8776

Diag. Cht. No. 526.

Form 504

U. S. DEPARTMENT OF COMMERCE

COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. HFP 12-5-63 Office No. H-8776

LOCALITY

State NEVADA-ARIZONA

General locality VIRGIN BASIN

Locality LAKE MEAD, NEVADA-ARIZONA

19 64

CHIEF OF PARTY
P.A.STARK, CDR. USC&GS
H.E.McCALL,LT. USC&GS

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DATE

USCOMM-DC 5087

8776

FORM C&GS-537
(8-15-59)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

REGISTER NO.

H-8776

HYDROGRAPHIC TITLE SHEET

FIELD NO.

HFP 12-5-63

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

State NEVADA-ARIZONA

General locality VIRGIN BASIN

Locality LAKE MEAD, NEVADA-ARIZONA

Scale 1:12,000 Date of survey 20 NOV.1963 to 15 OCT. 1964

Instructions dated 10 MAY 1963 2100B-pt, S2-219 Project No. OPR-443

Vessel LAUNCH CS 1177 and Launch CS 183

Chief of party P.A.STARK,CDR.,USC&GS and H.E.McCALL,LT.,USC&GS

Surveyed by G.F.TREFETHEN, ROBERT A.LEWIS and R.H.ALLBRITTON, LT.(jg) USC&GS

Soundings taken by echo sounder, hand lead, pole

Graphic record scaled by PARTY PERSONNEL

Graphic record checked by PARTY PERSONNEL

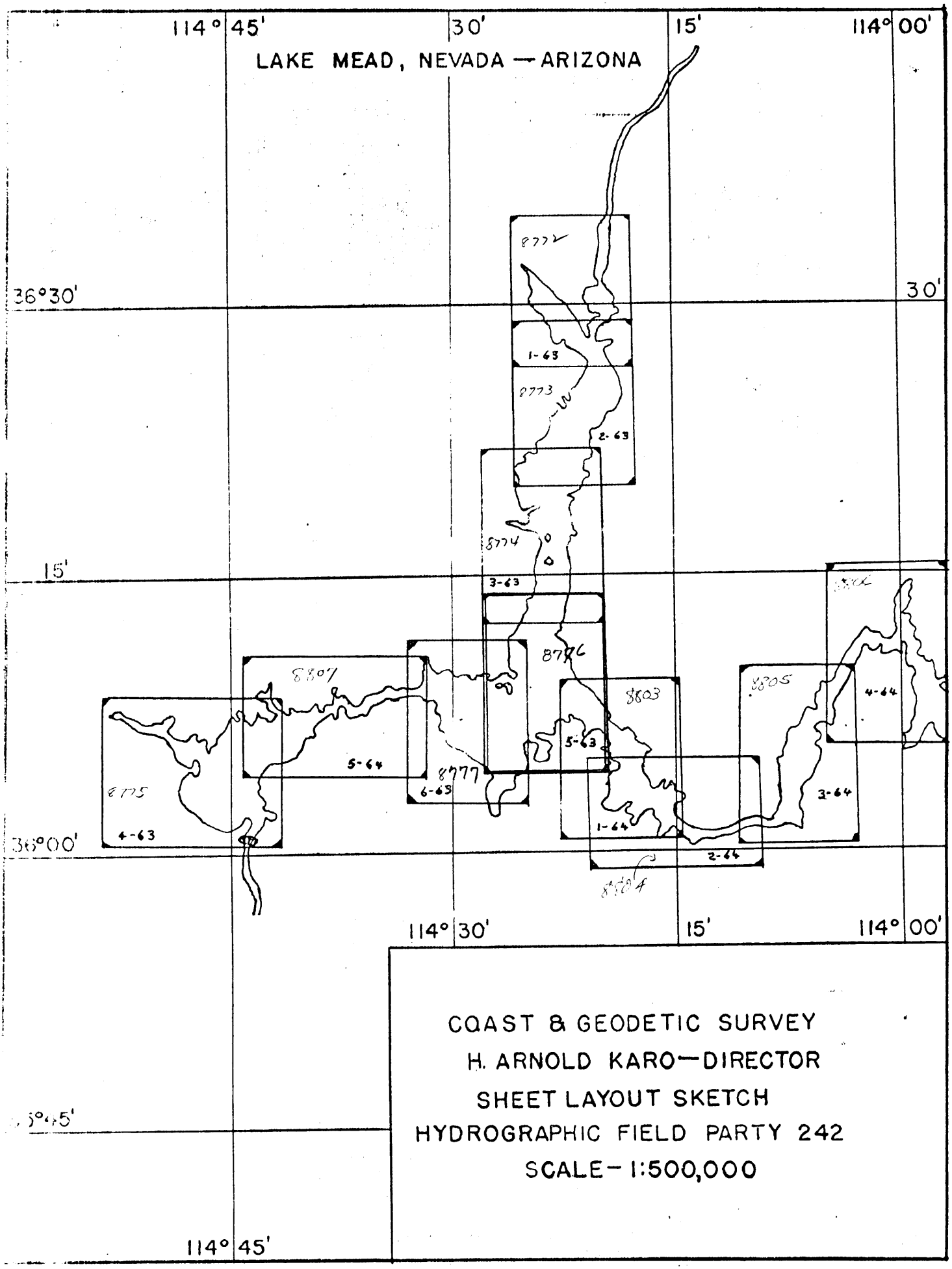
Protracted by

Soundings penciled by

Soundings in ~~XXXXX~~ feet at ~~XXXX~~ ~~XXXX~~ ELEVATION ABOVE MEAN SEA LEVEL

REMARKS: All echo soundings are in feet and tenths of feet. All soundings are converted to elevation of feet above Mean Sea Level and soundings on the boat sheet are elevation above Mean Sea Level. Only three digits were used, the first digit in 1,000 , 1,100 ,1200 were left off to make the boat sheet less congested. For example. Elevation 1128 on the boat sheet would be 128.

USCOMM-DC 8272-P62



COAST & GEODETIC SURVEY

H. ARNOLD KARO—DIRECTOR

SHEET LAYOUT SKETCH

HYDROGRAPHIC FIELD PARTY 242

SCALE—1:500,000

DESCRIPTIVE REPORT
TO ACCOMPANY HYDROGRAPHIC SURVEY H-8776
(Field No. HFP 12-5-63)
Project OPR-443

SCALE: 1:12,000

HFP 219

Chief of Party

P.A.STARK,CDR.,USC&GS
H.E.McCALL,LT.,USC&GS

A.PROJECT

Project OPR-443 was completed in accordance with instruction 2100B-pt S-2-219 dated 10 May 1963, Lake Mead, Nevada-Arizona.

B.AREA SURVEYED

The geographical limits of this sheet are from Lat.36°05'N to Lat. 36°13'N and Long. 114°22'W to Long. 114°27'W.

This sheet covers the Eastern portion of Virgin Basin with West Gypsum Bay on the South and the Southern portion of Overton Arm on the North.

This survey makes junction with contemporary survey H-8777 (HFP 12-6-63) on the West and contemporary survey H-8803 (HFP 12-1-64) on the East and contemporary survey H-8774 (HFP 12-3-63) on the North.

This survey also makes junction with Navy sheet No.3 dated 1948-1949, Scale 1:12,000 on the West and Navy sheet No.8 dated 1948-1949, Scale 1:12,000 on the East.

This survey was covered by Navy sheet No. 10 dated 1948-1949, Scale 1:12,000.

Hydrography began on November 20,1963 and was completed October 15, 1964.

This survey makes junction with contemporary survey H-8807 (HFP 12-5-64) on the West and H-8776 (HFP 12-5-63) on the East.

This survey also makes junction with Navy Sheet No. 2 dated 1948-1949 on the West and Navy Sheet No.10 dated 1948-1949 on the East.

This survey area was covered by Navy Sheet No.3 dated 1948-1949, Scale 1:12,000.

Hydrography began on December 9,1963 and was completed on October 14,1964.

C.SOUNDING VESSEL

The vessels used were Launch CS 1177, designated by blue day letters, and Launch CS 183 designated by violet day letters.

D.SOUNDING EQUIPMENT

On Launch CS 1177 the following Raytheon DE-723 fathometers were used:

Number	549	200 KC
Number	263	200 KC
Number	265	200 KC
Number	263	20 KC
Number	549	20 KC
Number	544	20 KC

On Launch CS 183 the following Raytheon DE-723 fathometers were used:

Number	263	200 KC
Number	549	200 KC
Number	543	20 KC
Number	263	20 KC

In certain areas two fathometers were run simultaneously. The 200 KC fathometer was operated on feet and the 20 KC fathometer was operated on fathoms. This procedure was used to assist the fathometer operator in keeping up with the scale change. To show sedimentation on crosslines, two fathometers were operated simultaneously.

In some instances the soundings from the 20 KC fathograms were converted from fathoms to feet and placed in the sounding volumes. Such soundings are noted in the sounding volumes by an asterisk and the word fathoms, or an abbreviation thereof, was placed in the remarks column.

Daily bar checks were taken to determine the corrections to be applied for the 200 KC unit. Bathythermography observations were made to obtain temperature at depths beyond the range of the bar checks.

E.SMOOTH SHEET

To be completed by smooth plotter.

F.CONTROL

All signals were located by ground survey methods. Appendix B contains a list of signals and indicates the methods used to locate the signals.

The hydrography was controlled by visual three point fixes.

In all of the coves in which hydrography was run, where there were no available fixes, the hydrographic lines were run by dead reckoning.

The normal procedure of the hydrographer spotting his position on the boat sheet from adjacent features of the shoreline was not adhered to, even though in some instances a position was givin at the end of the lines and" see boat sheet " was placed in the sounding volumes. The smooth plotter should plot the lines according to time and course and ignore the " see boat sheet " positions.

Since all signals had to be located by ground survey methods, the cost and time which would have been required to locate signals in all of the coves would have been prohibitive. Thus, the procedure of dead reckoning into coves was adopted for the entire project(OPR-443).

G.SHORELINE

The shoreline was transferred from a film positive of Navy sheet No. 10 dated 1948-1949 outlining the 1200 foot and the 1150 foot contour.

The 1150 foot contour is shown in red and the 1200 foot contour is shown in black on the boat sheet.

When the lake level dropped to 1150 feet above MSL, aerial infraned photographs were made. This contour was not verified by hydrography due to the low lake level at the time of hydrography.

H.CROSSLINES

Crosslines were run in excess of 8%. Favorable crossings were found.

I.JUNCTIONS

Depths at contemporary surveys H-8777 (HFP 12-6-63) and H-8803 (HFP 12-1-64) and H-8774 (HFP 12-3-63) are in agreement, and contours can be adequately drawn at the junctions.

J.COMPARISION WITH PRIOR SURVEYS

Comparision with Navy sheet No.10, 1948-1949 ,Scale 1:12,000.

The prior survey was of a reconnaisance nature and since no shoals or rocks were investigated, an adequate comparision can not be made.

K. COMPARISION WITH THE CHART

A comparision was made with chart No. C&GS 5458 A 2nd edition Oct. 17, 1955, Revised Sept. 4,1961 Scale 1:48,000 and chart No. C&GS 5457 B 2nd edition Oct. 17,1955 Revised Oct. 16, 1961 Scale 1:48,000.

All rocks and reefs indicated on the chart were plotted on the boat sheet in red pencile with their respective elev.

The following is a list of rocks and reefs that were investigated.

1. ROCK

Charted pos.	Lat.	36°13.88'
	Long.	114°24.92'
Charted elev.		1130
New elev.		1133

Located on 49"k" Launch C.S. 1177

This is not a rock. It is a point of land jutting out from the shore. It is recommended that the new elevation be charted. Appd

2. ROCK

Charted pos.	Lat.	36°09.48'
	Long.	114°22.19'
Charted elev.		1155
New elev.		1155

No Corr

Located on 11"a" Launch C.S. 183

It is recommended that the charted elevation be retained.

3. ROCK

Charted pos.	Lat.	36°09.45'
	Long.	114°22.23'
Charted elev.		1155
New elev.		1150

Located on 11"a" Launch C.S. 183

It is recommended that the new elevation be charted. No Corr.

K.COMPARISION WITH CHART(cont.)

4.ROCK

Charted pos.	Lat.	36°09.56'
	Long.	114°22.39'
Charted elev.		1157
New elev.		1156✓
Located on		21 a-day CS 183

It is recommended that the charted elevation be retained. No Corr

5.ROCK

Charted pos.	Lat.	36°09.62'
	Long.	114°22.46'
Charted elev.		1130
New elev.		1153✓
Located on		20 a-day CS 183

It is recommended that the new elevation be charted. Appd

6.ROCK

Charted pos.	Lat.	36°10.81'
	Long.	114°26.41'
Charted elev.		1142
New elev.		1150✓
Located on		4 r-day CS 183

It is recommended that the new elevation be charted. Appd

7.ROCK

Charted pos.	Lat.	36°10.63'
	Long	114°26.32'
Charted elev.		1104
New elev.		1105✓
Located on		3 r-day CS 183

It is recommended that the new elevation be charted. Appd

K.COMPARISION WITH CHART(cont.)

8.ROCK

Charted pos.	Lat.	36°09.98'
	Long.	114°26.18'
Charted elev.		1139 ✓

This area was visually inspected at a lake level of 1106 and no evidence of the rock was found to exist. Appd

9.ROCK

Charted pos.	Lat.	36°09.76'
	Long.	114°25.97'
Charted elev.		1145
New elev.		1145 ✓
Located on		70 q-day CS 183

It is recommended that the new elevation be retained. No Corr

10.ROCK

Charted pos.	Lat.	36°11.37'
	Long.	114°26.09'
Charted elev.		1100
New elev.		1110
Located on		14 r-day CS 183

It is recommended that the new elevation be charted. Appd

11.ROCK

Charted pos.	Lat.	36°11.66'
	Long.	114°26.09'
Charted elev.		1140
New elev.		1147
Located on		91 q-day CS 183

It is recommended that the new elevation be charted. Appd

K.COMPARISION WITH CHART(cont.)

12.ROCK

Charted pos.	Lat.	36°11.55'
	Long.	114°26.00'
Charted elev.		1093
New elev.		1086
Located on		26 t-day CS 183

This rock was investigated on t-day by running closely spaced lines over the area. 1086 was the shoal sounding in the area. Appd

13.ROCK

Charted pos.	Lat.	36°12.02'
	Long.	114°26.05'
Charted elev.		1100
New elev.		1109
Located on		17 r-day CS 183

It is recommended that the new elevation be charted. Appd

14.ROCK

Charted pos.	Lat.	36°12.21'
	Long.	114°25.69'
Charted elev.		1112
New elev.		1110
Located on		18 r-day CS 183

It is recommended that the new elevation be charted. Appd

15.ROCK

Charted pos.	Lat.	36°12.50'
	Long.	114°25.29'
Charted elev.		1118

This area was investigated by running closely spaced sounding lines over the area from 52"w" to 69"w" day CS 183. No evidence of the rock was found to exist. Appd

K.COMPARISION WITH CHART(cont.)

16.ROCK

Charted pos.	Lat.	36°12.52'
	Long.	114°25.55'
Charted elev.		1144
New elev.		1134
Located on		7 s-day CS 183

It is recommended that the new elevation be charted. Appd

17.ROCK

Charted pos.	Lat.	36°12.68'
	Long.	114°25.65'
Charted elev.		1127
New elev.		1120
Located on		9 s-day CS 183

It is recommended that the new elevation be charted. Appd

18.ROCK

Charted pos.	Lat.	36°12.79'
	Long.	114°25.93'
Charted elev.		1130

No rock was found at charted position . A rock was found about 70 meters S.W. of charted rock. This rock was located on 10-s-day CS 183 Lat. 36 12.78' Long. 114 25.99' Elevation of new rock is 1123. It is recommended that the new rock be charted. Appd

19.ROCK

Charted pos.	Lat.	36°13.09'
	Long.	114°25.49'
Charted elev.		1100
New elev.		1091
Located on		41 w-day CS 183

This rock was investigated by sounding lines from 35 "w" to 40 "w" day. It is recommended that the new elevation be charted. Appd

K.COMPARISION WITH CHART(cont.)

20.ROCK

Charted pos.	Lat.	36°13.28'
	Long.	114°23.88'
Charted elev.		~~1070~~ 1109
New elev.		1100
Located on		44 y-day CS 183

It is recommended that the new elevation be charted. Appd

21.SHOAL

Charted pos.	Lat.	36°13.12'
	Long.	114°24.07'
Charted elev.		1070
New elev.		1067

This shoal was investigated on y-day CS 183 from 1 y-day to 43 y-day. Close spaced sounding lines were run over the area. No Corr

22.ROCK

Charted pos.	Lat.	36°11.78'
	Long.	114°23.58'
Charted elev.		1142
New elev.		1134
Located on		62 n-day CS 183

This is not a rock but a point of land jutting out from the shore. It is recommended that the new elevation be charted. Appd

23.ROCK

Charted pos.	Lat.	36°11.76'
	Long.	114°23.39'
Charted elev.		1142
New elev.		1124
Located on		44 t-day CS 183

It is recommended that the new elevation be charted. Appd

K.COMPARISION WITH CHART(cont.)

24.ROCK

Charted pos.	Lat.	36°11.41'
	Long.	114°23.19'
Charted elev.		1120
New elev.		1105
Located on		19 m-day CS 1177

It is recommended that the new elevation be charted. Appd

25.ROCK

Charted pos.	Lat.	36°07.61'
	Long.	114°23.15'
Charted elev.		1146
New elev.		1123/
Located on		39 k-day CS 183

It is recommended that the new elevation be charted. Appd

26.ROCK

Charted pos.	Lat.	36°07.54'
	Long.	114°23.35'
Charted elev.		1140
New elev.		1105 & 1150
Located on		24 k & 29 h-day CS 183

This is not a rock but a point of land jutting out from the shore . Appd 11-30-42

27.ROCK

Charted pos,	Lat.	36°07.45'
	Long.	114°23.75'
Charted elev.		?
New elev.		1101
Located on		6 k-day CS 183

This is not a rock but a point of land jutting out from the shore. No Comm.

K.COMPARISION WITH CHART(cont.)

28.ROCK

Charted pos.	Lat.	36°07.27'
	Long.	114°24.06'
Charted elev.		1115
New elev.		1110✓
Located on		26 h-day CS 183

It is recommended that the new elevation be charted. Appd

29.ROCK

Charted pos.	Lat.	36°06.95'
	Long.	114°24.34'
Charted elev.		1175
New elev.		1124✓
Located on		21 h-day CS 183

It is recommended that the new elevation be charted. Appd

30.ROCK

Charted pos.	Lat.	36°06.83'
	Long.	114°24.29'
Charted elev.		1146
New elev.		1139
Located on.		20 h-day CS 183

This is not a rock but a point of land jutting out from the shore. Appd

31.ROCK

Charted pos.	Lat.	36°07.18'
	Long.	114°24.96'
Charted elev.		1110
New elev.		1105
Located on		97 h-day CS 1177

It is recommended that the new elevation be charted. Shoaled 1113 26f-27f day

K.COMPARISION WITH CHART(cont.)

32.ROCK

Charted pos.	Lat.	36°07.28'
	Long.	114°25.19'
Charted elev.		1115

This rock was not investigated. There is an indication of its existence from the sounding lines where an elevation of 1080 was obtained on 17 f-day CS 183. It is recommended that the charted elevation be retained. No Corr

33.ROCK

Charted pos.	Lat.	36°07.~~09~~ 29'
	Long.	114°25.31'
Charted elev.		1115

There is an indication of the rocks existence from the sounding line where an elevation of 1075 was obtained on 106 to 107 h-day CS 1177. It is recommended that the charted elevation be retained. No Corr

34.ROCK

Charted pos.	Lat.	36°07.26'
	Long.	114°25.45'
Charted elev.		1150 ✓

The area was visually inspected at a lake level of 1122 and no evidence of the rock was found to exist. Delete

35.ROCK

Charted pos.	Lat.	36°07.21'
	Long.	114°25.5~~8~~ 2'
Charted elev.		1121
New elev.		1140 ✓
Located on		12 c-day CS 183

It is recommended that the new elevation be charted. Corr

K.COMPARISION WITH CHART(cont.)

36.ROCK

Charted pos.	Lat.	36°06.98'
	Long.	114°25.58'
Charted elev.		1130
New elev.		1106
Located on		46 to 47 d-day CS 183

It is recommended that the new elevation be charted. Appd

37.ROCK

Charted pos.	Lat.	36°06.70'
	Long.	114° 25.40'
Charted elev.		1095
New elev.		1107✓
Located on		47 -48 e-day CS 183

It is recommended that the new elevation be charted. No Corr Boat sheet pos. inside L.W.L.

38.ROCK

Charted pos.	Lat.	36°06.55'
	Long.	114°25.20'
Charted elev.		1142
New elev.		1155✓
Located on		28 e-day CS 183

It is recommended that the new elevation be charted. Appd

39.ROCK

Charted pos.	Lat.	36°07.09'
	Long.	114°25.75'
Charted elev.		1100

This rock was not investigated. There is an indication of its existence from the sounding lines where an elevation of 1073 was obtained on 26½ out of d-day CS 183.
It is recommended that the charted elevation be retained. No Corr

K.COMPARISION WITH CHART(cont.)

40.ROCK

Charted pos.	Lat.	36°07.03'
	Long.	114°25.95'
Charted elev.		1140
New elev.		1127 ✓
Located on		10 c-day CS 183

It is recommended that the new elevation be charted.

41.ROCK

Charted pos.	Lat.	36°09.21'
	Long.	114°26.59'
Charted elev.		1105
New elev.		1108 ✓
Located on		37 q-day CS 183

It is recommended that the new elevation be charted.

42.ROCK

Charted pos.	Lat.	36°09.52'
	Long.	114°26.54'
Charted elev.		1132 ✓

This area was visually inspected at a lake level of 1104 and no evidence of the rock was found to exist.

Rocks that were not investigated:

Reefs,rocks, or ledges above 1150 feet above MSL were not investigated, except that all National Park Service Reef Markers were located.

L.ADEQUACY OF SURVEY

This survey is adequate to supercede prior surveys up to the 1150 foot contour. The actual hydrography covered only that area up to the 1115 foot contour, but all rocks, reefs and ledges up to the 1150 foot contour were located and an elevation determined except for the exceptions noted in the previous section of this report. Above the 1150 foot contour this survey is not adequate for charting.

M.AIDS TO NAVIGATION

There are reef markers on some of the numerous reefs and ledges. All reef markers were located. The reef markers are placed at the highest part of the reef and are maintained by the National Park Service .

The standard National Park Service reef marker is a hard, black, rubber cylinder which is 4.0 feet to 4.5 feet in length with an outside diameter of 6 inches. It is bolted to a pipe which is embedded in concrete at the top of the reef. None of the reef markers are lighted. The top two feet of the reef marker is flexible enough so that if hit by a boat, it would bend and probably not inflict any serious damage to the boat.

A lighted beacon is maintained at East Point by the National Park Service. The beacon is bolted to a concrete pedestal which is 10 inches square and 2.5 feet high. It was located by the U.S. Geological Survey with the same accuracy as their surrounding triangulation. The position as determined by the Geological Survey in 1948 is:

Lat.	36°07'54.68"N
Long.	114°22'46.12"W

Appd.

This beacon was used as signal LIT.

N.STATISTICS

LAUNCH	NO. OF POSITIONS	NAUTICAL MILES OF SOUNDING LINES
CS1177	1201	196.4
CS 183	1154	106.9
TOTAL--	2355	303.3

Total Area of Survey 20 sq. NM

Total No. of Bottom Samples 19

A Bristol bubbler gage located at Boulder Wash provided lake level control for this sheet.

Data for reduction of soundings were taken directly from the marigram without time or range corrections. See appendix A for additional information concerning tides.

O.MISCELLANEOUS

A hand level and a Zeiss level were used to run levels to points above the existing lake level.

The elevations shown in the sounding volumes and on the boat sheet for reefs which are marked by National Park Service reef markers are to the top of the reef and not to the top of the reef marker.

The term shoreline as used in this report and in the sounding volumes is the shoreline of the lake at the time of hydrography which for this sheet varies from a lake level of 1143 to a lake level of 1102.

The following schemes were used for placing contours on the boat sheet.

Contour (feet above MSL)	Color
1200	black
1150	red
1100	orange
1050	green
1000	red
950	blue
900	red
850	orange
800	blue

Respectfully submitted,

George L. Fernandez

FOR: Richard H. Allbritton
LTJG., USC&GS

APPENDIX A

TIDAL NOTE

PROJECT OPR-443

Gage Location: Boulder Wash, Lake Mead, Nevada
Lat. 36° 10.28'
Long. 114° 31.18'

Gage Type: Bristol Bubbler Gage

Staffs Zeros:

Staff Number	Date Established	Elevation
1	12 July 1963	1153.412
2	30 August 1963	1142.086
3	13 November 1963	1132.766
4	17 January 1964	1124.260
5	30 March 1964	1114.125
6	23 June 1964	1107.007
7	23 July 1964	1094.771
8	23 September 1964	1088.165

Gage was used to control sheets 12-5-63, 12-6-63, and 12-5-64. No time or height corrections were applied to the results obtained from the gage for the reduction of soundings, except for the following days; November 20th, 21st, 22nd, 26th, and the 27th 1963. Hoover Dam gage was used with a -0.1ft correction applied to the heights, due to the gage at Boulder Wash out of operation necessitated this action.

105th meridian time was used from July 1963-through October 1963. 120th meridian time was used from November 1963 through the completion of the project.

APPENDIX B

The basic control on H-8776 (HFP 12-5-63) was USGS third-order triangulation. Additional topographic stations were located with a Wild T-2. Hydrographic signals were located with a sextant.

The majority of the signals were located as intersecting stations. The computations and field data will be submitted with the control sheets. The computations are in a loose leaf binder and are divided into sections by boat sheet.

The order of material ina section, designated by a boat sheet field number, is as follows:

1. Abstract of Directions (Form 470)
2. List of Preliminary Grid Azimuth (Form 758) Reference to the proper field volume and page (Form 251, Observation of Horizontal Directions) is made on the form.
3. Position of Intersected Station (Form 157). The signals are arranged in alphabetical order in this subsection.

The source of this list of signals is (topo. & hydro.) is Master Control Sheet 12-5-63 except as noted.
(This list includes signals used thru y-day Vol. 11).

TRIANGULATION

ALE	(N-106,1948)	JIM	(N-32,1948)
DAN	(N-105,1948)	JOE	(N-38A,1948)
FEZ	(A-32, 1948)	LAG	(N-37,1948)
GAL	(A-25A,1948)	MAR	(N-34,1948)

APPENDIX B(cont.)

TRIANGULATION(cont.)

NUT	(A-27A,1948)	TEX	(A-29,1948)
ORB	(A-27B,1948)	TRI	(A-28,1948)
RED	(N-36 ,1948)	TOM	(N-38,1948)
SUB	(N-33 ,1948)		

TOPOGRAPHY

AGO	PAL
ALL	PIN
ALP	SET
BIG	SKY
BUD	SUM
CAM	TAP
GYP	TEA
HON	TED
HOW	TUB
HUR	VEX
JAR	WAS
LIT	YAK
MAG	

APPENDIX B(cont.)

HYDRO

ABE

AMY

COO

ICE

JAY

MOE

ROC

RUB

FATHOMETER CORRECTIONS
HYDROGRAPHIC SURVEY H- 8776 - (12-5-63)
Lake Mead, Nevada - Arizona

Vessel: Launch CS-183
Day Letters: a
Fath. No: DE-723 - #265

A SCALE

0.0 to 20.4	+0.6
20.6 to 34.0	+0.8
34.2 to 50.0	+1.0

B SCALE	+0.8
C SCALE	+0.2
D SCALE	0.0
E SCALE	-0.2
F SCALE	-0.6

Vessel: Launch CS-183
Day Letters: b,c,d,e,f,g,h,j,k
Fath. No: DE-723 - #263

A SCALE

6.0 to 11.0	+0.6
11.0 to 18.0	+0.8
18.0 to 26.5	+1.0
26.5 to 42.0	+1.2
42.0 to 48.0	+1.4

B SCALE

48.0 to 51.5	+1.0
51.5 to 81.5	+1.2
81.5 to 86.0	+1.4
86.0 to 90.0	+1.6

C SCALE	+1.0
D SCALE	+0.8
E SCALE	+0.4
F SCALE	0.0
G SCALE	+1.1
H SCALE	+0.9
I SCALE	+0.5
J SCALE	+0.1

Vessels: Launch CS-183
Day Letters: j (pos. 30 to end of day) , l,m (1 thru 56)
Fath. No: DE-723 - #543

A SCALE

6.0 to 7.5	+0.4
7.5 to 10.5	+0.6
10.5 to 15.5	+0.8
15.5 to 20.0	+1.0
20.0 to 24.5	+1.2
24.5 to 39.0	+1.4
39.0 to 48.0	+1.6

B SCALE

48.0 to 54.0	+1.0
54.0 to 73.0	+1.2
73.0 to 90.0	+1.4

C SCALE	+0.8
D SCALE	+0.8
E SCALE	+0.6
F SCALE	+0.4
G SCALE	+0.4

FATHOMETER CORRECTIONS
HYDROGRAPHIC SURVEY H-8776 - (12-5-63)
Lake Mead, Nevada - Arizona

Vessel: launch CS-183
Day Letters: m (pos. 57 thru 98)
Fath. No: DE-723 - #263

A SCALE

6.0 to 13.0	+0.8
13.0 to 24.0	+1.0
24.0 to 34.5	+1.2
34.5 to 42.0	+1.4
42.0 to 48.0	+1.6

B SCALE

48.0 to 73.5	+1.2
73.5 to 82.0	+1.4
82.0 to 90.0	+1.6

C SCALE	+1.2
D SCALE	+1.2
E SCALE	+1.0
F SCALE	+0.6

B SCALE

48.0 to 50.5	+0.6
50.5 to 55.0	+0.8
55.0 to 74.5	+1.0
74.5 to 78.5	+1.2
78.5 to 82.5	+1.4
82.5 to 90.0	+1.6

C SCALE	+1.6
D SCALE	+0.2
E SCALE	+0.3
F SCALE	0.0
G SCALE	+0.5
H SCALE	-0.5
I SCALE	-0.1

Vessel: Launch CS-183
Day Letters: n
Fath. No: DE-723 - #549

A SCALE

6.0 to 10.0	+0.6
10.0 to 18.0	+0.8
18.0 to 24.0	+1.0
24.0 to 30.0	+1.2
30.0 to 36.0	+1.4
36.0 to 41.5	+1.6
41.5 to 45.5	+1.8
45.5 to 48.0	+2.0

FATHOMETER CORRECTIONS
HYDROGRAPHIC SURVEY H- 8776 - (12-5-63)
Lake Mead, Nevada - Arizona

Vessel: Launch CS-183
Day Letters: p,q,r;s;t,u,v,w,x,y
Fath. No: DE-723 - #263

A SCALE

6.0 to 9.0	+0.8
9.0 to 13.0	+1.0
13.0 to 17.5	+1.2
17.5 to 22.5	+1.4
22.5 to 30.0	+1.6
30.0 to 37.0	+1.8
37.0 to 42.0	+2.0
42.0 to 45.5	+2.2
45.5 to 48.0	+2.4

B SCALE

48.0 to 51.5	+2.0
51.5 to 66.0	+2.2
66.0 to 79.5	+2.4
79.5 to 85.5	+2.6
85.5 to 90.0	+2.8

C SCALE	+2.3
D SCALE	+1.8
E SCALE	+0.9
F SCALE	+0.7
G SCALE	+0.5
H SCALE	+0.3

Vessel: Launch CS-1177
Day Letters: a,b,c,d,e,f,g,h
Fath. No: DE- 723 - #549

A SCALE

0.0 to 27.0	0.0
27.0 to 40.0	+0.2
40.0 to 47.0	+0.4
47.0 to end	+0.6

B SCALE

48.0 to 72.0	+0.8
72.0 to end	+1.0

C SCALE	+1.3
D SCALE	+1.7
E SCALE	+1.8
F SCALE	+2.1
G SCALE	-0.5
H SCALE	-0.2
I SCALE	-0.2
J SCALE	-0.3
K SCALE	+0.3

FATHOMETER CORRECTIONS
HYDROGRAPHIC SURVEY H-8776 - (12-5-63)
Lake Mead, Nevada - Arizona

Vessel: Launch CS-1177
Day Letters: k
Fath. No: DE-723 - #263

A SCALE

Depth (ft.)	Corr. (ft.)
0.0 to 42.0	0.0
42.1 to end	-0.2

B SCALE

42.0 to 75.0	0.0
75.1 to 82.0	-0.2
82.1 to end	-0.4

C thru K SCALE

90.0 to 180.0	-0.4
180.0 to 265.0	-1.0
265.0 to 325.0	-1.5
325.0 to 390.0	-2.0
390.0 to 460.0	-2.5
460.0 to end	-3.0

Vessel: Launch CS- 1177
Day Letters: l
Fath. No: DE-723 - #265

A SCALE

0.0 to 18.9	0.0
18.9 to 37.2	+0.2
37.2 to 50.0	+0.4

B SCALE

40.0 to 62.2	0.0
62.2 to 90.0	+0.2

C SCALE	0.0
D SCALE	-0.3
E SCALE	-0.4
F SCALE	-0.9
G SCALE	+0.2
H SCALE	-0.1

FATHOMETER CORRECTIONS
HYDROGRAPHIC SURVEY H-8776 - (12-5-63)
Lake Mead, Nevada - Arizona

Vessel: launch CS-1177
Day Letters: m
Fath. No: DE-723 - #265

A SCALE

6.0 to 13.5	+0.2
13.5 to 21.0	+0.4
21.0 to 30.5	+0.6
30.5 to 44.0	+0.8
44.0 to 48.0	+1.0

B SCALE

48.0 to 59.5	+1.0
59.5 to 74.5	+1.2
74.5 to 84.0	+1.4
84.0 to 90.0	+1.2

C SCALE	+0.7
D SCALE	+0.5
E SCALE	+0.3

B SCALE

48.0 to 52.5	+0.8
52.5 to 67.5	+1.0
67.5 to 77.0	+1.2
77.0 to 84.0	+1.4
84.0 to 90.0	+1.6

C SCALE	+1.7
D SCALE	+1.2
E SCALE	+0.9
F SCALE	+0.6

Vessel: launch CS-1177
Day Letters: n
Fath. No: DE-723 - #549

A SCALE

6.0 to 12.0	+0.6
12.0 to 18.0	+0.8
18.0 to 23.5	+1.0
23.5 to 28.5	+1.2
28.5 to 33.5	+1.4
33.5 to 39.0	+1.6
39.0 to 45.0	+1.8
45.0 to 48.0	+2.0

APPENDIX D

Approval sheet to accompany Hydrographic sheet H-8776
(HFP 12-5-63)

Project OPR-443

The records, corrections and all field and office work ~~was~~ were supervised by

P.A.STARK, CDR.,USC&GS and
H.E.McCALL,LT.,USC&GS

This descriptive report was written by
RICHARD H. ALLBRITTON,LT.(jg),USC&GS and
GUY F.TREFETHEN

The report and records for this survey are complete to the best of my knowledge.

Approved and forwarded,

Harold E McCall

H.E.McCALL,LT.,USC&GS

Officer - in - Charge

FORM C&GS-712
(3-9-64)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

March 11, 1968

Nautical Chart Division: R. H. Carstens

Plane of reference approved in
12 volumes of sounding records for

HYDROGRAPHIC SHEET 8776

Locality: Lake Mead, Arizona - Nevada

Chief of Party: P. A. Stark; H. E. McCall (1963-64)

Plane of reference is mean lower lake level (which is 1100 feet above sea-level datum)

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

Hoover Dam
Boulder Wash

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

Remarks

J. M. Symons
Chief, Tides and Currents Branch

USCOMM-DC 6680-P64

FORM 197
(3-16-55)

GEOGRAPHIC NAMES

Survey No. H-8776

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	
Benelli Bay										1
Detrital Reefs										2
East Gypsum Bay										3
East Point										4
Gypsum Reefs										5
Middle Point										6
Middle Pt. Islands										7
Napoleons Tomb										8
West Gypsum Bay										9
										10
		Names approved								11
		April 6, 1967								12
		[illegible]								13
										14
										15
										16
										17
										18
										19
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										23
										24
										25
										26
										27

FORM C&GS-946
(REV. 11-65)
(PRESC. BY
HYDROGRAPHIC
MANUAL 20-2,
6-94, 7-13)

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY
NAUTICAL CHART DIVISION

HYDROGRAPHIC SURVEY STATISTICS

HYDROGRAPHIC SURVEY NO. 8776

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET		BOAT SHEETS	1
DESCRIPTIVE REPORT	1	OVERLAYS	

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES						
CAHIERS	1					
VOLUMES	12					
BOXES						

T-SHEET PRINTS *(List)*

SPECIAL REPORTS *(List)*

1 Cahier - Misc. Data filed with H-8772.

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				
POSITIONS CHECKED				
POSITIONS REVISED				
DEPTH SOUNDINGS REVISED				
DEPTH SOUNDINGS ERRONEOUSLY SPACED				
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED				
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS				
JUNCTIONS				
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS				
SPECIAL ADJUSTMENTS				
ALL OTHER WORK				
TOTALS				

PRE-VERIFICATION BY	BEGINNING DATE	ENDING DATE
VERIFICATION BY	BEGINNING DATE	ENDING DATE
REVIEW BY	BEGINNING DATE	ENDING DATE

USCOMM-DC 36271-P65

FORM C&GS-946A
(REV. 11-65)
(PRES. BY HYDROGRAPHIC MANUAL, 6-94)

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

VERIFIER'S REPORT

HYDROGRAPHIC SURVEY, H- 8776

INSTRUCTIONS - This form serves to identify items of a check list in verification together with items which are separately reported to the Reviewer. The form is not to be forwarded to the Reviewer. A report, which is prepared for the Reviewer, should identify items by number and letter and will be filed in the Descriptive Report until the survey is reviewed.

CL - Check List Items: should be checked as having been completed during the verification processes.

R - Report Item: This column refers to those items reported to the reviewer and is used to indicate the items discussed.

Part I - DESCRIPTIVE REPORT	CL	R
Note: The verifier should first read the Descriptive Report for general information and problems.		
1. The Descriptive Report was consulted, paragraphs checked if found satisfactory, and notations were made in soft black pencil regarding action taken. Remarks Required: -- None		
2. Soundings originating with the survey and mentioned in the Descriptive Report have been verified and checked in soft black pencil, including latitude and longitude, together with position identification. Remarks Required: -- None		
3. All reference to survey sheets mentioned in the Descriptive Report should include registry number and year. Remarks Required: -- None		
Part II - SHORELINE AND SIGNALS		
4. Source of shoreline signals Remarks Required: -- List all surveys		
a. Give earliest and latest dates of photographs		
b. Field inspection date		
c. Field Edit date		
d. Reviewed-Unreviewed		
5. The transfer of contemporary topographic information was carefully examined and reconciled with the hydrography. Remarks Required: -- Discuss remaining differences.		
6. The plotting of all triangulation stations, topographic stations and hydrographic signals has been checked and noted in processing stamp No. 42 on the smooth sheet. Remarks Required: -- None		
7. Objects on which signals are located and which fall outside of the high-water line have been described on the sheet. Remarks Required: -- List those signals still unidentified.		
Part III - JUNCTIONS		
Note: Make a cursory comparison preliminary to inking soundings in area of overlap.		
8. All junctions of contemporary or overlapping sheets were transferred in colored ink and overlapping curves were made identical. Remarks Required: -- None		
9. The notation in slanted lettering "JOINS H---- (19)" was added in colored ink for all verified contemporary adjoining or overlapping sheets. Those not verified are shown in pencil. Remarks Required: -- None		

Part III - JUNCTIONS (Continued)	CL	R
10. Junctions with contemporary surveys were satisfactory except as follows: Remarks Required: -- Consider conditions after adjustments have been made; note adjustments made. Make special notes of **Butt** junctions and areas which are **SUPERSEDED.**		
Part IV - VOLUMES		
11. 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 and exceptions noted in the volumes. Remarks Required: -- None		
12. Condition of sounding records was satisfactory except as follows: Remarks Required: -- Mention deficiencies in completeness of notes or actions for the following:		
(a) rocks		
(b) line turns		
(c) position values of beginning and ending of lines		
(d) bar check or velocity correctors		
(e) time recording		
(f) notes or markings on fathograms		
(g) was reduction of soundings accurately done?		
(h) was scanning accurate?		
(i) were peaks at uneven intervals missed?		
(j) were stamps completed?		
(k) references to adjacent features		
Part V - PROTRACTING		
13. All positions verified instrumentally were check marked in color in the sounding records, and verifier initialed the processing stamp. Remarks Required: -- None		
14. The protracting and plotting of all unsatisfactory crossings were verified. Remarks Required: -- None		
15. All detached positions locating **critical** soundings, rocks, buoys, breakers, obstructions, kelp, etc., were verified and the position numbers are legible. Remarks Required: -- None		

Part V - PROTRACTING (Continued)	CL	R
16. The protracting was satisfactory except as follows: Remarks Required: -- Refers to protracting in general except for specific faults repeated often, or faults in control information, which required considerable replotting or adjustments.		
17. The protractor has been checked within the last three months. Remarks Required: -- Date of check, type of protractor and number.		
Part VI - SOUNDINGS		
18. All soundings are clear and legible, and critical soundings are a little larger than adjacent soundings. Remarks Required: -- None		
19. Sounding line crossings were satisfactory except as follows: Remarks Required: -- Discuss adjustments.		
20. The spacing of soundings as recorded in the records was closely followed; Remarks Required: -- None		
21. The scanning, reduction, spacing, plotting of questionable soundings have been verified. Remarks Required: -- None		
22. The smooth plotting of soundings was satisfactory except as follows: Remarks Required: -- Refer to legibility, errors in spacing, and errors in numbers - but not to errors in scanning.		
Part VII - CURVES		
23. The depth curves have been inspected **before** inking. Remarks Required: -- By whom was the penciled curves inspected.		
24. The low-water line and delineation of shoal areas have been properly shown in accordance with the following: a. From T-Sheet in dotted black lines b. From soundings in orange c. Approximate position of sketched curve is dashed orange d. Approximate position of shoal area **not sounded** in black dashed Remarks Required: -- None		
25. Depth curves were satisfactory except as follows: (This statement should not refer to the manner in which the curves were drawn). Remarks Required: -- Indicate areas where curves could not be drawn completely because of lack of soundings. For some inshore areas a general statement is sufficient.		

Part VIII - AIDS TO NAVIGATION	CL	R
26. All fixed aids located together with those on the contemporary topographic sheets, have been shown on the survey. Remarks Required: -- Conflicts of any nature listed.		
27. All floating aids listed in the Descriptive Report should be verified and checked in soft black pencil, including latitude and longitude and position identification. Remarks Required: -- None		
Part IX - BOAT SHEET		
28. The boat sheet was constantly compared with the smooth sheet with reference to notes, position of sounding lines and supplemental information. Remarks Required: -- None		
29. Heights of rocks awash were correctly reduced and compared with topographic information. Remarks Required: -- Note excessive conflicts with topographic information.		
Part X - GENERAL		
30. All information on the sheet is shown in accordance with figures 82 and 83 in the Hydrographic Manual (Pub. 20-2). Remarks Required: -- None		
31. Unnecessary pencil notes have been removed from the sheet. Remarks Required: -- None		
32. Degree, minute values and symbols have been checked; also electronic distance arcs have been properly identified and checked on the smooth sheet. Remarks Required: -- None		
33. The bottom characteristics are adequately shown. Remarks Required: -- None		
Part XI - NOTES TO THE REVIEWER		
34. Unresolved discrepancies and questionable soundings.		
35. Notation of discrepancies with photogrammetric survey inserted in report of unreviewed photogrammetric survey or on copy.		
36. Supplemental information.		

Verified by	Date

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

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-8776

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
661-SC	12-8-66	Chester F. Yupin	~~Full~~ Part Before ~~After Verification~~ Review Inspection Signed Via
			Drawing No.
			adequately
18687A&B	12-12-79	Gregory B. Norris	~~Full Part~~ Before ~~After Verification~~ Review Inspection Signed Via
(661-sc)		RH	Drawing No. 8A Exam; Considered adequately appl'd
			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
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			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.