

# 9253

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-40-3-71 Office No. H-9253

### LOCALITY

State CALIFORNIA

General locality Gulf of Santa Catalina

Locality Offshore Oceanside to Dana Pt

1971 and 72

### CHIEF OF PARTY

Capt. Roger F. Lanier, Capt. G.D. Haraden

### LIBRARY & ARCHIVES

DATE 6-17-75

Area 5

charts

5101 applied

5142 applied

5020

5002

9253

**HYDROGRAPHIC TITLE SHEET**

H-9253

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-40-3A-71

State CALIFORNIA

General locality Gulf of Santa Catalina

*see title sheet for RA-40-2B-1*

Locality Offshore Oceanside to Dana Pt

Scale 1:40,000

Date of survey March 7-29, 1972  
Oct 16 - Nov 16, 1971

Instructions dated 20 August 71

Project No. OPR-411-RA-71

Vessel NOAA Ship RAINIER

Chief of party Capt. Roger F. Lanier

Surveyed by Ltjg T. Ballentine, Ltjg N. Wright, Ltjg M. Adams, Lcdr E. Gelb,  
Ens N. Franklin, Ens W. Turnacliff, Ltjg J. McCabe.

Soundings taken by echo sounder, ~~SOUNDING~~ Ross 5000 Ser. No. 1042, EDO PDR MARK XVA #417

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Positions verified

~~positions~~ verified by Bruce Alan Olmstead

Automated plot by Xynerics  
PMC Digital Plotter

Soundings ~~positions~~ verified by Bruce Alan Olmstead

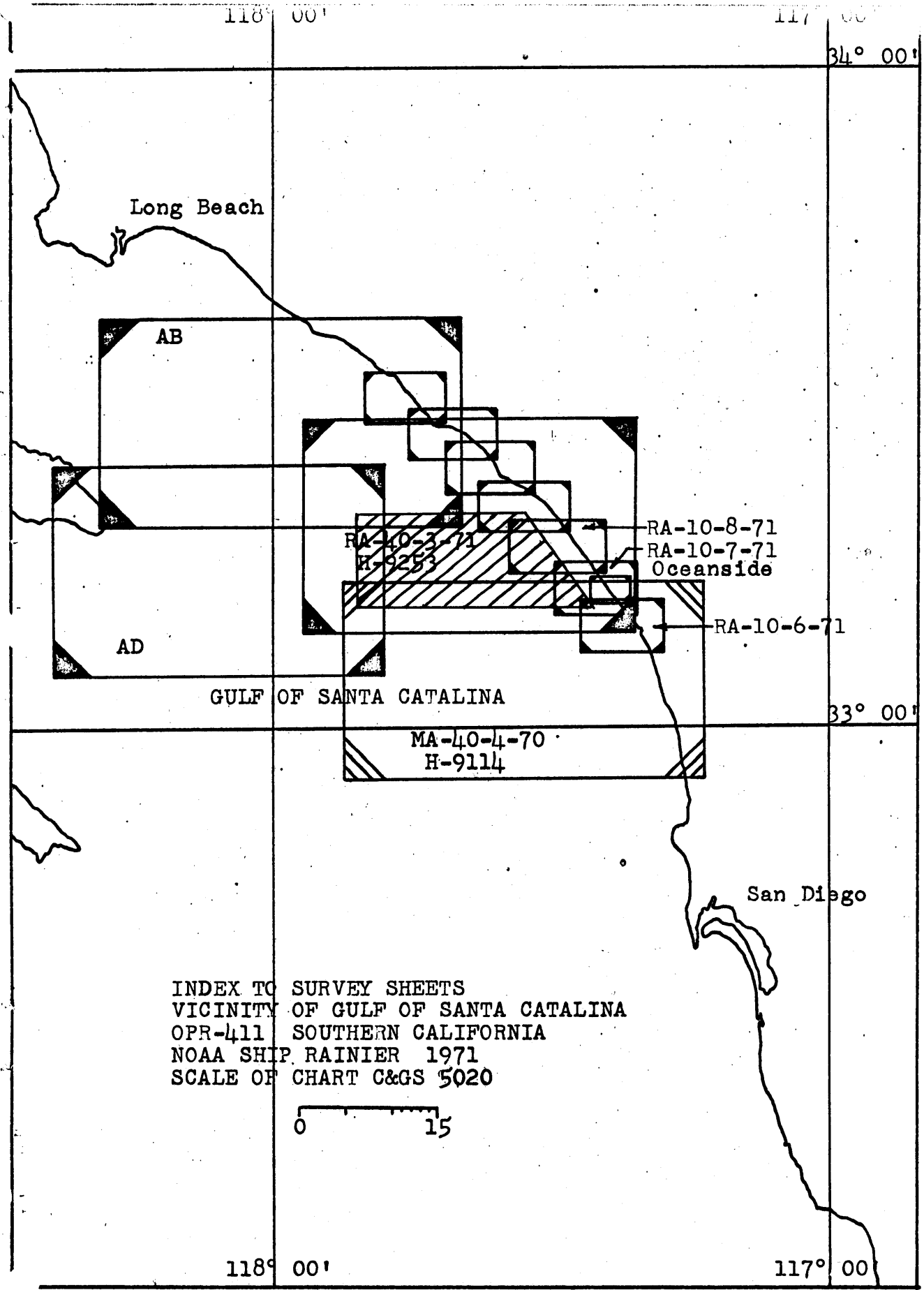
Soundings in fathoms ~~feet~~ at ~~MLLW~~ MLLW

REMARKS: The boatsheet has been split into a northern and southern part due to the paper size of the Hydroplot plotter. This report covers only the southern half, RA-40-3A-71.

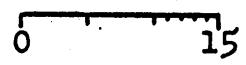
*Applied to stels 4/14/76*  
*[Signature]*

*cht*  
*5142*  
*5101*

*ADP -*



INDEX TO SURVEY SHEETS  
 VICINITY OF GULF OF SANTA CATALINA  
 OPR-411 SOUTHERN CALIFORNIA  
 NOAA SHIP RAINIER 1971  
 SCALE OF CHART C&GS 5020



118° 00'

117° 00'

33° 00'

34° 00'

✓  
DESCRIPTIVE REPORT TO ACCOMPANY

HYDROGRAPHIC SURVEY H-9253

FIELD NO. RA-40-3A-71

SCALE 1:40,000

1971

NOAA SHIP RAINIER

ROGER F. LANIER  
CAPT., NOAA  
COMMANDING

A. PROJECT

This survey was accomplished in accordance with PROJECT INSTRUCTIONS OPR-411-RA-71 dated 20 August 1971. None of the subsequent changes to these instructions are pertinent to this survey. ✓

B. AREA SURVEYED

Due to the sheet size limitations of the onboard Hydroplot system, the boatsheet was divided into two parts. Only the southern part, Field No. RA-40-3A-71, was surveyed. ✓

The survey began near Oceanside, California, at Latitude 33° 11'N, on Oct. 16 and progressed to Latitude 33° 19'N where work was terminated on November 16. The survey was carried out intermittently between the dates above on days when weather did not permit launch hydrography along the beach. This survey was run into the 25 fathom line along the coast (approximately 2½ miles off the beach) and westward for approximately 17 miles to Longitude 117° 51'W. Concurrent launch work accomplished hydrography from the 25 fathom line to the shore. the contemporary surveys for the junction to the east, progressing from south to north, are: H-9251 (RA-10-7-71) and H-9252 (RA-10-8A-71). ✓

The coast in this area consists of very straight beaches that run approximately NW-SE. The beaches are broad and sandy backed by sandy cliffs 30-40 feet high, except south of Oceanside Boat Harbor (Latitude 33° 12.7'N) where there are no cliffs. The continuity of the beach is broken only at Oceanside by the boat harbor and breakwater there. From the beach the smooth sandy bottom drops gradually for approximately 4 miles to the 50 fathom curve. At that point the bottom drops rapidly the next 4 miles to a fairly level plane approximately 400 fathoms deep. ✓

Prior surveys of the area are listed below:

Reg. No.	Date	Scale	Identifying Color
H-5648	1934	1:10,000	Red
H-5606	1934	1:10,000	Carmin
H-5605	1934	1:10,000	Blue
H-6116	1935	1:40,000	Violet
H-6117	1935	1:40,000	Brown
H-6118	1935	1:80,000	Orange

 ✓

This survey junctions with the following contemporary surveys:

Reg. No.	Date Field #	Scale	Color	Area of Junction
H-9114	(MA-40-4-70) 1970	1:40,000	Green	South East ✓
H-9251	(RA-10-7-71)	1:10,000		East
H-9252	(RA-10-8A-71)	1:10,000		East

#### C. SOUNDING VESSEL

All the hydrography accomplished on this survey was done by the ship RAINIER. The soundings along regular lines are shown in black ink and blue ink. Those along cross-lines are shown in red ink. The soundings on the boat sheet were plotted by the Complot Plotter in combination with the Digital Equipment Corporation PDP 8/e computer. ✓

#### D. SOUNDING EQUIPMENT

The RAINIER used two fathometers on this survey. Ross Fathometer Model 5000, Serial No. 1042, was used from the inshore end of the sounding lines to water approximately 150 fathoms deep. McKiernan-Terry PDR Mark XVA Recorder, Serial No. 417, was used in deeper water in combination with EDO UQN Fathometer No. 129. In order to more accurately delineate the 110 fathom curve (200 meters) the Ross Fathometer was used on outward bound lines to a depth of 125 fathoms. The PDR was then used until the inward bound soundings decreased to 150 fathoms. At that point the Ross was again utilized for soundings. With this procedure the entire 110 fathom curve along with shoaler depths were recorded on the Ross Fathometer. Both fathometers operated well during all survey work. ✓

All soundings were digitized with draft and predicted tide corrections applied on time. The fathograms were later scanned for peaks and deeps and compared against printouts. Any corrections necessary have been made. Tide corrections were based on predicted tides at Point Loma from the Tide Tables. The smooth sheet will use the tides at San Diego Reference Station which will be furnished by Rockville. EDAT will produce the corrector tape. ✓

TC/TI Transducer Correction/Table Indicator tapes have been made to provide final draft and velocity corrections. ✓

Both the EDO and Ross Transducers were located in the skeg. A draft correction of 2.5 fathoms was applied throughout the survey. Initial, fine arc, and phase corrections were unnecessary for the fathometers used. The initial value was inspected throughout the survey and adjusted as necessary. No abstract of initial corrections was compiled since any difference in the initial value appeared only on the fathogram and not on the digitized record. In check-  
scanning the fathogram the initial value was taken into consideration. Both fathometers used a stylus traveling in a straight line, thus fine arc corrections were unnecessary. Internal phase comparisons and necessary corrections were made so that all phase corrections would be zero prior to all survey work.

Velocity corrections were computed from a Nansen Cast taken at Latitude  $33^{\circ} 12.3'N$ , Longitude  $117^{\circ} 42.6'W$  on Nov. 14. For further information on this subject see the report entitled Corrections to Echo Soundings, OPR-411, NOAA Ship RAINIER, 1971.

#### E. SMOOTH SHEET

The boat sheet's Modified Transverse Mercator Projection and soundings were plotted by RAINIER personnel using the onboard PDP8/e Complot System. The final smooth sheet will be plotted by PMC's Electronic Data Processing Division.

The soundings and positions were originally plotted on time. During the survey, personnel kept track of lost Hi-Fix lanes and updated the position input data so as to read the correct whole lane values. Any errors found later were entered on a corrector tape and applied to the boat sheet. The positions on this sheet have also been corrected for the partial lane corrections resulting from 3-point sextant fix calibrations before and after each period of hydrography. An abstract of these corrections is in the Separates following the text. They have been logged onto a corrector tape.

The soundings on the boat sheet have been corrected for draft and predicted tides only.

#### F. CONTROL

Hi-Fix electronic control, utilizing hyperbolic mode, Type A-moderate power, on frequency 1799.6 KHz was used for position control throughout the survey.

The master station was located on a bluff midway between Newport Beach and Laguna Beach, California. A whip antenna was erected approximately 75 feet above sea level on traverse station, MUDDY, 1971 (Latitude  $33^{\circ} 34' 08.845''$ N, Longitude  $117^{\circ} 50' 00.744''$ W).

Slave station 1 was located on San Clemente Island. The whip antenna was erected approximately 1850 feet above sea level on R.M. 2 of triangulation station ROGER, 1971. R.M. 2 Pos: (Latitude  $32^{\circ} 53' 45.353''$ N, Longitude  $118^{\circ} 27' 44.128''$ W).

Slave station 2 was located on Point Loma near San Diego, California. A whip antenna was erected approximately 80 feet above sea level on R.M. 12 of traverse station JUMP 2, 1971. This reference mark was in Latitude  $32^{\circ} 42' 22.995''$ N and Longitude  $117^{\circ} 15' 14.958''$ W.

The Hi-Fix chain operated smoothly and caused no significant problems throughout the survey.

Calibration of Hi-Fix receivers was accomplished by visual three point sextant fixes on signals located by ground survey methods along the shoreline in the Oceanside area. The Hi-Fix receivers were also calibrated whenever "lock" was lost and when there was any doubt as to lane count. For further information on Hi-Fix control see Hi-Fix Calibration Report, OPR-411, NOAA Ship RAINIER, 1971.

For information related to the location of the Hi-Fix stations and the calibration signals see the Descriptive Report, Geodetic Surveying Operations, OPR-411, NOAA Ship RAINIER, 1971.

#### G. SHORELINE

The shoreline was transferred from 1:10,000 manuscripts T11867-T11871 by the following procedure. Numerous points were picked along the shoreline on the manuscripts and transferred to the 1:40,000 boatsheet with proportional dividers. When this was completed the shoreline was sketched in. Since H-9253 is basically an offshore survey no attempt was made to verify the shoreline. See the Descriptive Reports for the inshore junction surveys for a discussion of the shoreline.



## H. CROSSLINES

Crossline coverage for this survey is approximately 10% of the regular line coverage. Most of the crossings agree very well, generally within 1 fathom. No crossings are in need of further resolution. ✓

## I. JUNCTIONS

On the south this work junctions with Survey H-9114, 1:40,000 performed by the NOAA Ship MCARTHUR in 1970. The depths range from 15-440 fathoms and agree within 2 fathoms at all locations. No adjustment of either survey is necessary. ✓

The junctions with contemporary launch surveys H9251 (RA--10-7-71), 1:10,000, 1971 and H-9252 (RA-10-8A-71), 1:10,000, 1971 along the coast are extremely good and all soundings agree within 1 fathom. ✓

## J. COMPARISON WITH PRIOR SURVEYS

Soundings in the limited area of comparison with prior surveys H-5648, H-5606, and H-5605 agree very well. The comparisons involve only a few soundings since these surveys, accomplished in 1934, were launch surveys and run out to approximately the 20 fathom curve. ✓

This survey compares poorly with surveys H-6116, H-6117, and H-6118 all performed in 1935. In water less than 100 fathoms deep, depths agree within 1-2 fathoms, but in deeper water many discrepancies occur. After Velocity Corrections to the 1971 soundings are taken into consideration, the prior surveys are 5 to 10 fathoms deeper. Isolated prior survey soundings are significantly deeper, and some are shoaler than the 1971 soundings. The general bottom profile has not been changed by this survey.\* ✓

The Presurvey Review circled depth of 267 fathoms at Lat. 33° 17.6'N, Long. 117° 49.3'W was confirmed. A least depth of 269 fathoms (265 + 4fm vel. corr.) was obtained at Lat. 33° 18.1N, Long. 117° 49.3'W. ✓

\* Because of the superior positioning and sounding methods employed during the 1971 survey, the soundings from this survey should be considered correct.

#### K. COMPARISON WITH THE CHART

This survey was compared with C&GS Chart 5101, Scale 1:234,270, 5th Ed., June 1971. It is the largest scale C&GS Chart of the area. ✓

The depths on this survey agree with the charted depths in waters from the shoreline to the 250 fathom depth curve. ✓ In water deeper than 250 fathoms the depths on the chart compare poorly with the depths on this survey.\*

\* Charted soundings are from 10 fathoms shoaler to 25 fathoms deeper than velocity corrected soundings on this survey. In general, the charted soundings are from 5 to 10 fathoms deeper than the 1971 soundings in depths over 250 fathoms. ✓ A detailed comparison of individual discrepancies is not warranted because of the widespread nature of the disagreement.

Because of the superior positioning and sounding methods employed during the 1971 survey, the soundings from this survey should be considered correct. ✓

#### L. ADEQUACY OF THE SURVEY

The southern part of this sheet comprised of Field No. RA--40-3A-71 is complete and adequate to supersede all prior surveys for charting. The area north of 33° 19' has not yet been surveyed. ✓

#### M. AIDS TO NAVIGATION

There are several aids to navigation near the entrance to Oceanside Boat Harbor (Lat. 33° 12.5'N, Long. 117° 24.0'W) and several along the coast to the north and south. However, since this survey covers the area seaward of the 25 fathom curve and launch surveys were carried into the beach, these aids will be discussed in boat sheet reports covering the inshore area (H-9251 for the Oceanside area and H-9252 for the Southern Camp Pendleton Area). ✓

## N. STATISTICS

No. of Positions	814
Total miles Hydro	469.2 naut.
Sq. miles Hydro	136.8 naut.
No. Bottom Samples	89 ✓
No. Nansen Casts	1
Miles of Magnetics	361.4 naut.

## O. DATA PROCESSING

All data was obtained using the online plot program, AM 100, in conjunction with the PDP 8/e Hydroplot system. This program plots soundings and positions in real time and provides a punched paper tape in the master format with a teletype listing of all hydrographic data collected. ✓

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

A separate master and corrector tape was prepared for each day number. Standard formats, as specified in the instruction manual, Automated Hydrographic Surveys, were used for the TC/TI and velocity corrector tapes. Hourly heights and time and height differences will be furnished to the Pacific Marine Center's Electronic Data Processing Branch by the Tides Branch in Rockville, Maryland. In accordance with the PMC OPORDER, the tide reducer tape will be made by EDAT. ✓

For further information on the Hydroplot/Hydrolog system and formats consult the "HYDROPLOT/HYDROLOG SYSTEMS MANUAL" published by Marine Data Systems, Rockville, Maryland. ✓

## P. MAGNETICS

Magnetic data was gathered during this survey by a Varian Associates Direct Reading Proton Magnetometer, Model V-4937. The instrument measures the total intensity of the magnetic field directly in gammas. The sensor, which was towed at maximum cable length (approximately 750 feet), was polarized at sixty second intervals. ✓

The data obtained was logged real time by the RAINIER'S Digital Control Unit. Both a teletype printout and a punched paper tape were generated with output of the time and magnetic field intensity occurring every sixty seconds. No position information was generated on this tape. The print-out was checked regularly to insure accuracy of the record and annotated with all information pertinent to the ship's track. ✓

In addition, incoming information was recorded continuously on a strip-chart operating at three inches-per-hour on the 0-1000 gamma scale. The record produced was annotated frequently with appropriate calibration and first-three-digit checks. Tuning information and all other events affecting the magnetometer were noted on the Magnetometer Log Sheet, C&GS 385 (see Appendix). ✓

All magnetic data will be forwarded to PMC for processing with the appropriate position information compiled with this survey. Magnetic data was gathered on all sounding lines completed during this survey with the following exceptions: ✓

Julian Day	Position Numbers
318	445-506 (Bottom Samples and Nansen Cast)
319	507-627 (Bottom Samples and crosslines)

Magnetic data was not taken during the periods listed above because the ship was making frequent stops for Bottom Samples. ✓

#### Q. RECOMMENDATIONS

It is recommended that the northern half of H-9253 (RA-40- ✓  
-3B-71) be surveyed as soon as practicable.

R. REFERENCES TO REPORTS

1. Tide Report, OPR-411, NOAA Ship RAINIER, 1971.
2. Corrections to Echo Soundings, OPR-411, NOAA Ship RAINIER, 1971.
3. Hi-Fix Report, OPR-411, NOAA Ship RAINIER, 1971.
4. Geodetic Surveying Operations, OPR-411, NOAA Ship RAINIER, 1971.
5. Descriptive Report to Accompany H-9251 (RA-10-7-71), OPR-411, NOAA Ship RAINIER, 1971.
6. Descriptive Report to Accompany H-9252 (RA-10-8A-71), OPR-411, NOAA Ship RAINIER, 1971.

Respectfully submitted,

*Edward M. Hall*  
for Thomas Ballentine  
LTJG, NOAA

SEPARATES FOLLOWING THE TEXT

1. Tide Note.
2. Abstract of Corrections to Echo Soundings.
3. Abstract of Corrections to Distance Measurements.
4. List of Calibration Signals.
5. Approval Sheet.

✓  
TIDE NOTE

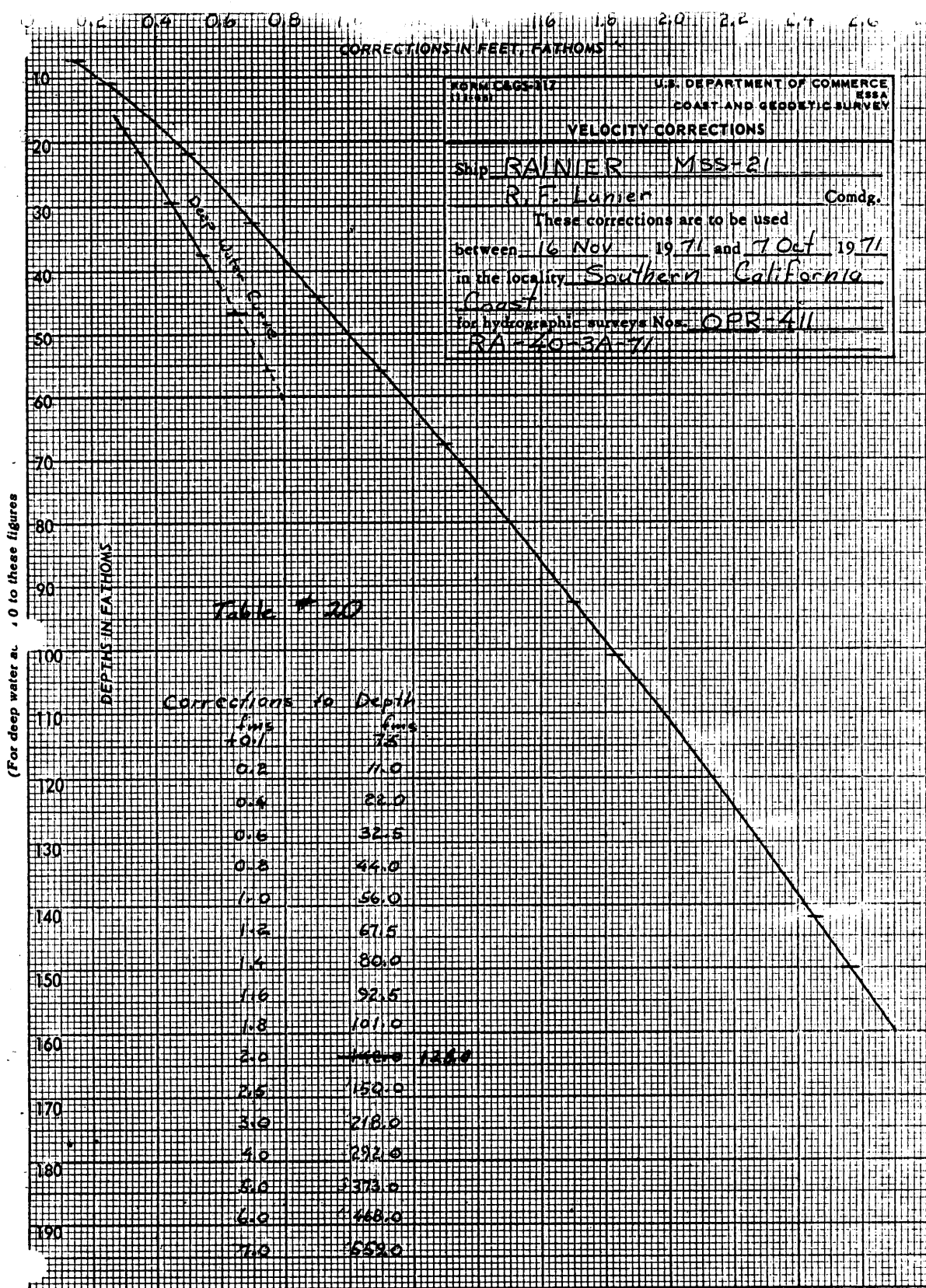
H-9253 (RA-40-3A-71)

The tide station at San Diego, California in Lat.  $32^{\circ} 42.8'N$  and Long.  $117^{\circ} 10.4'W$ , will be used to control the soundings on this survey. This gage operated on Time Meridian  $120^{\circ}W$ . Hourly heights and time and height differences will be furnished by the Tides Branch in Rockville. For further information on tides refer to Tide Report, OPR-411, NOAA Ship RAINIER, 1971.

Predicted tides for the boat sheet were obtained from the Tide Tables, 1971, North American Coast using the Point Loma Subordinate Station. The tides were applied directly to the data when plotted by the computer.

ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS





FORM CGS-117  
 U.S. DEPARTMENT OF COMMERCE  
 COAST AND GEODETIC SURVEY  
 VELOCITY CORRECTIONS  
 Ship RAINIER MSS-21  
R. F. Lunier Comdg.  
 These corrections are to be used  
 between 16 Nov 1971 and 7 Oct 1971  
 in the locality Southern California  
Coast  
 for hydrographic surveys Nos. OPR-411  
RA-40-3A-71

Table # 20

Corrections to Depth	
feet	fms
0.2	11.0
0.4	22.0
0.6	32.5
0.8	44.0
1.0	56.0
1.2	67.5
1.4	80.0
1.6	92.5
1.8	101.0
2.0	110.0
2.5	150.0
3.0	210.0
4.0	292.0
5.0	373.0
6.0	460.0
7.0	550.0

(For deep water at 0 to these figures)



ABSTRACT OF CORRECTIONS TO DISTANCE MEASUREMENTS

Vessel Ship

Julian Day	Time	Correction to Pattern 1	Correction to Pattern 2
289	111002	100009	100022
301	090000	100016	100027
301	124930	000090	000163
301	171530	100010	000163
301	174015	100110	000163
301	175000	100010	000163
301	180331	000090	000163
302	080001	100013	100029
318	100654	100028	000003
319	081701	100030	100005
319	082131	000070	100005
319	091146	000170	100005
319	161746	100030	100005
320	000030	100030	100005
320	012515	100130	100005

## APPENDIX

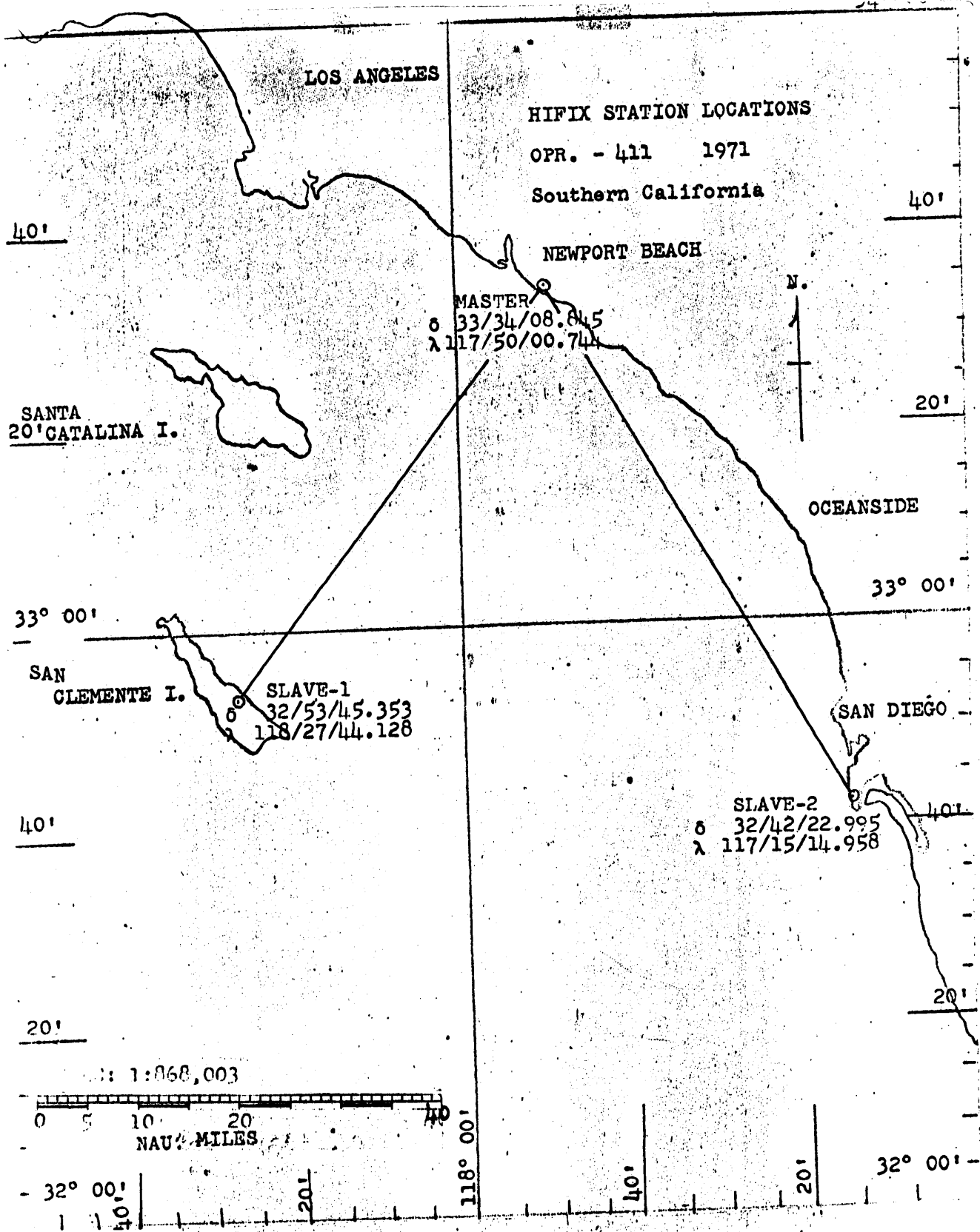
1. Sketches of Calibration Signal Locations (2).
2. Index to Survey Sheets.
3. Sketch showing Hi-Fix Station Locations.
4. Position Number Abstract.
5. C&GS Form 385, Magnetometer Log.
6. C&GS Form 733-M, Oceanographic Log Sheet M, Bottom Sediment Data.
7. Deep Water Sounding Technique.
8. Parameter Tape Listings.

✓  
LIST OF CALIBRATION SIGNALS

H-9253 (RA-40-3A-71)

Signal No.	Origin
003	EASTER CROSS (NEW), 1955
009	NORTHWEST RANGE USN, 1933
015	DEL MAR STACK, 1933
017	TOWER OF MANSION BACK OF DEL MAR, 1933
105	SILVER TANK, VENT ATOP, LEUCADIA, 1971
499	POST 3, 1971
501	SAN DIEGO GAS AND ELECTRIC CO. ENCINO PLANT CENTER STACK, <del>1962</del> 1959
503	MULL 2, 1933
509	CAMP DEL MAR OUTER BREAKWATER LIGHT 1 USN, 1961
510	OCEANSIDE HARBOR SE ENTRANCE LIGHT*
515	CAMP DEL MAR INNER BREAKWATER LIGHT 6 USN, 1961
521	CAMP PENDLETON WATER TANK, 1956
523	VORTAC OCEANSIDE OCN, 1961

\* See special report Oceanside Visual Control to Accompany H-9245 (RA-5-2-71), OPR-411, NOAA Ship RAINIER, 1971.



OCEANSIDE HARBOR &  
CAMP PENDELTON BASIN

SIGNAL STATION LOCATIONS  
OPR. - 1/11 1971  
Southern California

OCEANSIDE

GULF OF SANTA CATALINA

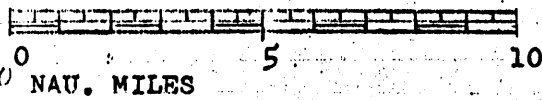
33° 00'

DEL MAR

SAN DIEGO



SCALE 1:234,270



35'

30'

25'

117° 20'

10'

10'

05'

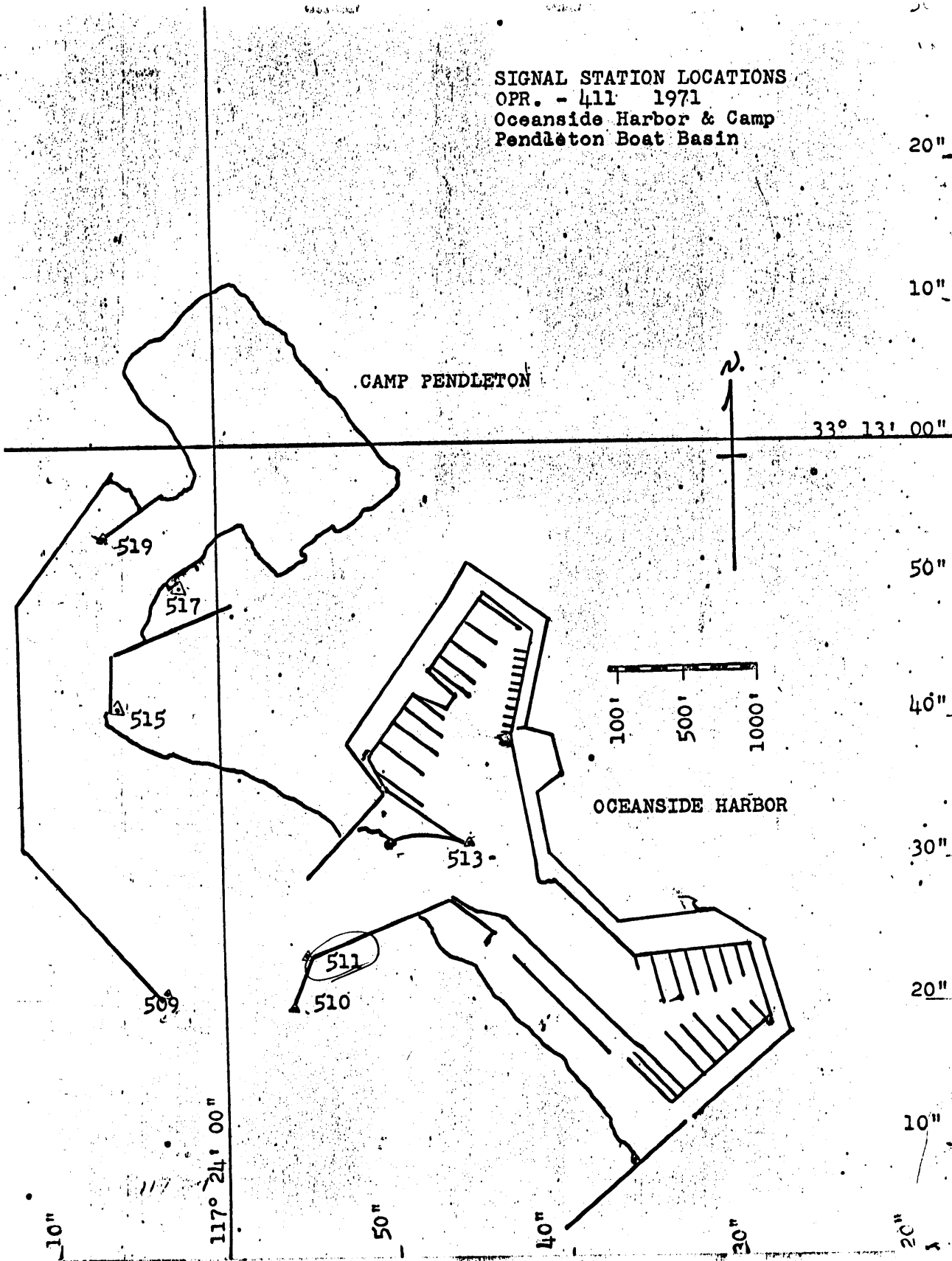
55'

50'

45'



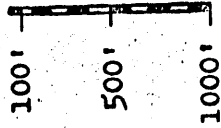
SIGNAL STATION LOCATIONS  
OPR. - 411 1971  
Oceanside Harbor & Camp  
Pendleton Boat Basin



CAMP PENDLETON

N.

33° 13' 00"



OCEANSIDE HARBOR

10"

117° 24' 00"

50"

40"

30"

20"

10"

20"

30"

40"

50"

10"

20"

OPERATIONS FILE

OPR 411

Bottom Samples

OCEANOGRAPHIC LOG SHEET - M  
BOTTOM SEDIMENT DATA

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

FORM CGCS-733M  
(4-65)

SERIAL NO.	DATE	SAMPLE POSITION		DEPTH (Fathoms)	WEIGHT SAMP- PLER	AP- PROX- TNA- TION	LENGTH OF CORE	COLOR OF SEDI- MENT	FIELD DESCRIPTION	REMARKS <small>(Thermal conditions, salinities, density, current, state, type of bottom, relief, etc.)</small>	OBS. INIT.
		LATITUDE	LONGITUDE								
RAVIER (455-21) PROJ. NO. OPR-411 YEAR '71 RA 40-3A-21											
448	14 Aug 1971			423.7					M	No SAMPLE	OK
451	14 Aug 1971	33° 11' 48" N	117° 32' 23" W	249.9					M	Hard Bottom - Some Samples	OK
542	15 Aug 1971	33° 16' 42" N	117° 41' 42" W	378.0					gn, M, fine S, gold flakes	SOFT Bottom	OK
556	15 Aug 1971	33° 13' 54" N	117° 46' 36.8" W	421.0					gn, M, fine S	Hard Bottom - Small Sample	OK
571	15 Aug 1971	33° 14' 42" N	117° 42' 55.8" W	411.0					gn, M, fine S	" " "	OK
584	15 Aug 1971	33° 16' 08" N	117° 31' 01.1" W	405.0					gn, M, fine S	" " "	OK
603	15 Aug 1971	33° 15' 41.2" N	117° 34' 26.9" W	155.0					gn, M, fine S, gold flakes	SOFT Bottom	OK
618	15 Aug 1971	33° 15' 48.4" N	117° 31' 54.4" W	34.0					gn, M, S, gold flakes	SOFT Bottom	OK
620	15 Aug 1971	33° 13' 18.4" N	117° 29' 42.2" W	58.0					gn, M, S, brk Sh, gold flakes	SOFT Bottom	OK

CHECKED BY *[Signature]*

DATE CHECKED 16 Nov 1971

POSITION NUMBER ABSTRACT

Date	J.D.	Pos. No.
Oct. 16	289	1-108
Oct. 28	301	109-136
		137-140 (Rejected)
		141-241
		242-272 (Rejected)
		273-328
Oct. 29	302	329-444
Nov. 14	318	445-506
Nov. 15	319	507-625
Nov. 15-16	319-320	626-850

MAGNETOMETER LOG  
(Towed Proton Magnetometer)

DATE DAY MO. YR.	TIME 105W -G-M.T.	REMARKS	DIAL SETTING		OBSR
			PRE-AMP	AMP-LIM	
		RA-40-3-71			
289	1110	MAG STREAMED			JRF
"	1112	CALIB. CK. 0=0.0 10=10.0			JRF
"	1115	MAG TUNED	6	5 6	JRF
"	1116	MAG ON LINE	6	5 6	JRF
"	1707	MAG TURNED OF	6	5 6	WFT
"	1730	FISH ABOARD			JRF
	120W LMT				
301	0855	MAG STREAMED & TUNED	6	5 6	EMG
"	0900	MAG ON LINE	6	5 6	EMG
"	0905	LAST 3 DIGIT CK	6	5 6	EMG
"	0909	CALIB. CK 0=0.40 10=10.0	6	5 6	EMG
"	0923	CALIB. CK 0=0.0 10=10.0	6	5 6	EMG
"	1033	L BK, HI-FIX PROBLEM	6	5 6	EMG
"	1037	MAG SHUT DOWN	6	5 6	EMG
"	1050	MAG ABOARD			EMG
"	1248	MAG STREAMED & TUNED	6	5 6	JRF
"	1249	MAG ON LINE	6	5 6	JRF
"	1404	CAL. CK 0=0.0 10=10.0	6	5 6	JRF
"	1922	MAG SHUT DOWN	6	5 6	JRF
"	1933	MAG ABOARD	6	5 6	NF
302	0758	MAG STREAMED AND TUNED	6	5 6	EMG
"	0800	MAG RECORD STARTS	6	5 6	EMG
"	0803	LAST 3 DIGIT CK OK	6	5 6	EMG
"	0813	CAL CK OK	6	5 6	JWM
"	0955	CAL CK	6	5 6	JWM
"	1029	CAL CK	6	5 6	JWM
"	1540	CAL CK	6	5 6	JWM
"	1647	MAG SHUT DOWN	6	5 6	JRF
"	1655	MAG ABOARD			JRF

**MAGNETOMETER LOG**  
(Towed Proton Magnetometer)

DATE	TIME	REMARKS	DIAL SETTING		OBSR
			PRE-AMP	AMP-LIM	
	120 <sup>W</sup>	RA-40-3-71			
	319 1620	MAG STREAMED			EMG
	1623	MAG TUNED, LAST 3 DIGIT CK,	6	6	EMG
		CALIB. CK, ON LINE			
	1643	MAG DATA OK FROM HERE ON			
		PREV. PROB. IN GETTING ANALOG ?			
		DIGITAL TO UPDATE AFTER POLARIZING			EMG
	1758	CAL. CK. 0=0.0 10=10.0			EMG
	1903	CALIB. CK. 0=0.0 10=10.0			SJH
	2000	MAG TUNED, CAL CK. 0=0.0 10=10.1	6	6	NMF
	2100	CALIB. CK. 0=0.0 10=10.0	6	6	NMF
	2300	CALIB. CK. 0=0.0 10=10.0	6	6	NMF
	320 0440	CALIB. CK. 0=0.0 10=10.0	6	6	JRF
	0447	MAG SHUT DOWN, LEDESE			JRF

## DEEPWATER SOUNDING TECHNIQUE

The Ross Laboratories Echo Sounder on board the NOAA Ship RAINIER is equipped with a digitizing unit which provides digital depth data to the Hydroplot controller in the Hydroplot/Hydrolog Systems. In order to take advantage of this digitizer, the transmit and receive pulses from the UQN transceiver were electronically conditioned to provide "start" and "stop" pulses to the Ross Digitizer. This allowed digitizing of the deep water soundings.

Many comparisons between the digital and analog record were subsequently made to determine the accuracy of this digitizing technique. A high degree of accuracy was revealed by these comparisons. For further information as to the actual hardware changes see the PDP 8/e Hydroplot/Hydrolog Systems Report, NOAA Ship RAINIER, 1971.

PARAMETER TAPE LISTINGS

OPR-411-RA-71

RA-40-3A71  
FEST=119000  
CLAT=3500000  
CMER=118/25/0  
GRID=120  
PLSCL=40000  
PLAT=33/08/45  
PLON=117/56/45  
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

APPROVAL SHEET

H-9253 (RA-40-3A-71)

Gulf of Santa Catalina

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

The boat-sheet and the accompanying records have been examined by me and are considered complete and adequate to the extent of this survey, and are approved. It should be noted that this survey covers only 50% of the area on the sheet.

Roger F. Lanier  
CAPT, NOAA

The rough draft and the accompanying data of this report were examined by CAPT Roger F. Lanier prior to his transfer. CAPT Lanier was unavailable for signature at this date. The final copy of this report and the accompanying records are approved for forwarding.



G. E. Haraden  
CAPT, NOAA  
15 Feb. 1972



HYDROGRAPHIC TITLE SHEET

H-9253

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-40-3B-71

State CALIFORNIA

General locality Gulf of Santa Catalina

Locality Offshore Oceanside to Dana Pt

Scale 1:40,000 Date of survey 7-29 March 72

Instructions dated 7 January 72 Project No. OPR-411-RA-72

Vessel NOAA Ship RAINIER

Chief of party Capt. G.E. Haraden

Surveyed by Ltjg M. Adams, Ltjg Anderly, Ltjg Faris, Ltjg Franklin, Lcdr Gelb, Ens Hollingshead, Ltjg Johnson, Ltjg McCabe, Lt Stubblefield

Soundings taken by echo sounder, ~~and tide gauge~~ Ross 5000 Ser. #1012, EDO PDR MARK XVA #324

Graphic record scaled by RAINIER Personnel

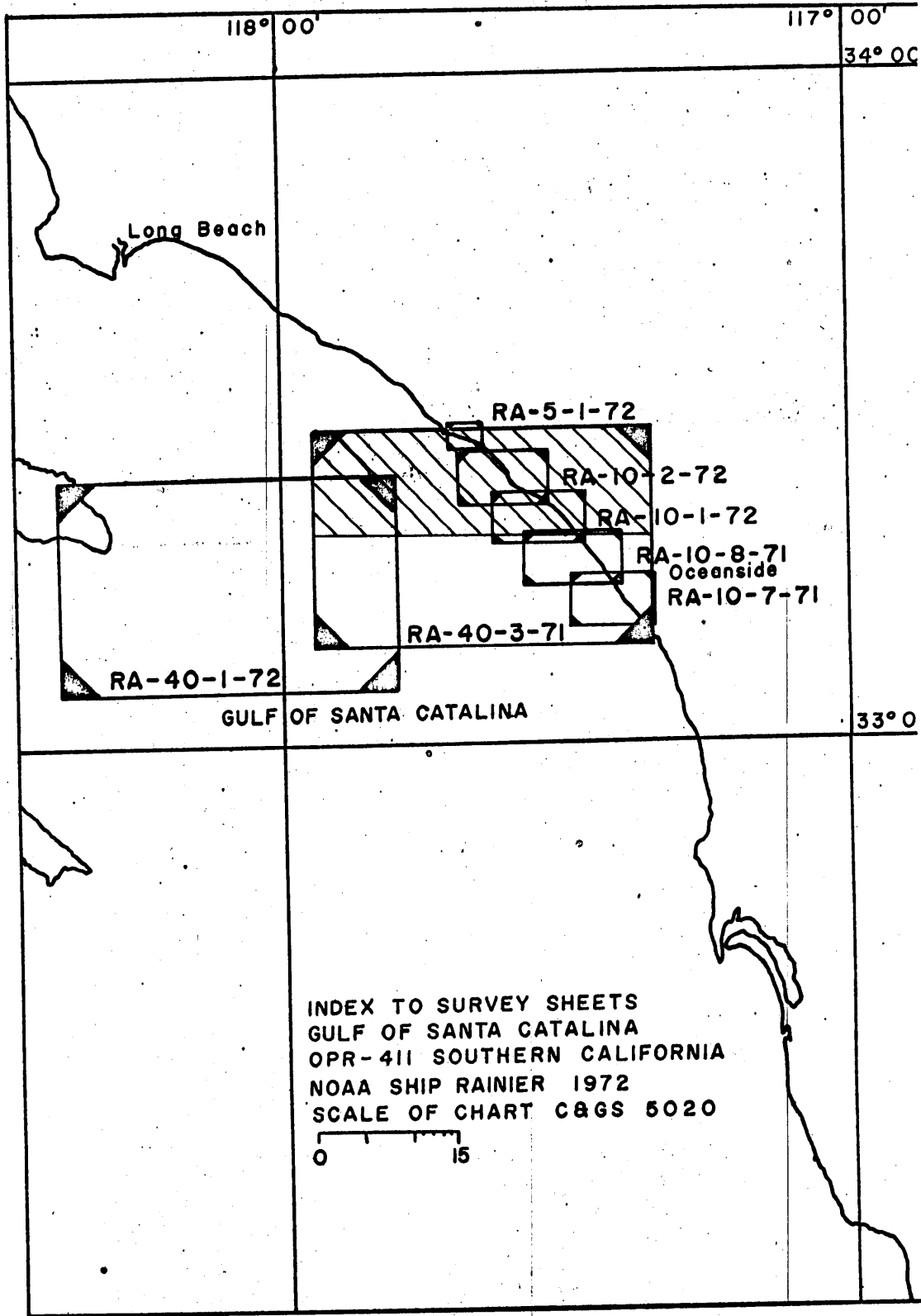
Graphic record checked by RAINIER Personnel

Positions verified ~~by~~ Bruce Alan Olmstead Automated plot by Xynerics PMC Digital Plotter

Soundings ~~checked~~ verified by Bruce Alan Olmstead

Soundings in fathoms ~~XXX~~ at ~~XXX~~ MLLW

REMARKS: The boatsheet has been split into a northern and southern part due to the paper size of the Hydroplot plotter. This report covers only the northern half, RA-40-3B-71. The report for the southern half, RA-40-3A-71, was completed in 1971.



### A. PROJECT

This survey was accomplished in accordance with Project INSTRUCTIONS OPR-411-RA-72 dated 7 January 1972. The subsequent change to these instructions are not pertinent to this survey. ✓

### B. AREA SURVEYED

Due to the sheet size limitations of the onboard Hydroplot system, the boatsheet was divided into two parts. The northern part (Field Number RA-40-3B-71) is a continuation of the 1971 survey and completes the sheet for H-9253 (RA-40-3-71). ✓

The survey began near latitude  $33^{\circ} 18'N$ , on March 7 and progressed to latitude  $33^{\circ} 27'N$  where work was terminated on March 29. The survey was carried out intermittently between the dates above, and concurrently with launch hydrography. This survey was run into the 20 fathom line along the coast approximately  $2\frac{1}{2}$  miles off the beach and westward for approximately 15 miles to longitude  $117^{\circ} 55'W$ . Concurrent launch work accomplished hydrography from the 20 fathom line to the shore. The contemporary surveys for the junction to the east, progressing from south to north, are: H-9275 (RA-10-1-72) and H-9276 (RA-10-2-72). ✓

The coast in this area consists of very straight beaches that run NW-SE. The beaches are broad and sandy backed by sand and gravel cliffs 75-100 feet high, except at San Mateo Point (latitude  $33^{\circ} 23'N$ ) where there are no cliffs. From the beach the smooth sandy bottom drops gradually for 4 miles to the 50 fathom curve. At that point the bottom drops rapidly the next 4 miles to a fairly level plane 350 fathoms deep. ✓

### C. SOUNDING VESSEL

All the hydrography accomplished on this survey was done by the ship RAINIER. The soundings along regular lines are shown in black ink. The crosslines are shown in red ink. The soundings on the boat sheet were plotted by the Complot Plotter in combination with the Digital Equipment Corporation PDP 8/e computer. ✓

#### D. SOUNDING EQUIPMENT

The RAINIER used two fathometers on this survey. Ross Fathometer Model 5000, Serial No. 1042, was used from the inshore end of the sounding lines to water approximately 150 fathoms deep. McKiernan-Terry PDR Mark XV<sub>A</sub> Recorder, Serial No. 324, was used in deeper water in combination with EDO UQN Fathometer No. 217. ✓

All soundings were digitized with draft and predicted tide corrections applied on time. The fathograms were later scanned for peaks and deeps and compared against digital printouts. Any necessary corrections were made. ✓ On time tide correctors were based on predicted tides for Point Loma as listed in the Tide Tables.

The Ross Laboratories Echo Sounder on board the NOAA Ship RAINIER is equipped with a digitizing unit which provides digital depth data to the Hydroplot controller in the Hydroplot/Hydrolog Systems. In order to take advantage of this digitizer, the transmit and receive pulses in the PDR were electronically conditioned to provide "start" and "stop" pulses to the Ross Digitizer. This allowed digitizing of the deep water soundings. ✓

Many comparisons between the digital and analog record were subsequently made to determine the accuracy of this digitizing technique. A high degree of accuracy was revealed by these comparisons. ✓

A modified velocity correction, which incorporates vessel draft, instrument error, and velocity corrections were applied to the recorded depths through the Transducer Correction/Table Indicator (TC/TI) tape. A draft correction of 2.5 fathoms was applied throughout the survey. Initial, fine arc, and phase corrections were unnecessary for the fathometers used. The initial value was inspected throughout the survey and adjusted as necessary. No abstract of initial corrections was compiled since any difference in the initial value was taken into consideration. Both fathometers used a stylus traveling in a straight line, thus fine arc corrections were unnecessary. Internal phase comparisons and corrections were made so that all phase corrections were zero prior to any survey work. ✓

Velocity corrections were computed from a Nansen Cast taken at latitude  $33^{\circ} 18.9'N$ , longitude  $117^{\circ} 44.6'W$  on March 17. All sounding equipment operated properly throughout the survey with no equipment errors which would have an adverse effect on the accuracy of the soundings. For further information on sounding equipment and corrections applied to the soundings see Corrections to Echo Soundings, OPR-411, NOAA Ship RAINIER, 1972. ✓

#### E. SMOOTH SHEET

The boat sheet's Modified Transverse Mercator Projection and soundings were plotted by RAINIER personnel using the onboard PDP 8/e Complot System. The boat sheet was prepared using a Central Meridian of  $118^{\circ} 25' 00''W$  and a Central Latitude of 3,500,000 meters North. Position numbers and Hi-Fix arcs were also plotted by the computer and plotter. The final smooth sheet will be plotted by PMC's Electronic Data Processing Division. ✓

The soundings and positions were originally plotted on time. During the survey, the hydrographer kept track of lost Hi-Fix lanes and updated the position input data so as to read the correct whole lane values. Any errors found later were entered on a corrector tape and applied to the boat sheet. The positions on this sheet have also been corrected for partial lane corrections resulting from 3-point sextant fix calibrations before and after each period of hydrography. An abstract of these corrections is in the Separates following the text. They have been logged onto a corrector tape. ✓

The soundings on the boat sheet have been corrected for draft and predicted tides only. ✓

#### F. CONTROL

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

The master station was located on a 40 foot bluff, 0.23 miles from the ocean overlooking a flat sandy, grassy plain. A 35 foot antenna was erected adjacent to R.M. 1 of triangulation station OLD, 1899. The antenna was located at latitude  $33^{\circ} 43' 12.946''$ N, longitude  $118^{\circ} 16' 56.980''$ W. The master station was within the confines of Fort McArthur Army Reservation, San Pedro, California. ✓

Slave station 1 was established atop a rounded hill on Santa Catalina Island, California. A 35 foot antenna was placed over traverse station, HI FIX, 1972 at an elevation of approximately 1525 feet, 1.4 miles from the ocean. No topographic obstruction of consequence was between slave station 1 and the survey area. The exact position of slave station 1 was latitude  $33^{\circ} 21' 25.309''$ N, longitude  $118^{\circ} 21' 50.721''$ W. The hyperbolic arcs generated by the master station and slave station 1 were drawn on the boat sheet with green ink. ✓

Slave station 2 utilized a 35 foot antenna positioned over station TEMPORARY, 1972 at an approximate elevation of 45 feet. The station was 0.30 miles from the ocean overlooking a sandy beach at latitude  $33^{\circ} 14' 57.267''$ N and longitude  $117^{\circ} 25' 28.755''$ W. The hyperbolic arcs created by the master station and slave station 2 were drawn on the boat sheet in red ink. ✓

The Hi-Fix receiver was calibrated at the beginning and end of each day's work and when there was doubt as to the correct lane count. The calibration was accomplished by visual three-point sextant fixes on previously established geodetic positions of natural or hand fabricated objects. The stations used for calibration are listed in the Appendix. A mathematical solution for three-point fixes was obtained by using program AM 560 in the PDP 8/e computer. ✓

Adverse visibility conditions from fog occasionally precluded obtaining a calibration by sextant fix and necessitated using a buoy for calibration. Each day the calibration buoy was employed, however, a sextant fix was obtained at some other time during the day. The buoy invariably offered calibration values congruent with those obtained from visual fixes. It is to be emphasized that the buoy was utilized for Hi-Fix calibration only when it was impossible to observe the visual signals. For additional information on Hi-Fix control refer to the Hi-Fix Report, OPR-411, NOAA Ship RAINIER, 1972. ✓

## G. SHORELINE

The shoreline was transferred from 1:10,000 manuscripts T-11865 to T-11869 using proportional dividers. Since H-9253 is basically an offshore survey no attempt was made to verify the shoreline. See the Descriptive Reports for the inshore junction surveys for a discussion of the shoreline. ✓

## H. CROSSLINES

Crossline coverage for this survey is approximately 14% of the regular line coverage and constitutes 44.7 miles. The crossings agree very well in the flat areas which lie in less than 50 fathoms and greater than 300 fathoms. Agreement is within 1 fathom in the former and 2 fathoms in the latter. ✓

The range of values between 50 and 300 fathoms constitute much of the Continental Slope region with its zone of precipitous drop-off. For this reason some problems result from spurious side return values in this region. In the cases where soundings were at nearly identical positions, the difference varied between 1 and 4 fathoms with two observations disagreeing by 7 fathoms. Considering the precipitous nature of the topography in the region, the crossings are considered acceptable. The two positions which had a 7 fathom disagreement are: ✓

1st out Pos # 1213, 252 fm., Lat 33° 23.6'N  
2nd out Pos # 1099, 259 fm., Long. 117° 42.1'W ✓

3rd out Pos # 1095, 163 fm., Lat. 33° 21.8'N  
on Pos # 1364, 156 fm., Long. 117° 40.0'W

In both cases the crossline trace was masked by side return along the slope face. The 252 fathom depth is probably correct in the first case in that it was digitized without side return problems. The 156 fathom depth presents better agreement with adjacent soundings and thus is more probably correct. ✓

The side return presented fewer problems in the east-west sounding runs hence adding more substance to the soundings relative to the crosslines soundings. No crossing resolutions are believed necessary. ✓

## I. JUNCTION

On the south this survey junctions with H-9253 (Field No. RA-40-3A-71). The depths range from 17-400 fathoms and are in good agreement. As previously mentioned in Section H. CROSSLINES, the sharp drop of the Continental Slope makes comparisons between 50 and 300 fathoms difficult because small differences in position create large disagreement in depths. In general all junction values fall within respective contour lines, with none of the comparisons appearing unreasonable. In less than 50 fathoms of water all soundings agree within 1 fathom, in greater than 300 fathoms all soundings agree within 4 fathoms and nearly 80% within 2 fathoms, hence no resolution is considered necessary. ✓

The southwest corner of H-9253 junctions with the northwest corner of survey H-9277 (Field No. RA-40-1A-72), 1:40,000. The depths range from 285-340 fathoms in a generally flat area. All depths agree within 2 fathoms; 63% of the soundings are in perfect agreement, 12% within 1 fathom, and 25% within 2 fathoms. ✓

The junctions with contemporary launch surveys H-9275 (RA-10-1-72), 1:10,000, 1972 and H-9276 (RA-10-2A-72), 1:10,000, 1972 along the coast are in good agreement. All soundings agree within 1 fathom. 68% of the soundings are in perfect agreement; 32% differ by 1 fathom. The discrepancies noted may result from the magnification of any small positioning errors when the soundings are transferred from the larger scale survey. ✓

## J. COMPARISON WITH PRIOR SURVEYS

This survey compares favorably with the 1935 surveys, H-6116 and H-6118. In water depths less than 100 fathoms the soundings agree within 1-2 fathoms; in deeper water, the disagreement varies from 2-5 fathoms. In all cases the 1935 soundings are deeper. The comparisons between this survey and the prior surveys were made after velocity corrections and predicted tides were applied to the present survey. With the superior positioning and sounding methods employed during H-9253, compared to those available in 1935, the soundings obtained during the present survey are considered more representative of the actual water depth in the area. ✓



K. COMPARISON WITH THE CHART

This survey was compared with C&GS Chart 5101, scale 1:234,000 (15th Ed., Feb. 1971); with the 1:50,000 scale chart H.O. 15,010-1 (3rd Ed., Jan 8, 1962; Rev. 5/5/69); and with the 1:25,000 scale chart H.O. 15,010-25-1 (2nd ED., May 1952; Rev. 3/16/70). The survey demonstrates good general agreement with the charts in both depth contours and individual soundings. ✓

L. ADEQUACY OF THE SURVEY

The northern part of this sheet comprised of Field No. RA-40-3B-71 is complete and adequate to supersede all prior surveys for charting. ✓

M. AIDS TO NAVIGATION

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

N. STATISTICS

No. of Positions	641	
Total miles Hydro	359.1 naut.	✓
Sq. miles Hydro	107.4 naut.	
No. Bottom Samples	9	
No. Nansen Casts	1	

O. DATA PROCESSING

All data was obtained using the online plot program, AM 100, in conjunction with the PDP 8/e Hydroplot system. This program plots soundings and positions in real time and provides a punched paper tape in the master format with a teletype listing of all hydrographic data collected. ✓

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

A separate master and corrector tape was prepared for each day number. Standard formats, as specified in the instruction manual, Automated Hydrographic Surveys, were used for the TC/TI and Velocity corrector tapes.

For further information on the Hydroplot/Hydrolog system and formats consult the "HYDROLOT/HYDROLOG SYSTEMS MANUAL" published by Marine Data Systems, Rockville, Maryland.

P. REFERENCES TO REPORTS

1. Corrections to Echo Soundings, OPR-411, NOAA Ship RAINIER, 1972.
2. Hi-Fix Report, OPR-411, NOAA Ship RAINIER, 1972.
3. Descriptive Report to Accompany H-9275 (RA-10-1-72), OPR-411, NOAA Ship RAINIER, 1972.
4. Descriptive Report to Accompany H-9276 (RA-10-2-72), OPR-411, NOAA Ship RAINIER, 1972.
5. Descriptive Report to Accompany H-9277 (RA-40-1A-72), OPR-411, NOAA Ship RAINIER, 1972.
6. Descriptive Report to Accompany southern half of H-9253 (RA-40-3A-71), OPR-411, NOAA Ship RAINIER, 1971.

Respectfully submitted,

*Stephen E. Anderly*

Stephen E. Anderly  
LTjg, NOAA

SEPARATES FOLLOWING THE TEXT

1. Tide Note
2. Abstract of Corrections to Echo Soundings
3. Abstract of Corrections to Distance Measurements
4. List of Calibration Signals

✓  
TIDE NOTE

H-9253 (RA-40-3B-71)

The primary tide station at San Diego, California (Lat.  $32^{\circ} 43'N$ , Long.  $117^{\circ} 10'W$ ) will be used to control this survey. This gage operated on time meridian  $120^{\circ}W$ . Hourly heights and time and height differences are being furnished by the National Ocean Survey Tides Branch, Rockville, Maryland.

H-9253

Name on Survey

	A	B	C	D	E	F	G	H	K	
	On Credit No.	On Inventory No.	On U.S. Coast & Geodetic Survey	From 1947 Information	On local sheets	P.O. Guide to	Rand McNally	U.S. Lipps		
GULF OF SANTA CATALINA										1
DANA POINT										2
OCEANSIDE										3
SAN JUAN ROCK										4
SAN MATEO POINT										5
SAN MATEO ROCKS										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25
										26

APPROVED  
 Chas. E. Harrington - C51X2  
 Staff Geographer  
 10 Oct. 1975

ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS

CORRECTIONS IN ~~10~~ FATHOMS

FORM C&GS-117 U.S. DEPARTMENT OF COMMERCE  
(1-1-52) ESSA  
COAST AND GEODETIC SURVEY

VELOCITY CORRECTIONS

Ship RAINIER - SHIP  
G. E. HARSEN Comdg.

These corrections are to be used  
between MARCH 7, 1972 and MARCH 29, 1972  
in the locality SOUTH CALIFORNIA

for hydrographic surveys Nos. OPR 411  
NP-40-3B-21, SA-40-1A-72

(For deep water add a 0 to these figures)

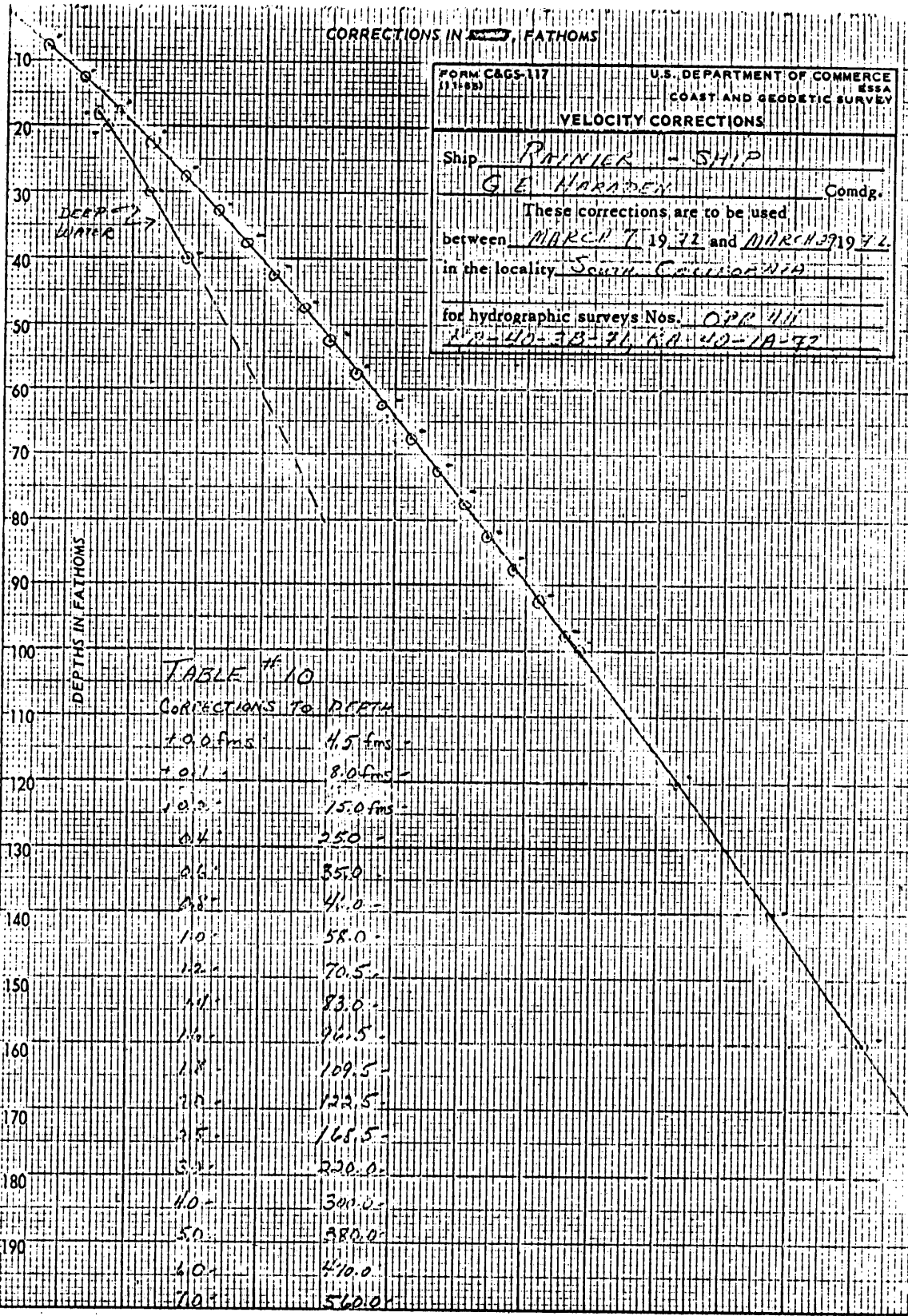


TABLE #10  
CORRECTIONS TO DEPTH

1.0 fms	4.5 fms
2.0	8.0
3.0	15.0
4.0	25.0
5.0	35.0
6.0	41.0
10.0	58.0
12.0	70.5
14.0	83.0
16.0	96.5
18.0	109.5
20.0	122.5
25.0	168.5
30.0	220.0
40.0	300.0
50.0	380.0
60.0	470.0
70.0	560.0

ABSTRACT OF CORRECTIONS TO DISTANCE MEASUREMENTS



ABSTRACT OF CORRECTIONS TO DISTANCE MEASUREMENTS

Sheet RA-40-3B-71

Julian Day	Time	Correction to Pattern 1	Vessel <u>Ship</u> Correction to Pattern 2
067	095730	100010	100040
068	084200	100010	100041
	150200	100010	100141
069	090631	100011	100049
	145631	000291	100049
078	150430	100016	000075
079	085600	100015	000034
080	083500	000003	100006
	144230	100005	100030
	151530	100005	100130
081	083200	100005	100040
082	090230	100018	100036
	151603	000082	100036
083	083310	100016	100041
	083525	000084	100041
	100311	000084	100004
087	145830	100006	000048
088	084230	100016	000049
089	090331	100017	000050

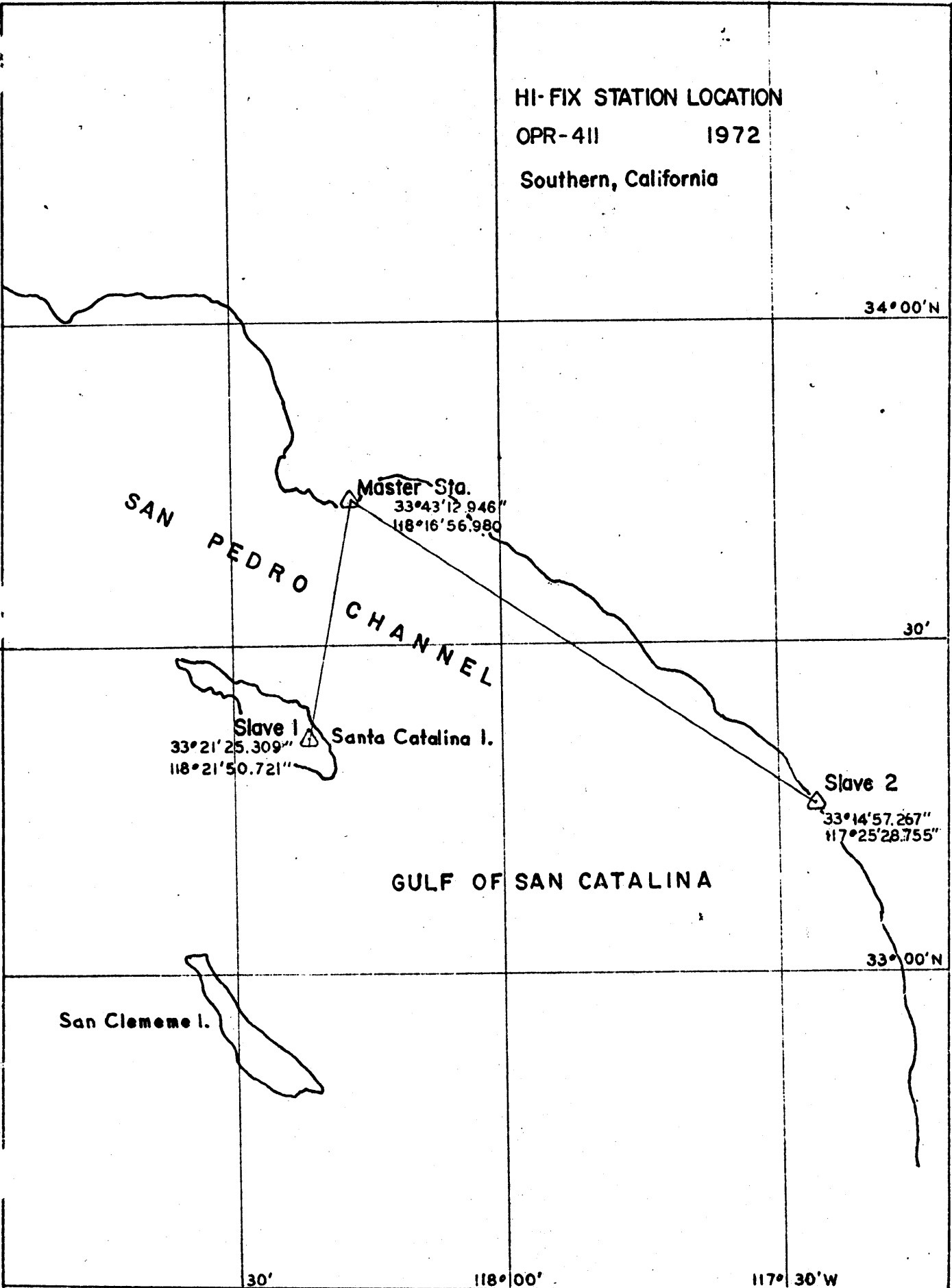
APPENDIX

1. Index to Survey Sheets
2. Sketch showing Hi-Fix Station Locations
3. Position Number Abstract
4. C&GS Form 733-M, Oceanographic Log Sheet M, Bottom  
Sediment Data
5. Parameter Tape Listings
6. Approval Sheet

✓  
LIST OF CALIBRATION SIGNALS  
H-9253 (RA-40-3B-71)

Signal No.	Latitude	Longitude	Origin
011	33 27 4764	117 42 1692	Signal for Dana Pt. Hydro. Survey
022	33 27 1564	117 41 2638	Dana Pt. Marina Outer Brkwtr. Light
028	33 27 2806	117 42 1152	Dana Pt. Northwestern Ban On Brkwtr.
029	33 27 2503	117 41 5833	Dana Pt. Center Ban On Brkwtr.
030	33 27 2080	117 41 4036	Dana Pt. Southeastern Ban On Brkwtr.
509	33 12 2240	117 24 0708	Oceanside Outer Brkwtr. Lt. 1 USN, 1961
510	33 12 2110	117 23 5544	Oceanside SE Ent. Lt. (Rot, Red)
517	33 12 4942	117 24 0475	Camp Delmar S Groin Lt. Red Daybn. 10 USN, 1961
521	33 14 0701	117 22 1483	Camp Pendleton Water Tank, 1956
523	33 14 2615	117 25 0065	Vortac, OCEANSIDE OCN, 1961
601	33 18 3840	117 28 5443	Camp Pendleton North Nav. Lt.
603	33 19 2073	117 29 3634	Orange X-ban
605	33 19 4929	117 30 0550	Piedra, <del>Orange X-ban</del> 1933
607	33 20 4517	117 31 0522	Orange X-ban
701	33 22 5919	117 35 0100	Medio, <del>Orange Triped</del> 1886
703	33 23 1587	117 34 3132	<del>Water Tank N of San Onofre RR Depot, 1933</del>
705	33 23 1753	117 35 4088	<del>San Onofre Water Tank or Triped</del>
707	33 23 5253	117 35 5692	Airway No. 5, <del>Orange Triped</del> 1932
799	33 26 3917	117 38 5250	Cotton 2, <del>Orange Triped</del> 1961
801	33 24 1722	117 36 5905	Prima Reset, 1961
803	33 27 2561	117 42 4608	San Mateo Rock, 1933
			San Juan Rocks (Highest) Rock of Group, 1933

HI-FIX STATION LOCATION  
OPR-411 1972  
Southern, California





OCEANOGRAPHIC LOG SHEET - M  
BOTTOM SEDI MENT DATA

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

VESSEL <i>RAINIER</i>		PROJ. NO. <i>OPR-411</i>		YEAR <i>1972</i>		RA-40-33-71					CHECKED BY		DATE CHECKED	
SERIAL NO.	DATE	LATITUDE	LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMP- PLER	AP- PRO- TRAM-	LENGTH OF CORE	COLOR OF SEDI- MENT	FIELD DESCRIPTION	REMARKS <small>(Type of conditions, nature of disturbed cores, state of preservation, etc.)</small>	OBS. INIT.			
<i>1388</i>	<i>3/28/72</i>	<i>39°26'59.1"</i>	<i>117°51'02.0"W</i>	<i>333.1</i>					<i>gn M</i>	<i>SHAPEX SAMPLER ENG</i>				
<i>1396</i>	<i>"</i>	<i>39°24'02.4"</i>	<i>117°54'12.4"W</i>	<i>316.5</i>					<i>gn M</i>					
<i>1407</i>	<i>3/28/72</i>	<i>39°19'07.9"</i>	<i>117°41'33.4"W</i>	<i>347.5</i>					<i>gn M</i>					
<i>1408</i>	<i>"</i>	<i>39°18'34.6"</i>	<i>117°55'45.5"W</i>	<i>44.5</i>					<i>fine gn bk S w/br. spks</i>	<i>"</i>				
<i>1413</i>	<i>"</i>	<i>39°20'58.9"</i>	<i>117°57'46.3"W</i>	<i>37.4</i>					<i>fine gn bk S w/br. spks.</i>	<i>"</i>				
<i>1418</i>	<i>"</i>	<i>38°22'52.3"</i>	<i>117°59'47.3"W</i>	<i>37.6</i>					<i>fine gn bk S w/br. spks.</i>	<i>"</i>				

Use more than one line per sample if necessary.

USCGM-DC 37018-P68

POSITION NUMBER ABSTRACT

Date	J.D.	Position Numbers
March 7	067	0851-0958
March 8	068	0959-1088
March 9	069	1089-1140
March 18	078	1141-1163
March 19	079	1164-1208
March 20	080	1209-1253
March 21	081	1254-1303
March 22	082	1304-1337
March 23	083	1338-1359
March 27	087	1360-1376
March 28	088	1377-1435
March 29	089	1436-1480
		1481-1483 rejected
		1484-1491

PARAMETER TAPE LISTINGS

OPR-411-RA-72

FEST=119000  
CLAT=3500000  
CMER=118/25/0  
GRID=120  
PLSCL=40000  
PLAT=33/16/00  
PLON=117/56/45  
MLAT=33/43/12.946  
MLON=118/16/56.980  
S1LAT=33/21/25.309  
S1LON=118/21/50.721  
S2LAT=33/14/57.267  
S2LON=117/25/28.755  
Q=1799.6  
VESNO=2120  
YR=72



APPROVAL SHEET

OPR-411

H-9253 (Field No. RA-40-3B-71)

This boat sheet covers the northern half of survey H-9253 which was begun in 1971. The fieldwork and data was examined daily during the survey. The survey is considered adequate and no additional field work is recommended.

The boat sheet and accompanying records are approved for transmittal to PMC Processing Division.

*G. E. Haraden*

G. E. Haraden  
CAPT., NOAA

**HYDROGRAPHIC SURVEY STATISTICS**  
**HYDROGRAPHIC SURVEY NO. H-9253**

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET & PNO		1	BOAT SHEETS		2	
DESCRIPTIVE REPORT		1	OVERLAYS		6	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES	2	1	1			1
CAHIERS	1 & P/O					
VOLUMES						
BOXES						

T-SHEET PRINTS (List)

(Offshore survey 1:40,000)

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				1455
POSITIONS CHECKED		1455		
POSITIONS REVISED		0		
DEPTH SOUNDINGS REVISED		120		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		0		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		0		
	TIME (MANHOURS)			
Verification of Control		6		
Verification of Positions		24		
Verification of Soundings		90		
Smooth Sheet Compilation		40		
		17		
<b>TOTALS</b>		<b>177</b>		
PRE-VERIFICATION BY	BEGINNING DATE		ENDING DATE	
VERIFICATION BY <i>Bruce Alan Olmstead</i> Bruce Alan Olmstead	BEGINNING DATE 10 October 74		ENDING DATE 11 June 75	
REVIEW BY	BEGINNING DATE		ENDING DATE	

VERIFIER'S REPORT  
 HYDROGRAPHIC SURVEY, H 9253

**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	Part III - JUNCTIONS (Continued)	CL	R
<p><b>Note:</b> The verifier should first read the Descriptive Report for general information and problems.</p> <p>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</p>	X		<p>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.</p>	X	
<p>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</p>	X		<p><b>Part IV - VOLUMES</b></p> <p>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</p>	X	
<p>3. All reference to survey sheets mentioned in the Descriptive Report should include registry number and year.                      Remarks Required: -- None</p>	X		<p>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</p>		
<p><b>Part II - SHORELINE AND SIGNALS</b></p> <p>4. Source of shoreline signals                      Remarks Required: -- List all surveys</p> <p>a. Give earliest and latest dates of photographs</p> <p>b. Field inspection date</p> <p>c. Field Edit date</p> <p>d. Reviewed-Unreviewed</p>	X	X			
<p>5. The transfer of contemporary topographic information was carefully examined and reconciled with the hydrography.                      Remarks Required: -- Discuss remaining differences.</p>	X				
<p>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</p>	X				
<p>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.</p>	X		<p><b>Part V - PROTRACTING</b></p> <p>13. All positions verified instrumentally were check marked in color in the sounding records, and verifier initialed the processing stamp.                      Remarks Required: -- None</p>	X	
<p><b>Part III - JUNCTIONS</b></p> <p><b>Note:</b> Make a cursory comparison preliminary to making soundings in area of overlap.</p> <p>8. All junctions of contemporary or overlapping sheets were transferred in colored ink and overlapping curves were made identical.                      Remarks Required: -- None</p>	X		<p>14. The protracting and plotting of all unsatisfactory crossings were verified.                      Remarks Required: -- None</p>	X	
<p>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</p>	X	X	<p>15. All detached positions locating critical soundings, rocks, buoys, breakers, obstructions, kelp, etc., were verified and the position numbers are legible.                      Remarks Required: -- None</p>	X	

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.

CL	R
X	

25. 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.

X	
---	--

17. The protractor has been checked within the last three months.  
 Remarks Required: -- Date of check, type of protractor and number.

X	
---	--

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

X	
---	--

Part VI - SOUNDINGS

18. All soundings are clear and legible, and critical soundings are a little larger than adjacent soundings.  
 Remarks Required: -- None

X	
---	--

Part IX - BOATSHEET

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

X	
---	--

19. Sounding line crossings were satisfactory except as follows:  
 Remarks Required: -- Discuss adjustments.

X	X
---	---

29. Heights of rocks awash were correctly reduced and compared with topographic information.  
 Remarks Required: -- Note excessive conflicts with topographic information.

X	
---	--

20. The spacing of soundings as recorded in the records was closely followed;  
 Remarks Required: -- None

X	
---	--

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

X	
---	--

21. The scanning, reduction, spacing, plotting of questionable soundings have been verified.  
 Remarks Required: -- None

--	--

31. Unnecessary pencil notes have been removed from the sheet.  
 Remarks Required: -- None

X	
---	--

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.

X	
---	--

Part VII - CURVES

23. The depth curves have been inspected before inking.  
 Remarks Required: -- By whom was the penciled curves inspected.

X	X
---	---

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

X	
---	--

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

X	
---	--

33. The bottom characteristics are adequately shown.  
 Remarks Required: -- None

X	
---	--

Part XI - NOTES TO THE REVIEWER

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.

X	
---	--

34. Unresolved discrepancies and questionable soundings.

X	
---	--

35. Notation of discrepancies with photogrammetric survey inserted in report of unreviewed photogrammetric survey or on copy.

X	
---	--

36. Supplemental information.

X	X
---	---

Verified by *Bruce Alan Olmstead*  
 Bruce Alan Olmstead, Cartographic Tech.

Date  
 11 June 75

## VERIFIER'S REPORT

H-9253

Offshore of Oceanside, Gulf of Santa Catalina

RA-40-3-71

This sheet was constructed at Pacific Marine Center, Seattle, Washington. Information relating to this will be noted under the heading by the number and letter as on the Verifier's Report, C&GS Form 946A.

### PART II - SHORELINE AND SIGNALS

4. Hydrographic survey H-9253 (RA-40-3-71) is a 1:40,000 offshore sheet that covers two years of field work. Therefore, all shoreline delineation is covered by five 1:10,000 inshore sheets which junction to the east at the 20-fathom curve.

### PART III - JUNCTIONS

9. H-9114 (MA-40-4-70) - This is a 1:40,000 scale sheet that junctions to the south in 15-440 fathoms of water. Curves were left in pencil between the common areas due to instability of the reproduced copy of the smooth sheet.

H-9251 (RA-10-7-71)  
H-9252 (RA-10-8-71)  
H-9275 (RA-10-1-72)  
H-9276 (RA-10-2-72)

Each of the four junctional sheets, at a scale of 1:10,000, share common hydrographic data. This verifier's ability to make adequate junctions was hindered by stage of processing in three cases and no data available in the case of H-9251 (RA-10-7-71). Consequently, the 20-fathom curve common to all sheets was left in pencil.

H-9277 (RA-40-1-72) - An adjoining survey at the same scale, this survey junctions the 300-fathom and 400-fathom curves to the west. Again, stage of processing prohibited the inking of curves common to both.

H-9467 (FA-10-1-74) - A hydrographic survey, this sheet junctions to the north and contains the 20-fathom, 30-fathom, 40-fathom, 50-fathom and 100-fathom depth curves. Due to scale differences and the stage of processing, all curves within the common area were left in pencil.

### PART VI - SOUNDINGS

19. The range of values between 50 and 300 fathoms constitute much of the Continental Slope region. Because of such precipitous characteristics in this area, some discrepancies resulted from spurious side return values.

PART VII - CURVES

23. The delineation of depth curves on the smooth sheet were inspected by Cartographic Technician, Stanley Otsubo.

The curves were traced directly from the Preliminary Sounding Overlay to the mylar smooth sheet. This necessitated the checking of curves on the paper sounding overlay before inking transferred data. Relatively few adjustments were made to these curves during the inking process.

PART XI NOTES TO THE REVIEWER

36. In order to more accurately delineate the 110-fathom curve, the Ross Fathometer was used on outward bound lines to a depth of approximately 150 fathoms. The PDR was then used until the inward bound soundings decreased to 150 fathoms.

The transmit and receive pulses from the UQN transceiver for deep water sounding was electronically conditioned to provide "start" and "stop" pulses to the Ross Digitizer. This arrangement takes advantage of the digitizing unit which provides digital depth data to the Hydroplot controller in the HYDROPLOT/HYDROLOG system. A high degree of accuracy was obtained during comparisons of digital and analog records.

Respectfully submitted,

*Bruce Alan Olmstead*

Bruce Alan Olmstead  
Cartographic Technician  
June 11, 1975

PROJECTION REQUEST

Form CPM32-1 (12/2/74)

H- 9253

OPR 411

Field No. RA-40-3-71

Requested by Bao

✓ by

Date Required ASAP

1	H	0	9	2	5	3								
---	---	---	---	---	---	---	--	--	--	--	--	--	--	--

Alphanumeric Sheet Label.

14	1	4	2
----	---	---	---

Projection X Dimension (centimeters: 139 maximum).<sup>1</sup>

18	0	9	1
----	---	---	---

Projection Y Dimension (centimeters: 100 maximum).<sup>1</sup>

22	0	2
----	---	---

Projection Type: Ø1=Merc.; Ø2=Polyconic; Ø3=St. Plane; Ø4=Tr. Mercator.

25	0	0	4	0	0	0
----	---	---	---	---	---	---

Scale. (e.g., 40000 for 1:40,000)

33	0	0	0
----	---	---	---

Skew.<sup>2</sup>

37	0	0	0	0
----	---	---	---	---

Grid Interval: 0000 for standard Hydrographic Manual intervals.

42	0	3	3
----	---	---	---

Degrees: (- for South)

46	0	9
----	---	---

Minutes

Latitude of Projection Origin<sup>3</sup>.

49	1	5	0
----	---	---	---

Seconds

54	0	1	1	7
----	---	---	---	---

Degrees: (- for East)

59	5	8
----	---	---

Minutes

Longitude of Projection Origin<sup>3</sup>.

62	1	0	0
----	---	---	---

Seconds

67	1	1	7
----	---	---	---

Degrees

71	4	0
----	---	---

Minutes

Longitude of Central Meridian.

74	0	0	0
----	---	---	---

Seconds

79	0
----	---

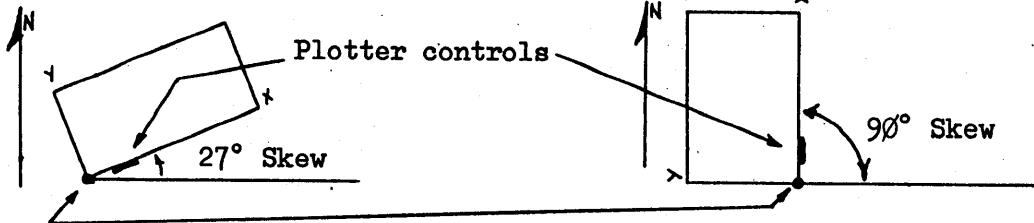
Number of Insets.

80	
----	--

3 Inch Hydro. Limit Border ( 1 if desired: for ship use only).

<sup>1</sup>Physical size of the projection. Sheet extends 2 cm beyond projection drawn.

<sup>2</sup>Sheet Skew: The angle of skew is the counterclockwise angle, measured at the projection origin, which the parallel of latitude makes with that edge of the paper which is adjacent to the plotter controls. e.g.,



<sup>3</sup>Projection Origin: Note, this origin is not necessarily a grid intersection.

CONTROL REQUEST attached \_\_\_\_\_ (form CPM32-3).

LATTICE REQUEST attached \_\_\_\_\_ (form CPM32-2).

INSET REQUEST attached \_\_\_\_\_ (form CPM32-4).

FORM # 3 FIG. 7

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

(RANGE - RANGE)

(1) PROJECT No. 411 (2) H- No. 9253 (3) FIELD No. PA-40-3-71

(4) TYPE OF CONTROL: SHORAN, RAYDIST,  HI-FIX, RADAR  
FREQUENCY (FOR CONVERSION OF RAYDIST OR HI-FIX LANES TO METERS) \_\_\_\_\_

(5) RANGE ONE (R1) LATITUDE 33° 34' 28.845"  
STATION NAME Muddy 1971 LONGITUDE 117° 50' 20.744"

(6) RANGE TWO (R2) LATITUDE 32° 53' 45.253"  
STATION NAME P 2570 1971 LONGITUDE 118° 27' 44.128"

(7) AZIMUTH FROM R1 TO R2 \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "

(8) BASELINE LENGTH IN METERS \_\_\_\_\_ M.

(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 001 TO 250

THIS IS FORM #3 SHEET # 1 OF 4 SHEETS FOR THIS SURVEY.

(13) OTHER REMARKS:



COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

(RANGE - RANGE)

- (1) PROJECT No. 411 (2) H- No. 9253 (3) FIELD No. RA-40-3-71
- (4) TYPE OF CONTROL: SHORAN, RAYDIST,  HI-FIX, RADAR  
 FREQUENCY (FOR CONVERSION OF RAYDIST OR HI-FIX LANES TO METERS) \_\_\_\_\_
- (5) RANGE ONE (R1) LATITUDE 33° 34' 18.745"  
 STATION NAME MURPHY 1871 LONGITUDE 117° 52' 02.744"
- (6) RANGE TWO (R2) LATITUDE 32° 42' 22.935"  
 STATION NAME JUMP 2 1871 LONGITUDE 117° 15' 14.958"
- (7) AZIMUTH FROM R1 TO R2 \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "
- (8) BASELINE LENGTH IN METERS \_\_\_\_\_ M.
- (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 101 TO 850  
 THIS IS FORM #3 SHEET # 2 OF 4 SHEETS FOR THIS SURVEY.
- (13) OTHER REMARKS:

File with  
printouts

## COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

(RANGE - RANGE)

(1) PROJECT No. 411 (2) H- No. 92 (3) FIELD No. PA-40-3-71(4) TYPE OF CONTROL: SHORAN, RAYDIST,  HI-FIX, RADAR  
FREQUENCY (FOR CONVERSION OF RAYDIST OR HI-FIX LANES TO METERS) \_\_\_\_\_(5) RANGE ONE (R1) LATITUDE 33 ° 43 ' 12.946 "  
STATION NAME SLC 1871 LONGITUDE 117 ° 10 ' 5.370 "(6) RANGE TWO (R2) LATITUDE 33 ° 21 ' 15.268 "  
STATION NAME LI 112 1872 LONGITUDE 118 ° 21 ' 5.281 "

(7) AZIMUTH FROM R1 TO R2 \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "

(8) BASELINE LENGTH IN METERS \_\_\_\_\_ M.

(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 27 TO 147

THIS IS FORM #3 SHEET # \_\_\_\_\_ OF \_\_\_\_\_ SHEETS FOR THIS SURVEY.

(13) OTHER REMARKS:

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

(RANGE - RANGE)

(1) PROJECT No. HI (2) H- No. 9253 (3) FIELD No. RA-49-2-71(4) TYPE OF CONTROL: SHORAN, RAYDIST,  HI-FIX, RADAR  
FREQUENCY (FOR CONVERSION OF RAYDIST OR HI-FIX LANES TO METERS) \_\_\_\_\_(5) RANGE ONE (R1) LATITUDE 33° 42' 57.846"  
STATION NAME \_\_\_\_\_ LONGITUDE 117° 16' 53.833"(6) RANGE TWO (R2) LATITUDE 33° 14' 57.867"  
STATION NAME TEMPORARY, 1972 LONGITUDE 117° 25' 56.755"

(7) AZIMUTH FROM R1 TO R2 \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "

(8) BASELINE LENGTH IN METERS \_\_\_\_\_ M.

(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 251 TO 1491

THIS IS FORM #3 SHEET # \_\_\_\_\_ OF \_\_\_\_\_ SHEETS FOR THIS SURVEY.

(13) OTHER REMARKS:

# 9253 - HYDRO B PARAMETER CARD

H.No. 9253  
 Field No. RA-40-3-71  
 Date Aug 23 1973

1971 work

## PARAMETER CARD 1B

MASTER R1 HYDRO NAME	1971	LAT	LONG	DEG. MIN. SEC. SEC. SEC.												
				1	2	3	4	5	6	7	8	9	10			
MITD V	1971	32	11	24	08	15	1	2	3	4	5	6	7	8	9	10

SLAVE R2 HYDRO NAME	1971	LAT	LONG	DEG. MIN. SEC. SEC. SEC.												
				1	2	3	4	5	6	7	8	9	10			
MITD V	1971	32	11	24	08	15	1	2	3	4	5	6	7	8	9	10

SLAVE R3 HYDRO NAME	1971	LAT	LONG	DEG. MIN. SEC. SEC. SEC.												
				1	2	3	4	5	6	7	8	9	10			
MITD 2	1971	32	11	24	08	15	1	2	3	4	5	6	7	8	9	10

FREQUENCY	1900	KHz	DEG. MIN. SEC. SEC. SEC.													
			1	2	3	4	5	6	7	8	9	10				

YEAR OF SURVEY

IDENTIFICATION NUMBERS									
1	2	3	4	5	6	7	8	9	10
7	8	9	0	1	2	3	4	5	6
7	8	9	0	1	2	3	4	5	6

H-No **9253**

-HYDRO B PARAMETER CARD

Field No (AC) PA-40-3-71

Date Aug 23, 1973

PARAMETER CARD 1B

MASTER R1 HYDRO NAME	LAT	LONG	DEG MIN SEC																	
			1	2	3	4	5	6	7	8	9	10								
OLD	1899		13	13	12	14	11	13	11	10	10	10	10	10	10	10	10	10	10	10

SLAVE R2 HYDRO NAME	LAT	LONG	DEG MIN SEC																	
			1	2	3	4	5	6	7	8	9	10								
H1. EIX	1972		21	22	23	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24

SLAVE R3 HYDRO NAME	LAT	LONG	DEG MIN SEC																	
			1	2	3	4	5	6	7	8	9	10								
TEMPER 1	1973		11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11

FREQUENCY	IDENTIFICATION NUMBER	DEG MIN SEC																		
		1	2	3	4	5	6	7	8	9	10									
17996 MHz		17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17

YEAR OF SURVEY

6253

Field No. (AC) PA-40-3-71  
Date Aug 23 1978

PARAMETER CARDS

PARAMETER CARD II

Scal major axis of the earth	6,378,206.4	FCM	1	2	3	4	5	6	7	8	9	10	11	12
X Constant - Distance from central meridian to origin of plotter SP 5		TCM	6	3	7	8	2	0	6	6	4	0	7	
Y Constant - Distance from equator to origin of plotter SP 2/3		TCM	11	12	13	14	15	16	17	18	19	20		
Central Meridian of Projection	117° 49' 00" W	TCM	21	22	23	24	25	26	27	28	29	30		
Plotter Scale/Survey Scale	1:100,000	TCM	31	32	33	34	35	36	37	38	39	40		
North/south axis of sheet - to correspond to (Y axis - 0)		TCM	41	42	43	44	45	46	47	48	49	50		
Foot/Fathom Indicator	0 - feet 1 - fathoms	FCF	51	52	53	54	55	56	57	58	59	60		
H Identification No.		JH	61	62	63	64	65	66	67	68	69	70		
		JH	71	72	73	74	75	76	77	78	79	80		

TOP - 1

PARAMETER CARD III

Lowest Lat. Intersection	33° 10' 00" N	YST	1	2	3	4	5	6	7	8	9	10		
Lowest Long. Intersection	117° 49' 00" W	XST	11	12	13	14	15	16	17	18	19	20		
Difference between Grid		DXL	21	22	23	24	25	26	27	28	29	30		
Interval (Long)		XSN	31	32	33	34	35	36	37	38	39	40		
Interval (Lat)		YSN	41	42	43	44	45	46	47	48	49	50		

Computed  
Punched  
Checked  
Date

2/11  
2/15  
2/15

9/4/73

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 7(-12)): San Diego California

Period: (October through November 1971)

HYDROGRAPHIC SHEET: H-9253.

OPR: 411

Locality: Off Coast, southern California

Plane of reference (mean lower low water): 3.5 feet

Height of Mean High Water above Plane of Reference is 5.0 feet

Remarks:

Zoning: Use San Diego hourly heights with the following corrections for time and height.

<u>Time</u>		<u>Height</u>
LW	HW	
-12 min.		x0.92

*Robert R. Gammon*

Chief, Tides Branch

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): Dana Point, California

Period: March 7 - 29, 1972

HYDROGRAPHIC SHEET: H-9253, H-9274, H-9275, H-9276

OPR: 411

Locality: Dana Point, southern California

Plane of reference (mean lower low water): 3.3 ft.

Height of Mean High Water above Plane of Reference is 4.7 ft.

Remarks: Zoning instructions. Use Dana Point, California hourly heights direct.

8/20/73  
PER HURBARD ONE SAN DIEGO  
CARR WITH -12 AND X.92  
FOR H-9253 (1971) WORK  
- (ALSO FOR H-9274, 75, 76)  
- (ALSO FOR H-9274, 75, 76)  
- (ALSO FOR H-9274, 75, 76)

*[Signature]*  
Chief, Tides Branch



RAINIER  
RA-40-3-71  
H-9253  
TIME MERIDIAN -- 120  
TIDE STATION -- SAN DIEGO  
YEAR -- 1971  
CORRECTIONS IN FATHOMS  
MLLW CORRECTION -- 3.5 FEET ✓  
TIME SHIFT -- PLUS 48 MINUTES FOR DAYS 289 - 302  
TIME SHIFT -- MINUS 12 MINUTES FOR DAYS 318 - 320  
RANGE RATIO -- 00.92

*File with  
print out*

031400 00 1002 0000 289 0 014800 000000  
035500 00 1003  
043400 00 1004  
051000 00 1005  
054600 00 1006  
062700 00 1007  
073500 00 1008  
075800 00 1009  
091700 00 1008  
101000 00 1007  
105200 00 1006  
113600 00 1005  
122200 00 1004  
132400 00 1003  
144000 00 1002  
153900 00 1003  
162100 00 1004  
170400 00 1005  
175000 00 1006  
183200 00 1007  
210500 00 1008  
214900 00 1007  
223300 00 1006  
231100 00 1005  
234700 00 1004  
003500 00 1003 0000 290 0 000000 000000  
005900 00 1002 0000 301 0 000000 000000  
014800 00 1003  
024200 00 1004  
034600 00 1005  
081200 00 1006  
120400 00 1005  
135400 00 1006  
174300 00 1007  
183300 00 1006  
191600 00 1005

200100	00	1004			
205200	00	1003			
214600	00	1002			
002700	00	1001	0000	302	0 000000 000000
012200	00	1002			
020800	00	1003			
025200	00	1004			
034600	00	1005			
044600	00	1006			
074200	00	1007			
084900	00	1006			
100400	00	1005			
123700	00	1004			
140100	00	1005			
151500	00	1006			
170200	00	1007			
173400	00	1008			
185800	00	1007			
194100	00	1006			
202000	00	1005			
205900	00	1004			
213900	00	1003			
222300	00	1002			
014800	00	1003	0000	318	0 014800 000000
023900	00	1004			
031800	00	1005			
035800	00	1006			
045000	00	1007			
071200	00	1008			
080700	00	1007			
084800	00	1006			
092200	00	1005			
095900	00	1004			
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131300	00	1001			
142900	00	1002			
151600	00	1003			
155900	00	1004			
164700	00	1005			
195700	00	1006			
210900	00	1005			
220200	00	1004			
231200	00	1003			
003800	00	1002	0000	319	0 000000 000000
015700	00	1003			
024000	00	1004			
032300	00	1005			
040400	00	1006			
044200	00	1007			
053000	00	1008			

071800 00 1009  
081300 00 1008  
084900 00 1007  
092100 00 1006  
095400 00 1005  
103000 00 1004  
110900 00 1003  
115700 00 1002  
142900 00 1001  
151700 00 1002  
160000 00 1003  
164300 00 1004  
173100 00 1005  
204900 00 1006  
214300 00 1005  
223600 00 1004  
020000 00 1003 0000 320 0 000000 000000  
025100 00 1004  
032900 00 1005  
040800 00 1006  
045000 00 1007  
053400 00 1008  
075100 00 1009  
084200 00 1008  
091800 00 1007  
095100 00 1006  
102400 00 1005

RAINIER  
RA-40-3-71  
H-9253  
TIME MERIDIAN -- 120  
TIDE STATION -- DANA POINT  
YEAR -- 1972  
CORRECTIONS IN FATHOMS  
MLLW CORRECTION -- 3.3 FEET ✓  
TIME SHIFT -- ZERO  
RANGE RATIO -- 01.00

010000 00 1008 0000 067 0 010000 000000

030000 00 1007

040000 00 1006

050500 00 1005

055900 00 1004

072200 00 1003

091500 00 1002

095900 00 1003

100000 00 1004

104200 00 1003

114000 00 1002

134800 00 1003

174100 00 1004

204800 00 1005

231600 00 1006

015900 00 1007 0000 068 0 000000 000000

020000 00 1008

035900 00 1007

053100 00 1006

063000 00 1005

072400 00 1004

081900 00 1003

101400 00 1002

114500 00 1001

132600 00 1002

144900 00 1003

170000 00 1004

214700 00 1005

004600 00 1006 0000 069 0 000000 000000

025900 00 1007

040000 00 1008

052400 00 1007

062600 00 1006

071500 00 1005

080400 00 1004

085000 00 1003

094600 00 1002

131800 00 1001  
144100 00 1002  
152400 00 1003  
160000 00 1004  
230800 00 1005  
232400 00 1006  
234100 00 1007  
002700 00 1008 0000 078 0 000000 000000  
004700 00 1007  
010800 00 1006  
013800 00 1005  
020700 00 1004  
023200 00 1003  
030000 00 1002  
033800 00 1001  
061000 00 1000  
065600 00 1001  
073100 00 1002  
081000 00 1003  
090000 00 1004  
093000 00 1005  
125900 00 1006  
134300 00 1005  
143300 00 1004  
175400 00 1003  
183300 00 1004  
190600 00 1005  
193900 00 1006  
201600 00 1007  
210000 00 1008  
214400 00 1009  
000600 00 1010 0000 079 0 000000 000000  
010000 00 1009  
012900 00 1008  
015500 00 1007  
021900 00 1006  
024300 00 1005  
030600 00 1004  
033000 00 1003  
040000 00 1002  
053800 00 1001  
064800 00 1000  
081000 00 1001  
085500 00 1002  
093700 00 1003  
103500 00 1004  
115100 00 1005  
132000 00 1006  
145900 00 1005  
183800 00 1004  
192800 00 1005

201600 00 1006  
205600 00 1007  
214200 00 1008  
231300 00 1009  
003500 00 1010 0000 080 0 000000 000000  
013400 00 1009  
021400 00 1008  
024100 00 1007  
030900 00 1006  
034500 00 1005  
042100 00 1004  
050000 00 1003  
054000 00 1002  
065900 00 1001  
083000 00 1000  
095900 00 1001  
104000 00 1002  
114800 00 1003  
125200 00 1004  
135900 00 1005  
140000 00 1004  
170000 00 1005  
182700 00 1004  
202600 00 1005  
212600 00 1006  
222900 00 1007  
233400 00 1008  
020600 00 1009 0000 081 0 000000 000000  
030000 00 1008  
034300 00 1007  
042400 00 1006  
050300 00 1005  
054100 00 1004  
061900 00 1003  
070500 00 1002  
105300 00 1001  
121200 00 1002  
131600 00 1003  
143700 00 1004  
155900 00 1005  
182000 00 1006  
220000 00 1005  
232800 00 1006  
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034800 00 1008  
043800 00 1007  
052000 00 1006  
060000 00 1005  
063400 00 1004  
071300 00 1003  
080500 00 1002

090800	00	1001			
112300	00	1000			
121000	00	1001			
132500	00	1002			
143300	00	1003			
152400	00	1004			
164700	00	1005			
193800	00	1006			
001900	00	1005	0000	083	0 000000 000000
012700	00	1006			
023000	00	1007			
052700	00	1008			
062200	00	1007			
070000	00	1006			
073500	00	1005			
081000	00	1004			
084500	00	1003			
092500	00	1002			
101800	00	1001			
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134700	00	1001			
143300	00	1002			
151300	00	1003			
154800	00	1004			
163900	00	1005			
175900	00	1006			
190000	00	1007			
204800	00	1006			
221200	00	1005			
234700	00	1004			
003400	00	1003	0000	087	0 000000 000000
023100	00	1002			
032500	00	1003			
040700	00	1004			
044300	00	1005			
051500	00	1006			
054800	00	1007			
063500	00	1008			
081900	00	1009			
090400	00	1008			
094500	00	1007			
101800	00	1006			
104500	00	1005			
111300	00	1004			
114300	00	1003			
122400	00	1002			
135900	00	1001			
151000	00	1001			
155600	00	1002			
162800	00	1003			
165700	00	1004			

172700	00	1005			
180000	00	1006			
184300	00	1007			
195900	00	1008			
200000	00	1009			
211600	00	1008			
220400	00	1007			
224500	00	1006			
231700	00	1005			
234700	00	1004			
002400	00	1003	0000	088	0 000000 000000
011600	00	1002			
025900	00	1001			
035500	00	1002			
043300	00	1003			
050700	00	1004			
054200	00	1005			
061700	00	1006			
065500	00	1007			
092500	00	1008			
100300	00	1007			
103700	00	1006			
110800	00	1005			
113800	00	1004			
121100	00	1003			
130000	00	1002			
153100	00	1001			
161100	00	1002			
163800	00	1003			
170600	00	1004			
174100	00	1005			
181800	00	1006			
190000	00	1007			
200000	00	1008			
202900	00	1009			
220300	00	1008			
223500	00	1007			
230300	00	1006			
233200	00	1005			
000300	00	1004	0000	089	0 000000 000000
004200	00	1003			
012700	00	1002			
040000	00	1001			
044200	00	1002			
051400	00	1003			
054200	00	1004			
061700	00	1005			
070700	00	1006			
074500	00	1007			
094800	00	1008			
103400	00	1007			



111000	00	1006
114500	00	1005
122200	00	1004
130400	00	1003
141900	00	1002
143700	00	1001
155900	00	1002
164200	00	1003
171400	00	1004
174400	00	1005
181800	00	1006
190000	00	1007
195200	00	1008
213400	00	1009
223600	00	1008
230000	00	1007
230900	00	1006
231800	00	1005
232600	00	1004
233500	00	1003
234400	00	1002
235400	00	1001

0

Velocity Corrector Table # 20  
Sheet RA-40-3A-71

Depth	Corr.
000030	0 0000 0020 000 000000 000000
000075	0 0001
000110	0 0002
000220	0 0004
000325	0 0006
000440	0 0008
000560	0 0010
000675	0 0012
000800	0 0014
000925	0 0016
001010	0 0018
001280	0 0020
001500	0 0025
002180	0 0030
002920	0 0040
003730	0 0050
004680	0 0060
005590	0 0070

Ship  
Tc/TI Tape  
Sheet RA-40-3A-71

111002	0	0025	0020	289	000000	000000
090000	0	0025	0020	301	000000	000000
080001	0	0025	0020	302	000000	000000
100654	0	0025	0020	318	000000	000000
081701	0	0025	0020	319	000000	000000
161746	0	0025				
000000	0	0025	0020	320	000000	000000

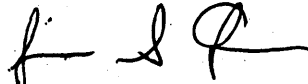
TC/TI TAPE  
SHEET RA-40-3B-71  
SHIP

095730	0	0025	0010	067	000000	000000
084200	0	0025	0010	068	000000	000000
090631	0	0025	0010	069	000000	000000
150430	0	0025	0010	078	000000	000000
085600	0	0025	0010	079	000000	000000
083500	0	0025	0010	080	000000	000000
083200	0	0025	0010	081	000000	000000
090230	0	0025	0010	082	000000	000000
083310	0	0025	0010	083	000000	000000
145830	0	0025	0010	087	000000	000000
084230	0	0025	0010	088	000000	000000
090331	0	0025	0010	089	000000	000000

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

H 9253

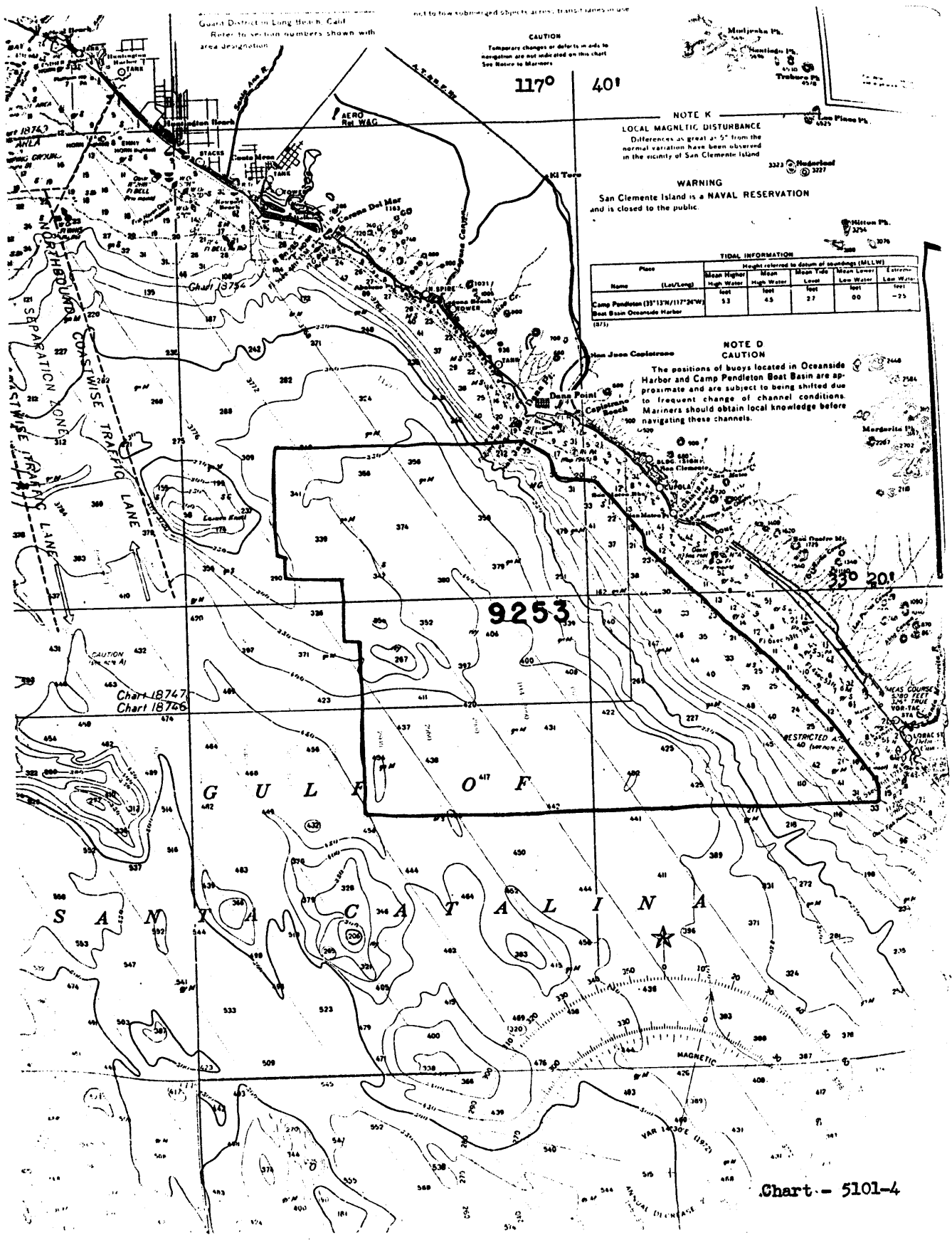
Parameter For H-9253

Form CPM 32-1

H09253 142 091 02 0040000 000 0000 033 09 15.0 0117 58 10.0 117 40 00.0 5

H-9253 1620/5 CONTROL REQUEST FORM CPM 32 3

STA	CRT	THE	DISP	@	ALPHANUMERIC --- 33 CHAR. MAXIMUM	DMS -- LAT.	DMS -- LON.	ELEV	FREQNCY	YR
001	250				MUDDY,1971	33 34 0885	117 50 0074		1799.6	71
002	250				ROGER RM 2,1971	32 53 4535	118 27 4413		1799.6	71
003	139			0	EASTER CROSS %NEW0,1955	32 50 2314	117 14 3770			71
007	250				JUMP 2 RM 1,1971	32 42 2299	117 15 1496		1799.6	71
009	139			0	NORTHWEST RANGE USN,1933	32 54 3478	117 15 0727			71
015	139			0	DEL MAR STACK,1933	32 57 4216	117 16 0069			71
017	139			0	TOWER OF MANDION,1933	32 57 4820	117 15 3086			71
017	139			0	1933	32 57 4820	117 15 3086			71
115	139			0	SILVER TANK,VENT ATOP,LEUCADIA,	33 03 4247	117 16 5181			71
115	139	328	01.8	0	1971	33 03 4247	117 16 5181			71
479	139			0	POST 3,1971	33 06 3635	117 19 1780			71
511	139			0	SAN DIEGO GAS AND ELECTRIC	33 08 1197	117 20 0914			71
511	139			0	COMPANY ENCINO PLANT CENTER	33 08 1197	117 20 0914			71
511	139			0	STACK,1959	33 08 1197	117 20 0914			71
513	139			0	MULL 2,1933	33 08 5671	117 20 4544			71
509	139	175	07.0	0	CAMP DEL MAR OUTER BKW	33 12 2240	117 24 0708			71
509	139	178	06.5	0	LIGHT 1 USN,1961	33 12 2240	117 24 0708			71
510	243			2		33 12 2110	117 23 5544			71
510	243			2		33 12 2110	117 23 5544			72
515	139			0	CAMP DEL MAR INNER BREAKWATER	33 12 4210	117 24 0993			71
515	139	307	00.6	0	LIGHT 6 USN,1961	33 12 4210	117 24 0993			71
521	139	160	07.0	0	CAMP PENDLETON WATER TANK,1956	33 14 0701	117 22 1483			71
523	139	307	00.6	0	VORTAC, OCEANSIDE OCN,1961	33 14 2615	117 25 0065			71
004	254					33 43 1295	118 16 5698		1799.6	72
005	250				HI FIX,1972	33 21 2531	118 21 5072		1799.6	72
006	250				TEMPORARY,1972	33 14 5727	117 25 2875		1799.6	72
011	243			2		33 27 4764	117 42 1692			72
022	243			2		33 27 1564	117 41 2638			72
028	243	270		2		33 27 2806	117 42 1152			72
029	243			2		33 27 2503	117 41 5833			72
030	243	040		2		33 27 2080	117 41 4036			72
509	139	175	07.0	0	CAMP DEL MAR OUTER BKW	33 12 2240	117 24 0708			72
509	139	178	06.5	0	LIGHT 1 USN,1961	33 12 2240	117 24 0708			72
517	139	040		0	CAMP DEL MAR S GROIN LIGHT	33 12 4942	117 24 0475			72
517	139				USN,1961	33 12 4942	117 24 0475			72
521	139	160	07.0	0	CAMP PENDLETON WATER TANK,1956	33 14 0701	117 22 1483			72
523	139			0	VORTAC, OCEANSIDE OCN, 1961	33 14 2615	117 25 0065			72
601	243					33 18 3840	117 28 5443			72
603	139			2		33 19 2073	117 29 3634			72
605	139			0	PIEDRA,1933	33 19 4929	117 30 0550			72
607	139			2		33 20 4517	117 31 0522			72
701	139			0	MEDIO,1886	33 22 5919	117 35 0100			72
703	139			0	WATER TANK N OF SAN ONOFRE	33 23 1587	117 34 3132			72
703	139			0	RR DEPOT,1933	33 23 1587	117 34 3132			72
705	139	135	01.0	0	AIRWAY NO. 5,1932	33 23 1753	117 35 4088			72
707	139			0	COTTON 2,1961	33 23 5253	117 35 5692			72
799	139			0	PRIMA RESET,1961	33 26 3917	117 38 5250			72



Guard District in Long Beach, Calif.  
Refer to section numbers shown with  
area designation.

**CAUTION**  
Temporary changes or defects in aids to  
navigation are not indicated on this chart  
See Notice to Mariners

**NOTE K**  
**LOCAL MAGNETIC DISTURBANCE**  
Differences as great as 5' from the  
normal variation have been observed  
in the vicinity of San Clemente Island

**WARNING**  
San Clemente Island is a NAVAL RESERVATION  
and is closed to the public.

**TIDAL INFORMATION**

Name	Place (Lat/Long)	Height referred to datum of soundings (MLLW)				
		Mean Higher High Water	Mean High Water	Mean Low Water	Low Water	Extreme Low Water
Camp Pendleton	(33°13'N/117°24'W)	5.3	4.5	2.7	0.0	-2.5
Boat Basin Oceanside Harbor	(33°)					

**NOTE D**  
**CAUTION**  
The positions of buoys located in Oceanside  
Harbor and Camp Pendleton Boat Basin are  
approximate and are subject to being shifted due  
to frequent change of channel conditions.  
Mariners should obtain local knowledge before  
navigating these channels.

Chart - 5101-4

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9253

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
5142	3/30/76	D.C. Larson	<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No. <i>Final</i>
5101 (18740)	4/09/76	DC Larson	<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No. <i>Final</i>
18774	2/9/77	Diak Kill	<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No. <i>Final</i> PARTLY APO TITAN CHART 5101
18022	12/14/78	R. A. Lillis	<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No. 40
18020	12/19/78	R. A. Lillis	<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No. 31
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
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