9688

Diag. Cht. No. 8002-2

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-20-2-77

Office No. H-9688

LOCALITY

State Alaska

General Locality Yakutat Bay

Locality Ocean Cape to Khantaak Island

19 77

CHIEF OF PARTY
Christian Andreasen

LIBRARY & ARCHIVES

DATE June 19, 1979

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

9688

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.: H-9688

FIELD NO.: DA 20-2-77

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

State: Alaska

General locality: Yakutat Bay

Locality: Ocean Cape to Khantaak Island

Scale: 1:20,000 Date of survey: 23 June - 21 Sept 1977

Instructions dated: 23 February 1977 Project No.: OPR-525-DA-77

Vessel: NOAA SHIP DAVIDSON and Launches DA-1 and DA-2

Chief of party: CDR Christian Andreasen

Surveyed by: ENS. G. Wheaton, ENS. S. Snyder, ENS. C. Greenawalt, ENS. E. McDougal, ENS. L. Haas, Ship's personnel.

Soundings taken by echo sounder, hand lead, pole: Echo Sounder

Graphic record scaled by: Ross digitizing fathometer and Raytheon DE 723 fathometer

Graphic record checked by: Ship's personnel

Position Verification

~~Protracted by~~: Gordon E. Kay Automated plot by: PMC Xynetics Plotter

Sounding Verification by: Gordon E. Kay

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

1

REMARKS: Survey completed

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

appd. for Pubs.
WST 8-17-79

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

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

A. PROJECT

This basic hydrographic survey, H-9688, DA-20-2-77, was accomplished in accordance with the Project Instructions for OPR-525-DA-77, the survey of Yakutat Bay, Alaska, dated 23 February 1977, and: change #1 dated 25 March 1977, change #2 dated 4 May 1977, change #3 dated 13 June 1977, change #4 dated 20 June 1977, and change to section 3.4 dated 15 April 1977.

B. AREA SURVEYED

The area surveyed is the eastern side of the entrance to Yakutat Bay. The survey is bounded on the north by latitude 59°39'10"N, on the south by latitude 59°30'40"N, and on the west by longitude 140°06'15"W. On the east, the survey boundary from south to north is as follows:

> north from latitude 59°30'40"N to 59°31'30"N along longitude 139°50'30"W, northwest from latitude 59°31'30"N to 59°32'15"N along the shoreline of Phipps peninsula, west along latitude 59°32'15"N from longitude 139°51'40"W to 139°53'40"W, north from latitude 59°32'15"N to 59°36'45"N along longitude 139°53'40"W, east along latitude 59°36'45"N from longitude 139°53'40"W to 139°45'40"W, northeast from latitude 59°36'45"N to 59°38'20"N along the western shoreline of Khantaak Island, and north from latitude 59°38'20"N to 59°39'10"N along longitude 139°43'50"W.

Hydrography began 23 June and was completed 21 September 1977.

C. SOUNDING VESSELS

Two hydrographic launches were used as sounding platforms for this survey. Their numbers and corresponding colors for data collection and plotting are as follows:

Vessel #	Platform	Color
3131	DA-1	Red
3132	DA-2	Blue

Both vessels were used in all areas of the survey; there is excellent sounding agreement between the vessels. The ship DAVIDSON was used for bottom sampling in the deeper waters.

D. SOUNDING EQUIPMENT

Both launches used Ross Fineline model 5000 fathometers. The serial numbers are as follows:
Echo sounder DE 723 used in conjunction with Bottom Sample observations (See Q.C. Report-item 3)

Vessel #	Recorder	Digitizer	Transceiver
3131	1048	1081	1036
3132	1077	1077	1077
3132	1080*	1077	1081

*changed JD 173.

This sounding equipment was used in depths from approximately 0.7 to 95 fathoms. The initials were maintained at zero, and daily phase calibration checks were made from 0 to 200 fathoms at 10 fathom intervals. All fathograms were scanned for comparison with digitized depths; additions (peaks and deeps) and corrections were made on a separate corrector tape.

Soundings on the Final Field Sheets have been corrected for predicted tides and transducer depth, but not for sound velocity. Tide correctors were computed from daily predicted tides, hourly heights, for Yakutat provided by Oceanographic Division, Tides and Water Levels Branch, National Ocean Survey, Rockville. Correctors were computed at 0.2 fathom intervals and used "on line" during hydrography. Six tide gages were installed by DAVIDSON during this survey. They were located at Pt. Manby 1, Pt. Manby 2, Pt. Latouche, North Blizhni Pt., Redfield Cove, and Johnstone Passage. See the appended Field Tide Note.

Transducer depth (TRA) was determined from bar checks made twice daily by each launch. The computed TRA corrector for each launch was 0.30 fathom. To obtain sound velocity correctors, two CTD casts and two Nansen casts were made in the project area. The data from the two CTD casts were obtained from NOAA ships working in the area: one cast from the MILLER FREEMAN made 10 June, the other from the SURVEYOR made 15 September. Both ships provided the data from their routine Outer Continental Shelf Environmental Assessment Project (OCSEAP) investigations of Yakutat Bay. Two Nansen casts were made by the DAVIDSON, one on 27 July and one on 1 September. See the appended Corrections to Echo Sounders Report.

E. HYDROGRAPHIC SHEETS

The field sheets for this survey were prepared using the Hydroplot system aboard the DAVIDSON. A PDP 8/e computer, S/N 09492, and a Complot DP3 plotter, S/N 5445-5, were used for computations and plotting. Two 1:20,000 scale field sheets comprise the survey, referred to as DA-20-2A-77 (south sheet) and DA-20-2B-77 (north sheet). Two 1:20,000 overlays were plotted for 45 meter splits and small developments to prevent congestion on the Final Field Sheet.

F. CONTROL STATIONS

For electronic and visual control of this survey, fourteen triangulation stations were recovered.

Stations Recovered

KHANTAAK ISLAND LIGHT 1974
BLOOD 1941
BOLD 1941
YAKUTAT WATER TANK 1974
CRATER 1941
ABLE 1941
CROW 1941
BEAR 1941
LUFF 1974
BLIZ 1974
MALASPINA SW BASE 1892
*KNIGHT 1941 (Red RAYDIST site from 23 June to 10 August)
KNIGHT 1941 RM3 1975 (Signal)
AREST 1941 (Signal built at AREST RM1, 1941)

During the course of the hydrographic survey, third-order, class I geodetic positions were determined for sixteen monumented and four temporary (unmonumented) triangulation stations.

New Stations

SEATTLE 1977 (Signal)(Unadjusted as of 6-29-79)
NEAR 2, 1977 (Signal)(" - - 6-29-79)
COORS 1977 (Signal)
*DONNA 1977 (Signal built at DONNA RM1, 1977)
CAROL 1977
FAITH 1977
GUN 1977 (Signal)
ARCO 1977 (**ARCO RM1, 1977 used as MINIRANGER site)

PHIPPS 1977 (Signal)
**KARDY 1977
TEMP PT #5
DIVER 1977
SCUBA 1977
ISLAND 1977
TEMP PT #3
TEMP PT #1
COYOTE 1977
TEMP PT #2
BOBCAT 1977 (*RAYDIST site at BOBCAT RM1, 1977)
SCHOONER 1977

*RAYDIST stations located at these stations.
**MINIRANGER transponders located at these stations.

The new stations were determined by triangulation and traverse in the areas of Phipps Peninsula, Monti Bay and in the islands north of Monti Bay. Also, a traverse was run south along the western shore of Yakutat Bay from triangulation station BLIZ 1974 to MALASPINA SOUTHWEST BASE 1892 for location of the RAYDIST site near BOBCAT 1977.

Refer to the signal list for the geodetic positions of these stations. Computations are based on the North American 1927 Datum. See the appended Horizontal Control Note.

G. HYDROGRAPHIC POSITION CONTROL

All but one day of hydrography was run using a Hastings RAYDIST DR-S medium range radio positioning system operated in the range-range mode. The mean frequency used for this system was 3306.45 KHz. The final day was run in range-range mode using the Motorola MINIRANGER III electronic position system. RAYDIST equipment was used as follows:

	DA-1 all days	DA-2 JD 174-204	DA-2 JD 205-206	DAVIDSON all days
Transmitter	172	171	20	171
Navigator	54	26	47	26
Strip chart	14	15	16	15
Hazlow interface	34	4	4	33

Each launch was equipped with a 28 foot whip RAYDIST antenna.

The RAYDIST transmitters were set up and operated as follows:

	KNIGHT 1941	BOBCAT RM1 1977	DONNA 1977
Dates & Color	JD 156-222 Red station	JD 222-265 Red station	JD 159-265 Green station
Transmitter	S/N 234	S/N 234	S/N 15
Antenna	42 ft*	60 ft	42 ft

*Note: an additional 12 feet of antenna was added on JD 188 (7 July) to increase signal output.

Calibrations were made at the beginning and ending of each day, using visual three-point sextant fixes from visual signals on the east side of Yakutat Bay. During the initial calibration each day, the lane counts were slewed to get the observed rates within one lane of the actual rates. The morning and evening partial lane correctors were then meaned to get daily corrector values to be applied to the data in final plotting from the electronic corrector tape. If an ending calibration was impossible due to bad weather, a whole lane count was verified using one of several calibration buoys. The partial correctors from the beginning calibration were then used for the daily correctors.

After several days of problems with lane jumps causing loss of hydrographic data, small calibration buoys were dropped by the launches in shoal areas of the working area. These provided a means for whole lane count checks during the day whenever lane jumps were suspected, allowing the launch to remain in the area instead of running a long distance to recalibrate. The launch rates were then verified several times each day. If lane jumps occurred and could be identified on the strip chart, the data was retained; if the jumps could not be found, the hydrography was rerun.

Many problems with lane jumps were encountered, especially with DA-2 (vessel #3132). Much of the problem was due to an electrical load shift in the launch antenna system. Although early experiences with antenna load problems were attributed to spray/rain on the launch antenna, continuing problems finally resulted in replacement of the transmitter/navigator unit on DA-2 on JD 204 (22 July). A contributing factor to the lane loss problem resulted from the poor shore transmitter setup at the red station on KNIGHT 1941. The site was the best available, but had a smaller than optimal ground plane. The shore stations on BOBCAT RM1 1977 and DONNA 1977 worked well, and no major lane jump or signal problems were encountered with them.

On JD 193 (12 July), the green station (DONNA 1977) stopped transmitting after two hours of launch hydrography had been run. This was apparently caused by a spurious signal on the frequency used to remotely key the shore station on and off. Remote control units were used throughout the season to turn both RAYDIST shore stations off when not in use so that battery power could be conserved. Keying was done from the ship DAVIDSON. On this same date, launch 3132 was also running hydrography and lost signal from the green station simultaneously with this launch. The ship confirmed that the green shore station was off the air; and then, after a short period of difficulty, DAVIDSON's remote keying returned the green station to the air. Both launches were then recalibrated, and the signal remained strong throughout the day. Since no lane jumps were indicated prior to the signal loss, the data was retained.

The next day (JD 194, 13 July), the green signal was again lost, this time due to interference from the other launch. It had gotten too close to the shore transmitter, while using high power, and jammed reception of the green signal. All the data run before the signal loss was rejected since the lane losses were impossible to recover. After recalibrating, the rest of the day went well.

On JD 174 (23 June) several soundings at the end of the day were rejected because of lane jumps. Similarly, a lane jump occurred on JD 200 (19 July), although no data was rejected since the jump was found. On JD 202 (21 July), almost all data was rejected because lane jumps occurred late in the day. And finally, on JD 204 (23 July), the last part of the day had to be rejected after the antenna lost its load. All of these days were run in DA-2 (3132), and all losses were attributed to antenna load shifts during the day. The new unit was installed on JD 204, and after that RAYDIST operations were improved.

On JD 201 (20 July), the top section of the whip antenna fell off while the launch was stationary, shifting the antenna load. The launch was then recalibrated and new correctors were obtained prior to running additional hydrography. On JD 215 (3 August), the RAYDIST navigator crystal was turned off accidentally, again while stationary. Since tracking was only momentarily interrupted and the system was unchanged, no data was lost, and the lane count and the partial correctors remained unchanged. This was verified by recalibration shortly after the navigator was turned off.

When the red RAYDIST site was shifted from KNIGHT 1941 to BOBCAT RM1 1977 on 10 August, the signal was good and no tracking or lane loss problems occurred.

On JD 243 (31 August), a small section in the northeast corner was run on the other side of the base line with the green and red stations reversed; i.e., DONNA 1977 was the red or left station and BOBCAT RM1 1977 the green or right station. The Hazlow inputs were reversed; no problems occurred on this setup.

On JD 259 (16 September), the southeast corner of the sheet was run in range-range mode using a Motorola MINIRANGER III control system. The serial numbers were as follows:

DA-2 (vessel #3132)	
Range console	707
R/T unit	721
Transponders	
Code 3	772
Code 4	773

Code 4 was used on the left station (ARCO RM1 1977) and Code 3 on the right station (KARDY 1977). No calibration or operational problems were encountered; signal strength was observed and recorded frequently. Occasionally hydrography was "time and coursed" where signal strength fell below the minimum allowable as determined from the baseline calibrations. These calibrations were done in Juneau on 12 August and in Sitka on 26 September. Refer to the appended Electronic Control Note.

H. SHORELINE

All the shoreline for this survey was derived from manuscript TP-00619. Only a small area at the north end of Khantaak Island and another one on the south side of Ocean Cape fall within the limits of this survey. The shoreline was verified by field edit. Positions of foreshore features were determined photogrammetrically and are plotted on the Final Field Sheets. See the appended Field Edit Report.

I. CROSSLINES

Crosslines comprised 6.8% of main scheme hydrography. They were in excellent agreement with the main scheme hydrography, differing by 1 fathom or less, except in steep or rugged areas.

J. JUNCTIONS

This survey junctions with H-9695 (DA-20-4-77) to the north, H-9687 (DA-20-1-77) to the west, and H-9686 (DA-10-1-77) to the east. For those surveys that are contemporary and of the same scale no soundings are shown on the Final Field Sheet. Since H-9686 is at a different scale, representative soundings have been transferred for comparison purposes. Comparison of the junction soundings from these various surveys reveals excellent agreement with the following two exceptions. The only area where the depth curves are not colinear is along the junction with H-9687 to the west, on the 10 fathom shoal at latitude 59°34'N to 59°35'N, at longitude 140°06'W. This shoal area, like all the areas shoaler than 10 fathoms on the bar across the mouth of Yakutat Bay, is rocky and irregular; thus, the fathometer trace on all lines in this area was very irregular. The digitized depths reflect the shoalest peaks of the area, but do not precisely delineate the 10 fathom curve. Therefore, the meandering curves are not in exactly the same position on the two surveys, but are close enough to show very good agreement. It is recommended that soundings from both surveys be used to best delineate the ten fathom curve. The conservative approach, enclosing all soundings ten fathoms or less for safety, should be taken.

See Verifies Report

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In addition, a discrepancy was noted at latitude 59°35'22"N and longitude 140°06'07"W where a 15 fathom sounding from H-9688 apparently overlies a 12 fathom sounding from H-9687, due to a steep bottom gradient.

K. COMPARISON WITH PRIOR SURVEYS AND PRESURVEY REVIEW

Representative soundings from prior surveys have been inked on the Final Field Sheets. These are as follows: H-2157 (1:20,000 scale, 1892) in blue, H-2158 (1:40,000 scale, 1892) in red, H-6720 (1:20,000 scale, 1941) in orange, H-6721 (1:20,000 scale, 1941) in brown on field sheet DA-20-2A-77, H-6719 (1:20,000 scale, 1941) in brown on field sheet DA-20-2B-77, and H-6718 (1:10,000 scale, 1941) in green.

The soundings from H-2158, 1892, are in poor agreement with this survey with 38% of the soundings differing by four or more fathoms. Significant differences occur at latitude 59°34'50"N, longitude 140°04'00"W (30 fathoms shoaler); latitude 59°34'55"N, longitude 140°01'45"W (24 fathoms shoaler); and latitude 59°33'38"N, longitude 140°04'20"W (9 fathoms shoaler with an 8 fathom prior sounding on 17 fathoms from this survey). Of the soundings

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from H-2158, 75% are the same as or deeper than this survey. Many differences occur on or near steep slopes, but most differences appear to be attributable to the improved surveying methods and equipment. The soundings from H-2157, 1892, are in fair agreement with this survey with the only significant difference being a 95 fathom prior survey depth at an 88 fathom depth on this survey, latitude 59°37'57"N, longitude 139°46'57"W.

Of the 1941 surveys, H-6718, H-6719 and H-6721, all three are in very good agreement, with no differences greater than 3 fathoms, except for the H-6719 sounding of 80 fathoms on a 59 fathom sounding from this survey at latitude 59°38'42"N, longitude 140°02'00"W. H-6720 is in good agreement, with 90% of the representative soundings within 3 fathoms of the newly established depths. Of those not in agreement with H-9688, three are deeper: one at 59°37'15"N, 140°00'45"W (7 fms); another at 59°37'30"N, 139°47'30"W (9 fms); and the third at 59°39'05"N, 139°46'20"W (14 fms). The first is on a steep slope, so horizontal control may have been off for this sounding; however, the other two are in the deepest area of the sheet and no soundings that deep were found near these areas during this survey. Only one representative sounding from H-6720 was shoaler, at 59°35'00"N, 140°00'00"W (9 fms). This sounding is on the side of a steep slope so a slight variation in horizontal positioning could explain the difference.

Presurvey review item #2 indicated shoaling in the area between Ocean Cape and red buoy "2". This area was developed to 11 meter line spacing, and a least depth of 6.12 fathoms was found at 59°32.70'N, 139°54.95'W. The area surrounding that sounding is extremely irregular and rocky, so the fathograms were carefully scanned for side echoes; there were no indications of shoaler areas than this. Chart present survey depths.

See Verification Report

Two other areas were indicated as being of particular interest. The shoal at 59°37.73'N, 139°50.30'W was split to 45 meter spacing, and a least depth of 6.98 fathoms was found; the shoal at 59°37.98'N, 139°58.87'W was split to 90 meters with a least depth found of 17 fathoms, as charted. Chart present survey depths.

L. COMPARISON WITH CHART

In general, the survey and chart 16761 (1:80,000, 11th edition, 1976) compared favorably. The shoal areas corresponded well, with the same range of soundings on each. A small area in the southwest corner of this survey had

not been previously charted; this area has a gradual slope from the bar across the mouth of the Bay out into the Gulf.

M. ADEQUACY

This survey is complete, and adequate to supersede prior surveys for charting except for one small area in the extreme southeast corner of the sheet. This area, outside Ocean Cape, was not surveyed due to lack of adequate horizontal control. East of the line 139°50.4'W, no control was established; the time and personnel expense for this small corner was not considered reasonable. Also, the surf is quite heavy along this beach, and very little additional hydrography could ever be obtained. The area from 59°30.5'N to 59°32.4'N, 139°50.4'W to 139°54.0'W was run using MINIRANGER as it was out of line of sight of the green RAYDIST station at DONNA 1977.

N. AIDS TO NAVIGATION

One floating aid, red buoy "2", is in the survey area. Several detached positions were taken on it on JD's 230, 233 and 236, establishing its position as 59°32'04.166"N, 139°57'23.889"W. It was used as an approximate calibration buoy for whole lane count on these days; the amount of scope in the chain at this buoy made it undependable as a basis for retaining data. On JD 233, when fog prevented an ending visual calibration, a final whole lane count check was made at buoy #4.

One fixed aid to navigation is on the sheet, Ocean Cape light (flashing 6 sec, 130 ft high, 9 mi visibility). No geodetic position was obtained for this light during the horizontal control operations around Phipps Peninsula. It was intended that a position be obtained by a "short base" from PHIPPS 1977, but bad weather during September prevented this. No photogrammetric position was established since the light, which is in the edge of the treeline, could not be photo identified. See RECOMMENDATIONS (section Q).

O. STATISTICS

Number of positions	4646
Nautical miles of sounding lines	1260.0
Nautical miles crosslines	65.8
Square nautical miles hydrography	68.3
Nansen and CTD casts	~~4~~ 2
Bottom samples	~~54~~ 69

P. MISCELLANEOUS

Due to heavy surf outside Ocean Cape, much of the zero fathom curve could not be defined. The area was very foul with rocks offshore and the seas were heavy.

Q. RECOMMENDATIONS

The area surveyed is complete; no further development is necessary. If a survey of the Gulf of Alaska coast south of Ocean Cape is done in the future, the area along the shore from longitude 139°50.4'W east, which was not completed during this survey, should be included. Also, it is recommended that Ocean Cape Light be tied into the Phipps Peninsula traverse, during DAVIDSON operations in the area during the 1978 season.

R. AUTOMATED DATA PROCESSING

The Final Field Sheets were plotted by a PDP 8/e computer (S/N 09492) and Complot DP3 plotter (SN 5445-5). The following programs were used in collecting and processing the data:

#	Program Name	Version
RK-111	Range-Range Time Hydroplot	1/10/76
RK-201	Grid, Signal and Lattice Plot	4/18/75
RK-211	Range-Range Hydroplot	1/15/76
RK-300	Utility Computations	2/10/76
RK-407	Geodetic Inverse/Direct Computation	10/23/75
RK-409	Geodetic Utility Computations	9/05/73
AM-500	Predicted Tides	11/10/72
RK-530	Layer Corrections to Velocity	5/10/76
RK-561	Geodetic Calibration	5/10/76
AM-602	Elinore	5/21/75

S. REFERENCES TO REPORTS

Field Tide Note OPR-525-DA-77
Correction to Echo Sounders Report OPR-525-DA-77
Horizontal Control Note OPR-525-DA-77
Electronic Control Note DA-20-2-77
Field Edit Report TP-00619
Coast Pilot Report OPR-525-DA-77

Submitted by,
Linda F. Haas
Linda F. Haas
ENS, NOAA

Approved and Forwarded by,
Christian Andreasen
Christian Andreasen
CDR, NOAA
Commanding Officer

SIGNAL LIST
OPR-525-DA-77

001 4 59 42 39307 139 35 16704 250 0003 330645
KNIGHT,1941
002 6 59 33 29037 139 50 19581 250 0011 330645
DONNA,1977
003 5 59 33 03127 139 48 22668 250 0000 000000
COORS,1977
004 4 59 35 08832 139 48 04624 250 0000 000000
NEAR 2,1977
005 2 59 37 09880 139 44 41604 250 0003 000000
AREST,1941
006 1 59 41 42487 140 19 22657 139 0006 000000
BEACH 7,1959
007 5 59 33 28983 139 50 20039 250 0000 000000
DONNA RM1,1977
008 2 59 42 38582 139 35 15177 139 0000 000000
KNIGHT 1941 RM3,1975
009 4 59 33 36600 139 46 56916 250 0000 000000
KHANTAAK ISLAND LIGHT 1974,1977
010 4 59 33 53672 139 47 18809 139 0000 000000
FAITH,1977
011 4 59 34 19028 139 47 45276 139 0000 000000
CAROL,1977
012 5 59 37 10153 139 44 41296 250 0000 000000
AREST RM1,1941,RM1
013 1 59 32 39089 139 43 40811 139 0000 000000
YAKUTAT RADIO TOWER 1974
014 1 59 43 27625 140 11 45592 139 0000 000000
MALASPINA SOUTHWEST BASE RM2,1892,RM2
015 2 59 46 40644 140 00 02060 250 0008 330645
BOBCAT RM1,1977
016 6 59 32 40486 139 44 31565 139 0000 000000
BOLD,1941
017 6 59 32 41507 139 45 36802 250 0002 000000
BLOOD,1941
018 0 59 34 13658 139 46 42978 250 0001 000000
DATU,1941
019 1 59 34 37199 139 46 27491 250 0002 000000
BLEND,1941
020 0 59 34 38471 139 45 47045 250 0001 000000
DEER,1941
021 3 59 35 18376 139 45 56450 250 0002 000000
CRATER,1941
022 1 59 35 05984 139 45 10796 250 0001 000000
ABLE,1941
023 7 59 34 04812 139 44 42467 250 0002 000000
CROW,1941
024 6 59 34 08167 139 44 02834 139 0001 000000
BEAR,1941
025 5 59 33 45685 139 43 13049 139 0001 000000
CAMP,1941

026 7 59 33 58283 139 42 43995 139 0006 000000
CASTRO,1941
027 3 59 34 17276 139 43 22268 139 0002 000000
BOAT,1941
028 2 59 34 41652 139 43 13341 139 0001 000000
CATCH,1941
029 3 59 35 51710 139 43 02784 250 0000 000000
COCKEL,1941
030 2 59 35 28832 139 44 32456 139 0002 000000
BALOD,1941
031 5 59 35 04154 139 42 45343 139 0000 000000
DISK,1941
032 6 59 34 54467 139 42 08077 139 0001 000000
CURLEW,1941
033 4 59 35 17971 139 42 06004 139 0003 000000
DOVE,1941
034 1 59 35 19879 139 42 56665 139 0002 000000
BLACK,1941
035 0 59 35 39140 139 43 46335 139 0001 000000
DOLE,1941
036 3 59 36 08421 139 43 49157 250 0001 000000
ALDER,1941
037 3 59 36 39476 139 44 07608 139 0001 000000
CAIN,1941
038 0 59 37 11135 139 43 30010 139 0012 000000
BOHAN,1941
039 7 59 36 31464 139 42 50464 139 0001 000000
CANOE,1941
040 4 59 36 10976 139 43 12044 250 0002 000000
AKRON,1941
041 3 59 34 59364 139 40 32627 139 0006 000000
ELBOW,1941
042 5 59 34 11761 139 40 11193 139 0001 000000
HEEL,1941
043 6 59 34 05060 139 38 17314 139 0006 000000
FINGER,1941
044 4 59 34 39155 139 39 01403 139 0006 000000
HEAVY,1941
045 3 59 35 44964 139 40 19908 139 0002 000000
FIRST,1941
046 6 59 35 59587 139 39 25142 139 0015 000000
FITZ,1941
047 4 59 35 41464 139 37 35911 139 0030 000000
GROW,1941
048 4 59 36 22924 139 34 58348 139 0015 000000
HERRING,1941
049 4 59 36 58519 139 36 09507 139 0004 000000
ERMINE,1941
050 4 59 37 29507 139 40 22355 139 0000 000000
KRUTOI RM1,1941

051 2 59 37 32453 139 38 24015 139 0003 000000
GRASS,1941
052 5 59 37 32398 139 38 23536 139 0000 000000
GRASS RM2,1941
053 1 59 39 49598 139 38 43763 139 0002 000000
FOXY,1941
054 3 59 40 16654 139 38 29885 139 0002 000000
KRUTOI,1941
055 4 59 39 50717 139 33 09274 139 0015 000000
GOON,1941
056 4 59 40 51868 139 31 27030 139 0023 000000
ELEANOR,1941
057 6 59 42 13438 139 30 29884 139 0000 000000
LEAN,1974
058 2 59 33 06783 139 44 14066 139 0000 000000
YAKUTAT WATER TANK,1974
059 6 59 32 44271 139 48 27223 139 0000 000000
ANK,1974
060 1 59 32 11009 139 51 15115 139 0010 000000
ANKAU 2,1941
061 6 59 43 27098 140 11 46277 139 0013 000000
MALASPINA SOUTHWEST BASE,1892
062 6 59 50 13083 139 47 01978 139 0000 000000
BLIZ,1974
063 3 59 54 49122 139 43 34880 139 0000 000000
ESKER,1974
064 4 59 55 06887 139 34 48888 139 0000 000000
DOLCE,1974
065 7 59 54 10707 139 37 39253 139 0000 000000
LUFF,1974
066 1 59 35 44393 139 46 22905 250 0000 000000
SEATTLE,1977
067 5 59 46 40122 140 00 02573 139 0008 000000
BOBCAT,1977
068 1 59 34 14600 139 43 01335 250 0000 000000
CALDWELL,1977
069 7 59 33 17924 139 50 49544 254 0000 000000
GUN,~~1977~~
070 4 59 32 30854 139 51 42239 254 0000 000000
ARCO,~~1977~~
071 6 59 32 07902 139 51 17167 254 0000 000000
PHIPPS,~~1977~~
072 4 59 31 43487 139 50 10486 254 0000 000000
KARDY,~~1977~~
073 4 59 32 20020 139 50 51194 139 0000 000000
DIVER,1977
074 5 59 32 19761 139 51 02530 ~~139~~ 243 0000 000000
SCUBA,~~1977~~

SIGNAL LIST CONT
OPR-525-DA-77

075 4 59 32 10287 139 51 07040 ~~139~~ 243 0000 000000
ELLEN,~~1977~~
076 1 59 32 16481 139 49 36829 ~~139~~ 243 0000 000000
SKIPPER,~~1977~~
077 6 59 32 04502 139 49 28786 ~~139~~ 243 0000 000000
LINDA,~~1977~~
078 1 59 32 29611 139 50 00870 139 0000 000000
ISLAND,1977
079 3 59 33 55245 139 43 19081 139 0000 000000
FOUND,1977
080 3 59 34 12998 139 47 21491 250 0000 000000
DORN,1977
081 6 59 36 32335 139 42 43689 139 0000 000000
CATHY,1977
082 1 59 36 26988 139 42 25438 250 0000 000000
WARDROOM,1977
083 1 59 36 11249 139 42 22169 250 0000 000000
QUACK,1977
084 1 59 36 10073 139 41 39359 250 0000 000000
TEXAS, 1977
085 2 59 36 44573 139 41 56385 250 0000 000000
BOJO,1977
086 3 59 35 37695 139 44 59315 139 0000 000000
ZEAG,1977
087 4 59 36 05312 139 44 41956 139 0000 000000
MAINE,1977
088 3 59 36 23776 139 45 11580 139 0000 000000
GLENN,1977
089 2 59 36 44008 139 45 11089 139 0000 000000
EVAN,1977
090 6 59 36 31340 139 44 32840 139 0000 000000
GENE,1977
091 6 59 36 33162 139 44 15288 139 0000 000000
KAREN,1977
092 0 59 32 05874 139 51 02666 250 0000 000000
TEMP.PT.5
093 0 59 32 30818 139 51 41480 250 0000 000000
ARCO ~~RM1~~,1977 RM1
094 0 59 34 45052 139 43 59047 139 0000 000000
BOAR ~~RM1~~,1977 RM1
095 0 59 34 45292 139 43 57023 250 0000 000000
BOAR ~~RM2~~,1977 RM2
096 1 59 47 53524 139 55 02085 139 0000 000000
COYOTE,1977
097 1 59 45 32080 140 04 04718 139 0000 000000
SCHOONER,1977

CORRECTIONS TO ECHO SOUNDERS REPORT
OPR-525-DA-77
Yakutat Bay, Alaska

To determine sound velocity correctors for hydrography done for OPR-525-DA-77, the survey of Yakutat Bay, two CTD casts and two Nansen casts were made in the working area. Data from CTD casts made by the NOAA Ships MILLER FREEMAN and SURVEYOR in Yakutat Bay were used for correctors at the beginning and end of the survey period respectively. The MILLER FREEMAN made a cast on 10 June 1977, before work in the area began, at latitude 59°42'36"N, longitude 139°57'24"W. Similarly, the SURVEYOR made a cast at latitude 59°39'18"N, longitude 140°04'36"W on 15 September 1977 just as the DAVIDSON's field work was ending. These sets of data were used to generate sets of velocity correctors. The DAVIDSON made two Nansen casts in the area during the same period, one on 27 July 1977 at latitude 59°39'54"N, longitude 139°59'02"W and the second on 1 September 1977 at latitude 59°38'57"N, longitude 139°46'15"W. These were used to generate additional sets of correctors.

Since survey operations extended over a three month period during which the temperature and salinity profiles changed significantly, each set of correctors will be applied to all four surveys run in the project area, but for different intervals of the survey period. As Yakutat Bay is headed by two active glaciers and bounded on the west by the large Malaspina Glacier, there was much fresh, cold water drainoff during the summer period. In addition, there were many warm, sunny days causing solar heating of the upper layers of the Bay water. Varying amounts of storm activity (and hence mixing) occurred in addition, so the survey period was split into the following four periods with their respective sets of correctors:

CTD cast #1, JD 163-184 (12 June to 3 July)
Nansen cast #2, JD 185-226 (4 July to 14 August)
Nansen cast #3, JD 227-250 (15 August to 7 September)
CTD cast #4, JD 251-266 (8 September to 23 September)

For the CTD casts, values of conductivity and temperature were read from the data printouts at 10 meter depth intervals. No bucket temperature or salinity values were included with the data from either cast so the values were used as read from the CTD data. These were used to calculate velocity correctors using RK-530, Layer Corrections

to Velocity (version 5/10/76). The values received were plotted and correctors at 0.1 fathom intervals were extracted from the resulting velocity corrector vs. depth graph. The appended tables show the depths to which each corrector value is applicable. Copies of the Northwest Regional Calibration Center, Report of Calibration on each of the CTD's are attached. Since the instrument accuracy exceeds that necessary for determination of velocity correctors no instrument correctors have been applied.

For the Nansen casts, temperature correction factors were calculated using a Culbertson slide rule. Calibration corrections for the reversing thermometers, as supplied by the NOIC, Northwest Regional Calibration Center from their 21 February 1977 calibration, were also applied to the field data. Salinities were calculated from hydrometer density readings. Velocity correctors were then calculated using RK-530, Layer Corrections to Velocity. These values were again plotted and correctors at 0.1 fathom intervals were extracted from the resulting velocity correction vs. depth graph.

Bar checks were taken twice a day during the working period, weather permitting, to calculate the TRA correctors for the sounding vessels. Only the 1.0 fathom bar check reading was used to actually determine the TRA value as this is the sounding least affected by currents, wind or sound velocity variation. These yielded a mean TRA corrector of 0.30 fathom for vessels 3131 (DA-1) and 3132 (DA-2). These are the same correctors that have been historically observed for these launches. Pole depth comparisons were used as a fathometer check in vessel 3133 (WZ-3041), with a mean TRA corrector of 0.31 fathom.

Submitted by,

C L Greenwald for
Linda F. Haas
ENS, NOAA

Approved and Forwarded by,

Christian Andreasen
Christian Andreasen
CDR, NOAA
Commanding Officer

Bar Check Averages
DA-20-2-77

Vessel 3131 (DA-1) JD 187-243

True	Sonic	True-Sonic
1.0 fm	0.69	0.31 fm
2.0	1.71	0.29
3.0	2.72	0.28
4.0	3.70	0.30
5.0	4.67	0.33
6.0	5.67	0.33
7.0	6.64	0.36
8.0	7.55	0.45

Vessel 3132 (DA-2) JD 174-259

True	Sonic	True-Sonic
1.0 fm	0.70	0.30 fm
2.0	1.70	0.30
3.0	2.69	0.31
4.0	3.66	0.34
5.0	4.63	0.37
6.0	5.59	0.41
7.0	6.57	0.43
8.0	7.54	0.46

OPR-525-DA-77
VELOCITY CORRECTOR TAPE PRINTOUT
TABLE 1

```
000036 0 0000 .0001 001 232000 000000
000100 0 0001
000168 0 0002
000230 0 0003
000281 0 0004
000332 0 0005
000383 0 0006
000436 0 0007
000489 0 0008
000539 0 0009
000590 0 0010
000641 0 0011
000692 0 0012
000744 0 0013
000795 0 0014
000847 0 0015
000898 0 0016
000949 0 0017
001000 0 0018
001051 0 0019
001102 0 0020
001154 0 0021
001205 0 0022
001257 0 0023
001308 0 0024
001359 0 0025
001410 0 0026
001460 0 0027
001512 0 0028
001563 0 0029
999999 0 0029
```

OPR-525-DA-77

VELOCITY CORRECTOR TAPE PRINTOUT
TABLE 2

```
000036 0 0000 .0002 001 313000 000000
000109 0 0001
000162 0 0002
000218 0 0003
000297 0 0004
000389 0 0005
000482 0 0006
000575 0 0007
000666 0 0008
000757 0 0009
000850 0 0010
000943 0 0011
001035 0 0012
001129 0 0013
001220 0 0014
001312 0 0015
001406 0 0016
001498 0 0017
001591 0 0018
999999 0 0018
```

OPR-525-DA-77
VELOCITY CORRECTOR TAPE PRINTOUT
TABLE 3

```
000024 0 0000 0002 001 313000 000000
000068 0 0001
000120 0 0002
000177 0 0003
000232 0 0004
000290 0 0005
000346 0 0006
000403 0 0007
000461 0 0008
000518 0 0009
000573 0 0010
000631 0 0011
000689 0 0012
000746 0 0013
000802 0 0014
000858 0 0015
000914 0 0016
000973 0 0017
001030 0 0018
001088 0 0019
001146 0 0020
001202 0 0021
001259 0 0022
001318 0 0023
001372 0 0024
001431 0 0025
001489 0 0026
001545 0 0027
999999 0 0027
```

OPR-525-DA-77
VELOCITY CORRECTOR TAPE PRINTOUT
TABLE 4

```
000031 0 0000 0004 001 321000 000000
000101 0 0001
000169 0 0002
000222 0 0003
000277 0 0004
000329 0 0005
000389 0 0006
000451 0 0007
000520 0 0008
000582 0 0009
000649 0 0010
000711 0 0011
000778 0 0012
000841 0 0013
000908 0 0014
000972 0 0015
001037 0 0016
001101 0 0017
001168 0 0018
001231 0 0019
001296 0 0020
001360 0 0021
001425 0 0022
001491 0 0023
001555 0 0024
999999 0 0024
```

Velocity Correction Table

TABLE 1. MILLER FREEMAN CTD JD 163-184

Corrector	To Depth from Surface	To Observed Depth
0.0 fm	3.6	3.3 fm
0.1	10.0	9.7
0.2	16.8	16.5
0.3	23.0	22.7
0.4	28.1	27.8
0.5	33.2	32.9
0.6	38.3	38.0
0.7	43.6	43.3
0.8	48.9	48.6
0.9	53.9	53.6
1.0	59.0	58.7
1.1	64.1	63.8
1.2	69.2	68.9
1.3	74.4	74.1
1.4	79.5	79.2
1.5	84.7	84.4
1.6	89.8	89.5
1.7	94.9	94.6
1.8	100.0	99.7
1.9	105.1	104.8
2.0	110.2	109.9
2.1	115.4	115.1
2.2	120.5	120.2
2.3	125.7	125.4
2.4	130.8	130.5
2.5	135.9	135.6
2.6	141.0	140.7
2.7	146.0	145.7
2.8	151.2	150.9
2.9	156.3	156.0

Velocity Correction Table

TABLE 2. DAVIDSON Nansen JD 185-226

Corrector	To Depth from Surface	To Observed Depth
0.0 fm	3.6	3.3 fm
0.1	10.9	10.6
0.2	16.2	15.9
0.3	21.8	21.5
0.4	29.7	29.4
0.5	38.9	38.6
0.6	48.2	47.9
0.7	57.5	57.2
0.8	66.6	66.3
0.9	75.7	75.4
1.0	85.0	84.7
1.1	94.3	94.0
1.2	103.5	103.2
1.3	112.9	112.6
1.4	122.0	121.7
1.5	131.2	130.9
1.6	140.6	140.3
1.7	149.8	149.5
1.8	159.1	158.8

Velocity Correction Table

TABLE 3. DAVIDSON Nansen JD 227-250

Corrector	To Depth from Surface	To Observed Depth
0.0 fm	2.4	2.1 fm
0.1	6.8	6.5
0.2	12.0	11.7
0.3	17.7	17.4
0.4	23.2	22.9
0.5	29.0	28.7
0.6	34.6	34.3
0.7	40.3	40.0
0.8	46.1	45.8
0.9	51.8	51.5
1.0	57.3	57.0
1.1	63.1	62.8
1.2	68.9	68.6
1.3	74.6	74.3
1.4	80.2	79.9
1.5	85.8	85.5
1.6	91.4	91.1
1.7	97.3	97.0
1.8	103.0	102.7
1.9	108.8	108.5
2.0	114.6	114.3
2.1	120.2	119.9
2.2	125.9	125.6
2.3	131.8	131.5
2.4	137.2	136.9
2.5	143.1	142.8
2.6	148.9	148.6
2.7	154.5	154.2

Velocity Correction Table

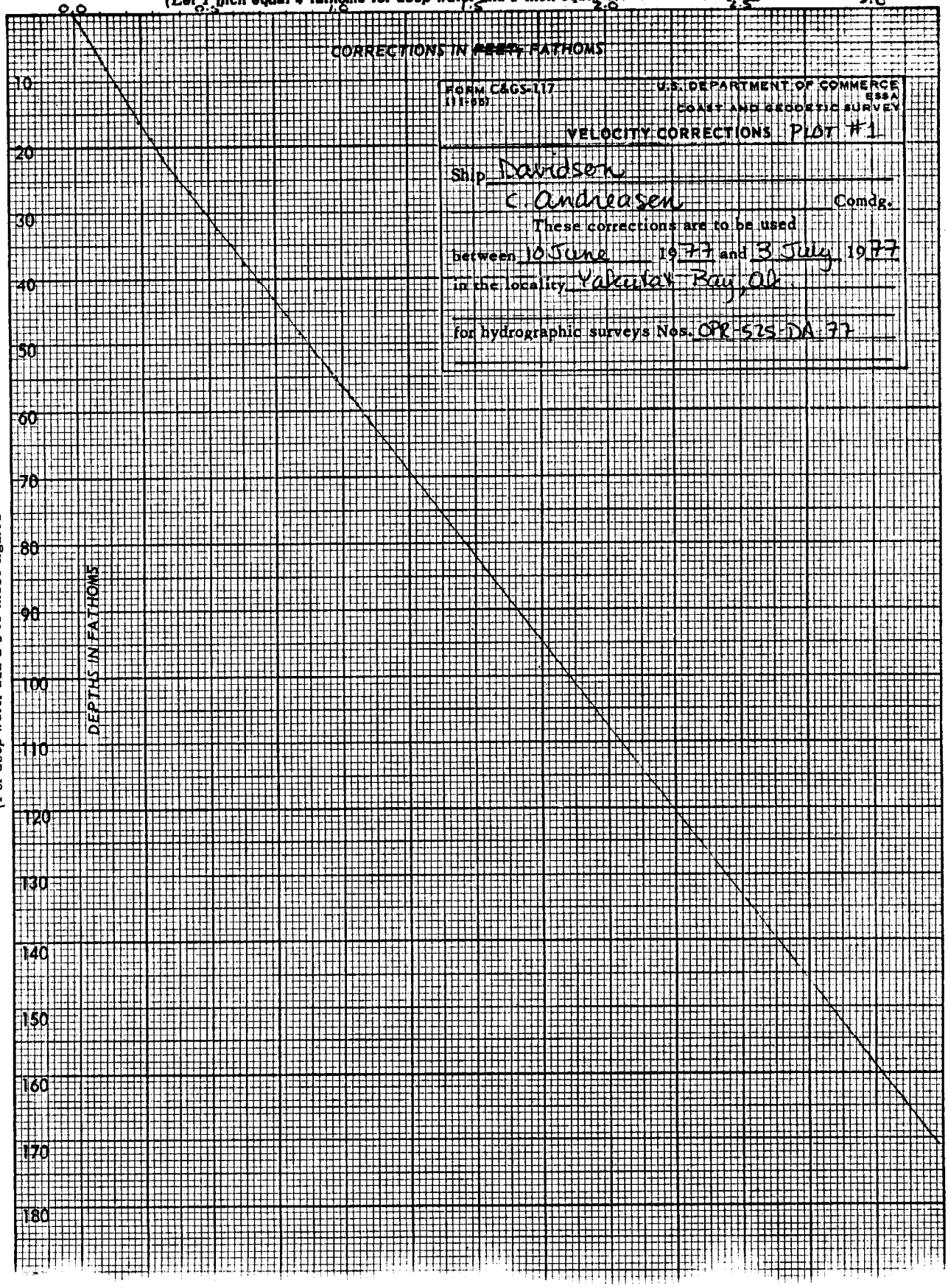
TABLE 4. SURVEYOR CTD JD 251-266

Corrector	To Depth from Surface	To Observed Depth
0.0 fm	3.1	2.8 fm
0.1	10.1	9.8
0.2	16.9	16.6
0.3	22.2	21.9
0.4	27.7	27.4
0.5	32.9	32.6
0.6	38.9	38.6
0.7	45.1	44.8
0.8	52.0	51.7
0.9	58.2	57.9
1.0	64.9	64.6
1.1	71.1	70.8
1.2	77.8	77.5
1.3	84.1	83.8
1.4	90.8	90.5
1.5	97.2	96.9
1.6	103.7	103.4
1.7	110.1	109.8
1.8	116.8	116.5
1.9	123.1	122.8
2.0	129.6	129.3
2.1	136.0	135.7
2.2	142.5	142.2
2.3	149.1	148.8
2.4	155.5	155.2

TRA Correctors

Vessel	Corrector	Day
3131(DA-1)	0.30	all
3132(DA-2)	0.30	all
3133(WZ-3041)	0.31	all

(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 PLOT #1

Ship Davidson

C. Andreasen Comdg.

These corrections are to be used

between 10 June 1977 and 3 July 1977

in the locality Yakutat Bay, AK

for hydrographic surveys Nos. OPR-525-DA-77

FORM CD-26
(12-11-46)

U.S. DEPARTMENT OF COMMERCE

WORKSHEET

59/42/36
139/57/24

CTD cast #1 station 34 (Miller Freeman) 10 June 1977

depth	cond	temp°C		
0	29.80	9.77	→ surface sal	30.71‰
10	30.33	9.43		
20	30.44	9.48		
30	31.25	10.00		
40	31.79	10.27		
50	32.10	10.42		
60	32.21	10.50		
70	32.42	10.64		
80	32.46	10.63		
90	32.55	10.68		
100	32.53	10.66		
110	32.53	10.63		

VELOCITY CORRECTIONS COMPUTATIONS

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

VESSEL = DAVIDSON

DATE = 10 JUNE 1977

TIME = 1030

LATITUDE = 59/40/36

LONGITUDE = 139/57/24

TYPE OF OBSERVATION = CTD CAST

SURFACE TEMPERATURE = 9.77

SURFACE SALINITY = 30.71

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	CONDUCTIVITY (MILLIMHOS/CM)
0000.0	09.77	29.80
0010.0	09.43	30.33
0020.0	09.48	30.44
0030.0	10.00	31.25
0040.0	10.27	31.79
0050.0	10.42	32.10
0060.0	10.50	32.21
0070.0	10.64	32.42
0080.0	10.63	32.46
0090.0	10.68	32.55
0100.0	10.66	32.53
0110.0	10.63	32.53

$

DATA BANK INPUT COMPLETED

PUNCH ON? (Y) Y

VESSEL =DAVIDSON

DATE =10 JUNE 1977

TIME =1030

LATITUDE = 059/42/36.00

LONGITUDE = 139/57/24.00

TYPE OF OBSERVATION =CTD CAST

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	SALINITY (0/00)	SND VEL (M/SEC)
0000.0	09.77	30.71	1484.06
0010.0	09.43	31.49	1483.96
0020.0	09.48	31.56	1484.40
0030.0	10.00	31.97	1487.00
0040.0	10.27	32.30	1488.56
0050.0	10.42	32.48	1489.51
0060.0	10.50	32.53	1490.02
0070.0	10.64	32.62	1490.81
0080.0	10.63	32.67	1491.00
0090.0	10.68	32.72	1491.40
0100.0	10.66	32.72	1491.49
0110.0	10.63	32.74	1491.57

1) CURVE FIT 2) NO CURVE FIT
SPECIFY OPTION (1,2) 1

DEPTH 1 = 0

DEPTH 2 = 1.10

LAYER THICKNESS = .5

ANOTHER INTERVAL? (Y,N) N

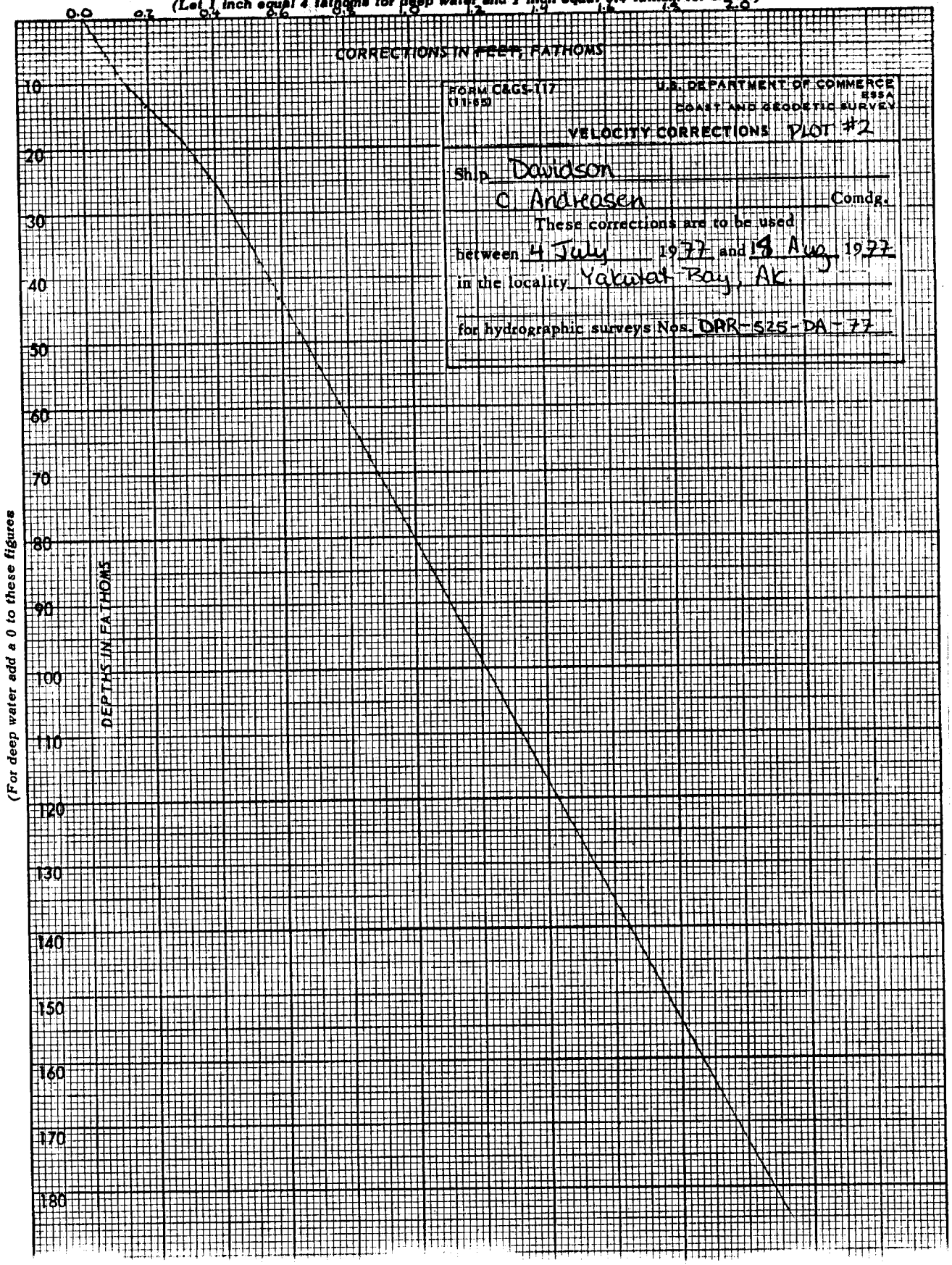
PUNCH ON? (Y) Y

MID-DEPTH (M)	SND VEL (M/SEC)	LAYER THICKNESS (M)
0002.50	1484.03	0005.00
0007.50	1483.98	0005.00
0012.50	1483.63	0005.00
0017.50	1483.92	0005.00
0022.50	1485.01	0005.00
0027.50	1486.38	0005.00
0032.50	1487.51	0005.00
0037.50	1488.26	0005.00
0042.50	1488.85	0005.00
0047.50	1489.33	0005.00
0052.50	1489.65	0005.00
0057.50	1489.87	0005.00
0062.50	1490.22	0005.00
0067.50	1490.65	0005.00
0072.50	1490.90	0005.00
0077.50	1490.96	0005.00
0082.50	1491.08	0005.00
0087.50	1491.31	0005.00
0092.50	1491.46	0005.00
0097.50	1491.49	0005.00
0102.50	1491.48	0005.00
0107.50	1491.51	0005.00

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

ACTUAL DEPTH (SURFACE) MINUS VELOCITY CORRECTION (FM)	VELOCITY CORRECTION (FM)
0002.69	0000.04
0005.39	0000.08
0008.09	0000.12
0010.78	0000.16
0013.47	0000.20
0016.16	0000.24
0018.85	0000.29
0021.54	0000.33
0024.22	0000.38
0026.91	0000.43
0029.59	0000.48
0032.28	0000.53
0034.96	0000.58
0037.64	0000.63
0040.33	0000.69
0043.01	0000.74
0045.69	0000.79
0048.37	0000.84
0051.05	0000.90
0053.73	0000.95
0056.41	0001.00
0059.09	0001.06

(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 PLOT #2

Ship Davidson

C Andreasen Comdg.

These corrections are to be used

between 4 July 1977 and 19 Aug 1977

in the locality Yakutat Bay, AK.

for hydrographic surveys Nos. OPR-525-DA-77

VELOCITY CORRECTIONS COMPUTATIONS

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

VESSEL = DAVIDSON

DATE = 27 JULY 1977

TIME = 1500

LATITUDE = 59/39/53.5

LONGITUDE = 139/59/01.9

TYPE OF OBSERVATION = NANSEN CAST

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	SALINITY (0/00)
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		
0000.0	12.79	23.00
0010.0	08.18	28.80
0020.0	10.91	31.20
0030.0	10.95	32.40
0050.0	09.14	29.70
0075.0	08.13	30.80
0100.0	07.61	32.10
0150.0	07.48	31.40
$		

DATA BANK INPUT COMPLETED

LFH

PUNCH ON? (Y) Y

VESSEL =DAVIDSON

DATE =27 JULY 1977

TIME =1500

LATITUDE = 059/39/53.50

LONGITUDE = 139/59/01.90

TYPE OF OBSERVATION =NANSEN CAST

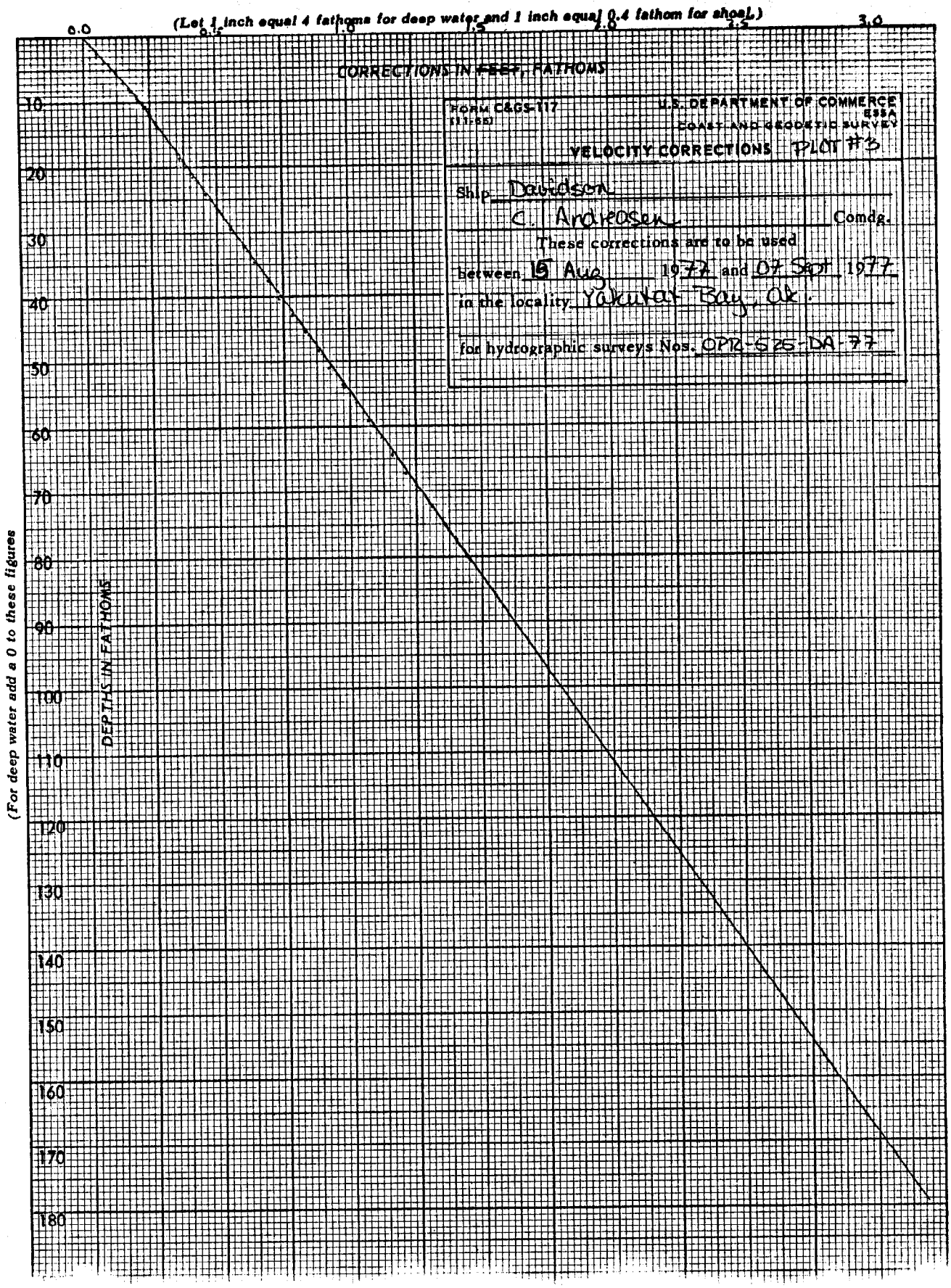
CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	SALINITY (0/00)	SND VEL (M/SEC)
0000.0	12.79	23.00	1485.36
0010.0	08.18	28.80	1475.75
0020.0	10.91	31.20	1489.16
0030.0	10.95	32.40	1490.99
0050.0	09.14	29.70	1481.22
0075.0	08.13	30.80	1479.19
0100.0	07.61	32.10	1479.27
0150.0	07.48	31.40	1478.66

```
1) CURVE FIT  2) NO CURVE FIT
SPECIFY OPTION (1,2)   1

DEPTH 1 = 0

DEPTH 2 = 150

LAYER THICKNESS = 5

ANOTHER INTERVAL? (Y,N) N


PUNCH ON? (Y) Y
```

MID-DEPTH (M)	SND VEL (M/SEC)	LAYER THICKNESS (M)
0002.50	1482.95	0005.00
0007.50	1478.15	0005.00
0012.50	1478.92	0005.00
0017.50	1485.99	0005.00
0022.50	1491.61	0005.00
0027.50	1492.88	0005.00
0032.50	1489.81	0005.00
0037.50	1487.31	0005.00
0042.50	1484.76	0005.00
0047.50	1482.33	0005.00
0052.50	1480.21	0005.00
0057.50	1478.58	0005.00
0062.50	1477.60	0005.00
0067.50	1477.45	0005.00
0072.50	1478.32	0005.00
0077.50	1479.20	0005.00
0082.50	1479.21	0005.00
0087.50	1479.23	0005.00
0092.50	1479.24	0005.00
0097.50	1479.26	0005.00
0102.50	1479.24	0005.00
0107.50	1479.18	0005.00
0112.50	1479.12	0005.00
0117.50	1479.06	0005.00
0122.50	1478.99	0005.00
0127.50	1478.93	0005.00
0132.50	1478.87	0005.00
0137.50	1478.81	0005.00
0142.50	1478.75	0005.00
0147.50	1478.69	0005.00

VELOCITY CORRECTION TABLE OPTIONS:
0) NO TABLE
1) IN FEET
2) IN FATHOMS
3) IN METERS
2
DRAFT = 0.0

ACTUAL DEPTH (SURFACE) MINUS VELOCITY CORRECTION (FM)	VELOCITY CORRECTION (FM)
0002.70	0000.04
0005.40	0000.07
0008.11	0000.10
0010.80	0000.14
0013.48	0000.19
0016.16	0000.25
0018.84	0000.30
0021.53	0000.34
0024.22	0000.38
0026.92	0000.42
0029.62	0000.45
0032.33	0000.48
0035.04	0000.51
0037.74	0000.53
0040.45	0000.56
0043.15	0000.59
0045.86	0000.62
0048.56	0000.65
0051.26	0000.68
0053.97	0000.71
0056.67	0000.74
0059.37	0000.77
0062.08	0000.80
0064.78	0000.83
0067.49	0000.86
0070.19	0000.89
0072.90	0000.92
0075.60	0000.95
0078.30	0000.98
0081.01	0001.01


(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
CORRECTIONS IN FEET, FATHOMS
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
DEPTHS IN FATHOMS
(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 PLOT #3
Ship Davidson
C. Andreasen Comdg.
These corrections are to be used
between 15 Aug 1977 and 07 Sept 1977
in the locality Yakutat Bay, Ak.
for hydrographic surveys Nos. OPR-625-DA-77

VELOCITY CORRECTIONS COMPUTATIONS

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

VESSEL = DAVIDSON

DATE = 1 SEPT 1977

TIME = ~~1500~~ 1015

LATITUDE = ~~59/39/53.5~~ 59/38/56.6

LONGITUDE = ~~139/59/01.9~~ 139/46/15.0

TYPE OF OBSERVATION = NANSEN CAST

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	SALINITY (0/00)
0000.0	12.76	27.20
0010.0	13.28	32.10
0020.0	10.42	32.00
0030.0	10.08	32.50
0050.0	09.89	32.70
0075.0	09.71	32.70
0100.0	09.58	34.00
0150.0	09.40	33.20

$

DATA BANK INPUT COMPLETED

PUNCH ON? (Y) Y

NEW

VESSEL =DAVIDSON

DATE =1 SEPT 1977

TIME =~~1500~~ 1015

LATITUDE = ~~059739753.50~~ 59/38/56.6

LONGITUDE = ~~139759701.90~~ 139/46/15.0

TYPE OF OBSERVATION =NANSEN CAST

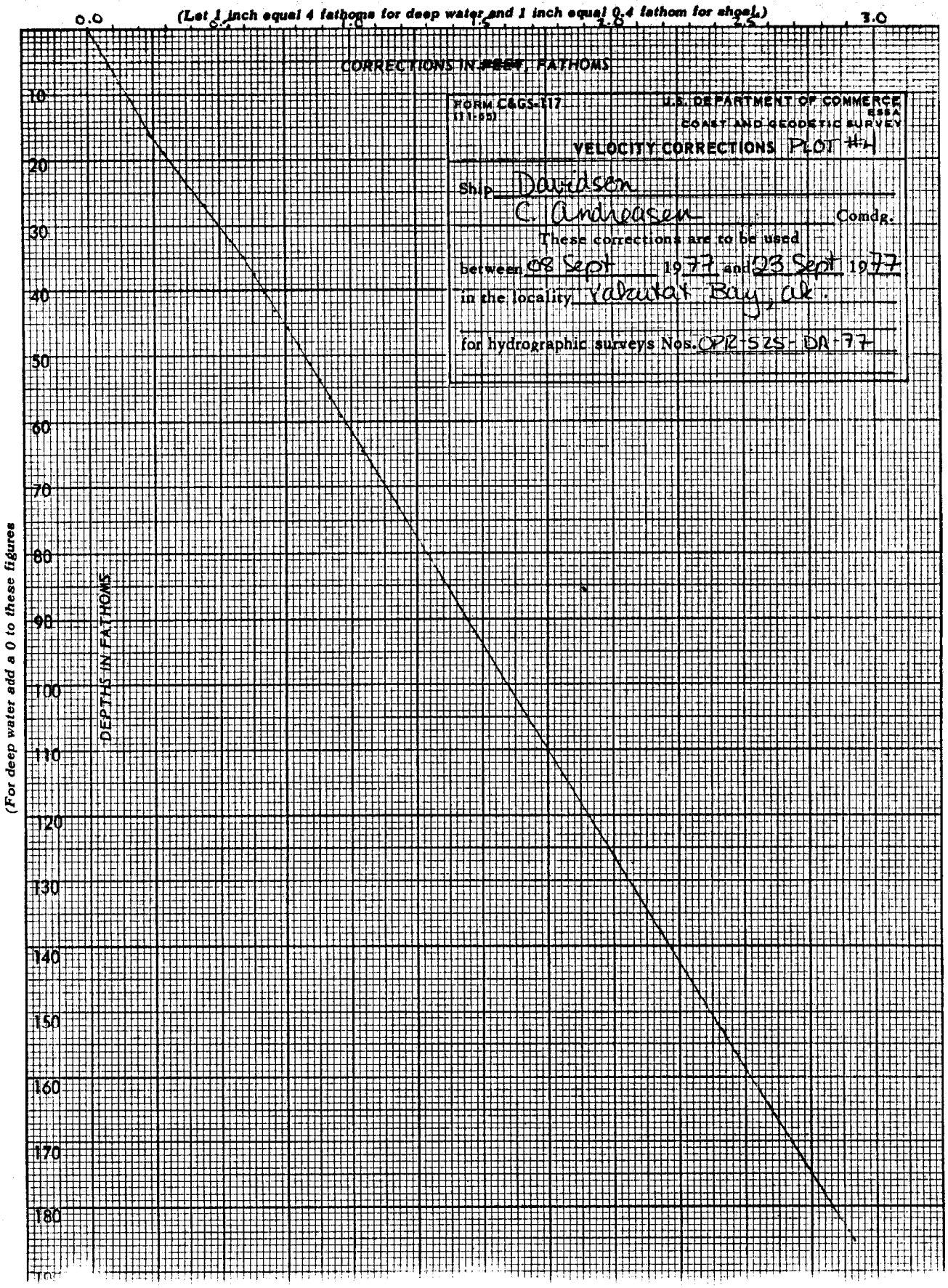
CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	SALINITY (0/00)	SND VEL (M/SEC)
0000.0	12.76	27.20	1490.38
0010.0	13.28	32.10	1498.36
0020.0	10.42	32.00	1488.41
0030.0	10.08	32.50	1487.97
0050.0	09.89	32.70	1487.85
0075.0	09.71	32.70	1487.60
0100.0	09.58	34.00	1489.20
0150.0	09.40	33.20	1488.32

```
1) CURVE FIT  2) NO CURVE FIT
SPECIFY OPTION (1,2)   1

DEPTH 1 = 0.0

DEPTH 2 = 150.0

LAYER THICKNESS = 5.0

ANOTHER INTERVAL? (Y,N) N


PUNCH ON? (Y) Y
```

MID-DEPTH (M)	SND VEL (M/SEC)	LAYER THICKNESS (M)
0002.50	1492.38	0005.00
0007.50	1496.37	0005.00
0012.50	1494.40	0005.00
0017.50	1489.59	0005.00
0022.50	1487.82	0005.00
0027.50	1487.77	0005.00
0032.50	1488.12	0005.00
0037.50	1488.25	0005.00
0042.50	1488.18	0005.00
0047.50	1487.98	0005.00
0052.50	1487.72	0005.00
0057.50	1487.47	0005.00
0062.50	1487.29	0005.00
0067.50	1487.25	0005.00
0072.50	1487.42	0005.00
0077.50	1487.76	0005.00
0082.50	1488.08	0005.00
0087.50	1488.40	0005.00
0092.50	1488.72	0005.00
0097.50	1489.04	0005.00
0102.50	1489.15	0005.00
0107.50	1489.07	0005.00
0112.50	1488.98	0005.00
0117.50	1488.89	0005.00
0122.50	1488.80	0005.00
0127.50	1488.71	0005.00
0132.50	1488.63	0005.00
0137.50	1488.54	0005.00
0142.50	1488.45	0005.00
0147.50	1488.36	0005.00

VELOCITY CORRECTION TABLE OPTIONS:
0) NO TABLE
1) IN FEET
2) IN FATHOMS
3) IN METERS
2
DRAFT = 0.0

ACTUAL DEPTH (SURFACE) MINUS VELOCITY CORRECTION (FM)	VELOCITY CORRECTION (FM)
0002.68	0000.05
0005.35	0000.12
0008.03	0000.18
0010.71	0000.23
0013.40	0000.27
0016.09	0000.32
0018.77	0000.36
0021.46	0000.41
0024.15	0000.46
0026.84	0000.51
0029.52	0000.55
0032.21	0000.60
0034.90	0000.64
0037.59	0000.69
0040.28	0000.73
0042.97	0000.78
0045.65	0000.83
0048.34	0000.87
0051.03	0000.92
0053.71	0000.97
0056.40	0001.02
0059.08	0001.07
0061.77	0001.12
0064.45	0001.16
0067.14	0001.21
0069.82	0001.26
0072.51	0001.31
0075.20	0001.36
0077.88	0001.40
0080.57	0001.45


(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoals)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
CORRECTIONS IN ~~FEET~~, FATHOMS
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
DEPTHS IN FATHOMS
(For deep water add a 0 to these figures
FORM C&GS-517
(11-65)
U.S. DEPARTMENT OF COMMERCE
ESSA
COAST AND GEODETIC SURVEY
VELOCITY CORRECTIONS PLOT #1
Ship Davidson
C. Andreasen Comdg.
These corrections are to be used
between 08 Sept 1977 and 23 Sept 1977
in the locality Yakutat Bay, Ak.
for hydrographic surveys Nos. OPR-525-DA-77

FORM CD-26
(12-11-46)

U.S. DEPARTMENT OF COMMERCE

59° 39' 18"
140° 04' 36"

CTD Cast station 0133 (Surveyor) WORKSHEET 15 Sept 1977

depth (m)	temp (°C)	cond (mmho/cm)
0	11.9 ✓	29.5 ✓
10	11.9 ✓	30.4 ✓
20	10.5 ✓	31.0 ✓
30	11.5 ✓	35.3 ✓
40	11.2 ✓	34.5 ✓
50	11.4 ✓	35.2 ✓
60	10.7 ✓	34.9 ✓
70	10.0 ✓	34.7 ✓
80	9.8 ✓	34.2 ✓
90	9.7 ✓	34.1 ✓
100	9.6 ✓	34.0 ✓
110	9.5 ✓	34.0 ✓
120	9.5 ✓	33.9 ✓

surface sal: 24.42 ‰

VELOCITY CORRECTIONS COMPUTATIONS

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

VESSEL = DAVIDSON

DATE = 15 SEPT 1977

TIME = 0700

XAXXXHHKXHXHHXXHXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

LATITUDE = 59/39/18

LONGITUDE = 140/04/36

TYPE OF OBSERVATION = CTD CAST

SURFACE TEMPERATURE = 11.90

SURFACE SALINITY = 24.42

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	CONDUCTIVITY (MILLIMHOS/CM)
0000.0	11.90	29.50
0010.0	11.90	30.40
0020.0	10.50	31.00
0030.0	11.50	35.30
0040.0	11.20	34.50
0050.0	11.40	35.20
0060.0	10.70	34.90
0070.0	10.00	34.70
0080.0	09.80	34.20
0090.0	09.70	34.10
0100.0	09.60	34.00
0110.0	09.50	34.00
0120.0	09.50	33.90
$		

DATA BANK INPUT COMPLETED

PUNCH ON? (Y) Y

VESSEL =DAVIDSON

DATE =15 SEPT 1977

TIME =0700

LATITUDE = 059/39/18.00

LONGITUDE = 140/04/36.00

TYPE OF OBSERVATION =CTD CAST

CAST-DEPTH (SURFACE) (M)	TEMP (DEG C)	SALINITY (0/00)	SND VEL (M/SEC)
0000.0	11.90	24.42	1483.94
0010.0	11.90	25.26	1485.13
0020.0	10.50	26.85	1482.20
0030.0	11.50	30.25	1490.23
0040.0	11.20	29.72	1488.66
0050.0	11.40	30.23	1490.18
0060.0	10.70	30.53	1488.20
0070.0	10.00	30.93	1486.32
0080.0	09.80	30.60	1485.32
0090.0	09.70	30.58	1485.10
0100.0	09.60	30.57	1484.87
0110.0	09.50	30.65	1484.77
0120.0	09.50	30.55	1484.80

```
1) CURVE FIT  2) NO CURVE FIT
SPECIFY OPTION (1,2)   1

DEPTH 1 = 0

DEPTH 2 = 120

LAYER THICKNESS = 5

ANOTHER INTERVAL? (Y,N) N


PUNCH ON? (Y) Y
```

MID-DEPTH (M)	SND VEL (M/SEC)	LAYER THICKNESS (M)
0002.50	1484.24	0005.00
0007.50	1484.84	0005.00
0012.50	1484.40	0005.00
0017.50	1482.93	0005.00
0022.50	1484.21	0005.00
0027.50	1488.22	0005.00
0032.50	1489.84	0005.00
0037.50	1489.05	0005.00
0042.50	1489.04	0005.00
0047.50	1489.80	0005.00
0052.50	1489.73	0005.00
0057.50	1488.73	0005.00
0062.50	1487.69	0005.00
0067.50	1486.73	0005.00
0072.50	1485.98	0005.00
0077.50	1485.48	0005.00
0082.50	1485.23	0005.00
0087.50	1485.13	0005.00
0092.50	1485.05	0005.00
0097.50	1484.93	0005.00
0102.50	1484.81	0005.00
0107.50	1484.76	0005.00
0112.50	1484.78	0005.00
0117.50	1484.79	0005.00

VELOCITY CORRECTION TABLE OPTIONS:
0) NO TABLE
1) IN FEET
2) IN FATHOMS
3) IN METERS
2
DRAFT = 0.0

ACTUAL DEPTH (SURFACE) MINUS VELOCITY CORRECTION (FM)	VELOCITY CORRECTION (FM)
0002.69	0000.04
0005.39	0000.08
0008.08	0000.12
0010.78	0000.16
0013.47	0000.20
0016.16	0000.24
0018.84	0000.29
0021.53	0000.34
0024.22	0000.39
0026.90	0000.44
0029.58	0000.49
0032.27	0000.54
0034.96	0000.59
0037.65	0000.63
0040.34	0000.67
0043.03	0000.71
0045.72	0000.76
0048.42	0000.80
0051.11	0000.84
0053.80	0000.88
0056.50	0000.92
0059.19	0000.96
0061.88	0001.00
0064.58	0001.04

A FORM 76-40
74)

places C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] 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)	STATE	LOCALITY	DATE
NOAA Ship DAVIDSON	Alaska	Yakutat Bay	1/23/78

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

R PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
PR-525-DA-77		TP-00619	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 ° ′	″ D.M. Meters	POSITION LONGITUDE ° ′	″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
4 sec. Ft 5M	Khantaak Island Light (LL# 3403) R&W daymark on skeleton tower	59 33	36.600	139 46	56.916		F-3-6-L	16761
6 sec 0Ft 9M	Ocean Cape Light (LL#179 & 3400) R&W daymark on skeleton tower	59 32	31.850	139 51	36.253		F-5	16761

U.S. DEPARTMENT OF COMMERCE
March 20, 1978 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): 945-3215 Johnstone Passage, Ak.

Period: June 23-September 16, 1977

HYDROGRAPHIC SHEET: H-9688

OPR: 525

Locality: Yakutat Bay, Alaska

Plane of reference (mean lower low water): 4.4 ft.

Height of Mean High Water above Plane of Reference is 9.1 ft.

Remarks: Recommended zoning:

1). East of a line extending from Pt. Carrew to Pt. Munoz and east of the northern most point of Khantaak Island zone direct.
2). West of these lines apply range ratio x0.97.

James R Hubbard
Chief, Tides Branch

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-9688

Name on Survey	A ON CHART NO. 1616	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	K TP 00619	
Gulf of Alaska									X	1
Khantaak Island	X									2
Ocean Cape	X									3
~~Cape Light~~								X		4
Yakutat Bay	X									5
MONTI Bay	X									6
NORTHEAST POINT										7
POINT CARREW										8
POINT MUNOZ										9
POINT TURNER										10
										11
										12
										13
										14
										15
										16
										17
				Approved:						18
										19
				Chas. E. Harrington						20
				Chief Geographer - C3x5						21
				11 July 1979						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 H-9688

HYDROGRAPHIC SURVEY STATISTICS

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	BOAT SHEETS & PRELIMINARY OVERLAYS	4 & 3
DESCRIPTIVE REPORT	1	SMOOTH OVERLAYS: POS. ARC, EXCESS	7

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES						
CAHIERS	2 - with printouts & misc. data					
VOLUMES	1					
BOXES			1- Smooth			1- Sawtooth rec.

T-SHEET PRINTS (List) TP-00619

SPECIAL REPORTS (List)

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

PROCESSING ACTIVITY	AMOUNTS: PRE-VERIFICATION	AMOUNTS: VERIFICATION	AMOUNTS: TOTALS
POSITIONS ON SHEET			4647
POSITIONS CHECKED		4647	
POSITIONS REVISED		9018	
SOUNDINGS REVISED		526	
SOUNDINGS ERRONEOUSLY SPACED		Ø	
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED		Ø	
	TIME – HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	4		
VERIFICATION OF CONTROL		19	
VERIFICATION OF POSITIONS		99	
VERIFICATION OF SOUNDINGS		118	
COMPILATION OF SMOOTH SHEET		41	
APPLICATION OF TOPOGRAPHY		--	
APPLICATION OF PHOTOBATHYMETRY		--	
JUNCTIONS		18	
COMPARISON WITH PRIOR SURVEYS & CHARTS		16	
VERIFIER'S REPORT		57	
OTHER		10	
TOTALS	4	378	382

Pre-Verification by James S. Green	*Beginning Date* Feb 10, 1978	*Ending Date* Feb 10, 1978
Verification by Gordon E. Kay	*Beginning Date* Sept 27, 1978	*Ending Date* April 9, 1979
Verification Check by A.E. Eichelberger	*Time (Hours)* 21	*Date* April 11, 1979
Marine Center Inspection by HIT	*Time (Hours)* 22	*Date* May 21, 1979
Quality Control Inspection by J. W. Wellman	*Time (Hours)* 50	*Date* 7-10-79
Requirements Evaluation by J Baumgardner	*Time (Hours)* 3	*Date* 7/31/79

D Myers 7/16/79 Shs

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-9688

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-9688 FIELD NO: DA-20-2-77

Alaska, Yakutat Bay, Ocean Cape to Khantaak Island

SURVEYED: 23 June - 21 September 1977

SCALE: 1:20,000 PROJECT NO: OPR-525-DA-77

SOUNDINGS: Ross Fineline, Model 5000
Raytheon V/DE 723

CONTROL: Range/Range Raydist
Range/Range MiniRanger III

Chief of Party.....CDR Christian Andreasen
Surveyed by.....ENS. G. Wheaton, ENS. S. Snyder, ENS. C. Greenawalt, ENS. E. McDougal, ENS. L. Haas
Automated plot by.....Xynetics Plotter (PMC)
Verified by.....Gordon E. Kay
April 9, 1979

I. INTRODUCTION

NOAA Ship DAVIDSON S331, conducted this basic hydrographic survey during the 1977 field season, 23 June - 21 Sept 1977.

Projection parameters used to prepare the boatsheet have been revised to center the hydrography on the smooth sheet. These parameters and all correctors used to reduce soundings by PMC are appended in the smooth printouts. The tide corrector printout is in the raw printout cahier.

Field tide reduction are based on Yakutat Alaska predicted tides. See Field Tide Note, Ship's Descriptive Report for an adequate description of tides. Smooth sheet soundings are based on observed tides at Johnstone Passage as approved by Tides Division, Rockville, MD.

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

II. CONTROL AND SHORELINE

During the 1978 field season inaccuracies were noted in the 1977 traverse along Phipps Peninsula, thus changing the following control stations on H-9688 from Third Order Class I to Topographic Station.

Name	Station Number
Donna	2
Donna RM1	7
Kardy	7 1/2

See Addendum to Horizontal Control Note OPR-525-DA-78. No other major discrepancy was noted in Control. See paragraph F and G, Ship's Descriptive Report and Horizontal Control Note for more description of control.

The following Class I unreviewed shoreline manuscript was used on the smooth sheet: TP-00619 of 1975-77. H-9688 borders the shoreline of Ocean Cape. This area was field edited in 1977 (see para II, of Verifier's Report). All charted features can be accounted for by the 1977 field edit except one rock located at latitude 59°32'02"N longitude 139°50'55"W. Due to the unknown source of all these charted rocks it is advised that TP-00619 Class I supersede all charted shoreline features in this area.

III. HYDROGRAPHY

Soundings embodied in the main scheme and crosslines agree within one to one and one half fathoms. The soundings in H-9688 are comprehensive enough to determine least depths. Standard depth curves could be adequately drawn except for the zero curve due to the foul nature of the inshore area. (See Q.C. Report-item 2)

There are 68 bottom samples containing primarily grey mud.

IV. CONDITION OF SURVEY

The smooth sheet and ~~accompany~~ accompanying overlays conform to the requirements of the Hydrographic Manual. The hydrographic records and reports adequately conform to the requirements of the Hydrographic Manual with the following exceptions:

a. A major hydrographic surveying discrepancy was noted in the southeastern corner of H-9688 off Ocean Cape. J.D. 221, launch 3132 ran 4.86 sq. miles of sounding lines with no crosslines.

> "The regular system of sounding lines shall be supplemented by a series of crosslines (4.3.6) for verifying and evaluating the accuracy and reliability of surveyed depths and plotted locations" (1.4.2) Crosslines, Hydrographic Manual.

b. A procedural discrepancy was noted in the way launch 3131 and 3132 meaned their daily calibrations. One launch would round up at a fractional part of a lane and the other would round down. During verification, correctors were standardized.

c. Shoal areas that were investigated on the lower half of H-9688 by launch 3131 should have been run as per guidance by the Hydrographic Manual (1.4.3 para 6).

> "A second pattern of closely spaced lines, usually parallel to the axis of the feature, should be run to provide greater detail in critical areas."
>
> and also by (4.3.5 para 2)
>
> "Steep features, submarine ridges, and valleys should be developed by a system of lines that cross the depth contours

at angles of approximately 45°.

d. Bar check averages were not plotted alongside the velocity corrections graph as per ~~Hydrographic Manual (4.9.5.1.3.1)~~, customary practice. If the bar check averages were plotted alongside the velocity curve, the measurement between them "(displacement) is equal to the combine residual instrument error plus draft and will be applied separately as a sounding correction." (4.9.5.3.3).

e. Fifteen bottom samples were not logged in a sounding volume and were obtained on Log Sheet M and had to be added at PMC.

f. See Q.C. Report-item 3)

V. JUNCTIONS

H-9688 junctions with the following contemporary surveys:

H-9695 1:20,000 1977 junctions with the entire northern limits of H-9688 with no problems encountered in making a junction. Depth curves and marginal notes have been entered on H-9688. Minor adjustments of the curves on H-9695 will have to be made by quality control.

H-9687 1:20,000 1977 junctions with the entire western limits of H-9688. Problems occurred in junctioning the 10 fathom curve. Each sheet contains some overlap. Each overlap area was surveyed on different dates on different lines of hydrography. At PMC, both sheets were handled separately and run through the excess program separately. Each sheet then has different selected shoal soundings that adequately portrays the irregular bottom configuration at 10 fathoms. These different selected soundings in the overlap area causes confusion, since depths of 10^2 and 9^8 may partially overlap (both soundings are correct) but a shift occurs in the depth curve, due to this excess number of soundings. Depth curves and marginal notes have been inked on H-9688, and H-9687 should be inked to reflect the changes. Necessary revisions were effected during Q.C. inspection.

H-9686 1:10,000 1977-1978 junctions the east central limits of H-9688 with no problems encountered in making a junction. Depth curves and marginal notes have been inked on H-9688. Exception to this is an area at Latitude 59°32.4'N, Longitude 139°53'E which was completed on H-9686 during the 1978 field season. Presently tides are not available and therefore a junction has not been made. Depth curves are shown in pencil, at this location. (Not available during Q.C. inspection.)

H-9694 1:20,000 1978 junctions along the extreme northeast corner of H-9688. There is a holiday along most of the junction area and in places where soundings do overlap, a junction was not made at this time due to H-9694 stage of processing. (Not available during Q.C. inspection.)

VI. COMPARISON WITH PRIOR SURVEYS

H-2157 1:20,000 (1892)
H-2158 1:20,000 (1892)
Soundings on these two surveys are in poor agreement with the present survey H-9688. Present soundings are one to ~~two~~ four fathoms shoaler, and range to as much as 30 fathoms deeper in some areas.

Due to age, control and sounding methods, H-9688 is considered a superior survey and should supersede H-2157, H-2158 over its common areas.

H-2665 1:600,000 (1903)
Only one 19 fathom sounding appears within the limits of the present survey H-9688. This 19 fathom sounding is three fathoms deeper than present soundings. Due to scale, age, and sounding methods, H-9688 is considered a superior survey and should supersede H-2665 over its common area.

H-6718 1:20,000 (1941)
H-6719 1:20,000 (1941)
H-6720 1:20,000 (1941)
H-6721 1:20,000 (1941)
The above surveys fall within general agreement with the present survey H-9688, with H-9688 being shoaler by one to two fathoms in most cases. In the vicinity of latitude 59°38'42"N and longitude 140°02'00"W appear two soundings on H-6719 a 79fm and 80fm. These soundings are 29fm and 30fm deeper than the present survey. This is the extreme case of how the above surveys differ.

Due to a shift in control stations used on H-6718, H-6719, H-6720, and H-6721, the present survey H-9688 is considered adequate to supersede the above over their common areas.

There are two dashed PSR items on H-9688.* One shoaling area is at approximately latitude 59°37'00"N and longitude 139°58'30"W with charted soundings of 29fm and 17fm. The present survey H-9688 verifies their existence.

*See O.C. Report - item 4

Charted Sounding	Latitude	Longitude
17fm	59°37'54"N	139°58'54"W
29fm	59°37'54.3"N	139°59'06.5W
Present Survey H-9688 shoalest in area		
17.1fm	59°37'50.88"N	139°58'39.91"W
29fm	59°37'53.81"N	139°59'03.17W

Due to the close location of these and other present soundings, this verifies the existence of a shoal. This PSR item is adequately disposed of.

Another dashed PSR item is centered at approximately latitude 59°37'30"N, longitude 139°50'00"W, with the following present charted soundings:

Charted Sounding	Latitude	Longitude
12fm	59°37'54.0"N	139°49'48.5"W
6 1/4fm	59°37'42.0"N	139°49'54.0"W
8fm	59°37'24.5"N	139°49'36.5"W

Present Survey H-9688 shoalest in area

10fm	59°37'49.39"N	139°50'01.32"W
6.8fm	59°37'41.99"N	139°49'53.94"W
7.5fm	59°37'24.6"N	139°49'37.7"W

The close location of these and other present soundings, verifies the existence of a shoal. This PSR item has been adequately disposed of.

VII. COMPARISON WITH THE CHART
(16761 11th Edition, August 28, 1976)

A. Hydrography (See Q.C. Report-item 5)

The primary sources of charted soundings covering the area of H-9688 ~~comes from~~ are H-6720 and H-6721, both 1941. (See marked enclosed chartlet*, also Para VI of this report for comparison of each survey).
(*Chartlet removed during Q.C. inspection)

Soundings overall on H-9688 agree very well with the charted soundings but differences of up to two fathoms shoaler on H-9688 occurs in areas of varied relief. These differences can also be attributed to differences in control stations and positioning equipment used on the prior surveys. (See Para VI of this report). H-9688 is adequate to supersede all charted soundings over its common areas.

PSR Item #2, shoaling reported at latitude 59°32.5'00"N, longitude 139°55.0'00"W originating from chart letter 366 of 1977: a least depth of 6.2fm was found (Sndg. No. 718404).(See Q.C. Report-item 4)

B. Aids to Navigation

There are two aids to navigation on H-9688 and changes in location have occurred. One floating aid and one fixed aid are plotted on the smooth sheet.

Entrance Lighted Whistle Buoy 2 (Light List #3401)
Latitude 59°32'04.2"N, longitude 139°57'23.9"W

Ocean Cape Light (Light #3400)
Latitude 59°32'09.3"N, longitude 139°51'13.8"W

These aids are presently located in positions that are adequate for the purpose intended.

VIII. COMPLIANCE WITH INSTRUCTIONS

H-9688 complies with the following:

Project Instructions: OPR-525-DA-77, Yakutat Bay, AK, Feb 23, 1977
Change No. 1: Supplement to Instructions, March 25, 1977
Change No. 2: Supplement to Instructions, May 4, 1977
Change No. 3: Amendment to Instructions, June 13, 1977
Change No. 4: Amendment to Instructions, June 20, 1977

IX. ADDITIONAL FIELD WORK

H-9688 is a good basic hydrographic survey, additional field work is not required at this time.

Respectfully submitted,

Gordon E. Kay
Cartographic Technician
April 9, 1979

Examined and approved,

James S. Green
Chief, Verification Branch

APPROVAL SHEET

FOR

SURVEY H-9688

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: 11 May 1979

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

DATE : May 21, 1979

TO : OA/CPM - Eugene A. Taylor

FROM : OA/CPM3 - Glen R. Schaefer

SUBJECT: PMC Hydrographic Inspection Team Report
for Survey H-9688

This survey is a basic hydrographic survey of Yakutat Bay from Ocean Cape to Khantaak Island, Alaska. This survey was conducted by NOAA Ship DAVIDSON in accordance with Project Instructions OPR-525-DA-77 dated 23 February 1977, and Change Nos. 1 through 4 dated 25 March 1977, 4 May 1977, 13 June 1977 and 20 June 1977, respectively and change to Section 3.4 dated 15 April 1977.

Several deficiencies in the field work were noted and well documented in the verifier's report Section IV, Condition of Survey. Additionally the control stations should have been plotted on the ship's smooth sheet as required per Section 4.2.5 of the Hydrographic Manual. Buoy #2 should have been plotted on the ship's smooth sheet as required by Section 4.2.1 of the Hydrographic Manual.

The inspection team finds H-9688 to be a very good basic survey adequate to supersede common areas of prior surveys and charted hydrography. Administrative approval is recommended.

David B. MacFarland, Jr.

William A. Wert

James W. Steensland

James L. Stringham

ADMINISTRATIVE APPROVAL

H-9688

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

Eugene A. Taylor, RADM
Director
Pacific Marine Center

23 May 1979
Date

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

OA/C352:KWW

July 10, 1979

R H Carstens

TO: R. H. Carstens
Acting Chief, Hydrographic Surveys Division

THRU: Chief, Quality Control Branch

FROM: K. W. Wellman K. W. Wellman
Quality Evaluator

SUBJECT: Quality Control Report for H-9688 (1977), Alaska, Yakutat Bay, Ocean Cape to Khantaak Island

A quality control inspection of H-9688 was accomplished to monitor the survey for obvious deficiencies 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. The Verifier's Report is inappropriately cluttered due to the extensive use of type-correction tape. The Verifier's Report is a formal document and, as such, should be edited and correct in its final format when inserted into the Descriptive Report. Significant revisions should necessitate the retyping of the affected page. The unsightly and unprofessional use of such correction tape to conceal deleted information should be discontinued.

2. Reference section III of the Verifier's Report:

Crossline discrepancies of the indicated magnitude, i.e., 1 to 1.5 fathoms, are considered significant and necessitate further scrutiny to facilitate explanation or rectification. Accordingly, the implication that discrepancies of such magnitude are acceptable is considered misleading and therefore requires justification.

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

Due to the irregular nature of the bottom and/or significant bottom gradients, crossline differences of the indicated magnitude are considered to be within acceptable limits and require no further consideration.

3. The use of a Raytheon DE-723 echo sounder is referenced on the Hydrographic Title Sheet of the Descriptive Report. However, since it was used only during bottom sampling and no soundings were plotted, the DE-723 should have been omitted in the Title Sheet.

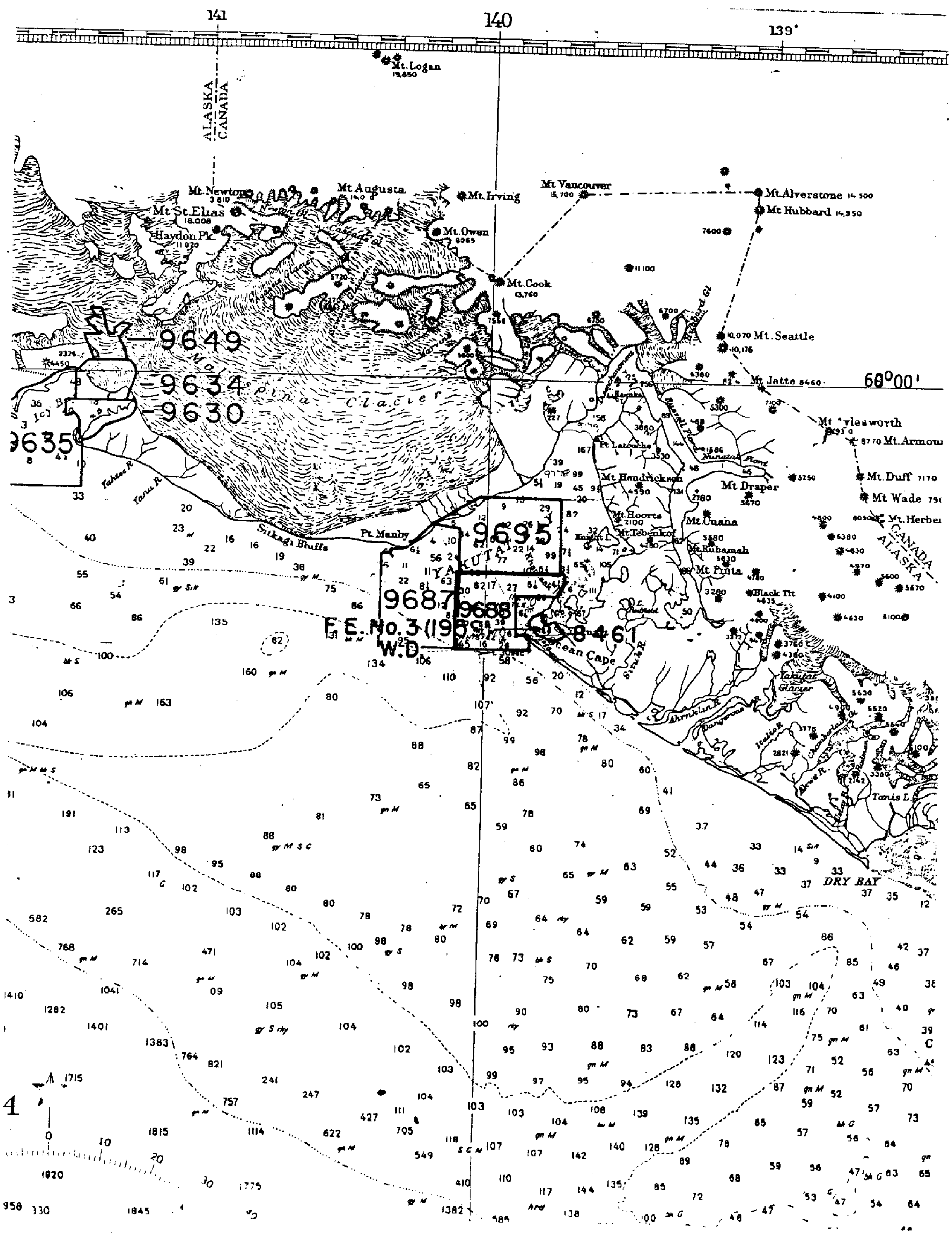
4. Reference sections VI and VII of the Verifier's Report:

The comments pertaining to the Presurvey Review items included within the referenced sections of the Verifier's Report are considered superfluous since they are adequately addressed in section K of the Descriptive Report. An appropriate annotation of the Descriptive Report would have been sufficient. Such annotations would have obviated the need for further consideration in the Verifier's Report. (See the memorandum dated March 21, 1977, from the Office of Marine Surveys and Maps entitled "Verifier's Report Format.")

5. Reference section VII of the Verifier's Report:

The referenced section of the Verifier's Report does not conform to the recommended format in that it is not subdivided so as to separately address "Hydrography" and "Aids to Navigation." (See the memorandum dated March 21, 1977, from the Office of Marine Surveys and Maps entitled "Verifier's Report Format" and section 6.6(12) of the Hydrographic Manual--Fourth Edition.)

cc:
OA/C35
OA/C351


141
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Mt. Newton
Mt St. Elias 18,008
Haydon Pk
Mt Augusta
Mt. Irving
Mt Vancouver 15,700
Mt. Alverstone 14,500
Mt Hubbard 14,950
Mt. Owen
Mt. Cook 13,760
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Mt. Armour
Mt. Duff
Mt Wade
Mt. Herbert
Mt Draper
Mt Hendrickson
Pt Latouche
Mt Hoorts
Mt. Tebenkof
Knight I.
Mt. Unana
Mt. Rubamah
Mt Pinta
Black Tit
Malaspina Glacier
Icy B
Tahoe R.
Yana R.
Sitkagi Bluffs
Pt. Manby
YAKUTAT
Ocean Cape
Situk R.
Ahrnklin R.
Dangerous R.
Italio R.
Yakutat Glacier
Tanis L.
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9649
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FORM C&GS-8352
(3-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9688

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
16761	7/29/79	Milton Sager	Full ~~Part Before After Verification Review~~ Inspection Signed Via
			Drawing No. 12 Fully app'd hydro after
			Quality Control & Inspection
16760	9/22/79	Milton Sager	Full ~~Part Before After Verification Review~~ Inspection Signed Via
			Drawing No. 12 Fully app'd hydro thru Chart 16761
			(After Quality Control & Inspection)
16016	8-29-83	L. A. Simmons	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 23. Fully app'd thru 16760 #12.
531	8-29-83	L. A. Simmons	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 18. Exam thru 16016 #23.
			Area cleared of sndgs. - No Correction
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
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			Drawing No.

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

USCOMM-DC 8558-P63