survey (DA-10-4A-78), there is a small area from just east of longitude 132°54'30"W, running east along the shore of Frederick Sound to the eastern survey limit, that was not surveyed (at first) because the area was within the less than minimum intersection angle area (the banana) for the Mini-Ranger setup that was being used to survey the area (see preliminary plot sheet DA-10-4A-78). The hole in this area was not noticed until the DAVIDSON had moved farther south in Wrangell Narrows. When the hole was discovered it was decided by the hydrographer and DAVIDSON's commanding officer that it would not be cost efficient to "pick up" such a small area so near the eastern limit of the survey area. Also, since a comparison of this survey and the chart agree to within 1 fathom on the perimeter of the unsurveyed area, and since the shoreline is rocky here, the Chart (17375) will suffice

here until a later survey. It is recommended that, in a later adjoining survey of this area that this hole be surveyed.

L. COMPARISON WITH THE CHART:

Representative soundings from Chart 17375, Wrangell Narrows, 17th Edition, 30 April 1977, have been plotted in violet on the Final Field Sheets for this survey. The comparisons of soundings from the chart are good; most with 3 fathoms except in some areas where mud shoals have built up near stream mouths. These descrepancy areas have been adequately delineated by this survey.

see Verifier report Section 7.

Bottom sampling done during this survey confirmed that the charted bottom composition remains the same and is completely adequate.

M. ADEQUACY:

This survey is considered complete and adequate to supersede the common areas of hydrography on H-1806, H-4955, and H-4961. No further survey work in this area is deemed necessary.

N. AIDS TO NAVIGATION:

The following Aids to Navigation were located by third order intersection:

Mountain Point Light
Channel Light 52

In regard to floating aids, all floating aids compared well with the U.S. Coast Guard Light List descriptions and with charted locations; except Channel Lighted Buoy "53" which had shifted approximately 10 meters to the east (channelward). The location of Buoy "53", hydrographic fix 4812 (JD 276), should be taken only as a near approximation, since a U.S. Coast Guard Buoy Tender was seen resetting Buoy "53" after hydrography was completed.* A new position was not established for Buoy "53" after resetting. All floating aids within the limits of this survey adequately serve the apparent purpose for which they were established. *Buoy "53" is smooth plotted as PA.

The Alaska State Ferry System has ferries running through the surveyed area and there is a ferry pier in Petersburg, Alaska (see Class III Manuscript TP-00421). See also appended NOAA Form 76-40.

O. STATISTICS:

Total number of positions	1,398
Nautical miles of sounding lines	135
Square nautical miles of hydrography	4.70
Martek casts	1
Bottom samples	11

P. MISCELLANEOUS:

At approximately latitude 56°50'17"N, longitude 132°56'09"W, a line did not delineate the exact 1 fathom depth contour. Since this line ended one sounding early on an inshore run in a rocky area and the two adjacent lines adequately determined their 1 fathom depth contour, the area is still adequately delineated for the purposes of this Navigable Area Survey.

Data from hydrographic fixes 4361 to 4364 were not computer plotted because of a problem with computer program RK216 (version 2/05/76); which will not plot data remaining in a line if the Julian day changes during the running of a line. The non-computer plotted soundings are available on tape and have been hand plotted on the preliminary survey plot (DA-10-4A-78).

On JD 278, from fixes 5090 to 5138, unidentifiable ghost traces appear on the fathogram. It was decided that this area should be further developed to determine if these "ghosts" were side echoes of peaks. On JD 285 (fixes 5388 to 5496) the area was thoroughly developed to look for the "ghosts", however nothing was found. See Final Field Sheet Overlay for a plot of hydrographic fixes 5388 to 5496.

Q. RECOMMENDATIONS

The small area just east of longitude 132°54'30"W, running east along the shore of Frederick Sound, to the eastern survey limit should be filled in by a later adjoining survey. Until the area is resurveyed, soundings from prior surveys will be adequate in this case.

The unsurveyed area behind the bucket dredge in Scow Bay should be left blank. No prior soundings should be inserted since this survey did not cover the area and dredging activity has rendered prior soundings invalid. In the southern unsurveyed area of Scow Bay, where log booms stopped the survey lines, prior soundings will be adequate until the next survey. The prior soundings are adequate because there was no indication, after present data

was compared with prior survey data, that there was any change in depths in the log booming area since the latest prior survey.

R. AUTOMATED DATA PROCESSING:

All Final Field Sheets were produced with a PDP8/e computer linked to a Complot DP3 plotter. Programs used for data acquisition and processing of this survey were:

Number	Program Name	Version
RK-111	Range-Range Real Time Hydroplot	1/30/76
RK-201	Grid, Signal, and Lattice Plot	4/18/75
RK-211	Range-Range Non-Real Time Hydroplot	1/15/76
RK-212	Visual Station Load and Plot	4/1/74
RK-216	Range-Azimuth Plot	2/05/76
RK-300	Utility Computations	2/10/76
RK-330	Reformat and Data Check	5/04/76
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-561	Geodetic Calibration	2/19/75
AM-602	ELINORE-Line Operated Editor	5/20/78

S. REFERENCE TO REPORTS:

Field Tide Note
Horizontal Control Note
Electronic Control Report
Corrections to Echo Sounders Report
Field Edit Report TP-00637
Field Edit Report TP-00438
Field Edit Report TP-00437
Field Edit Report TP-00421
Coast Pilot Report

Submitted by,

Timothy Peasley

Timothy Peasley
ENS, NOAA

Approved and Forwarded by,

C. William Hayes

C. William Hayes
CDR, NOAA

FIELD TIDE REPORT
OPR-0325-DA-78

Wrangell Narrows, Alaska
October 1978

Field tide reduction of soundings was based on predicted tides for Ketchikan, Alaska (#1227, Tide Tables, 1978) corrected to Petersburg (TT #1437) in fathoms for H-9792, to Petersburg in feet for H-9791, to Finger Point (TT #1435) in fathoms for H-9795 north of latitude 59°39'45"N, and to Anchor Point (TT #1436) in fathoms for H-9795 south of the above latitude in accordance with Project Instructions, dated 27 June 1978. Interim values were interpolated using program AM-500 and a PDP-8/e computer. The time zone used throughout the survey was Greenwich Mean Time. Eight tertiary stations, three with 30-day minimum gages and five with 3-day "Time of Hydro" gages, were established in support of this survey.

Name & Number of Station	Position	Type Gage	Period of Operation
Frederick Sound 945-1437	56/48/31.5W 132/54/37.0W	0-30 ft. Bristol Bubbler	14 Days 18 Sep - 01 Oct
*Petersburg 945-1439	56/48/57N 132/57/26W	Fischer-Porter ADR	40 Days 19 Sep - 28 Oct
Turn Point 945-1434	56/48.02N 132/58.85W	0-30 ft. Bristol Bubbler	23 Days 21 Sep - 13 Oct
Saw Mill 945-1417	56/46/05.4N 132/57/41W	0-30 ft. Bristol Bubbler	27 Days 29 Sep - 26 Oct
*Mountain Point (Cannery) 945-1409	56/44/26N 132/57/29.5W	0-30 ft. Bristol Bubbler	39 Days 21 Sep - 29 Oct
Papke's Landing 945-1346	56/40/39N 132/56/00W	0-30 ft. Bristol Bubbler	14 Days 05 Oct - 18 Oct
Light #32 945-1325	56/39/20.5 132/55/22.5W	0-30 ft. Bristol Bubbler	15 Days 13 Oct - 27 Oct
*Anchor Point 945-1317	56/38/18N 132/55/36W	Fischer-Porter ADR	32 Days 28 Sep - 29 Oct

*Denotes a 30-day minimum gage. All others are 3-day "Time of Hydro" gages.

Frederick Sound

The Frederick Sound bubbler gage (SN 73A 231) and tide staff were installed on 18 September. The staff was braced and guyed in a vertical position against the end of the first charted rock ledge extending outward into Frederick Sound south of and on the same side of the Sound as the mouth of Wrangell Narrows. The weighted bubbler orifice was placed near the base of the staff. The gage itself was placed in relative shelter just inside the treeline southwest of the staff. This part of the Sound was subject to considerable disturbance, the fetch being such that there was almost continuous chop. Storm disturbance is readily visible on the marigram.

The gage paper was changed from Bristol to Graphic Controls on 21 September to eliminate sprocket jumps. Continuous good records were obtained from this gage after the paper change.

The staff in Frederick Sound was destroyed by a small boat on 26 September. Six staff/gage comparisons had been made prior to the loss of the staff. A decision was made not to replace the staff, since the gage was only needed for two more days of hydrography. An alternate method was used in lieu of the staff/gage comparisons on 28 September and 01 October when the gage was removed. The alternate method entailed a level run between temporary BM-C and the water's edge, comparing the relative elevation with the gage. The level run on 28 September agreed well with the six prior staff/gage comparisons. The level run on 01 October was rejected due to improper documentation. On the basis of seven comparisons, the gage was determined to read 1.8 ft. higher than the staff.

Levels at Frederick Sound:

The tide staff in Frederick Sound was leveled to three temporary points upon installation. No ending levels were possible due to loss of the staff.

Petersburg

A tertiary station in Petersburg, employing a 30-day ADR gage (SN 7305 A 3099M2), was established on 18 September on the northern end of the Petersburg Fisheries Cannery pier. The floatwell was lag-bolted to a piling near the cannery building using special prefabricated pipe clamps. This part of the pier was deemed out of the way of daily cannery operations. The staff was bolted to a second piling near the outer corner of the same northern pier face. On 04 October, the floatwell was found to have slipped slightly out of plumb. It was replumbed, as noted on NOAA Form 77-24 for that date, and the supporting brackets were tightened to prevent further slippage. Good records were obtained until 0800Z on 18 October, when the gage paper jammed due to excessive moisture. The gage was restarted on 19 October at 1718Z, and good records were obtained until the gage was removed on 28 October. A total of 33 hrs. 18 min. of data were lost. On the basis of 13 gage/staff comparisons, it was determined that the gage read 10.0 ft. higher than the staff.

Levels at Petersburg:

Three of five historical bench marks were recovered and leveled in Petersburg. Two additional marks, one a City of Petersburg brass plug and the other a Corps of Engineers survey mark, were leveled at the same time. When compared to historical data, shifts were noted in the relative elevations of the three historical bench marks. As two of the three are set in sidewalks, this finding was not unexpected. Below is a summary of bench mark movement in Petersburg. (Note: BM's 10 and 11 are in sidewalks).

Difference in Elevation	BM6 - BM 11	BM6 - BM10	BM10 - BM11
1965 Data	0.50 ft.	0.38 ft.	0.116 ft.
1978 Data	0.54 ft.	1.40 ft.	0.860 ft.

As a result, the DAVIDSON set three new bench marks, 1439-A, -B, and -C, in areas considered to be the least prone to disturbance of any kind. Two of the three new BM's were leveled just before removal of the tide staff. The third, 1439-C, was inaccessible at the time, but will be leveled and the information forwarded at a later date. Comparison of the first and second level runs shows a downward staff movement of 0.066 ft.

Turn Point

The Turn Point bubbler gage (Sn 73 A 235) and tide staff were installed on 21 September. The staff was lag-bolted to the northwestern-most piling of the southern-most of two covered piers south of Turn Point, Wrangell Narrows. The gage was placed in a strip of brush between the highway and the water's edge. The weighted orifice was dropped in water approximately 3 feet deeper than the staff zero directly offshore of the gage. Continuous good records were obtained from this set-up. Two 1-1/2 hour periods, one near high tide and one near low, were spent making gage/staff comparisons. On the basis of 28 comparisons, the gage was determined to read 2.7 feet higher than the staff.

Levels at Turn Point:

The Turn Point tide staff was leveled to three temporary bench marks upon installation and removal. No staff movement was indicated.

Saw Mill

The Saw Mill bubbler gage (SN 67 A 10826) and staff were installed on September 29. The staff was lag-bolted to the southwestern-most piling of the Beachcomber Inn access pier in Scow Bay, Wrangell Narrows. The gage was set near the tree-line on the south side of a rock groin extending into the bay from behind the Beachcomber Inn barn. The orifice was weighted and dropped offshore of the gage at a depth approximately staff zero.

One and one-half hours at high tide and at low tide were spent making gage/staff comparisons to ensure proper gage adjustment. Thirty-two gage/staff comparisons were meaned to find that the staff read 0.3 feet higher than the gage.

The Saw Mill gage gave continuous good readings until 08 October at 1935Z, when the chart drive wound down. The gage was restarted at 1830Z on 11 October. A total of 59 hours of data was lost. On 24 October, the bubble rate was found low, 88 BPM, and corrected to 130 BPM. No other problems were experienced, and the gage was removed on 26 October.

Levels at Saw Mill:

The Saw Mill tide staff was initially leveled to three temporary BM's on 16 October, though it was installed on 29 September, a slip-up caused by the beginning-of-survey, new-Tides-Officer confusion. The staff was leveled out on 26 October and comparisons of the two runs showed a downward staff movement of .308 feet. It was discovered, by talking to the Inn owners, that the piling supporting the staff had been recently set. Probably the staff shift occurred as a result of the settling of the support piling. Since it cannot be determined when the staff movement occurred during the period of October 16-26 and how much the staff may have moved before the initial level run, it is recommended that data from the Mountain Point gage be used for control of the Saw Mill area. Data from the two gages is very similar.

Mountain Point (Cannery)

Installation of any gage at the Project Instruction site for the Cannery gage would have proven difficult. No ruins mark the position of the old cannery. A more suitable location was found across the Narrows from the original site, and a 0-30 scale Bristol Bubbler Gage was installed. A 20-foot tide staff was braced vertically against a rocky outcrop and guyed securely. The gage was set just inside the treeline north of the staff and a small stream. The weighted orifice was set near the base of the staff.

Gage/staff values at Mountain Point were read and recorded every 12 minutes for 4-1/2 hours on 4 October. On the basis of these and 20 other gage/staff comparisons, gage values were determined to read 1.0 foot higher than staff values. Problems were encountered when the gage was checked on 21 September and the bubble rate (BPM) was found to have dropped from the original 120 BPM to 60 BPM. The system was checked for leaks (none were found), and the bubble rate restored to 120 BPM. Another check on 26 September again revealed a drop in bubble rate from 120 BPM to 60 BPM. Once again the system was checked, and again no leaks were discovered. This time the bubble rate was slowly increased. The bubble rate remained stable for the remainder of its installation. It was later determined that insufficient observation time had been allotted to allow the bubble rate to stabilize after the first two adjustments. Sprocket jumps were also a problem, despite changes of marigram paper. The longest period of data loss due to sprocket jumps was 23 hours between 2300Z on 28 September and 2200Z on 29 September. Other sprocket jumps occurred singly, involving time periods of approximately 22 minutes each. The gage was removed on 29 October.

Levels at Mountain Point (Cannery)

Five new bench marks were established at Mountain Point: 1409-A, -B, and -C, set by ship personnel, USE 22 1902 and its RM. All five were leveled upon installation and removal of the tide staff. A comparison of both level runs shows no indication of staff or bench mark movement.

Papke's Landing

The Papke's Landing bubbler gage (SN 73 A 231) and tide staff were installed on 05 October. As only one historical bench mark was recovered at Finger Point, Papke's Landing was used as the alternate gage site as per Project Instructions. The gage was the same as was used in Frederick Sound and was set on the floating pier of the Papke's Landing Facility in Wrangell Narrows. The weighted orifice was dropped into the water next to the gage, and the staff was lag-bolted to a lone piling at the south edge of a log dump, approximately 15 meters north of the floating pier. The gage at Papke's Landing had a continuous sprocket jump problem. Both Bristol and Graphics Control paper was used in an effort to alleviate the problem, but this was unsuccessful. Because no spare 0-30 gages were available, the gage was checked every day to prevent excessive skewing and jamming of the marigram. Twenty-four sprocket jumps occurred between 1300Z on 5 October and 1900Z on 11 October. The paper was found jammed when checked on 11 October. Between 2100Z on 14 October and 1905Z on 16 October, twelve sprocket jumps occurred. After 16 October, the gage was checked daily, limiting sprocket jumps to one or two per day until the gage was removed on 18 October.

Two 1-1/2 hour periods were spent making gage/staff comparisons near high and low tides. The average of 33 comparisons indicated the gage to be reading 3.2 feet higher than the staff.

Levels at Papke's Landing:

The tide staff at Papke's Landing was infinitely more cooperative than the gage. No staff movement was indicated when the initial level run to three temporary bench marks was compared to the final level run at the time of staff removal.

Light #32

The bubbler gage (SN 73 A 235) and staff at Wrangell Narrows Channel Light #32 were installed on 13 October, using the gage that had previously been operational at Turn Point. The staff was banded to the southeastern-most support of the light. The gage was set on the light platform itself, and the orifice was submerged at the base of the structure. Kelp and high currents in the area were a problem. It was necessary to firmly secure the bubbler tubing to the light structure in order to prevent kelp from becoming entangled with it and carrying away the orifice. Two 1-1/2 hour periods near high and low tides were spent making gage/staff comparisons every twelve minutes. On the basis of 22 gage/staff comparisons, it was determined that the gage read 5.8 feet higher than the staff. Good readings were obtained from this gage.

Levels at Light #32:

The Light #32 tide staff was leveled to three temporary bench marks upon installation and removal. A 0.082 foot downward staff shift was noted when the two level runs were compared. The staff most likely slipped a bit within the banding.

Anchor Point

The Anchor Point staff and floatwell were installed on a lone piling south of Anchor Point, in Wrangell Narrows, on 26 September. The ADR gage (SN 7404 A 0407 M11) was installed and began running on 28 September. On 1 October, at 0712Z, the gage stopped running; it was restarted at 2230Z the same day. The punch appears to have jammed around 1736Z and then started up again on its own at 1748Z the same day. According to two time checks, one on the 17th and one on the 19th of October, the gage lost no time while jammed. A third check on 24 October showed a one hour loss of gage time. By comparing times of high tide with a nearby gage, the time loss was discovered to have occurred between 1354Z on 22 October and around 0148Z on 23 October. Other than the above, continuous good records were obtained until the gage was removed on 29 October. On the basis of 11 gage/staff comparisons, it was determined that the gage read 10.8 feet higher than the staff.

Levels at Anchor Point:

Five historical bench marks were leveled upon installation and removal of the tide staff at Anchor Point. Both runs check with each other; no staff movement was indicated. In addition, historical data agreed with the levels run during this project, indicating that the bench marks remain stable.

Zoning Recommendations

Zoning recommendations, based on hydrographic features of the project area, are as follows:

Gage	Control Area	
Frederick Sound	From:	Limits of H-9792 in Frederick Sound
	To:	Mouth of Wrangell Narrows (132°56'12"W)
Petersburg	From:	132°56'12"W
	To:	Just north of Turn Point (56°48'20"N)
Turn Point	From:	56°48'30"N
	To:	Entrance to Scow Bay (56°46'45"N)
Mountain Point	From:	56°46'45"N
	To:	North of Green Point (56°42'10"N)
Papke's Landing	From:	56°45'20"N
	To:	Rock Point (56°40'25"N)
Light #32	From:	56°40'25"N
	To:	Blind Point (56°38'55"N)
Anchor Point	From:	56°38'55"N
	To:	Southern Limit of H-9795

Though the Frederick Sound gage is included in the zoning scheme, it should be noted that data obtained from this gage was found to be much the same as that obtained from the Petersburg gage. Significant tidal differences were noted at each of the six remaining gages.

Submitted by:

Ellen McDougal
LT(jg), NOAA

Approved and forwarded by:

C.W. Hayes
CDR, NOAA
Commanding Officer

CORRECTION TO ECHO SOUNDERS REPORT
OPR-0325-DA-78
WRANGELL NARROWS, ALASKA

Two Martek casts were taken to determine velocity correctors for hydrography done in the Navigable Area Survey of Wrangell Narrows, OPR-0325-DA-78. The first was made 29 September 1978 (JD 272) in Frederick Sound (56°50'01"N - 132°54'02"W) and the other on 30 October (JD 303) just north of Mountain Point (56°45'20"N - 132°57'48"W) in the Narrows. The first cast was made using unit S/N 327. During the subsequent processing of this data, a note was found in the NOIC, Northwest Regional Calibration Center's report that there was a linear error associated with the depth indications obtained from this unit. The sampling depths actually used in this first cast were spaced farther apart than would normally be needed for a complete profile. However, in this area of high currents and complete mixing, there is little change in temperature and salinity through the water column; the corrected data is complete enough to determine the velocity correctors for hydrography. A second unit was requested and unit S/N 189 was received and used for the second cast with no additional problems.

For both Martek casts, mean temperature and conductivity readings were tabulated for each sample depth. These were corrected using the NOIC calibration reports. Copies of the calibration reports for both units are appended. These corrected readings were then used in RK 530, Layer Corrections for Velocity (ver 5/10/76), to determine velocity correctors as a function of depth. These correctors were plotted versus depth, and then extracted from the plot at 0.1-fathom or 0.1-foot intervals. Velocity correctors and their corresponding depth ranges were tabulated for application to hydrographic soundings as follows:

Table	Survey/Boatsheet	Comments
1	H-9791/(DA-5-3-78)	Soundings in feet
2	H-9792/(DA-10-4-78) H-9795/(DA-10-5-78)	for JD 270-285
3	" "	1:2000 Greenrocks Inset
4	" "	for JD 286-300

To determine the TRA of the sounding vessels, bar checks were taken twice daily in the working area. Only the one-fathom readings were used to determine the TRA as these are the least affected by wind, current, and

variations in the water column. See the appended table of TRA abstracts for TRA corrections used for each sounding vessel based on the bar checks completed during each survey.

Submitted by,

Linda F. Haas

Linda F. Haas
LTJG, NOAA

Approved and forwarded by,

C. William Hayes

C. William Hayes
CDR, NOAA
Commanding Officer

VELOCITY CORRECTION TABLES OPR-0325-DA-78

Table 1 - Vessel 3131 (DA-1) JD 271-299

Corrector	to actual depth	(Fathometer) to observed depth*
0.0 ft	5.9 ft	4.4 ft
0.1	17.2	15.7
0.2	26.6	25.1
0.3	36.5	35.0
0.4	46.6	45.1
0.5	56.4	54.9
0.6	65.9	64.4
0.7	75.5	74.0
0.8	85.3	83.8
0.9	95.4	93.9

* TRA = 1.5 ft applied

Table 2 - Vessel 3132 (DA-2) JD 270-285

Corrector	to actual depth	to fathometer depth*
0.0 fm	5.4 fm	5.1 fm
0.1	15.2	14.9
0.2	24.3	24.0
0.3	33.1	32.8
0.4	41.2	40.9
0.5	49.8	49.5
0.6	59.5	59.2
0.7	69.2	68.9
0.8	79.1	78.8
0.9	89.0	88.7
1.0	98.2	97.9
1.1	110.0	109.7

* TRA = 0.3 fm applied

Table 3 - Vessel 3132 (DA-2) JD 291 only

Corrector	to actual depth	to fathometer depth*
0.0 ft	9.2 ft	7.4 ft
0.1	26.1	24.3
0.2	39.1	37.3
0.3	52.2	50.4
0.4	65.2	63.4
0.5	76.0	74.2

* TRA = 1.8 ft applied

Table 4 - Vessel 3131, 3132 JD 286-300

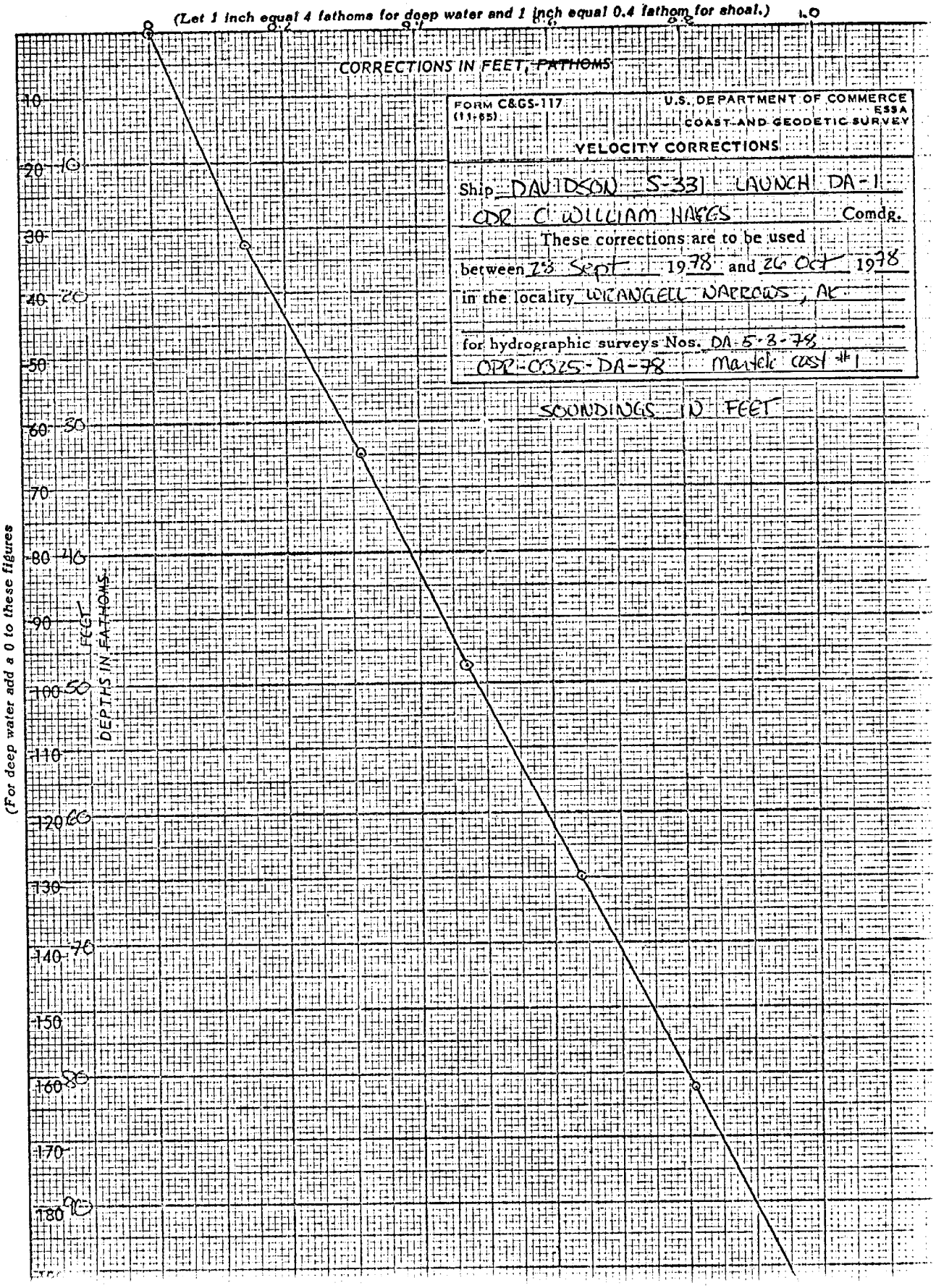
Corrector	to actual depth	to fathometer depth*
0.0	7.5 fm	7.2 fm
0.1	19.5	19.2
0.2	30.3	30.0

* TRA = 0.3 fm applied

TRA ABSTRACTS

	DA-1 (3131)	DA-2 (3132)
DA-5-3-78	1.48 ft	-
DA-10-4-78	-	0.30 fm
DA-10-5-78	0.30 fm	0.31 fm
(10-5 inset)	-	(1.82 ft)

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



FORM C&GS-117 (11-65)

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

VELOCITY CORRECTIONS

Ship DAVIDSON S-331 LAUNCH DA-1

CDR C WILLIAM HAEGS Comdg.

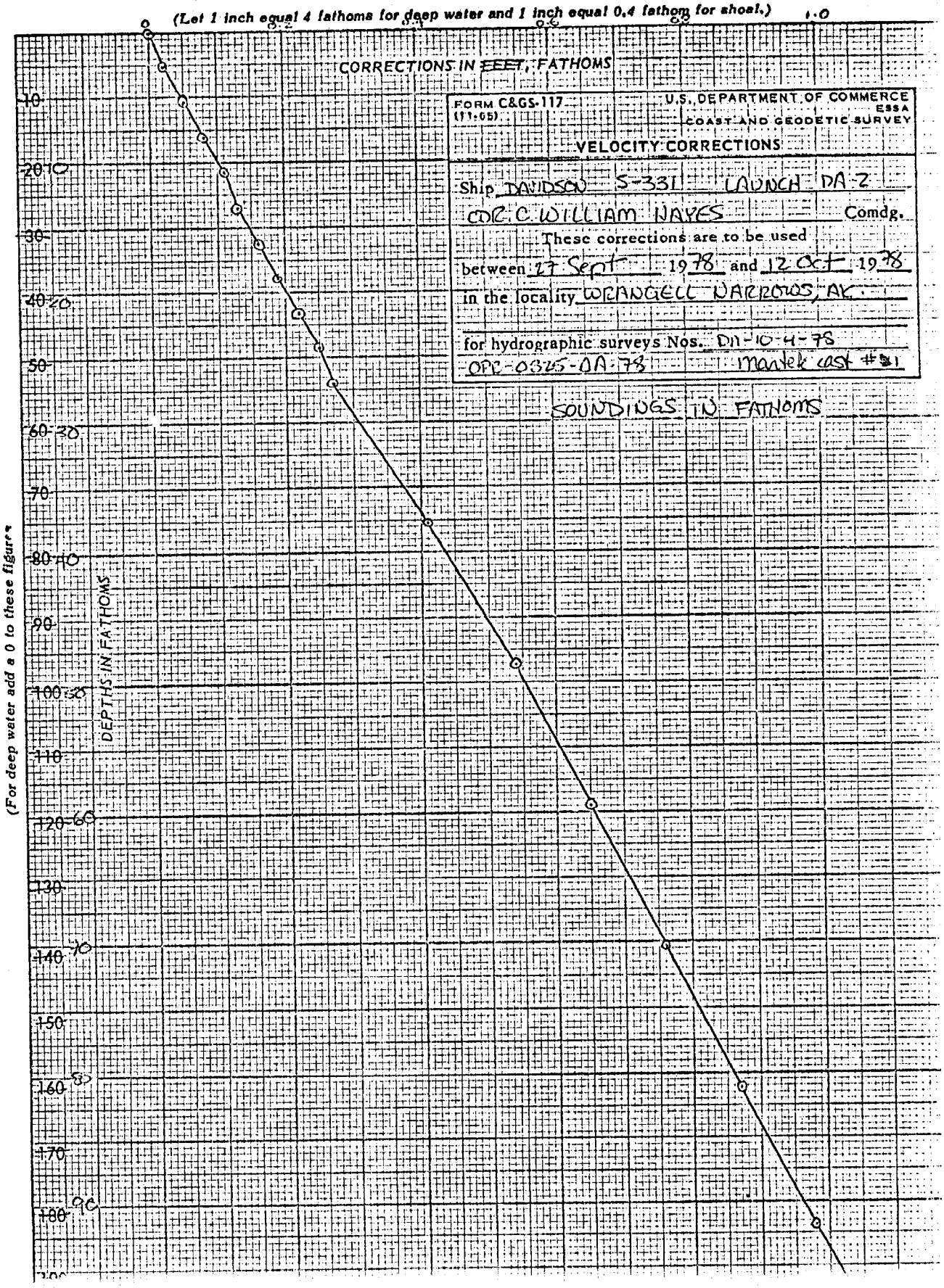
These corrections are to be used between 23 Sept 1978 and 26 Oct 1978

in the locality WRANGELL NARROWS, AK

for hydrographic surveys Nos. DA-5-3-78

OPR-0325-DA-78 Mantels cast #1

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



(For deep water add a 0 to these figures)

FORM C&GS-117 (11-65) — U.S. DEPARTMENT OF COMMERCE — ESSA — COAST AND GEODETIC SURVEY

VELOCITY CORRECTIONS

Ship DAVIDSON S-331 LAUNCH DA-2

CDR C. WILLIAM NAYES Comdg.

These corrections are to be used

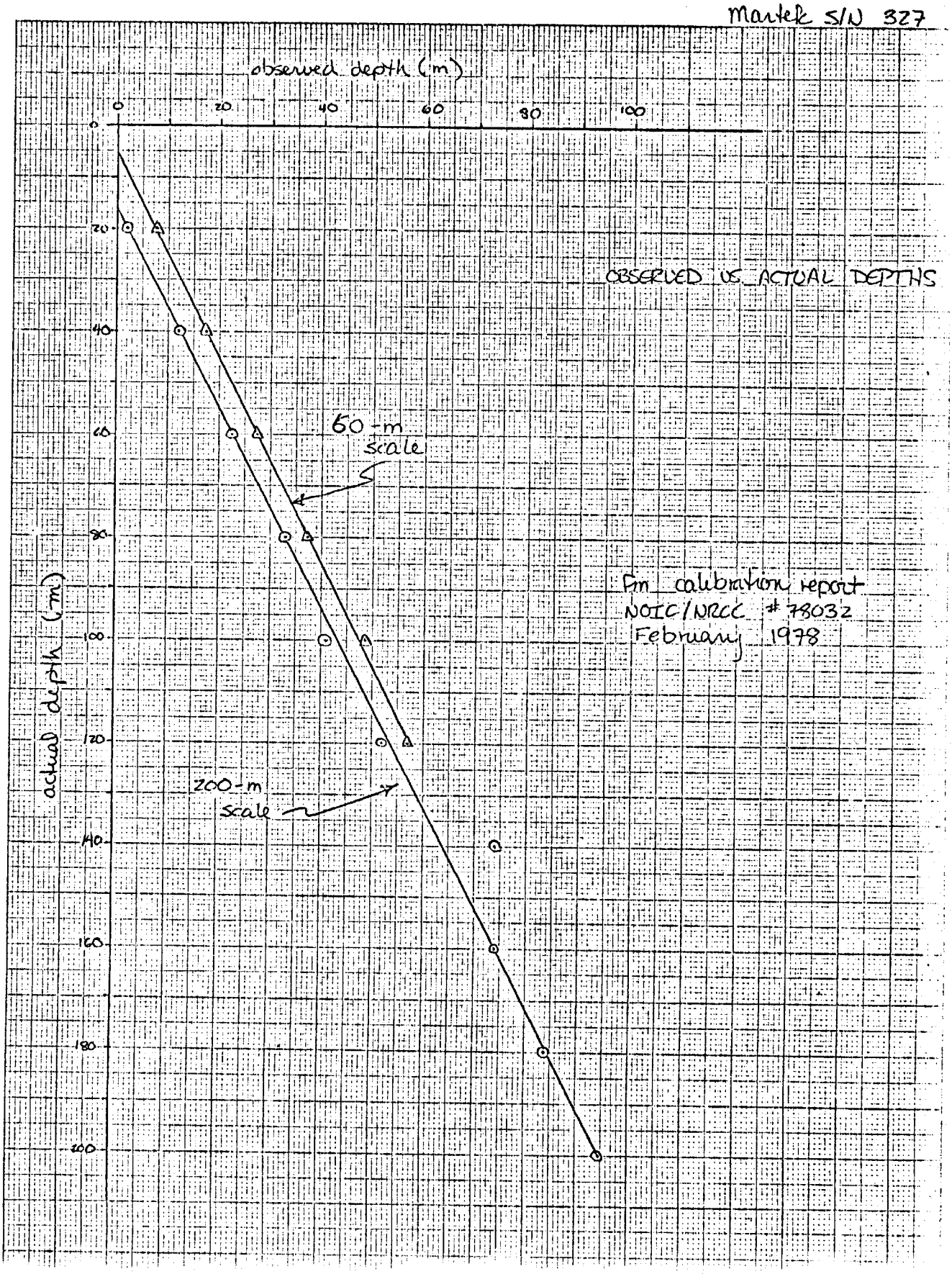
between 27 Sept 1978 and 12 Oct 1978

in the locality WRANGELL NARROWS, AK

for hydrographic surveys Nos. DN-10-4-78

OPR-0325-DA-78 Manek cast #31

Martek S/N 327



FORM CD-26 (12-11-46)

U.S. DEPARTMENT OF COMMERCE

S/N 327

WORKSHEET

Wrangell Narrows, Ak. — 29 Sept 1978 (JD 272) — Martek #1

depth	corrector	actual depth		mean temp	corrector	actual temp	mean cond	corrector	actual ~~temp~~ cond
surface	↑	0		7.35	+0.23	7.58	31.50	+0.98	32.48
		4.9							
0		~~14.5~~		7.25	+0.22	7.47	32.00	+1.00	33.00
		14.5							
5		~~24.7~~		7.25	+0.22	7.47	32.15	+1.00	33.15
10		24.7		7.25	+0.22	7.47	32.00	+1.00	33.00
15		34.5		7.25	+0.22	7.47	32.20	+1.00	33.20
20		44.8		6.80	+0.22	7.02	32.50	+1.00	33.50
25		55.0		6.65	+0.21	6.86	34.40	+1.10	35.50
30		65.0		6.55	+0.21	6.76	34.60	+1.12	35.72
35		75.1		6.55	+0.21	6.76	34.45	+1.10	35.55
40		85.2		6.25	+0.20	6.45	34.45	+1.10	35.55
45		95.3		5.85	+0.20	6.05	34.40	+1.10	35.50
50		105.2		5.70	+0.20	5.90	34.20	+1.10	35.30
60		132.4		5.35	+0.19	5.54	34.15	+1.10	35.25
70		151.9		5.25	+0.19	5.44	34.20	+1.10	35.30
80		161.5		5.15	+0.18	5.33	34.30	+1.10	35.40
90	↓	191.0		5.25	+0.19	5.44	34.35	+1.10	35.45

60 scale — 200 scale

↑ Graph (observed vs. actual depth) appended — see ↓

latitude = 56/50/01 N
longitude = 132/54/02 W

surface temp = 8.0° C
surface S.G. = 1.0236
= ~~1.0225~~ @ 15° C
= 30.4‰ salinity

☆ U.S. GOVERNMENT PRINTING OFFICE: 1977—786-753

VELOCITY CORRECTIONS COMPUTATIONS

1)CONDUCTIVITY 2)SALINITY
SPECIFY OPTION (1,2) 1

VESSEL = DAVIDSON

DATE = 29 SEPT 1978

TIME = 2310Z

LATITUDE = 56/50/01

LONGITUDE = 132/54/02

TYPE OF OBSERVATION = MARTEK CAST #1

SURFACE TEMPERATURE = 8.0

SURFACE SALINITY = 30.4

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	CONDUCTIVITY (MILLIMHOS/CM)
0000.0	07.58	32.48
0004.9	07.47	33.00
0014.5	07.47	33.15
0024.7	07.47	33.00
0034.5	07.47	33.20
0044.8	07.02	33.50
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		
0055.0	06.86	35.50
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		
0065.0	06.76	35.72
0075.1	06.76	35.56
0085.2	06.45	35.55
0095.3	06.05	35.50
0105.2	05.90	35.30
0132.4	05.54	35.25
0151.9	05.44	35.30
0171.5	05.33	35.40
0191.0	05.44	35.45

$

DATA BANK INPUT COMPLETED

VESSEL =DAVIDSON

DATE =29 SEPT 1978

TIME =2310Z

LATITUDE = 056/50/01.00

LONGITUDE = 132/54/02.00

TYPE OF OBSERVATION =MARTEK CAST #1

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	SALINITY (O/OO)	SND VEL (M/SEC)
0000.0	08.00	30.40	1476.95
0004.9	07.89	31.06	1477.45
0014.5	07.89	31.22	1477.81
0024.7	07.89	31.05	1477.77
0034.5	07.89	31.27	1478.21
0044.8	07.44	32.02	1477.50
0055.0	07.28	34.38	1480.23
0065.0	07.18	34.73	1480.47
0075.1	07.18	34.54	1480.38
0085.2	06.87	34.86	1479.76
0095.3	06.47	35.23	1478.83
0105.2	06.32	35.16	1478.30
0132.4	05.96	35.49	1477.74
0151.9	05.86	35.65	1477.88
0171.5	05.75	35.89	1478.08
0191.0	05.86	35.82	1478.75

MID-DEPTH (M)	SND VEL (M/SEC)	LAYER THICKNESS (M)
0002.50	1477.21	0005.00
0007.50	1477.67	0005.00
0012.50	1477.87	0005.00
0017.50	1477.80	0005.00
0022.50	1477.78	0005.00
0027.50	1477.90	0005.00
0032.50	1478.12	0005.00
0037.50	1478.03	0005.00
0042.50	1477.74	0005.00
0047.50	1478.26	0005.00
0060.00	1480.94	0020.00
0080.00	1480.14	0020.00
0100.00	1478.52	0020.00
0120.00	1478.05	0020.00
0140.00	1477.82	0020.00
0160.00	1477.93	0020.00
0180.00	1478.29	0020.00

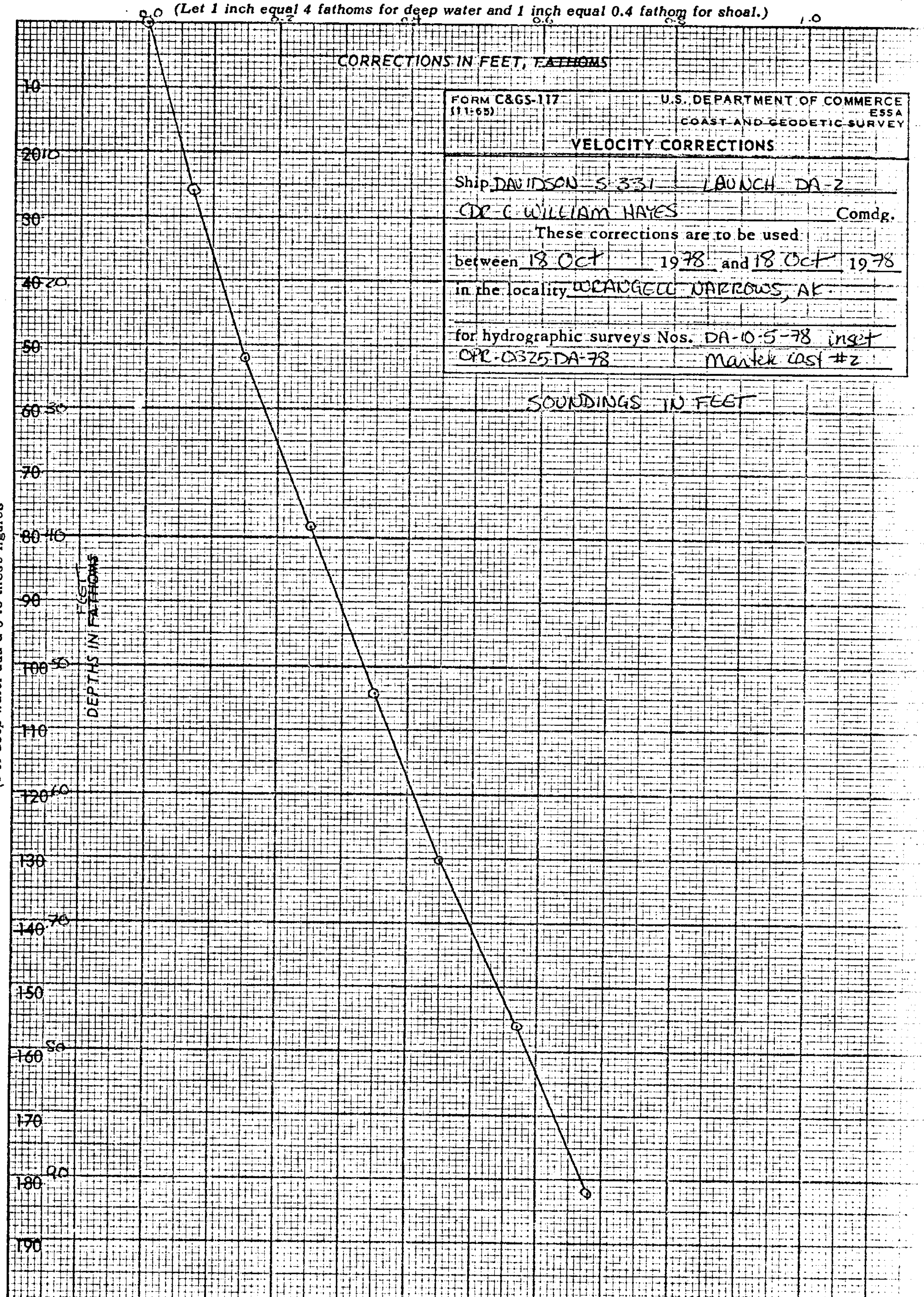
VELOCITY CORRECTION TABLE OPTIONS:
0) NO TABLE
1) IN FEET
2) IN FATHOMS
3) IN METERS
1
DRAFT = 1.5

ACTUAL DEPTH (SURFACE) MINUS VELOCITY CORRECTION (FT)	VELOCITY CORRECTION (FT)
0016.26	0000.14
0032.50	0000.31
0048.74	0000.47
0064.98	0000.64
0081.22	0000.81
0097.45	0000.97
0113.69	0001.14
0129.92	0001.31
0146.16	0001.47
0162.40	0001.64
0227.21	0002.45
0292.06	0003.21
0356.98	0003.91
0421.93	0004.58
0486.88	0005.24
0551.83	0005.91
0616.76	0006.60

VELOCITY CORRECTION TABLE OPTIONS:
0) NO TABLE
1) IN FEET
2) IN FATHOMS
3) IN METERS
2
DRAFT = 0.3

ACTUAL DEPTH (SURFACE) MINUS VELOCITY CORRECTION (FM)	VELOCITY CORRECTION (FM)
0002.71	0000.02
0005.42	0000.05
0008.12	0000.08
0010.83	0000.11
0013.54	0000.13
0016.24	0000.16
0018.95	0000.19
0021.65	0000.22
0024.36	0000.25
0027.07	0000.27
0037.87	0000.41
0048.68	0000.54
0059.50	0000.65
0070.32	0000.76
0081.15	0000.87
0091.97	0000.98
0102.79	0001.10

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



FORM C&GS-117 (11-65)

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

VELOCITY CORRECTIONS

Ship DAVIDSON S 331 LAUNCH DA-2

CDR C WILLIAM HAYES Comdg.

These corrections are to be used

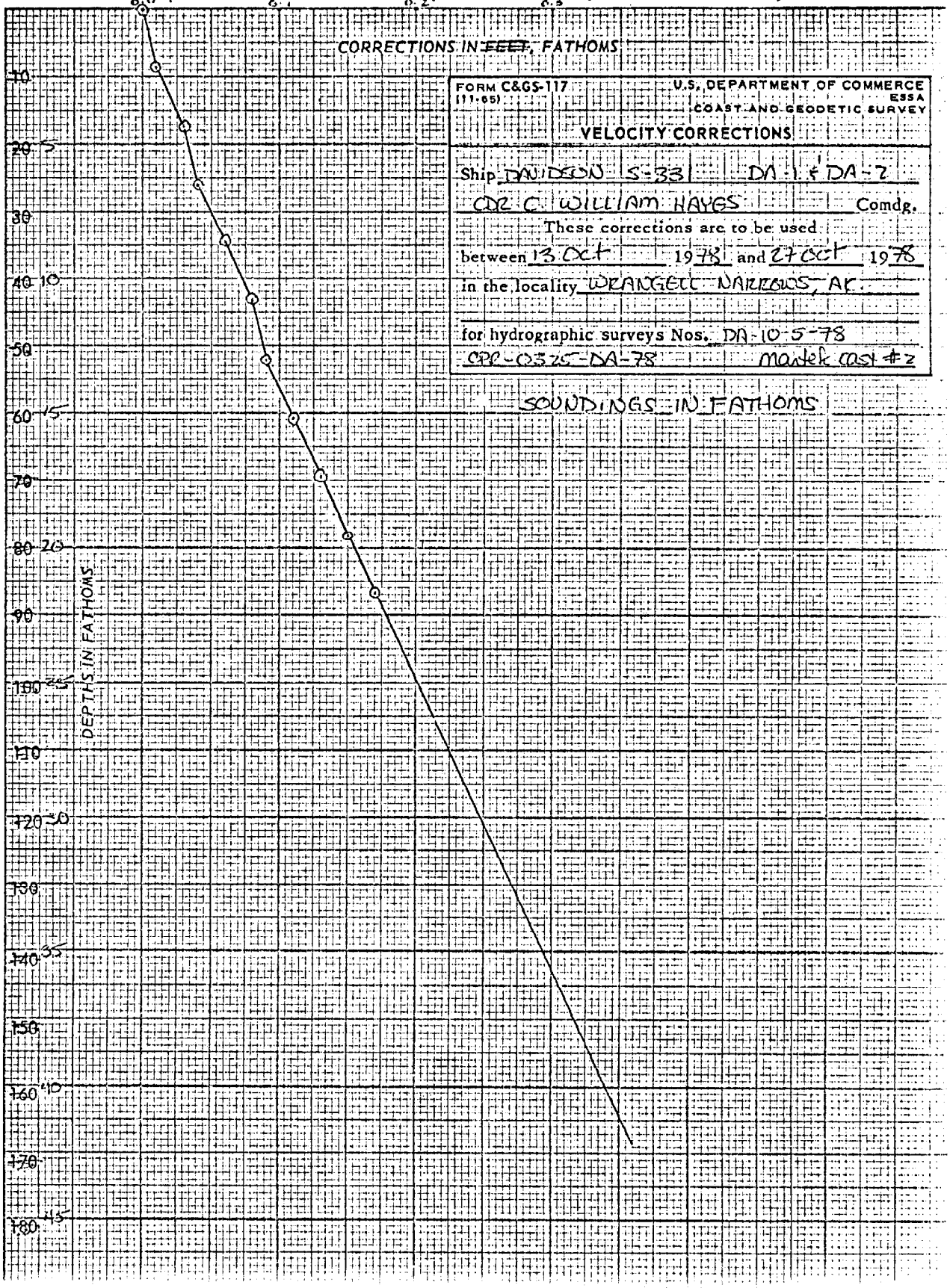
between 18 Oct 1978 and 18 Oct 1978

in the locality WRANGELL NARROWS, AK

for hydrographic surveys Nos. DA-10-5-78 inset

OPR-O325-DA-78 Martek cast #2

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



FORM C&GS-117 (11-65) — U.S. DEPARTMENT OF COMMERCE — ESSA — COAST AND GEODETIC SURVEY

VELOCITY CORRECTIONS

Ship DAVIDSON S-33 DA-1 & DA-2

CDR C. WILLIAM HAYES Comdg.

These corrections are to be used

between 13 Oct 1978 and 27 Oct 1978

in the locality WRANGELL NARROWS, AK.

for hydrographic surveys Nos. DA-10-5-78

CRP-0525-DA-78 Mantek cast #2

(For deep water add a 0 to these figures)

VELOCITY CORRECTIONS COMPUTATIONS

1)CONDUCTIVITY 2)SALINITY
SPECIFY OPTION (1,2) 1

VESSEL = DAVIDSON

DATE = 30 OCT 1978

TIME = 1930Z

LATITUDE = 56/45/20

LONGITUDE = 132/57/48

TYPE OF OBSERVATION = MARTEK CAST #2

SURFACE TEMPERATURE = 08.3

SURFACE SALINITY = 24.6

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	CONDUCTIVITY (MILLIMHOS/CM)
0000.0	07.83	32.60
0004.0	07.83	33.80
0010.2	07.88	34.30
0015.3	07.93	35.00
0022.6	07.98	35.70
0025.9	08.03	35.90
0040.3	07.98	35.90

$

DATA BANK INPUT COMPLETED

PUNCH ON? (Y) Y

VESSEL =DAVIDSON

DATE =30 OCT 1978

TIME =1930Z

LATITUDE = 056/45/20.00

LONGITUDE = 132/57/48.00

TYPE OF OBSERVATION =MARTEK CAST #2

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	SALINITY (O/OO)	SND VEL (M/SEC)
0000.0	08.30	24.60	1470.69
0004.0	08.30	25.88	1472.38
0010.2	08.35	26.37	1473.29
0015.3	08.40	27.07	1474.47
0022.6	08.45	27.77	1475.68
0025.9	08.50	27.94	1476.13
0040.3	08.45	27.98	1476.23

MID-DEPTH (M)	SND VEL (M/SEC)	LAYER THICKNESS (M)
0002.00	1471.74	0004.00
0006.00	1472.75	0004.00
0010.00	1473.26	0004.00
0014.00	1474.16	0004.00
0018.00	1475.00	0004.00
0022.00	1475.59	0004.00
0026.00	1476.14	0004.00
0030.00	1476.16	0004.00
0034.00	1476.19	0004.00
0038.00	1476.22	0004.00

VELOCITY CORRECTION TABLE OPTIONS:
0) NO TABLE
1) IN FEET
2) IN FATHOMS
3) IN METERS
1
DRAFT = 1.8

ACTUAL DEPTH (SURFACE) MINUS VELOCITY CORRECTION (FT)	VELOCITY CORRECTION (FT)
0013.06	0000.07
0026.09	0000.15
0039.12	0000.25
0052.15	0000.35
0065.16	0000.45
0078.17	0000.57
0091.18	0000.68
0104.19	0000.80
0117.19	0000.92
0130.20	0001.04

VELOCITY CORRECTION TABLE OPTIONS:
0) NO TABLE
1) IN FEET
2) IN FATHOMS
3) IN METERS
2
DRAFT = 0.3

ACTUAL DEPTH (SURFACE) MINUS VELOCITY CORRECTION (FM)	VELOCITY CORRECTION (FM)
0002.18	0000.01
0004.35	0000.03
0006.52	0000.04
0008.69	0000.06
0010.86	0000.08
0013.03	0000.09
0015.20	0000.11
0017.36	0000.13
0019.53	0000.15
0021.70	0000.17

FORM CD-26 (12-11-46) U.S. DEPARTMENT OF COMMERCE S/N 1889

WORKSHEET

Wrangell Narrows, Ak. 30 oct 1978 (JD303) Martek #2

depth	corr	actual depth		mean temp	corr	actual temp	cond	corr	actual cond
0	+0.05	0.05		7.85	-.02	7.83	18.0		32.6
4	+0.05	4.05		7.85	-.02	7.83	19.1		33.8
10	+0.15	10.15		7.90	-.02	7.88	19.8		34.3
15	+0.27	15.27		7.95	-.02	7.93	20.4		35.0
22	+0.60	22.60		8.00	-.02	7.98	21.2		35.7
25	+0.89	25.89		8.05	-.02	8.03	21.4		35.9
37	+3.26	40.26		8.00	-.02	7.98	21.4		35.9

calib report ↓ see

latitude = 56/45/20 N
longitude = 132/57/48 W

surface temp = 47°F = 8.3°C
surface S.G = 1.0190
= 1.0180 @ 15°C
= 24.6‰ salinity

☆ U.S. GOVERNMENT PRINTING OFFICE: 1977—786-783

OPR-0325-DA-78
DA 10-4-78(H-9792)
VELOCITY TAPE PRINTOUT IN FATHOMS
TABLE #2

000054 0 0000 0002 001 313200 009792
000152 0 0001
000243 0 0002
000331 0 0003
000412 0 0004
000498 0 0005
000595 0 0006
000692 0 0007
000791 0 0008
000890 0 0009
000982 0 0010
001100 0 0011

OPR-0325-DA-78
MASTER SIGNAL LIST PRINTOUT

```
001 3  56 48 28372 132 54 46316  250 0002 000000 E 1910
002 0  56 50 07877 132 56 18987  250 0001 000000 LEW 1910
004 3  56 49 39467 132 56 38028  250 0001 000000 USE 2 ~~RM 1~~ 1902 Rm1 (1978)
005 3  56 49 15763 132 57 18814  250 0000 000000 USE 4 1902
006 2  56 49 09476 132 58 02869  250 0002 000000 USE 6 1902
007 1  56 48 51424 132 58 46661  250 0002 000000 USE 8 1902
008 4  56 48 14642 132 58 45982  139 0003 000000 USE 9 1902
009 6  56 48 11760 132 59 29414  250 0002 000000 USE 10 1902
010 3  56 47 49420 132 59 11819  139 0001 000000 USE 11 1902
011 7  56 48 13801 132 58 46610  250 0003 000000 NOVA 1929-1978
012 3  56 47 36081 132 59 10254  139 0001 000000 USE 14 1902
013 2  56 46 44545 132 58 11217  250 0002 000000 BLUNT 1929
014 6  56 46 01326 132 58 57241  250 0002 000000 USE 18 1902
015 5  56 45 18537 132 58 31598  250 0001 000000 USE 20 1902
016 5  56 44 27478 132 57 29431  250 0002 000000 USE 22 1902
017 5  56 43 49756 132 57 12430  250 0003 000000 USE 24 RM 1 1929
018 4  56 43 53330 132 56 04228  250 0001 000000 USE 25 1902
019 0  56 43 49812 132 57 12555  250 0003 000000 USE 24 1902
020 4  56 41 21811 132 56 05845  250 0000 000000 USE 33 1902
021 5  56 40 07964 132 56 06947  139 0003 000000 USE 34 1902
022 4  56 39 53042 132 55 18692  250 0001 000000 USE 39 1902
023 1  56 38 38517 132 56 32185  250 0001 000000 USE 40 1902
024 3  56 38 18185 132 56 55156  250 0001 000000 USE 42 1902
025 3  56 37 45327 132 57 16027  250 0001 000000 USE 44 1902
026 6  56 38 19751 132 55 32944  250 0001 000000 USE 45 1902
027 3  56 37 29390 132 57 36325  250 0001 000000 USE 46 1910 RM1 1943
028 4  56 37 27405 132 57 03925  250 0001 000000 USE 49 1929
029 7  56 37 01007 132 57 32565  139 0001 000000 USE 51 1910
030 3  56 39 51055 132 55 52564  139 0001 000000 ISLAND 2 1929-1978
031 5  56 39 16652 132 55 39434  250 0001 000000 USE 38 1902
032 3  56 42 01376 132 57 13527  250 0001 000000 USE 28 1902
033 5  56 41 08188 132 56 57084  250 0002 000000 USE 30 1902
034 5  56 40 46773 132 56 32410  139 0002 000000 USE 32 1902
035 1  56 39 32625 132 55 13459  139 0002 000000 USE 41 1902
036 4  56 48 38860 132 57 33810  243 0002 000000 PHOTO TP-00421
037 7  56 48 32446 132 57 44313  252 0000 000000 SEXTANT FIX
```

```
038  4   56 48 31480 132 57 55510   243 0000 000000 PHOTO TP-00421
039  2   56 48 38150 132 58 00920   243 0000 000000   "       "
040  0   56 48 30820 132 58 01320   243 0000 000000   "       "
041  6   56 48 37470 132 58 11190   243 0000 000000   "       "
042  3   56 48 36720 132 58 13310   243 0000 000000   "       "
043  3   56 48 30050 132 58 17080   243 0000 000000   "       "
044  6   56 48 31990 132 58 27120   243 0000 000000   "       "
045  3   56 48 28790 132 58 26620   243 0000 000000   "       "
047  2   56 38 20118 132 55 31842   250 0000 000000 BM, USE 45 1902
048  2   56 49 39407 132 56 38323   139 0001 000000 USE 2, 1902
049  2   56 48 30057 132 58 50723   139 0000 000000 CHANNEL LIGHT 58,1978
```

SURVEY APPROVAL SHEET

H-9792 (DA-10-4-78)

A. Amount and degree of personal supervision of field work and frequency of record and sheet inspection:

Direct/Daily

B. State whether the survey is complete and adequate or if additional field work is recommended:

Same as report.

C. Cite additional information or references that may be of assistance for verifying and reviewing the survey:

The Corps of Engineers, Anchorage, AK will be conducting hydrographic surveys in Wrangell Narrows in the summer of 1979 in conjunction with dredging. A request to the COE might be initiated to ask for survey data in Scow Bay to fill in the area being dredged at the time of the DAVIDSON's 1978 work to update this survey.

D. Signed statement of approval of the field sheet and all accompanying records:

DATE: 12 Feb 1979

Approved and forwarded by:

C. William Hayes

C. William Hayes
CDR, NOAA
Commanding Officer

June 19, 1979

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): 945-1437 Frederick Sound, AK
945-1439 Petersburg, AK
945-1434 Turn Point, AK
945-1409 Mountain Point, AK

Period: September 16-October 18, 1978

HYDROGRAPHIC SHEET: H-9792

OPR: O 325

Locality: Wrangell Narrows, Alaska

Plane of reference (mean lower low water): 4.0 ft. - Frederick Sound
4.52 ft. - Petersburg
3.0 ft. - Turn Point
2.5 ft. - Mountain Point

Height of Mean High Water above Plane of Reference is

14.5 ft. - Frederick Sound; 15.0 ft. - Wrangell Narrows

Remarks: Recommended zoning:

(1). In Frederick Sound to the mouth of Wrangell Narrows (132°56.3') zone direct on Frederick Sound.

(2). From 132°56.3' to 56°48.4' zone direct on Petersburg.

(3). From 56°48.4' to 56°46.7' zone direct on Turn Point.

(4). South of 56°46.7' zone direct on Mountain Point.

Chief, Datums and Information Branch

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-9792

Name on Survey	A ON CHART NO. 17375	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	Manuscript	
BLUNT POINT	17375								00437	1
DOYHOF	17375								00437	2
FREDERICK SOUND	17375								00437	3
KUPREANOF ISLAND	~~17375~~								00437	4
LINDENBERG PENINSULA	17375								00437	5
MITKOF ISLAND	17375								00437	6
MOUNTAIN POINT	17375								00438	7
PROLEWY POINT	17375									8
SANDY BEACH									00437	9
SCOW BAY	17375								00437	10
WRANGELL NARROWS									00437	11
PROLEWY ROCKS										12
SASBY ISLAND										13
SCOW BAY (locality)										14
										15
										16
					Approved:					17
										18
					Chas. E. Harrington					19
					Chief Cartographer - C3x5					20
					12 Nov. 1980					21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 77-27 (5-77) | U. S. DEPARTMENT OF COMMERCE NOAA | HYDROGRAPHIC SURVEY NUMBER

HYDROGRAPHIC SURVEY STATISTICS

H-9792

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	BOAT SHEETS & PRELIMINARY OVERLAYS	2 ea
DESCRIPTIVE REPORT	1	SMOOTH OVERLAYS: POS. ARC, EXCESS	

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES						
CAHIERS	1					
VOLUMES	1					
BOXES					MYLAR	

T-SHEET PRINTS (List) Class I Manuscripts TP-00437, TP-00438 ~~paper~~ copies TP-00421, TP-00637

SPECIAL REPORTS (List) Electronic Control Report and Correction to Echo Sounders

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS PRE-VERIFICATION	AMOUNTS VERIFICATION	AMOUNTS TOTALS
POSITIONS ON SHEET			1421
POSITIONS CHECKED			1421
POSITIONS REVISED			181
SOUNDINGS REVISED			192
SOUNDINGS ERRONEOUSLY SPACED			Ø
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED			Ø
	TIME – HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	8		
VERIFICATION OF CONTROL		10	
VERIFICATION OF POSITIONS		47	
VERIFICATION OF SOUNDINGS		145	
COMPILATION OF SMOOTH SHEET		161	
APPLICATION OF TOPOGRAPHY		35	
APPLICATION OF PHOTOBATHYMETRY		0	
JUNCTIONS		24	
COMPARISON WITH PRIOR SURVEYS & CHARTS		40	
VERIFIER'S REPORT		80	
OTHER		25	
TOTALS	8	567	575

Pre-Verification by James S. Green, James L. Stringham	*Beginning Date* 3/28/79	*Ending Date*
Verification by Todd Stansbury, R.A. Shipley	*Beginning Date* 4/19/79	*Ending Date* 6/25/80
Verification Check by James L. Stringham, James S. Green	*Time (Hours)* 67	*Date* 7/1/80
Marine Center Inspection by Hydrographic Inspection Team	*Time (Hours)* 14	*Date* 8/18/80
Quality Control Inspection by K. W. Wellman	*Time (Hours)* 58	*Date* 11-7-80
Requirements Evaluation by D.J. Hill	*Time (Hours)* 2	*Date* 3/23/81

G. Myers 13 hours 1/22/81

REGISTRY NO. _____

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. H-9792

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:

PACIFIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO. H-9792 FIELD NO. DA-10-4-78

Alaska, Wrangell Narrows, Mountain Point to Northern Entrance

SURVEYED: September 27 - October 12, 1978

SCALE: 1:10,000 PROJECT NO: OPR-0325-DA-78

SOUNDINGS: Ross Fineline Fathometer, Model 5000

CONTROL: Mini-Ranger
Range-Range Mode
Range-Azimuth
~~Mode~~ Method

Chief of Party.....CDR C.W. Hayes
Surveyed.....ENS Timothy Peasley

Automated plot by.....PMC Xynetics Plotter
Verified by.....Todd M. Stansbury and Richard A. Shipley

1. INTRODUCTION

H-9792 (DA-10-4-78) was conducted under the current National Ocean Survey methods of planning, executing and processing a hydrographic survey as defined in the Hydrographic Manual. Project Instructions OPR-0325-DA-78, Wrangell Narrows, Alaska dated 27 June 1978, were generated to supplement the Hydrographic Manual. This was to compensate for the nature, locality, and the unique requirements of the project area. Change No. 1, dated 31 July 1978, and Change No. 2, dated 21 August 1978, are supplements to instructions. Hydrography was conducted from September 27 to October 12, 1978. Field edit operations were completed in September 1978.

The project is the result of requests from the Southeast Alaska Pilots' Association, the Alaska Ferry System, the State of Alaska, and the Alaska District Corps of Engineers to provide contemporary hydrography information in Wrangell Narrows for revision of chart 17375. These surveys are intended to confirm or deny any dangers to navigation and to include the disposition of the channel. The largest scale nautical chart (17375, 1:20,000) of Wrangell Narrows has a data source collected mostly in 1929. A combined operations project has been assigned to the NOAA Ship DAVIDSON and includes several navigable area surveys in the Wrangell Narrows area.

A Navigable Area Survey, H-9792 (DA-10-5-78), lies in or near the northern end of Wrangell Narrows and consists of two parts, a southern portion and a northern portion, consisting of the northern entrance to the Narrows from Frederick Sound. Specifically, the southern portion is bounded by Latitude 56°43'30"N on the south, Latitude 56°48'00"N on the north, and is bounded on the east and west by the east and west

shores of Wrangell Narrows. The Northern portion is bounded on the north by Latitude 56°50'23"N; on the east by Longitude 132°53'30"W; on the west by Longitude 132°56'30"W and the shore of Frederick Sound; and on the south by the shores of Frederick Sound and the southern shoreline at the entrance to Wrangell Narrows. Depths of water range from 0 fathoms to 100 fathoms.

Sounding differences of .2 to .4 of a fathom between the final field sheet and the smooth sheet are due to predicted versus approved tidal zoning.

Four tide gages and four tide zones were used to control the sounding reduction to Mean Lower Low Water for this sheet:

Gage Name	Zone Limit
a. Frederick Sound, AK	East Longitude 132°56'18"W
b. Petersburg, AK	West of Longitude 132°56'18"W
c. Turn Point, AK	North of Latitude 56°46'42"N and South of Latitude 56°48'24"N
d. Mountain Point	South of Latitude 56°46'42"N

The final projection parameters used to prepare the smooth sheet have been revised to center the hydrography plotted on the smooth sheet. The Projection Parameters, Signal List and Electronic Corrector Abstract were appended during the verification process. All correctors used to plot and reduce soundings are located in the smooth printout and ship's descriptive report.

2. CONTROL AND SHORELINE

Stations located to third order Class I standards were used to control the entire hydrographic survey. The Motorola Mini-Ranger III system used in the range-range and range-azimuth modes was employed for interrogation in determining positional data during launch operations. There was no work involving ship hydrography. Specific information and documented methods of procedure are adequately described in Parts F and G of the ship's descriptive report and the Horizontal Control Report. Rocks and shoreline items were field edited prior to tide gage installation.
(See Q.C. Report - item 1)

The Mean High Water line was applied from Class I unreviewed manuscripts TP-00437 and TP-00438, scale 1:10,000.
TP-00421

Dates of Photography		Dates of Field Edit
TP-00437	July 1974	October 1978
TP-00438	July 1974	September 1978
TP-00421	July 1974	September 1978 (See Q.C. Report - item 2)

The agreement between the hydrography and manuscript information is very good except for the following adjustments:

a. The ledge limit in the vicinity of Latitude 56°48'35"N and Longitude 132°54'45"W was extended to include minus soundings.

b. A rock located at Latitude 56°49'25"N and Longitude 132°56'20" was transferred from H-9791 in red ink. The rock was a detached position on H-9791 but was not included on H-9792.

c. A reef symbol with reef awash at MLLW was applied at Latitude 56°45'58"N, Longitude 132°58'35"W from the field sheet. A dashed line with "foul" was on the manuscript TP-00437 rather than the reef symbol as on the field sheet.(See Q.C. Report-item 3)

d. Dashed foul with rocks limit lines have not been transferred to the smooth sheet. The term, foul with rocks, was transferred and defines the area between the highwater line and hydrography. This was done to relieve congestion.

e. Channel Lt #52, 1978, was located at Latitude 56°46'52.56"N, Longitude 132°58'43.27"W by less than third order means by the Coast Guard. The DAVIDSON located the light at Latitude 56°46'53.675"N and Longitude 132°58'45.202"W using third order triangulation. It is recommended the third order triangulation supersede the prior position.

3. HYDROGRAPHY

Crossline soundings were found to be within two tenths of a fathom in depths under twenty fathoms and three to five tenths of a fathom in depths greater than twenty fathoms.

The development of the bottom configuration, determination of least depths and development of standard depth curves are adequate with the exception of:

a. An area in the vicinity of Latitude 56°48'~~21~~18"N and Longitude 132°54'30"W along the shoreline towards the southeast limit of the sheet was not run due to control problems. See ship's descriptive report, item K, page 6, for further discussion.

b. A gap in the line occurred at Latitude 56°49'37"N, Longitude 132°55'26"W when the line was broken and restarted without overlap. There were no prior soundings to support the curve.

c. ~~19~~ A shoal area at Latitude 56°49'3~~2~~3"N, Longitude 132°56'~~25~~19"W should have been developed further to support a 2.2 ~~2~~ fathom soundings.

A few soundings were displaced on the smooth sheet to improve legibility. Pertinent soundings are listed below:

Sounding	Latitude	Longitude
1^3	56°49'40.39"N	132°56'27.67"W
2^7	56°46'05.05"N	132°57'42.73"W
4^4	56°46'05.09"N	132°57'44.33"W
2^4	56°46'35.76"N	132°57'59.39"W

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports are adequate and conform to the requirements as stated in the Hydrographic Manual with the exceptions listed below and also in item 6 of the Verifier's Report.

a. A Mini-Ranger transponder was set up on the wrong mark. The data run during that time of hydrography was verified using the third order geodetic position that was established for the erroneous mark. For further discussion, refer to ship's report, item F, page 3.

b. Control stations 2, 4, 13 and 51 are located in offshore areas. The stations were not described and no notation was made on the field sheet or signal list as to the feature on which they were erected (permanent or temporary). Refer to 4.2.5, Control Stations, of the Hydrographic Manual.

c. The Horizontal Control computations submitted did not contain the field procedures used to locate station ~~use~~ USE 2 1902 RM1 (1978). The field position was used and the hydrography soundings agree very ~~good~~. well However, the accuracy of the station is considered less than third order.

d. and e. (See Q.C. Report - item 5)

5. JUNCTIONS • ADJOINS H-10256 (1987) to the south. LQ

H-9792 (DA-10-4-78) is bordered by two contemporary surveys.

a. H-9791 (DA-5-3-78), scale 1:5000 - This contemporary survey junctions the northern extremities of the southern portion of H-9792 at Latitude 56°48'00"N and the shoreline east and west and west side of the northern portion at the entrance to Wrangell Narrows, Latitude 56°49'20"N to Latitude 56°49'45"N, Longitude 132°56'30"W. Several minus soundings were transferred from H-9791 to support the 0 ~~fathom~~ depth curve on H-9792 in the vicinity of Latitude 56°47'55"N, Longitude 132°59'15"W.* In addition, a 5 fathom sounding at Latitude 56°48'00"N, Longitude 132°59'03.5"W and a 5 fathom sounding at Latitude 56°47'59"N, Longitude 132°59'03.5"W from H-9791 were transferred. On the northeast side of H-9791, soundings were transferred to support the 0 fathom curve on H-9792 in the vicinity of Latitude 56°49'23"N, Longitude 132°56'25"W. Also, a 3 fathom sounding was transferred from H-9791, Latitude 56°49'34.5"N, Longitude 132°56'26.5"W, that was not included in the hydrography of H-9792 and supported by prior survey H-4955.Δ With these additions, the soundings and depth curves are in good agreement and the junctional note is inked accordingly.

*See Q.C. Report - item 6a. Δ See Q.C. Report - item 6b

b. H-9795 (DA-10-5-78), scale 1:10,000 - This contemporary survey junctions the southern extremities of hydrography, Latitude 56°43'43"N, Longitude 132°56'00"W to Longitude 132°57'10"W. Soundings and depth curves are in good agreement and the junctional note is inked accordingly.

6. COMPARISON WITH PRIOR SURVEYS

a. H-1806 (1887) 1:80,000 < H-4037 (1918) 1:2500
H-4955 (1929) 1:5,000
H-4961 (1929) 1:10,000

The above ~~three~~ prior surveys were compared to during verification of H-9792, 1978. Generally, very good agreement was found between the present survey and the prior information except for man made changes. The comparison, however, revealed the channel area has shoaled 1-3 feet.* Some soundings and bottom samples were transferred from H-4955 (1929) and H-4961 (1929) to fill holidays and support depth curves.

*See Q.C. Report - item 7

The charted 24 fathom sounding at Latitude 56°50'01"N, Longitude 132°55'30"N, source is believed to be prior survey H-1806. The charted position of the charted 24 is offset to the east approximately 230 meters and falls in 35 to 44 fathom depths on the present survey. Concur. Delete the charted 24 fathom sounding and chart present survey depths.

The following two hydrographic features are dashed circle items on OPR-448 (0325) (Sheet 1 of 1), 7-28-77, Presurvey Review.

(1) The 2^7, 2^2, 5^5, 4^5, 4^7 fathom soundings from H-4955 (1929) charted in the area of Latitude 56°49'37"N, Longitude 132°56'15"W, have been confirmed by this survey. Recommend charted soundings be recompiled from H-9792, (1978). Concur

(2) The two soundings, a 3^7 and a 3^5, comprising the other presurvey review item at Latitude 56°46'30"N, Longitude 132°58'25"W, were also confirmed. Recommend that this area be recompiled from H-9792 (1978). Concur

With the exception of items carried forward from the prior surveys, ~~b.~~ H-9792, (1978) is adequate to supersede the prior surveys within the common area. (See Q.C. Report - item 8a.)

b. (See Q.C. Report - item 8b)

7. COMPARISON WITH CHART

A chart comparison was made with Chart 17375, 17th Edition, April 30, 1977. The charted hydrography originates primarily with the previously discussed prior surveys.

a. Hydrography

The following items are discrepancies between the chart and current survey:

(1) Four piles and pier ruins on the chart located at Latitude 56°46'09"N, Longitude 132°57'45"W, are recommended to be retained as submerged piles and ruins. No evidence was found in the hydrographic records or on the photo manuscript. The piles are described as "old piling" on the prior survey, H-4961. The piles and pier ruins were carried forward from H-4961 as submerged features. Chart as considered appropriate (See Q.C. Report - item 7)

(2) A disposal area located on the chart in the area of Latitude 56°46'00"N, Longitude 132°58'15"W, is recommended by the verifier to remain as charted until its source is confirmed. There was no indication of a disposal area on the prior. Recommend charting source be examined by the compiler to confirm existence.

(3) Pier ruins located at Latitude 56°46'08"N, Longitude 132°57'44"W, were not located during hydrography and were not mentioned in the field edit. Recommend the compiler check chart history for letter application. Additional pier ruins were carried forward from H-4961 to supplement the present survey.

(4) A float PA, with a Priv. Maintd buoy symbol, located at Latitude 56°47'40"N, Longitude 132°58'48"W, is recommended for deletion. It was not located during field edit or during hydrography. No evidence was found on prior surveys. Concur

(5) (See Q.C. Report-item 9)

The present survey is adequate to supersede the charted hydrography in the areas of common coverage.

b. Controlling Depths

There are two controlling depth channels maintained by the Corps of Engineers within the limits of this survey. The controlling depth in the lower portion of the survey runs from Latitude 56°46'35"N to Latitude 56°47'18"N. Only slight shoaling of two to three tenths of a fathom occurs in the area of Latitude 56°46'40"N, Longitude 132°58'43"W to Latitude 56°46'50"N, Longitude 132°58'43"W, along the edge of the channel. A 2^2 fathom sounding located at Latitude 56°49'33.32"N, Longitude 132°56'18.97"W, lies on the edge of the channel in the northern position of the survey.

c. Aids to Navigation

The floating aids to navigation were located and plotted off charted positions. See ship's report, item N, page 7. The charted positions of the five aids to navigation in Wrangell Narrows adequately mark the features intended. There are no new unmarked dangers. The shoals and channels remain unchanged except as noted in Section 2, item d, Control and Shoreline; Section 6, Comparison with Prior Surveys; and Section 7, item b, Controlling Depths.

8. COMPLIANCE WITH INSTRUCTIONS

H-9792 (DA-10-4-78) complies with Project Instructions OPR-0325-DA-78, Wrangell Narrows, Alaska, dated 27 June 1978, and Changes No. 1 and 2, dated 31 July and 21 August 1978, respectively. (See Q.C. Report-item 8b)

9. ADDITIONAL FIELD WORK

H-9792 is a good navigable area survey. Additional field work is recommended in the junctional area south of Latitude 56°48'30"N and east on Longitude 132°54'00"W. See ship's report under Recommendations, pages 8 and 9.

10. NOTES TO THE COMPILER

The log raft located at Latitude 56°46'49.3"N, Longitude 132°58'38.43"W is plotted on the smooth sheet with application to the chart left to the discretion of the compiler. Information as to the permanency of this item was not provided in the hydrographic records.

Submitted by,

for James L. Stringham

Richard A. Shipley
Cartographic Technician
July 1, 1980

Examined and approved:

James S. Green
Chief, Verification Branch

APPROVAL SHEET

FOR

SURVEY H- 9792

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: 1 July 1980

Signed: [signature]

Title: Chief, Verification Branch

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102

August 27, 1980 OA/CPM3/JWC

TO: OA/CPM - Charles K. Townsend (Acting)

FROM: OA/CPM3 - John W. Carpenter

SUBJECT: PMC Hydrographic Inspection Team Report for Survey H-9792

This survey is a basic hydrographic survey of Mountain Point to Northern Entrance, Wrangell Narrows, Alaska. This survey was conducted by NOAA Ship DAVIDSON in 1978 in accordance with Project Instructions OPR-0325-DA-78 dated June 27, 1978, Change No. 1, dated July 31, 1978 and Change No. 2, dated August 21, 1978.

The following items were noted:

1) Section F of the Descriptive Report and Section 4c of the Verifier's Report address the classification of Station USE 2, 1902 RM1 (1929, 78). The ship states that the station was established as a third order station while the verifier states that no field documentation can be found to substantiate the claim.

2) Velocity corrections were not utilized by the ship for the comparison of survey soundings to charted soundings.

3) Sections I, J, and L of the Descriptive Report were too brief in content; more specific comparison were needed.

4) Section K of the Descriptive Report addressed only one of the two unnumbered Presurvey Review Items.

5) The Project Instructions called for a Navigable Area Survey for Wrangell Narrows but the geographical boundaries of the narrows almost coincide with the survey coverage. Thus, the resulting survey tends to approach the meeting of basic survey requirements, especially since field edit was accomplished for the survey area.

6) Section 2e of the Verifier's Report recommends a new charted position for Channel Light #52. A copy of this recommendation has been forwarded to OA/C35.

The inspection team finds H-9792 to be a Navigable Area survey adequate to supersede common areas of prior surveys and charted hydrography. Administrative approval is recommended.

John W. Carpenter

Pamela R. Chelgren

James W. Steensland

Stanley H. Otsubo

ADMINISTRATIVE APPROVAL

H-9792

The smooth sheet and reports of this survey have been examined.

In regards to the PMC Hydrographic Inspection Team Report for H-9792:

Paragraph (1): Although field computation documentation is not available, the area of the survey controlled from this station is surrounded on all sides by soundings using other control. These soundings junction very well. Also sounding from prior survey H-4955 agree very well with soundings in area of control. This should substantiate the adequacy of the control from this station.

Paragraph (4): The Verifier's Report (Section 6) addresses both unnumbered Presurvey Review Items very adequately.

This survey is adequate for charting and to supersede common areas of prior surveys.

Charles K. Townsend, CAPT
Acting Director
Pacific Marine Center

Sept. 4, 1980
Date

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

OA/C352:KWW

November 7, 1980

TO: Glen R. Schaefer
Chief, Hydrographic Surveys Division

THRU: Chief, Quality Control Branch

FROM: K. W. Wellman
Quality Evaluator

SUBJECT: Quality Control Report for H-9792 (1978), Alaska, Wrangell Narrows, Mountain Point to Northern Entrance

A quality control inspection of H-9792 was accomplished to monitor the survey for adequacy with respect to data acquisition, delineation of the bottom, determination of least depths and navigation hazards, junctions, shoreline transfer, decisions and actions by the verifier, and cartographic presentation of data.

In general, the present survey was found to conform to National Ocean Survey standards and requirements except as discussed in the Verifier's Report, the HIT Report, and as follows:

1. A few triangulation stations shown on the smooth sheet originate with 1978 field work and are shown on the shoreline maps with the notation "Field Position." Since the official status of such stations is not currently published by the National Geodetic Survey (NGS), the smooth sheet should have been appropriately annotated to indicate the status of the stations as of the date of the survey. Further, suitable comments should have been included in section 2 of the Verifier's Report.

Section 2 of the Verifier's Report is supplemented by the following:

Some triangulation stations within the area of the present survey were established in 1978. These stations have not been validated as triangulation stations by NGS. It is assumed, however, that specifications for triangulation stations have been complied with and validation by NGS is expected.

2. Verification procedures are considered deficient in that the northeast shoreline of Sasby Island (vicinity of latitude 56°49.75'N, longitude 132°56.60'W) and the shoreline at Prolewy Rocks (vicinity of latitude 56°49.55'N, longitude 132°56.63'W) were not transferred from TP-00421 to

the present survey during verification. The delineation of the referenced shoreline would have described the location of Signal 4 on the smooth sheet and identified the limits of hydrography in this area in respect to the HWL on this inshore survey. The shoreline was added to the smooth sheet during quality control inspection.

3. Reference section 2.c of the Verifier's Report:

The referenced reef is noted on the smooth field sheet as "awash 1637 Z JD 291." The height of tide for this time is not included in the records for the present survey. However, the proper tide corrector (-0.3 fathom) is available in the survey records for adjoining survey H-9795 (1978). Accordingly, the referenced reef should have been annotated to be exposed 2 feet at MLLW; i.e., (2); during verification. Necessary revisions were effected during the quality control inspection.

4. In several instances, depth curves were drawn so as to be in vertical alignment with the numeral 1 or in 45° alignment with the left part of the numeral 4. This is in contravention of accepted practice. (See Hydrographic Manual--section 7.3.9.1.)

5. Section 4 of the Verifier's Report is supplemented by the following:

d. Field procedures in regard to a consideration of prior surveys are deficient. Four of the prior surveys listed in section 4.8 of the project instructions, which fall within the area of the present survey, are not addressed in section K of the Descriptive Report.

e. Field procedures with regard to verification of charted features are deficient. Several charted features were not investigated during field work as required by section 4.11 of the project instructions. (See Quality Control Report--item 9.)

6. Section 5.a of the Verifier's Report is supplemented by the following:

a. The referenced 0-depth curve is not in coincidence within the area of overlap as per customary practice due to congestion resulting from the smaller scale of the present survey. The larger scale adjoining survey H-9791 should be consulted for more detail in the referenced area.

b. The depth curve associated with the isolated 3-fathom sounding within the area of overlap is not in coincidence on the two smooth sheets. The 2:1 scale difference necessitated a slight exaggeration of the referenced depth curve on the smaller scale present survey.

7. Reference sections 6 and 7.a(1) of the Verifier's Report:

Verification procedures are deficient in that charted piles and pier ruins not verified or disproved by the present survey were not carried forward from prior survey H-4961 (1929). "Important soundings or features on prior surveys that were neither verified nor disproved by a new survey shall be brought forward and shown on the new smooth sheet." (See Hydrographic Manual--section 6.3.7.3.) Appropriate features were carried forward as submerged ruins during the quality control inspection.

Section 6 of the Verifier's Report is supplemented by the following:

Shoaling of 1 to 2 fathoms has occurred in general depths greater than 10 fathoms south of latitude 56°46'00"N. In lesser depths, and in areas outside the channel limits, depth differences generally range within ± 1 fathom. These depth differences are attributed to natural causes. Several piles and piers not verified or disproved by the present survey were carried forward as submerged ruins to supplement the present survey.

8. Reference section 6 of the Verifier's Report:

Verification procedures are deficient in the following cases:

a. The prior survey supersession statement was inappropriately included in a separate subsection "b." The supersession statement is an integral part of the discussion included in section 6.a and, as such, should not have been added as a separate subsection.

b. Four additional prior surveys were not considered during verification. The additional prior surveys are listed in section 4.8 of the project instructions. Comparisons between the present survey and the prior surveys should have been accomplished during both field work and verification. Suitable comparisons were effected during the quality control inspection and section 6.a of the Verifier's Report has been appropriately annotated.

Section 6 of the Verifier's Report is supplemented by the following:

b.

H-3990	(1917)	WD	1:20,000
H-3991	(1917)	WD	1:20,000
H-4037a	(1918)	WD	1: 2,500

These wire-drag surveys cover portions of the northeast limits of the present survey area. Comparisons between the present survey and the prior wire-drag surveys reveal no conflicts between present survey depths and cleared effective depths on the prior wire-drag surveys.

A 20-foot sounding in the vicinity of latitude 56°49'30.01"N, longitude 132°56'19.50"W on H-4037A WD falls within the area of the dredged channel and is considered no longer valid.

9. Additional charted items should have been addressed during field work and/or verification.

Section 7.a of the Verifier's Report is supplemented by the following:

(5) The following charted items originate with miscellaneous sources. These items are not verified or disproved by the present survey and are referred to the compiler for evaluation and appropriate action:

(a) Two piles charted in the vicinity of latitude 56°46'58"N, longitude 132°58'34"W.

(b) North-south trending pier charted in the vicinity of latitude 56°46'33"N, longitude 132°57'54"W.

(c) Dolphin charted in the vicinity of latitude 56°46'34"N, longitude 132°57'57"W.

(d) Three southernmost dolphins of a line of six dolphins charted in the vicinity of latitude 56°46'22"N, longitude 132°57'52"W.

cc:
OA/C351

5a-d carried fwd as subm
5/12/81 rtn

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

OA/C351:DJ

MAR 25 1981

TO: OA/CPM - Charles K. Townsend

FROM: F/OA/C3 - Roger F. Lanier

SUBJECT: H-9792 (1978), OPR-0325, Alaska, Wrangell Narrows, Mountain Point to Northern Entrance, Report of Compliance with Project Instructions

The smooth sheet and Descriptive Report for the subject survey have been examined. This survey, except as noted in the Quality Control Report, dated November 7, 1980 (copy attached), and the Hydrographic Survey Inspection Team Report, dated August 27, 1980, is complete and adequate for the purposes intended and is in compliance with Project Instructions OPR-0325-DA-78, dated June 27, 1978.

Attachment

cc:
OA/C352 w/o att.

From Massey

NOAA FORM 76-40 (8-74)
Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- ☐ HYDROGRAPHIC PARTY
- ☐ GEODETIC PARTY
- ☐ PHOTO FIELD PARTY
- ☒ COMPILATION ACTIVITY
- ☐ FINAL REVIEWER
- ☐ QUALITY CONTROL & REVIEW GRP.
- ☐ COAST PILOT BRANCH

(See reverse for responsible personnel)

☒ TO BE CHARTED
☐ TO BE REVISED
☐ TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): Photogrammetric Br., P.M.C., Seattle, Wa.
STATE: Alaska
LOCALITY: Wrangell Narrows
DATE: 08/27/79

The following objects HAVE ☒ HAVE NOT ☐ been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.: 0325-DA-78
JOB NUMBER: CM-7309
SURVEY NUMBER: TP-00438
DATUM: N. A. 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE // D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE // D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LIGHT	(Mountain Point Light, 1978 (Field Position)) DUP OF L-1067(80)	56 44	18.954 586.3	132 57	20.981 355.7		F-1-6-L 10/78	17375
LIGHT	(Wrangell Narrows Channel Light 50, 1978 (Field Position)) DUP OF L-1067(80)	56 42	17.619 545.0	132 56	47.206 803.2		F-1-6-L 10/78	17375
LIGHT	(Wrangell Narrows Channel Light 49, 1978 (Field Position)) DUP OF L-1067(80)	56 42	07.962 246.3	132 56	56.668 964.3		F-1-6-L 10/78	17375
LIGHT	(Wrangell Narrows Channel Light 48, 1978 (Field Position)) DUP OF L-1067(80)	56 41	42.380 1310.9	132 56	55.452 943.8		F-1-6-L 10/78	17375
LIGHT	(Wrangell Narrows Channel Light 47, 1978 (Field Position)) DUP OF L-1067(80)	56 41	33.248 1028.4	132 57	01.718 29.2		F-1-6-L 10/78	17375
LIGHT	(Wrangell Narrows Channel Light 44, 1978 (Field Position)) DUP OF L-1067(80)	56 41	05.490 169.8	132 56	32.326 550.3		F-1-6-L 10/78	17375
LIGHT	(Wrangell Narrows Channel Light 43, 1978 (Field Position)) DUP OF L-1067(80)	56 41	01.461 45.2	132 56	37.613 640.4		F-1-6-L 10/78	17375
LIGHT	(Wrangell Narrows Channel Light 40, 1975) DUP OF L-1067 (80)	56 40	16.845 521.0	132 55	58.493 996.1		Triang. Rec. 10/78	17375
DAYBEACON	(Wrangell Narrows Channel Daybeacon 39, 1975) DUP OF L-1067(80)	56 40	07.549 233.5	132 55	58.737 1000.3		Triang. Rec. 10/78	17375
LIGHT	(Wrangell Narrows Channel Light 38, 1975) DUP OF L-1067(80)	56 40	09.517 294.4	132 55	50.650 862.6		Triang. Rec. 10/78	17375

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	NAME	ORIGINATOR
IJECTS INSPECTED FROM SEAWARD	T. Peasley, Lt(jg), NOAA	[X] PHOTO FIELD PARTY [ ] HYDROGRAPHIC PARTY [ ] GEODETIC PARTY [ ] OTHER *(Specify)*
)SITIONS DETERMINED AND/OR VERIFIED	L. Haas, Lt, NOAA	FIELD ACTIVITY REPRESENTATIVE
	J. Minton	OFFICE ACTIVITY REPRESENTATIVE
)RMS ORIGINATED BY QUALITY CONTROL ID REVIEW GROUP AND FINAL REVIEW CTIVITIES		[ ] REVIEWER [ ] QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS
Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED
Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.
EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED
When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
Enter 'V-Vis.' and date.
EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

from Massey

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [ ] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [X] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [XX] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): Photogrammetric Br.
STATE: Alaska
LOCALITY: Wrangell Narrows
DATE: Ø7/Ø3/79

The following objects HAVE [XX] HAVE NOT [ ] been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.: Ø325-DA-78
JOB NUMBER: CM-73Ø9
SURVEY NUMBER: TP-ØØ437
DATUM: N. A. 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LIGHT	(WRANGELL NARROWS CHANNEL LIGHT 52, 1978 (Field Position)) DUP OF L-1067(80)	56° 46′	53.675 166Ø.3	132 58	45.2Ø2 767.6m		F-1-6-L Oct. 1978	17375

RESPONSIBLE PERSONNEL

TYPE ACTION	NAME	ORIGINATOR
JECTS INSPECTED FROM SEAWARD	T. Peasley, Lt(jg), NOAA	[X] PHOTO FIELD PARTY [ ] HYDROGRAPHIC PARTY [ ] GEODETIC PARTY [ ] OTHER *(Specify)*
SITIONS DETERMINED AND/OR VERIFIED	L. Haas, Lt, NOAA	FIELD ACTIVITY REPRESENTATIVE
	J. Minton	OFFICE ACTIVITY REPRESENTATIVE
RMS ORIGINATED BY QUALITY CONTROL ID REVIEW GROUP AND FINAL REVIEW CTIVITIES		[ ] REVIEWER [ ] QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

1. OFFICE IDENTIFIED AND LOCATED OBJECTS
   Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
   EXAMPLE: 75E(C)6042
   8-12-75

FIELD

1. NEW POSITION DETERMINED OR VERIFIED
   Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field Identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

   A. Field positions* require entry of method of location and date of field work.
   EXAMPLE: F-2-6-L
   8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

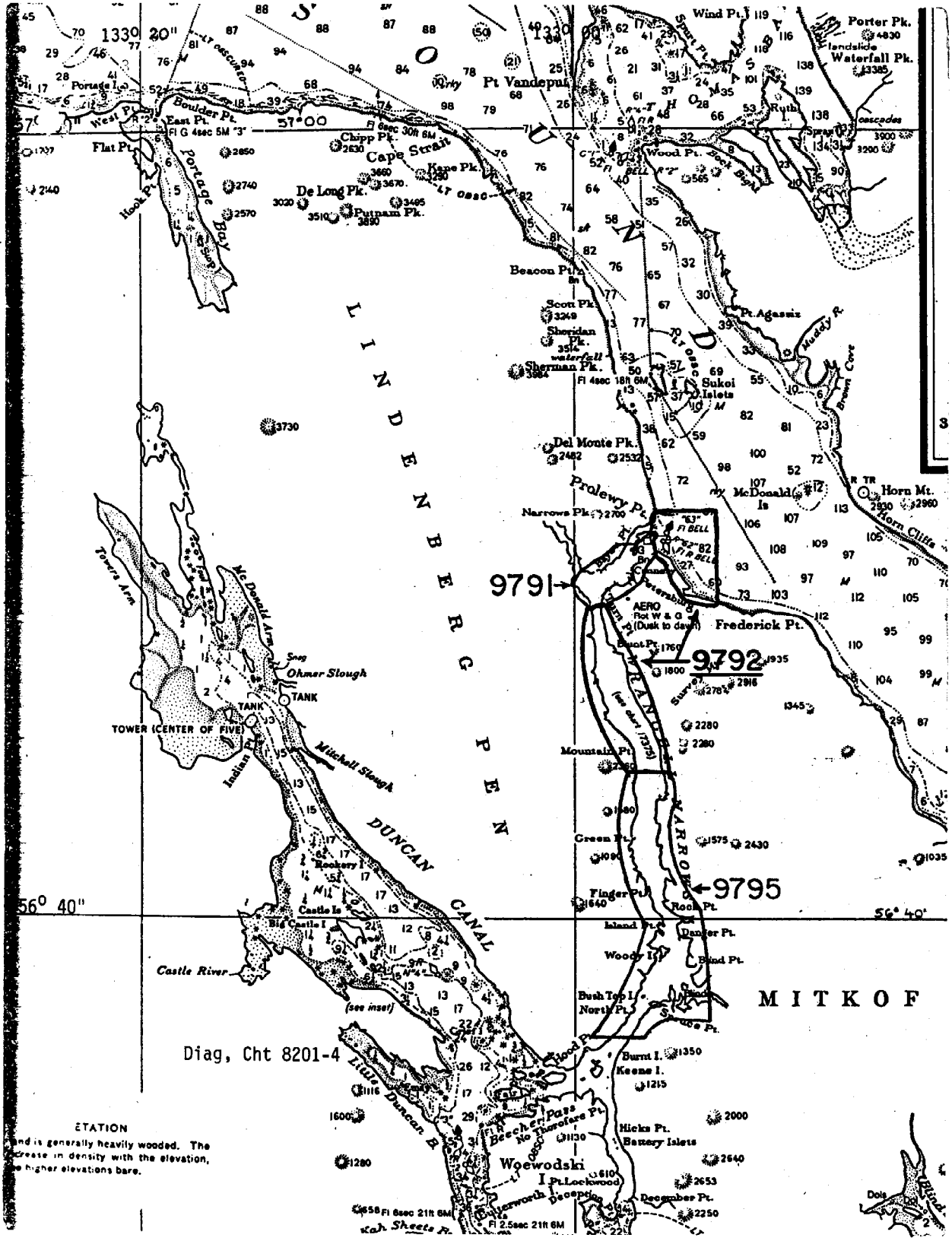
FIELD (Cont'd)

   B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
   EXAMPLE: P-8-V
   8-12-75
   74L(C)2982

II. TRIANGULATION STATION RECOVERED
   When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
   EXAMPLE: Triang. Rec.
   8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
   Enter 'V-Vis.' and date.
   EXAMPLE: V-Vis.
   8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.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Cape Strait
Portage Bay
Boulder Pt.
East Pt.
Flat Pt.
Chipp Pk.
De Long Pk.
Putnam Pk.
Kane Pk.
Pt Vandeput
Beacon Pt.
Scott Pk.
Sheridan Pk.
Sherman Pk.
Pt. Agassiz
Sukoi Islets
Del Monte Pk.
Narrows Pk.
Prolewy Pt.
McDonald Is
Horn Mt.
Horn Cliffs
Frederick Pt.
Wind Pt.
Porter Pk.
Waterfall Pk.
Ruth
Wood Pt.
Muddy R.
Brown Cove
Towers Arm
McDonald Arm
Ohmer Slough
TANK
TOWER (CENTER OF FIVE)
Indian Pt.
Mitchell Slough
Rookery I.
Castle Is.
Big Castle I.
Castle River
(see inset)
Mountain Pt.
Green Pt.
Finger Pt.
Rock Pt.
Island Pt.
Danger Pt.
Woody Is.
Bush Top I.
North Pt.
Burnt I.
Keene I.
Hicks Pt.
Bamery Islets
Woewodski I.
Pt. Lockwood
December Pt.
Beecher Pass
Thorofare Pt.
Butterworth
Deception
Sheets Pt.
Little Duncan Bay
Wrangell Narrows
Narrows
AERO
Rot W & G
(Dusk to dawn)
Fl 4sec 18ft 6M
Fl 6sec 21ft 6M
Fl 2.5sec 21ft 6M
Fl G 4sec 5M "3"
Fl 6sec 30ft 6M
57°00
56° 40"
1330 20"
1330 00"
ETATION
nd is generally heavily wooded. The
crease in density with the elevation,
e higher elevations bare.

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

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9792

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
17375	5/12/81	M Karris	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 19
17360	7/6/81	Naitor	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 29 thru 17375
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
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FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975.

USCOMM-DC 8558-P63