

10164

Diagram No. 5202-3

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey ... Hydrographic
Field No. FA-20-2-84
Office No. H-10164

LOCALITY

State California
General Locality .. Santa Barbara Channel
Locality Santa Barbara to Naples

19 84

CHIEF OF PARTY
CAPT. C. Andreasen

LIBRARY & ARCHIVES

DATE July 25, 1985

☆U.S. GOV. PRINTING OFFICE: 1980-766-230

Area 5 & 6
Chits

18725

18721

18720

18020

18022

501

530

50

50 applied

100

232

1,444

868

TO SIGN OFF SEE

"RECORD OF APPLICATION"

HYDROGRAPHIC TITLE SHEET

H-10164

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.

FA-20-2-84

State CALIFORNIA

General locality SANTA BARBARA CHANNEL

Locality SANTA BARBARA TO NAPEES

Scale 1:20,000 Date of survey October 18 to November 20

Instructions dated January 19, 1984 Project No. OPR-L100-FA-84

Vessel NOAA Ship FAIRWEATHER and launches 2023, 2024, 2025, and 2029

Chief of party Capt. C. Andreasen

Surveyed by Lt.Cdr. Andreen, Lt. Otsubo, Lt(jg) Tisch, Ens. Salmore, Ens. Mitchell,
Ens. Timmons, Ens. Hurst, Ens. Brezinski, CST Krick

Soundings taken by echo sounder, hand lead, pole Raytheon DSF 6000N

Graphic record scaled by FAIRWEATHER personnel

Graphic record checked by FAIRWEATHER personnel

Verified I. Almacen Automated plot by PMC Xynetic Plotter

Evaluated K.M. Scott

Soundings in fathoms feet at MLW MLLW and tenths

REMARKS: Revisions and marginal notes in black by the evaluator. SoSeparates are filed with the raw data.ANVOIS / SURF 7/29/85 -AAASC 12-996

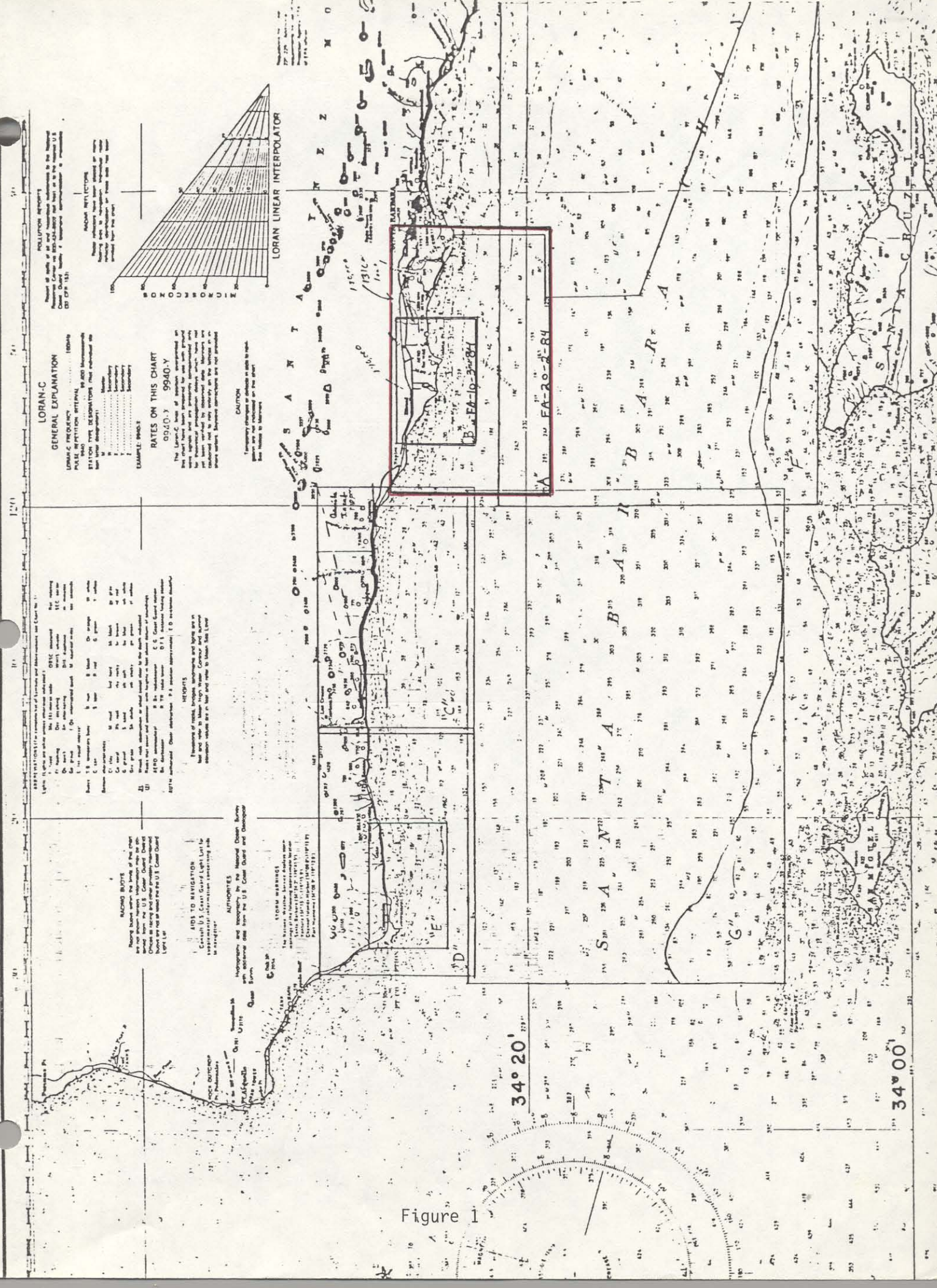


Figure 1

A. Project

This hydrographic survey was conducted in accordance with Project Instructions, OPR-L100-FA-84, Southern California Coast, dated 19 January 1984 with Change No. 1, dated 31 January 1984 and Change No. 2, dated 2 August 1984. The PMC OORDER and the Hydrographic Manual (Fourth Edition) also applicable. ✓

B. Area Surveyed

The area covered by this survey lies on the northern side of the Santa Barbara Channel, from Santa Barbara westward to Naples. The outer limits of the survey can be roughly described by lines connecting the following points in a clockwise manner with the exception of the northern boundary which follows the shoreline: ✓

<u>Latitude</u>	<u>Longitude</u>
Northeast - 34 23'42"N, 119 42'24"W	
Southeast - 34 19'00"N, 119 42'30"W	
Southwest - 34 18'54"N, 119 59'36"W	
Northwest - 34 26'54"N, 119 58'48"W	

The inner limits of this survey consist of the junction with contemporary survey H-10165 (FA-10-3-84), which lies within H-10164, in the vicinity of Goleta and Coal Oil Points. Refer to Figure 1, Boatsheet Layouts, for a diagram illustrating the inner limits of this survey. ✓
Survey operations were begun on 18 October 1984 (JD 292) and ended on 20 November 1984 (JD 325).

C. Sounding Vessels

Hydrography on this survey was conducted by FAIRWEATHER (2020) along with Jensen launches FA-3 (2023), FA-4 (2024), FA-5 (2025), and Monark 3 (2029). FAIRWEATHER (2020) was used to obtain all sound velocity casts (see Table II, Velocity Casts). Bottom samples were collected by FA-5 (2025) and by FAIRWEATHER (2020). Monark 3 (2029) was used to take detached positions and perform shoreline verification. No unusual sounding configurations were used during this survey. ✓

D. Sounding Equipment and Corrections to Echo Soundings

FAIRWEATHER, and her survey launches were equipped with the dual beam Raytheon DSF-6000N echo sounders to obtain soundings during this survey. ✓
The Monark used a portable Raytheon 719C echo sounder and sounding pole. See Table I, Sounding Equipment, for a list of equipment used by vessel and date.

Table I
Sounding Equipment

<u>Vessel</u>	<u>Date</u>	<u>Instrument/Model</u>	<u>Recorder</u>
FAIRWEATHER (2020)	JD 319-320	Raytheon DSF-6000N	A113N
	JD 325	Raytheon DSF-6000N	A113N
FA-3 (2023)	JD 295-296	Raytheon DSF-6000N	B048N
	JD 298	Raytheon DSF-6000N	A104N
	JD 308	Raytheon DSF-6000N	B048N
	JD 310	Raytheon DSF-6000N	A113N
	JD 313-325	Raytheon DSF-6000N	B048N
FA-4 (2024)	JD 310-313	Raytheon DSF-6000N	A121N
	JD 320-322	Raytheon DSF-6000N	A121N
	JD 324	Raytheon DSF-6000N	A113N
FA-5 (2025)	JD 295-296	Raytheon DSF-6000N	A104N
	JD 305-325	Raytheon DSF-6000N	B039N
MON-3 (2029)	JD 292	Raytheon 719C	10280
	JD 305-324	Sounding Pole	

The new Raytheon DSF-6000N recorders do not require belt tension or phase checks each morning however, two internal DSF-6000N tests, TEST 1 and TEST 2, were required daily at the beginning of hydrography. Echo sounding equipment was monitored continuously while on line. All hydrographic data was scanned at least twice to insert peaks and deeps between soundings and to ensure proper depth digitization. The effects of excess wave and swell action were adjusted at this time.

Several problems, both operational and mechanical were experienced with the DSF-6000N echo sounders. Operationally, three major difficulties were found that are currently inherent in the echo sounders which have a tremendous impact on the quality of this survey.

The first problem is that these instruments are great fish finders. Unfortunately, a school of fish at or near the ocean bottom can appear exactly like a shoal or peak. This was encountered a couple of times during the survey, requiring sounding lines to be re-run and/or extensive developments of reduced line spacing to be performed. The "fish-peaks" would be found while obtaining the main scheme hydro and upon returning to the developed area, regardless of whether it was a few minutes or a few days later, nothing would be found. Examples of this can be seen on Development "A". In all cases, the bottom was scanned by at least 200% coverage from the echo sounders' beam width. If nothing was found during the development, the initial trace was labeled "fish" and deleted from the data.

The second major problem experienced was that the DSF-6000N echo sounders could not sound in waters less than approximately one fathom,

depending on the individual unit. As a result, the zero fathom curve, and in some cases, the one fathom curve, were not delineated on this survey.

The sensitivity of the DSF-6000N was the third inconvenience. It will digitize on small items in the water column thus producing a large number of missed depths. Since sounding marks are not made at the digitized depth these incorrect depths can be easily missed. It should also be noted that in the non-computerized launches, only the "fix" marks are produced on the echogram. For a more indepth discussion of these problems, see the Corrections to Echo Soundings Report, OPR-L100-FA-84.

Only a few mechanical problems were experienced with the DSF-6000N echo sounders. In FA-3 (2023) the stylus belt came off S/N B048N several times on JD 308 and 309. It was replaced by S/N A113N. FA-4 (2024) experienced problems on JD 310 when echo sounder S/N A121N would not sound in water greater than 150 fathoms. This was resolved by an adjustment to the receiver board. On JD 322 and 323, S/N A121N in FA-4 (2024) intermittently began drawing a wavy trace. The cause of this problem has not yet been determined. S/N A121N was replaced by S/N A113N for the remainder of the survey. No problems were experienced in FA-5 (2025) during this survey.

In referring to Table 1, Sounding Equipment, it may be noted that other echo sounder replacements occurred which are not accounted for in the above list of mechanical problems. Two surveys (H-10164 and H-10165) were conducted interchangeably during the same time period. Mechanical problems developed while working on the other survey which required the exchange of echo sounders but did not result in loss of data or time or otherwise impact this survey, and therefore were not included in the above list.

FAIRWEATHER also utilized the Raytheon DSF-6000N echo sounder when performing ship hydro. The port midships EDO transducer was used for the DSF-6000N. It is located along the centerline of the ship. See figure 2, FAIRWEATHER Transducer Location Diagram, for a sketch of the transducer locations.

Diver's detached positions were obtained using a Lietz Fiberglass tape measure or pneumatic depth gauge manufactured by 3-D Instruments, Inc., (s/n 8302079N). Data acquisition using this gauge consisted of the following procedure: The orifice of the gauge was attached to 150 ft. air hose which was held in place at the least depth position by divers. A surface tender pressurized the system three times using air from a scuba tank and then recorded the averaged gauge value.

The pneumatic gauge was calibrated on 5 April 1984 by 3-D Instruments, Inc. and found to have an accuracy of 1/4 per cent of full scale (230 ft.). For depths obtained during this project, the accuracy was found to be 0.11 ft. for a maximum depth of 44.3 ft.

Daily system calibrations were performed to confirm accuracy standards of the pneumatic gauge. This check consisted of securing the orifice to a weighted tape and lowering it from the water surface to a maximum of 60 ft. At five foot increments, the gauge system would be pressurized and the value recorded. Comparisons were made to the weighted tape following a

method similar to that of bar checks. These checks are included with the raw data.

FAIRWEATHER's three survey launches, FA-3 (2023), FA-4 (2024) and FA-5 (2025), were tested for settlement and squat on 1 March and 6 March 1984 in Shilshole Bay, Seattle, Washington. Measurements were conducted in accordance with Section 4.9.4.2 of the Hydrographic Manual. It was determined that there was no applicable settlement and squat corrections for any launches when performing surveys in fathoms. Refer to the Corrections to Echo Soundings Report, OPR-L100-FA-84 for details concerning settlement and squat tests.

Settlement and squat tests were not conducted for FAIRWEATHER or the skiff. This corrector is not applicable to the ship due to her operating depths, and the skiff operates at speeds where the effect of settlement and squat correctors is insignificant. Therefore, no settlement and squat correctors were applied to data collected by these vessels. FAIRWEATHER'S TRA value of 2.3 fathoms is based on a mean draft of 13.8 feet.

Only one bar check was performed daily, wind and seas permitting and equipment functioning. This bar check ensured that the Raytheon DSF-6000N echo sounders were operating properly. Bar checks were not performed in the same manner as when checking the Ross Fineline 5000 echo sounders. Initial attempts at taking a 7 fathom bar check using the Raytheon DSF-6000N proved difficult under the best conditions, requiring 45 minutes to check high and low digitizing. The primary problem in obtaining bar check data was that the analog trace showed the bar, but the echo sounder digitized the bottom depth instead of the bar. This was resolved by using the range, phase and gain switches to observe a water depth less than the bottom depth, so that the bottom could not be observed by the echo sounder. Cdr. Dean Seidel recommended that a check at either the two or three fathom depth would be sufficient to test the system and obtain TRA information. Both Mr. Dennis Hill and LT Maureen Kenny, MOP211, were consulted before implementing this change.

Bar check data combined with the velocity correctors determined launch TRA values. For this project, FA-3 (2023), FA-4 (2024), and FA-5 (2025) had a TRA of 0.3 fathoms. All soundings on the final field sheet were plotted using the 0.3 fathom TRA for all launches.

The 17 foot aluminum skiff, Monark-3, was used for shoreline verification. This vessel was equipped with a sounding pole, a lead line and a Raytheon 719C portable echo sounder. The applied TRA for the 719C echo sounder is based on physical measurements of the transducer installation and comparison to depths measured by sounding pole. The TRA was found to be 1.7 feet. All data acquired with the Raytheon 719C was read from the analog trace and logged by hand in the sounding volumes along with the data collected by lead line or sounding poles. No leadline or sounding pole correctors are applicable to the data collected during this project. All data from the skiff was collected in feet and logged in feet in sounding volumes and data tapes. Plotting on the field sheets was done in fathoms.

Wind and sea conditions occasionally made it necessary to visually average the depth profile to correct for heave action. When heave averaging was required, soundings were corrected in accordance with Section 4.9.3.2 of the Hydrographic Manual. During this project winds ranged from 0 to 40 knots and seas from 0 to 10 feet over the duration of the survey.

Velocity correctors were determined from two Nansen casts, and one SV/D cast. Table II, Velocity Casts, shows the date and locations of all casts. Table III, Velocity Tables, shows which casts were used to derive each velocity corrector table. The velocity tables were applied to all soundings on the final field sheets.

Table II
Velocity Casts

<u>Cast #</u>	<u>Date (JD)</u>	<u>Latitude</u>	<u>Longitude</u>
1 (Nansen)	275	34/18/11 N	120/02/41 W
2 (Nansen)	293	34/17/06 N	120/04/42 W
3 (SV/D)	325	34/16/54 N	120/02/30 W

Table III
Velocity Tables

<u>Table #</u>	<u>Based on Cast(s)</u>	<u>Vessels</u>	<u>Dates (JD)</u>
1	1,2,3	2023,2024, 2025	292-325
2	3	2020	319-325

The SV/D cast (#3) was performed using a Plessy Model 9040 Environmental Profiling System, serial number 5632. This instrument was calibrated at the Northwest Regional Calibration Center (NRCC) in February 1984. An onboard PDP8/e FOCAL computer program was used to convert the frequency readings of the SV/D system to engineering units for determination of sound velocity profiles. Two Nansen bottles, one at the surface and one at depth were also taken during the SV/D cast as a check on the Plessy system. These were not used in the determination of the velocity tables.

The reversing thermometers used for the Nansen casts (#9476, 9477, 9480, 9963, 985-68, 988-68, 1001-68, 101-268, 101-568, 124-266, 10447, 10448, 16050, 16052, 16054, 16056, 16058 and 350) were calibrated at NRCC. #16050, 16054, 16056 and 16058 were calibrated in February 1983, 16052 was calibrated in September 1983, and the rest were calibrated in April and May of 1984. The Beckman salinometer, serial number 59314, was calibrated at NRCC in March 1984.

TC/TI tapes were made in accordance with PMC OPORDER, Appendix Q, dated 13 April 1984. Printouts of TC/TI tapes are included in Appendix D of this report.

Predicted tide correctors were applied to the soundings plotted on the field sheets for this project. The tide correctors used for all sheets were from Los Angeles (Outer Harbor) station (#437) in Table 2 of the 1984 West Coast of North and South America Tide Tables with zone correctors from N/OMS121 applied. For further information refer to the Field Tide Note that is included with the separates following the text.

E. Hydrographic Sheets

All field sheets were plotted aboard FAIRWEATHER using PDP 8/e computers and Complot Plotters. This survey consists of three final field sheets. All are plotted on mylar. The dimension, scale and skew of each sheet are as follows:

<u>Area</u>	<u>Dimensions</u>	<u>Skew</u>	<u>Scale</u>
20 - 2 North	21.5x56 inches	349	1:20,000
20 - 2 South	21x50 inches	0	1:20,000
Development A	18x20 inches	0	1: 5,000

All hydrographic data for this survey will be forwarded to the Pacific Marine Center, N/MOP21, for verification and smooth plotting.

F. Control Stations

Horizontal control operations on this survey were conducted by FAIRWEATHER personnel. Eight stations were recovered using conventional methods. Nine stations, PARK, EDWARDS 1933 AZIMUTH 2, NAPLES 2, GOLF, GOLF RM 2, OIL, CAMPBELL PROPERTY MONUMENT, TP-2, and PELICAN RM 2 were established by traverse. One station, PELICAN 3, was established in the same position as PELICAN 2, when the latter disk was found to be missing. The North American 1927 Datum was used throughout the project. All positions meet or exceed Third-Order, Class I specifications. No unconventional survey methods were used, no anomalies in control adjustment or in closures were encountered.

The following stations were used in support of this survey:

<u>Station Name</u>	<u>Signal Number</u>
+SANTA CRUZ EAST 1857 r.d.m.	102
+SAN MIGUEL 4 1951 RM 5 r.d.m.	104
STOW 1872 r.d.m.	115
PARK d.m.	118
GOAT 1863 r.d.m.	120
JOHN 1932 r.d.m.	126
EDWARDS 1933 AZIMUTH 2 d.m.	128
NAPLES 2 d.m.	130
GOLF d.m.	132

GOLF RM 1	d.m.	133
OIL	d.m.	134
PELICAN 3	d.m.	137
MOSS 1951	r.d.m.	138
REX 1927	r.d.m.	140
CAMPBELL PROPERTY MONUMENT	d.m.	148
TP-2	d.n.m.	150
#PELICAN RM 2	d.m.	152
KTMS SOUTH RADIO TOWER	r.d.m.	154

+ Located offshore, i.e. on islands

No check on this position

For more information, refer to the Horizontal Control Report,
OPR-L100-FA-84.

G. Hydrographic Position Control

Hydrographic positioning control for this survey was performed using the Motorola Mini-Ranger III and the Teledyne Hastings Raydist systems. These were used in the standard range-range and range-azimuth configurations. Several bottom samples were positioned by vessel 2020 with LORAN-C and radar. Table IV, Vessel Positioning Equipment, lists the equipment used in each vessel by date.

Raydist Position Control

Raydist stations were established on the Channel Islands; red Raydist on Santa Cruz (SANTA CRUZ EAST 1857, 1956 - station number 102) and green on San Miguel (SAN MIGUEL 4 RM5 1978 - station number 104). The stations were in operation from JD 292 to 321.

The Raydist system was calibrated using three Mini-Ranger rates and RK 561 or a calibration pole. Calibrations were performed at the beginning and end of each day and whenever a loss or gain of lanes were suspected. Also, on-line calibration checks using two Mini-Ranger rates were performed regularly during the day. The daily beginning and ending correctors were averaged to produce the final correctors used for processing. The mean difference observed between the daily beginning and ending correctors was 0.10 lanes with a maximum difference of 0.39 lanes.

Launch Raydist antenna are located at the center of the survey vessel's stern, thus requiring an ANDIST correction of 4 meters. The Raydist antenna on FAIRWEATHER was positioned over the transducer used, giving a corrector of 0 meters.

Several problems were experienced with the Raydist equipment during this survey. The major problem was interference between the shore stations and a competing signal at the 3.3 MHz frequency. This first occurred on JD 307 and continued sporadically until the Raydist was dismantled on JD 321. The symptoms began with the loss of signal from the red and green stations early in the morning which came back later in the day for no apparent reason. On later occasions, the signal stayed down all

day. Additionally, the red Raydist shore station transmitter was found to have a short in it and could be turned on or off by a touch.

Other problems encountered with the mobile equipment during this survey were:

On JD 306, the navigator in FA-5 failure. The entire Raydist system from FA-3 was installed in FA-5 at the end of the day.

The antenna in FA-5 collected water in its base on JD 307, and appeared to be causing the Raydist to detune shortly after tuning. The antenna base was dried out.

On JD 308, the Raydist signal was lost in FA-5 as the launch increased speed over idle. The cable to the antenna and the interface were changed which solved the problem.

The Panalogic (s/n 22) in FA-5 wouldn't track the red phase meter on JD 310. It was replaced but the new unit (s/n 37) sent bad data to the logger, which appeared as exclamation points. Data was hand logged on this day.

Mini-Ranger Control

Mini-Ranger baseline calibrations (BLC's) were performed three times during this survey and two sets of final correctors were determined. Beginning BLC's on all console-R/T pairs were performed on JD 230 in Kodiak, Alaska. After two R/T's failed in the field during this project, BLC's were again performed using the replacement equipment along with the other working instruments producing ending/beginning correctors on JD 299-300 in Monterey, California. (No ending calibrations were performed on console-R/T pairs 703/B1419 and 716/1538 since these were the two R/T's that failed.) The second set of ending BLC's were accomplished on JD 339-340 in Seattle, Washington. From these three BLC's, two sets of final correctors were determined. For this survey, the first covers the period from JD 292-298 and the second from JD 304-325. No hydrography was obtained between JD 299 and 303.

Non-critical systems checks were performed at the beginning and end of hydrography each day, unless prevented by weather or equipment failure. Critical calibrations were performed weekly by theodolite intersection or calibration pole. Critical checks showed a mean difference of +0.4 meters and a maximum variation of +7 meters from the baseline.

Mini-Ranger R/T units were placed over the transducers in both the launches and FAIRWEATHER (2020), which eliminated the need to apply ANDIST correctors.

Equipment problems with Mini-Ranger experienced during this survey were: On JD 295 in FA-3, the R/T from console-R/T pair 716/1538 failed. The pair was replaced by 703/B1419. Later on JD 298, R/T B1419 paired with console 703, failed. The signal strength indicator on the ship (2020) gave false values throughout the entire two days of ship hydro. Also, the

transponder, Code 9, was found vandalized at Station PELICAN 3 on JD 324. It obtained only minor damage and was repaired for the ending BLC's.

Several bottom samples taken by FAIRWEATHER were positioned by LORAN-C and radar because of computer problems on JD 325. The X and Y stations of the 9940 chain were used. ✓

No unusual weather conditions adversely affected positional accuracy of this survey. No hydrography was performed with weak or less than minimum control geometry. Signal strengths were recorded automatically or manually when on line, to insure that hydrography run with less than minimum required signal strengths was plotted using time and course methods. ✓

Refer to the Electronic Control Report, OPR-L100-FA-84 for more information.

Table IV
Vessel Positioning Equipment ✓

<u>Vessel & Date (JD)</u>	<u>Mini-Ranger Console-R/T</u>	<u>Navigator</u>	<u>Raydist Transmitter</u>	<u>Navigation Interface</u>
<u>FAIRWEATHER (2020)</u>				
319-320 325	703/B1212 (Used 9940 LORAN-C chains X and Y, and radar)	---	---	---
<u>FA-3 (2023)</u>				
295-298 308-325	703/B1419 506042/1527	21 ---	86 ---	22 ---
<u>FA-4 (2024)</u>				
310-324	B0323/B1398	119	96	90
<u>FA-5 (2025)</u>				
295-296 305-306 306-307 308 310-325	506042/1527 703/B1212 703/B1212 703/B1212 703/B1212	18 18 21 21 21	28 28 86 86 86	37 37 20 22 37
<u>MON-3/4 (2029)</u>				
292 305-324	703/B1419 716/B1108	---	---	---

H. Shoreline

Shoreline was taken from 1:20,000 scale Class III registered shoreline manuscripts TP-00921 and TP-00922. Comparison between hydrography on H-10164 and the manuscripts showed excellent agreement, thus these manuscripts are adequate and should be used for charting purposes. ✓

Shoreline verification was performed by range-azimuth positioning using monarch 3 (2029). Due to inadequate infrared photography, no offshore features were indicated on the shoreline manuscripts west of the Goleta Pier, (latitude 34/24/47 N, longitude 119/49/38 W). Field edit was performed east of this point in 1978 when the survey H-9752 was completed. ✓

When working on H-10164, the following rocks were found to be in disagreement with the 1978 Field Edit. In most cases, the rocks at the manuscript positions were searched for by the skiff an average of 15-20 min. where water visibility was between 5-15 feet depending on the surf. It is recommended that the manuscript positions be revised to those obtained on H-10164 as indicated below. *See Evaluation Report Section 6*

Detached Pos. #	Item	TP-00922		H-10164	
		Latitude N, Longitude W		Latitude N, Longitude W	
8068	rock (3)	34/23/42	119/43/31	34/23/42	119/43/30
8065	rock (2)	34/23/43	119/43/37	34/23/43	119/43/38
8063	rock (1)	34/23/48	119/43/54	34/23/48	119/43/53
8060	rock 0.6 Rk	34/23/54	119/44/08	34/23/52	119/44/09
8078	rock cov 1st MLLW	34/24/09	119/44/55	34/24/08	119/44/56
8052	rock (2)	34/24/21	119/45/34	34/24/23	119/45/33
8074	rock (2)	34/24/30	119/45/56	34/24/32	119/45/56
8073	rock (4)	34/24/36	119/46/14	34/24/37	119/46/15
8070	rock (2)	34/24/40	119/46/20	34/24/40	119/46/22
8032	rock 0.6 Rk	34/25/03	119/47/49	34/25/03	119/47/52
8031	rock cov 2nd MLLW	34/25/03	119/47/52	34/25/03	119/47/53

The shoreline verification east of longitude 119/43/25 W was not accomplished due to a lack of control stations in this area. It is recommended that this shoreline be carried forward from the manuscripts as previously field edited in 1978. *concur* ✓

Control stations seaward of the shoreline were Raydist stations #102 SANTA CRUZ EAST 1956, and #104 SAN MIGUEL 4 RM 5 1978; located on Santa Cruz and San Miguel Islands respectively. ✓

I. Crosslines

A total of 64.2 nautical miles of crosslines were run on this survey comprising 15.2% of the main-scheme hydrography. Crosslines were oriented approximately perpendicular to the main-scheme hydrography. All crosslines are in excellent agreement, with all soundings agreeing to within one fathom. ✓

J. Junction

This survey junctions with three contemporary surveys; H-9752 (a 1:20,000 scale survey performed in 1978), H-10161 (a 1:20,000 scale survey performed in 1984) and H-10165 (a 1:10,000 scale survey performed in 1984). All junction soundings between the three contemporary surveys and H-10164 agreed to within one fathom.

K. Comparisons With Prior Surveys

There were no AWOIS items to be investigated within the limits of this survey. *See Eval Rpt Section 6*

Comparisons were made between this survey and 1:20,000 reductions or enlargements of five prior surveys:

<u>Survey</u>	<u>Original Scale</u>	<u>Year</u>
*H-5030	1:80,000	1930
+H-5502	1:10,000	1933
+H-5503	1:10,000	1933
+H-5624	1:10,000	1933
*H-5830	1:40,000	1934

+ Reduced to 1:20,000

* Enlarged to 1:20,000

H-5030

Comparison between prior survey H-5030 and survey H-10164 showed 99% of the soundings less than 40 fathoms agreed to within one fathom. In depths deeper than 40 fathoms, 90% of the soundings agreed to within two fathoms. The majority of the discrepancies were soundings on the prior survey that were shoaler by 3 to 10 fathoms and are believed to be caused by the sharply sloping bottom. One prior sounding located at Latitude 34°21'00 N, Longitude 119°52'00 W was found to be 30 fathoms deeper than the corresponding H-10164 sounding, and should be deleted from the chart. *concur*

H-5502

When comparing prior survey H-5502 to survey H-10164, 99.9% of the soundings agreed to within one fathom. The only discrepancy was a rock awash located on the prior survey at Latitude 34°23'56 N, Longitude 119°44'10 W. A visual search, lasting anywhere from 15 to 20 minutes, was conducted in the area where the rock was supposed to be located. The rock could not be located anywhere within 80 to 100 meters of this position and therefore a detached position was taken at the center of the search. When plotted on the field sheet the detached position was over 100 meters away from the charted position. For this reason the hydrographer felt that the search procedures were insufficient for disproval, and that the rock should be retained for charting purposes.

*rocks awash have been transferred at
latitude 34°25'03"N longitude 119°47'32.6"W
latitude 34°23'55.7"N longitude 119°44'08.9"W
latitude 34°23'43.5"N longitude 119°43'17.7"W*

H-5503

When comparing prior survey H-5503 to survey H-10164, all of the soundings deeper than 3 fathoms agreed to within one fathom. In depths less than 3 fathoms, soundings agreed to within one and a half fathoms. Heavy surf action which has caused a large amount of beach erosion is believed to be the cause of these differences. The only other disagreements were several rocks that were located on or near the MLLW shoreline on the prior survey and could not be verified. These rocks were not carried forward to the present chart, and it is therefore recommended that they not be plotted. *rocks not superseded are transferred at latitude 34°26'05.5"N longitude 119°55'58.0"W and latitude 34°26'05.4"N longitude 119°55'51.8"W*

A rock awash located on the prior survey at Latitude 34/26/06 N, Longitude 119/56/36 W was searched for and not found. A visual search was made out to 100 meters from the charted position and nothing could be found. A detached position was taken at the center of the search area and when plotted on the field sheet it was found to lie directly over the charted position. The hydrographer felt that these search procedures were adequate for disproval, and that the rock should be deleted from the chart. *concur*

H-5624

All soundings on survey H-10164 agreed to within one fathom of those on prior survey H-5624. The only discrepancy was a rock awash located on the prior survey at Latitude 34/26/30 N, Longitude 119/58/06 W. The rock could not be located anywhere within 80 to 100 meters of this position and therefore a detached position was taken at the center of the search. When plotted on the field sheet the detached position was over 100 meters away from the charted position. For this reason the hydrographer felt that the search procedures were insufficient for disproval, and that the rock should be retained for charting purposes. *rock are transferred at latitude 36°24'46.5"N longitude 119°58'32.5"W latitude 36°26'30.2"N longitude 119°58'04.0"W*

H-5830

Comparison between H-5830 and H-10164 showed 95% of the soundings in excellent agreement. In general, soundings less than 50 fathoms agreed to within one fathom, while those between 50 and 200 fathoms agreed to within two fathoms. In depths greater than 200 fathoms soundings generally agreed to within 4 fathoms. The 5% that did not meet this criteria were all found to be in depths greater than 200 fathoms. Depths on prior survey H-5830 ranged up to 22 fathoms deeper than those on H-10164, with the exception of 3 soundings which were shoaler by 3 to 5 fathoms.

All soundings which did not meet the general trends noted in the comparisons were indicated on the 1:20,000 scale copies of the prior surveys. Those soundings indicated in red were found to be shoaler than the current survey H-10164, while those in blue were deeper.

L. Comparison With Chart

The largest scale chart for the area covered by survey H-10164 is chart 18721, 7th edition, January 30, 1982, at a scale of 1:100,000. Since the soundings and rocks from this chart are from the prior surveys listed

above or the shoreline manuscript, as indicated from the "chart mark-up" sheet provided from Rockville, comparisons of these items from the chart and H-10164 will not be made. Refer to sections H and K, Shoreline, and Comparison with Prior Survey, for this information.

One sounding on the chart is from H-1043, a survey of the area conducted in 1869. The charted position is at Latitude 34/25/18 N, Longitude 119/57/03 W. Divers investigated this sounding and found it to be a reef system with a least depth of 2.4 fathoms (pos. # 2491) at MLLW located at Latitude 34/25/21.06 N, Longitude 119/57/03.69 W.
20.17 02.75

The only discrepancy on the chart is a charted sounding of 69 fathoms at Latitude 34/20/50 N, Longitude 119/53/12 W. This sounding should actually be 169 fathoms, as is indicated on the "chart mark-up" of prior surveys.

Divers performed numerous investigations during this survey, all of which lie on Development Sheet "A", an area containing many reefs. The purpose of these investigations was to obtain least depths on all reefs and to disprove "fish peaks" mentioned in Section D of this report. Table V lists all the investigations completed on this survey. Diver circle searches were used to locate most of the items. Procedures for this type of search are included in the separates following the text. For information relating to the pneumatic gauge and fiberglass tape used to obtain least depths, refer to section D of this report.

Table V
Diver Investigations

Position No.	Item	Smooth Sheet	Least Depth at MLLW (feet)	Latitude (North)	Longitude (West)
2485	Reef	5 fms	30.4	34/25/18.80	119/57/03.97
2486	Reef	3 fms	18.8	34/25/19.82	119/57/01.46
2487	Reef	2.5 fms	17.8	34/25/20.85	119/57/01.58
2488	Reef	2.4 Rk (least depth)	14.8	34/25/20.88	119/57/02.75
2489	Reef	2.4 fms	14.25	34/25/20.88	119/57/01.89
2490	Reef	2.6 fms	15.6	34/25/20.88	119/57/06.34
2491	Reef	2.5 fms	15.0	34/25/21.06	119/57/03.69
2492	Reef	2.6 fms	15.9	34/25/19.86	119/57/00.58
2493	Reef	2.6 fms	16.15.6	34/25/18.88	119/57/01.04
2494	Reef	8.0 fms	48.0	34/25/17.07	119/56/56.03
2495	Reef	5.5 fms	33.8	34/25/19.84	119/56/57.58
2496	Reef	5.5 fms	33.8	34/25/17.86	119/57/01.94
2497	Reef	6.5 fms	38.6	34/25/16.83	119/57/00.98
2498	Reef	6.4 fms	38.3	34/25/32.18	119/56/37.16
2499	Reef	4.5 fms	27.6	34/25/29.81	119/57/11.80
6786	Reef	2.9 Rk	17.5	34/25/26.21	119/57/07.08
6787	Reef	3.5 fms	21.8	34/25/26.33	119/57/04.88
6788	Reef	4.5 fms	28.8	34/25/27.69	119/57/10.38
6789	Reef	3.7 fms	27.8	34/25/28.38	119/57/14.88
6790	No Object Found		---	34/25/12.97	119/56/57.06
6791	Reef	7.1 fms	43.1	34/25/28.38	119/56/13.58
6792	No Object Found		---	34/25/32.00	119/56/03.24

6793	No Object Found	----	34/25/24.33	119/56/07.93
6794	No Object Found	----	34/25/30.08	119/56/01.76
6795	No Object Found	----	34/25/31.80	119/56/21.98
6796	No Object Found	----	34/25/55.39	119/55/48.27
6797	Reef <i>28 Rk</i>	16.7	34/25/57.43	119/57/14.98

M. Adequacy

This survey is complete and fully adequate to supercede all prior surveys within their common areas. No additional field work is necessary. ✓

See Eval Report Sect 6

N. Aids To Navigation

There was one aid to navigation located within the limits of this survey: Santa Barbara Light. Project Instructions required that a Third-Order position be obtained for this light while FAIRWEATHER was conducting the survey. Upon inspection of the NGS Data Base it was found that this light already had a Third-Order position. The Coast Guard District office indicated that no work had been performed on the light that would have altered its position, and that the current position is still valid. The position in the data base, Latitude 34/23/46.726 N, Longitude 119/43/17.888 W, was obtained in 1941. FAIRWEATHER personnel did not verify the position of the Santa Barbara Light during this survey, however it is planned during the 1985 field season. *NGS position used to plot this light*

O. Statistics

<u>Vessel</u>	<u>2020</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2029</u>	<u>Total</u>
Positions	366	500	623	798	96	2383
Nautical Miles	130.0	123.9	119.6	50.2	--	423.7
Square Miles	36.9	15.8	5.0	5.6	--	63.3
Bottom Samples	9	--	--	56	--	65
Velocity Casts	3	--	--	--	--	--
Tide Stations	1	--	--	--	--	1
Detached Positions	--	9	--	7	96	123

P. Miscellaneous

Bottom samples were collected and forwarded to the Smithsonian Institute, Washington DC. Heavy surf action was observed in the area from Santa Barbara to Naples, and was responsible for a large amount of beach erosion. A small current of approximately one knot was observed throughout the survey area. ✓

Oil exploration is extremely predominant throughout the area from Santa Barbara to Point Conception. As a result, there are numerous research vessels working this vicinity using the same type of positioning equipment as FAIRWEATHER. Interference between the systems, along with delays caused by maneuvering around two mile long towing cables from the research vessels have been experienced while performing this survey. It is expected that these difficulties in operations will continue in the future. ✓

In addition to numerous research vessels there are also quite a few "jack-up" rigs throughout the Santa Barbara Channel. Since these rigs are temporary and can move on a day-to-day basis, the positions for them obtained during the project should not be carried forward to the chart.

Q. Recommendations

None

R. Automated Data Processing

All range-range and range-azimuth hydrography was processed in accordance with the Hydrographic Data Requirements Letter (Appendix Q) dated 13 April 1984. All peaks, deeps and sounding corrections for range-range hydrography were placed on the corrector tape. For the range-azimuth data all peaks and deeps that were inserted onto arcs were edited directly onto the master tape with an interpolated range assigned to them. All other range-azimuth edits were either edited onto the master tape as a short word or placed on a corrector tape, in both cases positioning was by time and course.

The following is a list of the hydroplot programs used for processing and data acquisition during this survey.

<u>Number</u>	<u>Program</u>	<u>Version Date</u>
RK 112	Range-Range Real Time Plot	04/23/84
RK 116	Range-Azimuth Real Time Plot	04/28/84
RK 201	Grid, Signal and Lattice Plot	04/18/75
RK 211	Range-Range Non-Real Time Plot	02/13/84
RK 212	Visual Station Table Load	04/01/74
RK 216	Range-Azimuth Non-Real Time Plot	02/24/84
RK 300	Utility Computations	10/21/80
RK 330	Reformat and Data Check	05/04/76
PM 360	Electronic Corrector Abstract	02/02/76
AM 500	Predicted Tide Generator	11/10/72
RK 530	Layer Corrections For Velocity	05/10/76
RK 561	H/R Geodetic Calibration	12/01/82
AM 602	Elinore	12/08/82

S. Referral to Reports

The following is a list of the reports for OPR-L100-FA-84 that are to be submitted separately from the descriptive report and the hydrographic records:

<u>Report</u>	<u>Date Submitted</u>
Horizontal Control Report	February 1985
Electronic Control Report	February 1985
Coast Pilot Report	February 1985
Corrections to Echo Soundings Report	February 1985

Approval Sheet

The final field sheets and the accompanying records have been reviewed for accuracy, completeness, compliance to project instructions and adherence to required standards and procedures. The commanding officer monitored field work and inspected selected portions of the data on a daily basis. This survey is complete. The data is forwarded for final review and processing.

Submitted by:

Kathy Andreen

for Timothy D. Tisch
Lieutenant Junior Grade, NOAA

Reviewed by:

Kathy Andreen

Kathy Andreen
Lieutenant Commander, NOAA
Field Operations Officer

Approved by:

John W. Andreasen
Christian Andreasen
Captain, NOAA
Commanding Officer

SIGNAL LISTING
FOR
OPR-L100-FA-84

SANTA CRUZ EAST 1857, 1956 NGS QUAD 341193 1008
102 0 34 03 17058 119 33 49504 250 0095 330040

SAN MIGUEL 4 RM 5 1978 NGS QUAD 341202 1055U
104 0 34 01 56311 120 21 45300 250 0255 330040

~~STOW 1872 NGS QUAD 341202 1062~~
~~115 1 34 28 12570 120 10 06867 250 0000 000000~~

~~PARK 1984 FAIRWEATHER 1984~~
~~118 1 34 27 39258 120 04 20963 250 0014 000000~~

~~GOAT 1843 NGS QUAD 341202 1029~~
~~120 1 34 28 07009 120 03 31687 250 0182 000000~~

JOHN 1932 1933 NGS QUAD 341202 1036
126 1 34 28 09987 120 00 56811 250 0211 000000

EDWARDS AZIMUTH 2 1984 FAIRWEATHER 1984
128 1 34 27 03356 119 59 22952 250 0023 000000

NAPLES 1927 NO 2 NGS QUAD 341193 1054
130 1 34 26 11978 119 57 22873 250 0023 000000

~~GOLF 1984 FAIRWEATHER 1984~~
~~132 1 34 25 26037 119 54 13998 250 0028 000000~~

GOLF RM 1 1984 FAIRWEATHER 1984
133 1 34 25 25852 119 54 1414⁵ 250 0028 000000

OIL 1984 FAIRWEATHER 1984
134 1 34 24 25⁷⁶² 119 52 38756 250 0010 000000

PELICAN 3 1984 FAIRWEATHER 1984
137 1 34 24 18187 119 50 35830 250 0011 000000

MOSS 1951 NGS QUAD 341193 1052
138 1 34 23 44151 119 42 32082 250 0020 000000

REX 1927 NGS QUAD 341193 1061
140 1 34 24 18884 119 45 04293 250 0052 000000

CAMPBELL PROPERTY MON. 1984 FAIRWEATHER 1984
148 1 34 24 28163 119 52 41520 250 0009 000000

TP 2 FAIRWEATHER 1984
150 1 34 24 466⁶⁴ 119 49 3831⁴ 250 0007 000000

PELICAN NO 2 1927 (RM) NGS QUAD 341193 1006
152 1 34 24 18938 119 50 35217 250 0012 000000

~~KTMS SOUTH RADIO TOWER NGS QUAD 341193 1088~~
~~154 0 34 25 03959 119 49 05268 139 0000 000000~~

Divers Circle Search Procedures

Several AWOIS items and least depth investigations are verified and/or disproved by divers performing circle searches. FAIRWEATHER procedures for this type of search are as follows:

In preparation for the investigation, the reported or listed position of the item is used to calculate ranges and if necessary, azimuths from the control stations using computer program RK300, Utility Computations.

Upon arrival of the survey launch in the vicinity of the computed position, the coxswain steers one of the ranges and when either the second range or the azimuth is crossed, a weight is dropped from the starboard side of the launch adjacent to the Mini-Ranger antenna. The weight is approximately 50 pounds and has a line and float attached to it.

After the weight is positioned, the launch returns to the float. The float is retrieved, the slack taken out of the line, the launch then maneuvers to position the Mini-Ranger antenna directly over the weight, and takes a detached position. This is to confirm that the weight is positioned correctly.

Once the weight is located, two divers enter the water at the float and descend to the weight. An end of a fiberglass measuring tape is attached to the weight and the divers swim away from it with the tape reel in hand until they can no longer see the weight. They then swim back along the tape until the weight becomes visible and note the distance. In this manner, the visibility can be accurately determined.

With visibility determined, the divers then position themselves at equal intervals from the weight along the fiberglass tape. This distance maybe equal to the visibility (example - 20 feet) or if that is not amenable, a convenient number, normally 25 feet, is used. This then has one diver at the first interval mark, i.e., 25 feet, and the second diver at the second interval, 50 foot mark, from the weight. The diver farthest from the weight holds the tape reel in hand while keeping the tape taut. After marking the bottom or noting a magnetic bearing from a compass, the divers swim a 360 degree circle holding the tape tightly, looking to both sides and staying close to the bottom.

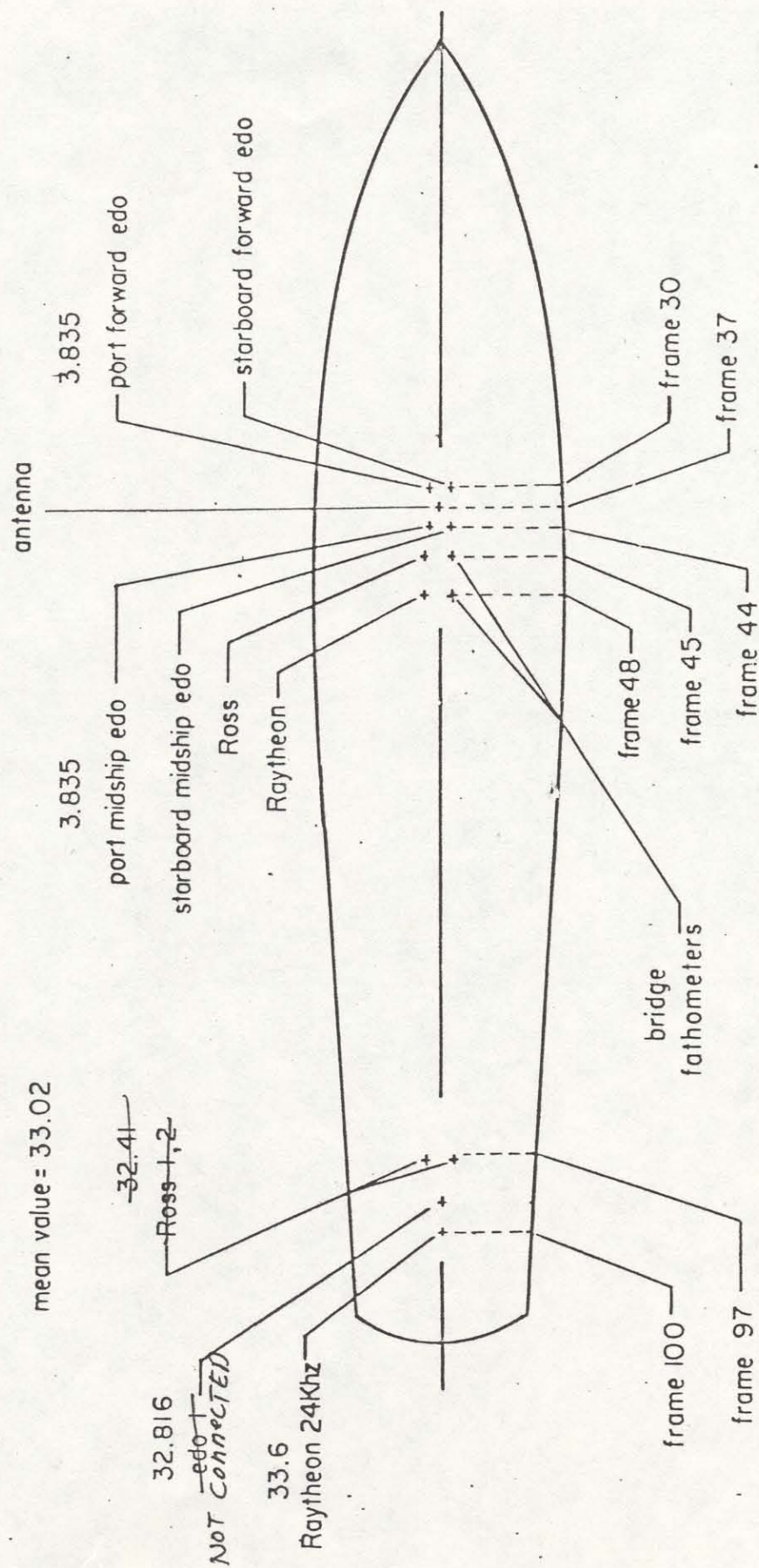
When the divers have completed the circle and returned to the starting marks on the bottom or the beginning magnetic bearing, they move farther away from the weight such that the closest diver is now at the third interval mark from the weight, i.e., 75 foot mark, while the second diver is at the fourth interval, i.e., 100 foot mark. They mark the bottom again and swim another 360 degree search. This procedure is continued until the diver farthest from the weight is as far out as he/she can be.

Using this procedure, if the diver farthest from the tape ends at the 150 foot mark, the entire bottom inside the 50 foot mark is swept with the tape 300%, between 50 and 100 it is swept 200%, and the area from 100 to 150 feet is swept 100%. In addition, if the visibility is 25 feet, the

bottom is visually inspected by approximately the same degrees out to 175 feet.

If something is found, divers move the weight to the location of the least depth otherwise it is left in place. All slack is removed from the bouy line and divers either obtain a least depth measurement or return to the launch. Another detached position is then obtained on the float above the weight to locate the object or to determine if the weight has moved during the search.

FAIRWEATHER TRANSDUCER LOCATION DIAGRAM, APRIL 1982



numerical values are distance in meters forward or aft of antenna

Figure 2.

Field Tide Note
OPR-L100-FA-84
Southern California

Los Angeles (Outer Harbor) served as the reference station for the predicted tides used for correctors on surveys H-10161, H-10164 and H-10165, as stated in the Project Instructions, OPR-L100-FA-84. The following tidal zone correctors were applied to the predicted tides from Los Angeles (Outer Harbor), as required by Section 5.9 of the Project Instructions:

Time Correctors:

High Water: +0 Hours 38 Minutes
Low Water: +0 Hours 36 Minutes

Height Ratio:

$0.94 \times \text{predicted tide} = \text{new predicted tide for project}$

These correctors were included in the tide package provided by N/OMS 121 at the beginning of the project. The controlling tide gauge was Rincon Island, California (941-1270). Leveling and periodic maintenance of the primary gauge at Rincon Island is performed by Coast Survey Limited.

Predicted tide correctors were interpolated aboard FAIRWEATHER, using data from the 1984 West Coast Tide Tables and program AM 500 (Predicted Tide Generator), dated 10 November 1972.

All times of predicted and reported tides (from gauges) are expressed in Universal Coordinated Time (UTC). Predicted tides were acceptable for hydrography with no discrepancies in the data attributable to tide errors.

A back-up tide gauge (station # 941-1270B) was installed at the site of the primary gauge on Rincon Island (Lat. 32 20.9'N, Long. 119 26.6'W), for the purpose of providing controlling tidal data in case the primary gauge malfunctioned. This gauge was a Bristol Bubbler analog tide gauge (S/N 67A 10287) and had a range of 0 to 20 feet. It was installed on 4 October 1984 (JD 278) and was removed on 20 November 1984 (JD 325). The gauge was secured to the wooden dock platform across the road from the primary gauge, and just above the existing tide staff. The orifice was secured to the bottom of the existing staff, and for this reason no levels were run. (Note: 0.02 feet on the tide staff equals 0.0 feet on the Bubbler gauge).

The only problem encountered during the project occurred when the change was made from Daylight Savings Time to Standard Time. For the first few days after this change, the gauge was running with the hour time difference applied in the wrong direction. This problem was corrected shortly afterwards when the next observation was made. All tidal data collected during this period can be corrected by simply applying the proper time difference.

Tidal data from this gage was sent to N/OMS 121 for comparison to the primary gage.

DATE: 03/28/85

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Pacific

OPR: L100

Hydrographic Sheet: H-10164

Locality: Santa Barbara Channel, Santa Barbara to Naples, CA

Time Period: October 18-November 20, 1984

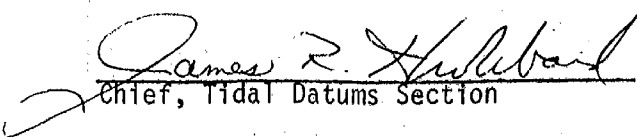
Tide Station Used: 941-1270 Rincon Island, CA

Plane of Reference (Mean Lower Low Water): 4.10 ft.

Height of Mean High Water Above Plane of Reference: 4.7 ft.

Remarks: Recommended Zoning:

- 1) East of longitude $120^{\circ}00.0'$ apply +10 minute time correction and x0.97 range ratio to all heights.
- 2) West of longitude $120^{\circ}00.0'$ apply +15 minute time correction and x0.94 range ratio to all heights.


Chief, Tidal Datums Section

GEOGRAPHIC NAMES

H-10164

Name on Survey

A ON CHART NO.
B ON PREVIOUS SURVEY NO.
C ON U.S. QUADRANGLE MAPS
D FROM LOCAL INFORMATION
E ON LOCAL MAPS
F P.O. GUIDE OR MAP
G RAND McNALLY ATLAS
H U.S. LIGHT LIST
K

* ATASCADERO CREEK

1

CALIFORNIA (title)

2

* COAL OIL POINT

3

* GOLETA POINT

4

✓ NAPLES

5

✓ SANTA BARBARA

6

✓ SANTA BARBARA CHANNEL

7

8

9

10

11

12

13

14

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16

Approved:

17

18

Charles E. Harrison
Chief Geographer - N/CG2x5

19

20

5 FEB. 1985

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23

24

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HYDROGRAPHIC SURVEY STATISTICS

H-10164

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		1
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		
DESCRIP- TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR- GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS
ACCORDIAN FILES	2				
ENVELOPES					
VOLUMES	3				
CAHIERS					
BOXES					

SHORELINE DATA

SHORELINE MAPS(List):

PHOTOBATHYMETRIC MAPS(List):

NOTES TO THE HYDROGRAPHER(List):

SPECIAL REPORTS(List):

NAUTICAL CHARTS(List):

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			1696
POSITIONS REVISED	814		
SOUNDINGS REVISED	46		
CONTROL STATIONS REVISED			
	TIME - HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL	4		4
VERIFICATION OF POSITIONS	48		48
VERIFICATION OF SOUNDINGS	57		57
VERIFICATION OF JUNCTIONS	2		2
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION	18		8
COMPILATION OF SMOOTH SHEET	15		15
COMPARISON WITH PRIOR SURVEYS AND CHARTS		10	10
EVALUATION OF SIDESCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT	2	7	9
OTHER		5	5
Digitization	10		10
TOTALS	146	22	168
Pre-processing Examination by R. Davies	Beginning Date	Ending Date 4-25-85	
Verification of Field Data by I. Almacén	Beginning Date 4-4-85	Ending Date 5-22-85	
Verification Check by S. Otsubo, B.A. Olmstead, J.S. Green	Beginning Date 5-31-85	Ending Date 6-17-85	
Evaluation and Analysis by K.M. Scott	Beginning Date 5-31-85	Ending Date 6-17-85	
Inspection by D. Hill	Beginning Date 5-31-85	Ending Date 6-17-85	

PACIFIC MARINE CENTER
EVALUATION REPORT

H-10164

1. INTRODUCTION

H-10164 was accomplished by NOAA Ship FAIRWEATHER in accordance with the following project instructions:

OPR-L100-FA-84, dated January 19, 1984
Change No. 1, dated January 31, 1984
Change No. 2, dated August 2, 1984

This is a basic survey of the continental shelf off California between Santa Barbara and Naples.

This survey employed the Raytheon DSF6000N. System problems were identified by the hydrographer and corrections made during field processing (see Section D of the Descriptive Report).

Predicted tides based on the Los Angeles (Outer Harbor) gage was used during field processing. Tide correctors used for the reduction of final soundings reflect approved hourly heights zoned from Rincon Island (941-1270), California, with time and height corrections for the surveyed area.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic.

2. CONTROL AND SHORELINE

Hydrographic control and positioning are adequately discussed in Descriptive Report (sections F and G) and Horizontal and Electronic Control Reports for OPR-L100-FA-84.

Geodetic positions for control stations used during hydrography are published and field positions on the North American 1927 datum.

The following reviewed photogrammetric manuscripts (scale 1:20,000) were used for location of offshore features.

	<u>TP-00921</u>	<u>TP-00922</u>
Date of Photography	Oct 1975, Mar 1976	Oct 1975, Mar 1976
Date of Field Edit	cancelled	Mar 1978
Class	III	I

Shoreline and most geographic names are not shown on the smooth sheet in an effort to expedite office processing (see memorandum Reduction of Marine Center Hydrographic Survey Processing Backlog, dated February 16, 1984).

3. HYDROGRAPHY

Soundings at line crossings are in good agreement.

Delineation of the bottom configuration, development of shoal soundings, determination of least depths, and delineation of standard depth curves are adequate, except that the zero curve and portions of the one-fathom curve were not delineated.

Brown curves were added to emphasize shoal depths.

4. CONDITION OF SURVEY

The hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change 3, except as noted in the Preprocessing Examination Report, dated April 22, 1985, and as follows:

Rocks were annotated on the field sheet using the wrong unit of measurement; i.e. 3 Rk (feet) meaning 0.5 Rk (fathoms). Depths on rocks should reflect the same unit of measurement as the rest of the survey.

5. JUNCTIONS

H-10164 junctions the following:

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Note</u>	<u>Junctions</u>
H-10161	1984	1:20,000	Joins	West
H-10165	1984	1:10,000	Joins	North
H-9752	1978	1:20,000	Adjoins	East

The junctions have been adequately effected with H-10161 and H-10165.

H-9752 has been verified and submitted to Rockville for charting. Junction comparisons were made using copies. Soundings are in agreement. Depth curves five fathoms and less should be adjusted to conform to those shown on H-10164.

6. COMPARISON WITH PRIOR SURVEYS

H-5030 (1930) 1:80,000
 H-5502 (1933) 1:10,000
 H-5503 (1933) 1:10,000
 H-5624 (1933) 1:10,000
 H-5830 (1934) 1:40,000

Prior survey soundings are comparable indicating a very stable bottom. Least depths over shoals agree within the fathom. Rocks not disproven have been transferred to the present survey.

The hydrographer has used incorrect reasoning to discredit rock disapproval efforts. It is stated that, since the charted position of specific rocks does not agree with the location on prior survey sources, the present investigation is not adequate for disapproval. In fact, the disapproval efforts may have been adequate since they are apparently centered on the prior survey positions. However, the searches are not well documented. There is no description of search methods or conditions at the time of the search. Accordingly, rocks have been carried forward at latitude 34°23'55.7"W, longitude 119°44'09.9"W from H-5502 and at latitude 36°26'30.2"N, longitude 119°58'04.0"W from H-5624.

There are no AWOIS items within the limits of the survey.

With the exception of features carried forward, H-10164 is adequate to supersede the prior survey data within the common area.

7. COMPARISON WITH CHART

Chart 18721, 7th Edition, January 30, 1982

Chart 18725, 20th Edition, September 24, 1983

a. Hydrography - Most charted information originates with the prior surveys discussed in Section 6 of this report. Other charted features originate with miscellaneous sources not readily ascertainable. For more detail see section L of the hydrographer's report.

The rock awash charted at latitude 34°26'00"N, longitude 119°57'03"W originates with an unknown source. The rock was neither verified nor disproved and should be retained as charted.

H-10164 is adequate to supersede charted hydrography within the common area.

The geographic names shown on the smooth sheet originate from these charts.

There have been no dangers to navigation identified or reports submitted by the hydrographer or PMC Nautical Chart Branch for this survey.

b. Controlling Depths - There are no controlling depths within the limits of this survey.

c. Aids to Navigation - Charted aids to navigation adequately serve their intended purpose.

8. COMPLIANCE WITH INSTRUCTIONS

H-10164 adequately complies with the project instructions as amended and noted in section 1 of this report.

9. ADDITIONAL FIELD WORK

This is a good basic survey. Additional field work is recommended on a low priority basis to investigate rocks discussed in section 6 as being not properly documented.



Karol M. Scott
Cartographer

This survey has been verified and evaluated. I have examined the survey and it meets Charting and Geodetic Services survey standards and requirements for use in nautical charting. The survey is recommended for approval.



Dennis Hill
Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10164

I have reviewed the smooth sheet, accompanying data, and reports of this hydrographic survey. Except as noted in the Evaluation Report, the hydrographic survey meets or exceeds Charting and Geodetic Services (C&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

David W. Yeager 6/20/85
Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LWMordock

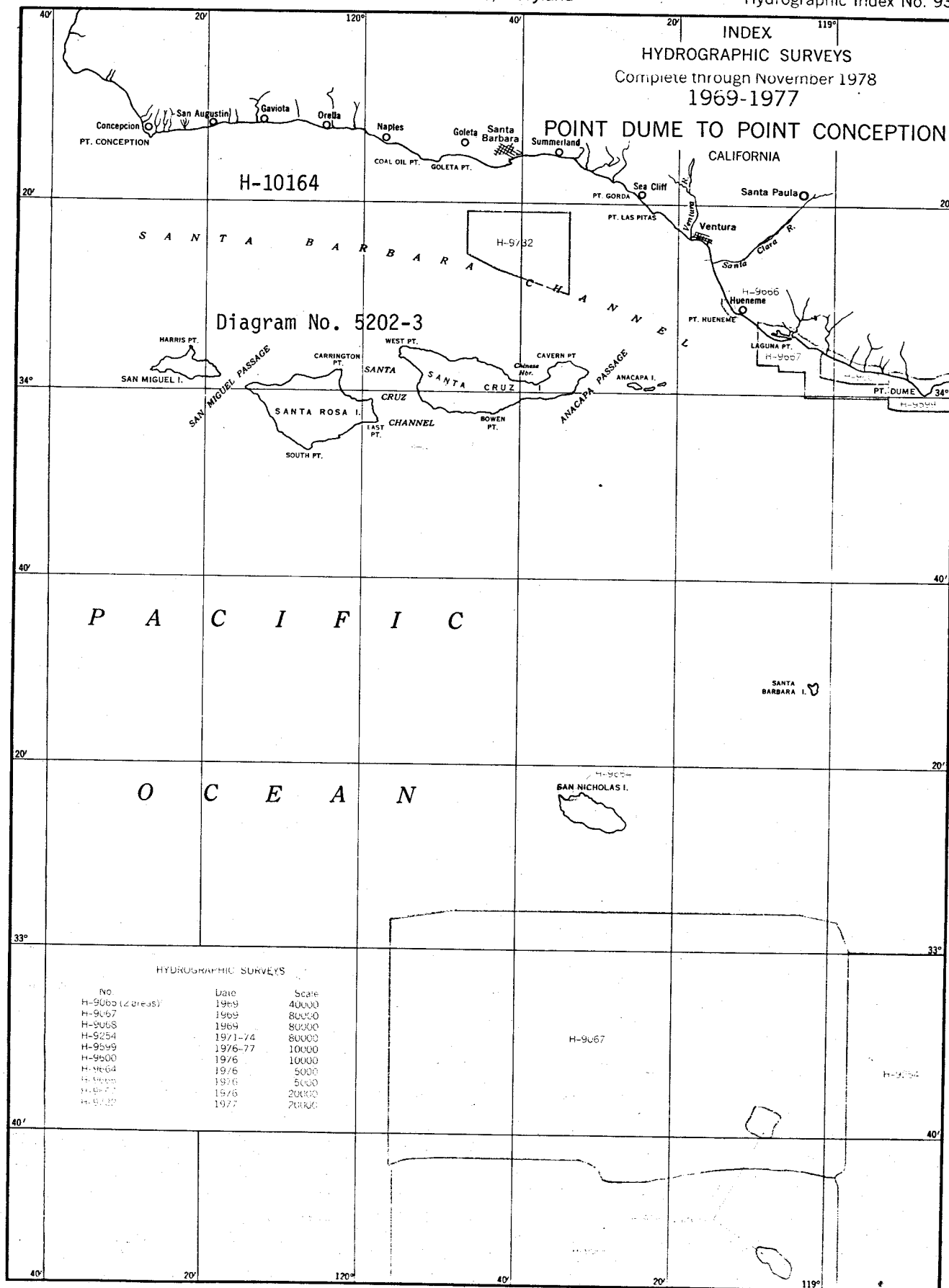
SIGNATURE AND DATE:

Larry M. Mordock 6/21/85

After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

Robert L. Sandpelt 6-21-85
Director, Pacific Marine Center (Date)

Hydrographic Index No. 931



FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10164

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.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED