FE-226

Diag. Cht. No. 8553

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT
(HYDROGRAPHIC)

Type of Survey Hydrographic Field Examination.

Field No. RA-5-3-79

Office No. FE-226

LOCALITY

State Alaska

General Locality Cook Inlet

Locality Kenai River Entrance

Wreck Investigation

1979

CHIEF OF PARTY
W.L. Mobley

LIBRARY & ARCHIVES

DATE March 3, 1981

★ U.S. GOV. PRINTING OFFICE: 1978—666-172

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

FE-226

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-5-3-79

State Alaska

General locality Cook Inlet

Locality Kenai River Entrance Wreck Investigations

Scale 1:5,000 Date of survey July 7 and July 25, 1979

Instructions dated Radio Message R 0822452 6/8/79 Project No. OPR-P114

Vessel RA-3 (2123), RA-6 (2126)

Chief of party Captain Wayne L. Mobley

Surveyed by LTJG Michael McCluskey, SST Richard L. Hastings

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

Graphic record scaled by N/A

Graphic record checked by Ships Personnel

~~Protracted by~~ Positions Verified by James L. Stringham Automated plot by PMC Xynetics Plotter

Soundings Verification by James L. Stringham

Soundings in fathoms feet at MLW MLLW

REMARKS: Survey Time is GMT ~~+9~~ +10 hours to local.

"Misc data filed with Field records"

Updated to Std. 11-20-81 WJT

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

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

SPECIAL REPORT

FIELD EXAMINATION

SUBMERGED WRECK INVESTIGATION, KENAI RIVER ENTRANCE

COOK INLET, ALASKA

JUNE - JULY 1979

NOAA SHIP RAINIER

Wayne L. Mobley, CAPT, NOAA

Commanding

INTRODUCTION

On July 7 and July 25, 1979 investigations were conducted in an area southwest and southeast of the Kenai River Entrance buoy 1KE ("~~1~~KE", LLN 3494) to confirm and position the alleged relocation of a submerged wreck, (refer to Appendix A). An indication of what could be the subject wreck was located near the charted and recently reported positions of the wreck. Two submerged objects, believed to be rocks, were also located in an area east of 1KE.

DISCUSSION

On June 8, 1979 a request from the USCGC SEDGE was transmitted to, and subsequently routed through, the Commander Coast Guard District Seventeen, Juneau, Alaska to Director Pacific Marine Center, Seattle, Washington. The communique requested NOAA ships in the Cook Inlet area conduct a submerged wreck investigation in an area southwest and southeast of the Kenai ~~River~~ Entrance Channel Buoy 1"~~1~~KE", (approximate reported position of wreck = 60° 31.1' N, 151° 20.6' W; refer to Appendix B). This request for investigation was prompted by a source report from Mr. Everett Collins, Salamotof Seafood, Kenai, Alaska, which stated that the "charted submerged wreck" southwest of the Kenai ~~River~~ Entrance Channel buoy 1"~~1~~KE" (charted wreck's position = 60° 31' N, 151° 21.1' W) had shifted position to the southeast of said buoy. Consequently, the NOAA Ship RAINIER was instructed to conduct field examinations to resolve the potential conflict in charted versus reported findings. * Buoy is placed seasonally, (May to Nov) as per Light List.

The source described the wreck as an 110-120 foot landing craft so constructed and modified as to be "used for beach landings". This length vessel would be characteristic of a "landing ship tank" (LST): 120x40x35 foot naval landing craft which probably had been modified for work appropriate to the Kenai area. The convention was for an LST to have a bridge positioned aft of the landing platform, having hinged doors in the bow, and a variable geometry ramp permitting access to the main deck/landing platform. (Refer to Appendix C).

METHODOLGY

July 8 Investigation: An investigation of the operational area was conducted from 094602 to 151931 local ship time.[1] Three hydrographic sounding launches; the RAINIER's aluminum launches

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[1] Zulu time = ship time plus +10 ~~8~~ hours (GMT)

RA-3 (EDP number 2123, hull 1007), RA-5 (EDP number 2125, hull 1003) and RA-6 (EDP number 2126, hull 1013) were employed to conduct survey operations. Each launch utilized a Ross Fineline 5000 echo sounding fathometer; however, only RA-3 integrated a hydroplot controlling system, PDP 8 digital mini-computer and a range-range (MiniRanger) intersectioning navigational system with the sounding device. RA-3 also utilized a raytheon sounding system with a wider beam width and lower frequency than the Ross. Sounding line position control was provided by range-range (MiniRanger) method employing three codes positioned at the Kenai River Rear Range light (station number 502-code #1)[2], station Louise RM-2 ecc. (station number 500-code #2)[3] and station Audrey RM-3 (station number 501-code #3)[4]. A launch investigation speed of 2000 RPMs with a ten second sounding interval was maintained through much of the exercise and was reduced to idle speed during specific feature studies. The survey was conducted in units of feet and was supplemented with lead-line measuring procedures.

An initial investigation (sweep) of the region was conducted from 094602 to 101337, local ship time, to determine and designate areas for mainscheme hydrographic development. Once so determined, given the full system configuration of RA-3, the mainscheme field operations were so established as to use RA-5 and RA-6 in a rear-flanking support pattern approximately twenty feet to either side and back of the operational controlling RA-3. The mainscheme sounding pattern was localized to an area inscribed by an approximately one nautical mile radius southeast and southwest of the charted buoy -1IKE and consisted of crisscrossed sounding lines decreasing from fifty meters to zero meter spacing (for RA-3) conducted at the least depth monitored. For fixes 3000 through 3119 the flanking launches were spaced at twenty feet and for 3120 through 3169 they were* ~~ten~~ meters apart. Mainscheme investigation were begun at 102730 and concluded at 143656, subsequently, detached positions (DP's) were taken of potential wreck objects/features from 144917 until field operations concluded at 151931 local ship time(s).* Annotation on raw data printout "5 and 6 boat 20m off port and starboard and 45° abaft the beam of RA-3" See Addendum to Special Report # Item 2

July 25 Investigation: From 125557 to 174909 local ship time a follow-up investigation to that performed on July 8 was performed. This examination was so constructed as to utilize two hydrographic

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[2]Kenai River Rear Range Light (station No. 502): 60° 33' 05.344" N, 151° ~~20~~ 15' ~~28.583~~ 30.007" W. Ecc. 1980. See Addendum to Special Report, Item 3.

[3]Louise RM-2 Ecc. (station No. 500): 60° 37' 12.405" N, 151° 20' 28.583" W.

[4]Audrey RM-3 (station No. 501): 60° 30' 50.22~~1~~2" N, 151° 16' 37.54~~1~~8" W.

survey launches (RA-3 and RA-6) conducting a pre-selected concentrated survey search pattern in an area centered about the location of the charted and reported submerged wreck's position.[5] Each launch was assigned a specific working area to survey and each utilized its own computerized hydrographic system. Sounding line position control was provided by a range-azimuth method with RA-3's and RA-6's control located on the Kenai River Rear Range light (station number 502, MiniRanger code #3, and two T-2 theodolite observers). A launch investigation speed of 2650 RPMs at ten second interval computer soundings was maintained during the entire operation. The primary mainscheme line-spacing interval was twenty meters; whereas, upon completion of the primary mainscheme a series of ten meter splits were to be employed as an additional developmental procedure.

TIDE INFORMATION

Onboard data processing ~~of data~~ was accomplished using predicted tide information for the Kenai River Entrance referenced to Seldovia. The closest operating RAINIER gage was 945-5697, The Sisters; 60° 18.2' N and 151° 27.2' W. A standard gage was also operating an equal distance to the north of the working area at Nikishka - 945-5760.

DATA PROCESSING

July 8 on-line hydrographic launch (RA-3) data were compiled using NOAA software program RK-111 Range-Range, Real Time Plot (version: Jan. 30, 1976) and that for the July 25 investigation (aboard RA-3 and RA-6) via FA-181 Range-Azimuth Logger (version: February 23, 1978).

The field data collected during the two days of investigation were processed aboard the RAINIER. A PDP-8 mini-computer coupled to two on-line TTY(s) was employed. July 8 data were processed using NOAA software programs, RK-211 Range-Range, Non-Real Time Plot (version: January 15, 1976) and that for the July 25 investigation via RK-216 Range-Azimuth, Non-Real Time Plot (version: February 5, 1976).

Field soundings were corrected for TRA and predicted tides only. The velocity, sea swell and settlement and squat correctors were negligible.

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[5]The surveyed region was bounded by a rhomboidal grid the vertices of which were: 60° 31' 17.6" N, 151° 21' 43.7" W; 60° 31' 37.0" N, 151° 20' 52.0" W; 60° 31' 03.6" N, 151° 20' 02.0" W; 60° 30' 43.2" N, 151° 20' 55.2" W.

RESULTS

July 8 Investigation: The initiation of field operations focused on obtaining an accurate, consequently, corrected position for the Kenai ~~River~~ Entrance Channel Lighted Buoy 1KE. (The correct position of 1KE is 60° 31' ~~21.75~~ 22.37" N, 151° 20' ~~47.5~~ 47.9" W, 206 yards from charted position). Next, a search pattern to the east of 1KE was conducted and subsequently revealed two obstructions. The first obstruction was positioned at 60° 31' 14.6½"N, 151° 20' ~~01.2~~ 01.6" W at a minimum depth of nine feet and obstruction 2's position was 60° 31' 14.7½" N, 151° 20' 11.6½" W at a depth of ~~14~~ 15 feet[6]. Once the obstructions were detected, verification as to positions and depths of these "objects" was accomplished via the employment of mainscheme and cross-line sounding developments at close spatial intervals, (refer to methodology section and to the accompanying field examination graphic plots). Leadline investigations of obstructions 1 and 2 failed to produce appreciable results as to the exact minimum depths or the physical properties of the obstructions, because of high currents and murky water during the times of the investigations, however sufficient development was performed to allow a high degree of confidence in the depth sounder results. Obstr. 1. pos. 3175 2. pos. 3096/2

AWOIS 50175 50176 2495 RWD

Topped

Subsequent to the aforementioned obstruction investigations a mainscheme development of an area southeast and southwest of 1KE was performed. This region encompassed the "charted" submerged wreck and that of its new (reported) position[7]. One significant feature characteristic of a submerged wreck was located and positioned at ~~60° 31' 00.0" N, 151° 20' 41.0"~~ 60°30'59.75" λ 151°20'39.94" W at a least depth of ~~seventeen~~ 19 feet, (change in sounding of seven feet from the bottom contour). This feature/"object" was detected on RA-6's Ross fineline fathogram (position fix number 3153); and as a slight trace on RA-3's Ross fathogram (position fix number 3153). No "object" was detected on RA-5's sounding equipment records. The object detected was characterized by steep sides and a significant amount of scouring.

AWOIS 50385 2495 RWD

Topped

Chart 3, WK

Identified as record number 17140 in listing

July 25 Investigation: The subject wreck was not detected on this date however the scour trail was picked up on three separate lines - fixes 3252, 3266 and 3277, (hydrographic survey launch 2123).

CONCLUSION

The two "obstructions" detected during the July 8 investigation show characteristics of an obstruction other than a submerged wreck.

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[6] All sounding depths were reduced to "mean lower low water" with predicted tide information for Kenai River Entrance referenced to the standard gage at Seldovia, Alaska, (refer to Methodology section). • Final smooth sheet reduced to actual tides.

[7] The developmental area was bordered by a rectangular grid with vertices at: 60° 31' 08.25" N, 151° 21' 25.5" W; 60° 31' 08.25" N, 151° 20' 18.0" W; 60° 30' 57.0" N, 151° 20' 18.0' W; 60° 30' 57.0" N, 151° 21' 25.5" W.

There were no depressions near the rising features nor were these features abrupt in their prominence (two characteristics common to submerged wrecks). Also, the distance between obstructions was greater than the 120 feet assumed length of the vessel. Consequently, it is believed that these obstructions would be best classified as ~~submerged rocks~~ obstr's. The submerged object located at φ 60°30'59.75" λ 151°20'39.94" ~~60° 31' 00.0" N, 151° 20' 41.0" W~~ did possess the two characteristics previously mentioned as common to submerged wrecks. These characteristics coupled with its location (415 yards east of charted position and 200 yards south of reported position) provide some evidence that the wreck in question has indeed been located.

However, the area under examination was not surveyed to the extent necessary and sufficient to determine unequivocally that this is the source identified wreck, in spite of the fact that most of the area was developed with ten meter line spacing. The high current and low visibility characteristics of this area make conventional search methods inadequate. The only way to clear this area, which appears to be quite congested; is to employ a swath or side scan sonar type system.

CORRESPONDENCE

Copies in Appendix B.

1) USCGC SEDGE to CCGD Seventeen to DPMC; info RAINIER: Requesting location of wreck. 081750Z Jun 79.

2) NOAAS RAINIER to CCGD Seventeen: 202230Z Aug 79: Present location of buoy; location of two rocks for LNM.

3) USCGC SEDGE to NOAAS RAINIER; info DPMC; ZEN CCGD Seventeen: 282022Z Nov 79.

4) NOAAS RAINIER to USCGC SEDGE; info DPMC; info CCGD Seventeen: 300300Z Nov 79: Location of wreck and two rocks.

RECOMMENDATIONS

1) Chart ~~submerged rocks~~ an obstruction at:

   60° 31' 14.5" (72") N, 151° 20' 01.2" (00.96") W - covered 9 feet and
   60° 31' 14.76" (69) N, 151° 20' 11.8" (29) W - covered 14 (15) feet.

2) Move submerged wreck symbol to:

   60° ~~31~~ 30' ~~00.0~~ 59.75" N, 151° 20' ~~41.0~~ 39.94" W

3) Initiate a project to clear this area with a side scan sonar (wire drag is virtually impossible, and conventional survey methods inadequate). Kenai is the busiest fishing port in upper Cook Inlet with large traffic of fishing boat tenders. The draft of these boats are becoming such that uncharted rocks could cause a significant loss of life or property.

4) Check historical tides for Kenai River Entrance against published predicted tides for that area and adjust soundings if a significant difference is noted.

Respectfully Submitted

Dr. Barry Reiss
Assistant Survey Technician

Approved and Forwarded

Wayne L. Mobley
for Captain, NOAA
Commanding Officer

TELEGRAPHIC MESSAGE

NAME OF AGENCY	PRECEDENCE ACTION: INFO:	SECURITY CLASSIFICATION UNCLAS
ACCOUNTING CLASSIFICATION	DATE PREPARED 8/20/79 SENT	TYPE OF MESSAGE ☐ SINGLE ☐ BOOK ☐ MULTIPLE-ADDRESS
FOR INFORMATION CALL		
NAME	PHONE NUMBER	

THIS SPACE FOR USE OF COMMUNICATION UNIT

MESSAGE TO BE TRANSMITTED *(Use double spacing and all capital letters)*

XXX
R

FM NOAAS RAINIER

TO CCGD SEVENTEEN JUNEAU AK

INFO DPMC NOS NOAA SEATTLE WA

CM GRNC

BT

UNCLAS

CY Arrad
XO JUA
CO

RA-PMC-_____. REQUEST THAT THE FOLLOWING INFORMATION BE BROADCAST AND PUBLISHED IN THE LOCAL NOTICE TO MARINERS FOR THE SEVENTEENTH DISTRICT: THE FOLLOWING HAZARDS TO NAVIGATION HAVE BEEN LOCATED OFF THE ENTRANCE TO THE KENAI RIVER IN COOK INLET, AK AND APPLY TO CHART 16660, 19TH EDITION DATED SEPTEMBER 10, 1977. KENAI ENTRANCE CHANNEL LIGHTED BUOY "1KE", LLN 3495 CHARTED "POSITION APPROXIMATE" IS LOCATED 206 YARDS AT 057 DEGREES TRUE FROM ITS CHARTED POSITION: ITS PRESENT POSITION IS LATITUDE 60 DEGREES 31 MINUTES ~~21.7~~ 22.5 SECONDS NORTH AND LONGITUDE 151 DEGREES 20 MINUTES ~~47.5~~ 46.9 SECONDS WEST. AN OBSTRUCTION COVERED BY 9 FEET AT MEAN LOWER LOW WATER HAS BEEN LOCATED 834 YARDS AT 097 DEGREES TRUE FROM THE CHARTED POSITION OF BUOY "1KE", LLN 3495. ITS

PAGE NO.	NO. OF PGS.	SECURITY CLASSIFICATION
1	2	UNCLAS

STANDARD FORM 14
REVISED AUGUST 1967
GSA FPMR (41 CFR) 101-35.306

☆U.S.Government Printing Office:1977—241-530/3188

POSITION IS LATITUDE 60 DEGREES 31 MINUTES 14.5 SECONDS NORTH, LONGITUDE 151 DEGREES 20 MINUTES 01.2 SECONDS WEST. A SECOND OBSTRUCTION COVERED BY 14 FEET AT MLLW HAS BEEN LOCATED NEAR THE FIRST. IT IS 696 YARDS AT 099 DEGREES TRUE FROM THE CHARTED POSITION OF BUOY "1KE", LLN 3495, LATITUDE 60 DEGREES 31 MINUTES 14.75 SECONDS NORTH, LONGITUDE 151 DEGREES 20 MINUTES 11.5 SECONDS WEST.

BT

APPENDIX B

NOJ | 4332 CATT
RVC | TOR 08 0158Z JUN 79

XXG FPHAE
INFO MRUWMVSA/NOAA SHIP RAINIER
RUWMFUA/DPMC NOS NOAA SEATTLE WA
R 081750Z JUN 79
FM USCGC SEDGE
TO CCGDSEVENTEEN JUNEAU AK
CG GRNC
BT
UNCLAS //N16502//
SUBMERGED WRECK - KENAI RIVER ENTRANCE
1. RCVD RPT FROM EVERETT COLLINS, SALAMOTOF SEAFOODS, KENAI, THAT THE CHARTED SUBMERGED WRECK SW OF KENAI RIVER ENT BUOY 1KE HAS SHIFTED POSN TO SE OF BUOY STATION (APPROX POSN 60-31.1N 151-20.6W).
2. REQ NOAA BE CONTACTED FOR SURVEY OF THIS AREA TO DETERMINE ACTUAL LOCATION OF WRECK. LOCAL CONTACT BY SEDGE WILL BE MADE ADDITIONALLY WITH NOAA SHIPS IN THE COOK INLET.
BT
#0255

PRU INT OEL K
VVMRVNYK

RTTUZYUW RUWMDMA4216 1592301-UUUU--RUWMVSA.
ZNR UUUUU
R 082245Z JUN 79
FM CCGDSEVENTEEN JUNEAU AK
TO RUWMFUA/DPMC NO NOAA SEATTLE WA
INFO RUWMVSA/NOAAS RAINIER
RUWMVSA/USCGC SEDGE
CG GRNC
BT
UNCLAS //N16502//
FROM OAN
SUBMERGED WRECK - KENAI RIVER ENTRANCE
A. USCGC SEDGE 081750Z JUN 79
1. IT IS REQUESTED THAT THE LOCATION OF SUBJ WRECK IN REF A BE DETERMINED.
BT
#4214

NOJ | 4332
Loy | 08 JUN 79

ANNAL

0413Z NMO DE WTEF KGRNGNCR TKS

RTTUZYUW RUHPTEP0159 3340300-UUUU--RUHPSUU.
ZNR UUUUU
FM NOAAS RAINIER R300300Z NOV 79
TO USCGC SEDGE
INFO DPUE NOS NOAA SEATTLE WA
INFO CCGD SEVENTEEN JUNEAU AK
CT GRNC
BT
UNCLAS

NMO | 6455M
893 | 0413Z 30NOV79

A. YOR 282222Z NOV 79
RESULTS OF SEARCH FOR SHIFTED WRECK OFF KENAI RIVER ENTRANCE AS FOLLOWS:
1. KENAI ENTRANCE CHANNEL LIGHTED BUOY "IKE", LLN 3494 CHARTED "POSITION APPROXIMATE" IS LOCATED 206 YARDS AT 057 DEGREES TRUE FROM ITS CHARTED POSITION. ITS PRESENT POSITION IS LATITUDE 60 DEGREES 31 MINUTES ~~21.7~~ 32.5 SECONDS NORTH AND LONGITUDE 151 DEGREES 20 MINUTES ~~47.5~~ 46.9 SECONDS WEST. AN OBSTRUCTION COVERED BY 9 FEET AT MEAN LOWER LOW WATER HAS BEEN LOCATED 834 YARDS AT 097 DEGREES TRUE FROM THE CHARTED POSITION OF BUOY "IKE", LLN 3495. ITS POSITION IS LATITUDE 60 DEGREES 31 MINUTES 14.5 SECONDS NORTH, LONGITUDE 151 DEGREES 20 MINUTES 01.2 SECONDS WEST A SECOND OBSTRUCTION COVERED BY 14 FEET AT MLLW HAS BEEN LOCATED NEAR THE FIRST. IT IS 696 YARDS AT 099 DEGREES TRUE FROM THE CHARTED POSITION OF BUOY "IKE", LLN 3495 LATITUDE 60 DEGREES 31 MINUTES 14.75 SECONDS NORTH, LONGITUDE 151 DEGREES 20 MINUTES 11.5 SECONDS WEST. THESE OBSTRUCTIONS ARE NEAR THE KENAI RIVER RANGE, ARE PRESENT IN 21 FEET OF WATER, AND ARE A DEFINATE HAZARD TO NAVIGATION AT MINUS TIDES.
2. AN OBSTRUCTION BELIEVED TO BE A WRECK WAS ALSO LOCATED. IT IS 415 YARDS AT 090 DEGREES FROM CHARTED POSITION OF WRECK AND IS COVERED BY 17 FEET AT MLLW, LATITUDE 60 DEGREES 31 MINUTES 08.0 SECONDS NORTH, LONGITUDE 151 DEGREES 20 MINUTES 41.0 SECONDS WEST.
3. KASILOF RIVER ENTRANCE BUOY AND RANGE PROJECT RESULTS MAILED THIS DATE TO USCGC SEDGE, HOMER, AK. AND FPO SEATTLE.
BT
#0159

NNNN

0416Z NMO DE WTEF INT QSL SORY SO LATE TONIT

DATE TIME GROUP IS R300300Z NNNOV 79 THATS R8EEEEEE

THATS R0300EEEEEEEEEEEE R300300Z NOV 79

I NEED A BEER !
15)

ADDENDUM TO SPECIAL REPORT

Field Examination #226

Submerged Wreck Investigation

Kenai River Entrance

Cook Inlet, Alaska

1-12-81

PURPOSE

The purpose of the addendum is to provide more detailed information concerning the data collection and processing methods used for this examination.

ADDITIONAL BACKGROUND INFORMATION

The instructions to perform this examination were obtained via two way radio with PMC Operations Division. Written instructions were not forwarded. The work was performed during opportunities that would not interfere with normal operations hence the rather large gap between the two days of field work.

The somewhat unusual method used to search for the wreck on July 8 was an effort to provide a very dense search pattern over a limited area in a short period of time. The launch OIC's were in constant communication with each other and the intent was to locate the approximate position of the wreck with the modified swath method and to return immediately to develop anything promising with range/range control. The wreck indication, however, went unnoticed until the fathograms were rescanned and the ship's schedule did not permit that more time be given to the development of the wreck indication. The position of the flanking boat that recorded the indication therefore had to be computed given its' relative position next to the guide boat. This position accuracy does not conform to Hydrographic Manual Specifications for the scale at which it was field plotted (1.5 mm x 5,000 m = 7.5 m), however it is felt that it is accurate to ±20 meters which is more accurate than the approximate, original, charting sources. This position accuracy is more than adequate for chart 16660 at a scale of 1:194,154 and does meet the ".5 mm at the scale" required for the 1:40,000 inset (.5 mm x 40,000 m = 20 m) the computations for this position are included (printouts 1 and 2) with this addendum. The accuracy figure was computed using the position accuracy formula from section 4.4.3.2.2. page 4-25*, $d_{rms} = \sqrt{2}\,\sigma\,\csc\mu$ to compute the position accuracy of launch RA-3.

$$d_{rms} = \sqrt{2}\,(3)\,\csc 61.5 = 4.82 \text{ meters}$$

The position accuracy of RA-6 was then computed assuming that the "seaman's eye" relative position of RA-6 with respect to RA-3 was accurate to 15 meters which is a very conservative estimate. These two figures were added resulting in the ±20 meter accuracy figure.

This report and data were submitted from the ship to C3 for direct application to the chart. It was felt at that time that a descriptive report format was not needed given the limited scope of the work. The report and data was forwarded by C3 to CPM3 for verification and CPM3 requested that clarifying information be provided in an addendum.

ADDITIONAL ITEMS

1) A printout of the signal tape for this work is included with this addendum.

*Provisional Hydrographic Manual

2) The special report indicates that RA-6 was 20 feet to starboard of RA-3 when it recorded the indication. The printout indicates that the distance was 20 meters which was used for the computations.

3) Footnote #2 on page 2 of the Special Report was typed in error. The station should have read "Kenai River Rear Range Light Ecc., 1980." It's position was computed using "Kenai River Rear Range Light 1975" and offset information. The printout for computation of the Ecc. position is included with this addendum.

ADDITIONAL RECOMMENDATIONS

1) Add the following note to chart 16660 and Kenai River Inset:

"The eastern shore of Cook Inlet is characterized by an abundance of boulders, both awash and submerged. These boulders extend several miles off shore and can rise dangerously close to the surface near zero and minus tide. The methods used to gather this hydrographic information do not allow 100% coverage of the bottom. As a result there exists numerous, uncharted, dangerous boulders. It would be prudent for mariners operating deep draft vessels in this area to avoid entering less than 5 fathoms of water when the stage of the tide is near the charted MLLW tidal datum.

2) Initiate a project to search the areas adjacent to the Kenai, Kasilof, and Ninilchik rivers with a side scan sonar or swath system. This is rerecommended here because of its importance. Conventional hydrographic data collection procedures are not adequate here. Wire drag and diving operations are virtually impossible because of high currents and muddy water with zero visibility. This search should be performed with the aid of a high resolution machine and an individual experienced in operating the machine and interpreting the records. Any effort less than this would be a waste of time, money, and effort. The highest priority area would be the Kenai River, followed by the Kasilof River, and the Ninilchik River. These priorities are based on size and volume of vessel traffic (mostly fishing boats and tenders) using these rivers. The approaches to the Nikishka fuel piers are also high priority areas as large ships with potentially dangerous cargos use these piers on a regular basis.

Respectfully Submitted

Alan D. Anderson

Alan D. Anderson, LCDR, NOAA
Field Operations Officer

Approved and Forwarded

Wayne L. Mobley

Wayne L. Mobley, CAPT, NOAA
Commanding Officer

Annotations on the graphic records and the raw data printouts vary in information as to the distances involved from 5m, 20Ft, 20m, and 50 meters during the various portions of the investigations.

ASCII SIGNAL TAPE, KENAI RIVER WRECK INVESTIGATION

101	3	60	06	21437	152	33	53267	254	0159	329646
102	3	60	29	08334	151	50	08087	254	0020	329646
103	4	60	05	46900	151	36	44515	250	0033	000000
104	4	60	09	52776	151	29	20457	250	0045	000000
105	4	60	12	20461	151	25	46188	250	0000	000000
106	4	60	01	12973	151	42	18089	250	0000	000000
107	4	60	12	53110	151	24	43974	139	0177	000000
108	4	60	18	03609	151	27	16845	139	0000	000000
109	4	60	18	35152	151	22	45041	139	0014	000000
110	4	60	07	18705	151	33	22918	139	0064	000000
111	4	60	00	33292	151	42	49781	139	0086	000000
200	3	59	52	53664	151	47	02441	139	0000	000000
500	3	60	37	12405	151	20	28583	139	0000	000000
501	3	60	30	50221	151	16	37547	139	0000	000000
502	3	60	33	05344	151	15	30007	139	0000	000000

POSITION COMPUTATION FOR POSITION OF M.R.'s SIGNAL 502

FROM STATION = KENAI RIVER REAR RANGE LIGHT 1975

LATITUDE = 60/33/05.309
LONGITUDE = 151/15/29.940
DISTANCE = 1.4
FWD AZIMUTH = 133/00/00

TO STATION = KENAI RIVER REAR RANGE LIGHT ECC 1980

LATITUDE = 60/33/05.339

SIGNAL 502

LONGITUDE = 151/15/30.007

BCK AZIMUTH = 312/59/59.941

JAN 1977
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEANSURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
NORTH AMERICAN 1927 DATUM

QUAD 601511 STATION 1003
ALASKA
LATITUDE 60 ° 30′ TO 61 ° 00′
LONGITUDE 151 ° 00′ TO 151 ° 30′
DIAGRAM NO-05-09 8553

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
Form 526
Rev. Aug 1968

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: AUDRY STATE: Alaska COUNTY: Cook Inlet

CHIEF OF PARTY: A.L.Wardwell YEAR: 1961 Described by: D.C.Mc Intosh

NOTE: HEIGHT OF TELESCOPE ABOVE STATION MARK METERS.† HEIGHT OF LIGHT ABOVE STATION MARK METERS.

desc. Surface-station mark, Underground-station mark

DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION

OBJECT	BEARING	DISTANCE feet	DISTANCE meters	DIRECTION†
Kenai, Tank 1959		(3.3 Miles)		00° 00′ 00.0
desc. R.M. 1	N	44.07	13.433	18 59 05
desc. R.M. 2	E	28.18	8.589	118 35 23

Detailed descriptions

Station is about 2 miles south of Kenai and about 1 mile west of Soldatna. To drive to station from the bridge over Kenai River at the south end of Soldatna, go south for 0.2 mile, turn right (West) on dirt road and travel 2.0 miles to a fork. Take right fork (main road) and go for 6.7 miles, turn right (West) and go 0.3 miles to a point where road turns north. Turn left (SW) at curve and travel on faint beach road for 0.1 miles and station on left.

To reach from the beach, go south from Kenai River for about 2 miles and start of bluff line and station in a field at the start of bluff. Two large rocks show at low water west of station.

Station is south of beach road by 71 feet and is under a 20 foot tree. The tree and bushes is only such group in the field. Station is a Standard Disk flush with the ground and 2 feet NW of tree. The Disk is set in a 3 foot by 6 inch Dia. cylinderical concrete monument and is stamped "AUDRY 1961"

RM 1 is North of station and about 45 feet from beach road. Station is a Standard Disk projecting 2 inches and is stamped "AUDRY 1961 RM 1". Mark is set in a 3 foot by 6 inch Dia. cylinderical concrete monument.

RM 2 is east of station in tall grass. Station is a Standard Disk projecting 2 inches and is stamped "AUDRY 1961 RM 2". Mark is set in a 3 foot by 6 inch Dia. cylinderical concrete monument.

Form 526
(11-1-55)

U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: AUDRY
ESTABLISHED BY: USC&GS YEAR: 1961 STATE: Alaska
RECOVERED BY:* J.C.B. YEAR: 1963 COUNTY:

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

The station and both reference marks were recovered as originally described. The station and RM 2 are in good condition but RM 1 is loose as its concrete post is broken about 10 inches from the top.

Form 526
(11-1-55)

U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: AUDRY
ESTABLISHED BY: USC&GS YEAR: 1961 STATE: Alaska
RECOVERED BY:* H. J. S. YEAR: 1964 COUNTY: Cook Inlet

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

The station and RM 2 were recovered in good condition. The top of RM 1 is loose and considered to be in poor condition.

The station is located about 47 meters E of the N end of a bluff which forms the shoreline to the S. The site is about 3 miles S of Kenai, Alaska.

(Continued)

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: AUDRY

STATE: ALASKA YEAR: 1961 SECOND ORDER

LOCALITY:

SOURCE: G-12653 FIELD SKETCH

GEODETIC LATITUDE:	60 30 50.55880	ELEVATION:	10.7 METERS
GEODETIC LONGITUDE:	151 16 37.44480		35 FEET

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	φ OR Δ φ ANGLE
AK 4	5004	269,866.75	2,382,045.42	- 1 06 42

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ OR Δ φ FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
AUDRY 1961 AZ MK	199 36 39.89	200 43 22	5004

GEODETIC SATELLITE OBSERVATIONS PERFORMED AT THIS STATION

PC 030

JAN 1977

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

HORIZONTAL CONTROL DATA

the
NATIONAL GEODETIC SURVEY
NORTH AMERICAN 1927 DATUM

QUAD 601511 STATION 1003
ALASKA
LATITUDE 60° 30' TO 61° 00'
LONGITUDE 151° 00' TO 151° 30'
DIAGRAM NQ-05-09 8553

60 30 50.55880
151 16 37.44480

RECOVERY NOTE, TRIANGULATION STATION 199 36 39.89R

NAME OF STATION: AUDRY
ESTABLISHED BY: ALW YEAR: 1961 STATE: ALASKA BENCH MARK ALSO ☐
RECOVERED BY: MHF YEAR: 1975 COUNTY: COOK INLET
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: 2.8 S of Kenai
HEIGHT OF TELESCOPE ABOVE STATION MARK FEET. HEIGHT OF LIGHT ABOVE STATION MARK FEET.

DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION				
OBJECT	BEARING	DISTANCE FEET	DISTANCE METERS	DIRECTION ° ' "

The station and its reference marks were recovered as described in 1961 and 1966. All marks were found in good condition.

The azimuth mark was recovered as described and found in good condition. The spruce tree mentioned in the 1961 recovery note no longer exists. The area has been cleared and only the witness post remains. The ground surrounding the station has been removed and the station projects 1.2 meters above the ground.

The station may be reached as follows:
1) via land - Procede along the Sterling Highway 0.3 mi. from Willow Road to Beaver Loop, then turn right onto Beaver Loopfor 3.3 mi. to Kalifonski Loop, turn right onto Kalifonski Loop for 2.5 mi. to Cannery Road, turn right onto Cannery Road for 0.1 mi. to the first dirt road on the left, turn left onto this dirt road for 100meters. The station is 3.5 feet southeast of the witness post.

2) via water - Procede south from the mouth of the Kenai River along the eastern shoreline to the area where the bluffline begins. The station is in the clear area just back of the bluff(see 1961 Description).

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: AUDRY
ESTABLISHED BY: A. L. Wradwell YEAR: 1961 STATE: Alaska BENCH MARK(S) ALSO ☐
RECOVERED BY: R. B. Melby YEAR: 1975 COUNTY: Cook Inlet
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: 2 miles south of Kenai

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

The station, reference marks 2 and 3 and the azimuth mark were recovered in good condition as described, in 1972.

(Continued)

AUDRY (Continued)

The station is a standard station disk, stamped AUDRY 1961 1964, set in the top of a 12 inch diameter concrete post that projects 6 inches. It is 65 feet south of the dim track road, 2 feet northwest of a small tree stump 6 inches high and 3.5 feet east of a metal witness post.

Reference mark 2 is a standard reference disk, stamped AUDRY RM 2 1961, set in the top of a 6 inch diameter concrete post that is flush with the ground. It is about the same elevation as the station.

Reference mark 3 is a standard refereice disk, stamped AUDRY NO. 3 1961 1964, brazed to the top of a 1 inch copper pipe that projects 6 inches. It is about the same elevation as the station.

The azimuth mark is a standard azimuth disk, stamped AUDRY 1961 1964, set in the top of a 12 inch diameter concrete post that projects 8 inches. It is 31 feet east of the centerline of the gravel road, 46.6 feet north of a 14 inch diameter tree and 1.9 feet southeast of a metal witness post.

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: AUDRY
ESTABLISHED BY: A. L. Wardwell YEAR: 1961 STATE: Alaska BENCH MARK(S) ALSO ☐
RECOVERED BY: R. B. Melby YEAR: 1973 COUNTY: Cook Inlet
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: 2½ miles south of Kenai

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

The station, reference marks 2 and 3 and the azimuth mark were recovered in good condition. The area around the azimuth mark has been cleared and the mark is now on a small mound.

(C.A.B.,1974)--Station RM2 & RM 3 and azimuth mark were recovered in good condition as described in 1972.

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: AUDRY 1961 1964
ESTABLISHED BY: U.S.C.&G.S. YEAR: 1961 STATE: Alaska
RECOVERED BY: G.W. Peterkin YEAR: 1974 COUNTY: Third Judicial District BENCH MARK ALSO ☐
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN: About 7.5 miles west of Soldatna
HEIGHT OF TELESCOPE ABOVE STATION MARK 1.5± FEET. HEIGHT OF LIGHT ABOVE STATION MARK FEET.

DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION				
OBJECT	BEARING	DISTANCE FEET	DISTANCE METERS	DIRECTION ° ' "
Azimuth Mark	NNE	(1389.89	06 M)	0 00 00.00
R.M. 2	SSE	28.04	8.547	89 36 35.68
R.M. 3	S	34.615	10.551	169 02 18.28
Kenai Russian Chapel Spire	N	Approx.	2.5 miles	347 06 00.32
R.M. 2 to R.M. 3		40.37	12.305	

Station mark and reference marks and the Azimuth mark were recovered and found to be in good condition. The distances and directions to the reference marks checked. The original to reach is adequate. A considerable difference was noted in the horizontal angles to the reference marks, and the station was occupied twice to verify the above data. Station mark was used for the antenna site for Geoceiver Station number 5106J.

NOAA FORM 76-31A
(11-74)

USCOMM-NOAA-ASHEVILLE

ORM 280
-611

60 1513
60 1511

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

FIELD GEOGRA[illegible] POSITIONS

UNADJUSTED

QUALITY COOK INLET NORTH AMERICAN 1927 DATUM THIRD - ORDER TRIANGULATION. STATE ALASKA

STATION		LATITUDE AND LONGITUDE			AZIMUTH			BACK AZIMUTH			TO STATION	DISTANCE METERS
		°	′	″	°	′	″	°	′	″		
KALGIN ISLAND LIGHT 3		60	29	07.985	61	14	48.8	240	49	00.6	LOUISE 1961	-----
1975	d.m.	151	50	06.232								
KENAI RIVER FRONT RANGE 1975	d.m.	60 151	33 15	02.389 36.508	192	46	18.0	12	50	18.3	AUDRY 1961	4184.765*
KENAI RIVER REAR RANGE 1975	d.m.	60 151	33 15	05.308 29.940	193	48	20.8	13	52	26.7	AUDRY 1961	4295.813*
DROWNED 1975	d.m.	60 151	29 48	17.166 12.325	80	41	50.9	260	40	11.9	KALGIN ISLAND LIGHT 1975	1761.121*
ROCK	n.d. n.m.	60 151	28 49	56.471 56.440							KALGIN ISLAND LIGHT 1975	384.952*

* = TELUROMETER DISTANCES

/ TDS

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.)

USCOMM-DC 28287-P61

(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7

CORRECTIONS IN [redacted] FATHOMS

LEGEND:

BLACK DOTS-TDC- 6/20/79

GREEN DOTS-TDC- 7/8/79

RED DOTS-NANSEN 7/8/79

BLUE DOTS-TDC 8/5/79

FORM C&GS-117 (11-65)

U.S. DEPARTMENT OF COMMERCE
ESSA
COAST AND GEODETIC SURVEY

VELOCITY CORRECTIONS

Ship RAINIER S221

WAYNE L. MOBLEY, CAPT. NOAA Comdg.

These corrections are to be used

between _____ 19___ and _____ 19___

in the locality COOK INLET
ALASKA

for hydrographic surveys Nos.

OPR-P114-RA-79

DEPTH RANGE (FM)	CORRECTIONS (FM)
UP TO 3.3	0.0
9.8	0.1
16.2	0.2
22.2	0.3
28.3	0.4
35.3	0.5
DEEPER	0.6

DEPTHS IN FATHOMS

5 10 15 20 25 30 35 40

(For deep water add a 0 to these figures

VELOCITY CORRECTOR TAPE LISTING
FA-20-1-79(H-9833)
FA-20-2-79(H-9835)
FA-20-3-79(H-9840)

TABLE NO. 1 FEET
SCALE - ~~FATHOMS~~

000033 0 0000 0001 001 000000 000000
000098 0 0001
000162 0 0002
000222 0 0003
000283 0 0004
000353 0 0005
~~999999 0 0006~~

Since the sounding in this part of the velocity curve is linear the fathoms table is equal to the table in feet.

TABLE NO. 0
005000 0 0000 0000 000 000000 000000
999999 0 0001

00040.0 0006
00046.7 0007
00053.30 0008

DETERMINATION OF LAUNCH DRAFT

Survey	Registry No.	Launch
RA-20-1-79	H-9833	RA-3 (2123)
RA-20-2-79	H-9835	RA-3 (2123)
RA-20-3-79	H-9840	RA-3 (2123)

Depth (fm)	Average Bar Check Value	Corresponding Vel. Correction	Launch Draft
1	.35	0.0	.35
2	.33	0.0	.33
3	.36	0.0	.36
4	.38	0.1	.37
		Total	1.41
		Average Draft (fms)	0.35

DETERMINATION OF LAUNCH DRAFT

Survey	Registry No.	Launch
RA-20-1-79	H-9833	RA-6 (2126)
RA-20-2-79	H-9835	RA-6 (2126)
RA-20-3-79	H-9840	RA-6 (2126)

Depth	Average Bar Check Value	Corresponding Vel. Correction	Launch Draft
1	.26	0.0	.26
2	.32	0.0	.32
3	.30	0.0	.30
4	.34	0.1	.33
5	.36	0.1	.35
6	.37	0.1	.36
7	.40	0.1	.39
		Total	2.31
		Average Draft (FMS.)	0.33

October 7, 1980

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 945-5760 Nikishka, AK
945-5653 Ninilchik, AK

Period: July 7 - 26, 1979
FIELD EXAMINATION:
~~HYDROGRAPHIC SURVEY~~ FE 226 Kenai River Wreck Investigation

OPR: P114

Locality: Cook Inlet, Alaska

Plane of reference (mean lower low water): 8.9 ft. - Nikishka
8.7 ft. - Ninilchik

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

REMARKS: Recommended zoning:

For days 188 and 189 zone on Ninilchik applying +1 hour time correction and range ratio x1.07

For days 206 and 207 zone on Nikishka applying -25 minute time correction

for Milton S. Kutschera
Chief, Datums and Information Branch

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

FE-226

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
COOK INLET										1
SALMO ROCK										2
										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25

Approved:

Chas L. Harrington

Chief Cartographer - C3x5

10 April 1981

APPROVAL SHEET

FOR

SURVEY FE-226

A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position print-out has been made. A new final sounding print-out has been made.

B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic Manual. Exceptions are listed in the verifier's report.

Date: 1-26-81

Signed: [signature]

Title: Chief, Verification Branch

NOAA FORM 77-27 (5-77) | U. S. DEPARTMENT OF COMMERCE NOAA | HYDROGRAPHIC SURVEY NUMBER

HYDROGRAPHIC SURVEY STATISTICS

FE-226

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	BOAT SHEETS + prelim. overlays 3 9	12
DESCRIPTIVE REPORT	1	SMOOTH OVERLAYS: POS. ARC, EXCESS	7

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

T-SHEET PRINTS (List) none

SPECIAL REPORTS (List) Contour Overlay and Tide Plot, Tide Listing, Sounding Analysis Statistics

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS: PRE-VERIFICATION	AMOUNTS: VERIFICATION	AMOUNTS: TOTALS
POSITIONS ON SHEET			
POSITIONS CHECKED		526	526
POSITIONS REVISED		3	3
SOUNDINGS REVISED		70	70
SOUNDINGS ERRONEOUSLY SPACED		0	
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED		0	

	TIME — HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	20		
VERIFICATION OF CONTROL		3	
VERIFICATION OF POSITIONS		15	
VERIFICATION OF SOUNDINGS		13	
COMPILATION OF SMOOTH SHEET		5	
APPLICATION OF TOPOGRAPHY		0	
APPLICATION OF PHOTOBATHYMETRY			
JUNCTIONS		2	
COMPARISON WITH PRIOR SURVEYS & CHARTS			
VERIFIER'S REPORT		12	
OTHER			
TOTALS	20	50	70

	Beginning Date	Ending Date
Pre-Verification by James S. Green	9/18/80	9/18/80
Verification by James L. Stringham	10/22/80	1/20/81
Verification Check by James S. Green	Time (Hours) 10	Date 1/26/81
Marine Center Inspection by	Time (Hours) 10	Date 2/13/81
Quality Control Inspection by RW Denkenzais	Time (Hours) 54	Date 4/2/81
Requirements Evaluation by Dennis Hill	Time (Hours) 3	Date 10/30/81

G Myers 12 hrs. 4/20/81

REGISTRY NO. FE-226

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

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

CARDS CORRECTED

DATE_____ TIME REQUIRED_____ INITIALS_____

REMARKS:

REGISTRY NO. _____

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

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

MAGNETIC TAPE CORRECTED

DATE_____ TIME REQUIRED_____ INITIALS_____

REMARKS:

PACIFIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO: FE-226 FIELD NO: RA-5-3-79

Alaska, Cook Inlet, Kenai River Entrance Wreck Investigation

SURVEYED: 7 July - 25 July 1979

SCALE: 1:5,000 PROJECT NO: OPR-P114

SOUNDINGS: Ross Fineline Fathometer Model 5000

CONTROL: Mini-Ranger, Range - Range mode, Range - Azimuth mode

Chief of Party.....CAPT Wayne L. Mobley
Surveyed by.....LTJG. Michael McCluskey and Senior Survey Tech Richard Hastings
Automated Plot by.....PMC Xynetics Plotter
Verified by.....James L. Stringham

1. INTRODUCTION

FE-226 (RA-5-3-79) was conducted in response to USCGC SEDGE message R 081750Z June, 1979 (see Appendix B attached to ships descriptive report).

The project is the result of Mr. Everett Collins, Salamotof Seafoods, Kenai, Alaska reporting that the charted wreck at Latitude 60°31'N, Longitude 151°21.1' W had shifted ~~northwest~~ east to a reported position of Latitude 60°31.1' N, Longitude 151°20.6' W. NOAA was requested to determine the location of the submerged wreck by the CCGD seventeen (see message R 082245Z June 1979 Appendix B attached to ships descriptive report).

The Field Examination survey is located south and ~~east~~ west of Salmon Rock.
Rainier launches RA-3 (2123, Hull 1007), ~~and~~ RA-6 (2126, Hull 1013), and RA-5(2125) were used to conduct the hydrographic survey investigation.

The survey launches recorded 529 positions during the wreck investigation, positioning 59 nautical miles of hydrographic sounding lines contained in a .55 square nautical mile of geographic area.

Predicted tide information for the Kenai River entrance was used to reduce the final field sheet soundings. Approved tides from Ninlchik, Alaska using a time correction and range ratio were used to reduce soundings taken on Julian days 188 and 189. Soundings taken on Julian days 206 and 207 were reduced using approved tides from Ninilchik, Alaska applying a time correction. The final smooth soundings agree very well with the field reduced soundings, generally within 1 to 2 feet.

The final projection parameters used to prepare the smooth sheet have been revised to center the hydrography plotted on the smooth sheet at 1:5,000 scale, soundings in feet reduced to MLLW.

2. CONTROL AND SHORELINE

Horizontal control used to control this investigation was not adequately described in the ships descriptive report or horizontal control report. The two control stations geographic positions were checked during verification. Audrey 1961 Rm-3 (station 501) position was computed and verified to be correct however, Kenai River Rear Range light (station 502) appears to be eccentric from the light to accomodate the mini-ranger and instrument while operating in the range azimuth mode. The field submitted geographic positions for stations 501 and 502 were used for the smooth sheet computation.

No shoreline is required or applied to the smooth sheet. No field edit was accomplished during the wreck investigation project.

3. HYDROGRAPHY

Crosslines incorporated within this survey are in good agreement generally 1 to 2 feet. Considering the complex area for obtaining accurate tide reducers and the launch gathering sounding data in fathoms on days 206 and 207 the agreement is considered acceptable.

The bottom configuration and determination of least depths are adequate. The depth curves were adequately drawn.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports are adequate and conform to the requirements as stated in the requirements as stated in the Hydrographic Manual with the exception of:

a. A smooth final field sheet was not compiled and plotted on mylar. Three paper ~~final~~ field sheets were submitted at 1:1250, 1:2500 and 1:5000 scale. The above plots were used to compile the data at 1:5000 scale during verification process here at the Marine Center.

b. Survey soundings were taken in feet on days 188 and 189 by launch 2123 at 1:2,500 scale, but soundings recorded on days 206 and 207 with launch 2126 were recorded in fathoms. This was an impairment to the accuracy and sounding agreement between the two periods of hydrography.

c. Electronic correctors and sounding correctors were not submitted with the survey data. The survey correctors were abstracted from the OPR-P114-RA-79 data and attached to the verifier's report.

d. The Descriptive Report text was not written in the standard field format. The Title Sheet and survey statistics with serial numbers of equipment was added during verification process.

c. The bottom materials were not sampled during the investigation. (see section 1.6.3 of the Hydrographic manual)

5. JUNCTIONS

FE-226, (RA-5-3-79) ~~does not join a contemporary survey, instead, the Field Examination is bounded on all sides by prior survey H-8789, 1964.~~

See Q.C. Report, para 1

The depth curves on the border of FE-226 agree very well with depth curves on H-8789, 1964. ~~The~~ A partial butt junction has been accomplished, during Quality Control

6. COMPARISON WITH PRIOR SURVEYS

H-3196	1910	1:40,000
H-3197	1910	1:10,000
~~H-8789~~	~~1964~~	~~1:10,000~~

The above ~~three~~ two prior surveys were compared to during verification of FE-226, 1979. Generally, very good agreement was found between the present survey and prior survey sounding information.

After completing a detailed comparison with the prior surveys, sounding agreement was determined to be very good. Generally FE-226 is 1 to 2 feet deeper than the prior surveys. The deeper soundings can be attributed to ~~the narrow beam Ross Fathometer compared to wide beam system.~~ ^ bottom change

~~Significantly shoaler soundings were carried forward from prior survey H-8789 in violet ink.~~

The present field examination is adequate to supersede the prior surveys within the common area. ~~except for the information carried forward from H-8789, 1964.~~

There were no presurvey review items pertaining to this survey.

7. COMPARISON WITH CHART

A comparison was made with chart 16660 19th edition Sept. 10, 1977. The charted hydrography originates with H-3196 and 3197, 1910 prior surveys. However after examining chart 16660 20th edition September 1, 1979 it was noted that the source for charted soundings is H-8789, 1964 and FE-226 is considered the source of the position approximate (PA) note.

I recommend the submerged wreck be charted at Latitude 60°30' 59.75 N, Longitude 151°20' 39.94" W with a least depth of 19 feet at MLLW. Chart 3, WK Concur Record # 17140 in sdg. history AWOIS 50385

The 9 foot sounding found at Latitude 60°31' 14.78" N, Longitude 151°20' 00.96" W is significantly shoaler than anything found prior to FE-226 depth soundings. Recommend the 9 foot sounding be charted as soon as possible. 50175

RWD 2/95

The present field examination FE-226 is adequate to supersede the charted information in areas of common coverage.

8. COMPLIANCE WITH PROJECT INSTRUCTIONS

FE-226 (RA-5-3-80) is a wreck investigation submitted as a Field Examination. Project Instructions were not issued to cover this project.

FE-226 was completed prior to letter from OA/C3, dated May 30, 1980. (copy of letter is attached to verifier's report).

Respectfully submitted,

James L. Stringham

James L. Stringham
January 20, 1981

Examined and approved:

James S. Green
Chief Verification Branch

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102

February 13, 1981 OA/CPM3/JWC

TO: OA/CPM - Charles K. Townsend

FROM: OA/CPM3 - John W. Carpenter JWC

SUBJECT: PMC Hydrographic Inspection Team Report for Survey FE-226

This survey is a field examination survey of Kenai River Entrance, Cook Inlet, Alaska. This survey was conducted by NOAA Ship RAINIER in 1979 in accordance with a radio message RØ82245Z Jun 79 from Commander, Coast Guard District 17.

The following items were noted:

1. The two recommendations contained in the "Addendum to Special Report," dated 1/12/81 on adding a cautionary note to Chart 16660 and the use of side scan sonar swath system for a project search of the area are fully endorsed.

2. The Project Instructions for the special survey consisted of only a radio message. The Hydrographic Manual (Section 4.1.2) specifies that special surveys need to be properly defined in the project instructions as to scope of the project, data requirements, and any variation from the Hydrographic Manual requirements.

3. A velocity table was not submitted by the RAINIER. ✓

4. No electronic correctors were submitted by the RAINIER as required in support of the Descriptive Report. ✓

Necessary Data Abstracts from OPR-P114-RA-79 JWC

It must be noted that this is the first special survey done under the category of a Field Examination and thus the items described in #3 and #4 probably would not have been a problem if these items were addressed in the Project Instructions. Also, as the first survey done under this format, it is subject to the usual problems associated when bringing a new format on line.

The inspection team finds FE-226 to be an adequate field examination survey.

Administrative approval is recommended.

John W. Carpenter

James W. Wintermyre

James W. Steensland

Stanley H. Otsubo

ADMINISTRATIVE APPROVAL

FE-226

The sheet and reports of this survey have been examined and the survey is an adequate field examination.

Charles K. Townsend, RADM
Director
Pacific Marine Center

2/13/81
Date

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

OA/C352:RWD

April 2, 1981

TO: Glen R. Schaefer
Chief, Hydrographic Surveys Division

THRU: Chief, Quality Control Branch

FROM: R. W. DerKazarian
Quality Evaluator

SUBJECT: Quality Control Report for FE-226 (1979), Alaska, Cook Inlet, Kenai River Entrance Wreck Investigation

A quality control inspection of FE-226 was accomplished to monitor the survey for adequacy with respect to data acquisition, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, smooth plotting, decisions and actions taken by the verifier, and the cartographic presentation of data. Revisions and additions to the smooth sheet, plus helpful comments made to the verifier, are identified on a copy of the survey to be furnished the verifier. In general, the survey was found to conform to the National Ocean Survey's standards and requirements except as stated in the Verifier's Report, the HIT Report, and as follows:

1. The present survey, as indicated in paragraph 6 of the Verifier's Report "is generally 1-2 feet deeper"; however, several areas are in excellent agreement. Because some conflict exists between the two surveys, it was decided to effect a butt junction during quality evaluation.

2. Salmo Rock was transferred to the present survey from H-8789 (1964) for orientation purposes.

3. During quality evaluation it was determined that a comparison of the survey with the new 1:40,000-scale inset of Kenai River on chart 16660, 21st edition (1980), would be advantageous.

The charted hydrography on this edition originates with H-8789 (1964) and advance information from the present survey.

Attention is directed to the following:

a. A rock awash charted in latitude 60°31'20"N, longitude 151°21'01"W was applied to the chart through a U.S. Geological Survey Quad. This rock, identified as Salmo Rock on the quad, was evidently reapplied to the quad through a Geographic Names Board decision and position of 1905; this position did not have the North American 1927 Datum considered. It is recommended that the rock be deleted from the chart.

b. Kenai Entrance Channel Lighted Buoy "1KE" as shown on the present survey is in conflict with the chart and the Light List. The 17th Coast Guard District has been informed that this aid shown on the present chart inset was not in the appropriate position as indicated by Local Notice to Mariners 15/77 or the Light List. The chart should be changed accordingly.

Considering all the potential dangers to navigation in the area, it is not obvious just what feature this aid is intended to mark. It is recommended that the Coast Guard be provided the most recent survey information so that the function of this aid can be reevaluated.

4. The present survey is adequate to supersede the charted information with the addition of paragraphs a. and b. above in the common area of coverage.

cc:
OA/C351

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

NOV 13 1981

OA/C351:DJI

TO: OA/CPM - Charles K. Townsend

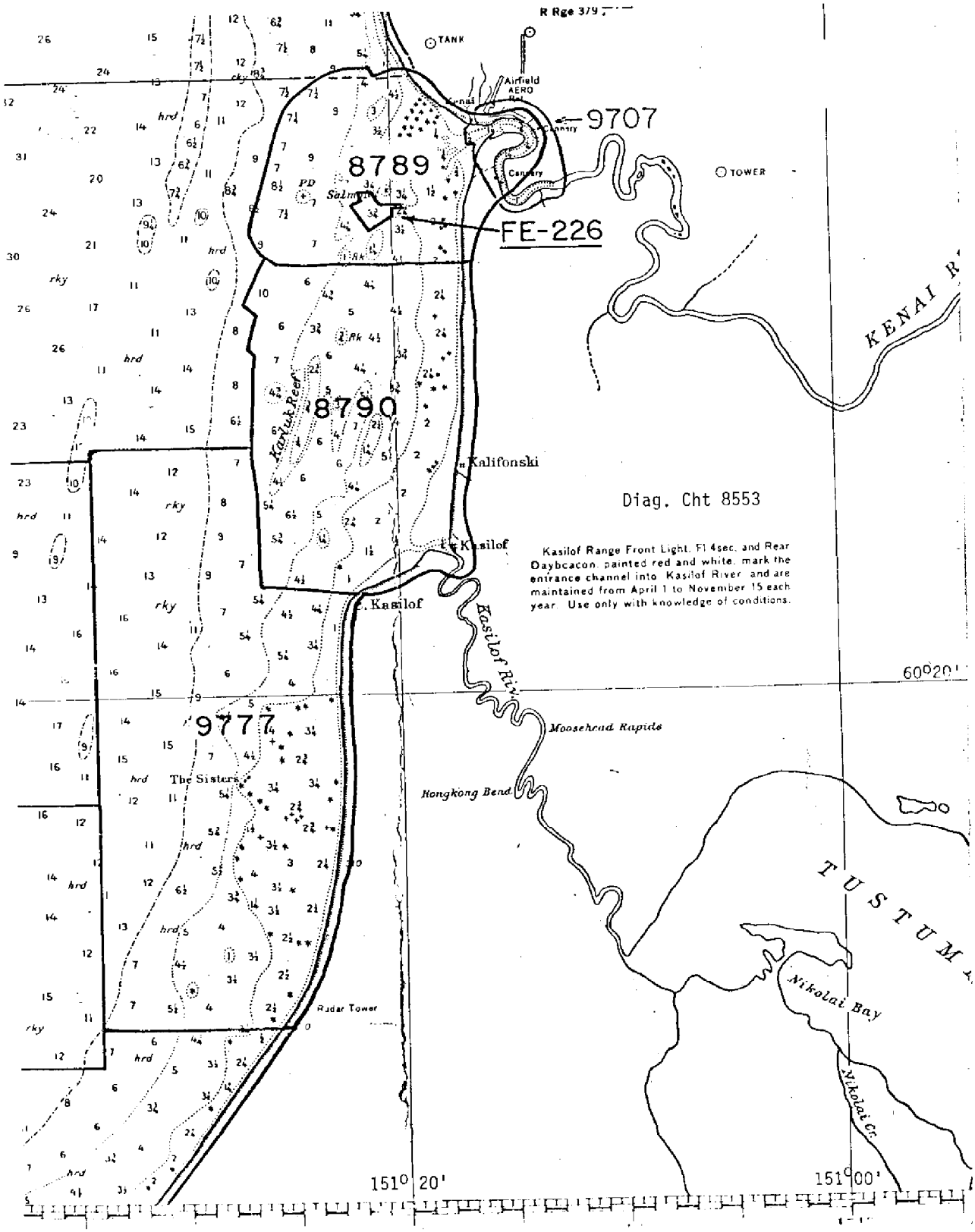
FROM: OA/C3 - Roger F. Lanier

SUBJECT: FE-226 (1979), Alaska, Cook Inlet, Kenai River Entrance Wreck Investigation

Project Instructions were not issued for this investigation; however, the smooth sheet and Descriptive Report for the subject survey have been examined. This survey, except as noted in the Quality Control Report, dated April 2, 1981 (copy attached), and the Hydrographic Survey Inspection Team Report, dated February 13, 1981, is complete and adequate for the purposes intended.

Attachment

cc:
OA/C352 w/o att.


R Rge 3/9
TANK
Airfield
AERO
9707
8789
PD
Salmon
FE-226
TOWER
KENAI R
8790
Karluk Reef
Kalifonski
Diag. Cht 8553
Kasilof Range Front Light, Fl 4sec, and Rear Daybeacon, painted red and white, mark the entrance channel into Kasilof River and are maintained from April 1 to November 15 each year. Use only with knowledge of conditions.
Kasilof
E. Kasilof
Kasilof Riv.
60°20'
9777
The Sisters
Moosehead Rapids
Hongkong Bend
TUSTUM
Nikolai Bay
Nikolai Cr.
Radar Tower
151° 20'
151°00'

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

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-226

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
16013	5/13/82	Robert Lachance	Full ~~Part~~ Before After Verification Review Inspection Signed Via
			Drawing No. Appld 34 WK through Chart 16660
			tps
16660	8/20/81	C.A. Swiftlick	Full ~~Part~~ ~~Before~~ After Verification Review Inspection Signed Via
			Drawing No.
16013	11-22-82	L.A. Simmons	Full ~~Part~~ ~~Before~~ After Verification Review Inspection Signed Via
			Drawing No. 27 App'd thru 16660
531	11-22-82	Simmons	Full ~~Part~~ ~~Before~~ After Verification Review Inspection Signed Via
			Drawing No. 18 No Correction. Area Cleared.
16662		NAITO	Full ~~Part~~ ~~Before~~ After Verification Review Inspection Signed Via
			Drawing No. 1 Fully app'd.
500	8-17-83	Simmons	Full Part Before After Verification Review Inspection Signed Via
			Drawing No. 5. Exam thru 16013 #27. No Correction
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.

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

USCOMM-DC 8558-P63