

7737

Diag. Cht. No. 8864-2

Form 504

U. S. COAST AND GEODETIC SURVEY
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. EX-2549 Office No. H-7737

LOCALITY

State Alaska

General locality Aleutian Islands

Locality Amchitka Island (South side)

194 9-50

CHIEF OF PARTY

H. A. Karo

LIBRARY & ARCHIVES

DATE

Jan 4-1951

7737

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

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

REGISTER No. H 7737

Field No. Ex 2549

State Alaska - Aleutian Islands

General locality Aleutian Islands Rat Islands

Locality Amchitka I. + South Side.

Scale 1/20 000 Date of survey 6/12 12 6/11 1950 to 9/16 1949

Instructions dated 3 Feb. 1938; & Sup. Instr. thru 11 Apr. 1949

Vessel Explorer's Launches No. 1 & No. 2.

Chief of party H. Arnold Karo

Surveyed by F. A. Riddell, J. S. Morton, M. A. Hecht, E. L. Jones, G. W. Moore, J. C. Phillips, W. A. Kemp, R. H. Tryon, P. X. Popper,

Soundings taken by fathometer, graphic recorder, ~~hand lead wire~~

Fathograms scaled by Thos. G. Taxelius

Fathograms checked by Thos. G. Taxelius

Protracted by Thos. G. Taxelius

Soundings penciled by Thos. G. Taxelius

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

REMARKS: Projection and shoran circles drawn in Washington.
Topography and plotting by Seattle Processing Office.

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SURVEY H - 7737

Field No. EX 2549

South side Amchitka Island

1949

Scale 1:20000

USC&GSS EXPLORER HA Arnold Karo, Commanding

A. PROJECT:

This survey was executed in accordance with Instructions for Project CS 218 dated 3 February 1938, and Supplemental Instructions received through 11 April 1949.

B. SURVEY LIMITS AND DATES:

This survey contains the inshore hydrography on the south side of Amchitka Island from Longitude 178° 47.3' E, southeastward to Longitude 179° 02.0' E. In general, the survey was carried offshore to the 30 fathom curve, which was considered the safe limit for ship hydrography, and as close inshore as possible.

This survey makes a junction on the northwest with Launch Hydrographic Sheet EX 2449^{H-7736 (1949)} and on the offshore side with Ship Sheets EX 4149 and EX 4349. ^{H-7738 (1949)} ^{H-7740 (1949)} *Project Survey on the northwest will be considered with this survey in received work. Office of 1/27/51*

An extensive shoal area was found at the Southeasterly limits of the sheet. Consequently, hydrography was executed much further offshore in this area. The termination of the season did not permit the completion of the launch area to the southeasterly limit of this sheet, or to a satisfactory junction with work accomplished on Ship Sheet EX 4349. ^{H-7740 (1949)}

*area also
partly de-
veloped dur-
ing 1950
season.*

Hydrography was accomplished during the period 12 June to 16 ~~Sept~~ ^{Sept} 1949. Work was carried on alternately on the north and south sides of Amchitka Island in order to take advantage of favorable weather and sea conditions.

C. VESSEL AND EQUIPMENT:

All hydrography was accomplished by EXPLORER Launches No. 1 and No. 2, operating from the ship.

Launch No. 1 used both visual and shoran control. Lines were run on shoran arcs whenever possible. When shoran was not available lines were run on boat compass courses.

Launch No. 2 was not equipped with shoran, and used visual control entirely. Lines were run using the boat compass or ranges where available. In general, Launch No. 2 accomplished the inshore hydrography.

Sounding was done with the 808 Fathometers, and numerous fathometer bar checks were made.

D. TIDE AND CURRENT STATIONS:

The reductions for tides were taken from tidal data obtained from the portable automatic tide gage operated in Constantine Harbor Amchitka Island. Reducers for a short period when this gage was out of operation, were furnished by the Washington Office, based on a comparison with the tide gage at Sweeper Cove, Adak, Alaska. No time or height corrections were applied.

No current stations were occupied.

E. SMOOTH SHEET:

The plotting of the smooth sheet ~~has not been started.~~ *was done by the Seattle Process Office.*

F. CONTROL STATIONS:

This survey was controlled by third-order triangulation, executed by H. Arnold Karo, Chief of Party, in 1949, and supplemental control located by a photogrammetric plot of this area in 1949. In addition, two hydrographic signals were located by launch sextant cuts.

Corrections to shoran distances were determined by simultaneous comparisons of shoran and three point visual fixes.

G. SHORELINE AND TOPOGRAPHY:

The shoreline is characterized by steep bluffs, foul rocky areas, and areas of heavy kelp. Sounding was carried into the beach as far as kelp, character of the bottom and breakers permitted. In general, it was not possible to delineate the low water line by sounding.

Hydrographic signals (white washes and banners) were located by photo plot. The shoreline was ~~not~~ surveyed and will be taken from the aerial photographic survey. The photo inspection and identification of the entire shoreline on this sheet was completed.

*LT-5594-95-96 of 1949.
T-5598*

H. SOUNDINGS:

All sounding was in fathoms by the echo method. Sounding lines were spaced in accordance with the instructions received. No unusual methods were used to obtain or to reduce the soundings.

I. CONTROL OF HYDROGRAPHY:

The hydrography was controlled by three point visual fixes, shoran arcs, and a combination of a shoran arc and a visual angle.

J. ADEQUACY OF SURVEY:

This survey is adequate and complete, except for additional hydrography needed to extend the survey to a satisfactory junction with ship work at the southeasterly limits of the sheet. An extensive shoal area in this section must be fully developed in order to determine safe limits for ship work.

Area adequately developed during 1950 season

The junction with Launch Sheet EX.2449 to the west and Ship Sheets EX 4149 and EX 4349 on the south (offshore) side are satisfactory. There are no holidays within the limits of the sheet except as noted above. ^{H-7736 (1949)} ^{H-7738 (1949)} ^{H-7740 (1949)} *Not with Proj. Survey on the N.E. will be considered when that survey is received in the office. 5/21/51 1M2*

K. CROSSLINES:

It is estimated that more than 10% of the total mileage is in crosslines. Due to the different systems of lines run by the two launches, numerous crossings were made at the junctions. Excellent agreement on these crossings and with ship crossings was obtained.

L. COMPARISON WITH PRIOR SURVEYS:

No prior surveys of this area have been made by this bureau. A comparison with soundings taken from a U. S. Navy survey in 1935 (H-6906) shows a considerable discrepancy or dislocation of depths. This is probably due to the use of unadjusted control and the reconnaissance nature of the survey. Furthermore, shoals were discovered which do not appear on the Navy's survey. See Paragraph N.

M. COMPARISON WITH CHART:

Existing charted soundings are not in agreement with this survey as noted above. Shoals were found which do not appear on the chart. See Paragraph N. It is recommended that these surveys supersede all previous surveys of this area.

N. DANGERS AND SHOALS:

An extensive shoal with a least depth of 5⁴ fathom (~~un~~reduced) was found at Latitude 51° 24⁰⁴ Longitude 178° 57.5⁶⁰. A 17 fathom Navy sounding $\frac{1}{2}$ mile to the northwest was an indication of this shoal. During slack current kelp is in evidence on this shoal.

A shoal spot, with a least depth of ~~6~~ fathom (~~un~~reduced), was obtained at Latitude 51° 25.5⁵ Longitude 178° 59.3³. The Navy survey and chart showed no less than 15 fathom in this area. Kelp is in evidence on this shoal during slack current.

It will be noted that closer inshore the bottom is very "bumpy" and irregular. Dangers and shoals in this area, such as rocks, breakers, etc., are noted on the boat sheet. Prior surveys in this area were so meager, that practically no comparison with existing soundings can be made.

O. COAST PILOT INFORMATION:

A special report on Coast Pilot Information covering this area has already been submitted.

P. AIDS TO NAVIGATION:

There are no fixed or floating aids to navigation in the area of this survey.

Q. LANDMARKS FOR CHARTS:

There are no special landmarks for charts in the area of this survey.

R. GEOGRAPHIC NAMES:

There are no recommendations for geographic names within the limits of this survey.

Respectfully submitted,

M. A. Hecht

M. A. Hecht

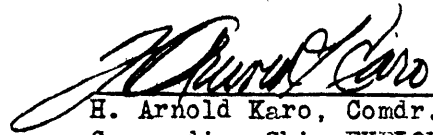
Lieut. Comdr. C. & G. S.

Approved and forwarded:

H. Arnold Karo
H. Arnold Karo, Comdr. C&GS
Commanding Ship EXPLORER

APPROVAL SHEET

The records and boat sheet have been inspected and
approved.


H. Arnold Karo, Comdr. C&GS
Commanding Ship EXPLORER

USC&GSS EXPLORER
c/o 705 Federal Office Bldg
Seattle 4, Washington

10 April 1950

To: The Director,
U.S. Coast & Geodetic Survey,
Washington 25, D.C.

Subject: Photogrammetric Manuscripts - Amchitka Island.

The 1949 season inshore hydrographic sheets for Amchitka Island have now been smooth plotted except for one sheet H-7737 (1949) (Field No. EX-2549) which is being plotted by the Seattle Processing Office. The photogrammetric shoreline detail on these sheets was excellent and very few topographic discrepancies were found during the smooth plotting.

The inshore hydrographic sheets smooth plotted by this ship covers the western part of Amchitka Island to longitude $178^{\circ}47.3'E$ on the south shore and longitude $179^{\circ}15.5'E$ on the north shore. Except for a few minor topographic discrepancies found on hydrographic sheet H-7731 (1949) (field No. EX-1149) no other discrepancies were found within the above limits.

In accordance with your letter of 13 January 1950, reference 711-rs, the discrepancies have been indicated on a paper copy of the shoreline manuscript T-5595A and is forwarded herewith so that corrections can be made on the original manuscript.

The Seattle Processing Office will report any topographic discrepancies found during the smooth plotting of sheet H-7737. (1949)

The promptness with which this ship was supplied photogrammetric shoreline detail and smooth sheets after the field inspection information was furnished the Washington Office last October greatly expedited the smooth plotting during this past winter.

H. Arnold Karo
Comdg. Ship EXPLORER

✓ cc: Seattle Processing Office.

SHORAN SUMMARY

1949

1. The EXPLODER used the following shoran stations:

STEM (1949) on SE end of Little Sitkin Island at an elevation of 340 feet.

BIRD (1948 - 1949) on Bird Cape at NW end of Amchitka Island at an elevation of 167 feet.

CAPE (1949) on highest peak on NW end of Amchitka Island at an elevation of 876 feet. This was the same equipment as used at BIRD in 1949.

HART (1949) on highest peak near the center of Amchitka Island at an elevation of 1034 feet.

The PIONEER's stations CABLE and VALY on Semisopochnoi Island and TINY at Constantine Harbor, east end of Amchitka Island.

2. The ZERO SETTINGS were obtained by a comparison of the shoran distances and the computed distances obtained in the following manner.

On 27 August, triangulation stations RIM 2 and OPT 2 were occupied with theodolites and the ship's mast out in simultaneously with shoran readings on CAPE and HART. True distances were obtained by computation.

On 4 September, sextant fixes on triangulation stations from both the Ship and Launch No. 1 were taken simultaneously with shoran readings on stations TINY and HART. True distances were computed.

Theodolite cuts were taken from stations WEB 2 and CHITKA on 6 June along with shoran readings from STEM and BIRD. Apparently these were not properly synchronized as the corrections obtained appear erroneous. The summations of the corrected shoran distances along the baseline do not agree with the true distances. Inasmuch as the same equipment was used at both BIRD and CAPE the correction obtained for CAPE has been applied to BIRD. Using correction for BIRD and the sums of 37 baseline crossings a correction was deduced for STEM.

No observations for corrections were made for the stations VALY and CABLE. The 1948 values for the equipment at these stations are therefore used.

With Launch 1 in the chocks, comparative distances were read with the Ship and the Launch to BIRD, STEM CAPE and HART. The launch distances were reduced to the ship distances and compared and the launch corrections thereby obtained.

SHORAN ZERO CHECK SETTINGS - EXPLORER - 1949

	SHORE SET	SHIP (1)	LAUNCH (5)
#1	VALT	99.816	not used
#2	HART	99.828	99.823
#3	TINY	99.809	99.803
#4	BIRD	99.822	99.820
	CAPE	99.822	99.826
#5	STEM	99.807	99.793
#6	CABLE	99.811	99.806

3. The shoran equipment gave little operational difficulties outside of the generators.

To correct this and to minimize radio communication transfer switches are to be installed at the shore stations so that the operators may change generators whenever convenient. Also variacs are to be supplied the stations in case the AC output voltage will not come up to normal.

Two types of generators were used in Launch #1. A light "Onan" gasoline generator was mounted on the stern. An inboard belt driven AC generator was installed in the engine compartment. The output voltage of this was controlled by a variac and DC voltage obtained by rectification. The variac only permitted a variance in speed from 800 to 1200 rpm for the launch when using the inboard generator. It would be advisable to install a variable speed drive between the engine and generator. In any case a clutch should be inserted before the generator so that it may be cut out while the launch is dead heading or running visual hydrography. The generator mounted on the stern has only one defect - gasoline must be carried in the launch. With different pulleys or a variable speed drive the inboard generator will give just as good service as the gasoline generator.

H 77387 *pkw*

Ex 2549

South side Amchitka Island.

Processing Office Notes.

Smooth sheet.

The projection was ruled in Washington where also the shoran circles were drawn. The shoreline was transferred by projector in Seattle from inspected photo topo compilations T 5594, 5, 6 & T5598. Signals were plotted on smooth sheet when received in processing office from ship.

Rock on Boatsheet. ϕ 51 31.07 λ 178 57.65

Doubt is thrown on the position of this rock by the topo location of a rock 100 meters to eastward, as shown on smooth sheet. At Pos. 56c P 31 Vol 8, the sounding line breaks to run around a rock. The line resumes at Pos. 57c. The rock on the boat sheet is shown between these positions. It is suggested that the air photo be examined to decide whether there are two rocks, or to see whether the position of the rock is out a hundred meters.

Rock on B.S. out of position. B/S rock same as rock shown on T-5596 (1949) in lat $51^{\circ}31.08'$, long $178^{\circ}57.72'$

Elsewhere the topography and hydrography are in good agreement.

Sunken rock on Boatsheet. ϕ 51 30.40 λ 178 58.53

The rock was sought but not found 4 Sept. 1949, per boat sheet note. The origin of this boatsheet rock appears to be a note on boatsheet, "Water hump up. Sunken rock. 3 Sept. 8:54". The search was made the following day.

ON S/S ϕ $51^{\circ}30.40'$, λ $178^{\circ}58.53'$

Sunken rock shown on S/S. Note as Sept 3 (386 red) and Sept. 15 (130 red) states water humps up. + looked for & not found on Sept 4 (766 red).

Kelp. ϕ 51 29 λ 179 00.

Shoalest depths are 13.5 fms. If this is growing kelp there is probably less water.

Sdg records or fathograms do not indicate kelp in this area. No kelp shown on S/S.

Dangers

ϕ	λ	Fms.	Remarks.
51 23.97	178 57.53	4.6	
24.03	57.60	4.9	5.4
24.215	57.65	5.7	9.5
25.55	59.32	5.5	Drifted over shoal 20 min.
30.54	58.01	Rk. awash.	Located by photo topo. (T-5596, 1949) Sounding 4.9 fm. (Boatsheet note reads "Breaks 4 Sept. 1949 at 10:36".)
32.213	55.80	2.9	
33.52	49.05	4.1	Not developed.
32.12	56.00	4.4	
32.73	52.72	4.6	

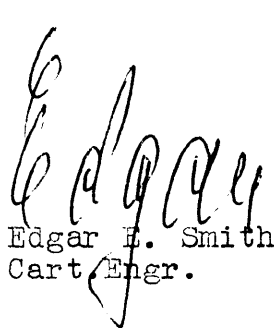
A number of these points are dangers only to ships seeking anchorage or shelter, or landing operations in bad weather.

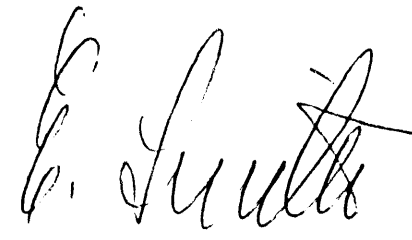
Note also the following:

	ϕ		λ	Fms.
51	30.50	178	57.50	6.8 12
	33.88		48.02	8.9 ✓

General.

The survey was made in 1949 and 1950. After the 1949 work was plotted the sheet was held for plotting the additional work of 1950. No new signals were required. The same tidal station was used in 1950 as in 1949 and the staff reading of MLLW is the same. 1950 Tidal data have already been sent to Washington from the ship.


Edgar E. Smith
Cart. Engr.


11/15/50

H 7737

Ex 2549

Aleutian Islands

Amchitka

List of geographic names
penciled on smooth sheet.

Amchitka Island

Pacific Ocean

STATISTICS FOR HYDROGRAPHIC SHEET NO. H-7737

Field No. EX 2549

USC&GSS EXPLORER

Date	Survey Unit	Day Letter	Vol.	Number of Pos.	Statute Miles	Area (statute) Sq. Miles
<u>1949</u>						
6/12	Launch 1	a	1	176	35.8	
6/13	Launch 1	b	11 & 2	233	35.2	
6/23	Launch 1	c	2	176	40.9	
8/27	Launch 1	d	2 & 3	199	43.8	
9/2	Launch 1	e	3 & 4	208	48.9	
9/2	Launch 2	a	1	142	32.5	
9/3	Launch 2	b	1 & 2	174	50.2	
9/3	Launch 1	f	4	140	36.1	
9/4	Launch 2	c	2	164	50.9	
9/4	Launch 1	g	4 & 5	183	44.5	
9/5	Launch 2	d	2 & 3	29	9.2	
9/5	Launch 1	h	5	29	6.3	
9/15	Launch 2	e	3	97	26.7	
9/15	Launch 1	j	5	140	36.6	
9/16	Launch 2	f	3	63	17.2	
9/16	Launch 1	k	5 & 6	176	50.3	
TOTAL - 1949				2329	565.1	61.5
<u>1950</u>						
6/11	Launch 1	l	9	92	17.6	
6/11		g	10	15	4.0	
6/11		a	AM	6660	8.3	
Total 1950				167	29.9	1.
Total for sheet				2496	595.0	62.5

7737

TIDAL NOTE

Soundings for this survey were reduced from tide data obtained from portable automatic tide gage located at Kirilloff Wharf, Constantine Harbor, Amchitka Island, Alaska. Latitude $51^{\circ} 24.8'$ Longitude $179^{\circ} 16.8'$. This gage was out of operation for a short period and tides for this period were obtained from the Washington Office. This data was based on a comparison with the tide gage at Sweeper Cove, Adak Island, Alaska.

The plane of reference was MLLW which is equal to 2.5 feet on the staff. 165th meridian time (west) was used for all sounding and tidal observations. No corrections for difference of time or height of tide was applied.

RHC

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Hydrography and Topography~~

16 January 1951

Division of Charts: R. H. Carstens

Plane of reference approved in
12 volumes of sounding records for

HYDROGRAPHIC SHEET 7737

Locality Amchitka Island, Aleutian Islands

Chief of Party: H. A. Karo in 1949-50
Plane of reference is mean lower low water, reading
2.5 ft. on tide staff at Constantine Harbor
9.9 ft. below B. M. 1 (1944)

Height of mean high water above plane of reference is 2.8 feet.

Condition of records satisfactory except as noted below:

E. C. McKay
Section
Chief, ~~Division of Tides and Currents~~

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. ^{H-7737}

Records accompanying survey:

Boat sheets ³....; sounding vols. ¹².....; wire drag vols.;
 bomb vols.; graphic recorder rolls ³envel.
 special reports, etc.

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

Number of positions on sheet		2496
Number of positions checked		171
Number of positions revised		24
Number of soundings revised (refers to depth only)		117
Number of soundings erroneously spaced		32
Number of signals erroneously plotted or transferred		0
Topographic details	Time	9 hrs
Junctions	Time	13 hrs
Verification of soundings from graphic record	Time	44 hrs

Verification by *Robert K. McLaughlin* Total time 183 hrs Date 5-10-51

Reviewed by *Sam Jesmond* Time 22 Date 5/24/51

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-7737

FIELD NO. EX-2549

Alaska-Aleutian Island, Rat Islands, South Side-Amchitka
Island
Surveyed in June 1949-June 1950 Scale 1:20,000
Project No. CS-218

Soundings:

Control:

808 Fathometer

Shoran

Sextant fixes on shore signals

Chief of Party - H. A. Karo

Surveyed by - F.A. Riddell, J.S. Morton, M.A. Hecht, E.L. Jones,
G.W. Moore, J.D. Phillips, W.A. Kemp, R.H. Tryon
and F.X. Popper

Protracted by - T. G. Taxelius

Soundings plotted by - T. G. Taxelius

Verified and inked by - R. K. DeLawder

Reviewed by - I. M. Zeskind, 24 May 1951

Inspected by - R. H. Carstens

1. Shoreline and Signals

The shoreline originates with air-photographic surveys T-5594, T-5595, T-5596 and T-5598 of 1949.

The source of the control is given in the Descriptive Report.

2. Sounding Line Crossings

Depths at crossings are in good agreement.

3. Depth Curves and Bottom Configuration

The usual depth curves were adequately delineated, except inshore from 5-fm. depths where the foul character of the bottom and heavy kelp prevented development to the low water line.

The bottom is very irregular. Submarine knolls, ridges, pinnacles and reefs contribute to the bottom irregularity.

4. Junctions with Contemporary Surveys

Adequate junctions were effected with H-7736 (1949) on the northwest, with H-7738 (1949) on the south and with H-7740 (1949) on the southeast. The junction with H-7888 (1950) on the east will be considered in the review of that survey.

5. Comparison with Prior SurveysH-6906 (1935) 1:150,000

A comparison between the small-scale Navy reconnaissance survey and the present survey reveals differences of as much as 10 fms. as for example, in lat. $51^{\circ} 26.4'$, long. $178^{\circ} 59.3'$, where a prior depth of 47 fms. falls in present depths of 37-40 fms. These discrepancies are attributed largely to the dead reckoning control on the prior survey. It is apparent that a shift in position of the prior sounding lines would eliminate many of the discrepancies. The present large-scale survey is adequately developed to reveal all the hydrographic information necessary to supersede H-6906.

6. Comparison with Chart 8864 (Latest print date 3/19/51)A. Hydrography

The charted hydrography originates with the present survey prior to verification and review.

The following charted soundings were revised during the verification and review of the present survey:

<u>Charted Sdg.</u> <u>fm.</u>	Lat.	Long.	<u>Revised Sdg.</u> <u>fm.</u>
4	$51^{\circ} 33.52'$	$178^{\circ} 49.15'$	70
9	$51^{\circ} 26.60'$	$179^{\circ} 01.65'$	94
5	$51^{\circ} 25.55'$	$178^{\circ} 59.32'$	54
4 $\frac{1}{2}$	$51^{\circ} 24.04'$	$178^{\circ} 57.60'$	5

Attention is directed to the sunken rock in lat. $51^{\circ} 30.4'$, long. $178^{\circ} 58.55'$ which was added to the smooth sheet during the review.

The present large-scale survey is adequate to supersede the charted information.

B. Aids to Navigation

There are no aids to navigation within the limits of the present survey.

7. Condition of Survey

- a. The sounding records and Descriptive Report are complete and comprehensive.
- b. The smooth plotting was accurately done.
- c. Few bottom characteristics were obtained in the area of the present survey.
- d. Kelp areas plotted on the smooth sheet included kelp interpreted from the fathograms which was assumed to appear on the surface of the water. Revisions in plotting the kelp were made in the Washington Office to show only kelp areas mentioned by the hydrographer or shown on the boat sheet or topographic survey.

8. Compliance with Project Instructions


The present survey adequately complies with the Project Instructions, except as noted in paragraphs 7c and 9.


9. Additional Field Work Recommended


This is a very good basic survey except that the least depth should be determined on the shoal in lat. $51^{\circ} 33.5'$, long. $178^{\circ} 49.0'$. Attention is also directed to the few bottom characteristics mentioned in paragraph 7c above.

Examined and approved:


H. R. Edmonston
Chief, Nautical Chart Branch


H. Arnold Karo
Chief, Division of Charts


L. S. Hubbard
Chief, Section of Hydrography


W. M. Scaife
Chief, Division of Coastal Surveys

NAUTICAL CHARTS BRANCH

SURVEY NO. H. 7737

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
12/7/50	8864	Riegar	Before After Verification and Review <i>But appld.</i>
5/24/57	9102	Wittmann	Before After Verification and Review <i>37MA</i>
11/61	8864	<i>ME</i>	Before After Verification and Review
JAN 1993	16450	DON CORDTS	Before After Verification and Review <i>Fully applied</i> <i>New metric chart</i>
			Before After Verification and Review
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M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.