

H10491

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey ... Hydrographic.....
Field No. RA-10-18-93.....
Registry No. H-10491.....

LOCALITY

State Alaska.....
General Locality .. Alaska Peninsula.....
Sublocality NW of Sutwik Island.....

1993-94

CHIEF OF PARTY

CAPT Russell C. Arnold, NOAA

LIBRARY & ARCHIVES

DATE JUN 7 1995.....

H-10491

HYDROGRAPHIC TITLE SHEET

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-10-18-93

State Alaska

General locality NW of Sutwik Island

Locality Alaska Peninsula

Scale 1:10,000 Date of survey July 29 - August 9, 1993
May 27 - June 4, 1994

Instructions dated April 13, 1993,* May 5, 1994 Project No. OPR-P180-RA

Vessel RA-3(2123), RA-4(2124), RA-5(2125), RA-9(2129)

Chief of party CAPT Russell C. Arnold, NOAA

Surveyed by LT D. Haines, LTJG D. Lemke, ENS A. Caron

Soundings taken by echo sounder, hand lead, pole DSF-6000N, Innerspace 448

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Verification by: E. Domingo, B. Mihailov, G. Kay Automated plot by HP Design Jet 550L

~~Plotted by~~

Evaluation by: B. Mihailov

~~Verified by~~ Meters & Decimeters

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

REMARKS: Time in UTC, revisions and marginal notes in black were generated during office processing. All separates are filed with the hydrographic data, as a result page numbering may be interrupted or non-sequential.

All depths listed in this report are referenced to mean lower low water unless otherwise noted.

* Change no. 1 dated April 23, 1993, Change No 2 dated June 21, 1993

*50 7-8-97
6/8/95*

*AWOIS/SURE 8/14/95
MLR*

PROGRESS SKETCH

EAGLE I.

GARDEN I.

157 00' 00"

HYDROGRAPHIC SURVEY
SOUTHERN ALASKA PENINSULA, ALASKA

MAY JUN JUL AUG

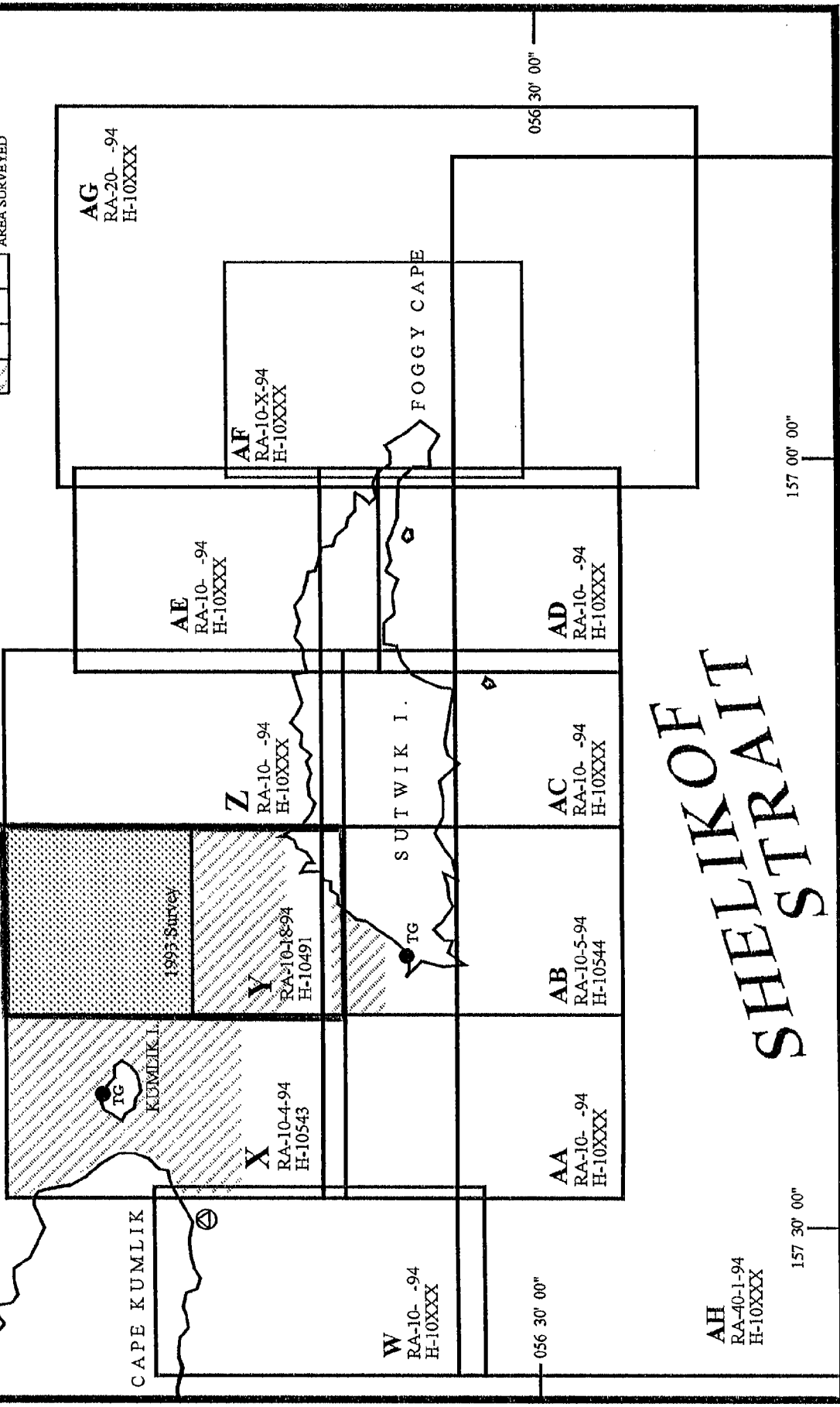
19.2				
493				
0				
3				
0				
3				
3				
0				

SQ. NM SOUNDINGS
LN. M. SOUNDINGS
LN. M. SIDE SCAN SOUNDINGS
BOTTOM SAMPLES (GRAB)
ELECTRONIC CONTROL STATIONS
TEMP. DEPTH, SOUND VEL. CAST
TIDE GAGES
GEO. CONT. STATIONS EST./REC.
AWOIS ITEMS INVESTIGATED
AREA SURVEYED

MAY 27-31, 1994

NOAA SHIP RAINIER
R. C. ARNOLD, CAPT., NOAA
COMMANDING

SCALE OF CHART 16568
1:106,600



AG
RA-20-94
H-10XXX

AF
RA-10-X-94
H-10XXX

AE
RA-10-94
H-10XXX

AD
RA-10-94
H-10XXX

Z
RA-10-94
H-10XXX

AC
RA-10-94
H-10XXX

Y
RA-10-18-94
H-10491

AB
RA-10-5-94
H-10544

X
RA-10-4-94
H-10543

AA
RA-10-94
H-10XXX

W
RA-10-94
H-10XXX

AH
RA-40-1-94
H-10XXX

SHELLIKOF STRAIT

056 30' 00"

056 30' 00"

157 30' 00"

157 00' 00"

Descriptive Report to Accompany Hydrographic Survey H-10491

Field Number RA-10-18-93

Scale 1:10,000

July-August 1993

May-June 1994

NOAA Ship RAINIER

Chief of Party: Captain Russell C. Arnold

A. PROJECT ✓

This basic hydrographic survey was completed along the Southern Alaskan Peninsula as specified by Project Instructions OPR-P180-RA dated April 19, 1993, change No. 1 dated April 23, 1993, change No. 2 dated June 21, 1993 and Project Instructions OPR-P180-RA dated May 5, 1994.

Survey H-10491 corresponds to "Sheet Y".

This survey will provide contemporary hydrographic survey data for updating existing nautical charts, and for constructing two new 1:100,000 scale metric charts. The new charts will cover inshore and offshore areas between Sutwik Island and Mitrofanina Island, along the Southern Alaska Peninsula. Requests for hydrographic surveys and updated charts have been received from the U.S. Coast Guard, Alaskan Congressional Delegates, NOAA, Defense Mapping Agency, and local fishermen.

B. AREA SURVEYED ✓ See Evaluation Report Section 1.

This survey area is located north of Sutwik Island, along the Southern Alaskan Peninsula. The survey limits are latitudes $56^{\circ}41.0'N$, $56^{\circ}34.0'N$, and longitudes $157^{\circ}14.5'W$, $157^{\circ}22.0'W$. The shoreline is rocky with numerous ledges.

Data acquisition was conducted from July 29, Day Number (DN) 210, through August 8, DN 220 1993 and May 27, DN 147 through June 3, DN 157 1994.

C. SURVEY VESSELS ✓

Data were acquired by the NOAA SHIP RAINIER, four survey launches, and a Munson Hammerhead skiff as noted below:

<u>Vessel</u>	<u>EDP No</u>	<u>Operation</u>
RAINIER	2120	SV Casts Bottom Samples
RA-3	2123	Hydrography
RA-4	2124	Hydrography Shoreline Verification
RA-5	2125	Hydrography Shoreline Verification Bottom Samples
RA-6	2126	Hydrography

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

Data acquisition and processing were accomplished with the following HDAPS and Coastal Oceanographics HYPACK programs:

HDAPS 1993

<u>Program Name</u>	<u>Version</u>	<u>Date Installed</u>
AUTOST	3.00	9/24/92
BACKUP	2.00	9/24/92
BASELINE	1.13	9/24/92
BIGABST	2.03	9/24/92
BLKEDIT	2.00	9/24/92
CARTO	2.04	3/1/93
CONVERT	3.51	9/24/92
DAS_SURV	6.33	5/17/93
DP	2.13	3/1/93
EXCESS	4.10	9/24/92
FILESYS	3.02	5/17/93
GRAFEDIT	1.01	2/26/93
LSTAWOIS	3.01	9/24/92
LISTDATA	1.00	9/24/92
MAINMENU	1.00	9/24/92
MAN_DATA	2.00	9/24/92
NEWPOST	6.00	9/24/92
PLOTALL	2.08	2/26/93
PRESURV	7.01	2/26/93
PRINTOUT	4.01	9/24/92
QUICK	2.03	2/26/93
RAMSAVER	1.01	9/24/92
REAPPLY	2.01	9/24/92
SYMBOLS	2.00	9/24/92
ZOOMEDIT	2.10	9/24/92

HDAPS 1994

<u>Program Name</u>	<u>Version</u>	<u>Date Installed</u>
BACKUP	2.00	3/7/94
BASELINE	1.14	3/7/94
BIGABST	2.07	3/7/94
BIGAUTOST	3.01	3/7/94
BLKEDIT	2.02	3/7/94
CARTO	2.13	5/12/94
CLASSIFY	1.05	3/7/94
CONVERT	3.62	3/7/94
DAS_SURV	6.70	5/12/94
DIAGNOSE	3.04	5/12/94
DISC-UTIL	1.00	3/7/94
DP	2.14	3/7/94

EXCESS	4.21	3/7/94
FILESYS	3.24	5/12/94
GRAFEDIT	1.06	3/7/94
LISTDATA	1.02	3/7/94
LOADNEW	2.10	3/7/94
LSTAWOIS	3.07	5/12/94
MAINMENU	1.20	3/7/94
MAN_DATA	2.01	3/7/94
NEWPOST	6.01	3/7/94
PLOTALL	2.27	5/12/94
POINT	2.10	3/7/94
PREDICT	2.01	3/7/94
PRESURV	7.08	5/12/94
PRINTOUT	4.03	5/3/94
QUICK	2.05	5/12/94
RAMSAVER	1.02	3/7/94
REAPPLY	2.10	3/7/94
SCANNER	1.00	3/7/94
SELPRINT	2.04	3/7/94
SYMBOLS		3/7/94
VERSIONS	1.00	3/7/94
ZOOMEDIT	2.24	5/12/94

<u>HYPACK Program Name</u>	<u>Version</u>	<u>Date Installed</u>
HYPACK.EXE	4.16	2/24/94
PLOTFILE.EXE	4.16	2/25/94
SETUP.EXE	4.16	2/15/94
VIEW.EXE	4.16	12/12/93
DESIGN.EXE	4.16	2/1/94
VOLUME.EXE	4.16	1/27/94
FORGP.EXE	4.16	11/12/93
NAVITRACK.EXE	4.16	2/1/93
CONTPICK.EXE	4.16	12/8/92
DIGITIZE.EXE	4.16	1/12/94
HYDROLIN.EXE	4.16	8/20/93
UPLOAD.EXE	4.16	8/12/92
TESTFIG.EXE	4.16	11/30/93
INVERSE.EXE	4.16	11/12/94
NAV.EXE	4.16	2/21/94
DATUM.EXE	4.16	11/23/94
GRIDCONV.EXE	4.16	12/21/93
DXF.EXE	4.16	2/11/94
MENUCOLO.EXE	4.16	8/12/92
IOTEST.EXE	4.16	2/22/94
TRANS.EXE	4.16	1/6/94
OVERLAY.EXE	4.16	5/19/93
UNITCONV.EXE	4.16	11/12/93
POINTFIG.EXE	4.16	11/12/93
TRACKS.EXE	4.16	12/12/93
MANDIG.EXE	4.16	9/30/92
DATADIRS.EXE	4.16	12/17/93

COM1SET.EXE	4.16	9/15/92
NEWSETUP.EXE	4.16	2/22/94
IONEW.EXE	4.16	2/9/94
MANAGER.EXE	4.16	12/13/93
PRINTFIG.EXE	4.16	10/25/93

Some data were collected using a Munson Hammerhead Skiff equipped with a laptop computer, Coastal Oceanographics HYPACK data acquisition software, standard Ashtech DGPS, and an Innerspace 448 fathometer.

Post processing was conducted using the HDAPS HP system. HYPACK files were translated to a PC-DA like format using a modified PowerBasic program provided by N/CG24. The PowerBasic program, CONV_HYP.BAS, was run through an accompanying batch routine called HYPCON.BAT (2/14/94). OSWEGO HPCOPY was used to copy the data onto a HP formatted disk. Data ~~were~~^{was} then processed in the same manner as PC-DAS on the HP system.

In addition, the following batch routine, GPSINIT.BAT(5/19/94), was used to initialize the Ashtech GPS receiver.

Velocity corrections were determined using:

<u>Program Name</u>	<u>Version</u>	<u>Date Installed</u>
VELOCITY	2.00	24 Mar 1993
VELOCITY	2.10	15 Mar 1994

E. SONAR EQUIPMENT ✓

Sonar equipment was not used on ~~sheet Y~~ survey H-10491.

F. SOUNDING EQUIPMENT ✓

The Raytheon DSF-6000N is a dual frequency (100 kHz, 24 kHz), paper trace echo sounder. Serial numbers are included on the headers of the daily Raw Master Printouts. The InnerSpace 448, serial number 300, is a single frequency thermal depth sounder recorder (208 kHz). No problems which affect survey data were encountered. All DSF-6000N soundings were acquired using the High + Low, High frequency digitized setting.

G. CORRECTIONS TO ECHO SOUNDINGS ✓

Correctors for the velocity of sound through water were determined from the casts listed below:

<u>Velocity Table No.</u>	<u>Cast No.</u>	<u>Deepest Depth (m)</u>	<u>Applicable DN</u>	<u>Cast Position</u>	<u>Day</u>	<u>Year</u>
4	4	204	203 - 204	56°40'38"N 157°10'41"W	194	1993
5	5	159	209 - 218	56°40'24"N 157°18'18"W	212	1993 ✓
1	1	157	147 - 154	56°39'16"N 157°22'58"W	152	1994 ✓

Casts 1, 4, and 5 plot outside the survey limits.

* Filed with the hydrographic data.

The sound velocity casts were acquired with SBE SEACAT Profiler (S/N 220) and SBE SEACAT Profiler (S/N 811). The SBE SEACAT (S/N 811) was calibrated on 12/17/93. Velocity correctors were computed using the PC program VELOCITY in accordance with Hydrographic Survey Guideline (HSG) No. 69. A printout of the Sound Velocity Corrector Tables used in the HDAPS Post Survey program is included in the "Separates to be Included with Survey Data, IV. Sounding Equipment Calibrations and Corrections". *

Static Draft

A transducer depth was determined using FPM Fig 2.2 for launches 2123, 2124, 2125 and 2126 on March 19, 1993. Transducer depths for all launches and the Munson Hammerhead were determined in the spring of 1994. The static draft for each vessel is in the offset tables* for the corresponding year.

Settlement and Squat

Correctors were computed in accordance with Hydrographic Manual Section 4.9.4.2, using FPM Fig. 2.2 and 2.3, and are included with project data for OPR-P180. The data used was collected in Shilshole Bay, Washington on March 11, 16, and 18 of 1992. Revised settlement and squat correctors were received from Pacific Marine Center on October 21, 1992. Authorization was obtained from N/CG241 to use the 1992 data for the 1993 season. New data was collected in Shilshole Bay, Washington in March of 1994 and new settlement and squat correctors were calculated. The correctors were applied to the corresponding year. These correctors were applied to the data on ~~sheet X~~ survey H-10491.

Offset Tables

Offset tables contain offset for the GPS antenna, as well as static draft measurements, and settlement and squat data. Offset tables 3,4,5,6, and 9 correspond to the number of the launch. The offset tables were compiled with new measurements in the spring of 1994 and are contained in the "Separates to be Included with Survey Data". *

Heave

The launches and skiff were not equipped with heave, pitch, and roll sensors. Data acquired during periods of significant sea action were scanned to account for inaccuracies caused by heave.

Bar Check and Lead Lines

Bar check and lead lines were calibrated by RAINIER personnel on February 19, 1993 at PMC and during the winter inport 1993-1994. Calibration forms are included with project data for OPR-P180. Bar checks were performed weekly and served as a functional check of the DSF-6000N and the InnerSpace 448.

Tide Correctors

The tidal reference station used for this survey was Ugaiushak Island, Alaska (945-8553). A 0.94 range ratio corrector was applied. Time correctors were direct.

HDAPS listings of the data used in generating tide corrector tables are included in Appendix V. ~~of this report.~~ *

* Filed with the hydrographic data.

In 1993 tide gages were installed and maintained by RAINIER personnel at Foggy Cape, Sutwik Island, Alaska (945-8582), Ugiashak Island, Alaska (945-8553), Cape Kunmik, Alaska (945-8631), and Kumlik Island, Alaska (945-8704). The control station was Sand Point, Alaska (945-9450). Closing levels for the tide stations were completed by RAINIER personnel at the conclusion of the project. The control station was levelled on July 24, 1993.

In 1994 tide gages were installed and maintained by RAINIER personnel at West End of Sutwik Island, Alaska (945-8665) and Kumlik Island, Alaska (945-8704). Opening levels were conducted on both stations upon installation. The control station was Sand Point, Alaska (945-9450). Opening levels for the control station were conducted by RAINIER personnel on May 21-22, 1994. Closing levels for the tide stations will be completed by RAINIER personnel at the conclusion of the project. Closing levels at Sand Point, Alaska will be completed by the Pacific Operation Section N/OES214 during their annual visit in late July as per phone conversation with Mr. Mike Gibson (OES212).

The station descriptions, field tide records, and Field Tide Note (Appendix V) will be forwarded to N/OES212 monthly in accordance with HSG 50 and FPM 4.3, and at the end of the project. Requests for approved tides will be forwarded to N/OES2 at the beginning of July when bracketing levels will be completed. *Tide Notes dated January 5, 1994 and October 28, 1994 are attached.*

Kumlik Island (945-8704) was installed on May 26, 1994, DN 146. Two 8200 digital gages were placed at the site. A problem was noted during the initial three hour observation. The two gage's pressure readings were not in agreement. The gage that appeared to be reading incorrectly was removed and examined by RAINIER personnel. The slope and offset values in the gage were incorrect. N/OES214 was contacted and the correct values were entered into the gage. The tides for West End of Sutwik Island (945-8665) should be used for May 27, 1994, DN 147.

H. CONTROL STATIONS ✓ *See Eval Rpt, Section 2*

A listing of the geodetic stations used to control this survey is included in ~~Appendix III~~ of this report.

In 1993, two DGPS base stations were setup on existing stations LAND and HYDRA. In 1994, DGPS stations were set up on existing station CLAY 2 and again on LAND. Station HYDRA is located on Hydra Island, south of Yantarni Bay, station LAND is located on a small islet in the northern Aniakchak Bay and station CLAY 2 is located on a small islet south west of Kumlik Island. The horizontal datum for this project is NAD 83. All existing stations were recovered in accordance with methods stated in Section 5.2.4 of the FPM. For further information see the "Summer 1993 Horizontal Control Report" submitted in August 1993 and the "Summer 1994 Horizontal Control Report" that will be submitted at the end of the project.

I. HYDROGRAPHIC POSITION CONTROL ✓

Method of Position Control

All soundings and features were positioned using differential GPS. Serial numbers for Ashtech GPS equipment are annotated on the data printouts.*

* Filed with the hydrographic data.

Ashtech GPS

VHF differential shore stations were established at existing stations HYDRA and LAND for 1993 field work. Station LAND was again used in 1994 in conjunction with existing station CLAY 2. After the stations were recovered a remote sensor was directly connected to each MXII shore station independently and its antenna was collocated with the shore station. The difference between each station's computed location and published location was recorded by the MONITOR program on a PC. Data from a 24 hour period were recorded and examined for signs of multipath signal reflection, which were not evident at any of the stations.

System checks were performed by launch to launch or launch to skiff comparisons of position. Three observations of position were made using correctors from two independent DGPS base stations. System checks were performed weekly. The results were transferred to forms which are included in the project data for OPR-P180. An abstract of the system checks is included in the "Separates to be Included with Survey Data, III. Horizontal Position Control and Corrections to Position Data". *

Problems

None

Offset

The launch GPS antenna offsets are stored in the HDAPS Offset Tables as listed in Section G. Copies of the Offset Tables are included in the "Separates to be Included with Survey Data". *

J. SHORELINE ✓ See Eval Rpt, Section 2

The shoreline maps (T-sheets) used to transfer shoreline detail to the final sheets were TP-01158 and TP-01157, enlarged to (1:10,000, NAD27).

T-sheets used during shoreline verification were not always accurate. Many offshore rocks were the seaward extension of a ledge and many new rocks were found that were visible during lower stages of tide. In addition, an islet, reef, and several rocks were not included on the shoreline manuscripts for this survey (see New Features).

Shoreline verification was conducted at or near predicted lower low water in accordance with FPM 7.1. Shoreline verification was accomplished by assigning sequential reference numbers and taking detached positions (DPs) as explained later in this section.

Shoreline and T-sheet features verified via visual inspection were assigned sequential reference numbers, described, and recorded in the field using reference forms and corresponding 1:10,000 photocopies of the T-sheet. Heights were corrected to MLLW using predicted tides. Corresponding notes were annotated on the photocopies of the T-sheet when deemed necessary. The annotated photocopies of the T-sheet are included with the reference forms which are included with the survey data. *

DPs taken during shoreline verification were recorded on the master printouts and DP forms. * DPs indicate significant T-sheet features, features not found on the T-sheet, and locations of disprovals. Where possible, positions of some T-sheet features were verified during inshore mainscheme hydrography and annotated on the master printouts. *

* Filed with the hydrographic records.

Detailed 1:10,000 "Rough Bottom Sample and Detached Position Plots" are provided showing all DPs and reference numbers and notes relating to each feature. The information from these plots were transferred to a final field plot. Verified T-sheet features were retained and shown in black. Disproved features were removed from the shoreline plot and changes to the shoreline were shown in red. Field cartographic codes were assigned using the HDAPS DP editor. Heights are recorded in meters and are corrected to predicted MLLW. Changes to the shoreline (reefs and ledges) are shown in black on the smooth sheet. No changes to the MLLW were noted by the hydrographer. Heights on the smooth sheet have been corrected for approved tides.

None

Changes

Five changes to the T-Sheet shoreline were found and depicted on the field shoreline plot.

The T-Sheet rock in the vicinity of latitude 56°35'04"N, longitude 157°15'05"W is the seaward extent of a broken ledge and is depicted by position No. 3565. - CONCUR

Position No. 3567 depicts the seaward extent of a the T-sheet ledge in the vicinity of latitude 56°35'23"N, longitude 157°14'52"W. - CONCUR

Position No. 3564 depicts the seaward extent of a the T-sheet ledge in the vicinity of latitude 56°34'45"N, longitude 157°15'38"W. - CONCUR

Position No.'s 3558 and 3560 in the vicinity latitude 56°34'39"N, longitude 157°16'21"W, and latitude 56°34'43"N, longitude 157°16'16"W depict a T-sheet islet connected to shore by a broken ledge.

Position No. 3558 depicts the seaward extent of a ledge surrounding the T-sheet islet in the vicinity.

Position No. 3560 depicts the high point of a broken ledge connecting the islet and ledge in position No. 3558 to shore. Position No. 3560 was taken as close to the feature as DGPS control would allow.

The high point was 140 meters bearing 148° magnetic. Depict this area as portrayed on the smooth sheet.

The five T-sheet rocks in the vicinity latitude 56°35'40"N, longitude 157°19'38"W are a large broken reef. The eastern and western extent are depicted by position No.'s 3569 and 3570. - CONCUR

New Features

Four new features were found and depicted on the field sheet.

1. A large foul area including a small islet, a reef, and several rocks, was found in the vicinity of latitude 56°39'01"N, longitude 157°18'54"W. Position No.'s 6151-6155 depict the foul area and the seaward most features included within the foul limits.

- Position No. 6151 depicts the rock south of the islet, covers ^{0.7 meters} 0.4 at MLLW. (part of reef)
Position No. 6152 depicts the islet, height ^{9.3 meters} 9.3 exposed. (5.9 m MHW)
Position No. 6153 depicts the rock north of the islet, height ^{0.9 meters} 0.9 exposed. (part of reef)
Position No. 6154 depicts a reef, height ^{UNCOV.} 2.5 exposed. (0)
Position No. 6155 depicts several rocks south of the reef, height ^{0.3} 0.4 exposed.

<u>Item</u>	<u>Approximate Position</u>	<u>Position Number</u>	<u>Depth (m)</u>	<u>Remarks</u>
2. Rock	56°38'49"N 157°19'05"W	6149	+ 0.6 +0.4	CoV Submerged
3. Rock	56°34'57"N 157°15'25"W	3700+5 3983	+ 1.4 +1.3	Sndg RK Submerged
4. Rock	56°35'01"N 157°15'25"W	3700+3 3985	+ 2.6 +3.0	Sndg RK Submerged

Recommendations: The hydrographer recommends that the shoreline detail from this survey be used to supersede prior shoreline information. — *concur*

K. **CROSSLINES** ✓

Crosslines are in good agreement with mainscheme hydrography. Crosslines totaled 29.6 nautical miles, representing 6.7% of the total mainscheme hydrography.

L. **JUNCTIONS** ✓ *See Evaluation Report Section 5.*

This survey junctions with survey H-10486 (1:10,000, 1993) and H-10487 (1:10,000, 1993) to the north, H-10543 (1:10,000, 1994) to the west, H-10546 (1:10,000, 1994) to the east, and H-10544 (1:10,000, 1994) to the south. No irregularities were found when comparing soundings and depth curves. Final comparisons will be made at the Pacific Hydrographic Section (PHS).

M. **COMPARISON WITH PRIOR SURVEYS** ✓ *See Evaluation report Section 6.*

Three prior surveys were compared: H-4495 (1:20,000, 1925), H-4497 (1:20,000, 1925), and H-4506 (1:60,000, 1925). Preliminary comparisons indicated general agreement in soundings and depth curves. Although numerous shoaler depths were located in the vicinity of these soundings, these were lead line surveys without a dense sounding pattern. No irregularities were found. Final comparisons will be made at the Pacific Hydrographic Section (PHS).

N. **ITEM INVESTIGATIONS** ✓

There were no item investigations for ~~sheet Y~~ survey H-10491.

O. **COMPARISON WITH THE CHART** ✓ *See Evaluation Report section 7.*

This survey was compared to NOS chart 16568, 9th Edition, March 21, 1992, 1:106,600 (NAD83) and NOS chart 16566, 7th Edition, October 28, 1989, 1:77,477 (WGS84). All charted soundings were compared and found to be generally deeper, with the exception of a few soundings located in areas with steep depth curves. In these cases a shoaler depth was in the general vicinity of the charted sounding.

Changes

Numerous rocks were depicted on NOS Chart 16568 that were not shown on NOS Chart 16566. Investigations of these rocks revealed that the rocks on Chart 16566 were depicted correctly. The origin of the rocks shown on Chart 16568 was unknown. A memorandum dated June 5, 1994 was sent to the Hydrographic Surveys Branch and is included in ~~Appendix VI~~ of this report.

The charted rock in the vicinity latitude 56°35'04"N, longitude 157°15'05"W is a T-sheet rock, position No. 3565. *Shown as seaward extent of broken ledge on the smooth sheet.*

The charted rock in the vicinity latitude 56°35'10"N, longitude 157°15'07"W is a T-sheet rock, position No. 3566. *Shown on the smooth sheet as rock uncovers 1 meter at MLLW.*

Recommendations: The hydrographer recommends using this survey to supersede the charts in their common areas. - *Concur*

Dangers to Navigation ✓

There were eight dangers to navigation within the limits of this survey. One of the dangers was reported in the 1993 portion of this survey and again in the 1994 portion of this survey with a revised shoaler depth. The danger was reported in the Danger to Navigation radio message as letter E in 1993, and letter B in 1994.

P. ADEQUACY OF SURVEY ✓

Prior to final approval, survey H-10491 is complete and adequate. *Concur*

Q. AIDS TO NAVIGATION ✓

None

R. STATISTICS ✓

<u>Vessel:</u>	<u>2123</u>	<u>2124</u>	<u>2125</u>	<u>2126</u>	<u>2129</u>	<u>Total</u>
# of Pos	1435	1016	1276	919	241	4887
NM Hydro	216	155	182	165	5.0	723

NM ² Hydrography	19.9
Velocity Casts	3
Detached Position	18
Tide Stations	2
Reference Numbers	8
Bottom Samples	73

Statistics are from 1993 and 1994.

Fixes 5788- 5816 were duplicated on August 8, 1993 (DN220) and May 27,1994 (DN147).

S. MISCELLANEOUS ✓

Bottom samples were sent to the Smithsonian Institution in accordance with Project Instructions.

The Coast Pilot current and predicted current comparisons were made in accordance with the Project Instructions. The current predictions were adequate and the descriptions accurate.

No unusual magnetic variations were noted.

T. RECOMMENDATIONS ✓

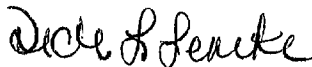
None

U. REFERRAL TO REPORTS ✓

The following supplemental reports contain additional information relevant to this survey:

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Summer 1993 Horizontal Control Report for OPR-P180-RA-93	August 1993	N/CG2333
Summer 1994 Horizontal Control Report for OPR-P180-RA-94	August 1994	N/CG245
Summer 1993 Coast Pilot Report for OPR-P180-RA-93	August 1993	N/CG245
Summer 1994 Coast Pilot Report for OPR-P180-RA-94	August 1994	N/CG245
Project related data for OPR-P180-RA-93	Summer 1993	N/CG245
Project related data for OPR-P180-RA	Incremental	N/CG245

Respectfully Submitted,



Dede L. Lemke
Lieutenant(jg), NOAA

Approved and Forwarded,



Russell C. Arnold
Captain, NOAA
Commanding Officer

CONTROL STATIONS as of 6 Jun 1994

No	Type	Latitude	Longitude	H	Cart	Freq	Vel Code	MM/DD/YY	Station Name
100	F	056:45:19.732	157:29:28.737	42	250	0.0	0.0	05/24/94	LAND(DGPS)
101	F	056:44:35.925	157:00:57.249	50	250	0.0	0.0	05/24/94	HYORA(DGPS)
102	F	056:36:08.811	157:29:12.200	44	250	0.0	0.0	05/24/94	CLAY 2(DGPS)
103	F	056:31:22.546	157:11:42.067	35	250	0.0	0.0	06/03/94	TWIK(DGPS)



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

NOAA Ship RAINIER

August 12, 1993

**ADVANCE
INFORMATION**

Director
DMAHTC
Attn: MCNM
6500 Brookes Lane
Washington, DC 20315-0030

Dear Sir:

While conducting hydrographic survey operations in Shelikof Strait, Alaska, NOAA Ship RAINIER discovered five dangers to navigation. They have been reported to DMAHTCNAVWARN and the Seventeenth Coast Guard District. A copy of the correspondence describing the dangers is enclosed.

Sincerely,

Russell C. Arnold
Russell C. Arnold
Captain, NOAA
Commanding Officer

Enclosures





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

NOAA Ship RAINIER

August 12, 1993

**ADVANCE
INFORMATION**

Commander
Seventeenth Coast Guard District
Post Office Box 25517
Juneau, AK 99802-5517

Dear Sir:

Attached is a confirmation copy of the radio message sent to your office regarding the dangers to navigation which I recommend for inclusion in the Local Notice to Mariners for the Seventeenth Coast Guard District. A copy of the chart showing the areas in which the dangers exist is also attached.

Sincerely,

Russell C. Arnold
Russell C. Arnold
Captain, NOAA
Commanding Officer

Enclosures

cc: DMAHTC
N/CG221
PMC



Rev
FOO

23:31, Tuesday, 10 August 1993
tPostOUT : Hellickson

P 102325 Z AUG 93
FM NOAA'S RAINIER
TO CCGDSEVENTEEN JUNEAU AK
DMAHTCCNAVWARN WASHINGTON DC//MCNM//
INFO NOAAAMOP SEATTLE WA
ACCT CM-VCAA

**ADVANCE
INFORMATION**

BT
UNCLAS
NOAA SHIP RAINIER HAS LOCATED 5 DANGERS TO NAVIGATION
IN THE VICINITY OF AMBER BAY AND SUTWIK ISLAND, SOUTHERN
ALASKA PENINSULA (PROJECT OPR-P190-RA) WITHIN THE LIMITS
OF HYDROGRAPHIC SURVEYS H-10488 AND H-10491. THE
FOLLOWING INFORMATION IS PROVIDED FOR PUBLICATION IN
THE LOCAL NOTICE TO MARINERS:

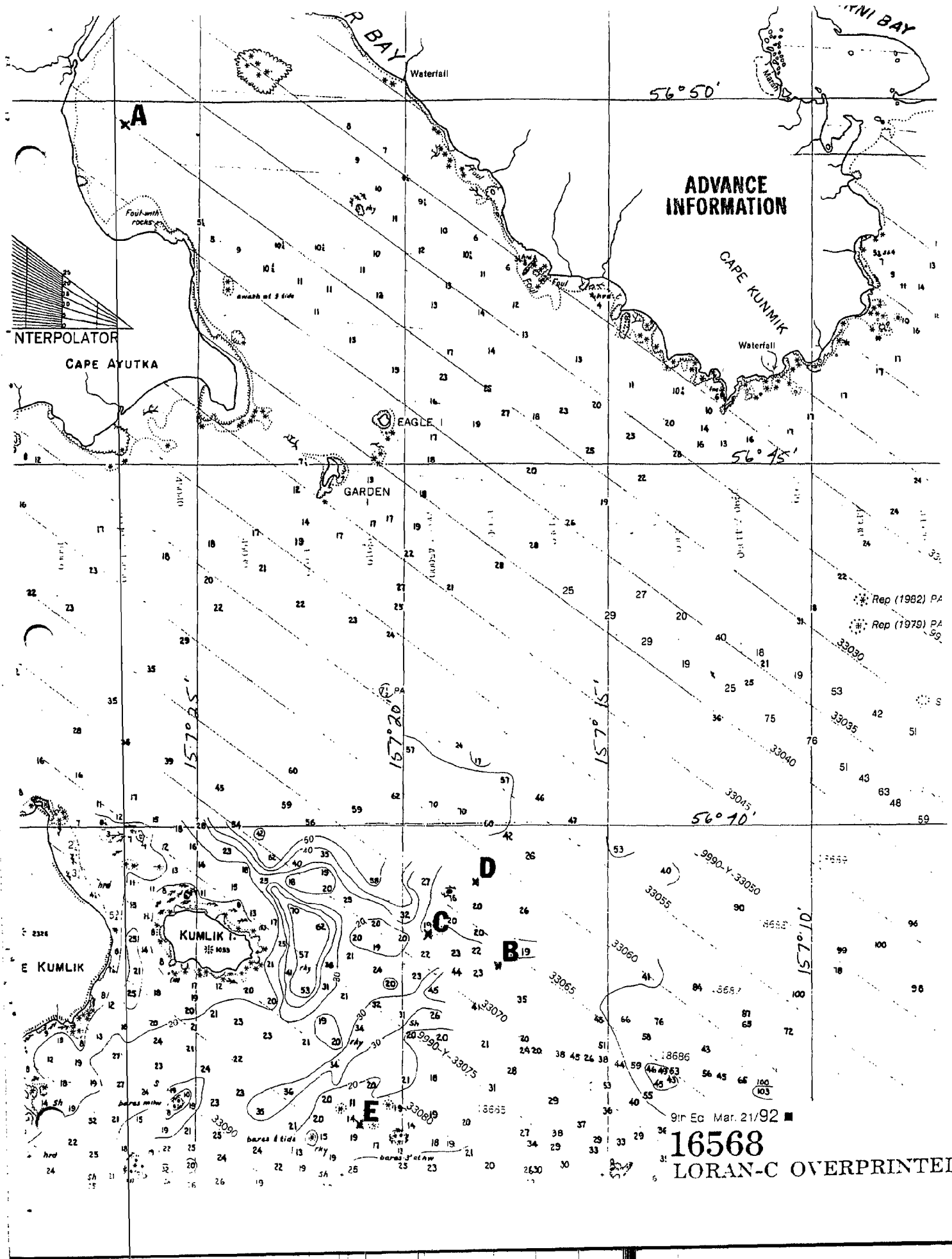
CHARTS AFFECTED: 16568 9TH ED MAR 21/92 1:106,600 NAD 83

DEPTH IS REDUCED TO MLLW BASED ON PREDICTED TIDES.

ITEM	DANGER	CHART	DEPTH	LATITUDE	LONGITUDE	<u>Position Number</u>
A.	REEF	16568	UNCOVERS 9.5 FEET	56/49/39.0N	157/26/52.0W	
B.	SHOAL	16568	7 3/4 fms	56/38/04.645N	157/17/39.101W	1832 + 4
C.	SHOAL	16568	11 fms	56/38/31.483N	157/19/24.751W	1551 + 7
D.	SHOAL	16568	10 fms	56/39/14.851N	157/18/10.107W	1576 + 3
E.	SHOAL	16568	2 3/4 fms	56/35/56.652N	157/21/02.024W	8229 + 2

THIS IS ADVANCE INFORMATION SUBJECT TO OFFICE REVIEW.
QUESTIONS CONCERNING THIS MESSAGE SHOULD BE DIRECTED TO THE
CHIEF, PACIFIC HYDROGRAPHIC SECTION AT (206)526-6835. A
LETTER WITH ATTACHED CHARTLET WILL BE MAILED TO CONFIRM
THIS MESSAGE.

BT



ADVANCE INFORMATION

Rep (1982) PA
Rep (1979) PA 59

9th Ed. Mar. 21/92

16568
LORAN-C OVERPRINTED



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

NOAA Ship RAINIER

June 8, 1994

**ADVANCE
INFORMATION**

Director
DMAHTC
ATTN: MCNM
6500 Brookes lane
Washington, DC 20315-0030

Dear Sir:

While conducting hydrographic survey operations in Southern Alaska Peninsula, Alaska, NOAA Ship RAINIER discovered four dangers to navigation. They have been reported to DMAHTCNAVWARN and the Seventeenth Coast Guard District. A copy of the correspondence describing the dangers is enclosed.

Sincerely,

A handwritten signature in cursive script that reads "Russell C. Arnold".

Russell C. Arnold
Captain, NOAA
Commanding Officer

Enclosures





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

NOAA Ship RAINIER

June 8, 1994

**ADVANCE
INFORMATION**

Commander
Seventeenth Coast Guard District
Post Office Box 25517
Juneau, Alaska 99802

Dear Sir:

Attached is a confirmation copy of the radio messages sent to your office regarding the dangers to navigation which I recommend for inclusion in the Local Notice to Mariners for the Seventeenth Coast Guard District. A copy of the chart showing the areas in which the dangers exist is also attached.

Sincerely,

A handwritten signature in cursive script that reads "Russell C. Arnold".

Russell C. Arnold
Captain, NOAA
Commanding Officer

Enclosures

cc: DMAHTC
N/CG221
PMC



P XXXXXZ JUN 94
FM NOAAS RAINIER
TO CCGDSEVENTEEN JUNEAU AK
DMAHTCCNAVWARN WASHINGTON DC//MCNM//
INFO NOAAMOP SEATTLE WA
ACCT CM-VCAA

**ADVANCE
INFORMATION**

BT
UNCLAS

NOAA SHIP RAINIER HAS LOCATED 4 DANGERS TO NAVIGATION IN THE VICINTIY OF NW CORNER OF SUTWIK ISLAND SOUTHERN ALASKA PENINSULA (PROJECT OPR-P180-RA) WITHIN THE LIMITS OF HYDROGRAPHIC SURVEY H-10491. THE FOLLOWING INFORMATION IS PROVIDED FOR PUBLICATION IN THE LOCAL NOTICE TO MARINERS:

CHARTS AFFECTED: 16566 7TH ED OCT 28/89 1:77,477 NAD 83
16568 9TH ED MAR 21/92 1:106,600 NAD 83

DEPTH IS REDUCED TO MLLW BASED ON PREDICTED TIDES.

ITEM	DANGER	CHART	DEPTH	LATITUDE	LONGITUDE	Pos
A.	ROCK	16568 16566	COVERS 1/4FM	56/38/49.5N	157/19/05.0W	6149
B.	SHOAL	16568 16566	COVERS 1.0FM	56/35/55.2N	157/20/58.8W	2227 ⁺⁵
C.	SHOAL	16568 16566	COVERS 8 3/4FM	56/36/04.6N	157/20/09.4W	8500 ⁺⁹
D.	ROCK	16568	COVERS 1/2FM	56/34/57.6N	157/15/25.1W	3983

THIS IS ADVANCE INFORMATION SUBJECT TO OFFICE REVIEW. QUESTIONS CONCERNING THIS MESSAGE SHOULD BE DIRECTED TO THE CHIEF, PACIFIC HYDROGRAPHIC SECTION AT (206)526-6835. A LETTER WITH ATTACHED CHARTLET WILL BE MAILED TO CONFIRM THIS MESSAGE.

BT

CONTINUED ON CHART 16567

CAPE KUMLIK

KUMLIK

ADVANCE INFORMATION

9th Ed., Mar. 21/92

16568
LORAN-C OVERPRINTED

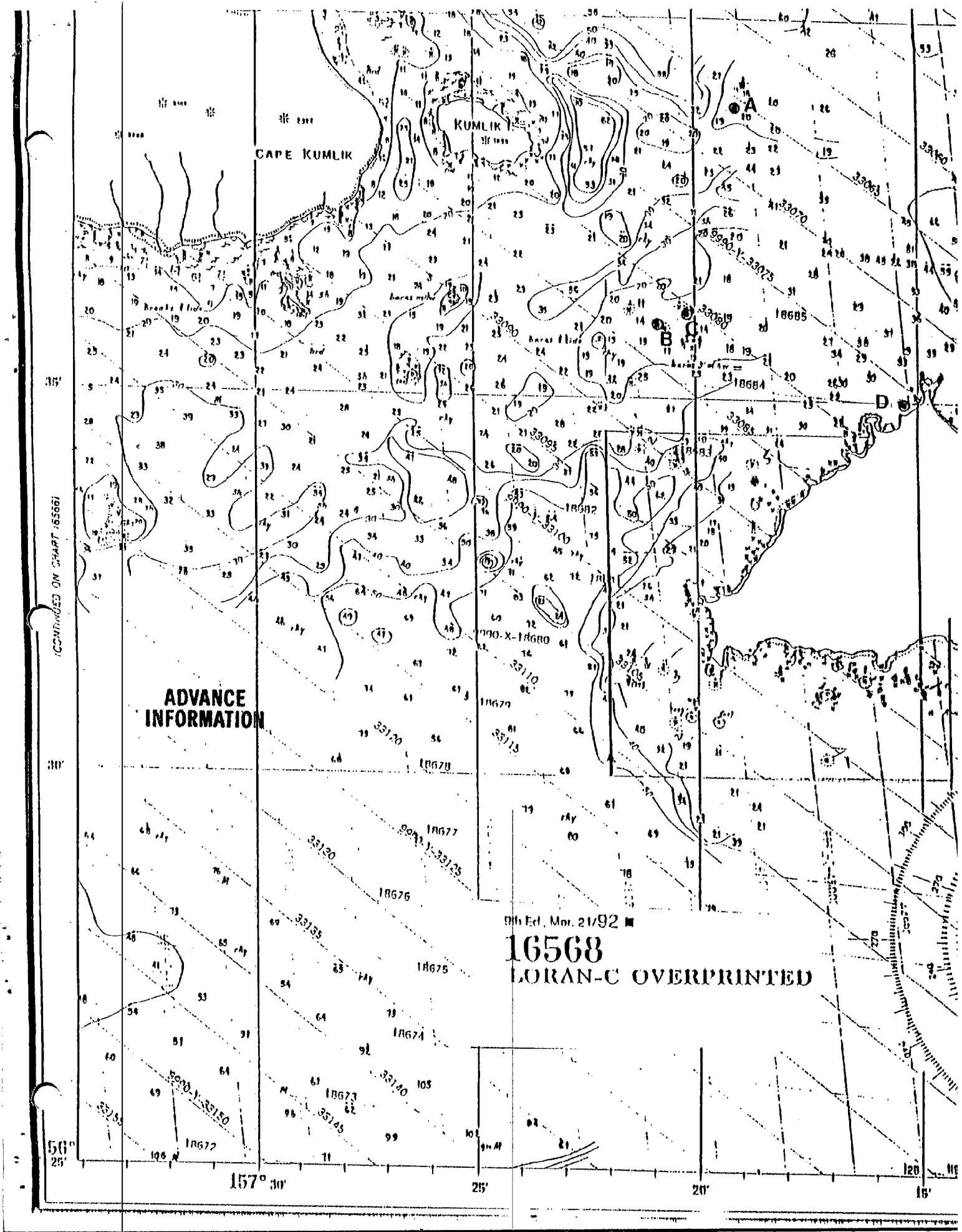
56° 25'

157° 30'

25'

20'

15'





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

June 5, 1994

MEMORANDUM FOR: Captain Dean Seidel, NOAA
Chief, Hydrographic Surveys Branch

FROM: *Russell C. Arnold*
Captain Russell C. Arnold, NOAA
Commanding Officer, NOAA Ship RAINIER

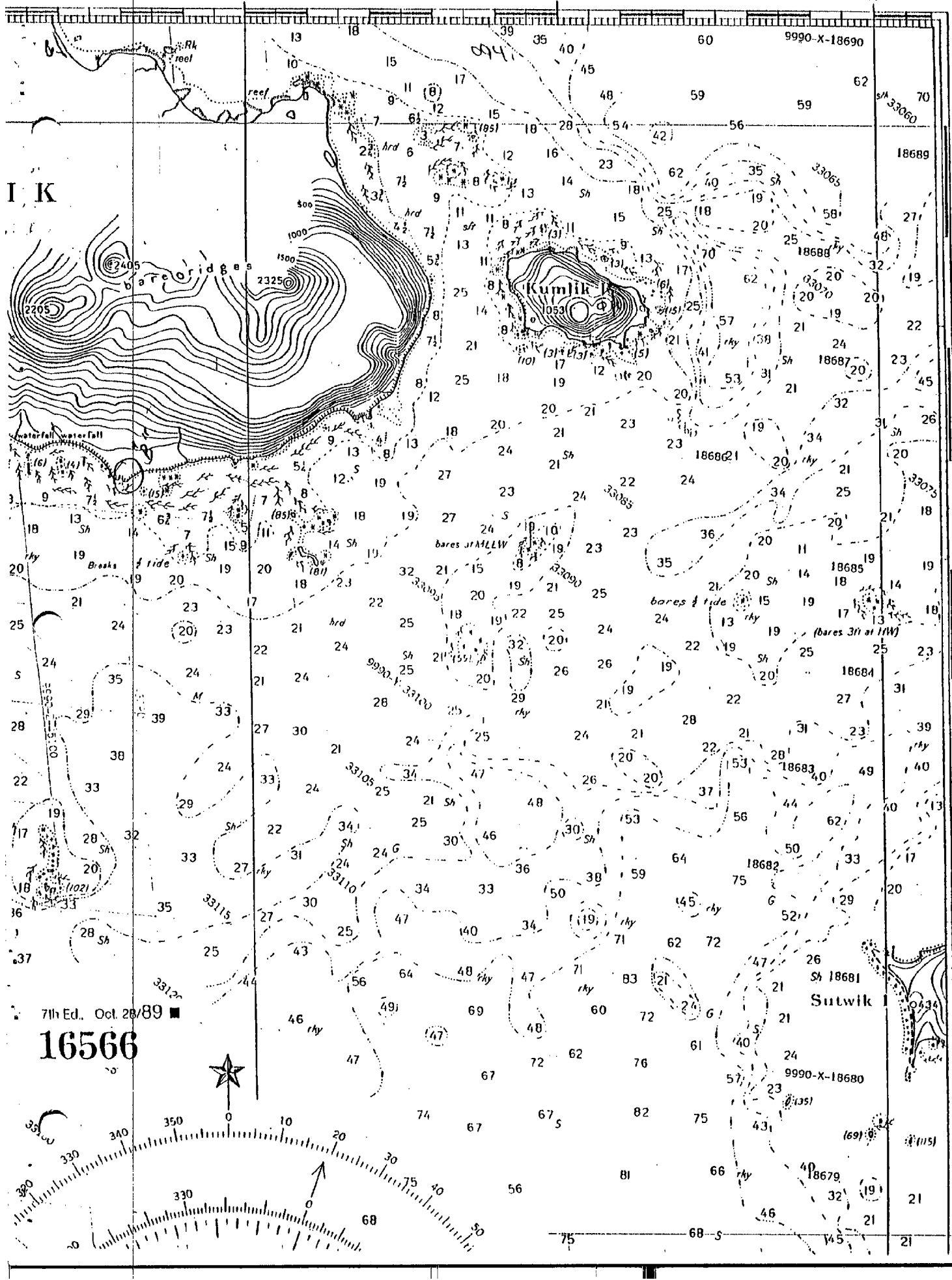
SUBJECT: Differences between Chart 16566 and 16568

RAINIER has started conducting surveys in the vicinity of the western end Sutwik Island and has noticed numerous differences between NOS Chart 16566 (1:77,477, 7thEd., October 28, 1989, NAD83) and NOS Chart 16568 (1:106,600, 9thEd., March 21, 1992, NAD83). Numerous rocks are depicted on Chart 16568 that are not shown on Chart 16566. Investigation of these rocks during surveys H-10491, H-10543, and H-10544 has revealed that the rocks depicted on Chart 16566 are correct and the origin the rocks shown on Chart 16568 is unknown. A chartlet of each chart is attached with the rocks in question highlighted.

Attachments



9990-X-18690



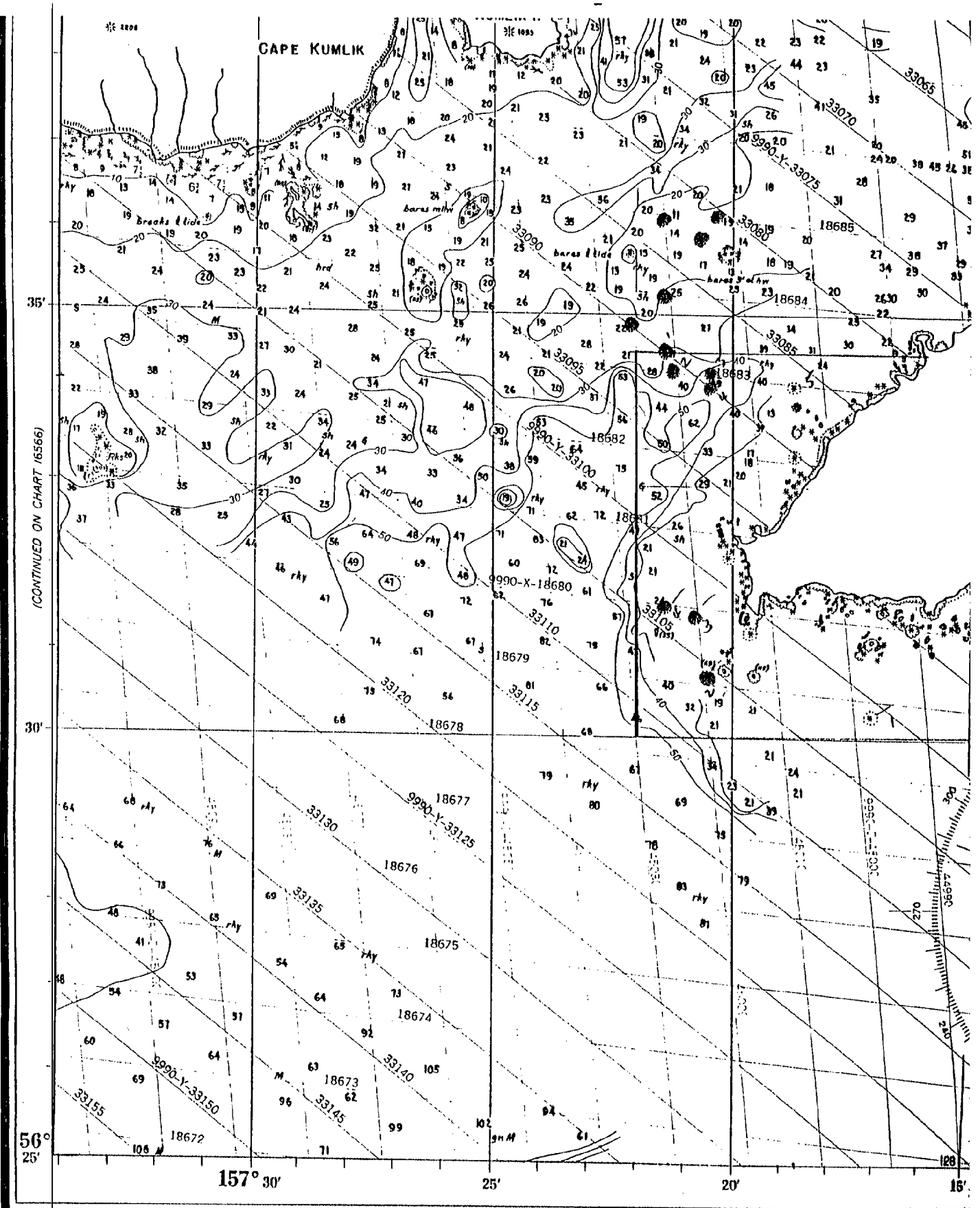
I K

40'

35'

56'
30'

(CONTINUED ON CHART 16568)



(CONTINUED ON CHART 16566)

9th Ed., Mar. 21/92 ■

16568
LORAN-C OVERPRINTED

CAUTION

This chart has been corrected from the Notice to Mariners published weekly by the Defense Mapping Agency Hydrographic/Topographic Center and the Local Notice to Mariners issued periodically by each U.S. Coast Guard district to the date shown in the lower left hand corner.

SOU

APPROVAL SHEET

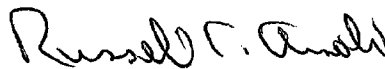
for

H-10491

RA-10-18-93

Standard procedures were followed in accordance with the Hydrographic Manual, Fourth Edition; the Hydrographic Survey Guidelines; and the Field Procedures Manual in producing this survey. The data were examined daily during data acquisition and processing.

The field sheet and accompanying records have been examined by me, are considered complete and adequate for charting purposes, and are approved.



Russell C. Arnold
Captain, NOAA
Commanding Officer



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Silver Spring, Maryland 20910

ORIGINAL

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: January 5, 1994

MARINE CENTER: Pacific

OPR: P180

HYDROGRAPHIC SHEET: H-10491

LOCALITY: NW Corner of Sutwik Island, Shelikof Strait, Alaska

TIME PERIOD: July 29, 1993 - August 9, 1993

TIDE STATION USED: 945-8704 Cape Kumlik (Kumlik Island),
Alaska

Lat. $56^{\circ} 38.8'N$ Lon. $157^{\circ} 25.5'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): = -0.88 feet

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: = 8.7 feet

TIDE STATION USED: 945-8631 Cape Kunmik, Alaska

Lat. $56^{\circ} 47.5'N$ Lon. $157^{\circ} 07.5'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): = 1.01 feet

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: = 9.2 feet

REMARKS: RECOMMENDED ZONING

Times are direct and apply a x1.03 range ratio to heights at Cape Kumlik (Kumlik Island), Ak. (945-8704). When data are not available for Cape Kumlik (Kumlik Island), times are direct and apply a x0.96 range ratio to heights at Cape Kunmik, Alaska (945-8631).

NOTES: Hourly heights are tabulated on Greenwich Mean Time. The data for Cape Kumlik (Kumlik Island), Ak. (945-8704) is stored in the back-up gauge file # 945-8705.

William M. Hudson
CHIEF, DATUMS SECTION

J.S.D.





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Silver Spring, Maryland 20910

ORIGINAL

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: October 28, 1994

MARINE CENTER: Pacific

OPR: P180

HYDROGRAPHIC SHEET: H-10491 (addendum for 1994 survey work)

LOCALITY: NW Corner of Sutwik Island, Shelikof Strait, Alaska

TIME PERIOD: May 27 - June 4, 1994

TIDE STATION USED: 945-8665 West Sutwik Island
Alaska
Lat. $56^{\circ} 32.4'N$ Lon. $157^{\circ} 19.6'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): = 1.40 feet
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: = 8.6 feet

TIDE STATION USED: 945-8704 Cape Kumlik (Kumlik Island)
Alaska
Lat. $56^{\circ} 38.8'N$ Lon. $157^{\circ} 25.5'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): = -1.15 feet
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: = 8.9 feet

REMARKS: RECOMMENDED ZONING

Times are direct and apply a X1.03 range ratio to heights at Cape Kumlik (Kumlik Island), Ak. (945-8704). Where data for Cape Kumlik is not available, use West Sutwik Island, Ak. (945-8665) with times direct, and apply a X1.06 range ratio to the heights.

NOTES: Hourly heights are tabulated on Greenwich Mean Time. The data for Cape Kumlik (Kumlik Island), Ak. (945-8704), and West Sutwik Island, Ak. (945-8665) are stored in the Next Generation Water Level Measurement System temporary files #745-8704 and #745-8665 respectively.

William M. Hobbs
CHIEF, DATUMS SECTION



GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 16568 B ON PREVIOUS SURVEY C ON U.S. QUADRANGLE MAPS D FROM LOCAL INFORMATION E ON LOCAL MAPS F P.O. GUIDE OR MAP G GRAND McNALLY ATLAS H U.S. LIGHT LIST K											
	ALASKA (title)	X										
ALASKA PENINSULA (title)	X											2
SUTWIK ISLAND	X											3
												4
												5
												6
												7
												8
												9
												10
												11
												12
												13
												14
												15
												16
												17
												18
												19
												20
												21
												22
												23
												24
												25

Approved:

Charles P. Harrington
Chief Geographer - N/CG 245

AUG 22 1994

HYDROGRAPHIC SURVEY STATISTICS

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION			AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS			
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS			
DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS	
ACCORDION FILES	3					
ENVELOPES						
VOLUMES						
CAHIERS						
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			1895
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	32		32
VERIFICATION OF SOUNDINGS	221.5		221.5
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	130		130
COMPARISON WITH PRIOR SURVEYS AND CHARTS		3.0	3.0
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		40.0	40.0
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS			
TOTALS	383.50	43.0	426.50

Pre-processing Examination by LT M. Larsen	Beginning Date 3/23/94	Ending Date 6/30/94
Verification of Field Data by E. Domingo, B. Mihailov, J. Stringham	Time (Hours) 417.50	Ending Date 3/10/95
Verification Check by J. Stringham	Time (Hours) 3.0	Ending Date 3/21/95
Evaluation and Analysis by B. Mihailov	Time (Hours) 40	Ending Date 5/16/95
Inspection by B. A. Olmstead	Time (Hours) 24	Ending Date 5/12/95

EVALUATION REPORT

H-10491

1. INTRODUCTION

Survey H-10491 is a basic hydrographic survey accomplished by the NOAA Ship *Rainier*, under the following Project Instructions.

OPR-P180-RA, dated April 13, 1993
CHANGE NO. 1, dated April 23, 1993
CHANGE NO. 2, dated June 21, 1993
OPR-P180-RA, dated May 5, 1994

This survey was conducted in Alaska, and is located along the Southern Alaska Peninsula, southwest of Kodiak Island. The surveyed area is bounded by latitude 56/41/15N to the north and latitude 56/34/15N to the south. The eastern limit is longitude 157/14/30W and the western limit is longitude 157/22/15W. The northwest portion of Sutwik Island is the only shoreline on this survey. Rocky ledges encompass the majority of the shoreline. The bottom consists mainly of mud, sand and broken shells. Depths range from 0 meters to 124 meters.

Depth curves depicted on the smooth sheet were selected from those authorized through HSG 69. However, instead of drafting all authorized curves only those curves considered necessary for the reasonable portrayal of the bottom were drafted. The selected curves were the 0, 1, 5, 10, 20, 40, 60, 80, 90, 100 and 120 meter. A note was added to the smooth sheet to identify these values. A few supplemental depth curves have been added to the smooth sheet in brown as warranted.

Predicted tides for Ugaiushak, Alaska (1993) and Kumlik Island (1994) were used for the reduction of soundings during field processing. Approved hourly heights zoned from Cape Kumlik (Kumlik Island), Alaska, gage 945-8704 (1993), Cape Kunmik, Alaska, gage 945-8631 (1993), West Sutwik Island, Alaska, gage 945-8665 (1994) and Cape Kumlik (Kumlik Island), Alaska, gage 945-8704 (1994) were used during office processing.

The field sheet parameters have been revised to center the hydrography on the office plot. Data is plotted using a Modified Transverse Mercator projection and are depicted on a single sheet. Sounding have been corrected for dynamic draft, actual tides and sound velocity. The offset values and velocity correctors are adequate.

Survey data were processed using the same Hydrographic Data Acquisition/Processing System (HDAPS) software used by the hydrographer, the Hydrographic Processing System (HPS) and AutoCad, Release 12.

At the time of the survey certification the format for transmission of digital data had not been formally approved. In the interim, digital data for this survey exists in the standard HPS format which is a database format using the .dbf extension. In addition, the sounding plot, created with .dbf data and enhanced using the AutoCad system, is filed both in the AutoCad drawing format, i.e., .dwg; and in the more

universally recognized graphics transfer format, .dxf. Copies of these files will be retained at PHS until data transfer protocols are developed and improved.

The drawing files necessarily contain information which is not part of the HPS data set such as geographic names text, line-type data, and minor symbolization. In addition, those soundings deleted from the drawing for clarity purposes, remain unrevised in the HPS digital files to preserve the integrity of the original hydrographic data set. Cartographic codes used to describe the digital data are those authorized by Hydrographic Survey Guideline No. 75.

2. CONTROL AND SHORELINE

Sections H and I of the hydrographer's report contain adequate discussions of horizontal control and hydrographic positioning.

Additional detailed information on horizontal control is found in the Summer 1993 Horizontal Control Report for OPR-P180-RA.

Differential GPS (DGPS) was used to control this survey. NAD 83 is used as the horizontal datum for plotting and position computations. Daily system checks were performed by launch to launch or launch to skiff comparisons of position, to confirm the DGPS was operating properly. A horizontal dilution of precision (HDOP) not to exceed 3.75 was computed for survey operations. The quality of several positions exceeds limits in terms of horizontal dilution of precision (HDOP). These positions are isolated and occur randomly throughout the survey area. A review of the data, however, indicates that none of these fixes are used to position dangers to navigation. The features or soundings locate by these fixes are consistent with the surrounding information. These fixes are considered acceptable.

The position of the horizontal control station used during hydrography is a field value based on NAD 83. The smooth sheet and accompanying overlays are annotated with NAD 27 adjustment ticks based on values determined with NGS program NADCON. Geographic positions based on NAD 27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections.

Latitude: -2.680 seconds (-82.918 meters)
Longitude: 7.557 seconds (124.918 meters)

The year of establishment of the control stations shown on the smooth sheet originates with the above mentioned horizontal control report and the hydrographer's signal list.

The following registered shoreline maps compiled on NAD 27 apply to this survey.

<u>Map Number</u>	<u>Photo Date</u>	<u>Scale</u>
TP-01157	July 1982 August 1983	1:20,000
TP-01158	July 1982 August 1983	1:20,000

Shoreline drawn on the smooth sheet originates from 1:10,000 scale photographic enlargements of the shoreline maps.

3. HYDROGRAPHY

Hydrography is adequate to:

- a. delineate the bottom configuration, determine least depths, and draw the required depth curves;
- b. reveal there are no significant discrepancies or anomalies requiring further investigation; and
- c. show the survey was properly controlled and soundings are correctly plotted.

4. CONDITION OF SURVEY

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, the Hydrographic Survey Guidelines, and the Field Procedures Manual, March 1993 and April 1994 Editions.

5. JUNCTIONS

Survey H-10491 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10486	1993	1:10,000	North
H-10487	1993	1:10,000	North
H-10546	1994	1:10,000	East
H-10544	1994	1:10,000	South
H-10543	1994	1:10,000	West

The junction with surveys H-10543, and H-10546 are complete and the soundings are in good agreement.

The junctions with surveys H-10486 and H-10487 have not been formally completed as these surveys were previously processed and forwarded for charting. The junctions were made using copies. Soundings are in good agreement.

The junction with survey H-10544 can not be completed because this survey is in preliminary office processing. Comparison with the field sheets indicates good agreement. The junction comparisons will be addressed in the Descriptive Report for survey H-10544.

6. COMPARISON WITH PRIOR SURVEYS

H-4495 (1925) 1:20,000
H-4497 (1925) 1:20,000
H-4506 (1925) 1:60,000

Prior surveys H-4495, H-4497 and H4506 (1925) cover the entire area of the present survey. Sounding agreement is generally good, with the present survey depths deeper between 1 and 4 meters. Differences can be attributed to increased bottom coverage and less accurate positioning and sounding methods available.

A 20 meter (11 fathom) sounding originating from prior survey H-4495 and charted at latitude 56/36/17(N), longitude 157/21/12 (W) was not adequately investigated during survey operations and should be retained as charted.

Except as noted above, survey H-10491 is adequate to supersede the prior surveys within the common area.

7. COMPARISON WITH CHART

Survey H-10491 was compared with the following charts.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16566	7th	October 28, 1989	77,477	NAD83
16568	9th	March 21, 1992	1:106,600	NAD83

a. Hydrography

Charted hydrography originates with the previously discussed prior surveys and miscellaneous sources. The prior surveys are discussed in section 6 and require no further discussion. Comparison with depths originating from miscellaneous sources reveal differences of 1-4 meters with present survey depths generally deeper. The greater sounding coverage and the relative accuracy of the data acquisition methods account for these differences.

The following five rocks are shown on Chart 16568(9th, 10th Ed) but not portrayed on Chart 16566, 7th ED. The hydrographer searched for these features during survey operations and did not find them to exist at the charted locations. Additional information is provided in a letter dated June 5, 1994 (attached). These rocks likely originate from an older miscellaneous source(s) containing questionable position accuracy. The evaluator recommends removing these rocks from the next edition of chart 16568 unless the chart compiler has better information to retain these features.

<u>Charted Feature</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
rock	56/36/10	157/21/30
rock	56/35/54	157/20/42
rock	56/36/11	157/20/20
rock	56/35/12	157/21/35
rock	56/34/35	157/21/26

Survey H-10491 is adequate to supersede charted hydrography within the common area.

b. AWOIS

There are no AWOIS items identified for this survey.

c. Controlling Depths

There are no channels with controlling depths located within the limits of survey H-10491.

d. Aids to Navigation

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

There are no features of landmark value located within the area of this survey.

e. Geographic Names

The names appearing on the smooth sheet and in the survey title have been approved by the Chief Geographer.

f. Dangers to Navigation

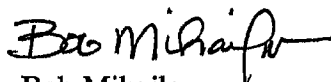
The hydrographer reported two rocks and six shoals as dangers to navigation to the local United States Coast Guard District, DMAHTC and N/CG221 during the survey. A copy of these reports are attached to this report. No additional dangers to navigation were discovered during office processing.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10491 adequately complies with the project instructions.

9. ADDITIONAL FIELD WORK

This is a good hydrographic survey. No additional work is recommended.


Bob Mihailov
Cartographer

APPROVAL SHEET
H-10491

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproof of charted data. The digital data have been completed and all revisions and processing have been entered in the magnetic tape record for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Bruce A. Olmstead Date: 5/17/95
Bruce A. Olmstead
Senior Cartographer, Hydrographic Processing Unit
Pacific Hydrographic Section

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Kathy Simmons Date: 5/24/95
Kathy Simmons
Commander, NOAA
Chief, Pacific Hydrographic Section

Final Approval

Approved:

Andrew A. Armstrong III Date: June 7, 1995
Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Surveys Branch

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10491

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
16568	7-8-93	B. MHAIFAU	Full Part Before After Marine Center Approval Signed Via Drawing No. 12 EDITION #11 FULL APPLICATION OF SPACES BYE
16566	6-96 13 JUN 96	D. McCAHLEN <i>D. McCAHLEN</i>	Full Part Before After Marine Center Approval Signed Via Drawing No. 14 EDITION #7 OCT 1989 FULL APPLICATION OF HYDRO THROUGH CHART 16568 (BP 157660)
16513	6-24-96	D. McCAHLEN	Full Part Before After Marine Center Approval Signed Via Drawing No. 30 26 JULY 92 REVISED SPACES THRU CHART 16568 H-DRAWING BP 157666
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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