9497

Diag. Cht. No. 5101-4

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT
(HYDROGRAPHIC)

Type of Survey HYDROGRAPHIC

Field No. RA-5-2-75

Office No. H-9497

LOCALITY

State CALIFORNIA

General Locality SANTA CATALINA ISLAND

Locality ISTHMUS COVE

1975

CHIEF OF PARTY
Charles K. Townsend

LIBRARY & ARCHIVES

DATE February 6, 1978

Area 5

Chart

18759 5129 10 applied

15757 5[illegible] 40 applied

18746 5[illegible] 80 applied 6-27-78 RCS

18740 5101 234 applied

DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHIC SURVEY

RA-5-2-75

H-9497

Scale 1:5,000

1975

NOAA SHIP RAINIER

CDR. CHARLES K. TOWNSEND

Commanding

2

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.: H-9497

FIELD NO.: RA-5-2-75

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

State: California

General locality: Santa Catalina Island

Locality: Isthmus Cove

Scale: 1:5,000 Date of survey: 16-30 March 1975

Instructions dated: 22 January 1975 Project No.: OPR-411-RA, FA-75

Vessel: NOAA Ship RAINIER, (MSS-21), Launch RA-5 (2125) RA-3 (2123) and Boston Whaler (2129)

Chief of party: Charles K. Townsend, CDR, NOAA

Surveyed by: LT B.K. Mezger, ENS R.W. Ellis, LT A.J. Pickrell, ENS K.P. Dolan, ENS M.M. Huestis

Soundings taken by echo sounder, hand lead, pole: Ross Model 6000 S/N RA-5-1042

Graphic record scaled by: Ship's Personnel

Graphic record checked by: Ship's Personnel

Positions verified ~~XXXXXX~~ by: A.E.Eichelberger Automated plot by: PMC Xynetics Plotter

Soundings Verification by: A.E. Eichelberger

Soundings in ~~XXXXXX~~ feet at ~~XXXXXX~~ MLLW

REMARKS: Survey Time Zone is 000°W.

Applied to Atlas 5/11/78 BB

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U. S. GOVERNMENT PRINTING OFFICE: 1976—665-661/1222 REGION NO. 6

A. PROJECT

This hydrographic survey was conducted in accordance with Project Instructions, OPR-411-RA-75, Santa Catalina Island, Southern California, dated 22 January 1975, change No. 3 dated 18 February 1975.

B. AREA SURVEYED

The general locality covered by this survey was Santa Catalina Island. More specifically the 5,000 scale survey included Isthmus Cove and Catalina Harbor, (Catalina Harbor Separate Survey H-9570 (1975)) the latter of which no hydrography was accomplished. The north and south maximum limits were 33 28'37"N and 33 24'30"N respectively. The east and west limits were 118 28'23"W and 118 31'18"W respectively. The survey commenced on 16 March 1975 and continued through 30 March 1975 inclusive.

The survey made a junction with contemporary survey RA-20-2-75 (H-9499), scale 1:20,000.

C. SOUNDING VESSELS

All soundings in this survey were taken by NOAA Ship RAINIER launch RA-5(2125) with the exception of 9 detached positions taken by the twin 20hp Boston Whaler(2129). Main scheme soundings were plotted in black ink; crosslines in red; junction soundings in violet and blue; bottom samples in blue; prior survey soundings in dark green; and pre-survey review items in light green. RA-3(2123) and RA-6(2126) obtained bottom samples for the survey. RA-3 also obtained detached positions on rocks and buoys on 29 March(J.D. 088) for this sheet.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Launch RA-5 used a Ross Model 5000 Fineline Fathometer,

S/N 1042, and a Ross Model 6000 Digitizer, S/N RA-5-1042 to collect all soundings except for, as mentioned above, the nine detached positions in which a leadline was employed. RA-5 obtained routine bar checks to a depth of seven fathoms(42 feet). Upon daily completion of collecting data, the analog trace and the digitizer record were compared. A new method of phase calibration specified in PMC OPORDER for the Ross Model 5000 Fineline Fathometers was incorporated into this survey. The most important difference of this new method is that it ignored the initial mark throughout the calibration procedure and during the actual operation of the fathometer. A copy of the exact procedure is included in the "Separates Following The Text". These phase checks were made at least three times daily.

A 1.5 foot transducer correction (TRA) was used on RA-5. All applicable corrections were incorporated on a TC/TI (Transducer Correction/Table Indicator) tape for automated processing (see Separates Following The Text). Velocity correctors were computed from bar checks and a TDC cast taken on 26 March 1975 (J.D. 085) at latitude 33 33' 22"N and longitude 118 58' 17"W. Vertical casts were taken for comparison and agreed reasonably well. No emphasis, however, was given to the vertical cast in computing echo sounding corrections.

Sounding equipment operated well with the exception of the Ross Model 6000 Digitizer. Only about half of the soundings on the printout needed no correction. The ones that did were adjusted as to agree with the analog trace. For further information concerning sounding equipment and corrections refer to Corrections to Echo Soundings Report, OPR-411-RA-75, NOAA Ship RAINIER, 1975.

E. BOAT SHEET

The Transverse Mercator Projection and soundings were plotted by RAINIER personnel using the ship's PDP8/e computer(S/N 1011) with Complot plotter Model DP-3(S/N 3750) for soundings and RA-5's PDP8/e (S/N 0995) with Complot plotter DP-3(S/N 4670) for the grid.

The central meridian for the project was 119 00'00"W and the control latitude was 3653000 meters north of latitude zero. Rough plots were made daily, and a semi-smooth plot collated as the work progressed. The final plot was begun and completed on 7 April 1975(J.D. 097). A good grade of polyester drafting film (Mylar, 0.003 inch thickness) was used for the final plot. No discernable distortion could be detected in the boat sheet during the period of the final plot.

F. STATION CONTROL

Station control for the visual hydrography included existing triangulation stations, photo-picked stations, and hydrographic stations located by sextant. Information regarding these stations can be referenced in the Stations List in the appendix. The station name, date, quad, and number that appear in the heading of the published description of the triangulation station are included in the Station List for reference. Triangulation stations were numbered in the one-hundreds. Photo-picked and hydrographic stations were numbered in the two-hundreds and three-hundreds. It should be noted that station 243 and station 303 have the same latitude and longitude. Because of a hardware problem in the remote thumbwheel station it was not possible to enter numbers greater than 39 (greater than 139, 239, 339, etc.) for the left object. This problem resulted in the duplication of 243 and

303 and also in the jump to the three-hundreds for photo-picked and hydrographic stations.

Computations for the photo-picked stations and hydrographic stations can be referenced in the Field Edit Report, OPR-411-RA-75. Due to a lack of adequate photo coverage, three hydro signals 318, 319, and 320 were computed by hydrographic methods; positioning by sextant angles being generated by Wang Resection Program. These computations are referenced in the appendix. The position of "Ship Rock Light" was computed from sextant angles, checked by measuring distances from reference marks, using computer programs RK 407, RK 409, and the Wang Resection Program.

A computer paper tape punched in even parity ASCII is submitted with this report for the Station List as it appears in the appendix. A computer tape that deletes all of the descriptive information is submitted for the list to help facilitate present processing procedures.

A station list for the entire project is included for completeness. No paper tape is submitted for this list.

G. POSITION CONTROL

The method of navigational control for RA-5-2-75(H-9497) was visual hydrography with the exception of the bottom samples which used Raydist for control. Noteworthy is that this survey employed for the first time the digital sextant combined with the hydrolog, a system which hybridizes visual hydrography with computer automation. Except for a few time-consuming hardware and software problems, very little difficulty was experienced with this system. On an inshore line, position numbers 7924 to 7944 inclusive, the left sextant inexplicably lost

44 half-minutes. This was noted when a zero-check was made at the end of the line. When the discrepancy was added to the entire line, it favorably adjusted its position to the actual line run according to the OIC and the coxwain's judgement. For further information on the digital sextant/hydrolog system see Digital Sextant Report, OPR-411-RA-75.

H. SHORELINE

Shoreline for the boatsheet was transferred from T-sheet manuscripts TP-00611."Ship Rock's" shoreline, not included in the above T-sheet manuscript, was scaled off a 1:5,000 scale photograph, #72L2398. Because of perimeter distortion on this photograph, this shoreline could be somewhat inaccurate. All shoreline and topographic details on the boatsheet were verified by field edit, and rocks that could be a potential hazard to navigation were located by photogrammetric methods. Verified shoreline is shown on the boatsheet by black ink and revised shoreline is designated by red ink. Field edit on this boatsheet was completed for Isthmus Cove. No field edit was completed on Catalina Harbor.

Shoreline details that were revised by Field Edit consisted of three areas. Firstly, at 33 26'32"N x 118 29'30"W the addition of "foul with rocks" to the area outlined in red on the boatsheet is suggested. Secondly, the shoreline in Fisherman's Cove, 33 26'40" x 118 28'58"W contains two additional changes since the original survey: 1) a pier and 2) a marine railway track system. Thirdly, the foul area encompassing "Ship Rock" has been revised to cover more area. Particularly of interest here are the three rocks found just south of "Ship Rock" as shown on the most recent edition of the chart C&GS 5128. The one photograph which was available of the area showed there to be only one

rock which corresponds to the north-most rock on the present chart. The two southern rocks not found on the photograph were searched for by boat and not found. Due to kelp in the area, however, it was impossible to verify their non-existence. Consequently, it is recommended that until better photographic coverage is examined that the three rocks remain as presently charted. Shoreline shown on the boat sheet can be considered adequate and should supersede the shoreline on the present chart.

For the most part, the MLLW line could not be defined by the soundings due to 1) the shoreline being fouled with rocks and kelp, 2) a steep bottom gradient, and 3) dangerous surf conditions. Refer to Field Edit Report, OPR-411-RA-75, for additional information.

I. CROSSLINES

Crosslines totalled 8.4 nautical miles or 8.1% of the main scheme of soundings. Crossline agreement was exceptionally good. Ninety-five percent of the crossline soundings agreed within one foot to main scheme soundings. A 0.2 nautical mile stretch of crossline just north of Blue Cavern Point, 33 26' 55"N x 118 28' 45"W suffered from weak inshore control and should be rejected. 4 questionable Sndgs. in excess. All other discrepancies appear from the fathogram to be due to steep bottom gradient.

Sounding equipment used to obtain crossline was the same as for the main scheme soundings; that is, a Ross Model 5000 Fineline Fathometer, S/N 1042, and Ross Model 6000 Digitizer, S/N RA-5-1042, which were contained in launch RA-5(2125).

J. JUNCTIONS

Junctions of RA-5-2-75(H-9497) are made with: RA-20-2-75(H-9499), scale 1:20,000, year 1975.

Agreement in depths at junctions with contemporary survey RA-20-2-75 were usually within six feet. Such large discrepancies are explained by two reasons: 1) RA-20-2-75 soundings were rounded off to the nearest integral fathom, then converted into feet for comparison. This alone can introduce an error of 4.2 feet. 2) The transferring of depths from a 20,000 scale boatsheet to a 5,000 scale boatsheet has inherent inaccuracy that must be taken into account. It should be pointed out, though, that when the 5,000 scale was transferred to the 20,000 sheet, RA-20-2-75, agreement appeared to be excellent.

Discrepancies six feet or over on depths at junction with RA-20-2-75 (H-9499) were found at the following geographical positions:

RA-5-2A-75:	H-9499 (ft.)	H-9497 (Smooth) (ft.)
1. 33 28'04"N x 118 29'28"W	432	443
2. 33 27'20"N x 118 29'07"W	246	250
3. 33 27'10"N x 118 28'45"W	276	281
4. 33 26'57"N x 118 28'45"W	168	172
5. 33 26'53"N x 118 28'45"W	17	20

RA-5-2B-75:

1. 33 27'55"N x 118 29'58"W no Sndg. @ this G.P. on H-9499

K. COMPARISON WITH PRIOR SURVEYS

This survey verified presurvey review items #26 and #27. With presurvey review item #26, a rock which is definitely a hazard to navigation was found to be awash at 2120Z on 13 March 1975. This rock, however, corresponds to a rock already shown on C&GS Chart 5128; it is recommended that this rock be retained on the chart. The pilings in

See Verifiers report

Item #27 were verified to exist, and are cut off at the mudline. They are covered by floats and present no danger to navigation.

The shoal at approximately 33 27'40"N x 118 30'30"W, just northwest of Lion's Head was developed giving a sounding of 13 feet where the H-1413(1877-78) survey recorded a depth of 1¼ fathoms. The shoalest depth recorded by this survey was 4 feet at 33 27'39"N x 118 30'29"W which corresponds to the ½ fathom sounding on the present chart.

On the east-most end of this shoal, a recorded depth of 3~~7~~ 8 feet was found at 33 27'38"N x 118 30'25"W. This corresponds to a depth of 9 fathoms on the present edition of the chart, a 3 fathom difference.

At 0.1 nautical miles due ~~west~~ east of Lion's Head(33 27'10"N x 118 29'54"W) this survey reaffirmed survey H-5556 that the 13 fathom sounding is in error. RA-5-2-75 fathograms coincide with H-5556's 23 fathom sounding.

The 6½ fathom sounding(33 27'16"N x 118 29'20"W) was not found. The shoalest depth in that vicinity was 6~~5~~ 3 feet(~~11~~ 10.5 fathoms).

The three presurvey review depths off ~~of~~ Bird Rock will be discussed counterclockwise starting from the north. The northern-most depth of 9 fathoms(33 27'09"N x 118 29'13"W) was found by this survey to be accurately placed, however, depths of ~~38~~ 40 feet and 13 feet were collected just south of the 9 fathom mark. More emphasis should be placed on these nearby shoaler soundings. The northwest depth of 3 fathoms(33 27'08"N x 118 29'17"W) was found to be misplaced towards the ~~south~~ west by 0.0~~5~~ 6 nautical miles.

The southern-most depth of 4½ fathoms was not found. It appears that the sounding should have been positioned closer to Bird Rock. The shoalest depth recorded in this vicinity was ~~42~~ 50 feet(~~7~~ 8.3 fathoms).

Harbor Reef's presurvey review items, two depths of 1½ and 1¼ fathoms; ~~seemed to have their depths switched around according to this~~

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~~survey~~. The west-most depth of 1½ fathom(33 26' 57"N, 118 29' 28"W) had a sounding of ~~12~~ 7 feet, while the ~~east~~-most depth of 1½ fathoms (33 26' 55"N, 118 29' 25"W) had a ~~shoal~~est depth of ~~7~~ 9 feet.

The 30-foot sailboat which was reported wrecked at 33 26' 47"N, 118 29' 23"W was not recovered by RA-5's development. It was not searched for by divers or wire drag.

It is recommended that all changes or differences found by this survey supersede prior surveys.

A comparison with the following prior survey was made:

Registry No.	Scale	Year
H-5556	1:10,000	1934

Prior surveys that were not available on the ship for comparison are:

Registry No.	Scale	Year
H-5557	1:5,000	1934
H-1413	1:20,000	1877,78
H-1210	1:10,000	1873

Depth discrepancies of six feet or more with H-5556 occur at:

	H-5556		H-9497
33 26' 51"N x 118 29' 49"W	11 fm.	66 ft.	103 ft.
33 27' 40"N x 118 29' 24"W	33 "	198 "	191 "
33 27' 20"N x 118 29' 25"W	31 "	186 "	150 "
33 27' 07"N x 118 29' 24"W	26 "	156 "	146 "
33 27' 23"N x 118 28' 52"W	58 "	348 "	331 "

All contemporary soundings were either equal or shoaler than this prior survey and should take precedence over the previous soundings.

L. COMPARISONS WITH THE CHART

The soundings collected for RA-5-2-75(H-9497), as mentioned previously, were generally shoaler than those found on C&GS Chart #5128. These discrepancies are probably due to the fact that the previous soundings were collected by leadline, not by echo sounding equipment. It is, of course, recommended that these values take precedence over prior surveys.

Shoreline comprised probably the greatest disagreement with the Chart. The shoreline as depicted on the manuscript TP-00611 should most definitely be used over existing charted shoreline. Ship Rock's position and shoreline posed problems when visual bearings were taken for fix purposes. The position of the light itself should be verified on the Chart. Two main shoreline features have been added by the University of Southern California in Fisherman Cove which need to be on the new Chart. Firstly, of main importance, is the pier; and secondly, the Marine Railway.

Shoal investigations were made at the following places:

Position	Scale	Least Depth
33 27'40"N x 118 30'30"W	1:2,500	4 feet
33 27'10"N x 118 29'15"W	1:2,500	18 feet
33 26'55"N x 118 29'25"W	1:2,500	6 foot

These shoal investigations are deemed adequate and should take precedence over prior surveys.

There were no newly found dangers to navigation on this survey.

M. ADEQUACY OF SURVEY

RA-5-2-75(H-9497) is a thorough survey of Isthmus Cove with the possible exception of 4th of July Cove. In this Cove, five detached positions were obtained by leadline(#9002-9008) and hydrographer's estimation for the control. Congestion from moored boats and mooring buoys plus being rushed due to a lack of time were the reasons for resorting to such techniques. Because of the gentle gradient and sandy bottom, this dubious method is adequate, but substandard.

No hydrography was collected in Catalina Harbor due to lack of time. All fathogram field survey records were scanned and checked for deeps and peaks with appropriate changes made to the original records.

N. AIDS TO NAVIGATION

All aids to navigation on RA-5-2-75(H-9497) are adequate. One new nonfloating aid, a tank located at approximately 33 26'N, 118 29'W has been submitted for charting. Refer to Separates Following The Text for further information.

O. STATISTICS

Total number of positions collected in this survey is 2021; linear nautical miles, 103.8; square nautical miles, 2.4. A tabulation of statistics follows:

Vessel	Nautical Miles	Positions	Remarks
2123	0.0	50	Detached positions and Bottom samples.
2125	103.8	1959	Hydrography
2126	0.0	3	Bottom samples
2129	0.0	9	Detached positions
Total	103.8	2021	

P. MISCELLANEOUS

RA-5-2-75(H-9497) was the first survey which employed the digital sextant/hydrolog system. Because of this, every possible means to ensure smooth operation was put forth by the ship(i.e. most experienced crew, best launch, etc.). In addition, superb station control was available in this particular area. These factors rendered an ideal set of working conditions for this boat sheet. ✓

Q. RECOMMENDATIONS

No further recommendations are deemed necessary.

R. REFERENCES TO REPORTS

1. Corrections to Echo Soundings Report, OPR-411-RA-75.
2. Field Edit Report, OPR-411-RA-75.
3. Digital Sextant Report, OPR-411-RA-75.
4. Horizontal Control Report, OPR-411-RA-75.
5. Electronic Control Report, OPR-411-RA-75.

S. DATA PROCESSING PROCEDURES

This project saw the implementation of the "new format" hydroplot software. Difficulty arose upon first usage of these new programs, and it became necessary to rely upon the old software to keep data acquisitions running smoothly. The problems stemmed from a variety of hardware associated malfunctions that were eventually solved. After two weeks of a combination of old and new software usage, implementation of the new software began. (It became still necessary, however, to use AM 201 GRID AND LATTICE PLOT and AM 300 UTILITY COMPUTATIONS as the new format versions for these programs were not available. RK 201 GRID, SIGNAL, AND LATTICE PLOT replaced AM 201 when it arrived during the last week of the project.) For the first two weeks all data that had been acquired through the old format was transformed to the new format with computer program RK 337 UNSCRAMBLER for submission to the Pacific Marine Center.

The following discussion deals primarily with processing of the hydrographic data in the production of the boat sheet. Information relating to tides processing procedures can be referenced in the Field Tide Note in the Appendix. Field edit procedures can be referenced in the Field Edit Report, OPR-411-RA-75. Processing of the data followed instructions for the 1975 field season as set forth by the Processing Division of Pacific Marine Center in the letter dated 13 February 1975.

Sounding data for this boat sheet was collected entirely with RK 171, 175, 176, the present visual hydrolog data logging system. RK 175 VISUAL HYDROLOG was modified by Alan Pickrell, Lt.,NOAA, during the project to improve its effectiveness with the digital sextant.

Improvements included a change in the timing interval of the ringing of the standby bell to ten and eight seconds before the fix instead of ten and nine seconds as before, a change in the rejection limit after the fix to be equal to the sounding interval minus one second, and the most important change, to allow a check fix in the on-line mode between fixes that would update the steering meter. This last change in conjunction with the digital sextant was the most important factor that improved the quality of the visual hydrography. The changes did not alter the logging of the data in the teletype printout or in the punching of the tape.

The master tape punched from RK 175 was edited at the end of the day to remove rejected lines and parts of lines and was then used in a position plot to check the line spacings and intervals. After the fathogram had been scanned, depths were changed on the master tape. Because of the constant sporadic malfunctioning of the Ross sounding digitizer it was more practical to edit the master tape for these digitizer discrepancies than to use the corrector tape. Changes to positioning data as indicated by the first position plot were also changed on the master tape at this time. A sounding plot was then made with these corrections. Any of the few minor changes or revisions that were needed to correct busts were then made either through the corrector tape or by editing the master tape. Teletype printouts for both the final master and corrector tapes were then made for submission to Pacific Marine Center.

Bottom samples and detached positions were obtained in the field and then transferred to a separate sounding volume in processing. Latitudes and longitudes for bottom samples and detached positions were

computed and then plotted on the boat sheets(on the final boat sheet for bottom samples and on a separate sheet for detached positions). Signals were plotted on the boat sheets with RK 201 GRID SIGNAL and LATTICE PLOT. Presurvey review items, prior surveys, and junction soundings were plotted by hand on the final boat sheet; and shoreline features were transferred from the T-sheet manuscripts under the supervision of field edit.

A latitude and longitude was computed for the fix at the beginning of a line that started the day or started after a LBKS(line breaks). The latitudes and longitudes were then recorded on the original printout with the corresponding fixes.

Boat sheets submitted with this report include the rough boat sheets used in the launches, semi-smooth boat sheets(a semi-complete sheet used by the ship for processing and planning purposes), the final boat sheet, a position plot of detached positions, and two different expansion plots of developments.

A listing of the computer programs and their respective version dates used during data acquisition and processing follows.

PROGRAM	VERSION DATE	TITLE/DESCRIPTION
RK 171	17 Sep 74	VISUAL HYDROLOG LOADER
RK 175	14 Mar 75	VISUAL HYDROLOG
RK 176	01 May 74	VISUAL HYDROLOG RESTARTER
AM 201	10 Nov 72	GRID AND LATTICE PLOT
RK 201	19 Feb 75	GRID, SIGNAL, AND LATTICE PLOT
AM 202	10 Nov 72	VISUAL STATION TABLE LOAD AND PLOT
AM 205	11 Sep 73	VISUAL POSITION AND SOUNDING PLOT
RK 212	01 Apr 74	VISUAL STATION TABLE LOAD AND PLOT
RK 215	16 Aug 74	VISUAL POSITION AND SOUNDING PLOT
AM 300	24 May 73	UTILITY COMPUTATIONS
AM 301	08 Dec 72	VISUAL STATION TABLE MARKER (VISTA)
RK 301	12 Aug 74	VISUAL STATION TABLE MARKER (VISTA)
RK 337	08 Aug 74	UNSCRAMBLER
RK 410	23 Aug 73	GEODETIC THREE POINT FIX
AM 500	10 Nov 72	PREDICTED TIDE GENERATOR
RK 530	25 Jun 74	VELOCITY CORRECTION COMPUTATIONS
AM 602	10 Mar 72	ELINORE LINE EDITOR
AM 603	10 Oct 72	BINARY TAPE CONSOLIDATOR
AM 607	01 Jan 71	SELF-STARTING BINARY LOADER

FOCAL SCALING PROGRAM (Used for photo signal computation) 13 Aug 73

Respectfully submitted:

Richard W. Ellis

Richard W. Ellis, Ens.,NOAA

APPROVAL SHEET

H-9497 (RA-5-2-75)

OPR-411-RA-75

Southern California

In producing this sheet, standard procedures were observed in accordance with the Hydrographic Manual, PMC OPORDER, and the Instruction Manual for Automated Hydrographic Surveys. The data was examined daily during the execution of the survey.

The boatsheets and the accompanying records have been examined by me and are considered complete and adequate for charting purposes and are approved.

Charles K. Townsend
CDR., NOAA

STATION LIST
RA-5-2-75 H-9497

116 3 33 27 47328 118 29 26698 139 0000 000000
BIRD ROCK 1875 33 118 2 1002

117 3 33 26 34796 118 29 57251 139 0000 000000
GLO NO 1 1933 33 118 3 1021

118 3 33 26 20864 118 29 52181 139 0000 000000
SANTA CATALINA NORTH BASE 1875 33 118 2 1041

119 3 33 26 09118 118 29 47419 139 0000 000000
ISTHMUS 1933 33 118 2 1026

120 3 33 27 04406 118 29 10363 139 0000 000000
WHITE ROCK 1875 33 118 2 1052

121 3 33 26 48080 118 28 38316 139 0000 000000
CHANNEL 1933 33 188 2 1010

122 3 33 27 10897 118 30 02584 139 0000 000000
CHERRY 2 1933 33 118 3 1005

123 3 33 26 35309 118 30 28427 139 0000 000000
PROSPECT 2 33 118 3 1021

124 3 33 27 54658 118 31 17979 139 0000 000000
PABLO 1875 33 118 3 1020

225 3 33 26 44534 118 29 02361 243 0000 000000
PHOTO TP-00611

226 3 33 26 41418 118 28 52802 243 0000 000000
PHOTO TP-00611

227 3 33 26 38204 118 29 00503 243 0000 000000
PHOTO TP-00611

228 3 33 26 37977 118 29 05884 243 0000 000000
PHOTO TP-00611

229 3 33 26 40087 118 29 12233 243 0000 000000
PHOTO TP-00611

230 3 33 26 31995 118 29 23773 243 0000 000000
PHOTO TP-00611

232 3 33 26 26613 118 29 34898 243 0000 000000
PHOTO TP-00611

233 3 33 26 27230 118 29 41344 243 0000 000000
PHOTO TP-00611

CONCLUDED ON NEXT PAGE

STATION LIST
RA-5-2-75 H-9497
(CONCLUDED)

234 3 33 26 28992 118 29 48776 243 0000 000000
PHOTO TP-00611

235 3 33 26 31330 118 29 49311 243 0000 000000
PHOTO TP-00611

236 3 33 26 39620 118 29 56104 243 0000 000000
PHOTO TP-00611

237 3 33 26 45066 118 29 50340 243 0000 000000
PHOTO TP-00611

243 3 33 26 52688 118 29 55431 243 0000 000000
PHOTO TP-00611
DUPLICATED IN STATION 303

300 3 33 26 48396 118 30 01812 243 0000 000000
PHOTO TP-00611

303 3 33 26 52688 118 29 55431 243 0000 000000
PHOTO TP-00611
DUPLICATE OF STATION 243

304 3 33 26 57608 118 29 59890 243 0000 000000
PHOTO TP-00611

305 3 33 27 01016 118 30 06497 243 0000 000000
PHOTO TP-00611

307 3 33 27 02490 118 30 10020 243 0000 000000
PHOTO TP-00611

314 3 33 26 46634 118 28 55346 243 0000 000000
PHOTO TP-00611

315 3 33 27 16158 118 30 22720 243 0000 000000
PHOTO TP-00611

317 3 33 27 17207 118 30 27823 243 0000 000000
PHOTO TP-00611

319 3 33 27 26044 118 30 50902 252 0000 000000
REFERENCE FIELD EDIT REPORT OR
DESCRIPTIVE REPORT FOR COMPUTATIONS

STATION LIST
OPR-411-RA-75
ALL BOAT SHEETS

101 3 33 42 59296 118 18 50585 250 0041 329646
NIKE ECC 1975 33 118 1 SW
REF COMPUTATIONS IN DESCRIPTIVE REPORTS
THIS POSITION TO SUPERSEDE PREVIOUS POSITION AS
USED DURING HYDROGRAPHY

102 3 33 33 22471 117 49 02200 250 0064 329646
ABALONE KNOLL 1884 33 117 4 1001
ELEVATION FROM TOPOGRAPHIC MAP (NOT CRITICAL
FOR SLOPE REDUCTION OF LONG RANGES)

103 3 33 20 29530 118 19 14170 139 0000 000000
FLAGSTAFF 1934 33 118 2 1059

104 3 33 20 51210 118 19 38660 139 0000 000000
CARILLION 1934 33 118 2 1056

105 3 33 20 55860 118 19 29289 139 0000 000000
CASINO 1934 33 118 2 1057

106 3 33 20 55706 118 19 26946 139 0000 000000
CASINO FLAGPOLE 1934 33 118 2 1058
THIS POSITION TO SUPERSEDE PREVIOUS POSITION
AS USED DURING HYDROGRAPHY

107 6 33 20 42439 118 19 15206 139 0003 000000
CABRILLO MOLE (RAYDIST CALIBRATION SITE)
CENTER OF NORTHERNMOST GROUP OF CORNER PILINGS
OF PIER REF COMPUTATIONS IN DESCRIPTIVE REPORTS
THIS POSITION TO SUPERSEDE PREVIOUS POSITION AS
USED DURING HYDROGRAPHY

108 3 33 20 34055 118 18 59390 139 0046 000000
FORLIS 1975 33 118 2
REF COMPUTATIONS IN DESCRIPTIVE REPORTS
THIS POSITION TO SUPERSEDE PREVIOUS POSITION AS
USED DURING HYDROGRAPHY

109 0 33 20 53973 118 19 22760 139 0005 000000
AVALON BAY NORTH LIGHT (LIGHT 2) 33 118 2
REF COMPUTATIONS IN DESCRIPTIVE REPORTS
THIS POSITION TO SUPERSEDE PREVIOUS POSITION AS
USED DURING HYDROGRAPHY

CONTINUED ON NEXT PAGE

STATION LIST
OPR-411-RA-75
(CONTINUED)

110 3 33 20 53362 118 19 42610 139 0134 000000
LOW POLE 1917 33 118 2 1030

111 3 33 20 34015 118 19 44220 139 0069 000000
NEW 1917 33 118 2 1031

112 3 33 20 42264 118 19 16006 139 0000 000000
AVALON BAY SOUTH LIGHT (LIGHT 1) 33 118 2
REF COMPUTATIONS IN DESCRIPTIVE REPORTS
THIS POSITION SUPERSEDES PREVIOUS POSITION AS
USED DURING HYDROGRAPHY

113 3 33 43 54664 118 19 55263 139 0270 000000
BENCH 1870, 1960 33 118 1 SW 3002

114 3 33 42 17354 118 17 35087 139 0034 000000
NAVY 1921 33 118 1 SW 3017

115 3 33 43 31144 118 20 11312 139 0105 000000
SEA BENCH 1870 33 118 1 SW 3028

116 3 33 27 47328 118 29 26698 139 0000 000000
BIRD ROCK 1875 33 118 2 1002

117 3 33 26 34796 118 29 57251 139 0000 000000
GLO NO 1 1933 33 118 3 1021

118 3 33 26 20864 118 29 52181 139 0000 000000
SANTA CATALINA NORTH BASE 1875 33 118 2 1041

119 3 33 26 09118 118 29 47419 139 0000 000000
ISTHMUS 1933 33 118 2 1026

120 3 33 27 04406 118 29 10363 139 0000 000000
WHITE ROCK 1875 33 118 2 1052

121 3 33 26 48080 118 28 38316 139 0000 000000
CHANNEL 1933 33 188 2 1010

122 3 33 27 10897 118 30 02584 139 0000 000000
CHERRY 2 1933 33 118 3 1005

123 3 33 26 35309 118 30 28427 139 0000 000000
PROSPECT 2 33 118 3 1021

CONTINUED ON NEXT PAGE

STATION LIST
OPR-411-RA-75
(CONTINUED)

```
124 3  33 27 54658 118 31 17979  139 0000 000000
            PABLO 1875          33 118 3    1020

125 3  33 42 58678 118 18 50766  139 0000 000000
            NIKE 1975   33 118 1 SW
            REF COMPUTATIONS IN DESCRIPTIVE REPORTS
            THIS POSITION SUPERSEDES PREVIOUS POSITION AS
            USED DURING HYDROGRAPHY

201 3  33 20 27461 118 18 50461  243 0000 000000
            PHOTO  TP-00612

202 6  33 20 33661 118 18 55023  243 0000 000000
            PHOTO  TP-00612

203 6  33 20 36939 118 18 59315  243 0000 000000
            PHOTO  TP-00612

204 3  33 20 38854 118 19 12837  243 0000 000000
            PHOTO  TP-00612

205 4  33 20 38043 118 19 18792  243 0000 000000
            PHOTO  TP-00612

206 6  33 20 39341 118 19 24128  243 0000 000000
            PHOTO  TP-00612

207 5  33 20 44859 118 19 32944  243 0000 000000
            PHOTO  TP-00612

208 0  33 20 48105 118 19 34104  243 0000 000000
            PHOTO  TP-00612

209 3  33 21 09413 118 19 38442  243 0000 000000
            PHOTO  TP-00612

210 3  33 21 04707 118 19 39680  243 0000 000000
            PHOTO  TP-00612

211 6  33 20 34634 118 19 22659  243 0000 000000
            PHOTO  TP-00612

212 5  33 20 39860 118 19 30547  243 0000 000000
            PHOTO  TP-00612
```

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STATION LIST
OPR-411-RA-75
(CONTINUED)

213 3 33 20 58233 118 19 34298 243 0000 000000
PHOTO TP-00612

214 6 33 20 33368 118 19 03944 243 0000 000000
PHOTO TP-00612

215 6 33 20 33888 118 19 06148 243 0000 000000
PHOTO TP-00612

216 3 33 20 19508 118 18 45202 243 0000 000000
PHOTO TP-00612

217 7 33 20 14607 118 18 39788 243 0000 000000
PHOTO TP-00612

218 3 33 20 17142 118 18 43818 243 0000 000000
PHOTO TP-00612

219 5 33 20 15159 118 18 41737 243 0000 000000
PHOTO TP-00612

220 3 33 20 16587 118 18 54513 243 0000 000000
PHOTO TP-00612

221 3 33 20 22040 118 19 08669 243 0000 000000
PHOTO TP-00612

222 3 33 21 20495 118 19 47334 243 0000 000000
PHOTO TP-00612

223 3 33 21 33193 118 19 54082 243 0000 000000
PHOTO TP-00612

224 3 33 20 31518 118 19 58333 243 0000 000000
PHOTO TP-00612

225 3 33 26 44534 118 29 02361 243 0000 000000
PHOTO TP-00611

226 3 33 26 41418 118 28 52802 243 0000 000000
PHOTO TP-00611

227 3 33 26 38204 118 29 00503 243 0000 000000
PHOTO TP-00611

CONTINUED ON NEXT PAGE

STATION LIST
OPR-411-RA-75
(CONTINUED)

228 3 33 26 37977 118 29 05884 243 0000 000000
PHOTO TP-00611

229 3 33 26 40087 118 29 12233 243 0000 000000
PHOTO TP-00611

230 3 33 26 31995 118 29 23773 243 0000 000000
PHOTO TP-00611

231 3 33 26 31738 118 29 30292 243 0000 000000
PHOTO TP-00611

232 3 33 26 26613 118 29 34898 243 0000 000000
PHOTO TP-00611

233 3 33 26 27230 118 29 41344 243 0000 000000
PHOTO TP-00611

234 3 33 26 28992 118 29 48776 243 0000 000000
PHOTO TP-00611

235 3 33 26 31330 118 29 49311 243 0000 000000
PHOTO TP-00611

236 3 33 26 39620 118 29 56104 243 0000 000000
PHOTO TP-00611

237 3 33 26 45066 118 29 50340 243 0000 000000
PHOTO TP-00611

238 3 33 26 47773 118 29 55346 243 0000 000000
PHOTO TP-00611

239 3 33 26 48653 118 29 57970 243 0000 000000
PHOTO TP-00611

243 3 33 26 52688 118 29 55431 243 0000 000000
PHOTO TP-00611
DUPLICATED IN STATION 303

300 3 33 26 48396 118 30 01812 243 0000 000000
PHOTO TP-00611

301 3 33 26 50412 118 30 00643 243 0000 000000
PHOTO TP-00611

CONTINUED ON NEXT PAGE

STATION LIST
OPR-411-RA-75
(CONTINUED)

302 3 33 26 51896 118 29 58385 243 0000 000000
PHOTO TP-00611

303 3 33 26 52688 118 29 55431 243 0000 000000
PHOTO TP-00611
DUPLICATE OF STATION 243

304 3 33 26 57608 118 29 59890 243 0000 000000
PHOTO TP-00611

305 3 33 27 01016 118 30 06497 243 0000 000000
PHOTO TP-00611

306 3 33 27 01143 118 30 07806 243 0000 000000
PHOTO TP-00611

307 3 33 27 02490 118 30 10020 243 0000 000000
PHOTO TP-00611

308 3 33 27 05158 118 30 07748 243 0000 000000
PHOTO TP-00611

309 3 33 27 08297 118 30 05335 243 0000 000000
PHOTO TP-00611

310 3 33 26 28291 118 29 06093 243 0000 000000
PHOTO TP-00611

311 3 33 26 44673 118 28 45095 243 0000 000000
PHOTO TP-00611

312 3 33 28 52226 118 28 49612 243 0000 000000
PHOTO TP-00611

313 3 33 26 50273 118 28 58148 243 0000 000000
PHOTO TP-00611

314 3 33 26 46634 118 28 55346 243 0000 000000
PHOTO TP-00611

315 3 33 27 16158 118 30 22720 243 0000 000000
PHOTO TP-00611

CONCLUDED ON NEXT PAGE

STATION LIST
OPR-411-RA-75
(CONCLUDED)

316 3 33 27 15795 118 30 24772 243 0000 000000
PHOTO TP-00611

317 3 33 27 17207 118 30 27823 243 0000 000000
PHOTO TP-00611

318 3 33 27 19482 118 30 28434 252 0000 000000
REFERENCE FIELD EDIT REPORT OR
DESCRIPTIVE REPORT FOR COMPUTATIONS

319 3 33 27 26044 118 30 50902 252 0000 000000
REFERENCE FIELD EDIT REPORT OR
DESCRIPTIVE REPORT FOR COMPUTATIONS

320 3 33 27 23642 118 30 44594 252 0000 000000
REFERENCE FIELD EDIT REPORT OR
DESCRIPTIVE REPORT FOR COMPUTATIONS

-33-

NOAA FORM 76-40 (8-74)
Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

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

REPORTING UNIT (Field Party, Ship or Office): RAINIER
STATE: CALIFORNIA
LOCALITY: SANTA CATALINA ISLAND
DATE: APRIL 75

The following objects HAVE [X] HAVE NOT [ ] been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.: OPR-411-RA-75
JOB NUMBER: PH-7112
SURVEY NUMBER: TP-00611
DATUM: N.A. 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° / // D.M. Meters	POSITION LONGITUDE ° / // D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	METHOD AND DATE OF LOCATION FIELD	CHARTS AFFECTED
TANK		33 26 / 28291 / 871.6	118 29 / 06093 / 157.4		V-Vis 3-12-75	5112 5128 5142

VELOCITY CORRECTOR TAPE LISTING
RA-5-2-75 (H-9497)

TABLE # 2
SCALE- FEET

```
000100 0 0000 0002 000 000000 000000
000293 0 0005
000489 0 0010
000681 0 0015
001065 0 0020
001455 0 0030
001940 0 0040
002340 0 0050
002860 0 0060
003390 0 0070
003950 0 0080
004530 0 0090
```

TIDE NOTE

H-9496 (RA-5-1-75)
H-9497 (RA-5-2-75)
H-9498 (RA-20-1-75)
H-9499 (RA-20-2-75)

Tide reducers for boatsheet soundings were generated by Hydroplot Program AM 500, using the daily values for Los Angeles, California reference station listed in "Tide Tables, High and Low Water Predictions, 1975, West Coast of North and South America", with the following corrections applied:

Time (minutes)	high water	+ 8
	low water	+10
Height Ratio (high and low water)		0.97

The corrections were derived from an interpolation of the time differences and height ratios between Avalon and Isthmus Cove.

Tide stations in operation in relation to these surveys were:

Station	Location	Dates of Installation - Removal
1. Los Angeles Outer Harbor (Control Station)	33° 43.2' N 118° 16.6' W	N/A
2. Avalon	33° 22.7' N 118° 19.5' W	2/25 - 3/30/75
3. Catalina Harbor	33° 25.9' N 118° 30.2' W	3/17 - 3/29/75

Verified Forms 362, Value of MLLW, Form 712, Time and Height Relationships Between Gages, and final tidal zoning for the smooth sheet will be furnished by Tides Branch (C331), Rockville. It is recommended that tide correctors based on observed tides at Avalon be used throughout the project.

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): Avalon Bay

Period: February 27-March 29, 1975

HYDROGRAPHIC SHEET: H-9497

OPR: 411

Locality: Off the eastern coast of Santa Catalina Island

Plane of reference (mean lower low water): 2.79 ft.

Height of Mean High Water above Plane of Reference is 4.60 ft.

Remarks: Zone direct

James R Hubbard
for Chief, Tides Branch

GEOGRAPHIC NAMES

Survey No.

H-9497

Name on Survey	A On Chart No 5128	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 TP-00611	
BIRD ROCK	X									1
CHERRY COVE	X									2
CHERRY VALLEY									X	3
EAGLE REEF	X									4
FISHERMAN COVE	X									5
FOURTH OF JULY COVE	X									6
HARBOR REEFS	X									7
ISTHMUS COVE	X									8
LION HEAD	X									9
SAN PEDRO CHANNEL	X									10
SANTA CATALINA ISLAND	X									11
SHIP ROCK	X									12
TWO HARBORS	X									13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
									34	25

APPROVED

Chas L. Harrington

STAFF GEOGRAPHER - C3x8

29 MARCH 1978

APPROVAL SHEET

FOR

SURVEY H- 9497

A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position print-out has been made. A new final sounding print-out has been made.

B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic Manual. Exceptions are listed in the verifier's report.

Date: 6 Jan 78

Signed: [signature]

Title: Chief, Verification Branch

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

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

HYDROGRAPHIC SURVEY STATISTICS

HYDROGRAPHIC SURVEY NO. H-9497

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET with PMO & excess overlay	1	BOAT SHEETS 2-mylar 6-paper	8 parts 2
DESCRIPTIVE REPORT	1	OVERLAYS (preliminary)	4 ~~4~~

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES			1-smooth			
CAHIERS	1 with printouts & misc. data					
VOLUMES	2					
BOXES						

T-SHEET PRINTS (List): 1-Chart mark-up

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				2021
POSITIONS CHECKED		2021		
POSITIONS REVISED		36		
DEPTH SOUNDINGS REVISED		230		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		0		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		0		
	TIME (MANHOURS)			
Verification of Control		31		
Verification of Positions		112		
Verification of Soundings		149		
Smooth Sheet Compilation		74		
ALL OTHER WORK	4	30		
TOTALS		396	HIT 12	

	BEGINNING DATE	ENDING DATE
PRE-VERIFICATION BY James S. Green	6/6/75	6/6/75
VERIFICATION BY A. E. Eichelberger	7/7/75	8/30/77
REVIEW BY	BEGINNING DATE	ENDING DATE

Quality Control: JG Myers 60 hrs 3/28/78

* U.S. G.P.O. 1972-769-562/439 REG.#6

Passed EHC

36

Original: 4-25-78 Shr Dftgr

Reg. No. H-9497

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

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

CARDS CORRECTED

DATE_____ TIME REQ'D_____ INITIALS_____

REMARKS:

Reg. No. _____

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE_____ TIME REQ'D._____ INITIALS_____

REMARKS:

Information for Future Presurvey Reviews

No significant changes in the bottom configuration have occurred since the prior survey.

Position Index		Bottom Change Index	Use Index	Resurvey Cycle
Lat.	Long.			
332	1183	2	1	50 years
332	1184	2	1	50 years

PACIFIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO: H-9497 FIELD NO: RA-5-2-75

California, Santa Catalina Island, Isthmus Cove

SURVEYED: March 16-30, 1975

SCALE: 1:5,000 PROJECT NO: OPR-411

SOUNDINGS: Ross Fineline Fathometer CONTROL: Visual

Chief of Party.....CDR Charles K. Townsend
Surveyed by.....B. K. Mezger, R. W. Ellis, A. J. Pickrell, K. P. Dolan, and M. M. Huestis
Automated Plot by.....PMC Xynetics Plotter
Verified by.....A. E. Eichelberger
August 30, 1977

I. INTRODUCTION

H-9497 is a basic survey conducted by Ship RAINIER from 16 to 30 March 1975. The area covered by this survey is located at Isthmus Cove along the north shore of Santa Catalina Island. This is a good basic survey, adequate to supersede common areas of prior surveys and charted hydrography. Catalina Harbor has been separated from Isthmus Cove and assigned its individual registry number.

This sheet is the first complete survey with digital sextant/hydroplot positioning control. Problems did develop in maintaining sextant calibration and frequent zeroing of the instruments were required.

Positions 7277 to 7279, near the western side of Eagle Reef, were rejected as the accompanying soundings did not agree with adjacent soundings. Positions 7917 to 7923 were rejected as the angles from the left sextant were suspected. This line was duplicated by positions 7945 to 7951.

Field sheet soundings were reduced for tides from the predicted daily values for the standard gage at Los Angeles with appropriate time and ratio corrections for the northeastern shore of Santa Catalina Island. Smooth sheet soundings were reduced using approved tidal data from the Avalon Bay temporary tide station.

II. CONTROL AND SHORELINE

Horizontal control is adequately described in Paragraph F of the Descriptive Report.

The following Class I unreviewed shoreline manuscript with its dates of photography and field edit was utilized on H-9497:

TP-ØØ611 1972-75

Ship Rock high water line was transferred in pencil from the smooth field sheet. See Ship's Report, Paragraph H.

III. HYDROGRAPHY

A. Crosslines were generally in good agreement with the maximum difference 3 ft. in isolated areas. One crossline, position 5488 to 549Ø contains four soundings in excess that exceed the maximum difference.

B. Standard depth curves could be adequately drawn except for the zero curve along the shoreline due to rocky foul areas and surf conditions.

C. The basic hydrography incorporated in this survey is adequate to delineate the bottom configuration and to determine least depths except as noted in Item VI.

There are seven (7) bottom samples in this survey. Raydist Control (uncalibrated) was used to position the bottom samples only. Twenty six (26) bottom characteristics were carried forward from H-5556 (1934).

IV. CONDITION OF SURVEY

With the following exceptions, the smooth sheet and accompanying overlays, hydrographic records and reports are adequate and conformtto the requirements of the Provisional Hydrographic Manual.

A. Control for positions 9ØØ2 to 9ØØ7, leadline soundings in Fourth of July Cove, were obtained by a substandard method. The hydrographer estimated location of the launch and pseudo fixes were scaled. See Ship's Report, Paragraph M. Insufficient hydrography was conducted in this area.

B. The Ross Model 6ØØØ Digitizer was inoperative for approximately 6Ø% of the soundings. Ship's personnel scanned the fathograms and corrected the erroneous values from the digitizer. The verifier made additional corrections during the verification process.

C. An insufficient number of bottom samples were obtained.

D. Four objects compiled were designated as of landmark value, but only one was submitted on the Form 76-40.

E. Rocks located and data contained in the hydrographic records were not plotted on the smooth field sheet.

V. JUNCTIONS

This survey junctions with H-9499 (1975). Agreement of junction soundings were generally within six feet. H-9499, scale 1:20,000, is plotted in fathoms. The rounding of soundings to integral fathoms when compared to soundings in feet on H-9497 can introduce a maximum difference of 4.2 ft. Due to the scale and lack of soundings on H-9499 in the junction area, it is recommended H-9497 be utilized for charting depths of 300 ft. (50 fms.) and shoaler. Approximate dashed curves on H-9499 should be adjusted and superseded by the larger scale H-9497. Upon the completion of this procedure, the junction would be complete with H-9499.

VI. COMPARISON WITH PRIOR SURVEYS

H-5556, 1:10,000 (1934)

Comparison was made with H-5556 (1934). Soundings are generally in good agreement with contemporary depths equal to or shoaler than the prior survey.

A more detailed high water line is depicted on manuscript TP-00611 and H-9497. The HWL is generalized on H-5556, probably due to the planetable method of topographic delineation employed in 1934. Bottom configuration and depths have remained similar with normal differences attributable to natural changes. The use of a graphic fathometer versus leadline in 1934 would result in generally shoaler soundings on the present survey. Significant least depths from the prior have been carried forward to the present survey.

Four least depths and fifteen additional soundings were carried forward from H-5556.

3 ft. on eastern shoal of Eagle Reef
7 ft. on western shoal of Eagle Reef. Origin: H-1413 (1877-78)
39 ft. 1500M NNW of Bird Rock. Origin: H-6186 (1936) WD
~~27 ft. 300M SW of Bird Rock~~
15 soundings in Fourth of July Cove

The following rocks were carried forward from H-5556:

4 rocks south of Ship Rock
1 rock west of Ship Rock
3¼ rocks along the southwestern shore of Isthmus Cove

PSR item #26, a rock bare 2 ft. at Lat. 33°27'Ø7", Long 118°3Ø'Ø3" was not located during field edit or hydrography. No information on this rock is contained in the hydrographic records. The ship contends the rock does exist with an elevation of 1 ft. at MLLW. See Paragraph K of the Ship's Report. Due to the unsubstantiated statement in the report, the rock and accompanying elevation was carried forward from H-5556. *Existence of rock noted on D.R. shown on chart and smooth sheet.*

PSR item #27, pier ruins at Lat. 33°26'32", Long. 118°29'48" have been sawed off and no longer exist. Recommend deletion. *from 1963 air photography (BP 98116)*
charted at lat. 33°27.64' long. 118°30.68'

Dashed circle item on Eagle Reef: A least depth obtained on western shoal of reef area is 11 ft. on this survey. Recommend the 7 ft. sounding transferred from H-5556 (origin, H-1413 1877-78) to H-9497 continue to be charted.

charted at lat. 33°27.65' long. 118°30.5'

Dashed circle item on Eagle Reef: A least depth obtained on eastern shoal of reef area is 4 ft. Recommend the 3 ft. sounding transferred from H-5556 (1934) continue to be charted.

Dashed circle shoal of 9 fm (54 ft) at eastern edge of Eagle Reef: least depth obtained 38 ft. Recommend 9 fms. be superseded and the 38 ft. (6 fms.) charted.

Dashed circle item 9 fms. (54 ft) 1ØØM North of Bird Rock: this depth falls between a 4Ø ft. (6.6 fm.) and a 13 ft. (2.1 fm.) sounding on the present survey. Recommend the shoaler depths on H-9497 be charted.
charted depth falls in immediate vicinity of 40-ft depth on present survey

Dashed circle item 3 fms. (18 ft.) 13ØM northwest of Bird Rock: this depth falls in approximately 4Ø ft. (6.7 fms.) of water on the present survey. An 18 ft. (3 fms.) sounding is plotted about 115M northeast of the prior location. Recommend this least depth be charted from H-9497.

Dashed circle item 4½ fms (27 ft.) 12ØM southwest of Bird Rock: this depth falls close to and north of a 5Ø ft. (8.3 fms.) sounding an the present survey. As this area was not developed and no line plots directly over this depth, it is not considered disproven. Recommend the 4½ fms. be carried forward from H-5556. *4½ fms sounding should be deleted from chart. See Quality Control Report.*

PA

PSR Item AX, a sunken wreck, located at Lat. 33°26.76', Long. 118°29.38': the area was developed with no indication of the wreck. Existence was not proven, recommend sunken wreck symbol be charted. from LNM 25/74 Shown as sunken wreak, PA on Chart 18759 (formerly 5128) print date 3/29/75

PSR Item AW, a mooring buoy located in Fisherman Cove at Lat. 33°26.67', Long. 118°29.06' was not located on this survey. The buoy was probably not in place at the time of hydrography due to the transit nature of the small craft anchor buoys in this area. from CL 1575(73) Mooring buoy not shown on chart 18759 (formaly 5128) print date 3/29/75

PSR Item AZ, a mooring buoy located off Cherry Cove at Lat. 33°27.0', .99' Long. 118°29.87'. A mooring buoy was found and plotted at Lat. 33°26.8', Long. 118°29.88' and is presumed to be Item AZ. from LNM 54/73

Circled 10 3/4 fm. and 6 1/2 fm 400M north-northwest of Bird Rock: the 10 3/4 fm. depth has a comparable depth of 63 ft. (10 1/2 fm.) The 6 1/2 fm. depth was not recovered on the present survey. Recommend the 63 ft. (10 1/2 fm.) be charted from H-9497 and the 6 1/2 fm. be carried forward from its source. (H-6186 (1936 WD))

With the above additions, H-9497 is considered adequate to supersede the prior survey of the area.

VII. COMPARISON WITH CHART C&GS 5128, 7th Ed., 10 April 1971 (1:10,000)

All of the charted hydrography originated from the prior surveys discussed in paragraph VI and has been disposed of in that section of the Verifier's Report. With the addition of least depths and additional soundings noted in paragraph VI, this survey is adequate to supersede charted hydrography.

A. Erroneous 13 fm. sounding 200M, east of Lion Head, at Lat. 33°27.2', Long. 118°29.9': Error in compilation from H-5556 (1934). Prior survey indicates a 23 fm. sounding, H-9497 133 ft. (22 fm.) at this location.

B. Controlling Depths: There were no controlling depth notes on Chart 5128.

C. Aids to Navigation: The charted aids to navigation adequately mark the features intended. Isthmus Cove North Entrance Buoy 1 was not located during hydrography. Recommend buoy continue to be charted according to Coast Guard information.

A privately maintained speed buoy was located at Lat. 33°26.7', Long. 118°29.7'.

Numerous mooring buoys plotted on this survey are small privately maintained buoys subject to change.

VIII. COMPLIANCE WITH INSTRUCTIONS

This survey adequately complies with Project Instructions, dated 22 January 1975 and Change No. 3, dated 18 February 1975.

IX. ADDITIONAL FIELD WORK

This is a good basic survey and is considered adequate to supersede charted information of the area. No additional field work is recommended.

X. NOTES TO COMPILER

Rock at Lat. 33°26.53', Long. 118°29.51': Location transferred from manuscript TP-ØØ611, elevation reduced using approved tides from note on smooth field sheet.

Respectfully submitted,

A. E. Eichelberger

A. E. Eichelberger
Cartographic Technician
August 3Ø, 1977

Examined and approved,

James S. Green
Chief, Verification Branch

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Pacific Marine Center, 1801 Fairview Ave. E.
Seattle, WA 98102

20 January 1978

TO: Eugene A. Taylor
Director, Pacific Marine Center

FROM: Glen R. Schaefer
Chief, Processing Division

SUBJECT: PMC Hydrographic Survey Inspection Team Report - H-9497

This survey is a basic hydrographic survey of Isthmus Cove, Santa Catalina Island, California. This survey was conducted by NOAA Ship RAINIER in 1975 in accordance with Project Instructions OPR-411-RA-75, dated 22 January 1975 and Change No. 3, dated 18 February 1975.

As noted in the verifier's report; an insufficient number of bottom samples were obtained, a large number of least depths and rocks were required to be carried forward from prior surveys as they were not disproven, and soundings from prior surveys were required to supplement sparsely spaced soundings in Fourth of July Cove. Also, the orientation of the soundings lines in Fisherman Cove was not completely adequate for delineating the depth curves.

The inspection team finds H-9497 to be a good basic survey adequate to supersede common areas of prior surveys and charted hydrography. Administrative approval is recommended.

Glen R. Schaefer

John C. Albright

Stanley H. Otsubo

James W. Steensland

ADMINISTRATIVE APPROVAL
H-9497

The smooth sheet and reports of this survey have been examined and the survey is adequate for charting and to supersede common areas of prior surveys.

E. A. Taylor

Eugene A. Taylor, RADM
Director
Pacific Marine Center

Jan. 20, 1978
Date

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

C352/GKM

March 25, 1978

TO: A. J. Patrick
Chief, Marine Surveys Division

FROM: G. K. Myers
Chief, Quality Control Branch

SUBJECT: Quality Control Report for H-9497 (1975), California, Santa Catalina Island, Isthmus Cove

The quality control inspection of H-9497 has been accomplished to evaluate the adequacy and accuracy of the survey with respect to data acquisition, delineation of the bottom, determination of least depths and navigational hazards, junctions, shoreline transfer, decisions and actions by the verifier, and cartographic presentation of data.

The shoreline originating with final reviewed photogrammetric manuscript TP-00611 (1972-75) was compared with the present survey during quality evaluation.

In general, the present survey was found to conform to National Ocean Survey standards and requirements except as discussed in the Verifier's Report, the HIT Report, and as follows:

1. The depth curves in the common area between the present survey and junctional survey were not in coincidence thus necessitating revisions of such curves during quality control evaluation to effect satisfactory agreement.

2. Part of the area covered by the present survey extends beyond the limits of TP-00611. This area falling on reviewed photogrammetric manuscript TP-00608 (1972-75) was examined during quality evaluation. The area covered by the two reefs shown on TP-00608 in the immediate vicinity of latitude 33°27.64', longitude 118°30.55' was specifically investigated during the present survey. These low water features were not found and are considered nonexistent. The shoreline inked in green at Ship Rock located in the immediate vicinity of latitude 33°27.77', longitude 118°29.95' is from the boat sheet of the present survey.

3. Signal No. 325, SHIP ROCK LIGHT, mistakenly identified as a light not used as a signal on the smooth sheet was corrected during quality control.

The appropriate topographic station symbol and proper lettering of the station's name were shown.

4. Limits of kelp beds in areas of soundings erroneously delineated by black dashes and identified by the label "Kelp" were revised in accordance with accepted cartographic practices. Some areas depicting kelp on the smooth sheet were deleted during quality evaluation where discrepancies between the shoreline manuscripts and hydrographic data exist. These revisions were made as prescribed by the Hydrographic Manual. (See Hydrographic Manual--section 7.3.7.10 and table B-1.)

5. Four additional foul areas were indicated on the smooth sheet during quality inspection from remarks made in the raw sounding printouts.

6. Lettering pertaining to the description of the speed buoy located at latitude 33°26.62', longitude 118°29.73' was changed from a vertical to slanted type during quality control.

7. It is uncertain whether all mooring buoys located on the present survey are privately maintained; therefore, the note pertaining to this information was removed from the smooth sheet.

8. In addition to soundings transferred to the present survey from H-5556 in the area of Fourth of July Cove during verification, the quality evaluator brought forward prior soundings in other portions of the inshore areas to complete the coverage of the bottom configuration.

9. Descriptions of four bottom samples from H-9499 were transferred in the area of overlap with the present survey.

10. The rock located at latitude 33°27.74', longitude 118°29.43' from the present survey was erroneously shown in red instead of black on the smooth sheet.

11. The term "rky" accompanying the 39-foot sounding at latitude 33°27.27', longitude 118°29.33' from H-6186 WD was brought forward to the present survey during quality control. This description reveals the nature of the bottom in the area of the shoal sounding which originates with a wire-drag survey. The 39 was transferred about 2 mm in error during verification.

12. The item at Eagle Reef mentioned in the Verifier's Report should have been properly identified by a geographic position.

13. The 3- and 7-foot soundings charted at latitude 33°27.64', longitude 118°30.58' and latitude 33°27.64', longitude 118°30.5', from H-5556 (1934) and H-1413 (1877-78) respectively, were slightly displaced to the north

of their original positions on the smooth sheet. These soundings were accurately transferred during quality control. Notes concerning these areas of least depths that are adequately shown on the smooth plot from present survey information are considered superfluous and were subsequently removed during quality evaluation. (See Hydrographic Manual--section 6.3.7.3.)

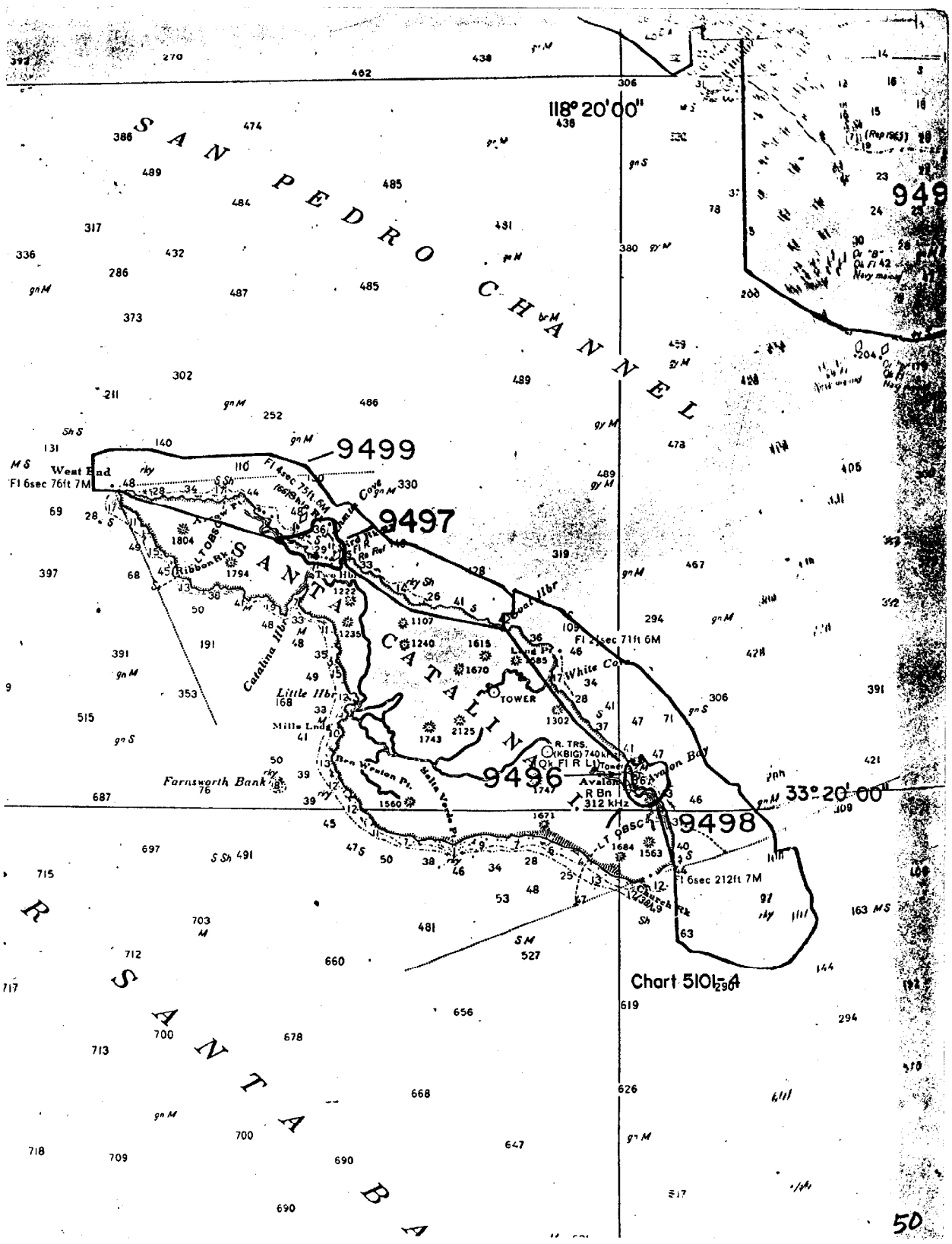
14. Comparable soundings in the area of the present survey reveal definite stability of the bottom. Areas of least depths were confirmed on the present survey except for some prior soundings that fall in deeper depths presently found in the vicinity of latitude 33°27.01', longitude 118°29.17'. Here, prior depths appear to be too far off Bird Rock probably as a result of poor control. The 27-foot sounding charted at latitude 33°27.04', longitude 118°29.24' from H-5556 brought forward to the present survey during verification is considered out of position. The 4 5/6- and 7 1/4-fathom soundings located in the immediate vicinity of latitude 33°26.69', longitude 118°29.1' along a two-position line appear erratic on the prior survey. Sounding lines crossed the positions of these features on the present survey and revealed no shoals. The depths are, therefore, considered disproved by the present survey and should be disregarded.

15. Many charted features that do not originate with the prior surveys were erroneously mentioned under the heading "Comparison with Prior Surveys" in the Verifier's Report. These items should be addressed under the heading "Comparison with Chart." (See Hydrographic Manual--sections 6.3.7 and 6.3.10; Verifier's Report format memorandum dated March 21, 1977--sections 6 and 7.) Notes pertaining to the sources of these features were annotated in the report during quality control.

16. A statement to the effect that no conflicts were found between present depths and effective drag depths on H-6186 (1936) WD should have been made in the Verifier's Report.

17. The comment pertaining to controlling depths in the Verifier's Report is not needed for this survey.

cc:
C351


SAN PEDRO CHANNEL
SANTA CATALINA
SANTA BA
118° 20' 00"
33° 20' 00"
9499
9497
9496
9498
West End
Fl 6sec 76ft 7M
Fl 4sec 75ft 6M
Fl 2½sec 71ft 6M
Fl 6sec 212ft 7M
Ribbon Rk
Catalina Hbr
Little Hbr
Farnsworth Bank
Mills Ldg
Long Pt
White Cove
TOWER
Avalon Bay
Avalon
R Bn
312 kHz
R. TRS.
(KBIG) 740 kHz
Chart 5101-24
50

FORM C&GS-8352
(3-25-69)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. 9497

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
18759	5/78	Contes WM	Full ~~Part Before~~ After Verification Review Inspection Signed Via
(5149)		1110,000	Drawing No. 8th Ed.
18757		Contes RCS	Full ~~Part Before~~ After Verification Review Inspection Signed Via
(5112)	5/78	40,000	Drawing No. 15
18746	5/78	Contes RCS	Full ~~Part Before~~ After Verification Review Inspection Signed Via
(5142)		80,000	Drawing No. 32
18740	5/78	Contes RCS	Full ~~Part Before~~ After Verification Review Inspection Signed Via
(5101)		234,270	Drawing No. 44
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
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			Drawing No.

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975.

USCOMM-DC 8556-P68