9108

Diag. Cht. No. 5101-3.

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. DA-40-1-70 *Office No.* H-9108

LOCALITY

State California

General locality Gulf of Santa Catalina

Locality West of Point La Jolla

19 70

CHIEF OF PARTY

R. E. Moses

LIBRARY & ARCHIVES

DATE 8-9-73

USCOMM-DC 37022-P66

9108

FORM C&GS-537 (5-66)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-9108

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.

DA-40-1-70

State CALIFORNIA

General locality Gulf of Santa Catalina ~~Southern California~~

Locality West of Point La Jolla ~~Gulf of Santa Catalina~~

Scale 1:40,000 Date of survey 17 Feb. - 23 Apr. 1970

Instructions dated 15 December 1969 Project No. OPR-411

Vessel USC&GSS DAVIDSON

Chief of party CDR R.E. Moses

Surveyed by Ship's Officers

Soundings taken by echo sounder, ~~hand lead, pole~~ EDO-UQN, DE-723 #1284 and #926

Graphic record scaled by Ship's Personnel

Graphic record checked by Ship's Officers

Verified ~~Protracted~~ by Clarence R. Lehman Automated plot by PMC, ~~Seattle~~ = Gerber Digital Plotter

Soundings verified ~~penciled~~ by Clarence R. Lehman

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

REMARKS:

Chart
5060
5101
5002
5020

Applied to chts 8/15/73
CAP

USCOMM-DC 37009-P66

DESCRIPTIVE REPORT

DA-40-1-70

OPR-411

Southern California

1970

USC&GSS DAVIDSON

Ray E. Moses
CDR, USESSA
Commanding Officer
USC&GSS DAVIDSON

A. PROJECT

This surveY was accomplished according to PROJECT INSTRUCTIONS: OPR-411, Southern California, dated 15 December 1969.

B. AREA SURVEYED

This surveY covered the offshore area greater than 20 fathoms off La Jolla and San Diego, California between the latitudes 32° 40'N and 32° 56'N and between the longitudes 117° 17'W and 117° 50'W. The work was accomplished between 17 FebruarY and 23 April 1970. The surveY makes a junction with the following sheets:

DA-40-1-68	H-8980 (1968)	ContemporarY	SurveY
AR-40-2-70	H-9112 (1970)	"	"
AR-40-4-70	H-9114 (1970)	"	"
DA-10-2-70	H-9106 (1970)	"	"
DA-10-3-70	H-9107 (1970)	"	"

See Verifier's Report

C. SOUNDING VESSEL

The ship DAVIDSON was used for all soundings, bottom samples, and magnetic observations. One oceanographic station each was taken bY the DAVIDSON and the SURVEYOR. Position numbers are in brown.

D. SOUNDING EQUIPMENT

For depths over 110 fathoms an EDO-UQN with a PFR was used for soundings. A RaYtheon DE-723 fathometer was used in shallow water (#1284 was used on daY 48, #926 was used on all other daYs). VelocitY corrections were obtained from two Nansen casts taken near the center of the sheet, one bY the DAVIDSON on 26 FebruarY 1970 and one bY the SURVEYOR on 3 April 1970. The velocitY correction data agreed verY closelY for an average velocitY correction. Phase corrections and initial setting corrections for the DE-723 were scanned from the fathogram. A complete discussion of these corrections to the echo sounders is presented in Corrections to Echo Sounders Report, DAVIDSON, OPR-411, 1970. Abstracts of these corrections are included in the appendix.

E. SMOOTH SHEET

The smooth sheet will be constructed and plotted bY the Processing Division, Pacific Marine Center, Seattle, Washington.

F. CONTROL

Hi-Fix electronic control in the hYperbolic mode was used for horizontal control. Pattern 1 (red) came from the northern slave station at

RM 1 of A 01d 1597

Point Fermin, California and the master station at Camp Pendleton, California; pattern 2 (green) came from the southern slave station on Point Loma, and the master station. All ground stations were either located by an electrochain T-2 traverse or by setting them on existing geodetic control. A detailed discussion of their location is presented in the Hi-Fix Traverse Report, DAVIDSON, OPR-411, 1970. Difficulty was experienced in plotting positions in the lower right portion of the boat sheet due to the rapid divergence and curvature of the arcs in this area. Supplementary visual sextant fixes on the calibration signals were used for plotting in this area. A sounding volume of these fixes is included with the survey records. For the identification of these signals and the calibration records see the Hi-Fix Calibration Report, DAVIDSON, OPR-411, 1970. (attached)

G. SHORELINE

Since this is an offshore survey, no shoreline details were included on the sheet. The shoreline in this area is included on DA-10-2-70 and DA-10-3-70/ (H-9106 and H-9107 respectively).

H. CROSSLINES

The percentage of crosslines to sounding lines is 9.9% (162 NM). There is good agreement at crossings.

I. AGREEMENT AT JUNCTIONS See Review.

The soundings in the junction with DA-40-1-68 (H-8988) are less than those of the 1968 survey. The 1968 soundings were taken from the smooth sheet, however when the velocity corrections are applied to this survey's soundings good agreement is obtained.

There is good agreement with AR-40-2-70/(H-9112). (H-9114)

No comparison was obtained with AR-40-4-70 since it was not completed when the DAVIDSON left the project area. This survey's soundings at that junction were applied to AR-40-4-70 (H-9114) and a discussion of the junction may be found in the AR-40-4-70 (H-9114) descriptive report.

The junction with DA-10-2-70 (H-9106) and DA-10-3-70 (H-9107) finds this survey to be shallower than those soundings. When the draft correction is applied, however, there is good agreement.

J. COMPARISON WITH PRIOR SURVEYS See Review.

Comparison of this survey's soundings with prior survey H-6119 (1:80,000 - 1922) shows the latter to be, in general, deeper. There is fair agreement with H-4266 (1:40,000 - 1923).

Items on the boat sheet from the 11/10/66 pre-survey review were investigated as follows:

(1) Item No. 6: 32° 44.06'N, 117° 35.23'W.
The fathograms were inspected for indications of the submerged target; no evidence of its existence near that location was found. Concur. See Review.

(2) Sounding of 130 fm: 32° 44.4'N, 117° 47.8'W.
A development was run in the area which found a least depth (reduced) of 139 fm. A least depth, reduced, was obtained in the vicinity of 125 fm.

(3) Sounding of 138 fm: 32° 46.9'N, 117° 49.0'W.
A development was run in the area which found a least depth (reduced) of 139 fm. A least depth, reduced, of 138 fm. was obtained in the vicinity.

(4) Sounding of 140 fm: 32° 48.6'N, 117° 48.9'W.
A development was run in the area which found a least depth (reduced) of 139 fm. A least depth, reduced, of 136 fm. was obtained in the vicinity.

(5) Sounding of 414 fm: 32° 49.6"N, 117° 34.2'W.
Lines of 400 m. spacing were run in this area. A least depth (reduced) of 497 fm. was found. No indications on the fathogram indicated shallower depths in this area. The 414 fms. was an erroneous depth from H-6114 (1935) and should be disregarded.

K. COMPARISON WITH THE CHART

Comparison with C&GS chart 5101, 14th Ed., is, in general, good. The major discrepancies are those investigated in the pre-survey review (see section J). Comparison with C&GS chart 5060, 3rd Ed., is also, in general, good. See Review.

L. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede prior surveys for charting.

M. AIDS TO NAVIGATION

There are no aids to navigation on this survey. There is a large explosives dumping ground near the center of the sheet whose boundaries are shown on C&GS chart 5101 and described in Coast Pilot 7. No bottom samples were attempted in this area.

N. STATISTICS

Day	Positions	Sounding Miles (NM)	Magnetic Miles (NM)	Bottom Samples
48	011-050	29.8	0	0
49	051-120	58.0	0	0
50	121-194	59.9	33	0

DaY	Positions	Sounding Miles (NM)	Magnetic Miles (NM)	Bottom Samples
51	195-249	39.0	0	0
55	250-326	60.0	46	0
56	327-409	66.4	50	0
58	410-478	56.0	47	0
62	479-581	83.2	72	0
63	582-693	81.6	79	0
69	694-830	106.0	101	0
77	831-960	96.0	96	0
92	961-1204	173.2	170	0
93	1204-1434	177.1	177	0
97	1435-1572	105.2	105	0
103	1573-1637	50.1	40	0
105	1638-1845	160.1	160	0
106	1846-2197	225.4	225	0
107	2198-2365	101.8	102	0
112	2366-2488	71.0	71	5
113	2489-2500	0	0	12
	2500	1799.8	1574	17

Two oceanographic stations were observed on this sheet: one bY the DAVIDSON on 26 FebruarY 1970 and one bY the SURVEYOR on 3 April 1970. Serial temperatures and water samples were taken for an analYsis of the velocitY corrections for echo sounders.

This surveY covered 424.0 square NM of ocean. Soundings are in fathoms. Time meridian 120 W was used for all times.

O. MISCELLANEOUS

La Jolla CanYon SurveY

CloselY spaced lines were run over the La Jolla CanYon, as shown on the boat sheet. Comparison with prior surveYs of this area and with in-

vestigations bY Scripps' Institute show good agreement. The canYon is so deep, however, that soundings from the DAVIDSON's comparativelY wide-beam transducers cannot give a true picture of the submarine terrain in this area.

Magnetics

The proton magnetometer performed poorlY to fair throughout the surveY. Spurious readings are scattered throughout the record. After smooth logging and final processing on board it was discovered that the DCU unit produced erroneous readings in the magnetic printout. In the fourth column of the magnetic field:

1. a 0 was printed, instead of an 8,

2. a 1 was printed, instead of a 9.

All other digits in this column are correct. Since magnetic intensities on this surveY were such that an 8 or 9 was rarelY encountered in this column this discrepancY was unnoticed during the surveY. This error is still in the DCU tape.

An abstract of times and positions of useable magnetic data follows:

DaY	Positions	Times
50	153 +3 min. thru 194	124000-152700
55	259 +3 min. thru 316	104350-143000
56	330 +40 sec. thru 391	092840-133500
58	421 thru 478 +1 min.	095600-133800
62	493 thru 581 +1 min.	090700-145300
63	585 thru 693	090600-160200
69	700 thru 830	091100-174700
77	831 +40 sec. thru 960	093300-172700
92-93	965 +2 min., 20 sec. thru 1434 +40 sec.	084420-151640
97	1435 thru 1572	083300-173500
103	1586 +1 min., 30 sec. thru 1637	104730-143700
105-107	1638 thru 2364 +1 min.	102200-134800
112	2366 +36 sec. thru 2483	100536-182800

Logging

A Digital Control Unit (DCU) was used to log time, the two Hi-Fix patterns, the soundings and the magnetic data simultaneouslY on tape. An example of this format is in the appendix. There are five tape rolls of this data. In addition there is a DCU corrector tape, an approximate position format-corrector tape, and a TC/TI tape.

Because of noise problems with the DCU equipment, all data was smooth logged. Obvious missing digits in the Hi-Fix patterns and magnetics field were determined bY interpolation.

P. RECOMMENDATIONS

After the analYsis of the magnetic data, additional magnetic surveYs maY be needed in a few parts of the sheet. There are no further recommendations.

Q. REFERENCES TO REPORTS

Corrections to Echo Sounders Report (transmitted to CFS3, #DA-82-70).

Hi-Fix Traverse Report (transmitted to CFS3, #DA-28-70). — Not available at time of Review.

Hi-Fix Calibration Report (transmitted to CFS3, #DA-82-70).

Respectfully submitted,

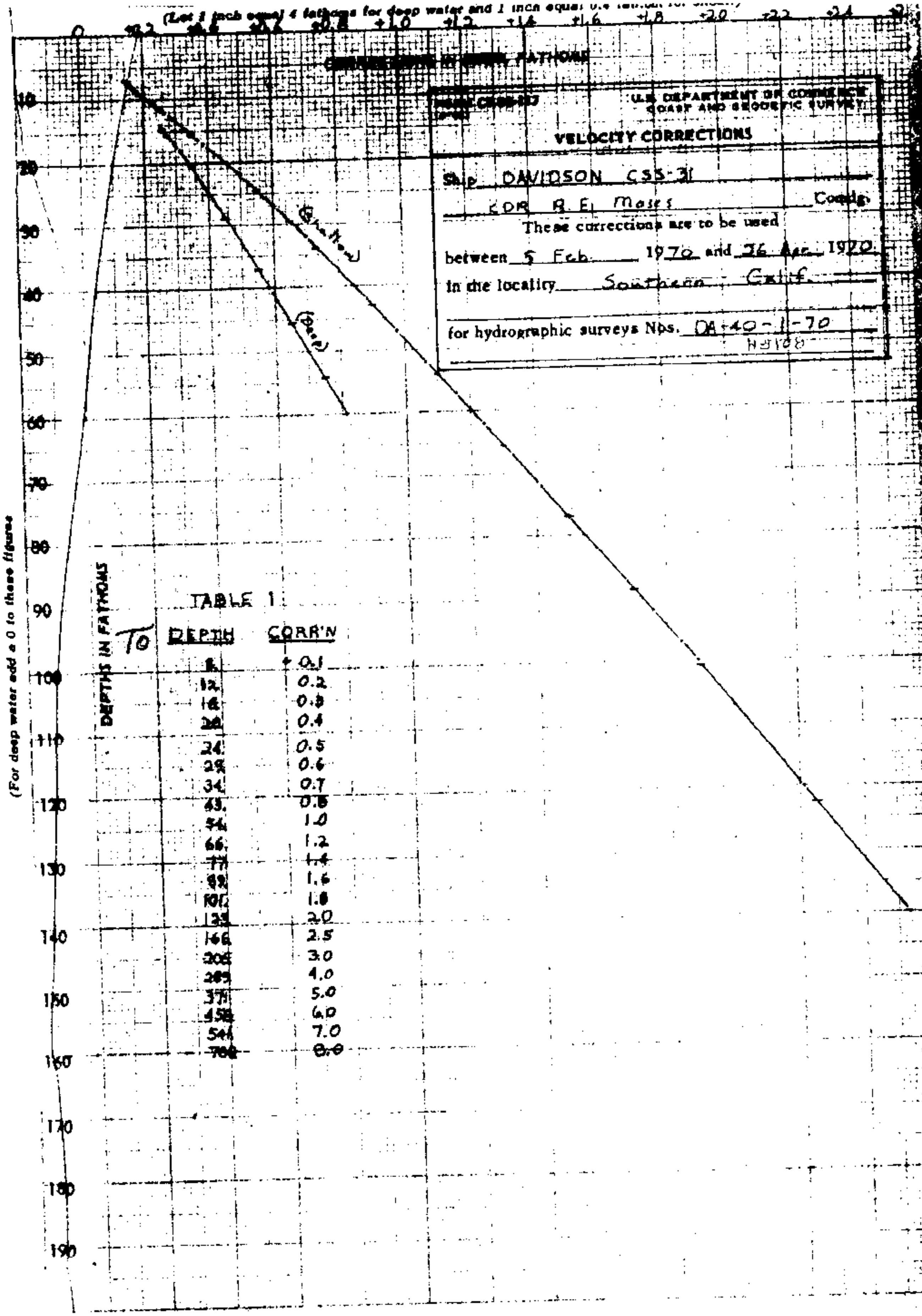
Glenn H. Endrud

Glenn H. Endrud
LTJG, USESSA

APPENDIX

"INITIAL" CORRECTIONS DAVIDSON DA-40-1-70 (H-9108)

DAY	TIME	CORRECTION
048	131300	0.0 fm.
049	113900	0.0
050	102600	0.0
051	092600	0.0
055	100900	0.0
056	091620	0.0
058	091600	0.0
062	081100	0.0
063	085400	0.0
069	080700	0.0
077	093000	0.0
092	082600	0.0
093	000000	0.0
	145900	+0.2
	150301	+0.5
	150801	+0.7
	150900	0.0
097	083300	0.0
103	095500	0.0
105	102200	0.0
106	000000	0.0
107	000000	0.0
112	000000	0.0
113	000000	0.0
	015114	+0.2
	020000	0.0



U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

VELOCITY CORRECTIONS

Ship DAVIDSON CSS-31

CDR R. E. Moses Comdg.

These corrections are to be used

between 5 Feb 1970 and 26 Apr 1970

in the locality Southern Calif.

for hydrographic surveys Nos. DA-40-1-70
H9108

TABLE 1

TO DEPTH	CORR'N
6	+0.1
12	0.2
16	0.3
20	0.4
24	0.5
29	0.6
34	0.7
43	0.8
54	1.0
66	1.2
77	1.4
89	1.6
101	1.8
133	2.0
166	2.5
205	3.0
289	4.0
371	5.0
458	6.0
546	7.0
700	8.0

DAY	TIME	CORRECTION
055	145300	+0.4 fm.
	145440	0.0
	150000	+0.4
	150220	+0.2
	150720	0.0
056	092540	+0.2
	093040	+0.4
	093300	0.0
	131900	+0.2
	132440	0.0
	140440	+0.6
	140600	+0.4
	140740	+0.2
	141100	0.0
	143520	+0.2
	144300	+0.4
	144440	+0.6
	144800	+0.8
	145100	+0.6
	145320	+0.4
	145540	+0.2
	145900	0.0
058	092700	+0.2
	093620	+0.4
	093740	+0.6
	093940	+0.8
	094200	0.0
	132000	+0.4
	132100	+0.2
	132500	0.0
062	082540	+0.2
	083220	+0.4
	083320	+0.6
	083600	0.0
	121520	+0.6
	121600	+0.4
	121700	+0.2
	121900	0.0
	121940	+0.2
	122420	0.0

DAY	TIME	CORRECTION
062	130400	+0.2 fm.
	130900	+0.4
	131100	+0.6
	131500	+0.8
	131600	0.0
063	090720	+0.2
	090840	0.0
	091140	+0.2
	091620	+0.4
	091700	+0.6
	091900	+0.8
	092100	0.0
	130000	+0.2
	130500	0.0
	134200	+0.2
	134540	+0.4
	134620	+0.6
	134840	+0.8
	134920	+0.6
	135100	+0.4
	135120	+0.2
	135820	0.0
	143400	+0.2
	143920	+0.4
	144000	+0.6
	144140	+0.8
	144620	+0.6
	144740	+0.4
	144820	+0.2
	145720	0.0
	152020	+0.
	153340	+0.
	153440	+0.
	153600	+0.
	154000	+0.
	154140	+0.4
	154220	+0.2
	154920	0.0
069	090200	+0.2
	090900	+0.4
	090920	+0.6
	091000	0.0

Phase Corrections, DAVIDSON
DA-40-1-70 (H-9108)

DAY	TIME	CORRECTION
069	124800	+0.4 fm.
	124840	+0.2
	125600	0.0
	132820	+0.2
	133540	+0.4
	133800	0.0
	173000	+0.2
	173500	0.0
077	094320	+0.2
	094840	+0.4
	095020	+0.6
	095200	0.0
	133020	+0.4
	133120	+0.2
	133620	0.0
	135520	+0.2
	140100	+0.4
	140300	+0.6
	140520	+0.8
	140740	+0.6
	141000	+0.4
	141140	+0.2
	141620	0.0
	144120	+0.4
	144820	+0.4
	144940	+0.6
	145120	+0.8
	145520	+0.6
	145640	+0.4
	145720	+0.2
	150200	0.0
	153200	+0.2
	154220	+0.4
	154300	+0.6
	154400	+0.8
	154620	+1.0
	155120	+0.8
	155340	+0.6
	155440	+0.4
	155520	+0.2
	155920	0.0

DAY	TIME	CORRECTION
092	083900	+0.2 fm.
	084300	+0.4
	084500	+0.6
	085140	+0.4
	085320	+0.2
	085800	0.0
	092440	+0.2
	092820	+0.4
	093100	+0.6
	093620	+0.4
	093900	+0.2
	094340	0.0
	100400	+0.2
	100820	+0.4
	102200	+0.6
	102340	+0.4
	102700	+0.2
	103340	0.0
	105500	+0.2
	110000	+0.4
	110600	+0.6
	111200	+0.8
	111300	0.0
093	032800	+0.2
	033420	+0.4
	033640	+0.6
	033920	+0.8
	034100	0.0
	072000	+0.4
	072040	+0.2
	072600	0.0
	074020	+0.2
	074600	+0.4
	074820	+0.6
	075100	0.0
	133500	+0.4
	133640	+0.2
	134040	0.0
	135720	+0.2

Phase Corrections, DAVIDSON
DA-40-1-70 (J+-9109)

DAY	TIME	CORRECTION
093	140320	+0.4 fm.
	140600	+0.6
	140940	+0.8
	141640	+0.6
	142020	+0.4
	142300	+0.2
	142640	0.0
	144600	+0.2
	144940	+0.4
	145140	+0.6
	145420	+0.8
	145640	+0.6
	150000	+0.4
	150140	+0.2
	150600	0.0
097	083740	+0.2
	084200	+0.4
	084440	+0.6
	084600	0.0
	111300	+0.6
	111340	+0.4
	111600	+0.2
	111920	0.0
	112900	+0.2
	113340	+0.4
	113540	+0.6
	113900	0.0
	153220	+0.6
	153300	+0.4
	153400	+0.2
	153700	0.0
	155400	+0.2
	155540	+0.4
	155900	0.0
103	095500	+0.2
	100520	+0.4
	100820	+0.6
	101200	0.0
105	102820	+0.2
	103540	+0.4

DAY	TIME	CORRECTION
105	103720	+0.6 fm.
	103800	0.0
	122120	+0.4
	122900	+0.2
	123200	+0.4
	124100	0.0
107	022120	+0.2
	022440	+0.4
	022740	+0.6
	023220	+0.4
	023500	+0.2
	023820	0.0
	025700	+0.2
	025940	+0.4
	030220	+0.6
	030540	+0.4
	030840	+0.2
	031200	0.0
	032540	+0.2
	032920	+0.4
	033140	+0.6
	033420	+0.4
	033640	+0.2
	034040	0.0
	035340	+0.2
	035820	+0.4
	040040	+0.6
	040320	+0.4
	040540	+0.2
	041000	0.0
	042640	+0.2
	043240	+0.4
	043440	+0.6
	045840	+0.4
	050140	+0.2
	051140	+0.4
	051400	+0.6
	054900	+0.2
	055300	0.0
	060200	+0.2
	060700	+0.4

DAY	TIME	CORRECTION
107	060900	+0.6 fm.
	061000	0.0
	062640	+0.4
	062940	+0.2
	063240	0.0
	064340	+0.2
	064740	+0.4
	065000	+0.6
	065100	0.0
	072840	+0.2
	073300	+0.4
	073500	+0.6
	073700	0.0
	080920	+0.6
	080940	+0.4
	081140	+0.2
	081500	0.0
	082940	+0.2
	083340	+0.4
	083500	+0.6
	083600	0.0
	090920	+0.6
	090940	+0.4
	091140	+0.2
	091300	0.0
	092840	+0.2
	093400	+0.4
	093600	+0.6
	093700	+0.8
	094000	+0.6
	094100	+0.4
	094420	+0.2
	094640	0.0
112	191054	+0.4
	191055	0.0
113	030447	+0.2
	034733	0.0
	042631	+0.2
	044737	0.0

ELECTRONIC DRAFT CORRECTIONS - DAVIDSON - DA-40-1-70 (M-9109)

DAY	TIME	CORRECTION
48	131300	0.00 fathoms
	153520	-0.17
49	120000	0.00
	155720	-0.17
50	104400	0.00
	143900	-0.17
	151300	0.00
51	092600	-0.17
	094300	0.00
	122520	-0.17
55	102700	0.00
	141640	-0.17
	145440	0.00
	150000	-0.17
56	093300	0.00
	131900	-0.17
58	094200	0.00
	132000	-0.17
62	083600	0.00
	121520	-0.17
	131600	0.00
63	090720	-0.17
	092100	0.00
	130000	-0.17
69	091000	0.00
	124800	-0.17
	133800	0.00
	173000	-0.17
77	095200	0.00
	133020	-0.17
92	111300	0.00

DAY	TIME	CORRECTION
93	032800	-0.17
	034100	0.00
	072000	-0.17
	075100	0.00
	132500	-0.17
97	084600	0.00
	111300	-0.17
	113900	0.00
	153220	-0.17
	155900	0.00
103	095500	-0.17
	101200	0.00
105	102200	-0.17
	103800	0.00
	122120	-0.17
	124100	0.00
107	021400	-0.17
	061000	0.00
	062640	-0.17
	065100	0.00
	072240	-0.17
	073700	0.00
	080920	-0.17
	083600	0.00
	090920	-0.17
112	191055	0.00
113	015114	-0.17
	024707	0.00
	030447	-0.17
	034733	0.00
	042631	-0.17
	044737	0.00

FIXED CORRECTIONS DAVIDSON DA-40-1-70 (H-9108)

TYPE	CORRECTION
Draft	+1.81 fm.

HI-FIX CALIBRATION & CORRECTION ABSTRACT

OPR-411

Southern California

USC&GS DAVIDSON

DA-40-1-70

H-9108

Day	Time	Corr'n Pattern 1	Corr'n Pattern 2
48	131300	.02	.02
49	113900	-.10	-.07
	141500	-3.10*	-.07
50	102600	3.95**	.09
	103320	3.95*	-.91*
	110600	4.95*	-2.91*
	112300	5.95*	-4.91*
	120500	7.95*	-6.91*
	120900	9.95*	-8.91*
	130500	-.05	.09
51	092600	-.07	.09
55	100900	-.02	.12
56	091620	-.02	.12
58	091620	.02	-.05
62	081100	.05	-.09
63	085400	.03	-.05
64	084600	.03	.08
77	093220	-.10	-.08
92	082600	-.02	-.03
93	000000	-.02	-.03
97	083300	.02	-.02
103	095500	.01	-.07
105	102200	-.03	-.07
106	000000	-.03	-.07
107	000000	-.03	-.07
112	100500	.01	-.02
113	000000	.01	-.02

* Calibration correction plus correction due to [illegible]'s skipped lanes

**Calibration value alone is -.05

The Hi-Fix corrections are to be added algebraically to the lane value.

DUAL INDICATOR POSITION-SOUNDING TAPE

Time	Ind	SNDG	Pos. No.	Day	Ft Fm	LA	RA	LO	CO	RO
080000	01	0232	0111	123	0	000000	000000	0000	000	000
080015	01	0243								
080030	01	0222								
080045	01	0302								
080100	01	0293	0112	123	0	000000	000000	0000	000	000

Time- Hour, min, sec
Ind- Indicator: 00-soundings recorded in whole units
01-soundings recorded in units and tenths
SNDG- Depth in feet or fathoms
Pos. No.- Position number
Day- Julian day No.
Ft/Fm- Indicator: 0-Ft
1-Fm
LA- Left angle
RA- Right angle
LO- Left object
CO- Center object
RO- Right object

HI FIX REPORT
OPR 411
1970

I INTRODUCTION

Position data for OPR 411 offshore hydrography conducted by the USC&GS Ship McARTHUR during the period February - May, 1970 was obtained by use of a Hyperbolic mode Hi-Fix net. Boatsheets MA 40-1-70 (H-9111), MA 40-2-70 (H-9112), MA 40-3-70 (H-9113) and MA 40-4-70 (H-9114) were surveyed using this net.

II STATIONS

Station locations were provided by the USC&GS Ship DAVIDSON. Traverse information for the location of stations utilized is covered in a separate report submitted by the DAVIDSON. Stations were located as follows:

SIGNAL NO.'S:

The northern slave was set on RM#1 of station OLD 1899, Pt. Fermin, California at 33°43'12.937"N, 118°16'56.977" W. (111)

The master was located on station TORN 1970, Camp Pendleton, California at 33°21'00.23"N, 117°31'27.83"W. (222)

The southern slave was located on station JUMP 1970, Pt. Loma, California at 32°42'24.48"N, 117°15'13.03"W. (333)

station JUMP was not listed in the Geodetic records at Rockville, Md. TRDS.

III CALIBRATION METHODS

Calibrations were made at three locations; San Clemente Island; Avalon Bay, Santa Catalina Island; and Mission Bay, California. For each calibration, corrections to lane readings were obtained by simultaneously recording a three-point visual fix taken by sextants, and Hi-Fix lane readings. Check angles were observed at Santa Catalina and Mission Bay. The visual fixes were plotted on 1:10,000 scale mylar calibration sheets "B", "C" and "BU" for the respective areas. Scaled Hi-Fix rates were then compared to recorded rates to obtain corrections. Calibrations were made before and after each week's work, and, as feasible in an attempt to ascertain net distortion, both at Mission Bay and offshore.

Visual control at San Clemente Island was very poor. Only three signals were visible. The center signal, a formerly whitewashed rock, was inadequate for accurate

control. Since no check angle was available, calibrations obtained at San Clemente are considered good only to the extent of whole lane identification and are not adequate for partial lane corrections for the surrounding area.

A separate record of equipment failures and changes was kept to aid in determining valid correctors. During those periods in which no equipment irregularities occured, all Hi-Fix correctors for a given station were meaned to statistically reduce random errors in calibrating.

Visual fixes at Santa Catalina and Mission Bay were of approximately equal strength; however, lane width for each pattern varied. The ratio of lane width: Santa Catalina to Mission Bay was approximately one to four for pattern I (red), and three to one for pattern II (green). Assuming that Hi-Fix readings were equally accurate, correctors obtained at wider lane spacing should be more reliable. Therefore, correctors were weighted in the above ratios when meaned.

The good agreement between calibrations at Santa Catalina and Mission Bay, indicates that distortion of the Hi-Fix net is negligible.

IV EQUIPMENT

The equipment at each station was standard, the active elements being a receiver and transmitter for each slave, and a Master Drive Unit and transmitter at the master site. The ship equipment included a receiver, a left/right indicator, and a brush recorder. Each station utilized shore power and was operated continuously for the duration of the project except as noted. Equipment trouble was minimal; few lane jumps occured.

V SUMMARY

Hi-Fix equipment functioned well throughout the project. Correctors obtained are consistently well within 0.1 lane. Position information provided by the Hi-Fix net is entirely adequate for control of the Hydrography. Enclosed are calibration sheets, tabulation of correctors and equipment changes.

SCR •2624671900000EX 00
NYX •0
CMR 117 33 59.99

LAT 33 21 .23 LON 117 31 27.83 X 8626.4 Y 20700.9	MASTER
LAT 33 43 12.94 LON 118 16 56.98 X -9820.5 Y 31537.7	S-1
LAT 32 42 24.48 LON 117 15 13.03 X 15297.7 Y 1988.0	S-2

PROGRAM NO. 700-002

STATION A: MASTER TO STATION B: S-1

LATITUDE	LONGITUDE		AZIMUTH	DISTANCE
33 21 .23000	117 31 27.83000	F	120 27 16.27495	81513.0383
33 43 12.94000	118 16 56.97999	B	300 2 8.53660	BASE 1

GEODETIC INVERSE COMPUTATION

PROGRAM NO. 700-002

STATION A: MASTER TO STATION B: S-2

LATITUDE	LONGITUDE		AZIMUTH	DISTANCE
33 21 .23000	117 31 27.83000	F	340 24 3.87513	75691.4511
32 42 24.48000	117 15 13.03000	B	160 32 55.20395	BASE 2

FREQUENCY = 1799.6 KHZ

9108 HYPERBOLIC WANG PARAMETERS

117 34 .00
XKN .289322000000EX 05
YKN .361251040200EX 07
SCA .262467190000EX 00
NYX .0
CMR 117 33 59.99

LAT 33 21 .23 *Torn 1970*
LON 117 31 27.83
X 8626.4
Y 20700.9 MASTER

LAT 33 43 12.94
LON 118 16 56.98 *Lim of [illegible] 1899*
-9820.5
Y 31537.7 S-1

LAT 32 42 24.48
LON 117 15 13.03 *Jump 1979*
X 15297.7
Y 1988.0 S-2

PROGRAM NO. 700-002

STATION A: MASTER TO STATION B: S-1

LATITUDE	LONGITUDE		AZIMUTH	DISTANCE
33 21 .23000	117 31 27.83000	F	120 27 16.27495	81513.0383
33 43 12.94000	118 16 56.97999	B	300 2 8.53660	BASE 1

GEODETIC INVERSE COMPUTATION

PROGRAM NO. 700-002

STATION A: MASTER TO STATION B: S-2

LATITUDE	LONGITUDE	AZIMUTH	DISTANCE

FORM # 1 FIG. 15

PARAMETERS FOR DIGITAL COMPUTING
POLYCONIC PROJECTION

(1) PROJECT NO. OPR-411
(2) H NO. 9108
(3) ~~FIELD~~ Sheet NO. 4 (DA-40-1-70)
(4) REQUESTED BY D.R. Tibbit
(5) SHIP OR OFFICE McARTHUR
(6) DATE REQUIRED 1 Feb. 1970
(7) VISUAL ☐
(8) ELECTRONIC ☑ (Hyperbolic) (FILL OUT FORM #3)

(10) XKN (SP 5) DISTANCE FROM CMER TO EAST EDGE (NYX = 1) OR WEST EDGE (NYX = 0). 28,932.2 METERS

(11) YKN (SP 241) DISTANCE FROM EQUATOR TO SOUTH EDGE OF SHEET. 3,612,510.402 METERS

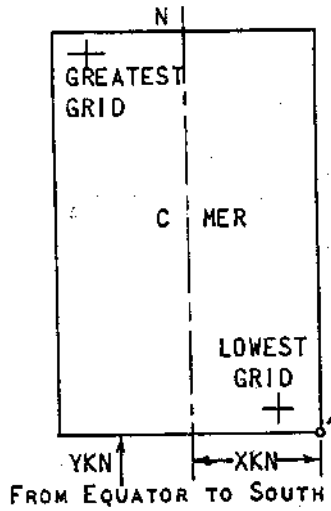
(12) CENTRAL MERIDIAN 117° 34' 00W"

(13) SURVEY SCALE 1: 40,000

(14) SIZE OF SHEET (CHECK ONE) 36X54 ☒ 42X60 ☐ OTHER ____ ☐

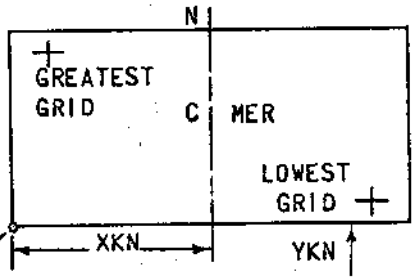
(15) NYX, ORIENTATION OF SHEET (CHECK ONE)

NYX = 1 ☐



FROM EQUATOR TO SOUTH EDGE OF SHEET

NYX = 0 ☑



FROM EQUATOR TO SOUTH EDGE OF SHEET

(9) PLOTTER ORIGIN (CORNER OF SHEET)

LATITUDE 32° 38' 20"
LONGITUDE 117° 52' 30"

GRID LIMITS

(16) GREATEST LATITUDE 32° 58' 00" (PROJECTION LINE
(17) LOWEST LATITUDE 32° 40' 00" INTERVAL, PAGE 4
(18) DIFFERENCE ° 18' 00" HYDRO MANUAL)

(19) 2' 00"
(20) 9 YSN

(21) GREATEST LONGITUDE 117° 52' 00"
(22) LOWEST LONGITUDE 117° 14' 00"
(23) DIFFERENCE ° 38' 00"

(24) 2' 00"
(25) 19 XSN

LIST G.P. OF ALL STATIONS TO BE PLOTTED ON THIS PROJECTION ON THE BACK OF THIS FORM. (DEG., MIN., METERS)

Comp. by JCA
✓ by DMS

32°-40' to 32°-58' 33,279* / 33,269

@ 32°-40' 31,284* / 31,268

Dia = okay B.W.F

-HYDRO D PARAMETER CARD

H. No.
Field No. OPR-411 S,R,4 = 03010, 03030, AND 03040, AND @ 05101 = CHART OVERLAP
Date 2-10-70

PARAMETER CARD 1B

	DEG	MIN	SECONDS	1	2	3	4	5	6	7	8	9	10
MASTER R1 HYDRO NAME	33°	21'	00.23" / LAT	1	2	3	0	6	0	2	3	0	6
Atom 1970	117°	31'	27.83" W LONG	11	12	13	14	15	16	17	18	19	20
				4	2	3	0	8	7	8	3	0	6
SLAVE R2 HYDRO NAME	33°	43'	12.94" / LAT	21	22	23	24	25	26	27	28	29	30
RM 1 of				-1	2	1	3	9	2	9	4	0	6
Old 1929	118°	16'	56.98" / LONG	31	32	33	34	35	36	37	38	39	40
				4	2	5	8	1	6	9	8	0	6
SLAVE R3 HYDRO NAME	32°	42'	24.48" / LAT	41	42	43	44	45	46	47	48	49	50
				1	1	7	7	4	4	4	8	0	6
Jump 1970	117°	15'	13.03" / LONG	51	52	53	54	55	56	57	58	59	60
				4	2	2	1	1	3	0	3	0	6
FREQUENCY	1799.6			61	62	63	64	65	66	67	68	69	70
				1	7	9	9	6	0	0	0	0	8
H IDENTIFICATION NUMBER									71	72	73	74	75
									8	9	1		
YEAR OF SURVEY												76	77
												7	0

F4

120060.23

121380.00 + 12.94 = 121392.94

117720.00 + 24.48 = 117744.48

422100.00 + 13.03

423060.00 + 27.83 = 1

425760.00 - 56.98 = 425816.98

jeh

F 03040
Field No. SHEET "U"
Date 1-21-70
OPR-411

PARAMETER CARD II

03040

			1	2	3	4	5	6	7	8	9	10
Semi major axis of the earth	6,378,206.4	RDA	6	3	7	8	2	0	6	4		7
X Constant- Distance from central meridian to origin of plotter SP 5	meters	XKN	2	8	9	3	2	2	0	0	0	5
Y Constant - Distance from equator to origin of plotter SP 241	meters	YKN	3	6	1	2	5	1	0	4	0	7
Central Meridian of Projection	117 34 00	CMR	4	2	3	2	4	0	0	0	0	6
Plott Scale/Survey Scale	10498.6876 / 1:40,000	SCA	2	6	2	4	6	7	1	9	0	0
North ... axis of sheet - to correspond to (Y axis - 0) X axis ... 1) of plotter		NYX										0
Feet/fathom indicator	0 - feet 1 - fathom	FOF										1
H Identification No.		JN						0	3	0	4	0
		YR									7	0

FOF - 1

PARAMETER CARD III

			1	2	3	4	5	6	7	8	9	10
Lowest Lat. Intersection	32 40 00	YST	1	1	7	6	0	0	0	0	0	6
Lowest Long. Intersection	117 14 00	XST	4	2	2	0	4	0	0	0	0	6
Difference between Grid	2 00	DXY	1	2	0	0	0	0	0	0	0	3
Interval (Long)		XSN									1	9
Interval (Lat)		YSN									0	9

Coded [signature]
Punched [signature]
Checked [signature]
Date 1-21-70

TIDE NOTE (FIELD)
OPR-411
H-9108
OA-40-1-70

Standard Station	Scripps' Pier, La Jolla, Calif.
Latitude	32° 52.0' N
Longitude	117° 15.4' W
Datum	4.1 ft. below MLLW
Time Mer.	120° W
Time Corr'n	0
Range Ratio	1.0

APPROVAL SHEET

OPR-411

DA-40-1-70
H-9108
Southern California

The field work on this surveY was accomplished under mY supervision. Frequent inspections were made of the boat sheet and other records.

John D. Boudra for
RaY E. Moses
CDR, USESSA
Commanding Officer
USC&GSS DAVIDSON

U.S. DEPARTMENT OF COMMERCE
Environmental Science Services Administration
COAST AND GEODETIC SURVEY
Rockville, Md. 20852

Date: June 24, 1970

Reply to Attn of: C331W-172-CSS

Subject: Tidal Data, California Coast

To: Commanding Officer
USC&GSS DAVIDSON

In reference to your memorandum of May 21, 1970, there are enclosed hourly heights for La Jolla, California. La Jolla has been substituted due to the poor tide record at San Diego. Datum is 4.1 feet below mean lower low water.

Listed below are the Hydrographic Sheets and the corrections to apply to the La Jolla hourly heights.

Sheet No.	Time Correction	Range Ratio
9108	0	1.0
9107	0	1.0
9106 (outside)	0	1.0
" (inside)	+0 10	1.1
9105 (outside)	0	1.0
" (inside)	0	1.1

L. C. Wharton
Tides & Currents Branch
Oceanography Division

Enclosures

TO

FWD

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

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

November 10, 1970

~~Nautical Chart Division~~: Pacific Marine Center

Plane of reference approved in ~~Tidal Records~~ for

HYDROGRAPHIC SHEET H9107 and H9108

Locality: Southern California

~~Chief, Tides~~: Year: 1970

Plane of reference is mean lower low water

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

La Jolla, California

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

4.5 feet

Remarks

For L.C. Walton

Chief, Tides and Currents Branch

USCOMM-DC 6880-P64

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-9108

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
Coronado Escarpment										1
Gulf of Santa Catalina										2
La Jolla Canyon										3
San Diego Trough										4
~~Pacific Ocean~~										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
					Approved by					19
					C. S. Harrington					20
					Staff Geographer					21
					19 Sept 1973					22
										23
										24
										25

FORM C&GS-946
(REV. 11-65)
(PRESC. BY HYDROGRAPHIC MANUAL 20-2, 6-94, 7-131)

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

HYDROGRAPHIC SURVEY STATISTICS

HYDROGRAPHIC SURVEY NO. H-9108

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET & PNO	1 ✓	BOAT SHEETS	1 ✓
DESCRIPTIVE REPORT	1 ✓	OVERLAYS	36

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES		1 ?				
CAHIERS	1 ✓					1 ✓
VOLUMES	8	2 ✓				
BOXES PDR-T-162	1 ✓		2 ✓	X		1 ✓

T-SHEET PRINTS *(List)* None

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				2489
POSITIONS CHECKED		2489	2	
POSITIONS REVISED		27	0	
DEPTH SOUNDINGS REVISED		170	62	
DEPTH SOUNDINGS ERRONEOUSLY SPACED or added		147	5	
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED			0	
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS		2	1.0	
JUNCTIONS		39	12.0	
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS		202	8.0	
SPECIAL ADJUSTMENTS			8.0	
ALL OTHER WORK		211	52.0	
TOTALS		454	81.0	

PRE-VERIFICATION BY	BEGINNING DATE	ENDING DATE
VERIFICATION BY Clarence R. Lehman	BEGINNING DATE 4/1/72 & 5/12/73	ENDING DATE 7/31/73
REVIEW BY R. D. Sagecki	BEGINNING DATE 1 July 1974	ENDING DATE 26 July 1974

Insp. RH Carstens 11 hr 8/9/74

USCOMM-DC 36271-P65

Reg. No. H-9108 (1970)

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

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

CARDS CORRECTED

DATE_____ TIME REQ'D_____ INITIALS_____

REMARKS:

H-9108

Information for Future Pre-Survey Reviews

The bottom in this area appears to be stable.

Position Index Lat.	Long.	Bottom Change Index	Use Index	Resurvey Cycle
324	1172	1	4	50 Years
324	1173	0	1	50 Years
324	1174	0	1	50 Years
324	1175	0	1	50 Years
325	1172	1	2	50 Years
325	1173	0	1	50 Years
325	1174	0	1	50 Years
325	1175	0	1	50 Years

OFFICE OF MARINE SURVEYS AND MAPS

MARINE CHART DIVISION

HYDROGRAPHIC SURVEY REVIEW

REGISTRY NO. H-9108 FIELD NO. DA-40-1-70

California, Gulf of Santa Catalina, West of Pt. LaJolla

SURVEYED: February 17 - April 23, 1970

SCALE: 1:40,000 PROJECT NO.: OPR-411

SOUNDINGS: EDO-UQN and DE-723 Depth Recorders CONTROL: Hi-Fix (Hyperbolic Mode)

Chief of Party ..... R. E. Moses
Surveyed by ..... J. D. Bossler
..... G. H. Endrud
..... G. F. Tornberg
..... B. W. Fisher
..... W. K. Taguchi
Automated Plot by ..... PMC-Gerber Digital Plotter
Verified by ..... C. R. Lehman
Reviewed by ..... R. D. Sanocki
Date: July 26, 1974
Inspected by ..... R. H. Carstens

1. Description of the Area

This survey covers a rectangular area of the Pacific Ocean west of Point LaJolla. The survey limits extend west from depths along the 20-fathom curve to long. 117°50' and north from lat. 32°41' to lat. 32°56'.

In the northeast portion of the survey a steepwalled submarine canyon, known as LaJolla Canyon extends in a crescent shape to a basin in the central portion of the survey with depths of 500 to over 600 fathoms. The basin, known as San Diego Trough, lies between the northern limit of the Coronado Escarpment to the southeast in the survey area and a submarine ridge sharply rising to a least depth of 125 fathoms in the western area of the survey.

The bottom is composed primarily of mud, sand, and some rocky areas.

2. Control and Shoreline

The origin of the control is given in the Descriptive Report.

There is no shoreline shown within the limits of the survey.

3. Hydrography

A. Depths at crossings are in good agreement.

B. The usual depth curves were adequately delineated. Brown supplementary depth curves at 50-fathom intervals were added to correspond with charting practice and to further define the bottom configuration. Additional dashed and brown depth curves were added to emphasize important bottom features.

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

4. Condition of the Survey

The survey records, automated plotting, Descriptive Report, and verification are adequate and conform to the requirements of the Hydrographic Manual, as amended by the Instruction Manual-Automated Hydrographic Surveys except as follows:

A. Numerous soundings overprinting adjacent soundings and detracting from clarity should have been added to excess during verification.

B. The reference station (Stamp 42a) position computation of seconds to meters was incorrectly computed.

5. Junctions

Adequate junctions were effected with H-8979 (1968) on the southeast, H-8980 (1968) on the south, H-9114 (1970) on the north, and H-9248 (1971) on the northeast. The junctions with contemporary surveys H-8978 (1968), H-9106 (1970) and H-9107 (1970) on the east, and H-9113 (1970) and H-9112 (1970) on the west are discussed in the reviews of those surveys.

6. Comparison with Prior Surveys

A.

H-289 (1851) 1:380,000	H-4265a (1922-23) 1:120,000
H-1888 (1888-89) 1:20,000	H-4366 & Ad. Wk. (1924,1928) 1:160,000
H-1889 (1888-89) 1:20,000	H-4367 (1924) 1:40,000
H-1905 (1889) 1:20,000	

These surveys provide the earliest coverage of the present survey area. They have been compared with and are superseded in the common area by the prior surveys listed below. No further consideration of the above prior surveys is deemed necessary.

B. H-4266 (1922-23) 1:40,000 H-6117 (1935) 1:40,000
H-4809 (1928) 1:10,000 H-6119 (1935) 1:80,000

These surveys, taken together, cover the area of the present survey. A comparison of these surveys with the present survey reveals only minor differences considering the depths and distances offshore. Depths as great as 580 fms. usually differ by no more than 10 fms. and RAR positions are in error by no more than about 150 to 350 meters. Selected bottom samples from H-4266 (1922-23) and H-4265a (1922-23) were brought forward to supplement the present survey.

With the addition of the supplementary bottom samples the present survey is considered adequate to supersede the prior surveys in the common area.

7. Comparison with Chart 5060, 6th Ed., December 29, 1973

The charted hydrography originates with the previously discussed prior surveys, which need no further consideration, supplemented by applications of soundings from the verified smooth sheet of the present survey.

The submerged obstruction, PA, 33 fms. rep charted in lat. 32°44.1', long. 117°35.2' originates with Notice to Mariners No. 6 of 1966 and should remain as charted. The obstruction is a submarine target.

With the exception of the submerged obstruction noted above the present survey is adequate to supersede the charted hydrography in the common area.

8. Compliance with Instructions

The survey adequately complies with the Project Instructions.

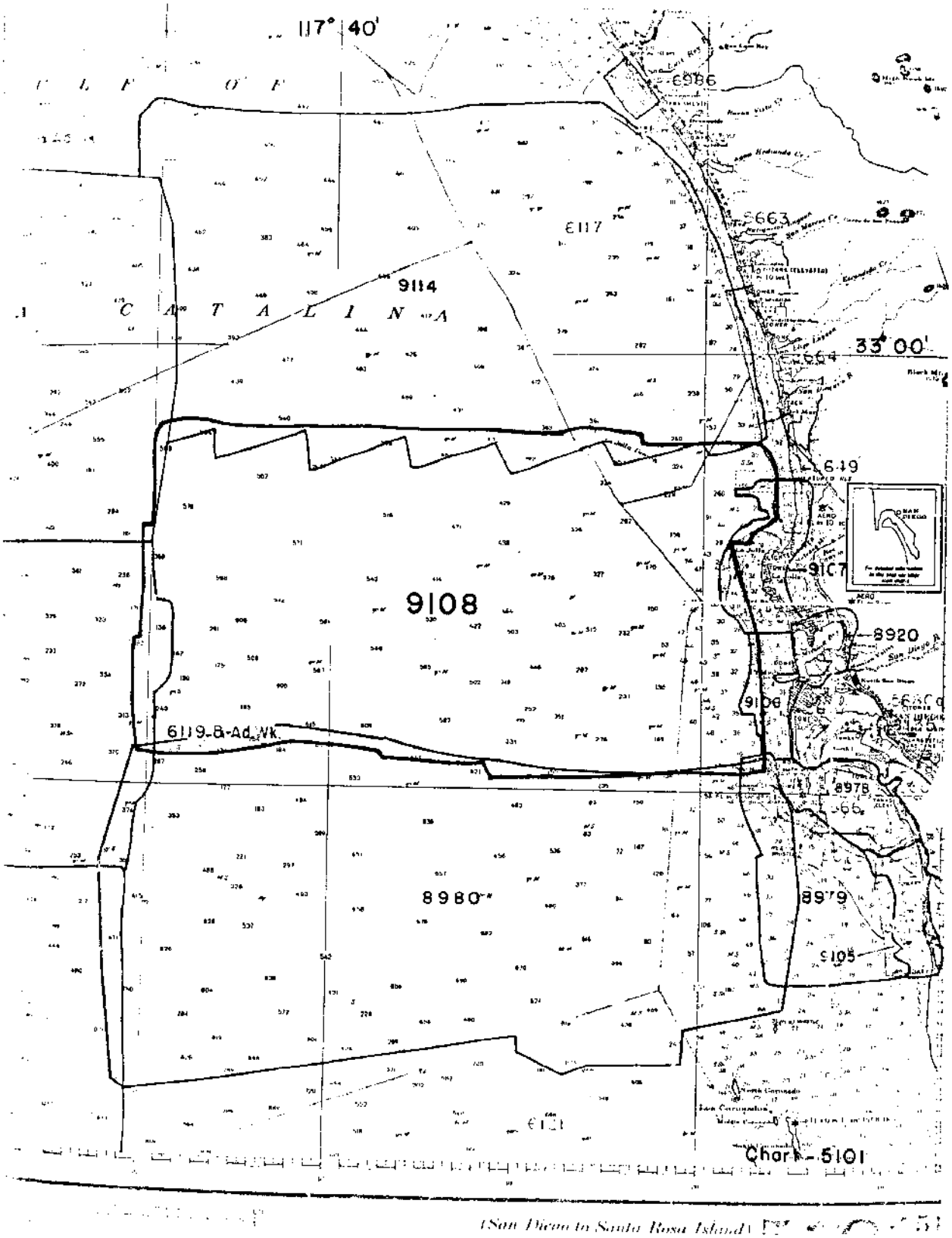
9. Additional Field Work

This is considered to be a very good basic survey and no additional field work is recommended. However, a more narrow beam transducer for future surveys may enhance the depiction of the LaJolla Canyon and Coronado Escarpment bottom configuration.

Examined and Approved:

Chief
Marine Chart Division

Robert C. Munson
Associate Director
Office of Marine Surveys and Maps



(San Diego to Santa Rosa Island)

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

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9108

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
5060	8/20/73	STUART	~~Full~~ Part ~~Before~~ After Verification ~~Review~~ Before Inspection Signed Via
			Drawing No. EXAMINED FOR CRITICAL CORR. ONLY - NO CORR. (Revisions were made [illegible])
5101	6/4/74	SHAW	~~Full~~ Part Before ~~After~~ Verification Review Inspection Signed Via
			Drawing No. EXAM. FOR CRIT. CORR. ONLY THRU 5060 - NO CORR.
5020	7/1/74	SHAW	~~Full~~ Part Before ~~After~~ Verification Review Inspection Signed Via
			Drawing No. EXAM. FOR CRIT. CORR. ONLY THRU 5101 NO CORR.
5060 (18765)	11-6-74	Ray Spence	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 8 (FULLY Revised Hydro)
5107 (18772)	11-19-75	Hamilton	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. Reconstruction
5101 18740	8/01/75	D.C. Larson	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. through 5060
18022	12/14/78	R. A. Lillis	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 40
18020	2/19/78	R. A. Lillis	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 31
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.