

9182

Diagram No. 8102-3

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic
Field No. MA-10-1-70
Office No. H-9182

LOCALITY

State Alaska
General Locality Nichols Passage
Locality Smuggler Cove to Copper Point

19 70

CHIEF OF PARTY
CDR D.R. Tibbit

LIBRARY & ARCHIVES

DATE July 31, 1985

☆U.S. GOV. PRINTING OFFICE: 1980-766-230

Area 6

Cuts

17435

17432

17434

17420

16015-2c

70 ... 825
"APPLICATION"

HYDROGRAPHIC TITLE SHEET

H-9182

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.

MA 10-1-70

State ALASKA

General locality NICHOLS PASSAGE

Locality SMUGGLER COVE TO COPPER POINT

Scale 1:10,000 Date of survey 06/17/70 - 09/04/70

Instructions dated March 26, 1970 Project No. OPR-424

Vessel NOAA Ship McARTHUR, launches AR-1, AR-2, and skiff

Chief of party Cdr. D. Tibbit

Surveyed by Lt(jg) Howell, III, Ens. D. Spillman, Lt. D. Wilson, Lt.Cdr. J. Brown, Ens. N. Prah, and Ens. M. Wagner

Soundings taken by echo sounder, hand lead, pole Raytheon DE723

Graphic record scaled by Ship personnel

Graphic record checked by Ship personnel

Verified ~~Produced~~ by K. Scott, S. Otsubo, L. Deodato Automated plot by PMC Xynetics Plotter

Evaluated ~~Verification~~ by K. M. Scott

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

REMARKS: Revisions and marginal notes in black by the evaluator. Separates are filed in the accordian file with the raw data

Audis / Surf GSM 5/9/86

SWW 12/14/92

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY (MA 10-1-70)

NOAA Ship McARTHUR (CSS-30)

Scale 1:10,000

Donald R. Tibbit, CDR, NOAA

1970

A. PROJECT

Hydrography on this sheet was accomplished in accordance with Project Instructions OPR-424, Nichols Passage and Felice Strait, South East Alaska dated 26 March, 1970 and change thereto dated 6 April, 1970. ✓

B. AREA SURVEYED

The area surveyed is in the South end of Nichols Passage near Metlakatla. It is bounded on the north by Latitude $55^{\circ}08.75'$ N on the South by Latitude $55^{\circ}05.00'$ N on the West by Longitude $131^{\circ}41.00'$ W and on the East by Annette Island. The survey was performed between 17 June, 1970 and 4 September, 1970. The survey overlaps prior surveys H-3710 (1:10,000, 1914) H-3718 (1:20,000, 1914) and H-3685 WD (1:10,000 1914). This survey junctions with contemporary surveys H-9070 (1:10,000, 1969) and MA 10-2-70 (1:10,000, 1970). *H-9157*

C. SOUNDING VESSELS

Hydrography performed by the McARTHUR is indicated by red position numbers, Launch AR-1 by blue position numbers, Launch AR-2 by violet position numbers, and all skiffs positions by green position numbers. An Abstract of position numbers corresponding to various sounding vessels is included at the end of this report. ✓

D. SOUNDING EQUIPMENT

Raytheon DE 723 fathometers were used throughout the survey, serial number 918 on the ship, serial number 931 on Launch AR-1 and serial number 920 on Launch AR-2. The fathometer initial was set on 2.0 fathom on the ship and 0.0 on both launches. Bar checks to seven fathoms were taken twice daily ✓

to determine instrument and transducer draft corrections for the launches. Velocity corrections included in the bar check results were subtracted out to determine instrument and transducer draft corrections. Instrument error and draft corrections for the ship were obtained from the results of a vertical cast comparison in Tamgas Harbor. Velocity corrections were obtained from the results of 4 Nansen casts taken at the working grounds during the 1970 field season. No phase corrections were necessary. Settlement and squat corrections were not determined because the sounding vessels, in particular the launches, were run at a great variety of speeds. Tide reducers were determined from actual tides observed using a bubbler gage at the port of Metlakatla wharf, Metlakatla, Annette Island, Alaska. TC/TI tapes for the ship and both launches were made using a single indicator format. The tapes for the ship and both launches combined instrument error correction and the transducer draft corrections. The velocity correction table for the ship is referred to as Table (one) and the velocity correction table for launches AR-1 and AR-2 is referred to as Table (two) in the TC/TI tape. The TRA correction remained constant throughout the survey. For detailed information on fathometer corrections see the fathometer correction report OPR-424.

E. SMOOTH SHEET

The smooth sheet is to be plotted by the ^{Xynerics} Gerber Plotter at the Electronic Data Processing Division, Pacific Marine Center.

F. CONTROL

The entire survey was controlled by visual three-point sextant fixes. Control consisted of 5 existing triangulation stations, 25 photo-hydro signals, 1 hydro signal located by theodolite cut 5 hydro signals located by sextant cuts, and 9 hydro signals located by theodolite with computed geographic positions. Photo-hydro signals were transferred using 1:10,000 scale incomplete manuscripts, T-12443, T-12444, T-12446 and T-12447.

G. SHORELINE

The shoreline was transferred to the boatsheet from the four manuscripts mentioned in Section F. The transfer of shoreline and topographic details was checked during hydrography. Corrections are shown in red ink on the boatsheet.

Several corrections and additions to rock ledge limits were made between Smugglers Cove and Village Point. ✓

The wharf shown in red has been constructed since the date of the photography. An inset at approximately 1:2,500 is shown on the boatsheet. Hand lead soundings were taken around the pier. A groin and small pier have been constructed in the vicinity of positions #241 and 217. Barges tie up at this pier to load sawdust from a lumber mill. All changes in the shore line are noted on the boatsheet. The low waterline was located whenever possible. ✓

* 241 - latitude 55° 07' 36.87" N longitude 131° 33' 39.66" W
217 - latitude 55° 07' 37.99" N longitude 131° 33' 39.76" W

H. CROSSLINES

There were 18.6 nm of crosslines which amounted to approximately 8% of the main system of sounding lines. A large amount of development was also run. ✓

A consistent one fathom discrepancy between ship and launch soundings exists on the boatsheet. This is due to the combination of instrument and draft corrections which were not applied to boatsheet soundings. Ship soundings appear 1 fathom deeper than launch soundings in the same area. There were no significant unresolved discrepancies at crossings.

I. JUNCTIONS

The soundings in this survey agree well with the two contemporary surveys listed in Section B of this Report. No adjustments were necessary. See Eval Rpt Sect. 5

J. COMPARISON WITH PRIOR SURVEYS

There were two numbered pre survey review items applicable to this survey. Item No. 28, an eight foot sounding charted at Latitude 55°08.30' Longitude 131°34.40', was investigated and a least depth of 1.4 fm between pos 6409 and 6410 (Vol. 13 page 28) was found. Since several lines were run in this area at close spacing this is assumed to be the shoalest sounding in the area. The shoal was not visible.

Chart from H-9182

Item No. 29 consisted of a 2 fm sounding charted in Latitude 55°07.04' N Longitude 131°36.56' W and a 1 1/4 fm sounding at Latitude 55°06.91' Longitude 131°36.56'. The least depth in the area of the 2 fm sounding was 0.7 fm between pos 2381 and 2382 (Vol. 19 page 33). The least depth in the area of the 1 1/4 fm sounding was 1.4 fm between position 5058 and 5059 (Vol. 8 page 28). Although several lines at close spacing were run in the area, since the 1 1/4 fm was not visible, it is

* 5058 - latitude 55° 06' 54.01" N longitude 131° 36' 32.34" W
5059 - latitude 55° 06' 54.62" N longitude 131° 36' 46.80" W
* * 6409 - latitude 55° 08' 17.54" N longitude 131° 34' 13.17" W
6410 - latitude 55° 08' 17.87" N longitude 131° 34' 26.42" W

recommended that the 1 1/4 fm sounding be retained for charting instead of the 1.5 fm sounding obtained in this survey. *Do not concur Chart from H-9182*

A comparison of this survey with prior surveys H-3710 (1:10,000 1914) and H-3718 (1:20,000 1914) indicates good agreement. Some new shoals and rocks were found. *See Eval Rpt Sect. 6*

K. COMPARISON WITH THE CHART

A comparison with charts 8074 (1:20,000 10th Ed. May 1, 1967), 8075 (1:80,000 3rd Ed. 2 Sep, 1968) and 8102 (1:229,376 10th Ed. 26 May, 1969) showed discrepancies as mentioned in Section G about the new water front construction in Port Chester, and in the areas explained below, which are noted on the boatsheet.

<u>Latitude</u>	<u>Longitude</u>	<u>Previously Charted Depth</u>	<u>Depth from this Survey</u>	
55°08.64'	131°33.19'	6.0 fms	4.0 fms ✓	<i>See Eval Rpt Sect. 7</i>
55°08.58'	131°34.30'	5.0 fms	4.0 fms	
55°08.38'	131°34.40'	5.25 fms ✓	3.8 fms	
55°08.70'	131°35.81'	9.0 fms ✓	3.8 fms ✓	
55°08.11'	131°38.80'	7.0 fms ✓	3.0 fms ✓	
55°05.37'	131°36.72'	3.0 fms ✓	1.8 fms ✓	

L. ADEQUACY OF THE SURVEY

Hydrography on the western side of this survey was not attempted due to the inadequacy of the photo hydro support data on manuscripts T-10626 and T-10627. The new photography, requested by Chief, Operations Division Pacific Marine Center, in a letter dated 20 November, 1969, to C351, operation requirements branch, was not provided. Ground survey methods were not used due to problems encountered in this area during the 1969 season, as mentioned in the letter cited above. *See Eval Rpt Sect. 1*

The rest of this survey is adequate to supersede prior surveys.

M. AIDS TO NAVIGATION

A comparison of the navigational aids on this boatsheet with the light list and the largest scale charts of the area showed all aids were present and operating as indicated. *See Eval Rpt Sect. 7*

N. STATISTICS

SKIFF

Number of Positions 193

LAUNCH AR-1

Number of Positions 3,034
Nautical Miles Sounding Lines 334.0

LAUNCH AR-2

Number of Positions 447
Nautical Miles Sounding Lines 47.5

SHIP

Number of Positions 516
Nautical Miles Sounding Lines 85.6

TOTALS

Number of Positions 4190
Nautical Miles Sounding Lines 467.1
Bottom Samples 90
Nansen Casts 4
Square Miles 14.1
Nautical Miles Shoreline 12.5

O. MISCELLANEOUS

Skiff positions 5 through 405 require no velocity or transducer draft corrections since they were made using a lead-line.

P. RECOMMENDATIONS

Based on the experiences of McARTHUR with incomplete and inadequate photo-hydro support during the 1969 and 1970 field season, no attempt should be made to run hydrography on the Western part of this survey until new photography has been flown and compiled. *Hydrography was accomplished in that area during the 1972 field season. See Eval Rpt Sect. 1*

Q. REFERENCES TO REPORTS

Fathometer correction report OPR-424 Nichols Passage 1970; Field edit reports T-12443, T-12444, T-12446 and T-12447; Pre survey review report OPR-424; and Geographic names report OPR-424 Nichols Passage 1970.

R. ELECTRONIC DATA PROCESSING INFORMATION

Data was recorded using a climatronics data logger and friden ✓
flexowriter in single indicator, visual control format. Po-
sition and sounding tapes were combined.

Submitted by,

Don M. Spelleman

for Thomas C. Howell III
LTJG, NOAA

Approved and Forwarded

Donald R. Tibbit

Donald R. Tibbit
CDR, NOAA
Commanding Officer
NOAA Ship McARTHUR (CSS-30)

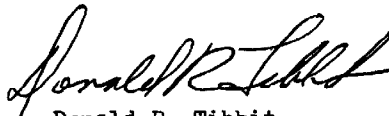
ENCLOSURES:

Tide Note
Abstract of Velocity Corrections
Transducer Draft and Instrument Corrections
Abstract of Position Numbers
List of Signals
List of Basic Field Records
Approval Sheet

*separates
are filed in
the accordion
file with raw
data*

APPROVAL SHEET FOR MA 10-1-70

Field work on this survey was accomplished under my general supervision. Frequent inspections of the field data and boatsheet were made by me as the survey progressed. The sounding records have been inspected by me and are approved. This survey is complete and adequate, and is hereby approved.



Donald R. Tibbit
CDR, NOAA
Commanding Officer
NOAA Ship McARTHUR (CSS-30)

TIDE NOTE

TO ACCOMPANY

H (MA 10-1-70)

TIDE STATION

METLAKATLA HARBOR

Annette Island, Alaska

Lat. $50^{\circ}07.7'N$

Long. $131^{\circ}34.0'W$

PLANE OF REFERENCE MLLW 9.7 ft ON 1970 STAFF

Time Meridian	105°W
Time Correction	None
Height Correction	None
Time of Coverage	Entire Survey
Area of Coverage	Entire Survey

TIDE NOTE
TO ACCOMPANY

H (MA 10-1-70)

TIDE STATION

MITLANATLA HARBOR

Annette Island, Alaska

Lat. $50^{\circ}07.7'N$

Long. $131^{\circ}34.0'W$

PLANE OF REFERENCE MLLW 9.7 ft ON 1970 STAFF

Time Meridian	$105^{\circ}W$
Time Correction	None
Height Correction	None
Time of Coverage	Entire Survey
Area of Coverage	Entire Survey

TIDE NOTE FOR HYDROGRAPHIC SHEET

March 17, 1971

~~National Ocean Service~~ Pacific Marine Center

Hourly heights

~~Printed from the~~ approved ~~for~~ OPR 424, Tide Tape Printout
~~values of standing records~~ Sept. 9-Oct. 20, 1970

HYDROGRAPHIC SHEET

Locality: Annette Island, SE Alaska

Year
~~Printed from~~ 1970

Plane of reference is staff "0", which is 9.4 feet below mean lower
low water

Tide Station Used (Form C&GS-681):

Tamgas Harbor, Annette Island

Height of Mean High Water above Plane of Reference is as follows:

~~230~~
~~230~~ feet

H-9157
9182
9184

Remarks Heights have been revised in red and verified
as follows:

<u>Day</u>	<u>Hour</u>
267	0700
284	1000

J.M. Symons
Chief, Tides and Currents Branch

HYDROGRAPHIC SURVEY STATISTICS

H-9182

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		0
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		1
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDIAN FILES			3		
ENVELOPES	28				
VOLUMES	22				
CANERS					
BOXES					

SHORELINE DATA

- SHORELINE MAPS(List):
- PHOTOBATHYMETRIC MAPS(List):
- NOTES TO THE HYDROGRAPHER(List):
- SPECIAL REPORTS(List):
- NAUTICAL CHARTS(List):

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			4,113
POSITIONS REVISED	1,386		
SOUNDINGS REVISED	86		
CONTROL STATIONS REVISED	0		
	TIME - HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION	2		2
VERIFICATION OF CONTROL	12		12
VERIFICATION OF POSITIONS	248		248
VERIFICATION OF SOUNDINGS	167		167
VERIFICATION OF JUNCTIONS	2		2
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	63		63
COMPARISON WITH PRIOR SURVEYS AND CHARTS		24	24
EVALUATION OF SIDESCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT	4	15	19
OTHER			
Digitization	12		12
TOTALS	510	39	549
<i>Pre-processing Examination by</i>	<i>Beginning Date</i>	<i>Ending Date</i>	
<i>Verification of Field Data by</i> K Scott, S Otsubo, I Deodato	<i>Time(Hours) Beginning</i> May 30, 1985	<i>Ending Date</i> May 10, 1985	
<i>Verification Check by</i> S Otsubo, BA Olmstead, JS Green	<i>Time(Hours)</i> 24	<i>Ending Date</i> June 11, 1985	
<i>Evaluation and Analysis by</i> K Scott	<i>Time(Hours) Beginning</i> May 22, 1985	<i>Ending Date</i> June 11, 1985	
<i>Inspection by</i> D Hill	<i>Time(Hours)</i>	<i>Ending Date</i>	

PACIFIC MARINE CENTER
EVALUATION REPORT

H-9182

1. INTRODUCTION

H-9182 was accomplished by NOAA Ship McARTHUR in accordance with the project instruction OPR-424, dated March 26, 1970 and Change No. 1, dated April 6, 1970. Change No. 1 was requested from Rockville but a copy of this change could not be found.

This is a basic survey of Nichols Passage, Alaska, Smuggler Cove to Copper Point, with field work taking place during two years, 1970-72. After position verification, it was agreed by telecon with N/CG24 (D. Westbrook, May 17, 1984) to process only the 1970 data. The 1972 field sheet, west of longitude 131°41'00"W, was sent to N/CG22 for application to charts as unprocessed field data.

Tide correctors used for the reduction of final soundings reflect hourly heights zoned directly from Metlakatla. Depths and elevations for detached features were computed using tide correctors in fathoms which were manually converted to feet.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic.

2. CONTROL AND SHORELINE

Hydrographic control and positioning are adequately discussed in Descriptive Report, paragraph F.

Horizontal control used established triangulation stations, photo-located signals and hydrographic signals based on the North American 1927 datum.

The following unreviewed photogrammetric manuscripts were used for location of offshore features.

T-Sheet	Sheet	Date of Photography	Date of Field Edit	Class
T-12443	1:10,000	July 1963	Oct 63, Jun 70	I
T-12444	1:10,000	July 1963	Oct 63, Jun 70	I
T-12446	1:10,000	July 1963	Aug 70	I
T-12447	1:10,000	July 1963	Jun & Sept 70	I

Most shoreline and some geographic names are not shown on the smooth sheet in an effort to expedite office processing. (See memorandum Reduction of Marine Center Hydrographic Survey Processing Backlog, February 16, 1984.) Shoreline is shown for small islands offshore of Annette Island to prevent the possible interpretation that islands no longer exist.

3. HYDROGRAPHY

Soundings at line crossings are in good agreement.

Delineation of the bottom configuration, development of shoal soundings, determination of least depths, and delineation of standard depth curves are adequate. Supplemental and brown curves have been added to emphasize shoal soundings.

4. CONDITION OF SURVEY

The hydrographic field records and reports are adequate and conform to the requirements of the Hydrographic Manual, 3rd Edition. The smooth sheet and associated records are adequate and conform to the requirement of the Hydrographic Manual, 4th Edition, revised through Change Three with the following exception.

Some nonfloating aids to navigation were not located by the hydrographer (see Section 7c).

5. JUNCTIONS

H-9182 junctions with the following surveys:

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Junction</u>	<u>Note</u>
H-9070	1969	1:10,000	north	Adjoins
H-9157	1970	1:10,000	south	Adjoins
H-9330	1972	1:10,000	southwest	Adjoins

Soundings were transferred from H-9070 and H-9157 to further define depth curves and effect an adequate junction.

The adjoining surveys have been verified and submitted to Rockville for charting. Junction comparisons were made using copies. Depth curves and soundings are in agreement. No adjustments are needed.

6. COMPARISON WITH PRIOR SURVEYS

H-3710 (1914) 1:10,000

Soundings and features in the area of common coverage indicate a very stable bottom. Features are identifiable and soundings agree within one to two feet. Changes in the area are due to cultural development.

Soundings and features have been transferred to the smooth sheet to further define the area.

H-3718 (1914) 1:20,000

The comparison between H-3718 and H-9182 shows a difference in sounding depth up to four fathoms. These differences are attributed to the scale of the prior survey (less detail) and the difference between sounding methods.

H-9182 is less deep and incorporates more data; however, the hydrographer seems to have missed several rocks. Since other features are identifiable, those rocks not disproven have been transferred to the smooth sheet from H-3718.

H-9182 is adequate to supersede H-3710 and H-3718 within their common areas.

H-3685 WD (1914) 1:10,000

H-9182 has been compared with this wire drag survey. With the exception of the 3.5 fathom (21 foot) sounding at latitude 55°08'20.4"N, longitude 131°33'18.8"W, soundings are in agreement and there is no conflict with the effective depth of any drag. The 3.5 fathom sounding has been transferred to the present survey.

Pre-survey review items are adequately discussed in paragraph J of the hydrographer's report.

7. COMPARISON WITH CHART

Chart 8074, 11th Edition, November 28, 1970
 Chart 17435 (8074), 14th Edition, January 1, 1983
 Chart 8075, 3rd Edition, September 2, 1968
 Chart 17434 (8075), 9th Edition, February 14, 1981

While H-9182 was being processed, several editions of the charts 17435 (8074) and 17434 (8075) were published. For this reason, H-9182 was also compared with Charts 17435, 14th Edition, and 17434, 9th Edition.

The largest scale chart used in the field at the time of the survey was 8074, 10th Edition, May 1, 1967. That chart was not available for comparison during evaluation. The 11th Edition was used instead.

a. Hydrography - Most charted information originates with the prior surveys discussed in Section 6 of this report. Cultural features of the town of Metlakatla were charted and updated from miscellaneous sources and should remain as charted.

The rock awash at latitude 55°06'16.5"N, longitude 131°36'41.5"W originates from an unknown source. The present survey indicates a 1.9 fathom shoal in that vicinity; however, the hydrographic development does not adequately verify or disprove the rock. The source of this rock should be investigated and, if valid, retain the rock awash as charted; otherwise, the area should be revised in accordance with the present survey.

*Revised
 the Book
 AS*

Except as noted previously in this section, H-9182 is adequate to supersede charted hydrography within the common area.

There have been no dangers to navigation identified or reports submitted by the ship or PMC Nautical Chart Branch for this survey.

The geographic names shown on the smooth sheet originate with Chart 17434, 9th Edition.

b. Controlling Depths - There are no controlling depths within the limits of this survey.

c. Aids to Navigation - Floating aids to navigation were located during field operations and are plotted on the smooth sheet as N"2" and C"1". Buoy N"2" has been replaced by Gull Island Light. Buoy C"1", Scrub Island Lighted Buoy 1, has been replaced by Scrub Island Buoy 5.

Village Point Light and Metlakatla Breakwater Light were plotted using photomanuscript locations. The first light remains as described in the 1970 Light List but the second has been replaced with Metlakatla Breakwater Light 1.

The following lights were not located:

Metlakatla Pier North Light
Metlakatla Pier South Light

The following aids have been added since the date of the survey:

Metlakatla Inner Harbor Daybeacon 3
Metlakatla Inner Harbor Daybeacon 5
Metlakatla Inner Harbor Daybeacon 7
Metlakatla Boat Harbor Light 2
Scrub Island Buoy

All present aids to navigation should be retained as charted.

8. COMPLIANCE WITH INSTRUCTIONS

H-9182 adequately complies with the project instructions as amended and noted in Section 1 of this report.

9. ADDITIONAL FIELD WORK

This is a good basic survey. No additional field work is recommended.

Karol M. Scott

Karol M. Scott
Cartographer

This survey has been verified and evaluated. I have examined the survey and it meets Charting and Geodetic Services survey standards and requirements for use in nautical charting. The survey is recommended for approval.

Dennis Hill

Dennis Hill

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-9182

I have reviewed the smooth sheet, accompanying data, and reports of this hydrographic survey. Except as noted in the Evaluation Report, the hydrographic survey meets or exceeds Charting and Geodetic Services (C&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

 6/18/85
Chief, Nautical Chart Branch (Date)

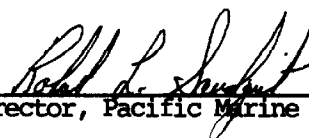
CLEARANCE:

N/MOP2:LNMordock

SIGNATURE AND DATE:

 6/18/85

After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

 6-18-85
Director, Pacific Marine Center (Date)

