

8529

Diag. Cht. No. 3502-2.

Form 504

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. BO-40-1-60 Office No. H-8529

LOCALITY

State Alaska

General locality Cook Inlet

Locality off Moose Pt
Birch Hill

19.60

CHIEF OF PARTY

Horace G. Conerly

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DATE

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8529

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-8529

Field No. BO-40-1-60

State Alaska

General locality Cook Inlet

Locality Off Moose Pt.
Birch Hill

Scale 1:40,000 Date of survey 7/28/60 -- 8/17/60

Instructions dated 11 December 1959

Vessel USC&GS SHIP BOWIE

Chief of party Horace G. Conerly

Surveyed by Horace G. Conerly

Soundings taken by ~~fathometer~~, graphic recorder, ~~hand level~~

Fathograms scaled by J. Sande

Fathograms checked by A. R. Benton, Jr., H. G. Conerly

Protracted by Personnel, Seattle Processing Office *- H. C. Parsons

Soundings penciled by Personnel, Seattle Processing Office - H. C. Parsons

Soundings in fathoms ~~xxxx~~ at ~~xxxx~~ MLLW

REMARKS:

WRS

DESCRIPTIVE REPORT

To Accompany

HYDROGRAPHIC SURVEY NO. H-85~~30~~²⁹ (BO-40-~~1~~-60)

COOK INLET, ALASKA

Scale: 1:40,000

Date: 1960

USC&GS SHIP BOWIE

H. G. CONERLY, COMMANDING

A. PROJECT:

This survey was accomplished under Instructions for Project CS-413, issued by the Director and dated 11 December 1959.

B. SURVEY LIMITS AND DATES:

Project limits and outlined by the following points; 60-55.4N, 150-58W to 60-56.8N, 151-02.0W to 61-02.9N, 150-48.2W to 61-05.6N, 150-44W to 61-06.35N, 150-38.8W to 61-08.5N, 150-24.75W to 61-09.85N, 150-20.0W, and then to 61-07.55N, 150-20.0W.

Field work commenced on 28 July 1960 and was completed on 17 August 1960.

Junction on the east was made with H-85~~30~~²⁸, a 1:20,000 scale survey, and on the west with H-8530, a 1:40,000 scale survey, both completed by the BOWIE during 1960.

C. VESSELS AND EQUIPMENT:

All hydrography was done with USC&GSS BOWIE and launch 184, a 26 foot plastic motor whaleboat, operating from the BOWIE. Soundings were taken with an EDO Fathometer (No. 255C-33) and 808 Fathometer No. 57-28.

No bottom samples were taken.

D. TIDE AND CURRENT STATIONS:

The records from the portable tide gage located on Jumbo Rock (151-10.3W, 60-46.7N) and the pressure tide gage located on Fire Island.

(CONTINUED FROM PAGE ONE)

At 150-13.55W, 61-10.02N, were used for the reduction of all soundings. Neither gage is located on this sheet. A second pressure tide gage was installed near North Foreland Light but it did not operate properly and its results were not used.

There were no current stations located on the sheet.

E. SMOOTH SHEET:

The smooth sheet will be constructed and plotted by personnel of the Seattle Processing Office. (See Director's letter to Seattle District Officer dated 28 September 1960, a copy of which is attached to this report.)

F. CONTROL STATIONS:

Station CREEK was located by direction and taped distance from BIRCH HILL, 1942 (USE).

Station MOWK was located by direction and taped distance from TYONEK, 1909, a C&GS triangulation station.

Station FARM was located by direction and taped distance from BOULDER, 1909, a C&GS triangulation station.

G. SHORELINE AND TOPOGRAPHY:

Shoreline and topography were taken from film positives of Chart 8553.

H. SOUNDINGS:

Soundings were taken with EDO Fathometer No. 255C-33 and 808 Fathometer No. 57-28.

Velocity corrections to fathometer soundings were computed from vertical casts. An abstract of corrections is included in this report. For computations see Ship BOWIE 1960 Fathometer Report.

No scale comparisons of the fathometers were taken for this sheet and none were needed as all work was done on the "A" Scale.

I. CONTROL OF HYDROGRAPHY:

The hydrography was controlled by shoran from three shore shoran stations whose towers were located near ~~to~~ triangulation stations. When the launch was used its position was obtained by gyro-compass bearing from the ship and a radar distance, the ship's position was obtained simultaneously by shoran.

J. ADEQUACY OF SURVEY:

This survey is adequate and complete and should supersede previous surveys of this area.

K. CROSSLINES:

The crosslines on this sheet constitute about 12% of the total miles of soundings for normal spacing of lines. Crossings are satisfactory.

L. COMPARISON WITH PRIOR SURVEYS:

Previous surveys of all or part of this area were made in 1910, 1941, 1955 and 1959, at scales of 1:100,000 (H-3199), 1:40,000 (H-6678), 1:20,000 (H-8213), and 1:20,000 (H-8468).

The shoal bearing 290 T, 3.4 nautical miles off ~~West Point~~ ^{Fire Island} Light with a least depth of $\frac{1}{2}$ fm. (charted) is moving southeastward; and its shoalest area is moving to the southwest end of the shoal. 0.4 fm

The southwestern-most shoal soundings in previous years and at present are located as follows:

1941 --- H-6678 and Chart 8553 (revised 5/12/58)
1 $\frac{1}{2}$ fm. at 61-08.9N and 150-25.25W

1959 --- H-8468
0 fm. at 61-08.95N and 150-22.65W
1 fm. at 61-08.66N and 150-24.45W

1960 --- H-8529
0.4 fm. at 61-08.⁵~~4~~N and 150-23.⁶~~8~~W
1.4 fm. at 61-08.44N and 150-24.³⁰~~85~~W

The shoal whose westernmost point of the 6 fm. curve is at approx. 150-44.3W, 61-05.45N has moved slightly from the position shown on H-6678 (1941). Sheet H-6678 shows 0.0 fm. at 61-05.6N, 150-43.2W and 61-05.9N, 150-41.2W with a line of minus soundings between these two points. Sheet H-8529 shows a minimum sounding at 61-05.6N and 150-41.⁷⁰~~65~~W. 0.4 fm

Pre-Survey Review Item No. 3.

✓ The $2\frac{1}{4}$ fm. shoal marked by Buoy No. "3" was searched for and not found by both the ship and the launch. The shoalest depth found was 4.8 fms. at 150-54W, 60-59.7N, this was found inside a general 5 fathom shoal to the west and northwest of the buoy. Sheet H-6678 shows a minimum sounding of $4\frac{1}{6}$ fathoms at 60-59.61N, 150-54.4W and Sheet H-3199 shows a minimum sounding in this area of $7\frac{1}{2}$ fm.

✓ The $6\frac{1}{6}$ fm. sounding at 61-03.7N, 150-46.2W on H-6678 does not appear on H-8529; however there are 7 fathom soundings 0.2 miles east and northeast of the above mentioned shoal soundings.

a 6 fathom shoal was found at 150-51W, 60-59.13N, at 115 T and 1.2 nautical miles from Buoy No. "3". The nearest comparable soundings are $6\frac{1}{2}$ fm., +0.8 nautical miles to the NW and $6\frac{1}{6}$ and $5\frac{5}{6}$ th., 0.8 nautical miles to the SW.

a $6\frac{1}{2}$ fathom shoal is shown on H-6678 at 150-52.1W, 60-59.75N. There are 6.7 and 6.9 fathom soundings on H-8529 about 0.2 nautical miles from that position but no $6\frac{1}{2}$ fathom soundings.

M. COMPARISON WITH CHART 8553:

The $\frac{1}{2}$ fathom shoal bearing 290 T, 3.4 nautical miles off ~~West~~ ^{Fire} Island Point Light is moving as described in "L". The charted $\frac{1}{2}$ fathom sounding has moved from 150-20.5W and 61-10.15N to 150-23.85W and 61-08.45N, a distance of 2.4 nautical miles to the SW.

Southwestern-most $\frac{1}{2}$ fathom soundings on H-6678 and H-8529 for the shoal that bares (on Chart 8553) whose position is 150-41W and 61-05.75N indicate that the shoal is moving to the east.

Position for H-6678 is 61-05.2N
150-43.6W

Position for H-8529 is 61-05.6N (This is actually 0.4 fathoms)
150-41.65W (With all corrections applied)

N. DANGERS AND SHOALS:DANGERS:

The $\frac{1}{2}$ fm. shoal bearing 310 T, 3.3 nautical miles from ~~West Point~~ ^{Fire Island} Light is a very serious danger. A letter concerning this shoal was sent to the Director on 9 September 1960 along with boat sheet BO-40-1-60. This shoal is moving closer to the Coast Pilot Course, making the passage from Possession Point to Race Point on an outgoing tide particularly hazardous. The flow of water from Turnagain Arm sets a vessel onto this shoal rapidly unless extreme caution is used. A buoy on the South tip of the shoal or near it, would be a valuable aid in navigating this most dangerous section of Cook Inlet.

(CONTINUED FROM PAGE FOUR)

SHOALS:

1. 2 $\frac{1}{4}$ fm. shoal at 150-53.3W and 60-59.8N. Not found, see "L".
2. Shoal with least depth of 0.4 fathoms at 61-05.6N and 150-41.65W.
3. 6 1/6 fathom sounding at 61-03.7N and 150-46.2W. See "L".
4. 6 fathoms at 150-51W and 60-59.13N .
5. 6.7 and 6.9 fathom soundings near 150-52.1W and 60-59.75N. See "L".

O. COAST PILOT:

It is recommended that future surveys be made in the area of the shoal listed as a danger above at frequent regular intervals.

P. AIDS TO NAVIGATION:

1. Fixed Aids *Fire Island*
 - a. ~~North Foreland~~ Light is the only fixed aid to navigation on the sheet. It has not been located by triangulation.
2. Floating Aids
 - a. Buoy No. "3" was located by gyro-compass bearings from the ship with shoran fixes for ship position taken simultaneously. This is a seasonal buoy (1 May to 1 Nov.) so its position shifts from year to year.

Q. LANDMARKS FOR CHARTS:

There are no landmarks for charts in this area which have not already been charted.

R. GEOGRAPHIC NAMES:

No changes or additions were made in geographic names.

S. SILTED AREAS:

While fathograms show no evidence of silting, comparison of H-8529 with H-3199 indicates that most of the area the hydrography covers is shoaling 1 to 3 fathoms.

U. MISCELLANEOUS INFORMATION:

Pre-Survey Review Item No. 3 is found in paragraph "L".

Z. TABULATION OF APPLICABLE DATA:

(NEXT PAGE).

Z. TABULATION OF APPLICABLE DATA:

The following applicable data are attached to this report:

- ~~1. Abstract of vertical casts~~
2. Copy of letter to Director concerning Shifting shoal
3. Fathometer corrections for EDO Fathometer 255C-33
4. Fathometer corrections for 808 Fathometer No. 25
5. List of hydrographic signals for H-8529
6. Tide Reducers for E, F, G, and H tide zones
7. Statistics Sheet
8. Tidal Note
9. Copy of Shoran Report.

Respectfully submitted

Jack W. Kinney, Jr.
Jack W. Kinney, Jr.
Ensign, C&GS

Approved and Forwarded:

Francis X. Popper
Francis X. Popper
CDR, C&GS
Commanding Ship BOWIE

TIDAL NOTE

Sheet BO-40-1-60 Reg. H-8529

Portable tide gages were established at Jumbo Rock and Fire Island. The maximum height and time correction for the period of hydrography indicated five zones would be needed. (See Boat Sheet for zones). Curves for both gages were drawn using the observed hourly heights. Then the differences in time and height were proportioned at highs, lows and selected intermediate points so that the curves for the intermediate zones would be drawn and tide reducers determined.

The procedure used was in accordance with section 257 of Special Publication 196.

STATISTICS

BO-40-1-60 (H-8529)

	<u>NO. OF DAY POSITIONS</u>	<u>NAUTICAL MILES SOUNDING LINE</u>	<u>TO AND FROM & MISC.</u>	<u>TOTAL</u>
A	231	93.5	26.0	119.5
B	125	52.7	17.0	69.7
C	146	64.0	42.5	106.5
D	283	130.5	22.0	152.5
E	295	116.0	7.4	123.4
F	279	117.5	5.2	122.7
G	177	78.5	28.7	107.2
	<hr/>	<hr/>	<hr/>	<hr/>
	1,536	652.7	148.8	801.5

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
USC&GS SHIP BOWIE
General Delivery
Juneau, Alaska

9 September 1960

To: The Director
Coast and Geodetic Survey
Department of Commerce Bldg.
Washington 25, D. C.

Subject: Project CS-413. Shifting sandbars.

Boat Sheet Field No. BO-40-1-60 was forwarded to Washington today. Surveys indicate further shifting of the sand bar NW of West Point, Fire Island. It has shifted approximately one-half mile at one point from the location determined by the PATHFINDER a little over a year ago. The other shoals have shifted small amounts but do not endanger any but local navigation.

The soundings shown on the sheet are corrected for predicted tides only, but should be correct to within a fathom.

It is requested that the boat sheet be returned to the BOWIE for final processing of the work.

Horace G. Conerly
CDR, C&GS
Commanding Ship BOWIE

FATHOMETER CORRECTIONS
WITH
INITIAL SET AT ONE FATHOM

SHEETS

BO-40-1-60 Reg. H-8529

BO-40-2-60 Reg. H-8530

EDO Fathometer 2590-33

From	To	Corr. fms
1	55	+ 0.3
55	--	+ 0.2

FATHOMETER CORRECTIONS

WITH

INITIAL SET AT ONE FATHOM

Sheets Reg. H-8529 and Reg. H-8530

SEE FATHOMETER REPORT SHEET H-8546

808 Fathometer No. 25			
<u>From</u>	<u>To</u>	Corr. fms.	
		"A" Scale	"B" Scale
0	55	+ 0.3	
55	80	+ 0.3	0.0

LIST OF SIGNALS

BO-40-1-60 (H-8529)

<u>HYDRO NAME</u>	<u>SOURCE</u>
BIRCH HILL	BIRCH HILL (USE), 1942
CREEK	Shoran Tower, Theodolite angle and taped distance from BIRCH, (USE), 1942
MOWK	Shoran Tower, Theodolite angle and taped distance from TYONEK 1909

TIDE REDUCERS

BO-40-1-60 (H-8529)

<u>TIME</u>	<u>REDUCERS</u>
28 July	
"H" ZONE	
0700-0807	- 3.6
0836	- 3.4
0857	- 3.2
0917	- 3.0
0934	- 2.8
0953	- 2.6
1009	- 2.4
1027	- 2.2
1045	- 2.0
"G" ZONE	
1022-1039	- 2.4
1057	- 2.2
"H" ZONE	
1057-1104	- 1.8
1123	- 1.6
1139	- 1.4
1158	- 1.2
"G" ZONE	
1158-1207	- 1.4
1223	- 1.2
"H" ZONE	
1223-1233	- 0.8
1253	- 0.6
1316	- 0.4
1322	- 0.2
"G" ZONE	
1322-1337	- 0.4
1413	- 0.2
"H" ZONE	
1413-1442	- 0.2
1455	- 0.4
1502	- 0.6
"G" ZONE	
1502-1512	- 0.4
1527	- 0.6
1542	- 0.8
1546	- 1.0

File with figure

TIME REDUCERS

28 July (cont)

"H" ZONE

1546-1553 - 1.2
~~XXXX~~ 1607 - 1.4
 1621 - 1.6
 1632 - 1.8
 1649 - 2.0

"G" ZONE

1649-1657 -2.0
 1711 - 2.2
 1724 - 2.4
 1740 - 2.6
 1749 - 2.8

"H" ZONE

1749-1754 - 2.8
 1812 - 3.0
 1833 - 3.2
 1853 - 3.4
 1858 - 3.6

"G" ZONE

1858-1913 - 3.6
 1935 - 3.8

29 July

"H" ZONE

1147-1156 - 1.6
 1215 - 1.4
 1233 - 1.2
 1253 - 1.0
 1316 - 0.8
 1343 - 0.6
 1402 - 0.4

"G" ZONE

1402-1412 - 0.6
 1510 - 0.4

"H" ZONE

1510-1526 - 0.6
 1542 - 0.8
 1559 - 1.0

"G" ZONE

1559-1612 - 1.0
 1626 - 1.2
 1642 - 1.4
 1654 - 1.6
 1709 - 1.8
 1719 - 2.0

TIME

REDUCERS

"H" ZONE

1719-1728 - 2.2
 1735 - 2.4

"G" ZONE

1735-1738 - 2.2
 1753 - 2.4
 1811 - 2.6
 1827 - 2.8
 1845 - 3.0
 1904 - 3.2
 1926 - 3.4
 1943 - 3.6

30 July

"G" ZONE

0842-0952 - 3.6
 1024 - 3.4
 1046 - 3.2
 1106 - 3.0
 1125 - 2.8
 1145 - 2.6
 1203 - 2.4
 1223 - 2.2
 1243 - 2.0
 1303 - 1.8
 1323 - 1.6
 1342 - 1.4
 1401 - 1.2
 1423 - 1.0
 1451 - 0.8
 1613 - 0.6
 1633 - 0.8
 1647 - 1.0
 1704 - 1.2
 1721 - 1.4
 1736 - 1.6
 1753 - 1.8
 1810 - 2.0
 1826 - 2.2
 1830 - 2.4

"F" ZONE

1830-1844 - 2.4
 1900 - 2.6

<u>TIME</u>	<u>REDUCERS</u>
14 August	
"H" ZONE	
0637-0640	- 1.4
"G" ZONE	
0640-0650	- 1.4
0707	- 1.6
0727	- 1.8
0745	- 2.0
0804	- 2.2
0828	- 2.4
0830	- 2.6
"F" ZONE	
0830-0847	- 2.6
0920	- 2.8
1011	- 3.0
1056	- 3.2
"G" ZONE	
1056-1132	- 3.4
1205	- 3.2
"F" ZONE	
1205-1215	- 3.4
"G" ZONE	
1215-1239	- 3.0
1304	- 2.8
1320	- 2.6
"F" ZONE	
1320-1339	- 2.8
"G" ZONE	
1339-1355	- 2.4
1422	- 2.2
1434	- 2.0
"F" ZONE	
1434-1454	- 2.2
1501	- 2.0
"G" ZONE	
1501-1513	- 1.8
1539	- 1.6
1544	- 1.4

<u>TIME</u>	<u>REDUCERS</u>
"F" ZONE	
1544-1609	- 1.6
1620	- 1.4
"G" ZONE	
1620-1654	- 1.2
"F" ZONE	
1654-1734	- 1.2
"G" ZONE	
1734-1758	- 1.4
1759	- 1.6
"F" ZONE	
1759-1810	- 1.4
1837	- 1.6
1843	- 1.8
"G" ZONE	
1843-1847	- 1.8
1900	- 2.0
"F" ZONE	
1900-1915	- 2.0
1935	- 2.2
1948	- 2.4
"G" ZONE	
1948-1952	- 2.4
1959	- 2.6
"F" ZONE	
1959-2014	- 2.6
2034	- 2.8
2056	- 3.0
2105	- 3.2
15 August	
"F" ZONE	
0520-0522	- 1.2
0556	- 1.0
0703	- 0.8
0733	- 1.0
0753	- 1.2
0812	- 1.4
0829	- 1.6

TIME REDUCERS

15 August (cont)

"F" ZONE (cont)

0829-0848	- 1.8
0906	- 2.0
0926	- 2.2
0944	- 2.4
1004	- 2.6
1027	- 2.8
1054	- 3.0
1123	- 3.2
1207	- 3.4
1318	- 3.6
1402	- 3.4
1433	- 3.2
1457	- 3.0
1523	- 2.8
1547	- 2.6
1613	- 2.4
1638	- 2.2
1707	- 2.0
1745	- 1.8
1919	- 1.6
1951	- 1.8
2014	- 2.0
2037	- 2.2
2043	- 2.4

16 August

"F" ZONE

0509-0512	- 1.8
0538	- 1.6
0608	- 1.4
0641	- 1.2
0828	- 1.0
0856	- 1.2
0919	- 1.4
0938	- 1.6
0940	- 1.8

"E" ZONE

0940-0942	- 1.6
0958	- 1.8
1014	- 2.0
1030	- 2.2
1046	- 2.4
1104	- 2.6
1122	- 2.8
1143	- 3.0
1206	- 3.2
1231	- 3.4
1302	- 3.6
1352	- 3.8

TIME REDUCERS

"E" ZONE (cont)

1352-1435 - 4.0

"F" ZONE

1435-1449 - 3.6

"E" ZONE

1449-1521 - 3.8

"F" ZONE

1521-1542 - 3.4

1610 - 3.2

1613 - 3.0

"E" ZONE

1613-1627 - 3.4

1629 - 3.2

"F" ZONE

1629-1634 - 3.0

1659 - 2.8

1726 - 2.6

1752 - 2.4

1820 - 2.2

1855 - 2.0

1932 - 1.8

17 August

"F" ZONE

0553-0614 - 1.8

0636 - 1.6

"G" ZONE

0636-0652 - 1.2

0721 - 1.0

0806 - 0.8

0852 - 0.6

0925 - 0.8

0951 - 1.0

1012 - 1.2

1029 - 1.4

1042 - 1.6

"F" ZONE

1042-1047 - 1.6

1103 - 1.8

1118 - 2.0

1125 - 2.2

"E" ZONE

1125-1133 - 2.2

TIME REDUCERS

17 August (cont)

"E" ZONE (cont)

1133-1148	- 2.4
1205	- 2.6
1223	- 2.8
1243	- 3.0
1303	- 3.2
1326	- 3.4
1352	- 3.6
1424	- 3.8
1505	- 4.0

"F" ZONE

1505-1554	- 3.8
1559	- 3.6

"G" ZONE

1559-1611	- 3.4
1637	- 3.2

SHORAN REPORT - 1960

BO 40-1-60 (H-8529) and BO 40-2-60 (H-8530)

FOREWORD

This report covers location, operation, equipment, and calibration of the shoran stations used on the Cook Inlet hydrographic survey during the 1960 field season. The area surveyed was approximately the middle one third of Cook Inlet, from East Foreland northeastward to Point Possession.

STATION LOCATION

Three shoran stations were used in this survey. Station MOWK, near North Foreland, was used during the entire survey. All arcs were run on MOWK. Station FARM, at Boulder Point, was used in conjunction with MOWK for all of sheet BO 40-2-60 and for the western portion of sheet BO 40-1-60. When it was determined that station FARM would not provide sufficient range for coverage of the remainder of sheet BO 40-1-60, station FARM equipment and personnel were moved to station CREEK at Birch Hill.

Each of the shoran stations was built adjacent to existing triangulation stations, with exact location measured by short traverses and computed on the ~~accompanying~~ Position Computation forms. The observed angles and distances from the triangulation stations to the shoran towers are recorded in Volumes 4 and 5, Observations of Horizontal Directions, previously submitted as part of the Triangulation Report for Project CS-413.

CALIBRATION METHOD

Stations MOWK and FARM were immediately adjacent to two intervisible triangulation stations (TYONEK 1909 and BOULDER 1909). Observing parties were sent to each shoran camp with T-2 theodolites. With the theodolites set up over the triangulation station marks, observations were taken on the BOWIE's shoran antenna at the same instant that shoran readings were taken on board ship, time of simultaneous observation being sent from the ship to the two shore camps by radio.

Eight positions of the ship were used during calibration. Theodolite angles were recorded in Volumes 4 and 5, Observations of Horizontal Directions, Cook Inlet Project CS-413 Triangulation Report. The corresponding shoran readings are recorded in Sounding Volume No. 1, Sheet BO 40-2-60, Cook Inlet Project CS-413, along with several zero check values taken during calibration.

Distances from the two triangulation stations to the BOWIE were computed on Form 25, Computation of Triangles, Sheets 3, 4, and 5 of this report. Corrections for relative eccentricity of the shoran station antennae (see sheet 1 for method of computation) were then applied to obtain distances

from station antennae to the ship's antenna. Computation of differences between observed distances and shoran readings is shown on sheet 6 and the results plotted on sheet 7.

Additional supporting data for determining shoran corrections was obtained from each crossing of the baseline between the two stations during the course of the hydrographic survey. Explanation of method of computing baseline crossing data and the plotted results are contained in sheets 8, 9, and 10 of this report.

The following three premises were made before final determination of shoran correction curves:

1. Baseline crossing data indicates that the sum of the MOWK and FARM corrections is approximately constant at -0.007 statute miles for all distance sums plotted (see sheet 10) and therefore the two correction curves should be parallel and the sum of the corrections at the equidistant point ($9\frac{1}{2}$ miles) is -0.007 .
2. Means of the rate and drift zero checks taken during calibration indicate that the spacing of correction curves should be 0.012 statute miles.
3. Hydrographic Instructions No. 10, Revised, indicate that the slope of the correction curves should approximate 0.0018 miles/mile.

Since the plotted results of the calibration on sheet 7 do not delineate the correction curves too clearly, especially in the case of station MOWK, final curves were obtained by adhering rigidly to premises 1, 2, and 3 above. The curves thus drawn were found to agree with the plotted results about as well as any arbitrarily drawn set of curves might have.

Values of zero check for rate and drift taken during the calibration were considered to be "standard". On days when there were changes in zero check from "standard", said changes were applied to the corrections used for those days (sheets 11 and 12).

Station MOWK was used as the Rate station during the entire survey. Stations FARM and CREEK were always used as Drift stations.

Station CREEK was inadvertently not calibrated. Since station equipment at CREEK was the same as used at FARM, and since terrain conditions and relative antenna height were quite similar, and also since FARM and CREEK were always drift stations, the assumed correction values for CREEK are the same as for FARM.

METHOD OF USE

Except for crosslines, all shoran controlled hydrography was run on arcs off station MOWK. Position control for the area between stations MOWK and FARM where the shoran arc intersections were less than 30° was obtained by measuring, simultaneously, theodolite bearings from triangulation station

TYONEK 1909, and shoran distances from station MOWK. Time of theodolite observation was coordinated with time of shoran reading by radio. Station FARM shoran readings were taken during the MOWK-FARM line crossings and this data used to aid in determination of MOWK and FARM calibration curves, as explained previously in this report. The area of small-angle intersections between MOWK and CREEK was covered by MOWK-FARM arcs prior to putting station CREEK in operation.

SHORAN CAMP BUILDINGS

In accordance with project instructions, permanent-type buildings were constructed at each of the three station sites. Description of these buildings is in the Shoran Camp Construction Report for this project.

EQUIPMENT

Ship equipment was Model APN-3. Shore equipment was Model AVQ-5. Ship antenna was a MIMI, with the mean height of the radiating elements about 65 feet above water level. The ground station antennae were standard dipoles mounted on 50 foot masts at stations MOWK and CREEK, and on a 30 foot mast at station FARM. Communications equipment in all shore camps consisted of URC-13 crystal-controlled transceivers. The URC-13's were new this year and were found to be simple to operate and quite reliable.

Arthur R Benton Jr
LCDR C&GS
Exec. Off., Ship BOWIE

Approved and Forwarded:

F X Popper
CDR C&GS
Commanding Ship BOWIE

SHORAN CAMP CONSTRUCTION REPORT

PROJECT CS-413 COOK INLET

1960 Field Season Ship BOWIE

FOREWORD

Instructions, dated 11 December 1959, Project CS-413, Paragraph 10, state in part that "Shoran shelters left in place shall be winterized for use in succeeding years". With this in mind, the shelters were designed to be:

1. Simple to build
2. Relatively weathertight
3. Rugged enough to withstand snow and wind loads

DESIGN

Post and beam construction was used, with 4"x4" posts on 4 foot centers, concreted 30" into the ground, supporting paired 2"x8" floor joists and 2"x6" roof joists which were pitched about 1:8. Floor and roof was 2"x6" tongue and groove common lumber. Walls were 4'x8'x $\frac{1}{2}$ " exterior grade plywood for the living quarters and 4'x8'x $\frac{3}{8}$ " exterior grade plywood for the generator shack and outhouse. 2"x4" studding on 16 inch centers was used between the 4"x4" posts to provide additional wall rigidity. Walls and roof were covered with standard weight roll roofing, pitched at the seams, using single thickness on walls and double thickness on roof.

The main building, which housed camp personnel and electronics equipment, was 8'x16', had one house-type door and two screened windows with glass lights removable from the inside. The floor of the main building was covered with 1/8" tempered hardboard.

The generator shack was 6'x8' and had two plywood doors.

The outhouse was 4'x4', with one plywood door, and furnished with house-type enameled seat and lid.

The three sites had one each of the above three buildings.

SITES

Tentative selection of shoran station sites was made from the standpoint of optimum coverage utilizing the least number of stations. Helicopter transportation was arranged through Elmendorf AFB and a reconnaissance trip was flown, at which time the triangulation station marks were recovered and the three chosen sites found to be suitable for construction.

Station MOWK lies on top of a 100 foot cliff about 1 mile west of North Foreland Light. The camp buildings are nestled in the trees but are easily seen from the air. A 100' x 200' helicopter clearing is just east of the

camp buildings. Supplies were generally brought in by helicopter. Normal helicopter landing is made by approaching over a small cluster of shacks near the beach just west of North Foreland Light, and heading toward the shoran camp buildings. Supplies and personnel are easily taken in and out of MOWK using ship's boats. Fresh water is obtainable from a stream at the base of the cliff.

Station FARM is on top of a 200 foot cliff at Boulder Point. The camp buildings are in the open and can be readily seen from the air. A 70' x 120' helicopter clearing is on top of a small knoll about 60 yards east of the camp buildings. Landing here is moderately hairy when there is a strong wind. The landing approach axis lies on a line running from the helicopter pad to the inner tangent of the Nikishka Bay shoreline. The easier landing approach is from the southwest, wind permitting. Camp personnel may obtain good drinking water from homesteaders living in the northeast cove of Nikishka Bay by following a devious trail which starts at the east end of the helicopter clearing, drops down along a small valley, and passes over a low ridge to a house where a road leads down to the beach. This is getting water the hard way, so washing and laundering water for this station was flown in by helicopter in reclaimed fuel drums. Because of the long and arduous route from the beach at Nikishka Bay to the station site, heavy loads of supplies and fuel should be flown in, although personnel and light loads may be taken in and out using ship's boats. The beach landing at Boulder Point is not recommended.

Station CREEK lies on top of an 80 foot cliff which just barely protrudes from the shoreline cliffs about 3 miles southwest of Moose Point. The camp buildings are hidden in the trees and hard to spot from the air. An 80' x 250' helicopter clearing is just northeast of the camp buildings and the clearing is the best local landmark for finding the camp from the air. Helicopter landing is made from the north along the axis of the clearing. The helicopter should be landed between 20 and 50 feet in from the face of the cliff, as this is the only area completely cleared of slumps. An adequate supply of cold, clear water is available from a very small creek which lies on the opposite side of the clearing from the camp buildings. A beach landing by boat would be extremely hazardous at this site. From Moose Point to Boulder Point, enormous boulders are scattered throughout the offshore area as much as a mile from the high water line. The opacity of the water prevents boulders just below the surface from being seen.

CONSTRUCTION

After selection of the sites, BOWIE deck personnel were flown in to clear the helicopter landing areas, using chain saw, axes, and machetes. USAF helicopter pilots supervised the clearing operation to insure a proper margin of safety for later landings carrying maximum loads.

With the clearing completed, daily flights were made to haul building materials and ship's personnel for construction work. After camps were completed, manned, and operating, occasional logistic flights were made to provide additional food and fuel as requested by radio.

WINTERIZING

On completion of shoran controlled hydrography, personnel and equipment were flown out of the shoran camps. At this time, all windows were boarded up and the hasps on the doors were secured with wooden wedges, but not locked. A small amount of canned goods was left in each main building. Stoves were left in the CREEK and MOWK main buildings, still connected to the fuel drums. Drum racks, with ramps, remain attached to the living quarters and generator shacks of each camp. There is no stove at FARM. When these buildings are used again, it is recommended that a new carburetor be installed in the stove at CREEK. New 6" stovepipe sections and T dampers may be required since the existing stovepipe is not galvanized. With the exception of the communications antenna feed-through holes, no unnecessary holes were made in the walls or roofs. To reduce water seepage, all power cables, coaxial cables, and fuel lines entering the living quarters and generator shacks were brought up through drilled holes in the raised floors. Two new communications antenna feed-through insulators, for FARM and MOWK, are needed. With the exception of the items noted, the camp buildings should be ready for use as they now stand.

Arthur R Benton Jr
LCDR C&GS
Exec. Off., Ship BOWIE

Rowe

22/may

28 September 1960

AIR MAIL

To: Seattle District Officer
Coast and Geodetic Survey
705 Federal Office Bldg.
Seattle 4, Washington

Subject: Processing of Hydrographic Records of Seattle-based Ships

A processing pool shall be established in Seattle as soon as it can be conveniently arranged after the ships return to the base. You will assign LCDR Harley D. Nygren to supervise this operation and he will be relieved of all other shipboard duties. He will assign projects to the junior officers under his direction, and make frequent inspections of the work as it progresses to assure that all work is performed in an approved manner. Final approval of completed records will be made by the commanding officer of the vessel where the records originate.

Surveys by the BOWIE in Cook Inlet (Project CS-413) are assigned top priority. The sounding volumes for these surveys shall be completed by personnel from the BOWIE or the processing pool as appropriate, and the records shall then be transferred to the Seattle Processing Office for completion of smooth sheets on a top priority basis.

Surveys by the HODGSON at Kake, Alaska (Special Project 1-60) shall be handled in a similar manner. The smooth sheet shall be plotted at Seattle Processing Office and is assigned second priority after the Cook Inlet Surveys.

Surveys by the PATNFINDER at Cape St. Elias (Special Project 4-60) shall be processed by the PATNFINDER and are assigned first priority.

Surveys by the SURVEYOR in Bering Strait and vicinity (Project CS-415) shall be processed by the SURVEYOR and are assigned first priority.

The remaining surveys shall be processed on a routine basis. After consulting with the commanding officers of all Seattle-based ships, you will develop a plan for assigning junior officers to the processing pool. Consideration should be given to the workload on the SURVEYOR and PATNFINDER, leave schedules for officers, and transfers of officers as indicated on the schedule of assignments for 1961.

Seattle District Officer
28 September 1960

Although the purpose of the pool is to assist in the processing of records from the smaller vessels, it is not intended that the commanding officers of these units be relieved of the responsibility for making full use of Quartermaster-Surveyors, Yeomen, and other qualified personnel in processing their own records.

A brief narrative report on the operation of the processing pool shall be submitted at monthly intervals.

(Signed) H. Arnold Karo

Director

cc: SURVEYOR
PATRICKINDER
✓SONIE
HODGSON
LESTER JONES
PATTON
83, 23, 22

PROCESSING OFFICE NOTES H-8529

SMOOTH SHEET

The smooth sheet was hand constructed and checked, using standard methods, by Seattle Hydrographic Processing Unit personnel.

SHORELINE AND TOPOGRAPHY

The shoreline was transferred from film positives of T-3036 (1909), T-3037 (1909) and T-3038 (1909) and left in pencil as instructed.

Other items are adequately covered in the field report and corrected, in ink, to smooth sheet values.

Respectfully submitted

William M. Martin

William M. Martin
Supervisory Cartographer

Approved and Forwarded

M. E. Wennermark

M. E. WENNERMARK
CAPTAIN, C&GS
SEATTLE DISTRICT OFFICER

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Coastal Survey~~

28 November 1961

Division of Charts: R. H. Carstens

Plane of reference approved in
4 volumes of sounding records for

HYDROGRAPHIC SHEET 8529

Locality Cook Inlet - Alaska

Chief of Party: H. G. Conerly (1960)
Plane of reference is mean lower low water, reading
8.0 ft. on tide staff at Jumbo Rock, Cook Inlet
27.6 ft. below B. M. 1 (1960)
13.9 feet on tide staff at Fire Island, Cook Inlet
14.6 feet below B. M. 5 (1941)

Height of mean high water above plane of reference is:
18.6 feet, Jumbo Rock
24.6 feet, Fire Island

Condition of records satisfactory except as noted below:

J. M. Symons
Chief, Tides and Currents Branch
~~Chief, Division of Tides and Currents~~

GEOGRAPHIC NAMES

Survey No. H-8529

Name on Survey	On Chart No. 8553		On previous survey No.	On U. S. quadrangle Maps	From local information	On local Maps	P. O. Guide or Map	Rand McNally Atlas	U. S. Light List	
	A	B								
Birch Hill	✓									1
Cook Inlet	✓									2
Kenai Peninsula	✓									3
Moose Point	✓									4
Point Possession	✓									5
										6
										7
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										27

George M. Base
Geographic Names Section
26 Sept 1861

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. 8529...

Records accompanying survey: Smooth sheets ¹.....;
 boat sheets ¹.....; sounding vols. ⁴.....; wire drag vols.;
 Descriptive Reports ¹.....; graphic recorder envelopes ⁴.....;
 special reports, etc. ² Film Positives of Chart 8553.....

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

Number of positions on sheet	.....	1536
Number of positions checked	.....	75
Number of positions revised	.....	4
Number of soundings revised (refers to depth only)	.....	12
Number of soundings erroneously spaced	.....	21
Number of signals erroneously plotted or transferred	.....	0
Topographic details	Time	4
Junctions	Time	10
Verification of soundings from graphic record	Time	8
Special adjustments	Time	0

Verification by *Dennis Hill* Total time *66 hr.* Date *6-24-74*

Reviewed by Time Date

VERIFIER'S REPORT OF HYDROGRAPHIC SURVEY NO. H- 8529

The verifier should deal with the present hydrographic survey only, as the reviewer considers its relation to previous surveys and published charts. He should be thoroughly familiar with Chapters 3, 7 and 9 of the Hydrographic Manual.

1. The descriptive report was consulted and appropriate notes were made in soft pencil regarding action taken. ✓
2. Soundings originating with the survey and mentioned in the descriptive report have been verified, including latitude and longitude. ✓
3. All reference to survey sheets mentioned in the descriptive report include the registry number and year. ✓
4. Geographic names of hydrographic features if on sheet are in slanting lettering and of topographic features in vertical lettering. ✓
5. All items affecting the plotting of the survey which are entered in the remarks columns of the sounding records were noted and check marked. In all cases appropriate action was taken. ✓
6. All positions verified instrumentally were check marked in the sounding records. ✓
7. All critical soundings are clear and legible and are a little larger than the adjacent soundings. ✓
8. The metal protractor has been checked within the last three months. ✓
9. The protracting and plotting of all bad crossings were verified. ✓
10. All detached positions locating critical soundings, rocks or buoys were verified. ✓
11. The boat sheet was compared with the smooth sheet. ✓

15. 2. SHORELINE WAS TRANSFERRED FROM CHART 7553, REVISED 9-12-60 AND IS TO BE USED FOR ORIENTATION PURPOSES ONLY. CONTEMPORARY PRE-EARTHQUAKE (1964) PHOTOGRAMMETRIC SHORELINE HAD BEEN BRIDGED WITH POST-EARTHQUAKE SHORELINE AND WAS THEREFORE NOT USED.

17. AS PER HYDRO. MANUAL PARA. 6-91 APPROPRIATE JUNCTION NOTES WERE MADE BUT WERE NOT INKED UNLESS SNDGS. WERE ACTUALLY TRANSFERRED.

H-8530 ununified.

12. The spacing of soundings as recorded in the records was closely followed. *21 sndg. erroneously SPACED OR LOCATED*
13. The bottom characteristics were shown on outstanding shoals.
NO SAMPLES TAKEN
14. The reduction and plotting of doubtful soundings were checked. ✓
15. The transfer of contemporary topographic information was carefully examined. *"MOOSE PT." MISPELLED; CORRECTED, SEE ADJOINING PAGE,*
16. All junctions were transferred and overlapping curves made identical. ✓
17. The notation "JOINS H- (19--)" was added in ink for all contemporary adjoining or overlapping sheets now registered. Those not verified are shown in pencil.
SEE ADJOINING PAGE
18. The depth curves have been inspected before inking. ✓
19. All triangulation stations and transfer of topographic and hydrographic signals were checked.
Electronic Control Stations listed as triangulation in G.P. volumes.
20. Heights of rocks were checked against range of tide.
NO ROCKS
21. Rocks transferred from topographic surveys have a dotted curve where shown thereon. Rocks located accurately by hydrographer are encircled by dotted red curve.
NO ROCKS
22. Unnecessary pencil notes have been removed. ✓
23. Objects on which signals are located and which fall outside of the low water line have been described on the sheet. ✓
24. The low water line and delineation of shoal areas have been properly shown. ✓
25. Degree and minutes values and symbols have been checked. ✓
26. Questionable soundings have been checked on the fathograms. ✓

27. Source of shoreline and signals (when not given in report).
SHORELINE SOURCE: CHART 8553, 4th EDITION, REVISED, 9-12-60
28. All notes on sheet are in accordance with figure 171 in the Hydrographic Manual. ✓
29. All aids located, with those on contemporary topographic sheets, have been shown on survey. ✓
30. Depth curves were satisfactory except as follows:
4 fm & 6 fm CURVES WERE ELIMINATED FROM DELINEATION OF 2 WESTERNMOST SHOALS. REPRESENTATION OF 10 fm DEPTH WAS UNSATISFACTORY THRU OUT THE SURVEY AND WAS APPROPRIATELY REVISED.
31. Sounding line crossings were satisfactory except as follows:
SEVERAL CROSSING DISCREPANCIES WERE RESOLVED BY A CAREFUL RE-EXAMINATION OF PATHOGRAMS.
32. Junctions with contemporary surveys were satisfactory except as follows: *JUNCTION W/ H-8467 (1959) NOT POSSIBLE DUE TO LARGE DISCREPANCIES IN DEPTHS BETWEEN THE 2 SURVEYS.*
33. Condition of sounding records was satisfactory except as follows:
*1. INCOMPLETE STAMPS.
 2. PROCEDURE USED TO EXAMINE WESTERNMOST SHOAL IS INADEQUATELY DEFINED.*
34. The protracting was satisfactory except as follows: ✓
35. The field plotting of soundings was satisfactory except as follows: ✓
36. Notes to reviewer: *SURVEY H-8727 (1963) WAS CONSIDERED AS A SEPERATE NON-CONTEMPORARY SURVEY AND THEREFORE WAS NOT JUNCTIONED WITH H-8529. NOTES INDICATING SHOAL AREAS TO BE SUPERSEDED BY H-8727 WERE REMOVED FROM SHEET.*

GEOGRAPHIC POSITIONS

Unadjusted Field Computations

Accession No. of Computation: _____

locality, Cook Inlet, Alaska

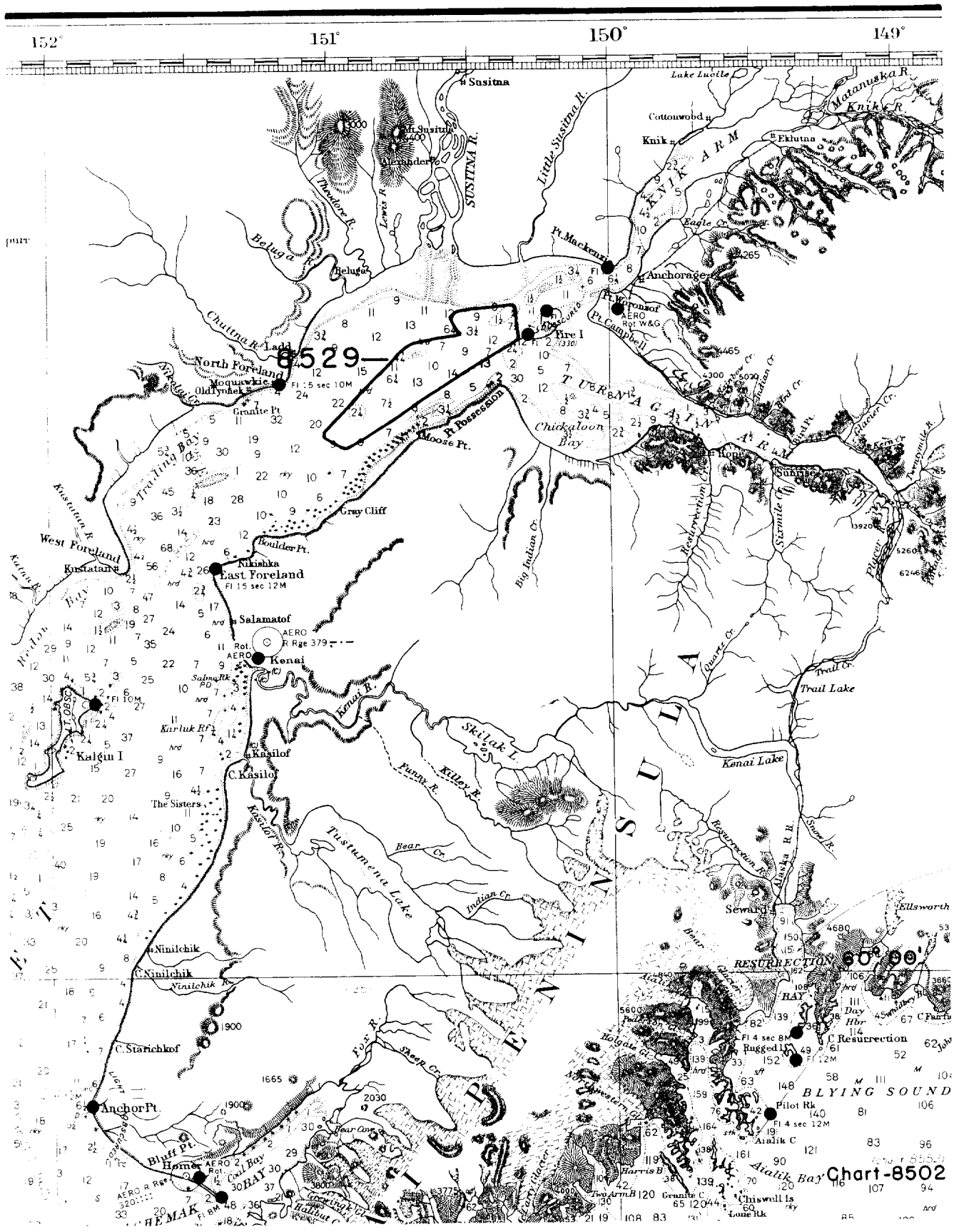
North American 1927 Datum_____Third

Third - order Triangulation. State Alaska

[illegible]

¹ No check on this position. Abbreviations used: d.=described; m.=marked; n.=not; r.=recovered; l.=lost; p.=probably. (Examples: n. d.=not described; p. l.=probably lost.)

COMM-DC 34429



NAUTICAL CHARTS BRANCH

SURVEY NO. H-8529

Record of Application to Charts

[illegible]

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.