9634

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.: RA-10-4-76

Office No.: H-9634

LOCALITY

State: ALASKA

General Locality: ICY BAY

Locality: SOUTHEAST OF KICHYATT POINT

1976

CHIEF OF PARTY
R.L. Speer, J.P. Randall

LIBRARY & ARCHIVES

DATE: October 19, 1977

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

9634

Acc. L
8457
8002

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-9634

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.

RA-10-4-76

State ALASKA

General locality ICY BAY

Locality SOUTHEAST OF KICHYATT POINT

Scale 1:10,000 Date of survey 12 July - 14 Sept 1976

Instructions dated June 8, 76 Change No. 1, June 16, 1976 Change No. 2, 8/13/76 Project No. OHR - 524-RA-76

Vessel RAINIER LAUNCHES: 2123 and 2125

Chief of party R.L. Speer, J.P. Randall

Surveyed by Survey Team Leader, LTJG Osborn, OIC's LT Kleinschmidt, LTJG Stanke, ENS Peterson, ENS Doering, ENS Ramsey

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

Graphic record scaled by Rainier Personnel

Graphic record checked by Rainier Personnel

Positions verified by D. E. Zimmer Automated plot by PMC/Xynetics Plotter

Soundings Verification by D.E. Zimmer

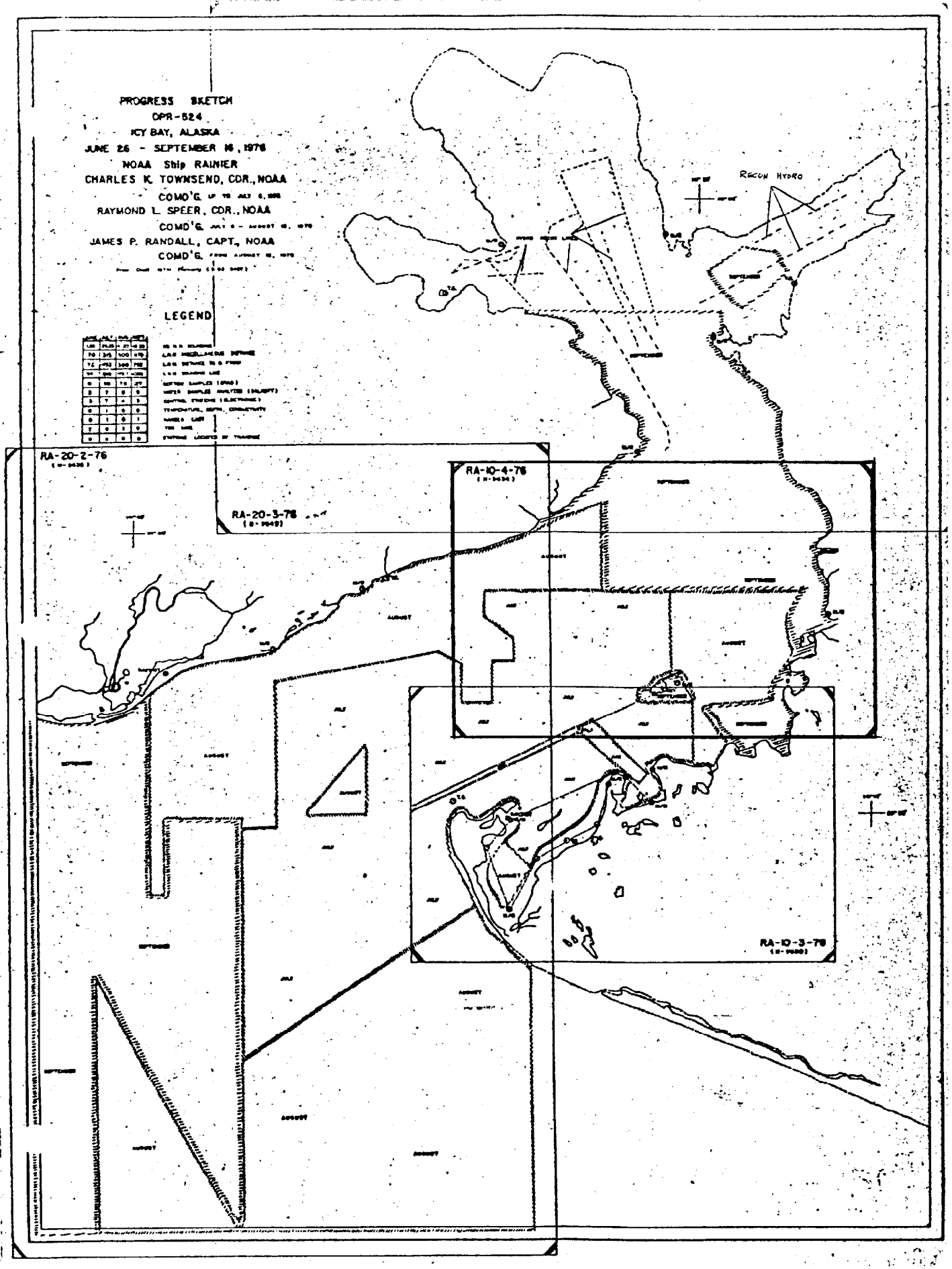
Soundings in ~~XXXXXX XXX~~ at ~~XXXXX~~ MLLW fathoms and tenths

REMARKS: Survey is complete and is adequate to supersede prior surveys

Time Meridian 0° GMT

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

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


PROGRESS SKETCH
OPR-524
ICY BAY, ALASKA
JUNE 26 - SEPTEMBER 16, 1978
NOAA Ship RAINIER
CHARLES K. TOWNSEND, CDR., NOAA
COMD'G.
RAYMOND L. SPEER, CDR., NOAA
COMD'G.
JAMES P. RANDALL, CAPT., NOAA
COMD'G.
LEGEND
RECON HYDRO
RA-20-2-76
RA-20-3-76
RA-10-4-76
RA-10-3-76

A. PROJECT

This hydrographic survey was conducted in accordance with PROJECT INSTRUCTIONS, OPR-524-RA-76, Icy Bay, Alaska, dated June 8, 1976; change no. 1, dated June 16, 1976; change no. 2 dated August 13, 1976. Concurrent with this, RAINIER personnel undertook visits to authorized nautical chart agents in Juneau, Alaska, per PROJECT INSTRUCTIONS, OPR-451-76, Familarization and Instruction Visits to Authorized Nautical Chart Agents in Alaska, dated May 13, 1976, with change no. 1, dated June 9, 1976.

B. AREA SURVEYED

The area covered by RA-10-4-76, H-9634, is north central and central eastern regions of Icy Bay, bounded by the following latitudes and longitudes: northern limit, latitude 60° 01' N, western limit, longitude 148° 28' 30" W, eastern limit, longitude 141° 14' W, and southern limit, latitude 59° 56' 30" N.

The survey area includes Gull Island in the central southern region. The eastern shoreline includes the Caetani River Delta and a low laying rock, gravel, and sand shore to the north. The shoreline along the northwest border of the survey is similar to the eastern in its low profile near the shore. Heavily forested hills begin just back of the shore.

RA-10-4-76, H-9634, commenced on July 12, 1976 (J.D. 194), and ended on September 14, 1976, (J.D. 258).

C. SOUNDING VESSEL

RAINIER computerized survey launches RA-3 (2123) and RA-5 (2125) obtained all soundings for RA-10-4-76, H-9634, each using Ross Model 5000 Fineline Fathometer. Launch 2125 obtained all bottom samples for this survey.

No unusual sounding vessel configurations were used, and no major problems were encountered during survey operations.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDERS

Echo Sounding equipment operated with only minor problems which were easily located and repaired in the field during survey operations. The following is a list of sounding equipment used and dates used.

LAUNCH	FATHOMETER	J.D. IN USE
2123	Ross Model 5000 S/N 1042	194-196
2123	Ross Model 5000 S/N 1071	197-258
2125	Ross Model 5000 S/N 1070	194-258

A transducer correction (TRA) of 0.3 fathoms was determined for both launches 2123 and 2125 by measuring the vertical distance from the waterline to the transducer.

The fathometers were monitored continuously during survey operations to keep the phase calibrate setting correct, at a depth as close as possible to the actual bottom trace. A wide range of depths were encountered in the area covered and adjustments to the fathometers were made accordingly.

The fathograms were scanned during or after hydrography, and all digitized values were compared to the analog bottom trace. When the scanning of these records showed that the digitized depth value was in error, when inserting peaks and deeps, and when meaning out any swell encountered, the depth was taken from the analog trace and annotated on the digitized printout. Allowance was made in this process for any systematic analog-digital differences. In days when swell was encountered, depths were determined by tracking the analog trace value midway between the crest and trough and anotating this value on the digitized printout in place of the erroneous digitized depth.

Settlement and squat observations were made on launch 2123, while survey observations on OPR-524-RA-76 were underway, by examining the analog trace over a flat bottom at various speeds. There was no noticeable settlement and squat determined. Level measurement taken during the spring on launch 2125 showed this craft to have negligible settlement and squat.

Bar checks were normally made twice daily on each vessel. This was not always possible, due primarily to wind and sea conditions too hazardous or too excessive to produce reliable bar check data.

Two Nansen Casts were made during OPR-524-RA-76. The first one was taken at 1600Z, on 15 July 1976, at position 59° 55' 35.0" N x 141° 30' 28.0" W. Analysis was then undertaken using a Plessey Salinometer, S/N 1011, calibrated by N.R.C.C., Northwest Regional Calibration Center, in December of 1975. The second cast, in deeper water, was taken at 2100Z, on 31 August 1976, at position 60° 00' 03.0" N x 141° 23' 00.0" W. The same equipment was used for analysis. Separate velocity curves were constructed for each vessel. The second cast was deemed more representative of conditions on this survey and was used to determine the velocity corrections.

A temperature, depth, and conductivity cast (T.D.C.) was taken simultaneous to the first Nansen cast, using the MARTEK T.D.C. equipment, S/N 358. Velocity correction information from this cast was not used in the processing of the survey.

All applicable corrections are incorporated on a TC/TI (Transducer Correction/Table Indicator) tape for automated processing. Refer to "Separates Following the Text" for printouts of these tapes, as well as abstracts of corrections to echo soundings. For further and more complete information on corrections to echo soundings, reference Corrections

to Echo Soundings Report, OPR-524-RA-76. Preliminary velocity correctors were applied to the smooth sounding boatsheet plots only.

E. HYDROGRAPHIC SHEETS

The Transverse Mercator Projection and soundings were plotted by RAINIER personnel using the PDP-8/e Hydroplot system with the Complot DP-3 Plotter. Launch 2123 used PDP-8/e computer, S/N 01006, and Complot Plotters, S/N's 3750-1 and 6166-23, for gathering and plotting raw field data and for some rough and semi-smooth processing. Launch 2125 used PDP-8/e computer, S/N 01015, and Complot Plotter, S/N 5845-18 for the same purpose as Launch 2123. The plotting room on board RAINIER utilized PDP-8/e computer, S/N 00995 and Complot Plotter, S/N 5445-7. This system was used for a majority of the rough and semi-smooth processing of the field data as well as for all smooth processing of this survey.

The central meridian for RA-10-4-76, H-9634 was 141° 28' 0" W, and the control latitude was 6,623,000 meters north of latitude zero. Rough processing plots were made daily and concurrent with field work to allow for rapid decision making with regards to developments and completeness of sounding coverage. Semi-smooth processing plots were accomplished soon after as a final check on completeness and accuracy. The final smooth plot was constructed after the field work was finished and preliminary processing had verified the survey's completeness and accuracy. No discernable distortion could be detected in the mylar sheet during the final smooth plotting period. The final smooth sounding plot was begun and completed on 29 September 1976.

In addition to the 1:10,000 scale smooth sounding plots for RA-10-4A-76 and RA-10-4B-76, smooth position plots to correspond to the smooth sounding plots are being submitted for use as an overlay at PMC and all rough boat sheets and preliminary processing sheets are being submitted for completeness of the survey records. All data is being transferred to the PACIFIC MARINE CENTER for verification.

F. CONTROL STATIONS

Third order geodetic survey methods were used to establish control stations. Existing triangulation stations were utilized to establish and to supplement these stations. The final version Master Station List contains a listing of all control stations used for both hydrography and field edit with names, descriptions, signal numbers, whether or not that station was used for a Miniranger shore transponder, and the code number of the Miniranger that was located at the corresponding station. Refer to "Separates Following the Text."

Signal numbers 100-299 were used to denote stations that previously existed or were established by third order methods. Signal number 300 was established by three point sextant fix from existing stations, and used for field edit location work. All other third order stations that were visable in the area along the southern shore and surrounding Gull Island, and formed solid geometric configuration for sextant fixes, were used for field edit location work. For further information on station

usage for field edit, reference FIELD EDIT REPORT OPR-524-RA-76.

For a complete discussion of geodetic survey methods, printouts of all computations, and geographic position lists, refer to HORIZONTAL CONTROL REPORT: OPR-524-RA-76.

G. HYDROGRAPHIC POSITION CONTROL

Position control was electronic range--range methods using the Motorola MINI-RANGER III positioning system. The following is a table of electronic components for the two sounding vessels used in data acquisition:

	MINIRANGER	
VESNO	CONSOLE	R/T
2123	720	727
2125	715	720

The following is a table of electronic shore stations used on H-9634:

NAME	SIGNAL NO.	M/R CODE	S/N
CARSON	103	3	776
CHIRP	104	4	777
CAETANI 2	218	1	774
ICY	107	2	775
ICY	107	1 (J.D. 258)	774

Calibrations of the MINI-RANGER III positioning system were performed twice daily except on rare occasions when equipment failures, poor weather, or time limitations prevented this. Calibrations were performed at the intersection of two visual ranges which were set up on control stations located by third order geodetic survey methods. The ranges were formed by stations SEAL (200 on Station List) and HARBOR (No. 201) in Seal Camp Harbor; and by stations CHIRP (No. 104) and CHIRP FRONT RANGE (No. 204) on Gull Island. The geographic position of the range intersection and the rates from each shore station transponder were calculated using computer program RK-562, AZIMUTH TO ELECTRONIC CALIBRATION; VERSION 9/10/74. The method for calibration is as follows; one range was run by the launch coxswain at idle speed. When the second range was crossed, a "mark" was called, the MINI-RANGER was interrogated, and the observed rates were compared to the calculated rates. The ranges were interchanged and the process repeated. Six comparisons were made for each code to be used only as a verification of the baseline calibration corrector. The baseline values were used for final smooth boatsheet plotting.

The large amounts of brash ice and bergs, especially on clear sunny days, caused extreme refraction and mirages. Little is known about the extent to which this refraction affected the MINI-RANGER signals. It is believed that skip and null zones were more extensive and that signals were weaker when extensive ice was positioned between the launches and shore transponders. Reference Section P, "Miscellaneous" of the text for further discussion.

For complete MINI-RANGER base-line calibration information, ELECTRONIC CONTROL REPORT; OPR-524-RA-76 can be referenced.

H. SHORELINE

The final shoreline was transferred from 1:10,000 scale enlargements of National Ocean Survey Shoreline Manuscripts TP-00894 and TP-00895. scale 1:20,000. All shoreline details on the Master Field Edit Sheets for the above manuscript numbers were verified by field edit, and the information was transferred to the smooth boatsheet by pantograph due to the scale difference between the Master Field Edit Sheets and the Hydrographic Survey Boatsheets. Rocks that could be a potential hazard to small boat navigation in the region surrounding Gull Island were located by three point sextant fix or by photo identification. Additional three point sextant fixes were taken in this region to adequately delineate the areas considered foul in nature. Refer to Section P of the text, "Miscellaneous" for further discussion on this subject.

Field Edit is complete and thorough for the shoreline that covers this smooth boatsheet. No major changes to the inshore details or in the compilation of the Mean High Water Line on the manuscripts were necessary. Minor revisions were made on the shoreline in the Gull Island region and in the Caetani River Delta. Verified shoreline and inshore details are shown in black ink on the smooth boatsheet, while changes are shown in red ink. For more complete information on the field edit process for the area of RA-10-4-76 (H-9634), FIELD EDIT REPORT, OPR-524-RA-76, and Master Field Edit Sheets, TP-00894 and 00895 can be referenced.

I. CROSSLINES

Crossline soundings totaled 49.5 nautical miles of 563.0 total nautical miles of sounding line for the survey. This is 8.8% of the total. Agreement was very good to excellent. A total of 1048 junctions between crossline soundings and main scheme soundings were examined on the smooth boatsheets. 85.7% of the junctions were either in exact agreement, or had a maximum error of 0.5 fathoms. In the case of crossline soundings falling between main scheme soundings the prevailing bottom contour was followed with the discrepancy believed less than 0.5 fathoms. 98.7% of the junctions agree or follow the prevailing contour to within one fathom. The remaining 1.3% of the junctions, twelve cases, show a greater than 1 fathom discrepancy between crossline and main scheme soundings. Eleven of these cases are at the following locations:

LATITUDE	LONGITUDE
59° 58' 07" N	141° 18' 22" W
59° 58' 55" N	141° 17' 50" W
59° 58' 55" N	141° 16' 25" W
59° 58' 55" N	141° 16' 07" W
59° 59' 10" N	141° 22' 50" W
59° 59' 35" N	141° 27' 55" W
59° 59' 59" N	141° 24' 31" W
60° 00' 25" N	141° 23' 40" W
60° 00' 25" N	141° 20' 17" W
60° 00' 50" N	141° 19' 05" W
60° 00' 50" N	141° 19' 45" W

All of these eleven positions are in regions of highly irregular and rapidly changing bottom contours, which accounts for the difference between crossline soundings and main scheme soundings in that region. The twelfth case is located at position 59° 59' 10" N x 141° 25' 07" W. The explanation for this is believed by the hydrographer to be a highly localized and isolated irregularity in the bottom contour of the region and was not of sufficient magnitude to warrant development. The main scheme sounding is shoaler by two fathoms than a crossline sounding insert just east of the main scheme sounding. The depths are 24 and 26 fathoms respectively, thus no hazard to navigation is present.

All crossline soundings were taken with the same position and echo sounding equipment used to gather main scheme sounding data (refer to sections D and G of the text). Crossline soundings are plotted in red ink on the smooth boatsheets.

J. JUNCTIONS

As per PROJECT INSTRUCTIONS, junctions with prior surveys were not required. Three junctions were made with contemporary hydrographic surveys that were run concurrently as a part of OPR-524-RA-76. Soundings that overlap are hand plotted in blue ink, and in all cases, junctioning of surveys was excellent.

The southern boundary of H-9634 junctions with contemporary survey RA-10-3-76 (H-9634), scale 1:10,000. All junction soundings from H-9630 are either in agreement with H-9634, or are consistent with the existing bottom contour and allow for smooth continuity in the depth curves between the surveys.

Contemporary hydrographic survey RA-20-3-76 (H-9649), scale 1:20,000, junctions with H-9634 on its northern boundary. Here too, all junction soundings are either in agreement if superimposed, or are consistant with existing bottom contour as viewed on both survey smooth boatsheets.

Finally, the western boundary of RA-10-4-76 (H-9634) junctions with contemporary hydrographic survey RA-20-2-76 (H-9635), scale 1:20,000. All junction soundings agree with the existing bottom gradient and cause no inconsistancy in the depth curves.

K. COMPARISON WITH PRIOR SURVEYS

A comparison of RA-10-4-76 (H-9634) was made with prior hydrographic survey 4256-B dated 1922, scale 1:10,000. Soundings from this survey are hand plotted on the smooth sounding plot boatsheets in brown ink.

Survey priority area
~~Pre-survey review item~~ no. 1, prior soundings to be compared to H-9634 in the region bounded by latitude 59° 58' 35" N on the north, latitude 59° 56' 55" N on the south, longitude 141° 24' 30" W on the east, and longitude 141° 28' 00" W on the west, were examined with the following general conclusion being drawn: an eroding and transporting of the bottom has occurred and soundings are deeper by an average of 7.5 fathoms. The least amount of erosion, 5 fathoms, occurs at geographic position 59°57'37"N x 141° 27' 14" W. The maximum erosion, 13 fathoms, occurs at geographic position 59° 58' 34" N x 141° 27' 44" W, in the central portion of the bay. The primary reason for this deepening is due to currents transporting the glacial depositional mud seaward out of the bay. It is recommended that present survey soundings in this region be accepted for charting purposes. ✓

Pre-survey review item no. 2 was a 4 fathom sounding in a shoal area at geographic position 59° 59' 05" N x 141° 26' 13" W. Adequate development, and position and least depth information was requested. ✓

The shoal region was first run at 90 meter main scheme line spacing. These lines were then split at 45 meter line spacing. Finally the area was covered at 45 meter spacing 90° opposite to the main scheme sounding lines and splits. A least depth of 5.~~7~~6 fathoms was found between the 5th and 6th soundings out of fix number 3987, J.D. 221. The presurvey review 4 fathom sounding originates from a United States Coast Guard sounding that was probably not reduced for transducer draft. It is recommended that the present survey's 5.~~7~~6 fathom sounding be accepted in place of the prior survey's 4 fathom sounding for charting purposes. ✓ concur JHS

Finally it is recommended that all present survey soundings supercede prior survey soundings for charting. concur JHS

L. COMPARISON WITH THE CHART

A comparison was made between RA-10-4-76 (H-9634) and the existing N.O.S. Chart of Icy Bay (5th Ed., 197~~4~~), No. 16741, scale 1:40,000. Comparison soundings are hand plotted on the smooth boatsheets in lime green ink. There are wide variances between contemporary survey soundings and previously charted soundings. ✓

A ridge of de~~x~~position and shoaling has developed in the north central portion of the boatsheet, centered at longitude 141° 19' 30" W. Contemporary soundings are shoaler by up to 22 fathoms at geographic position; latitude 60° 00' 12" N, longitude 141° 20' 05" W, than the comparison charted soundings. East of this ridge however, extensive erosion and transport of the bottom has occurred. Soundings from H-9634 are deeper than those previously charted by up to 27 fathoms at geographic position latitude 60° 00' 17" N, longitude 141° 17' 21" W. Extensive shifting of glacially deposited bottom sediments, deposition and erosion by the New ✓

Yahtse or Caetani Rivers, or position errors in charted soundings are possible explanations. Along the northern boundary of this survey at latitude 60° 01' 00" N, there is general agreement between contemporary survey and charted soundings.

Along the northwestern shore of the boatsheet, both shoaling and deepening can be seen when soundings from H-9634 and from previous charting are compared. Northeast from longitude 141° 24' 25" W, deepening of contemporary soundings by up to 31 fathoms, at geographic position; latitude 60° 00' 16" N, longitude 141° 24' 00" W, are observed. Southwest of longitude 141° 24' 25" W, and northeast of longitude 141° 25' 00" W, shoaling up to 16 fathoms has occurred. Bottom transport or erroneous positioning of charted soundings are again the possible explanations. ✓

West of longitude 141° 25' 00" W to the survey limits at longitude 141° 28' 00" W, there is no apparent pattern to the comparison discrepancies between contemporary survey soundings and soundings previously charted. Shoaling and deepening both occur within this longitude span. Eight fathoms is the maximum difference seen between the chart and H-9634 in this region. ✓

It is recommended that in all these cases, the present survey soundings are of superior quality, and should be accepted to supersede prior soundings for charting purposes. concur JPS

M. ADEQUACY OF SURVEY

RA-10-4-76, H-9634, is a thorough survey of the area bounded by the limits previously listed in Section B. The mainscheme sounding line spacing is 90 meters. This is reduced to 45 meters for development of areas of shoaling deemed necessary by operations, Project Instructions, and Provisional Hydrographic Survey Manual. Inshore areas were surveyed as close to the zero fathom curve as safety would allow. The development of all inshore regions on the sheet is considered thorough. ✓

This survey is complete and adequate to supersede prior surveys for charting purposes. No part is deemed incomplete or substandard in any way. All field survey records (fathograms and digitized printouts) were scanned and checked for peaks and deeps. Appropriate changes were made to the original records where necessary. ✓

N. AIDS TO NAVIGATION

There are no aids to navigation on RA-10-4-76 (H-9634). It is recommended that at some future date, to aid in the proposed development of the southern shore of Icy Bay, that a permanent range be established on Gull Island to be used as an aid in entering the bay. Fixed lights and distinctive day shapes at proper height intervals could be seen out to 2-3 miles, and are recommended. The rear range location could be triangulation station CHIRP, 1974, number 104 on the Final Version Station List for Icy Bay. The front range should be set on the western side of Gull Island in a position to provide a range for entrance down the center of the bay. Refer to "Separates Following the Text," Station List, and ✓

HORIZONTAL CONTROL REPORT, OPR-524-RA-76 for further information. Gull Island is a nesting ground for gulls and terns. It is further recommended that the impact of possible construction on the nesting grounds be thoroughly studied and examined before any such construction takes place.

O. STATISTICS

The following statistics were compiled from daily recordings during survey operations on RA-10-4-76:

LAUNCH	LINER NAUT. MI. SNDNG LINE	NO. BOTTOM SAMPLES	POS.
2123	438.7	0	2273
2125	124.3	201	758
Totals	563.0	201	3031

P. MISCELLANEOUS

The floe ice abounds in Icy Bay, due to extensive calving at the faces of the three glaciers that empty into the bay. This ice caused several minor problems for hydrographic survey operations. Large bergs and extensive pack ice posed potential danger to survey launches and caused delays in operations when the ice would concentrate in unsurveyed areas of the boatsheet.

Floe ice larger than 8-10 feet above the surface of the water created the problem of signal blockage by getting between the launches R/T unit and the shore station transponders. This was alleviated as soon as a direct line of sight was reestablished.

The possibility also exists that the atmospheric refraction over the floe ice surface caused a fluttering and weakening of the signal strength received by the launch. This problem was also seen on the days of heavy moisture concentration in the atmosphere. Careful field monitoring during data acquisition and prudent decision making as to daily work areas kept this problem to a minimum. For a more detailed discussion of project electronics, ELECTRONIC CONTROL REPORT, OPR-524-RA-76 can be reference.

The region surrounding Gull Island is very shallow in nature, and foul at low tide. Three point sextant fixes were used to delineate those regions most foul in nature and to locate the most prominant rocks that outlined the foul areas. This data, in the form of field sounding volumes, paper boatsheets with the plotted fixes, visual master and corrector tapes for automated processing, and geographic position computations for each fix, is being submitted as a part of the field edit data package for this combined operations project. Refer to FIELD EDIT REPORT, OPR-524-RA-76.

No unusual submarine features or anomolous tide and current conditions were encountered in area of RA-10-4-76 (H-9634).

Q. RECOMMENDATIONS

No portion of this hydrographic survey is considered inadequate for charting purposes.

Development and construction in the region surrounding Seal Camp Harbor and the southern shore of Icy Bay, at geographic position; latitude 59° 55' 30" N, longitude 141° 22' 00" W, is planned to coincide with the development of oil drilling operations in the northeast Gulf of Alaska. This land is under the management of:

Chugach Development Corporation
Division of Chugach Natives, Inc.
Mr. Cecil Barnes, President
912 E 15th Ave.
Anchorage, Alaska, 99501

It is recommended that this organization be contacted periodically for information concerning development and construction, and that field parties should be dispatched according to the needs and requirements of the region.

It is further recommended that a bird sanctuary be established on Gull Island for the purpose of protecting the nesting grounds on the island when development begins. This should be coordinated with the previously stated recommendation for a permanent range on the island so as to distrub as little as possible the nesting grounds that abound on Gull Island.

No recommendations outside of the ones previously mentioned, and of those discussed in other sections of the text, are being made.

R. AUTOMATED DATA PROCESSING

Raw digitized data printouts were compared during and after acquisition with the analog trace, and missed depths and inserts were annotated on the printouts. Corrector tapes containing the missed depths and inserts were cut, printouts of the tapes were made, and these printouts were compared to the original annotated raw data printouts for errors and omissions. A rough processing plot was then made of the data, and the raw data and corrector tape printouts were compared to this. Additional inserts, corrections, and erroneous Miniranger rates were eliminated on, or incorporated into a new corrector tape and annotated on the raw data printouts. After a printout was made of the newly edited corrector tape and compared to previous corrector tape and annotated raw data printouts, a semi-smooth processing plot of the data was made. The comparison process previously described was repeated, yielding a complete corrector tape with associated printout, and a fully annotated raw data printout with the original raw electronic master data tape. Final boatsheets then plotted include a smooth sounding plot and a smooth electronic position plot overlay. These are being submitted along with the electronic raw master data tapes, edited electronic corrector tapes, and corresponding printouts. Also being submitted for completeness of the record are field, rough plot, and semi-

smooth boatsheets used during acquisition and processing of H-9634.

No data acquisition or processing procedures differ from those described in current National Ocean Survey Manuals or instructions. A complete list of software used for all phases of combined operations on OPR-524-RA-76, RA-10-4-76 (H9634) follows.

S. SOFTWARE USAGE

	DESCRIPTION	VERSION
RK 111	RANGE-RANGE REAL TIME HYDROPLOT	1/30/76
RK 201	GRID, SIGNAL, AND LATTICE PLOT	7/12/75
RK 211	RANGE-RANGE NON-REAL TIME PLOT	1/15/76
RK 300	UTILITY COMPUTATIONS	2/10/76
RK 330	REFORMAT AND DATA CHECK	5/04/76
PM 360	ELECTRONIC CORRECTOR ABSTRACT	2/02/76
RK 407	GEODETIC INVERSE/DIRECT COMPUTATION	10/23/75
RK 409	GEODETIC UTILITY PACKAGE	9/15/73
AM 500	PREDICTED TIDE GENERATOR	11/10/72
RK 530	LAYER CORRECTIONS FOR VELOCITY	6/25/74
RK 561	H/R GEODETIC CAL BY 3PT FIX	2/19/75
RK 562	AZIMUTH TO ELECTRONIC CALIBRATION	9/10/74
AM 602	ELINORE-LINE ORIENTED EDITOR	5/22/75

T. REFERENCES TO REPORTS

1. FIELD EDIT REPORT; OPR-524-RA-76
2. ELECTRONIC CONTROL REPORT; OPR-524-RA-76
3. HORIZONTAL CONTROL REPORT; OPR-524-RA-76
4. CORRECTIONS TO ECHO SOUNDINGS REPORT; OPR-524-RA-76
5. COAST PLOT REPORT, ICY BAY; OPR-524-RA-76
6. DESCRIPTIVE REPORTS H-9630, H-9635, H-9649

Respectfully submitted

for John C. Osborn, Jr., LTJG, NOAA

APPROVAL SHEET

Descriptive Report to Accompany

Hydrographic Survey

H-9634

RA-10-4-76

OPR-524-RA-76

In producing this sheet, standard procedures were observed in accordance with the Hydrographic Manual, P.M.C. OPORDER and the Project Instructions. The data was examined daily during the execution of the survey.

The boatsheets and the accompaning records have been examined by me, are considered complete and adequate for charting purposes and are approved.

James P. Randall

James P. Randall
CAPT., NOAA

STATION LIST ICY BAY, ALASKA PROJECT OPR-524
VER. FINAL VERSION

100-199 ELECTRONIC AND/OR GEODETIC CONTROL STATIONS
300-399 PHOTO CONTROL STATIONS

EXISTING TRIANGULATION STATIONS
REFERENCE HORIZONTAL CONTROL REPORT

103	202	206	220
104	205	213	221

STATIONS ESTABLISHED BY THIRD ORDER TRIANGULATION, TRAVERSE, OR INTERSECTION METHODS.
REFERENCE HORIZONTAL CONTROL REPORT

102	108	203	209	214	218
105	109	204	210	215	219
106	200	207	211	216	
107	201	208	212	217	

STATIONS ESTABLISHED BY PHOTO IDENTIFICATION
REFERENCE FIELD EDIT REPORT

300

STA 0	LATITUDE	LONGITUDE	CRT	ELEV	F KHZ
102 7	59 55	46409 141 21 44471	250	0000	000000
/CAMP 1976 M/R CODE 2					591411
103 3	59 59	01235 141 31 57069	250	0005	000000
/CARSON 1974 MR CODE 3					591414
104 1	59 57	20001 141 20 47347	250	0012	000000
/CHIRP 1974 M/R CODE 4					591411
105 3	59 54	53988 141 26 47999	254	0012	329640
/GREEN RAYDIST STATION 1976					591411
106 1	59 57	33167 141 38 51639	254	0008	329640
/RED RAYDIST STATION 1976					591414
107 3	60 01	26844 141 22 10771	250	0006	000000
/ICY 1976 M/R CODE 1 & 2					601412
108 4	59 55	45384 141 23 02483	250	0003	000000
/ISLE 1922 RM3 M/R CODE 4					591411
109 2	59 57	58284 141 35 01095	250	0010	000000
/ICY BAY LIGHT(CLAY BLUFF PT) M/R CODE 2					591414
200 5	59 55	39875 141 22 35480	250	0000	000000
/SEAL 1976 M/R CODE 4					591411
201 7	59 55	13538 141 21 44972	250	0000	000000
/HARBOR M/R CODE 4					591411
202 3	59 54	51947 141 26 42707	250	0000	000000
/RUNT 1974 M/R CODE 1					591411
206 7	60 03	28530 141 19 32535	250	0000	000000
/CHAIX 1974 M/R CODE 4					601412
208 7	59 53	14394 141 26 30985	243	0000	000000
/RIOU"B" M/R CODE 1					591411
209 7	59 54	07790 141 25 43702	243	0000	000000
/RIOU "C" M/R CODE 4					591411
218 2	59 58	32071 141 15 37358	250	0000	000000
/CAETANI 2 1976 M/R CODE 1					591411
220 4	60 05	19802 141 21 10312	250	0000	000000
/KARR 1974 M/R CODE 3					601412
221 3	60 05	11108 141 26 53471	250	0000	000000
/TOYUG 1974 M/R CODE 2					601412

```
203 4  59 55 17958 141 21 20978  243 0000 000000
/SHIP FRONT RANGE                            591411

204 4  59 57 07930 141 21 36772  243 0000 000000
/CHIRP FRONT RANGE                           591411

205 6  60 01 54296 141 22 17296  139 0000 000000
/KICHYATT 1974                               601412

207 0  59 54 20552 141 27 19774  243 0000 000000
/RIOU"A"                                     591411

210 7  59 54 37949 141 24 41242  139 0000 000000
/RIOU "D"   TIDAL BM 3456-F-1976             591411

211 7  59 54 46045 141 23 40645  243 0000 000000
/RIOU "E"                                    591411

212 7  59 55 31774 141 23 14267  243 0000 000000
/RIOU "F"                                    591411

213 3  59 54 23715 141 24 11152  139 0030 000000
/RIDGE 1922-74                               591411

214 4  59 55 47163 141 21 44367  139 0000 000000
/CAMP 1976 RM1                               591411

215 6  59 56 08844 141 19 10144  243 0000 000000
/BITS 1976                                   591411

216 4  59 56 29849 141 17 02530  243 0000 000000
/BURGEE 1976                                 591411

217 7  59 57 32876 141 38 50619  139 0000 000000
/WATSON 2 1976                               591411

219 3  60 00 09462 141 26 00214  243 0000 000000
/PEN                                         601412

300 3  59 55 58762 141 21 32154  252 0000 000000
/HYDRO SIGNAL                                591411
```

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)	STATE	LOCALITY	DATE
N.O.S. P.M.C. SEATTLE, WASH	ALASKA	ICY BAY	10-18-76

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
524	CM-7413	TP-00895	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 ° ′	POSITION LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	POSITION LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	METHOD AND DATE OF LOCATION FIELD	CHARTS AFFECTED
LIGHT	ICY BAY LIGHT POSITION UPPATED	59 57	58.284	141 35	01.095		F-3-6-L 12JULY 1976	16016 16741 531

VELOCITY CORRECTOR TAPE LISTING
RA-10-4-76 (H-9634)

LAUNCH - 2123
SCALE - FATHOM
TABLE NO. 2

```
000107 0 0000 0002 001 212300 009634
000211 0 0001
000272 0 0002
000326 0 0003
000378 0 0004
000427 0 0005
000478 0 0006
000527 0 0007
000576 0 0008
000624 0 0009
999999 0 0010
```

LAUNCH - 2125
SCALE - FATHOM
TABLE NO. 2

```
000107 0 0000 0002 001 212500 009634
000211 0 0001
000272 0 0002
000326 0 0003
000378 0 0004
000427 0 0005
000478 0 0006
000527 0 0007
000576 0 0008
000624 0 0009
999999 0 0010
```

Field Tide Note

H-9630, H-9635, H-9634, H-9649

OPR-524

Icy Bay, Alaska

Field tide reduction of soundings was based on station No. 1635, Table 2 (Icy Bay) of the Tide Tables using Sitka, Alaska (945-1600) as the reference station. These predicted tides were converted to GMT tide correctors with PDP8/E computer using Program AM 500, PREDICTED TIDE GENERATOR, version 10 November 1972. PROJECT INSTRUCTIONS stated that no zoning was required and field tide observations during the survey indicate the same. All observations were done on GMT.

Five stations were established to monitor the tide within the project limits:

Station	Location	Operation Dates
T-1, Riou Bay 945-3456	Lat: 59°54.63' N Lon: 141°24.69' W	30 JUN - 16 SEP 76 79 Days
T-2, Carson Creek 945-3464	Lat: 59°59.22' N Lon: 141°30.69' W	28 JUN - 16 SEP 76 81 Days
T-3, Tyndall Glacier 945-3431	Lat: 60°04.7' N Lon: 141°16.5 W	6 AUG - 15 SEP 76 41 Days
T-4, Guyot Glacier 945-3454	Lat: 60°04.31' N Lon: 141°28.74' W	6 AUG - 15 SEP 76 41 Days
T-5, Riou Spit 945-3484	Lat: 59°55.31' N Lon: 141°28.55' W	22 AUG - 6 SEP 76 16 Days

T-1, Riou Bay, 945-3456

T-1 was a Bristol, 0-20 ft bubbler tide gage, SN 67 A 16202. It is recommended that this gage be used to control all hydrography from 1 July, 1976 to the end of the project. This gage was well protected from surf and ice and the best tidal data from Icy Bay was recorded here. The only problem with this gage is that the marigram jumped a sprocket on two occasions during the 2 1/2 months of operations.

The 1922 bench marks were searched for, not found, and are presumed lost. A major shift in the shoreline of Riou Spit 1 1/2 miles to the northeast since 1922 makes recovery unlikely. The gage site was relocated and five (5) new disks set.

Levels were run to five (5) standard NOS disks. Installation levels were run on 30 June and 9 July; and removal levels were run on 10-11 September 1976. Comparison of elevation differences between installation and removal level records indicate that the staff sunk 0.02 ft in 2 1/2 months of operation.

T-2, Carson Creek, 945-3464

T-2 was a Bristol, 0-20 ft bubbler tide gage, SN 73 A 226. An observer was contracted for this station and the gage was operated on GMT (000° W).

The Carson Creek gage was exposed to the south and to the west; therefore was continually subjected to breakers and occasionally to floe ice. The observer knocked the gage pen off its pivots on two occasions. 1) At 2200, 17 July the pen was pushed 1.5 ft low, at 2200 on 18 July it was pushed an additional 0.6 ft lower. The pen was not reset until 27 July 1976. 2) At 1625, 20 August, the pen was knocked off the pivots and was reset at 2305 on 21 August 1976.

T-2 ran out of paper at 0800, 10 July, and a new roll was installed at 1800 on 15 July 1976.

On 8 August the observer found the staff support cables broken. It is believed that the staff sunk when the cables were broken. Due to thick ice and bad weather during the last few weeks of the project, the staff (2 in. diameter pipe with the orifice attached) was found bent on 11 September and by 13 September the staff was no longer visible. It is presumed the staff was bent below the water line rather than removed by the ice (this occured after removal levels).

It is recommended that this gage NOT be used for tide control except for the first two days of hydrography (28 and 29 June). Records from Riou Bay gage were superior to the Carson Creek records, therefore it is recommended that the Riou Bay gage control hydrography from 1 July to the end of the project.

Levels were run to four (4) standard NOS disks and one (1) recoverable point. Installation levels were run on 28-29 June removal levels on 2 September 1976. It was noted that the staff moved 0.36 ft. This change probably occured on 8 August when ice was thick in the area and the pipe supporting both the orifice and the tape reference-mark was torn from its supports.

T-3, Tyndall Glacier, 945-3431

T-3 was a Bristol, 0-20 ft bubbler tide gage, SN 67 A 10287. Observations were done on GMT (000° W) by RAINIER personnel.

The Tyndall Glacier gage was well protected from both surf and ice. It ran out of paper at 1130 on 15 September and the marigram jumped a sprocket two (2) times during the 1 1/4 months of operations.

Levels were run to four (4) standard NOS disks and two (2) recoverable points. After installation levels were run on 11 August to three (3) standard NOS disks and two (2) recoverable points, an additional NOS disk was recovered so a spur was run to it on 5 September, 1976. Removal levels were run on 10 September, 1976.

T-4, Guyot Glacier, 945-3454

T-4 was a Bristol, 0-20 ft bubbler tide gage SN 63A 2925. Observations were done on GMT (000°W) by RA personnel.

Since T-4 was so close to glaciers, it was continually subjected to floe ice. From 1600 on 11 September, the marigram trace slowly increased to full deflection; then at 1900 the trace dropped rapidly to normal. It is believed that ice came to rest on the bubbler tubing, crimped it, and caused the gage to register the feed presure. As the tide rose, the ice was floated and the pressure dropped to normal. At 1018 on 14 September, ice action parted the bubbler tubing.

During the operation of the gage, the marigram jumped a sprocket on three occasions.

Since the gage was originally to be established for less then thirty (30) days of observation, levels were run only to three (3) recoverable points. Installation levels were run on 23 August and removal levels on 10 September, 1976. Comparison of elevation differences between installation and removal level records indacate that the staff sunk 0.03 ft in 1¼ months of operation.

T-5, Riou Spit, 945-3484.

T-5 was a Bristol, 0-30 ft bubbler tide gage SN 72A 21485. Observations were done on GMT (000°W) by RA personnel.

This gage was operated sixteen (16) days with no staff and no levels required in accordance with change no.2 to OPR-524 Project Instructions dated 13 August, 1976.

T-5 ran approximately 0.85 min/day slow and the marigram jumped a sprocket on 7 occasions in the 14 days of operation.

Comparison Among Gages

Since it is recommended that T-1, Riou Bay, be used for control of hydrography, this investigation consists of comparing the Riou Bay marigram with the marigrams of each of the other four gages. In each case the marigram trace of the comparison gage was overlayed on the trace of the Riou Bay marigram (allowing for change in datum) and the comparison done on a light table. Values for comparing Riou Spit had had to be scaled since the gages were of different ranges. In all cases, the comparison was done for 2 through 4 September, 1976.

Carson Creek - Riou Bay

A comparison of the Carson Creek marigram with the Riou Bay marigram showed a difference in the height of high and low tide of between 0.0 and 0.2 ft; and a difference in times of high and low tides varied between 0 and 15 minutes.

Tyndall Glacier - Riou Bay

A comparison of the Tyndall Glacier marigram with the Riou Bay marigram showed a difference in the height of high and low tide of between 0.0 and 0.2 ft. The difference in times of high and low tides was so small as to be indiscernible on the marigrams.

Guyot Glacier - Riou Bay

A comparison of tne Guyot Glacier marigram with the Riou Bay marigram showed a difference in the height of the high and low tide between 0.0 and 0.4 ft; and a difference in times of high and low tides of 0 and 5 minutes.

Riou Spit - Riou Bay

A comparison of the Riou Spit marigram with the RiouBay marigram showed a difference in the height of the high tide between 0.1 and at worst 0.5 ft and a difference in the height of the low tide between 0.0 and 0.3 ft. The difference in the times of high and low tides was between 0 and 15 minutes.

Recommended Zoning

Unless Rockville Smooth Tides display significantly different comparison information to the above field comparison, it is recommended that this survey be reduced using smooth tidal data from Carson Creek tide gage for June and Riou Bay data from 1 July to the end of the project. Since comparison among the gages indicated no tidal height difference equal to nor greater than 0.1 fathom; it is recommended that no zoning be applied.

March 29, 1977

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): Riou Bay

Period: June 26 - September 15, 1976

HYDROGRAPHIC SHEET: H-9634

OPR: 524

Locality: Icy Bay, Alaska

Plane of reference (mean lower low water): 4.9 ft.

Height of Mean High Water above Plane of Reference is 8.9 ft.

Remarks: Zone direct

James C Hubbard

for Chief, Tides Branch

GEOGRAPHIC NAMES

Survey No.

H-9634

Name on Survey	A: On Chart No 16741	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-00894	
CAETANI RIVER ✓									X	1
ICY BAY ✓	X									2
INDEPENDENCE CREEK ✓	X									3
Gull Island (Lat 59°57.2' Long. 140°21.3')										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25

APPROVED

Chas. E. Harrington

STAFF GEOGRAPHER J-C5½2

30 Mar 1971

APPROVAL SHEET

FOR

SURVEY H- 9634

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: 9/9/77

Signed: [signature]

Title: Chief, Verification Branch

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

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

HYDROGRAPHIC SURVEY STATISTICS

HYDROGRAPHIC SURVEY NO. H-9634

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET with PMC & excess overlay	1	BOAT SHEETS 4 parts, 2-paper 2-mylar	1 2
DESCRIPTIVE REPORT	1	OVERLAYS (preliminary)	3 2

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES						
CAHIERS	2 -with printouts					
VOLUMES						
BOXES			1-smooth			

T-SHEET PRINTS (List)
TP-00893, TP-00894, TP-00895 (partials) - complete topo coverage of survey area

SPECIAL REPORTS (List)

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				3031
POSITIONS CHECKED		3031		
POSITIONS REVISED		0		
DEPTH SOUNDINGS REVISED		170		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		3		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		0		
	TIME (MANHOURS)			
Verification of Control		5		
Verification of Positions		25		
Verification of Soundings		134		
Smooth Sheet Compilation		61		
ALL OTHER WORK		15	13 HIT	
TOTALS	3	240		

PRE-VERIFICATION BY James S. Green	BEGINNING DATE 1/22/77	ENDING DATE 1/22/77
VERIFICATION BY A. E. Eichelberger for D.E. Zimmer	BEGINNING DATE 3/6/77	ENDING DATE 6/21/77
REVIEW BY QC/. F.P. SAYLSBURY	BEGINNING DATE	ENDING DATE 11/2/77 24hrs

Carstens 8 hr 11/22/77
Baumgardner 4 hrs 12-5-77

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

REGISTRY NO. H-9634 (1976)

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

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

CARDS CORRECTED

DATE_____ TIME REQUIRED_____ INITIALS_____

REMARKS:

REGISTRY NO. _____

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

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

MAGNETIC TAPE CORRECTED

DATE_____ TIME REQUIRED_____ INITIALS_____

REMARKS:

H-9634

Information for Future Presurvey Reviews

Both shoreline and bottom have undergone considerable changes. Any future survey should be as comprehensive as the present survey to reflect anticipated changes in this area.

Position Index		Bottom Change	Use	Resurvey
Lat.	Long.	Index	Index	Cycle
595	1412	3	0	50 years
595	1413	7	0	50 years
600	1412	3	0	50 years
600	1413	3	0	50 years

(Increased user requirements in the area, logging and oil exploration, may justify a more frequent resurvey cycle.)

PACIFIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO: H-9634 FIELD NO: RA-10-4-76

Alaska, Icy Bay, Southeast of Kichyatt Point

SURVEYED: July 12 - Sept 14, 1976

SCALE: 1:10,000

SOUNDINGS: Ross, Model 5000 Fineline Fathometer

Chief of Party.....R. L. Speer, J.P. Randall
Surveyed by.....Team Leader, J. Osborn,
Kleinschmidt, Stanke, Peterson,
Doering, Ramsey
Automated Plotted by.....PMC Xynetics Plotter
Verified by.....Donald E. Zimmer
June 21, 1977

I. INTRODUCTION

This is a very good basic hydrographic survey conducted by the RAINIER in Icy Bay, AK during the summer of 1976. This survey complies with Project Instructions dated June 8, 1976 and is adequate to supersede all common areas of prior surveys and charted hydrography.

Project parameters used to prepare the boatsheet have been revised to center the hydrography on the smooth sheet. Parameters used by PMC are appended in the smooth printout. All correctors used to plot and reduce soundings on H-9634 can be found in the smooth printout.

The list of stations in the Ship's Report was amended to include only those stations used for control and electronic calibration.

Field sheet soundings were reduced using predicted tides from Station No. 1635, Table 2 (Icy Bay) of the tide tables using Sitka, AK (945-1600) as the reference station. Smooth sheet soundings were reduced from recorded tides using Riou Bay Tide Gage.

No unusual problems were encountered during verification of this survey.

II. CONTROL AND SHORELINE

Refer to Items F and G in the Descriptive Report for a complete description of Horizontal Control used in this survey.

The following Class I Manuscripts, all unreviewed and all having smooth tide correctors applied to elevations, were the source of shoreline transferred to the smooth sheet. Class I's

TP-ØØ893 - 1975-1976
TP-ØØ894 - 1974-76
TP-ØØ895 - 1975-76

Several references are made in the Ship's Report to "Gull Island", an offshore island centered at Lat. 59°57.2', Long. 141°21.3'. This geographic name has not been approved and is not identified on the smooth sheet. Submitted to Geo Names for approval 3PS. (pending 12/1/77)

III. HYDROGRAPHY

a. Crosslines are in excellent agreement with no difference being greater than 1 fathom throughout the entire survey. ✓

b. All standard depth curves are adequately delineated except for the zero curve in alongshore foul areas. ✓

c. The hydrography and developments are adequate to delineate bottom configuration and determine least depths. ✓

An offset of soundings is noticeable when comparing the smooth sheet and the field sheet RA-1Ø-4A-76. This difference being caused by an origin shift on the ships complot plotting system. ✓

There are two hundred and one (2Ø1) bottom samples plotted on H-9634. ✓

IV. CONDITION OF SURVEY

The hydrographic records, overlays, smooth sheet, and reports are all assembled in excellent order and conform to the requirements of the Provisional Hydrographic Manual. ✓

V. JUNCTIONS

This survey junctions with contemporary surveys H-9635, 1:2Ø,ØØØ)(1976)to the west, H-9649, 1:2Ø,ØØØ (1976) to the north, and H-963Ø, 1:1Ø,ØØØ (1976) to the south. All junctions are in excellent agreement, there being no difference in soundings greater than 1 fathom in depths greater than 2Ø fathoms and no difference more than .3 fathom in soundings less than 2Ø fathoms. Depth curves and junction notes have been inked. ✓

VI. COMPARISON WITH PRIOR SURVEYS

This survey was compared with prior survey No. 4256a, 1:10,000, Sept 1922. Due to the change in datum in the 1922 survey, a detailed comparison could not be made. An overall sounding comparison shows H-9634 to be shoaler in all areas. Recommend this survey supersede No. 4256a in all areas of common hydrography.

No comparison was made with the Reconnaissance Survey conducted by the NOAA Ship SURVEYOR in May 1976 - 1:40,000. This survey was made to aid the SURVEYOR in finding suitable anchorage and is not considered a prior survey. ✓

The Pre-Survey Review Item (No. 2) is thoroughly and adequately disposed of in Section "K" of the Descriptive Report. The changes to soundings made by the verifier are due to PMC computer programs and application of the velocity and approved tide correctors. Concur

VII. COMPARISON WITH CHART

a. Comparison was made with Chart No. 16741, 5th Ed. June 1, 1974. Comparison of sounding shows H-9634 to be both shoaler and deeper than charted soundings. This difference being attributed to glacial deposits and erosion of the bottom. See Section "L" Ship's Report for a complete description. Recommend that H-9634 supersede charted data in all areas of common hydrography. Concur

   Charted soundings originated from a Geological Survey of 1970 and U. S. Coast Guard Survey in 1971. ✓

b. There are no controlling depths indicated on the chart. ✓

c. There are no authorized aids to navigation within the limits of this survey. ✓

VIII. COMPLIANCE WITH PROJECT INSTRUCTIONS

This survey adequately complies with Project Instructions dated June 8, 1976, Change no. 1, June 1976, Change No. 2, August, 1976. ✓

IX. ADDITIONAL FIELD WORK

This is a very good hydrographic survey with all areas adequately developed. No additional field work is recommended. ✓

X. NOTES TO COMPILER

The signal list is at the beginning of the position printout. The electronic correctors are at the end of the position printout.

The velocity and TC/TI correctors are at the beginning of the sounding printout.

Respectfully submitted,

A. E. Eichelberger

for Donald E. Zimmer
Cartographic Technician
June 21, 1977

Examined and approved,

James S. Green
Chief, Verification Branch

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

Date: 7 October 1977

To: Eugene A. Taylor, RADM
Director, PMC

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

Subject: PMC Hydrographic Survey Inspection Team Report - H-9634

This survey is a basic hydrographic survey of Icy Bay, Alaska, southeast of Kichyatt Point. This survey was conducted by NOAA Ship RAINIER in 1976, in accordance with Project Instructions OPR-524-RA-76, dated 8 June 1976, and Change Nos. 1, dated 16 June 1976 and 2, dated 13 August 1976.

The north-south sounding line orientation of the mainscheme hydrography, in the eastern portion of the survey area, results in instances where sounding lines parallel the depth curves. Such depth curves are inherently less accurate than those which are produced from sounding lines perpendicular to the bottom contours.

It would have been desirable to have had additional development of the apparent 4.3 fathom shoal at Latitude 59°59'N and Longitude 141°20'W.

The inspection team finds survey H-9634 to be a very good basic survey, adequate to supersede common areas of prior surveys and charted hydrography. Administrative approval is recommended.

Glen R. Schaefer, CDR

John C. Albright, LCDR

Dean R. Seidel, LCDR FOR:

Stanley H. Otsubo

ADMINISTRATIVE APPROVAL
H-9634

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

Eugene A. Taylor

Eugene A. Taylor, RADM
Director
Pacific Marine Center

7 OCT. 1977
Date

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

C352

November 1, 1977

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

THRU: Chief, Quality Control Branch

FROM: F. P. Saulsbury
Quality Evaluator

SUBJECT: Quality Control Report for H-9634 (1976), Alaska, Icy Bay, Southeast of Kichyatt Point

Survey H-9634 was inspected to evaluate the accuracy and adequacy of the survey with respect to data acquisition, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, shoreline transfer, smooth plotting, decisions and actions taken by the verifier, and the cartographic presentation of data. In general, it was found to conform to the National Ocean Survey's standards and requirements except as follows:

1. Additional development in the following areas to ascertain least depths and/or to aid in the delineation of bottom configuration would have been desirable.

Latitude	Longitude	
60°00.44'	141°16.81'	4.6-fathom sounding on present survey and delineation of 5-fathom depth curve
59°59.69'	141°19.64'	7.8 sounding on present survey
59°59.01'	141°20.01'	4.3 sounding on present survey

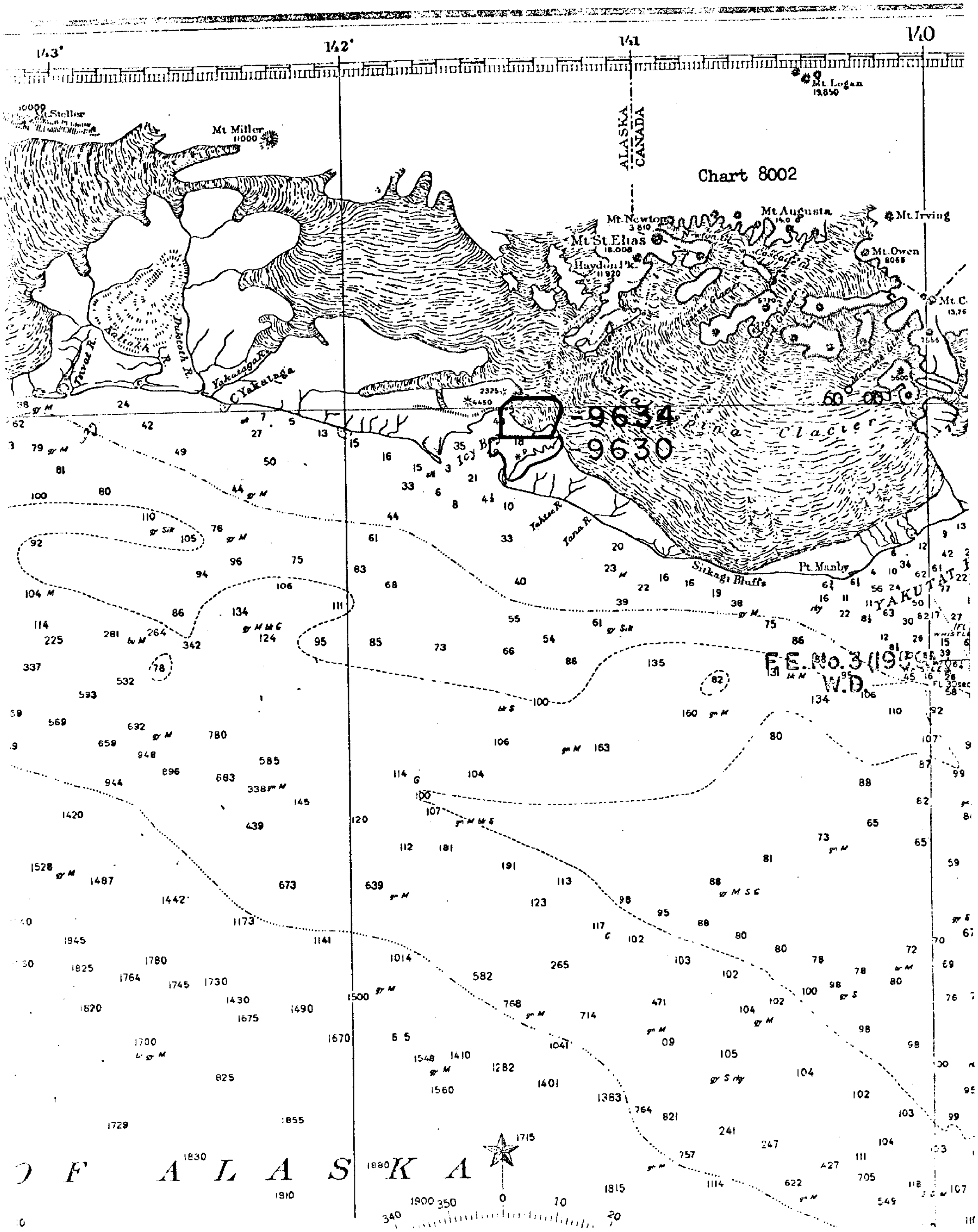
2. Overlapping depth curves with junctional surveys H-9630 (1976) on the south and H-9649 (1976) on the north were made coincidental. The comparison of the junction with H-9635 (1976) on the west will be made in the inspection of that survey.

3. Depth curves were unnecessarily drawn to the center of soundings deeper than the curve value by one unit. They were added where omitted, corrected where in conflict with soundings, and were revised in a few places where soundings supported a more definitive delineation of bottom configuration.

4. Shoreline, islands, and limits of foul areas charted throughout the survey area from NOS photography of 1971 (Bp-86669) have undergone considerable change in this glaciated area and should be charted as they appear on the present survey.

5. The area foul with rocks on T-00894 in latitude 59°57.2', longitude 141°22.1' is obviously in error and was disregarded in the transfer of topographic detail.

cc:
C351



143°
142°
141
140
Mt. Logan
19,850
Mt. Steller
Mt Miller
11000
ALASKA
CANADA
Chart 8002
Mt. Newton
Mt. Augusta
Mt. Irving
Mt. St. Elias
18,008
Haydon Pk.
Mt. Owen
C. Yakataga
Yakataga R.
9634
9630
Sitkagi Bluffs
Pt. Manly
W.D.

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

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. 9634

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
8457	3-9-78	J. Bailey	~~Full~~ Part ~~Before~~ After ~~Verification Review~~ Inspection Signed Via
			Drawing No. Exam. for critical corrs. for Notice to MARINERS. No corr. G.C.
16016	10-4-78	J. Bailey	Full ~~Part Before~~ After ~~Verification Review~~ Inspection Signed Via
			Drawing No. No corr. No hydro shown in area on this chart G.C.
16741 (8457)	6/16/80	J. A. Graham	Full ~~Part Before After Verification Review~~ Inspection Signed Via
			Drawing No. 8 Fully app'd hydro after G.C.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.

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

USCOMM-DC 8558-P63