9248

Diag. Cht. No. 5101-4.

FORM C&GS-504

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. RA-10-4-71 *Office No.* H-9248

LOCALITY

State California

General locality Gulf of Santa Catalina

Locality Del Mar

19 71

CHIEF OF PARTY

R. F. Lanier

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DATE 3-20-74

USCOMM-DC 37022-P66

9248

FORM C&GS-537
(5-66)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO. H-9248

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

FIELD NO. RA-10-4-71

State: CALIFORNIA

General locality: Gulf of Santa Catalina

Locality: Del Mar

Scale: 1:10,000   Date of survey: 7-22 October 1971

Instructions dated: 20 August 1971   Project No. OPR-411-RA-71

Vessel: NOAA Ship RAINIER

Chief of party: Capt. Roger F. Lanier

Surveyed by: Lt(jg) M. L. Adams, Lt(jg) W. C. Turnacliff, Lt(jg) N. W. Wright, Ens. J. R. Faris

Soundings taken by echo sounder, [illegible] Raytheon DE-723 (S/N 253), Ross Model 5000 (S/N 1040 & 1041)

Graphic record scaled by: Ship's Personnel

Graphic record checked by: Ship's Personnel

Positions verified [illegible] by: Bruce Alan Olmstead   Automated plot by: Gerber PMC Digital Plotter

Soundings verified [illegible] by: Bruce Alan Olmstead

Soundings in fathoms [illegible] at [illegible] MLLW

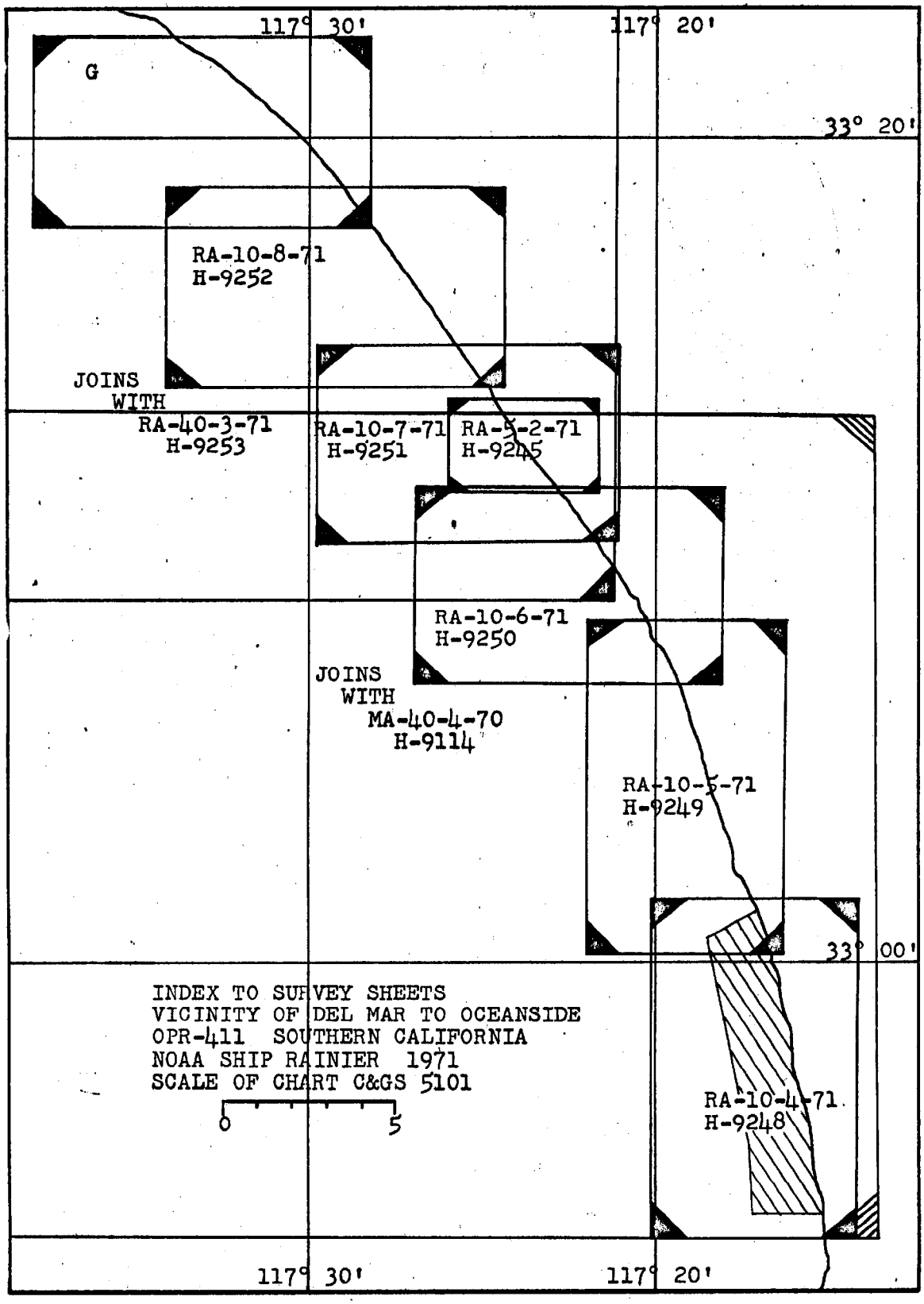
REMARKS:

The Modified Transverse Mercator Projection, soundings, and position numbers on the boatsheet were plotted by the RAINIER's PDP8/e computer and COMPLOT plotter.

Applied to [illegible] 5-29-74 [illegible]

[illegible] 5/01 [illegible]

Exam for Crit Corr. 5/31/74


117° 30'
117° 20'
33° 20'
G
RA-10-8-71
H-9252
JOINS
WITH
RA-40-3-71
H-9253
RA-10-7-71
H-9251
RA-5-2-71
H-9245
RA-10-6-71
H-9250
JOINS
WITH
MA-40-4-70
H-9114
RA-10-5-71
H-9249
33° 00'
INDEX TO SURVEY SHEETS
VICINITY OF DEL MAR TO OCEANSIDE
OPR-411 SOUTHERN CALIFORNIA
NOAA SHIP RAINIER 1971
SCALE OF CHART C&GS 5101
0
5
RA-10-4-71
H-9248
117° 30'
117° 20'

A. PROJECT

This survey was conducted in accordance with PROJECT INSTRUCTIONS: OPR-411-RA-71 dated 20 August 1971. Change No. 1 made 7 September 1971 is the only change to the project instructions that is applicable to this survey.

B. AREA SURVEYED

H-9248, 1:10,000 scale, covers the coastal vicinity near Del Mar, California. It is bounded by latitudes 32° 54' 00"N and 33° 01' 00"N and longitudes 117° 15' 30"W and 117° 18' 30"W. This sheet includes approximately 7 miles of shoreline composed predominantly of sandy beach.

The survey began on 7 October 1971 (J.D. 280) and was continued to completion on 22 October 1971 (J.D. 295). The field edit was completed by the NOAA Ship DAVIDSON in 1970.

Prior surveys covering the area include H-5649 & H-5664, 1934, 1:10,000 scale. Junctions were made with the following contemporary surveys: also H-4367 & H-4266, 1924 & 1922-1923, 1:40,000.

Registry No.	Field No.	Scale	Date
H-9107	DA-10-3-70	10,000	1970
H-9108	DA-40-1-70	40,000	1970
H-9114	MA-40-4-70	40,000	1970
H-9249	RA-10-5-71	10,000	1971

C. SOUNDING VESSEL

Soundings on H-9248 (RA-10-4-71) were obtained by two Bertram launches, RA-3 and RA-5, and by one Uniflite launch, RA-6. With the exception of crosslines, the color of ink used on the boat sheet denotes the launch that obtained the soundings. Soundings and position numbers using red ink were obtained by RA-3; those in blue ink were obtained by RA-5; and those in black ink were obtained by RA-6. In addition, position numbers 7050 to 7073 were obtained by RA-5 and are plotted in green ink. For crosslines, ink was used which would contrast with the regular soundings and consequently the crossline soundings cannot be keyed to a particular launch by color alone. All bottom samples are plotted

in green ink.

Each launch was assigned a block of position numbers which can be used to denote the particular work of an individual launch. Launch RA-3 used position numbers from 5001 to 5326. RA-5 used position numbers from 7001 to 7671, and RA-6 used position numbers from 1 to 1090 and 9001 to 9052. A listing of the specific position numbers used is included in the appendix to this report.

D. SOUNDING EQUIPMENT

Launch RA-3 used a Raytheon DE-723 Fathometer (Serial No. 253) in depths from 0-30 fathoms. Bar checks were taken twice daily when sea conditions would permit accurate results. A maximum depth of seven fathoms was used and the results abstracted. The initial value was scanned continuously during the survey. It was again inspected when the fathogram was scanned and the results were abstracted. Fine arc and AF checks were made routinely. Phase comparisons were omitted as only A scale was used. A 0.3 fathom draft correction was used for RA-3. All fathometer corrections were compiled on the Transducer Correction/Table Indicator (TC/TI) tape.

Launch RA-5 used Ross Model 5000 Fathometer (Serial No. 1041) in depths from 0-30 fathoms. Bar checks were taken twice daily when sea conditions would permit accurate results. A maximum depth of seven fathoms was used and the results abstracted. The initial value was inspected continuously during the survey. No abstract of initial corrections was compiled since any observed difference in the initial value appeared only on the analog record and not on the digitized record. In check scanning the fathogram the initial correction was considered before reading the analog value. The fathogram was scanned continuously in the field and compared to the Hydrolog digitized values. Judicious use of the blanking function was made to eliminate spurious returns. Phase comparisons were omitted as only one scale was used. A 0.3 fathom draft correction was used for RA-5. All fathometer corrections were compiled on the Transducer Correction/Table Indicator (TC/TI) tape.

Launch RA-6 used Ross Model 5000 Fathometer (Serial No. 1040) in depths from 0-135 fathoms. With the following minor exceptions, sounding equipment and

operation on RA-6 was identical to RA-5. Due to the greater depths encountered, internal phase comparisons were made and the equipment adjusted to have zero phase correctors. A 0.4 fathom draft correction was used for the Uniflite launch (RA-6).

Velocity corrections were computed from bar checks and water temperature and salinity values obtained from a Nansen Cast taken on 14 November 1971 in latitude 33° 12.3'N, longitude 117° 42.6'W. Velocity correction tables were made and entered on tape and applied via the TC/TI tape.

All sounding equipment operated properly throughout the survey with no equipment produced errors which would affect the accuracy of the soundings. For further information on sounding equipment and corrections refer to Sounding Correction Report, OPR-411, NOAA Ship RAINIER, 1971.

E. SMOOTH SHEET

The smooth sheet will be plotted by the Pacific Marine Center, Electronic Data Branch.

The 22" x 64" paper boat sheet was produced aboard the NOAA Ship RAINIER using the COMPLOT DP-3 plotter coupled with the Digital Equipment Corporation PDP-8/e computer. A Modified Transverse Mercator projection was produced, with the Central Meridian at 118° 25' 00"W and the control latitude at 3,500,000 meters N. Boat sheet soundings and position numbers were also plotted by the computer/plotter. Two overlays were produced to clarify developments; one centered at 32° 57' 00"N and 117° 16' 30"W, and the other at 32° 59' 30"N and 117° 17' 00"W.

F. CONTROL

Decca Hi-Fix was used for horizontal control and was operated in the hyperbolic mode on Type A moderate power, transmitting on the frequency of 1799.6 KHZ. The stations operated satisfactorily and caused no problems during the work on this survey.

The master station was located on a 75 foot bluff midway between Newport Beach and Laguna Beach, California. A 35 foot whip antenna was erected approximately 100 feet above sea level on traverse station MUDDY, 1971 (latitude 33° 34' 08.845"N, longitude 117° 50' 00.744"W).

Slave station 1 was located on San Clemente Island. A 35 foot whip antenna was erected approximately 1850 feet above sea level on RM 2 of triangulation station ROGER, 1971 (RM 2 position: latitude 32° 53' 45.353"N, longitude 118° 27' 44.128"W). The hyperbolic rates established by the master station and slave station 1 were drawn on the boat sheet using green ink.

Slave station 2 was located on Point Loma near San Diego, California. A 35 foot whip antenna was erected approximately 80 feet above sea level on RM 1 of traverse station JUMP 3, 1971 (RM 1 position: latitude 32° 42' 22.995"N, longitude 117° 15' 14.958"W). The hyperbolic rates established by the master station and slave station 2 were drawn on the boat sheet in red ink.

Calibration of Hi-Fix receivers was accomplished by visual three-point sextant fixes on natural objects with previously established geodetic positions. A mathematical solution for three-point fixes was used in conjuction with a Digital Equipment Corporation PDP-8/e computer and program AM 560. The receivers were calibrated at the beginning and end of each day's work and when there was any doubt as to the correct lane count. For further information on Hi-Fix control refer to Hi-Fix Report, OPR-411, NOAA Ship RAINIER, 1971.

G. SHORELINE

Shoreline details were traced directly from manuscripts T-11873(2), T-11874(2), and T-11875(2). Field edit of these manuscripts was completed by the NOAA Ship DAVIDSON in 1970 and the shoreline was inspected during the course of this survey. There are no additions to the field edit as a result of the 1971 inspection. Included in the appendix are copies of NOAA Form 76-40, Nonfloating Aids or Landmarks for Charts for manuscripts T-11874 and T-11875.

Heavy surf prevented development of the Mean Lower Low Water line. The two fathom curve was developed and runs generally parallel to the manuscript shoreline. The shoreline is considered adequate as shown on RA-10-4-71.

H. CROSSLINES

Crosslines on sheet H-9248 (RA-10-4-71) amounted to more than 11% of the total miles run. Crossings are excellent with very few disagreeing by more than 0.5

fathoms and the majority agreeing within 0.2 fathom. No resolutions at crossings are necessary.

I. JUNCTIONS

Junctions with the two neighboring 1:10,000 scale surveys, H-9107 (1970) and H-9249 (RA-10-5-71, 1971), are excellent with no discrepancies greater than 1.0 fathom and the major portion agreeing within 0.5 fathom. No adjustments are necessary at these junctions.

The junction with 1:40,000 scale survey H-9114 (1970) also demonstrates good agreement. Better than three-quarters of the junction soundings agree within 1.0 fathom and there are no discrepancies greater than 2.0 fathoms. In like manner, at the junction with 1:40,000 scale survey H-9108 (1970) the major portion of the soundings agree within 1.0 fathom with some discrepancies to 3.0 fathoms in the steep slope area of La Jolla Canyon. The larger discrepancies evident at the junctions with the 1:40,000 scale surveys result from the magnification of small positioning errors when the soundings are transferred from the smaller scale survey. For this reason, soundings from H-9248 should take precedence over those from the contemporary 1:40,000 scale surveys. No adjustments are considered necessary.

J. COMPARISON WITH PRIOR SURVEYS

The survey compares favorably with the 1:10,000 scale prior surveys H-5649 (1934) and H-5664 (1934) which cover the area of the 1971 survey.* A representative sample of soundings generally agree within one fathom with a very few disagreeing by two fathoms.

* also portions of H-4266 (1922-23) & H-4367 (1924) both 1:40,000 scale.

There were no specific PRE SURVEY REVIEW items to be investigated in the area of this survey apart from the general notes covering OPR-411.

K. COMPARISON WITH CHART

Comparison was made with 1:100,000 scale C&GS Chart 5060 (4th Ed., 6/13/70) in all applicable areas and with 1:234,270 scale C&GS Chart 5101 (15th Ed., 2/6/71) in areas not covered by the 1:100,000 scale chart (north of 33° 00' 00"N latitude). The large scale differences between the survey and the published charts makes detailed sounding comparisons difficult, however the survey demonstrates good general agreement with the charts and no specific revisions are necessary. There were no

newly found dangers to navigation on this survey.

L. ADEQUACY OF SURVEY

Survey H-9248 is complete and adequate to supersede prior surveys for charting.

M. AIDS TO NAVIGATION

No floating aids to navigation exist within the confines of this survey. Nonfloating aids or landmarks for charts are listed on copies of NOAA Form 76-40, included in the appendix. Comparison with C&GS Chart 5060 (4th Ed., 6/13/70) indicates that all included aids and landmarks are currently charted with one exception. The Tower of Mansion back of Del Mar is not charted and it is recommended that it be charted as a landmark. The sewer outfall shown in latitude 33° 01'N, longitude 117° 17'W on C&GS Chart 5101 (15th Ed., 2/6/71) could not be located during the survey and no information was obtained regarding its current condition. It should be retained on the chart until such information can be obtained.

N. STATISTICS

Survey H-9248 contains 283.6 nautical miles of sounding line covering an area of approximately 11.0 square nautical miles. Fifteen bottom samples were taken. A tabulation of statistics follows:

Launch	Miles Hydro	No. of Positions	Bottom Samples
RA-3	40.0	326	0
RA-5	97.5	626	9
RA-6	146.1	1122	6
Total	283.6	2074	15

O. DATA PROCESSING

Launches RA-5 and RA-6 were equipped with a NOS Hydrolog system while RA-3 employed the standard method of data collection with a manual data logger being used on time in place of a sounding volume. The data collected by RA-3 was later converted to Hydroplot/Hydrolog master tape format using program AM 303. The data from RA-5 and RA-6 was recorded in master tape format using the on-line Hydrolog system controlled by program AM 170.

Corrector tapes were prepared using the standard Hydroplot/Hydrolog format for all peaks, deeps, and sounding and control changes.

Separate master tapes and corrector tapes were prepared for each day. Standard formats, as specified in the INSTRUCTION MANUAL, Automated Hydrographic Surveys, were used for the TC/TI and Velocity Correction tapes. NOTE: TRA corrector values and velocity table numbers shown on the Hydroplot/Hydrolog tapes are to be ignored for processing at PMC. The correct data is listed on the TC/TI tape.

P. RECOMMENDATIONS

None.

Q. REFERENCES TO REPORTS

1. Corrections to Echo Soundings, OPR-411, NOAA Ship RAINIER, 1971.
2. Hi-Fix Report, OPR-411, NOAA Ship RAINIER, 1971.
3. Geodetic Surveying Operations, OPR-411, NOAA Ship RAINIER, 1971.
4. Tide Report, OPR-411, NOAA Ship RAINIER, 1971.

Respectfully submitted,

J. Richard Faris

J. Richard Faris
ENS, NOAA

NUMERICAL LISTING ✓

CALIBRATION SIGNALS FOR H-9248

SOUTHERN CALIFORNIA COAST

Number	Origin
001	SAN DIEGO T.V. STATION KFMB MAST, 1962
002	SAN DIEGO T.V. STATION KOGO MAST, 1962
003	EASTER CROSS "NEW", 1955
005	SOUTH EAST RANGE U.S.N., 1932
006	SOUTH WEST RANGE U.S.N., 1933
007	TORREY, 1933
008	NORTH EAST RANGE U.S.N., 1933
009	NORTH WEST RANGE U.S.N., 1933
015	DEL MAR, STACK ON COAST INN, 1933
017	TOWER OF MANSION BACK OF DEL MAR, 1933

ABSTRACT OF POSITION NUMBERS

Vessel	Julian Day	Position Numbers
RA-3	280	5001-5286
	281	5287-5326
RA-5	286	7001-7041
		7042-7049 - Reject
		7050-7073
	287	7074-7301
		7302-7306 - Reject
		7307-7320
	288	7321-7495
	290	7496-7514
		7515-7529 - Reject
	291	7530-7652
		7653-7671 - Reject
	292	7673-7761
RA-6	280	01-279
	281	280-354
	286	355-418
	287	419-669
		670-671 - Reject
		672-684
	288	685-695
		696-746 - Reject
		747-914
	290	916-998
		999-1003 - Reject
		1004-1034
	293	1035-1090
		9001-9028
	294	1035-1050 *
		9029-9052
	295	1051-1075 *

* Duplicate position numbers

PARAMETER TAPE LISTINGS

OPR-411-RA-71

RA-10-4A-71

FEST=119000
CLAT=3500000
CMER=118/25/0
GRID=30
PLSCL=10000
PLAT=32/53/30
PLON=117/14/05
MLAT=33/34/08.845
MLON=117/50/00.744
S1LAT=32/53/45.353
S1LON=118/27/44.128
S2LAT=32/42/22.995
S2LON=117/15/14.958
Q=1799.6
VESNO=2126
YR=71

RA-10-4B-71
FEST=119000
CLAT=3500000
CMER=118/25/0
GRID=30
PLSCL=10000
PLAT=32/57/15
PLON=117/14/50
MLAT=33/34/08.845
MLON=117/50/00.744
S1LAT=32/53/45.353
S1LON=118/27/44.128
S2LAT=32/42/22.995
S2LON=117/15/14.958
Q=1799.6
VESNO=2120
YR=71

Apparently in error as D & E says HiFix and curves are hyperbolic computations are for hyperbolic

FORM # 3 FIG. 7

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

~~(RANGE - RANGE)~~

(1) PROJECT No. 411 (2) H- No. 9248 (3) FIELD No. RA-10-4-71

(4) TYPE OF CONTROL: ____ SHORAN, ____ RAYDIST, ✓ HI-FIX, ____ RADAR
FREQUENCY (FOR CONVERSION OF RAYDIST OR HI-FIX LANES TO METERS) 1799.6 kHz

(5) RANGE ONE (R1)
STATION NAME ROGER, 1971
LATITUDE 32 ° 53 '45.353 "N
LONGITUDE 118 ° 27 '44.128 "W

(6) RANGE TWO (R2)
STATION NAME JUMP 3, 1971
LATITUDE 32 ° 42 '22.995 "N
LONGITUDE 117 ° 15 '14.958 "W

(7) ~~AZIMUTH FROM R1 TO R2~~
Master MUDDY 1971
33 ° 34 '08.845 "N
(8) ~~BASELINE LENGTH IN METERS~~
117 ° 50 ' 00.744 "W

(9) LOCATION OF SURVEY WITH RESPECT TO ELECTRONIC BASELINE: CHECK ONE
(TO DETERMINE: IMAGINE AN OBSERVER STANDING AT R1 AND LOOKING DIRECTLY AT R2 --- IF THE SURVEY AREA IS TO THE OBSERVER'S LEFT THEN A IS NEGATIVE; IF THE SURVEY AREA IS TO THE OBSERVER'S RIGHT THEN A IS POSITIVE.)

✓ -A (MINUS) _____ +A (PLUS)

(10) IF SHORAN CORRECTIONS ARE APPLIED BY THE EQUATION, K(X) + C = D, WHERE X IS SHORAN DISTANCE AND D IS TRUE DISTANCE, ENTER THE CONSTANT COEFFICIENTS OF THE EQUATIONS HERE:

K(R1) _____, C(R1) _____, K(R2) _____, C(R2)_____

(11) NUMBER OF VELOCITY TABLES TO BE USED:
___NONE, ___ONE, ___MORE THAN ONE.

(12) _____THIS FORM IS SUBMITTED ONLY AS AN AID IN PREPARING A BOAT SHEET PROJECTION.

_____THIS FORM APPLIES TO ALL DATA ON THIS SURVEY.

_____THIS FORM APPLIES TO PART OF THE DATA ON THIS SURVEY –

TIME AND DATE LIMITATIONS: FROM _____ TO _____

POSITION NUMBER LIMITATIONS: FROM _____ TO _____

THIS IS FORM #3 SHEET #_____ OF _____ SHEETS FOR THIS SURVEY.

(13) OTHER REMARKS:

FORM # 2

PARAMETERS FOR DIGITAL COMPUTING
POLYCONIC PROJECTION

(1) Project No. OPR-411 (4) Requested by _____

(2) H No. H 9248 (5) Ship or Office RAINIER

(3) Field No. (A) RA-10-4-71 (6) Date Required _____

(7) Visual ☐ Pt.(0) or Fathoms (1) ☐ (8) Electronic ☒ (fill out form #3)

(10) XKN (SP 5) Distance from CMER to East Edge (NYX = 1) or West Edge (NYX = 0). (Origin) 3898.9032 Meters

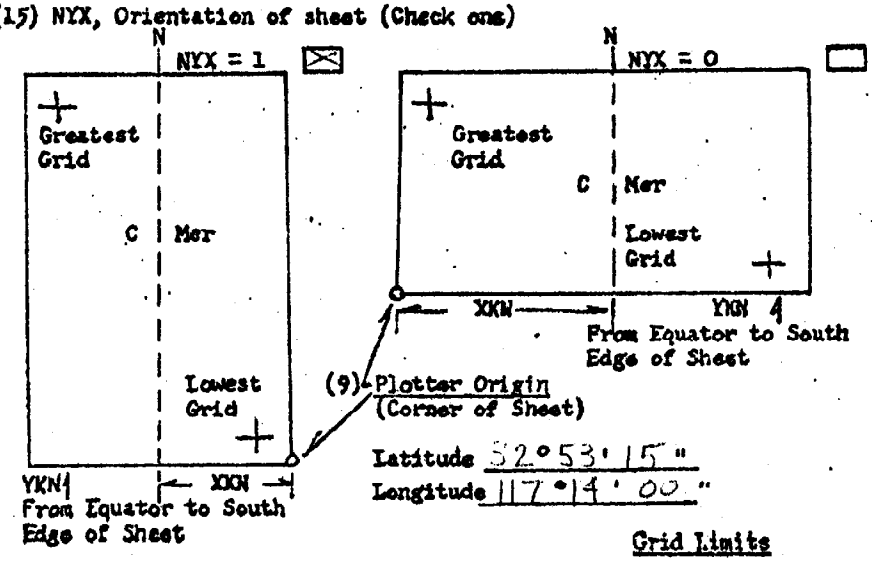
(11) YKN (SP 241) Distance from Equator to South Edge of Sheet. (Origin) 3640,080.577 Meters

(12) Central Meridian 117°16'30"

(13) Survey Scale 1:10000

(14) Size of Sheet (Check one) 36x60 ☒ 42x60 ☐

(15) NYX, Orientation of sheet (Check one)



Latitude 32°53'15"
Longitude 117°14'00"

Grid Limits

(16) Greatest Latitude 32°57'30" (Projection Line Interval Page 4 Hydro Manual)

(17) Lowest Latitude 32°53'30"

(18) Difference 4'00" (19) 1'30"

(20) 16 YSN

(21) Greatest Longitude 117°19'00"

(22) Lowest Longitude 117°14'30" (24) 1'30"

(23) Difference 4'30" (25) 01 XSN

Copy

H 9248

Field No. (A) RA-1A-4-71

Date AUG 23 -73

~~HYDRO II AND~~ PARAMETER CARDS

PARAMETER CARD II

			RDA	XXN	YXN	CMR	SCA	NYX	FCF	JN	YR
Semi major axis of the earth	6,378,206.4	meters	6								
X Constant- Distance from central meridian to origin of plotter SP 5		meters		3							
Y Constant - Distance from equator to origin of plotter SP 2/3		meters			3						
Central Meridian of Projection	117° 45' 00"					4					
Plotter Scale/Survey Scale	*20,96.6876 1: 10200						1				
North/south axis of sheet - to correspond to (Y axis - 0) (X axis - 1) of plotter								1			
Feet/Fathom indicator	0 - feet 1 - fathom								1		
H Identification No.										09	
											7

FCF - 1

PARAMETER CARD III

		YST	XST	DXN	XSN	YSN
Lowest Lat. Intersection	32° 53' 30"	1				
Lowest Long. Intersection	117° 45' 00"		4			
Difference between Grid	5.00			2		
Interval (Long)					01	
Interval (Lat)						16

Computed

Punched

Checked

Date

-HYDRO B PARAMETER CARD

H-No 9248
Field No (A) RA-10-4-71
Date Aug 23, 1973

PARAMETER CARD 1B

		DEG	MIN	SECONDS	1	2	3	4	5	6	7	8	9	10
MASTER R1 HYDRO NAME MUDDY, 1971	LAT	32	34	08.45	1	2	0	8	4	8	8	5	0	6
	LONG	117	59	02.74	4	2	4	2	0	0	7	4	0	6
SLAVE R2 HYDRO NAME ROGER, 1971	LAT	32	53	45.35	-1	1	8	4	2	5	3	5	0	6
	LONG	117	44	12.8	4	2	6	4	6	4	1	3	0	6
SLAVE R3 HYDRO NAME JUMP 3, 1971	LAT	32	42	22.95	1	1	7	7	4	3	6	8	0	6
	LONG	117	15	14.95	4	2	2	1	1	4	9	6	0	6

FREQUENCY	1	7	9	7	6					
H IDENTIFICATION NUMBER						0	0	2	4	3
YEAR OF SURVEY									7	1

APPROVAL SHEET

OPR-411

H-9248 (Field No. RA-10-4-71)

7 - 22 October, 1971

Del Mar, California

In producing this sheet standard hydrographic procedures were observed and the data was examined daily during the execution of this survey.

The data on the boat sheet and the accompanying records have been examined by me and are considered complete and adequate and are hereby approved.

Roger F. Lanier

Roger F. Lanier
CAPT, NOAA

APPROVAL SHEET

The smooth sheet has been inspected, is complete, and meets the requirements of the General Instructions for automated surveys and the Hydrographic Manual. (Note: All exceptions are listed in the Verifier's Report)

Examined and approved,

James S. Green
Supervisory Cartographic Technician

Approved and forwarded,

Walter F. Forster, Cdr., NOAA
Chief, Processing Division
Pacific Marine Center

TIDE NOTE ✓

H-9248 (RA-10-4-71)

The primary tide station at San Diego, California (Lat. 32° 43'N, Long. 117° 10'W) will be used to control this survey. This gage operated on time meridian 120°W. Hourly heights and time and height differences are being furnished by the National Ocean Survey Tides Branch, Rockville, Maryland. For further information on tides refer to Tide Report, OPR-411, NOAA Ship RAINIER, 1971.

Predicted tides for the Point Loma subordinate station (No. 425, Lat. 32° 40'N, Long. 117° 14'W) were used to reduce boat sheet soundings and were obtained from the 1971 Tide Tables for the North American Coast. The predicted tide correctors were conviently obtained through the use of a Digital Equipment Corporation PDP-8/e computer and programs AM 500 and AM 504.

GEOGRAPHIC NAMES

Survey No. H-9248

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
DEL MAR										1
GULF OF SANTA CATALINA										2
SOLANA BEACH										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
					Approved					19
					Chas. E. Harrington					20
					Staff Geographer - C51x2					21
					24 Sept. 1973					22
										23
										24
										25
										26
										27

NOAA FORM 77-27
(9-72)
(PRESC. BY HYDROGRAPHIC MANUAL 20-2, 6-94, 7-13)

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

HYDROGRAPHIC SURVEY STATISTICS

HYDROGRAPHIC SURVEY NO. H-9248

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET & PNO	1	BOAT SHEETS	1
DESCRIPTIVE REPORT	1	OVERLAYS	3 x

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES	[illegible]		[illegible]			
CAHIERS	1					
VOLUMES						
BOXES			1 & Misc. Data			

T-SHEET PRINTS *(List)* [illegible]

SPECIAL REPORTS *(List)*

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				2074
POSITIONS CHECKED		2074		
POSITIONS REVISED		58	1	
DEPTH SOUNDINGS REVISED or added		309	11	
DEPTH SOUNDINGS ERRONEOUSLY SPACED		0	0	
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		0	0	
	TIME (MANHOURS)			
Verification of Control		8	1	
Verification of Positions		80	5	
Verification of Soundings		142	15	
Smooth Sheet Compilation		135	10	
ALL OTHER WORK		0	86	
TOTALS		365	122	

PRE-VERIFICATION BY	BEGINNING DATE	ENDING DATE
VERIFICATION BY Bruce Alan Olmstead	BEGINNING DATE 25 September 1973	ENDING DATE 11 March 1974
REVIEW BY Carl Fete 118 hrs Dennis Hill 4 hrs Insp. RW Derkazarian 29 hrs 1/31/76	BEGINNING DATE	ENDING DATE 9-29-75

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

2/28/73

Processing Division: Pacific Marine Center

Hourly heights are approved for

Tide Station Used (NOAA form 77-12): San Diego, California

Period: March 1972 1971 1972

HYDROGRAPHIC SHEET: H-9248, H-9277

OPR: 411

Locality: San Diego, California

Plane of reference (mean lower low water): 3.5 ft.

Height of Mean High Water above Plane of Reference is 5.0 ft.

Remarks: Zoning instructions. Use San Diego hourly heights direct.

Reg. No. H-9248

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 REQ'D_____ INITIALS_____

REMARKS:

Reg. 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 REQ'D._____ INITIALS_____

REMARKS:

H-9248

Information for Future Presurvey Review

The area covered by the survey is considered to be relatively stable. The shoreline is subject to frequent changes due to intermittent drainage gaining access to the sea with variation in the point of breakthrough in the backshore area.

The bottom is considered adequately developed on the present survey.

Resurvey Cycle Information

Position Index Lat.	Long.	Bottom Change Index	Use Index	Resurvey Cycle (Years)
325	1172	3	2	50
330	1172	3	2	50

OFFICE OF MARINE SURVEYS AND MAPS

MARINE CHART DIVISION

HYDROGRAPHIC SURVEY REVIEW

REGISTRY NO. H-9248 FIELD NO. RA-10-4-71

California, Gulf of Santa Catalina, Del Mar

SURVEYED: October 7 to October 22, 1971

SCALE: 1:10,000 PROJECT NO.: OPR-411-RA-71

SOUNDINGS: Raytheon DE-723 and Ross Model 5000 Depth Recorders CONTROL: Decca Hi-Fix (Hyperbolic Mode)

Chief of Party	R. F. Lanier
Surveyed by	M. L. Adams
	W. F. Turnacliff
	N. W. Wright
	J. R. Faris
Automated Plot by	Gerber Digital Plotter (PMC)
Verified by	B. A. Olmstead
Reviewed by	C. X. Fefe
	D. J. Hill
Inspected by	R. W. Derkazarian

1. Description of the Area

This survey covers that portion of the California coast north of San Diego between latitudes 32°54'00" and 33°01'00". The survey extends from the shoreline on the east, seaward into the Gulf of Santa Catalina to 117°17'20" for the southern and to 117°18'30" for the northern westerly limit of the survey.

The bottom over most of the area is smooth and gently sloping except for the extreme southwest corner of the survey which covers a small portion of the north wall of La Jolla Canyon.

The predominant bottom characteristic is fine sand. In areas in which kelp grows, characteristics of rocky have been carried forward from prior surveys.

2. Control and Shoreline

The control is adequately described in paragraph F of the Descriptive Report.

The shoreline originates with reviewed Class I photogrammetric manuscripts T-11873(2) and T-11874(2) of 1970-72 and T-11875(2) of 1972. A discrepancy exists with the mean high water line and mean lower low water line on the present survey and the junctional survey H-9107 (1970). The junctional survey used T-11875 based on 1966 photography; the present survey information is based on 1972 photography and supersedes the junctional information.

3. Hydrography

A. Depths at crossings are in good agreement.

B. The usual depth curves were adequately delineated except for portions of the 1-fathom curve and all of the low water line which fell in the breakers zone and could not be surveyed.

C. The development of the bottom configuration and the investigation of least depths are considered adequate.

4. Condition of the Survey

The field plotting, sounding records, Descriptive Report, and various printouts are adequate and conform to the requirements of the Hydrographic Manual and the Instruction Manual - Automated Hydrographic Surveys with the following exceptions:

A. Improper Hi-Fix correctors were applied for Julian Days 287 and 292, Launch RA-5. The discrepancies were deemed negligible and not corrected.

B. Position numbers 1035-1075, Julian Day 293, have been duplicated with work accomplished on Julian Days 294 and 295.

C. Two landmarks (towers) were not shown on the smooth sheet.

5. Junctions

Adequate junctions were effected with H-9249 (1971) to the north, H-9107 (1970) to the south, H-9114 (1970) to the northwest, and H-9108 (1970) to the southwest.

6. Comparison with Prior Surveys

A. H-5664 (1934) 1:10,000
H-5649 (1934) 1:10,000

Taken together, these two prior surveys cover approximately 80 percent of the present survey from the shoreline to about

the 22-fathom depth. A comparison between the present survey and these prior surveys reveals only minor changes in the bottom, with differences in most cases of less than 1/2 fathom.

Three shoal soundings, one rock awash, and several bottom characteristics were brought forward from the prior surveys to the present survey.

With these additions, the present survey is adequate to supersede the prior surveys in the comman area.

B. H-4367 (1924) 1:40,000
H-4266 (1922-1923) 1:40,000

Taken together, these prior surveys cover the seaward remainder of the present survey. A comparison between the present and prior surveys reveals little change to the bottom configuration. The present larger scale survey is adequate to supersede the prior surveys in the common area.

7. Comparison with Charts 5060, 6th Ed., December 29, 1973
5101, 18th Ed., October 6, 1973

A. Hydrography

The charted hydrography originates with the previously discussed prior surveys which require no further consideration.

Attention is directed to the following:

(1) The sewer charted in latitude 33°00.50', longitude 117°17.00' from Bps 68153 and 68154, Chart Letter 909 (1965), was not verified or disproved by the hydrographer and should be retained on the chart.

(2) The pile symbol charted in latitude 32°57.20', longitude 117°16.02' (Presurvey Review Item 7) is indicated by the present survey to be nonexistent and should be removed from the chart.

With the exception of the above items, the present survey is adequate to supersede the charted hydrography within the common area.

B. Aids to Navigation

There are no aids to navigation on this survey.

8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions.

9. Additional Field Work

This survey is considered to be a very good survey and no additional work is recommended.

Examined and Approved:

Donald R. Tibbet
Chief
Marine Chart Division

R. K. Hamilton
Associate Director
Office of Marine Surveys
and Maps

NOAA FORM 76-40
(2-71)
PRESCRIBED BY
PHOTOGRAMMETRY INSTRUCTION NO. 64.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] FIELD INSPECTION
- [ ] FIELD EDIT
- [ ] COMPILATION
- [ ] FINAL REVIEW
- [ ] QUALITY CONTROL AND REVIEW

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE DELETED

ORIGINATING LOCATION: NOAA Ship RAINIER

DATE: 12-71

The following objects have (have not) been inspected from seaward to determine their value as landmarks:

JOB NUMBER: PH-

STATE: California

SURVEY NUMBER: T-11874

TP-

DATUM: North American 1927

POSITION

CHARTING NAME	DESCRIPTION	LATITUDE ° ′	LATITUDE ″ D.M.METERS	LONGITUDE ° ′	LONGITUDE ″ D.P.METERS	METHOD AND DATE OF LOCATION (See instructions on reverse of this form) FIELD INSPECTION	COMPILATION	FIELD EDIT	CHARTS AFFECTED
Del Mar Stack	Large concrete fluted stack approx. ~~50'~~ 68'/T-11874 high & 8' in diameter.	32°57′	42.161 1298.8	117°16′	0.694 018.0	Triang. Rec. 10-71			
Tower of Mansion	Circular stairs to a roof of castellated tower of a ~~residence~~	32°57′	48.201 1484.9	117°15′	30.863 801.5	Triang. Rec. 10-71			
								checked by: WCS	

TYPE OF ACTION	NAME	TITLE
1. Objects i. cted from seaward	J. Richard Faris, ENS. NOAA	☒ FIELD INSPECTOR ☐ FIELD EDITOR
2. Positions determined and/or verified	J. Richard Faris, ENS. NOAA	FIELD INSPECTOR
		FIELD EDITOR
		COMPILER
3. Forms originated by Quality Control and Review Group and final review activities		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR 'METHOD AND DATE OF LOCATION' SECTION

NOTE: 'Photogrammetric Positions' are dependent entirely, or in part, upon control established by photogrammetric methods.
'Field Positions' are determined by field observations based entirely upon ground control.

COLUMN TITLE	TYPE OF ENTRIES
COMPILATION	Applicable to office identified and located objects only. Enter the number and date of the photograph used to identify the object.
FIELD INSPECTION AND FIELD EDIT	1. New Position Determined–Enter the applicable data by symbols as indicated below:

F – Field	P – Photogrammetric	EXAMPLES:
1. Triangulation	1. Field identified	
2. Traverse	2. Theodolite	F. 3.c
3. Intersection	3. Planetable	
4. Resection	4. Sextant	P.2
a. Theodolite		
b. Planetable		
c. Sextant		

Immediately beneath the data described above, enter the following:

a. For 'Field Positions' enter the date of location.

b. For 'Photogrammetric Positions' enter the date of field work; and, if a photograph was used in locating the object or the object was identified on a photograph, enter the number of the photograph used.

2. Triangulation Station Recovered – Enter 'Triang. Rec. mo/day/yr.'

3. Position Verified – Enter 'Verif. mo/day/yr.'

NOAA FORM 76-40 (2-71)
PRESCRIBED BY PHOTOGRAMMETRY INSTRUCTION NO. 64.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] FIELD INSPECTION
- [ ] FIELD EDIT
- [ ] COMPILATION
- [ ] FINAL REVIEW
- [ ] QUALITY CONTROL AND REVIEW

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE DELETED

ORIGINATING LOCATION: NOAA Ship RAINIER

DATE: 12-21-71

The following objects have (have not) been inspected from seaward to determine their value as landmarks:

JOB NUMBER: PH-

STATE: California

SURVEY NUMBER: T-11875 TP-

DATUM: North American 1927

CHARTING NAME	DESCRIPTION	POSITION LATITUDE ° ′	LATITUDE ″ D.M. METERS	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. METERS	METHOD AND DATE OF LOCATION (See instructions on reverse of this form) FIELD INSPECTION	COMPILATION	FIELD EDIT	CHARTS AFFECTED
S.E. Range	6" pipe, white, 78' high with triangular target, atop 45' skeleton tower	32°53′	34.594 1065.7	117°14′	25.347 658.8	Triang. Rec. 10-71			
S.W. Range	6" pipe, white, 110' high with triangular target, atop 45' skeleton tower	32°53′	34.603 1065.9	117°14′	56.676 1473.1	Triang. Rec. 10-71			
N.E. Range	6" pipe, white, 74' high with triangular target, atop 45' skeleton tower	32°54′	34.768 1071.0	117°14′	37.471 973.7	Triang. Rec. 10-71			
N.W. Range	6" pipe, white, 126' high with triangular target, atop 45' skeleton tower	32°54′	34.779 1071.4	117°15′	7.270 188.9	Triang. Rec. 10-71			
								checked by: WLS	

TYPE OF ACTION	NAME	TITLE
1. Objects ...pected from seaward	J. Richard Far..., ENS. NOAA	☒ FIELD INSPECTOR ☐ FIELD EDITOR
2. Positions determined and/or verified	J. Richard Faris, ENS. NOAA	FIELD INSPECTOR
		FIELD EDITOR
		COMPILER
3. Forms originated by Quality Control and Review Group and final review activities		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR 'METHOD AND DATE OF LOCATION' SECTION

NOTE: 'Photogrammetric Positions' are dependent entirely, or in part, upon control established by photogrammetric methods.
'Field Positions' are determined by field observations based entirely upon ground control.

COLUMN TITLE	TYPE OF ENTRIES
COMPILATION	Applicable to office identified and located objects only. Enter the number and date of the photograph used to identify the object.
FIELD INSPECTION AND FIELD EDIT	1. New Position Determined–Enter the applicable data by symbols as indicated below:

F – Field	P – Photogrammetric	EXAMPLES:
1. Triangulation	1. Field identified	
2. Traverse	2. Theodolite	F. 3.c
3. Intersection	3. Planetable	
4. Resection	4. Sextant	P.2
a. Theodolite		
b. Planetable		
c. Sextant		

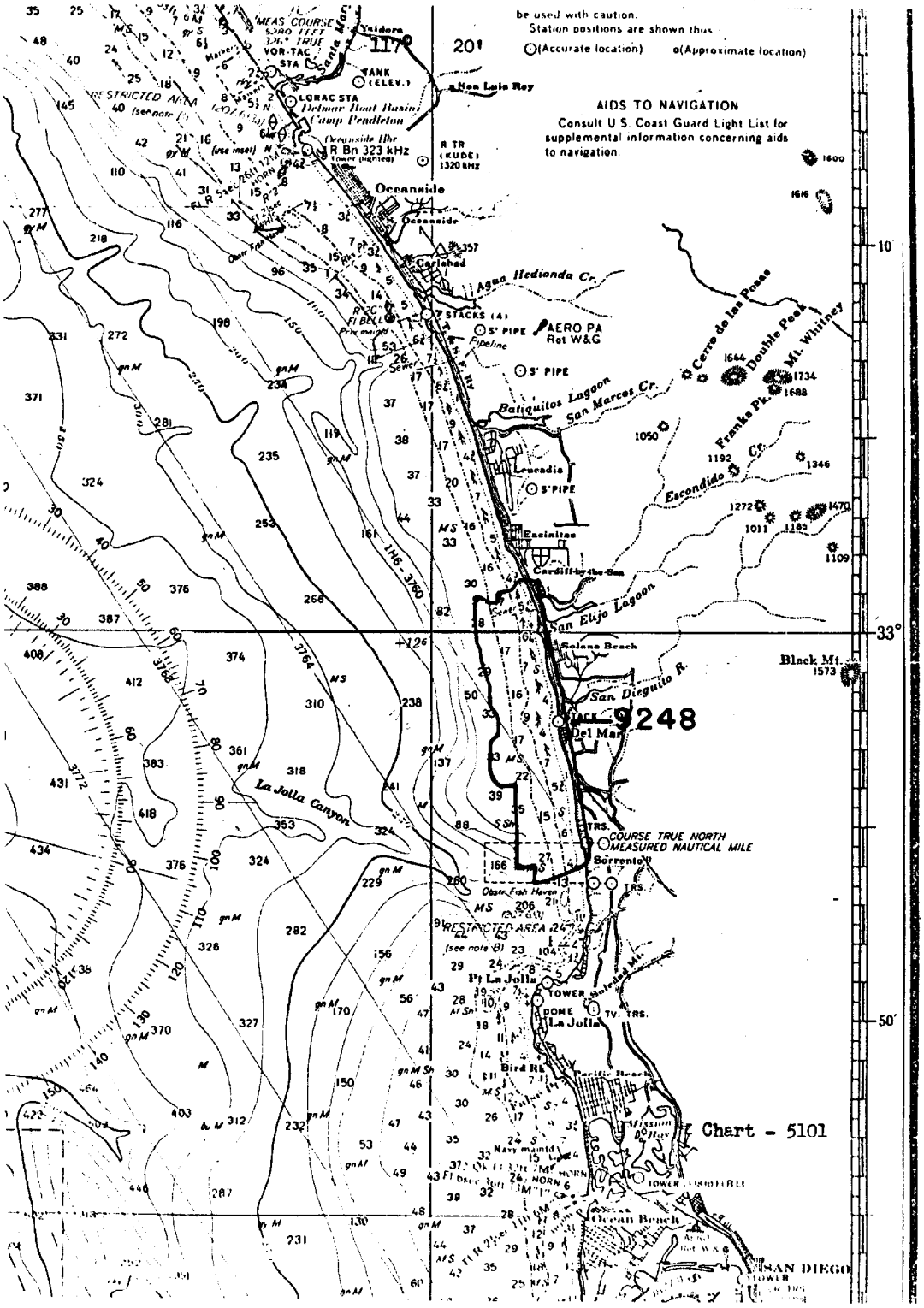
Immediately beneath the data described above, enter the following:

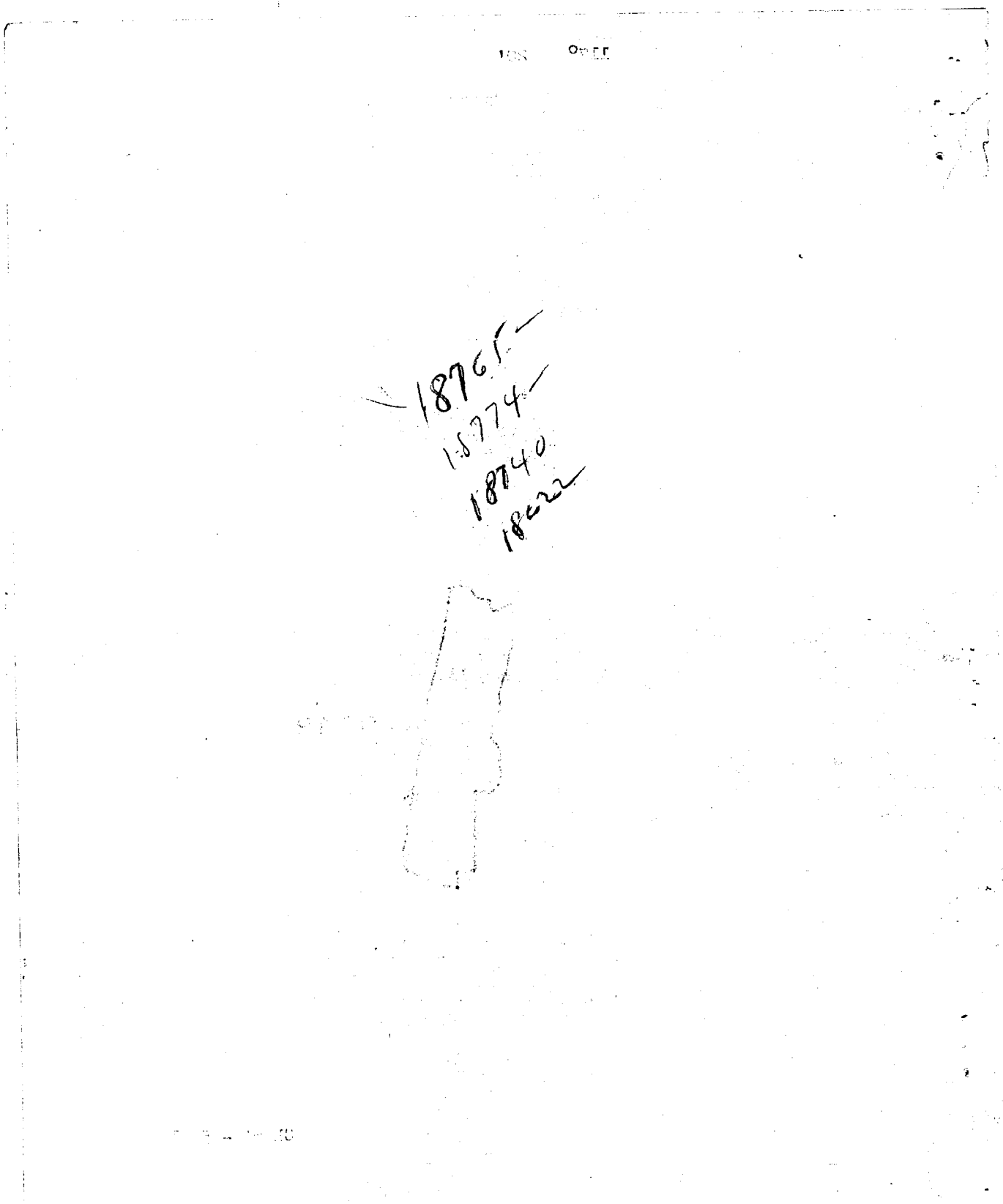
a. For 'Field Positions' enter the date of location.

b. For 'Photogrammetric Positions' enter the date of field work; and, if a photograph was used in locating the object or the object was identified on a photograph, enter the number of the photograph used.

2. Triangulation Station Recovered – Enter 'Triang. Rec. mo/day/yr.'

3. Position Verified – Enter 'Verif. mo/day/yr.'


be used with caution.
Station positions are shown thus
(Accurate location) o(Approximate location)
AIDS TO NAVIGATION
Consult U.S. Coast Guard Light List for supplemental information concerning aids to navigation.
MEAS COURSE 5280 FEET 326° TRUE
VOR-TAC STA
TANK (ELEV.)
LORAC STA
Delmar Boat Basin
Camp Pendleton
Oceanside Hbr R Bn 323 kHz
R TR (KUDE) 1320 kHz
Oceanside
Carlsbad
Agua Hedionda Cr.
7 STACKS (4)
5° PIPE
AERO PA Rot W&G
Batiquitos Lagoon
San Marcos Cr.
Encinitas
Cardiff-by-the-Sea
San Elijo Lagoon
Solana Beach
San Dieguito R.
Del Mar
9248
La Jolla Canyon
COURSE TRUE NORTH
MEASURED NAUTICAL MILE
Sorrento
Pt La Jolla
La Jolla
Bird Rk
Ocean Beach
SAN DIEGO
Black Mt. 1573
Double Peak
Mt. Whitney
Franks Pk.
Escondido Cr.
Chart - 5101
117
201
10
50'
33°


1876
1774
1840
1822

FORM C&GS-8352
(9-29-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9248

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
5060	12-10-74	Ray Spencer	~~Full~~ ~~Part~~ ~~Before~~ Part Before After Verification Review Inspection Signed Via
			Drawing No. 8 Revised Hydro
5101	04/01/76	DC Larson	Full ~~Part~~ Before After Verification Review Inspection Signed Via
18741			Drawing No.
18774	2/8/78	[illegible]	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. APPLIED PARTY THREE CORT 5701
5020	5-30-79	Hamilton	Full ~~Part Before~~ After Verification Review Inspection Signed Via
(18022)			Drawing No. 40 Thr: 18740
18765	10-22-80	C Jones	
		10-22-80 RCS	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 12 Revised Hydro
18774	10-23-80	C Jones	Full ~~Part Before~~ After Verification Review Inspection Signed Via
		10-23-80 RCS	Drawing No. X-dwg Reapplied thru chart 18765
18740	10-23-80	C Jones CJJ 11-4-80	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 46 Exam thru chart 18765 NO CORT
18022	10-23-80	C Jones CJJ 11-4-80	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. X-dwg Exam thru chart 18740 NO CORT
			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 8536-P63

Appl'd Chart 5101 after verification before review
KDS 6-5-74 -

Appl'd Chart 5020 - after verif. - before review
KDS - 7/1/74 - No Corr. (Exit only)