

TP- 00529

TP- 00529

NOAA FORM 76-35 (3-76) U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SURVEY	
DESCRIPTIVE REPORT	
<i>Map No.</i> TP-00529	<i>Edition No.</i> 1
<i>Job No.</i> CM-7704	
<i>Map Classification</i> FINAL, FIELD EDITED MAP	
<i>Type of Survey</i> SHORELINE	
LOCALITY	
<i>State</i> California	
<i>General Locality</i> San Francisco and San Pablo Bays	
<i>Locality</i> Treasure Island	
1977 TO 1978	
REGISTRY IN ARCHIVES	
DATE	

NOAA FORM 76-36A (3-72)		U. S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMIN.	
DESCRIPTIVE REPORT - DATA RECORD		TYPE OF SURVEY ☒ ORIGINAL ☐ RESURVEY ☐ REVISED	SURVEY TP. <u>00529</u> MAP EDITION NO. <u>(1)</u> MAP CLASS <u>Final</u> JOB <u>PH-CM-7704</u>
PHOTOGRAMMETRIC OFFICE Coastal Mapping Div., AMC, Norfolk, VA		LAST PRECEDING MAP EDITION TYPE OF SURVEY ☐ ORIGINAL ☐ RESURVEY ☐ REVISED	
OFFICER-IN-CHARGE Roy K. Matsushige, CDR		JOB <u>PH-</u> MAP CLASS <u></u> SURVEY DATES: 19__ TO 19__	
I. INSTRUCTIONS DATED			
1. OFFICE		2. FIELD	
Aerotriangulation April 13, 1977 Compilation August 3, 1977 Compilation Amend. 1 April 20, 1978 Compilation Amend. 2 April 6, 1979 Compilation Amend. 3 July 30, 1979 Compilation July 2, 1981		Control - Premarking February 7, 1977	
II. DATUMS			
1. HORIZONTAL: ☒ 1927 NORTH AMERICAN		OTHER (Specify)	
2. VERTICAL: ☒ MEAN HIGH-WATER ☐ MEAN LOW-WATER ☒ MEAN LOWER LOW-WATER ☐ MEAN SEA LEVEL		OTHER (Specify)	
3. MAP PROJECTION Lambert Conformal		4. GRID(S) STATE <u>California</u> ZONE <u>3</u>	
5. SCALE 1:10,000		STATE <u></u> ZONE <u></u>	
III. HISTORY OF OFFICE OPERATIONS			
OPERATIONS		NAME	DATE
1. AEROTRIANGULATION BY METHOD: Analytic LANDMARKS AND AIDS BY		R. Kelly	July 1977
2. CONTROL AND BRIDGE POINTS PLOTTED BY METHOD: Coradomat CHECKED BY		S. Solbeck S. Solbeck	July 1977 July 1977
3. STEREOSCOPIC INSTRUMENT PLANIMETRY BY COMPILATION CHECKED BY INSTRUMENT: Wild B-8 SCALE: 1:15,000 CONTOURS BY CHECKED BY		F. Mauldin L. Neterer NA NA	July 1978 July 1978
4. MANUSCRIPT DELINEATION PLANIMETRY BY CHECKED BY CONTOURS BY CHECKED BY METHOD: Graphic smooth drafted SCALE: 1:10,000 HYDRO SUPPORT DATA BY CHECKED BY		F. Mauldin F. Margiotta NA NA F. Mauldin F. Margiotta	Oct. 1978 Oct. 1978 Oct. 1978 Oct. 1978
5. OFFICE INSPECTION PRIOR TO FIELD EDIT BY		F. Margiotta	Oct. 1978
6. APPLICATION OF FIELD EDIT DATA BY		G. Morris and J. Minton	June 1980
7. COMPILATION SECTION REVIEW BY		J. Minton	July 1980
8. FINAL REVIEW BY		J. Hancock	Dec. 1981
9. DATA FORWARDED TO PHOTOGRAMMETRIC BRANCH BY		J. Hancock	Dec. 1981
10. DATA EXAMINED IN PHOTOGRAMMETRIC BRANCH BY		R. Kelly	FEB 1982
11. MAP REGISTERED - COASTAL SURVEY SECTION BY		H. R. Wolfe	APR 21 1982

NOAA FORM 76-36B
(3-72)U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEYTP-00529
COMPILATION SOURCES

1. COMPILATION PHOTOGRAPHY

CAMERA(S) Wild R. C. 10 "B" (B=152.74 MM)		TYPES OF PHOTOGRAPHY LEGEND		TIME REFERENCE	
TIDE STAGE REFERENCE ☐ PREDICTED TIDES ☒ REFERENCE STATION RECORDS ☒ TIDE CONTROLLED PHOTOGRAPHY		(C) COLOR (P) PANCHROMATIC (I) INFRARED		ZONE Pacific	☒ STANDARD
				MERIDIAN 120° W.	☐ DAYLIGHT
NUMBER AND TYPE	DATE	TIME	SCALE	STAGE OF TIDE	
77B(P)2523 thru 2524	03/04/77	10:48	1:30,000	Not Determined	
77B(P)2540 thru 2543	03/04/77	11:21	1:30,000	Not Determined	
77B(P)3513 thru 3514	03/18/77	11:24	1:30,000	Not Determined	
77B(P)3494 thru 3496	03/18/77	11:06	1:30,000	Not Determined	
77B(P)3545 thru 3546	03/18/77	11:48	1:30,000	Not Determined	

REMARKS 77B(P)2523 - 2524 and 2540 - 2543 were used for the stereo compilation of interior detail and the selection of pass points common to the infrared photography listed on the attached form 76-36 B(1). The remaining photography was prepared for

2. SOURCE OF MEAN HIGH-WATER LINE:

hydro support.

The mean high water line was compiled graphically from the mean high water tide coordinated infrared photography listed on the attached form 76-36B(1). The infrared ratio prints were controlled with pass points selected and positioned during the instrument compilation of interior detail. Modifications and changes to the mean high water line may have resulted from the application of the field edit data listed in part II of form 76-36C.

3. SOURCE OF MEAN LOW-WATER OR MEAN LOWER LOW-WATER LINE:

The mean lower low water line was compiled from the mean lower low water infrared ratio prints listed on the attached form 76-36B(1). The ratio prints were oriented in the same manner as described for the mean high water line.

4. CONTEMPORARY HYDROGRAPHIC SURVEYS (List only those surveys that are sources for photogrammetric survey information.)

SURVEY NUMBER	DATE(S)	SURVEY COPY USED	SURVEY NUMBER	DATE(S)	SURVEY COPY USED
H-9794	Nov. 1978	Verified			

5. FINAL JUNCTIONS

NORTH	EAST	SOUTH	WEST
TP-00526 and TP-00527	TP-00530	TP-00531 and TP-00532	TP-00528

REMARKS TP-00526 and TP-00527 are 1:20,000 scale; there is no shoreline junction with TP-00526.

NOAA FORM 76-36B(1)
(7-75)U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

TIDE - COORDINATED PHOTOGRAPHY

TP - 00529

LOCATION AND PHOTOGRAPHY	TIDE STATIONS (In operation at time of photography)	STAGE OF TIDE	MEAN RANGE
03/05/77 77B(I)2794 thru 2798	Richmond Inner Harbor	0.22 ft. below MHW	
77B(I)2807 thru 2809	Richmond Inner Harbor	0.08 ft. below MHW	
77B(I)2833	Alameda	0.17 ft. below MHW	
03/18/77 77B(I)3433	Richmond	0.18 ft. below MHW	
03/10/77 77B(I)3072 thru 3076	Richmond Inner Harbor	0.35 ft. below MLLW	
77B(I)3089	Richmond	at MLLW	
77B(I)3101	Alameda	0.15 ft. above MLLW	
77B(I)3111 thru 3112	Richmond	0.45 ft. above MLLW	
77B(I)3113 thru 3114	Alameda	0.50 ft. above MLLW	

REMARKS:

The above listed infrared photography was taken at 1:30,000 scale and enlarged to the 1:10,000 map scale for application.

TP-00529
HISTORY OF FIELD OPERATIONSI. ☒ FIELD INSPECTION OPERATION (Premarking) ☐ FIELD EDIT OPERATION

OPERATION	NAME	DATE
1. CHIEF OF FIELD PARTY	R. B. Melby	Feb. 1977
2. HORIZONTAL CONTROL	RECOVERED BY R. B. Melby	Feb. 1977
	ESTABLISHED BY R. B. Melby	Feb. 1977
	PRE-MARKED OR IDENTIFIED BY R. B. Melby	Feb. 1977
3. VERTICAL CONTROL	RECOVERED BY None	
	ESTABLISHED BY None	
	PRE-MARKED OR IDENTIFIED BY None	
4. LANDMARKS AND AIDS TO NAVIGATION	RECOVERED (Triangulation Stations) BY R. B. Melby	Feb. 1977
	LOCATED (Field Methods) BY R. B. Melby	Feb. 1977
	IDENTIFIED BY None	
5. GEOGRAPHIC NAMES INVESTIGATION	TYPE OF INVESTIGATION ☐ COMPLETE ☐ SPECIFIC NAMES ONLY BY ☒ NO INVESTIGATION	
6. PHOTO INSPECTION	CLARIFICATION OF DETAILS BY	None
7. BOUNDARIES AND LIMITS	SURVEYED OR IDENTIFIED BY	None

II. SOURCE DATA

1. HORIZONTAL CONTROL IDENTIFIED

2. VERTICAL CONTROL IDENTIFIED

None

PHOTO NUMBER	STATION NAME	PHOTO NUMBER	STATION DESIGNATION
77B(P)2540	TI C 9, 1947 (Sub Pt.)		

3. PHOTO NUMBERS (Clarification of details)

None

4. LANDMARKS AND AIDS TO NAVIGATION IDENTIFIED

None

PHOTO NUMBER	OBJECT NAME	PHOTO NUMBER	OBJECT NAME

5. GEOGRAPHIC NAMES: ☐ REPORT ☒ NONE6. BOUNDARY AND LIMITS: ☐ REPORT ☒ NONE

7. SUPPLEMENTAL MAPS AND PLANS

None

8. OTHER FIELD RECORDS (Sketch books, etc. DO NOT list data submitted to the Geodesy Division)

1 - form 76-53
1 - Field Report

NOAA FORM 76-36C
(3-72)U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

TP-00529

HISTORY OF FIELD OPERATIONS

I. ☐ FIELD INSPECTION OPERATION☒ FIELD EDIT OPERATION

OPERATION	NAME	DATE
1. CHIEF OF FIELD PARTY	J. P. Randall	Nov. 1978
2. HORIZONTAL CONTROL	RECOVERED BY J. P. Randall	Nov. 1978
	ESTABLISHED BY J. P. Randall	Nov. 1978
	PRE-MARKED OR IDENTIFIED BY None	
3. VERTICAL CONTROL	RECOVERED BY None	
	ESTABLISHED BY None	
	PRE-MARKED OR IDENTIFIED BY None	
4. LANDMARKS AND AIDS TO NAVIGATION	RECOVERED (Triangulation Stations) BY J. P. Randall	Nov. 1978
	LOCATED (Field Methods) BY J. P. Randall	Nov. 1978
	IDENTIFIED BY D. D. Smith	Nov. 1978
5. GEOGRAPHIC NAMES INVESTIGATION	TYPE OF INVESTIGATION ☐ COMPLETE ☐ SPECIFIC NAMES ONLY BY ☒ NO INVESTIGATION	
6. PHOTO INSPECTION	CLARIFICATION OF DETAILS BY D. D. Smith	Nov. 1978
7. BOUNDARIES AND LIMITS	SURVEYED OR IDENTIFIED BY Not Applicable	

II. SOURCE DATA

1. HORIZONTAL CONTROL IDENTIFIED

None

2. VERTICAL CONTROL IDENTIFIED

None

PHOTO NUMBER	STATION NAME	PHOTO NUMBER	STATION DESIGNATION

3. PHOTO NUMBERS (Clarification of details)

77B(P)3495 and 77B(P)3513

4. LANDMARKS AND AIDS TO NAVIGATION IDENTIFIED

See below

PHOTO NUMBER	OBJECT NAME	PHOTO NUMBER	OBJECT NAME
77B(P)3513	Tank		
77B(P)3513	Tower		
77B(P)3495	Bell, Pier 32 Fog Signal		
77B(P)3495	Bell, Pier 26 Fog Signal		

5. GEOGRAPHIC NAMES: ☐ REPORT ☒ NONE6. BOUNDARY AND LIMITS: ☐ REPORT ☒ NONE

7. SUPPLEMENTAL MAPS AND PLANS 1 Field sketch, San Francisco Ferry Terminal modifications. 9 Field sketches, location of Fog Signals along San Francisco-Oakland Bay Bridge.(5 pages).

8. OTHER FIELD RECORDS (Sketch books, etc. DO NOT list data submitted to the Geodesy Division)

2-pages of fix computations, 5-pages master station list, 1-field edit original, 1-field edit report.

NOAA FORM 76-36D
(3-72)U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATIONTP-00529
RECORD OF SURVEY USE

I. MANUSCRIPT COPIES

COMPILATION STAGES			DATE MANUSCRIPT FORWARDED	
DATA COMPILED	DATE	REMARKS	MARINE CHARTS	HYDRO SUPPORT
Compilation complete pending field edit	Oct. 1978	Class III manuscript	Feb. 1979	Nov. 1978
Field Edit applied, Compilation complete	July 1980	Class I manuscript	None	July 1980
Final Review	Dec. 1981	Final Map	Feb. 1982	Feb. 1982

II. LANDMARKS AND AIDS TO NAVIGATION

1. REPORTS TO MARINE CHART DIVISION, NAUTICAL DATA BRANCH

NUMBER	CHART LETTER NUMBER ASSIGNED	DATE FORWARDED	REMARKS
8 Pages	112/1982	Feb. 1982	Appropriate forms (76-40) are attached with this Descriptive Report; no forms were forwarded prior to final review.

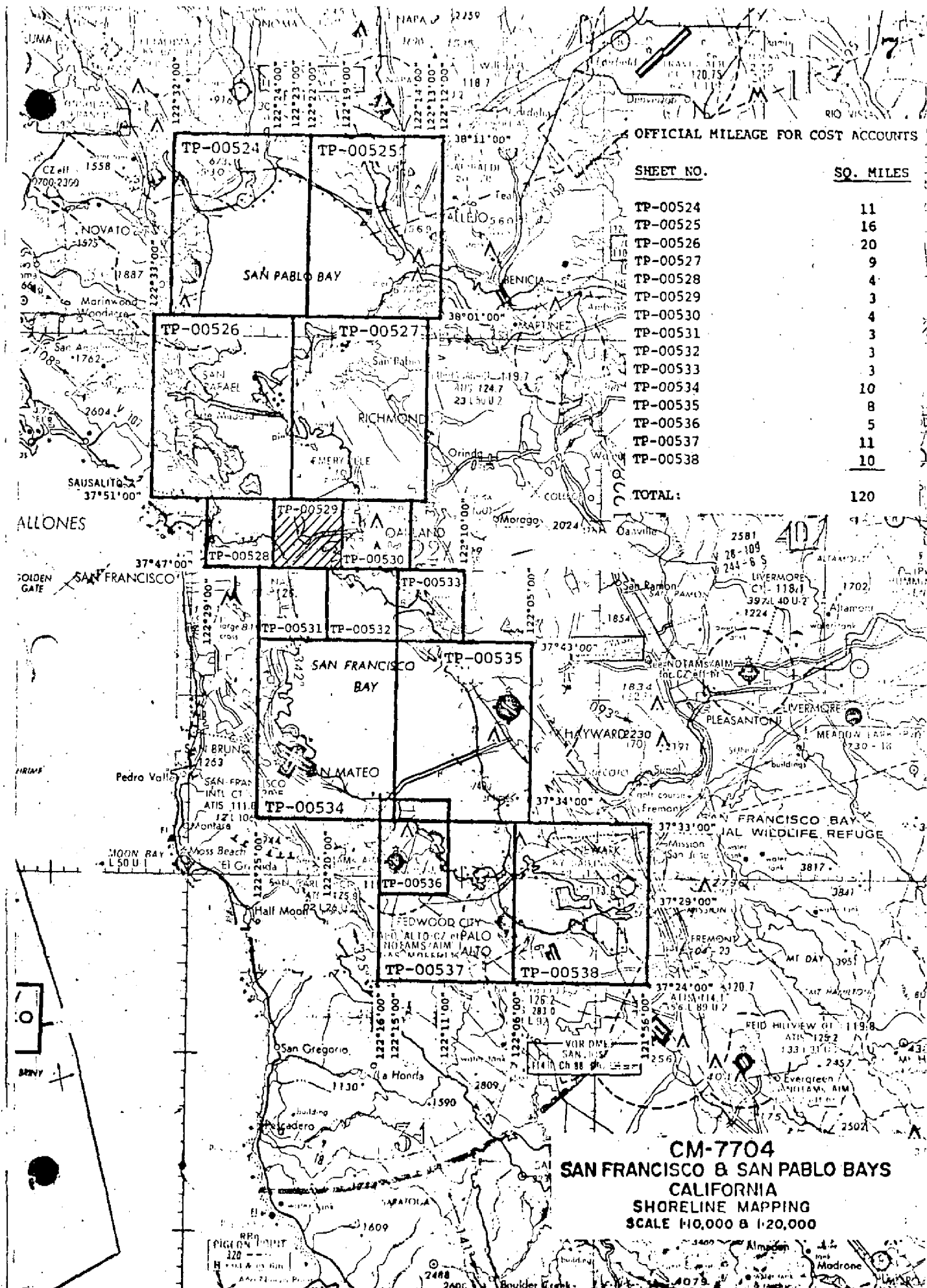
2. ☐ REPORT TO MARINE CHART DIVISION, COAST PILOT BRANCH. DATE FORWARDED: _____3. ☐ REPORT TO AERONAUTICAL CHART DIVISION, AERONAUTICAL DATA SECTION. DATE FORWARDED: _____

III. FEDERAL RECORDS CENTER DATA **

1. ☒ BRIDGING PHOTOGRAPHS; ☒ DUPLICATE BRIDGING REPORT; ☒ COMPUTER READOUTS.
 2. ☒ CONTROL STATION IDENTIFICATION CARDS; ☐ FORM NOS 567 SUBMITTED BY FIELD PARTIES.
 3. ☒ SOURCE DATA (except for Geographic Names Report) AS LISTED IN SECTION II, NOAA FORM 76-36C.
 ACCOUNT FOR EXCEPTIONS: **All indicated data will be forwarded to the Federal
 Records Center upon completion of the entire project.
 4. ☐ DATA TO FEDERAL RECORDS CENTER. DATE FORWARDED: March 1982

IV. SURVEY EDITIONS (This section shall be completed each time a new map edition is registered)

SECOND EDITION	SURVEY NUMBER TP - _____ (2)	JOB NUMBER PH - _____	TYPE OF SURVEY ☐ REVISED ☐ RESURVEY MAP CLASS ☐ II. ☐ III. ☐ IV. ☐ V. ☐ FINAL
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	
THIRD EDITION	SURVEY NUMBER TP - _____ (3)	JOB NUMBER PH - _____	TYPE OF SURVEY ☐ REVISED ☐ RESURVEY MAP CLASS ☐ II. ☐ III. ☐ IV. ☐ V. ☐ FINAL
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	
FOURTH EDITION	SURVEY NUMBER TP - _____ (4)	JOB NUMBER PH - _____	TYPE OF SURVEY ☐ REVISED ☐ RESURVEY MAP CLASS ☐ II. ☐ III. ☐ IV. ☐ V. ☐ FINAL
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	

OFFICIAL MILEAGE FOR COST ACCOUNTS

<u>SHEET NO.</u>	<u>SQ. MILES</u>
TP-00524	11
TP-00525	16
TP-00526	20
TP-00527	9
TP-00528	4
TP-00529	3
TP-00530	4
TP-00531	3
TP-00532	3
TP-00533	3
TP-00534	10
TP-00535	8
TP-00536	5
TP-00537	11
TP-00538	10

TOTAL: 120

CM-7704
SAN FRANCISCO & SAN PABLO BAYS
CALIFORNIA
SHORELINE MAPPING
SCALE 1:10,000 & 1:20,000

SUMMARY TO ACCOMPANY
DESCRIPTIVE REPORTS

TP-00529

This 1:10,000 scale final shoreline map is one of fifteen maps, TP-00524 thru TP-00538 that comprise project CM-7704, San Francisco and San Pablo Bays, California. This project consists of eight 1:20,000 maps, six 1:10,000 maps featuring San Francisco Bay entrance and one 1:10,000 inset map of the Redwood Creek area.

The initial purpose of this project was to provide data in support of hydrographic operations beginning in the Fall of 1978. However, due to rapid cultural coast development, field activity has been temporarily delayed. Photogrammetry memo/instruction dated July 2, 1981, has reassigned this project, in its present stage, for final review and registration. Registration will include 10 Final Maps and 5 Final Class III Maps. Immediately afterwards, a Revision Survey using 1981 photography is scheduled to facilitate hydrography that has not been accomplished and to provide Nautical Charts with current shoreline information.

Contemporary hydrographic surveys H-9794, H-9810, and H-9844 were performed in areas common to this map. These 1:10,000 scale surveys received shoreline and offshore detail from the Class I map.

This Final Map is a 1:10,000 scale shoreline map that portrays Treasure Island and the San Francisco-Oakland Bay Bridge which links the eastern shore of San Francisco and the western shore of Oakland.

Field work prior to compilation was accomplished in March 1977; this involved the establishment of horizontal control in order to meet aerotriangulation requirements. During this period, ground support was provided for obtaining tide-coordinated photography and several of the project's navigational aids and landmarks for Charts were field determined.

Photo coverage was provided in March 1977 for aerotriangulation and compilation using panchromatic film with the "B" camera at 1:50,000 and 1:30,000 scales. Hydro support photography was taken using panchromatic film with the "B" camera at 1:30,000 scale. Tide coordinated black and white infrared photography at MHW and MLLW was supplied using the "B" camera at 1:40,000 and 1:30,000 scales. At the time of final review, the 1981 revision survey photography, at 1:40,000 scale, became available and was used to evaluate the existing Class I map.

Analytic aerotriangulation was adequately provided by the Washington Science Center in July 1977.

TP-00529

Compilation was performed at the Atlantic Marine Center in October 1978. The Class III manuscript was forwarded to the Pacific Marine Center for the combined field edit and hydrographic operation.

Field edit was performed in conjunction with hydrographic survey H-9794 in November 1978 by personnel aboard the NOAA Ship RAINIER.

Application of field edit was performed at the Pacific Marine Center in July 1980. Afterward, copies of the Class I map were released to the Hydrographic Verification Branch for shoreline application to the contemporary smoothsheets.

Final Review, involving a complete evaluation of all office and field activities, was performed at the Atlantic Marine Center in December 1981. As a result, minor revisions were made to the Class I map which will affect the contemporary hydrographic survey. Consequently, a final map copy indicating all changes will be forwarded to the Hydrographic Surveys Division.

A chart maintenance print was prepared during final review and forwarded to the Marine Charts Division. This final map will supersede the former Class III print previously submitted in February 1979. Only revisions to the former Class III map will be indicated on this final maintenance print as no Class I map was forwarded to Marine Charts.

The context of this Descriptive Report contains all pertinent information used to compile this Final Map except for the field records used to establish horizontal control and locate nonfloating aids to navigation. This field data was previously forwarded to the National Geodetic Survey and was not evaluated during final review. Listings of these features are attached with this report on NOAA forms 76-40 and 76-41.

The original base manuscript and all pertinent data was forwarded to the Washington Science Center for final registration and preparation for the 1981 Revision Survey.

FIELD INSPECTION
TP-00529

There was no field inspection prior to compilation. Field work accomplished was limited to the recovery and establishment of horizontal control necessary for the aerotriangulation of the project.



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY

Pacific Marine Center

April 4, 1977

CPM17/RBM

TO: C3415 Coastal Mapping

FROM:

Robl. B. Melby 4/5/77
Robert B. Melby
Chief, PMC Photo Party

SUBJECT: Field Operations Project CM-7704, San Francisco and San Pablo Bays, California

Horizontal Control:

Twenty-five horizontal control stations were paneled for aerial photography as indicated on the project diagram that was furnished to the photo-field party. A majority of the stations were paneled by the sub. pt. method as the stations did not lend themselves to being paneled direct. Distances up to about 2 miles were determined to the sub. points (panels), utilizing a Ranger III, laser distance measuring instrument. It was rapid, accurate and unaffected by electronic disturbances, normal to a high population and/or industrial area like the project encompassed.

Vandalism was a problem, in regard to panels, as several were disturbed and required relaying or substituting with photo identifiable points.

Several aids to navigation and landmarks for charts were located by third-order tirangulation intersection methods. The aids to navigation (lights) marking the channel through San Bruno shoal would have been difficult to positively photo-identify.

All photo-panels were removed after photography to verify their being in place at the required time and to maintain a "cleanup" policy. All panels were in place by March 1, 1977.

Tide Controlled Photography:

The South San Francisco Bay shoreline was photography and controlled by nine, preselected tide stations. With the aid of the Pacific Tide Party, California Boundary Project, all nine stations were manned at the same time. A coordination point was selected in the southeast section of the City of Oakland that was capable of direct F.M. radio communications with all the stations and the photo-mission aircraft.



C3415 Coastal Mapping
April 4, 1977
Page 2

The coordinator would transmit time checks and receive tide staff readings of involved stations and filter and transmit to the aircraft the flight lines that were within the required tide ranges and maintain a summary of staff readings.

Because of the elevation of the coordination site a Motorola Walkie-Talkie was sufficient to maintain communications to all sites and the aircraft.

The operation was rather smooth as all observers were on station at the required time and no radio or transportation failures were experienced at the required times. The only difficulty encountered was an erratic tidal behavior during one series of projected favorable tides when during an unusual high pressure atmospheric condition the predicted tide range decreased by about 0.7 foot, causing stations to go out of range and greatly altering the tidal pattern.

Recommendations:

It is recommended that the field data, tidal predictions, etc., be furnished to the field units, with ample advance time to allow a thorough research and planning of the field phases of the project.

PHOTOGRAMMETRIC PLOT REPORT
SAN FRANCISCO & SAN PABLO BAYS
CALIFORNIA

Job CM-7704

July 22, 1977

21. Area Covered

This report covers eight 1:20,000 sheets, TP-00524, TP-00525, TP-00526, TP-00527, TP-00534, TP-00535, TP-00537, TP-00538, and seven 1:10,000 sheets TP-00528, TP-00529, TP-00530, TP-00531, TP-00532, TP-00533, and TP-00536 of San Francisco Bay and San Pablo Bay, California

22. Method

Seven strips of 1:50,000 scale panchromatic photography, taken with the "B" camera were bridged by analytic aerotriangulation methods and adjusted to ground on the California Zone 3. Common pass points were positioned between the 1:50,000 scale and 1:30,000 scale panchromatic photography, also taken with the "B" camera to provide horizontal control for compilation of the 1:10,000 and 1:20,000 scale maps.

Tide-coordinated supplemental photography, 1:30,000 and 1:40,000 scale MHW and MLLW were tied to the 1:50,000 scale bridging photography for shoreline compilation of 1:10,000 and 1:20,000 scale maps by means of positioning common points for ratio prints.

The 1:30,000 scale hydro support photography was also tied to 1:50,000 scale bridging photography by common points to determine the exact ratios. Tie points were used to augment datum between bridging strips. After running a strip adjustment on strip 5, it was found, for no apparent reason, that the control and tie points did not fit. This was resolved by running a block adjustment. Ruling of manuscripts and plotting of points was done on the Coradomat. A list was forwarded with this job, CM-7704, to AMC for selection of ratios to be ordered.

23. Adequacy of Control

The horizontal control provided was adequate except for Bench Mark H - 111, 1932 paneled substation, which did not hold in strips 5 and 7. The home station was plotted on a USGS quadrangle and did not fall in the area given in the description. All other control held within the accuracy required by National Standards of Maps at 1:10,000 and 1:20,000 scale.

24. Supplemental Data

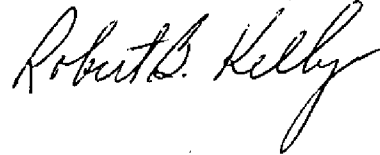
Local shoreline and USGS quadrangles were used to provide elevations for vertical adjustments of bridges.

25. Photography

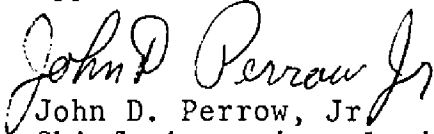
The photography was adequate as to placement of flight lines consistent quality, definition and absence of haze.

Submitted by:

Robert B. Kelly



Approved and Forwarded:



John D. Perrow, Jr.
Chief, Aerotriangulation Section

KEY TO NUMBERED CONTROL
STATIONS USED IN ADJUSTMENT
AND CLOSURES

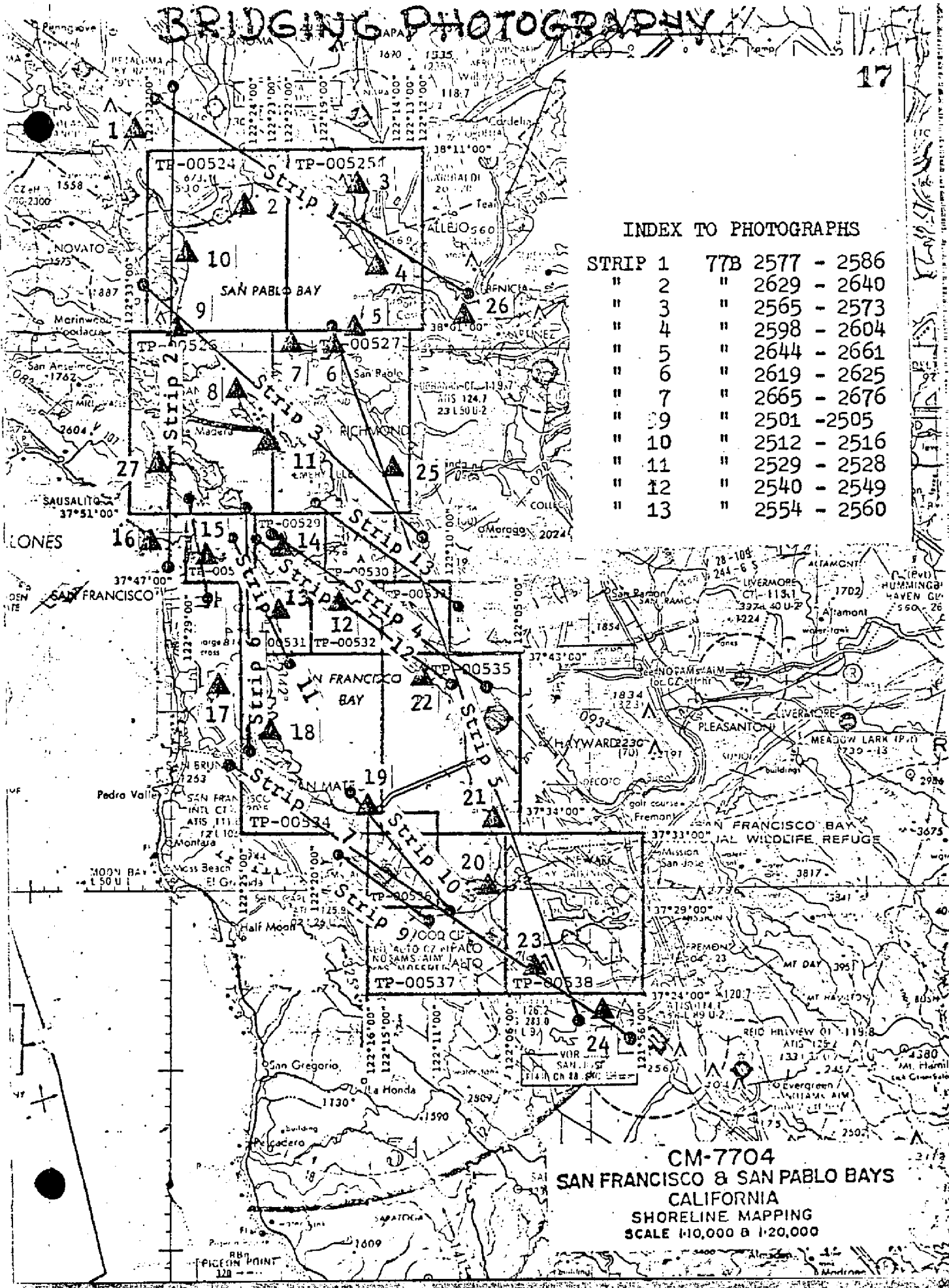
1 LAKEVILLE, SQUARE TANK ON HILL, 1951	TANK(1.04, -3.77)
	PANEL(-.25, .23)
2 BUG (SLC), 1951	COULD NOT SEE
3 SLAUGHTERHOUSE PT. 3, 1921	(-2.22, .52)
4 MARE ISLAND SOUTHEAST=, 1952	(3.02, -.23)
5 PINOLE HERCULES POWDER CO., TANK, 1947	(.38, -.17)
6 WILSON, 1852	(.08, -.10)
7 POINT PINOLE ATLAS DOCK, SHED E. GABLE, 1950	COULD NOT SEE
8 SAN PABLO RIDGE, 1897	(2.14, -1.21)
9 GROVE POINT 2, 1887	(-.65, .49)
10 PETALUMA CREEK, 1851	(1.70, -.24)
11 RICHARD, 1932	(-2.08, .91)
12 ALAMRDA N.A.S. E! BREAKWATER N. LT. 1953	(.00, .00)
13 CROSSING, 1955	(-.09, -.42)
14 T I C9, 1947	(.00, .00)
15 CLARK, 1948	(.45, .74)
16 BARRY, 1932	(-3.36, -.98)
17 SAN BRUNO MTN. (RADIO STA. KNBC MAST), 1899	(.03, .49)
18 POINT SAN BRUNO, 1925	(.04, -.19)
19 GUANO ISLAND, 1851	(3.33, -1.50)
20 DUM, 1930	(-1.31, 1.01)
21 RED HILL, 1851	(-.05, .01)
22 SAN, 1947	(.27, .20)
23 BENCH MARK H 111, 1932	DID NOT FIT ADJUSTMENT
24 COFFIN 2, 1974	(.07, -.02)
25 BALDOPRAK (EBMUD), 1946	(-.15, .02)
26 BUCK, 1949	(-1.04, -.52)
27 MANZANITA (CADH), 1972	(-1.01, -1.09)

BRIDGING PHOTOGRAPHY

17

INDEX TO PHOTOGRAPHS

STRIP 1	77B 2577 - 2586
" 2	" 2629 - 2640
" 3	" 2565 - 2573
" 4	" 2598 - 2604
" 5	" 2644 - 2661
" 6	" 2619 - 2625
" 7	" 2665 - 2676
" 9	" 2501 - 2505
" 10	" 2512 - 2516
" 11	" 2529 - 2528
" 12	" 2540 - 2549
" 13	" 2554 - 2560



1:40,000

MLLW
MHW

18

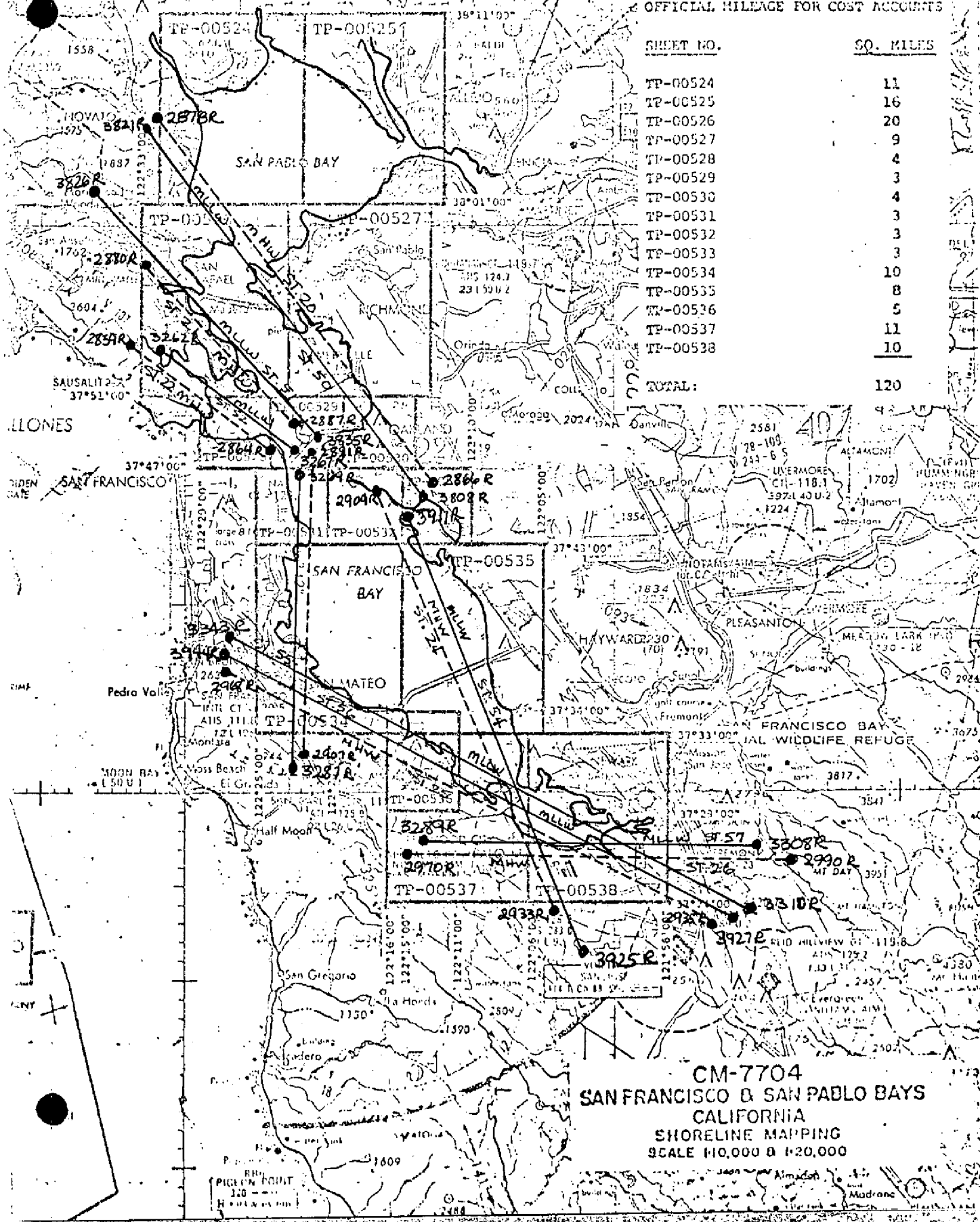
OFFICIAL MILEAGE FOR COST ACCOUNTS

SHEET NO.

GO. MILES

TP-00524	11
TP-00525	16
TP-00526	20
TP-00527	9
TP-00528	4
TP-00529	3
TP-00530	4
TP-00531	3
TP-00532	3
TP-00533	3
TP-00534	10
TP-00535	8
TP-00536	5
TP-00537	11
TP-00538	10

TOTAL: 120



CM-7704
SAN FRANCISCO & SAN PABLO BAYS
CALIFORNIA
SHORELINE MAPPING
SCALE 1:40,000 & 1:20,000

1:30,000 MLW
MHW
MLW

19

OFFICIAL MILEAGE FOR COST ACCOUNTS

<u>SHEET NO.</u>	<u>SO. MILES</u>
TP-00524	11
TP-00525	16
TP-00526	20
TP-00527	2
TP-00528	4
TP-00529	3
TP-00530	4
TP-00531	3
TP-00532	3
TP-00533	3
TP-00534	10
TP-00535	8
TP-00536	5
TP-00537	11
TP-00538	10
TOTAL:	120

TOTAL: 120

CM-7704
SAN FRANCISCO & SAN PABLO BAYS
CALIFORNIA
SHORELINE MAPPING
SCALE 110,000 & 120,000

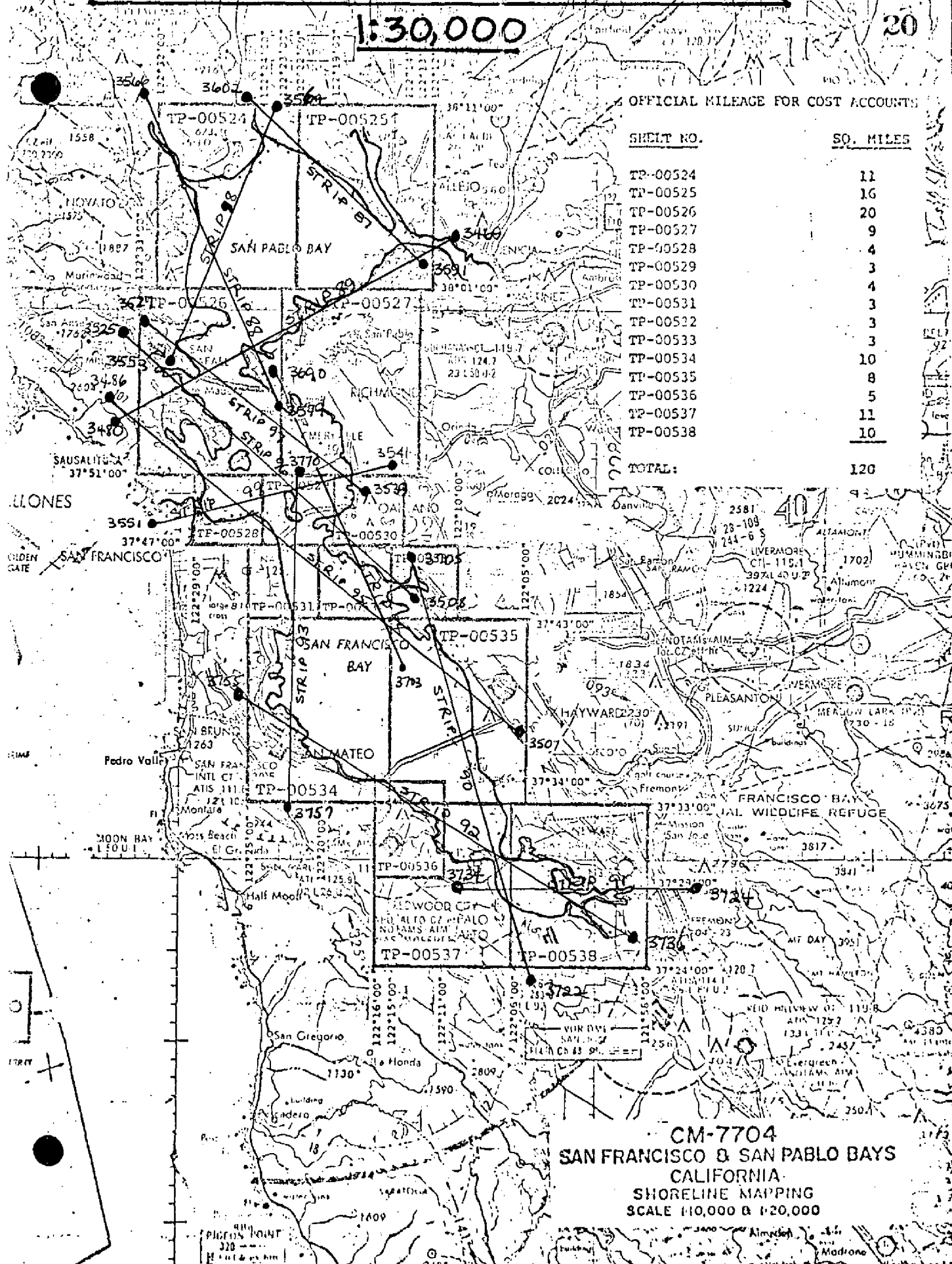
HYDRO-SUPPORT PHOTOGRAPHY

1:30,000

20

OFFICIAL MILEAGE FOR COST ACCOUNTS

SHEET NO.	SO. MILES
TP-00524	11
TP-00525	16
TP-00526	20
TP-00527	9
TP-00528	4
TP-00529	3
TP-00530	4
TP-00531	3
TP-00532	3
TP-00533	3
TP-00534	10
TP-00535	8
TP-00536	5
TP-00537	11
TP-00538	10
TOTAL:	120



COMPILATION PHOTOGRAPHY

1:30,000

21

OFFICIAL MILEAGE FOR COST ACCOUNTS

SHEET NO.

SQ. MILES

TP-00524	11
TP-00525	16
TP-00526	20
TP-00527	9
TP-00528	4
TP-00529	3
TP-00530	4
TP-00531	3
TP-00532	3
TP-00533	3
TP-00534	10
TP-00535	8
TP-00536	5
TP-00537	11
TP-00538	10

TOTAL: 120

CM-7704

SAN FRANCISCO & SAN PABLO BAYS
CALIFORNIA
SHORELINE MAPPING
SCALE 1:10,000 & 1:20,000

DESCRIPTIVE REPORT CONTROL RECORD

MAP NO.		JOB NO.		GEODETTIC DATUM		ORIGINATING ACTIVITY	
TP-00529		CM-7704		North American 1927		PMC Photogrammetric Branch	
STATION NAME	SOURCE OF INFORMATION (Index)	AEROTRIANGULATION POINT NUMBER	COORDINATES IN FEET		GEOGRAPHIC POSITION		Departures REMARKS Front (Back)
			STATE	ZONE	ϕ LATITUDE	λ LONGITUDE	
ALLEY, 1978 (Unadjusted Field Position)	Field G. P. List		X=		ϕ 37 49' 30.968"		954.8m (895.1m) 32.9m (1434.4m)
			Y=		λ 122 22' 01.346"		
ARMY 2, 1947	3712214		X=	1,463,154.98	ϕ 37 48' 50.558"		1558.8m (291.1m) 749.4m (718.2m)
			Y=	483,776.73	λ 122 21' 30.637"		
BERKELEY BREAKWATER LIGHT 2, 1978 (Unadjusted Field Position)	Field G. P. List		X=		ϕ 37 50' 52.109"		1606.6m (243.3m) 833.4m (633.5m)
			Y=		λ 122 21' 34.089"		
DUMP A, 1947	3712214		X=	1,459,526.46	ϕ 37 49' 54.784"		1689.0m (160.8m) 427.6m (1039.6m)
			Y=	490,346.38	λ 122 22' 17.484"		
EMERYVILLE MARINA LIGHT 1, 1978 (Unadjusted Field Position)	Field G. P. List		X=		ϕ 37 50' 25.292"		779.8m (1070.1m) 256.5m (1210.6m)
			Y=		λ 122 19' 10.490"		
EMERYVILLE MARINA LIGHT 2, 1978 (Unadjusted Field Position)	Field G. P. List		X=		ϕ 37 50' 24.242"		747.4m (1102.4m) 226.1m (1241.0m)
			Y=		λ 122 19' 09.246"		
GOAT, 1916	3712214	243	X=	1,459,458.22	ϕ 37 48' 39.271"		1210.8m (639.1m) 401.9m (1065.7m)
			Y=	482,708.57	λ 122 22' 16.431"		
HAIR, 1947	3712214	244	X=	1,461,379.69	ϕ 37 48' 45.012"		1387.8m (462.1m) 1287.2m (180.4m)
			Y=	483,251.00	λ 122 21' 52.626"		
MOLE, 1947	3712214		X=	1,471,691.26	ϕ 37 49' 14.966"		461.4m (1388.4m) 1096.6m (370.8m)
			Y=	486,077.72	λ 122 19' 44.838"		
OAKLAND ESTUARY WEST REAR RANGE, 1953	3712214		X=	1,472,011.53	ϕ 37 47' 56.296"		1735.7m (114.2m) 951.9m (516.0m)
			Y=	478,113.01	λ 122 19' 38.909"		
COMPUTED BY	G. A. Morris	DATE	COMPUTATION CHECKED BY		J. R. Minton		DATE
		02/06/80					02/06/80
LISTED BY	G. A. Morris	DATE	LISTING CHECKED BY		J. R. Minton		DATE
		02/06/80					02/06/80
HAND PLOTTING BY	G. A. Morris	DATE	HAND PLOTTING CHECKED BY		J. R. Minton		DATE
		02/06/80					02/06/80

SUPERSEDES NOAA FORM 76-41, 2-71 EDITION WHICH IS OBSOLETE.

DESCRIPTIVE REPORT CONTROL RECORD

MAP NO. TP-00529	STATION NAME	JOB NO. CM-7704	GEODETTIC DATUM North American 1927		ORIGINATING ACTIVITY PMC Photogrammetric Branch		REMARKS
			SOURCE OF INFORMATION (Index)	AEROTRI- ANGULATION POINT NUMBER	COORDINATES IN FEET STATE <u>California</u> ZONE <u>3</u>	GEOGRAPHIC POSITION φ LATITUDE λ LONGITUDE	
OAKLAND NAVY SUPPLY DEPOT CHECKERED TANK, 1947		3712214		206	X= 1,474,264.83	φ 37 48' 28.021"	863.9m (985.9m)
					Y= 481,278.45	λ 122 19' 11.606"	283.9m (1183.8m)
OAKLAND OUTER HARBOR E. SIDE BEACON 337, 1948		3712214		205	X= 1,474,056.30	φ 37 49' 03.163"	97.5m (1752.3m)
					Y= 484,837.56	λ 122 19' 15.067"	368.5m (1099.0m)
OAKLAND OUTER HARBOR ENTRANCE CHANNEL EXPOSED CABLE BARRIER NORTH LIGHT, 1978 (Unadjusted Field Position)		Field G. P. List			X=	φ 37 48' 41.458"	1278.2m (571.6m)
					Y=	λ 122 20' 14.070"	344.2m (1123.4m)
OAKLAND OUTER HARBOR ENTRANCE CHANNEL EXPOSED CABLE BARRIER SOUTH LIGHT, 1978 (Unadjusted Field Position)		Field G.P. List			X=	φ 37 48' 40.968"	1263.1m (586.7m)
					Y=	λ 122 20' 14.122"	345.4m (1122.2m)
OAKLAND OUTER HARBOR RANGE A REAR LIGHT, 1978 (Unadjusted Field Position)		Field G. P. List			X=	φ 37 49' 02.134"	65.8m (1784.0m)
					Y=	λ 122 19' 27.094"	662.7m (804.8m)
SAN FRANCISCO BELL TELEPHONE BUILDING, 1932		3712214			X= 1,451,292.45	φ 37 47' 12.177"	375.4m (1474.4m)
					Y= 474,062.34	λ 122 23' 55.982"	1369.8m (98.3m)
SAN FRANCISCO FERRY BUILDING FLAGSTAFF, 1910		3712214			X= 1,453,199.26	φ 37 47' 43.804"	1350.5m (499.3m)
					Y= 477,223.21	λ 122 23' 33.029"	808.1m (659.9m)
SAN FRANCISCO MATSON BUILDING TOWER, 1932		3712214			X= 1,452,321.07	φ 37 47' 34.020"	1048.9m (801.0m)
					Y= 476,251.20	λ 122 23' 43.723"	1069.8m (398.2m)
SAN FRANCISCO OAKLAND BAY BRIDGE PIER G AEROBEACON, 1978 (Unadjusted Field Position)		Field G.P. List			X=	φ 37 48' 51.721"	1594.6m (255.2m)
					Y=	λ 122 21' 26.906"	658.1m (809.5m)
COMPUTATION CHECKED BY				DATE	J. R. Minton		
LISTING CHECKED BY				DATE	J. R. Minton		
HAND PLOTTING CHECKED BY				DATE	J. R. Minton		

SUPERSEDES NOAA FORM 76-41, 2-71 EDITION WHICH IS OBSOLETE.

DESCRIPTIVE REPORT CONTROL RECORD

MAP NO.	JOB NO.	GEODETIC DATUM	ORIGINATING ACTIVITY		
TP-00529	CM-7704	North American 1927	PMC Photogrammetric Branch		
STATION NAME	SOURCE OF INFORMATION (Index)	AEROTRI-ANGULATION POINT NUMBER	COORDINATES IN FEET STATE California ZONE 3	GEOGRAPHIC POSITION φ LATITUDE λ LONGITUDE	REMARKS
SAN FRANCISCO OAKLAND BAY BRIDGE PIER H AEROBEACON, 1978 (Unadjusted Field Position)	Field G. P. List		X=	φ 37 48' 56.950"	1755.8m (94.0m)
			Y=	λ 122 21' 10.683"	261.3m (1206.2m)
SAN FRANCISCO OAKLAND BAY BRIDGE PIER NO. 1, 1954	3712214		X=1,460,128.57	φ 37 48' 20.492"	631.8m (1218.1m)
			Y= 480,795.43	λ 122 22' 07.603"	186.0m (1281.8m)
SAN FRANCISCO OAKLAND BAY BRIDGE PIER NO. 2, 1954	3712214		X=1,458,596.57	φ 37 48' 03.080"	95.0m (1754.9m)
			Y= 479,064.61	λ 122 22' 26.257"	642.4m (825.5m)
SAN FRANCISCO OAKLAND BAY BRIDGE PIER NO. 3, 1954	3712214		X=1,456,947.10	φ 37 47' 44.337"	1367.0m (482.9m)
			Y= 477,201.59	λ 122 22' 46.336"	1133.7m (334.3m)
SAN FRANCISCO OAKLAND BAY BRIDGE PIER NO. 4, 1954	3712214		X=1,455,414.61	φ 37 47' 26.921"	830.0m (1019.8m)
			Y= 475,470.56	λ 122 23' 04.994"	122.2m (1345.9m)
SAN FRANCISCO P. G. AND E. SMOKESTACK, 1932	3712214		X=1,452,220.89	φ 37 47' 32.793"	1011.0m (838.8m)
			Y= 476,129.11	λ 122 23' 44.940"	1099.5m (368.5m)
SAN FRANCISCO SCHMIDT BUILDING TOWER, 1932	3712214		X=1,452,970.61	φ 37 47' 01.424"	43.9m (1805.9m)
			Y= 472,940.53	λ 122 23' 34.798"	851.5m (616.7m)
SAN FRANCISCO SHELL OIL BUILDING FLAGSTAFF, 1932	3712214		X=1,451,350.65	φ 37 47' 29.666"	914.6m (935.2m)
			Y= 475,830.41	λ 122 23' 55.704"	1363.0m (105.1m)
SAN FRANCISCO UNION OIL COMPANY BUILDING TOWER, 1978 (Unadjusted Field Position)	Field G. P. List		X=	φ 37 47' 09.761"	300.9m (1548.9m)
			Y=	λ 122 23' 28.898"	707.1m (761.1m)
SAN FRANCISCO WATERFRONT PIER 1 NORTH LIGHT, 1978 (Unadjusted Field Position)	Field G. P. List		X=	φ 37 47' 53.648"	1654.0m (195.8m)
			Y=	λ 122 23' 31.437"	769.1m (698.8m)
COMPUTED BY	G. A. Morris	DATE	COMPUTATION CHECKED BY	J. R. Minton	DATE
LISTED BY		02/06/80	LISTING CHECKED BY		02/06/80
HAND PLOTTING BY	G. A. Morris	DATE	HAND PLOTTING CHECKED BY	J. R. Minton	DATE
	G. A. Morris	02/06/80		I. R. Minton	02/06/80

DESCRIPTIVE REPORT CONTROL RECORD

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

MAP NO.	JOB NO.	GEODETIC DATUM	ORIGINATING ACTIVITY		
TP-00529	CM-7704	North American 1927	PMC Photogrammetric Branch		
STATION NAME	SOURCE OF INFORMATION (Index)	AEROTRI-ANGULATION POINT NUMBER	COORDINATES IN FEET STATE <u>California</u> ZONE <u>3</u>	GEOGRAPHIC POSITION ϕ LATITUDE λ LONGITUDE	REMARKS
SAN FRANCISCO WATERFRONT PIER 1 SOUTH LIGHT, 1978 (Unadjusted Field Position)	Field G. P. List		X=	ϕ 37 47' 52.928"	1631.8m (218.0m)
			Y=	λ 122 23' 30.766"	752.7m (715.2m)
SAN FRANCISCO WATERFRONT PIER 17 LIGHT, 1978 (UN- adjusted Field Position)	Field G. P. List		X=	ϕ 37 48' 10.914"	336.5m (1513.3m)
			Y=	λ 122 23' 45.624"	1116.1m (351.7m)
SAN FRANCISCO WATERFRONT PIER 27 -29 EAST LIGHT, 1978 (Unadjusted Field Position)	Field G. P. List		X=	ϕ 37 48' 26.394"	813.8m (1036.1m)
			Y=	λ 122 23' 57.687"	1411.1m (56.6m)
SAN FRANCISCO WATERFRONT PIER 27 - 29 WEST LIGHT, 1978 (Unadjusted Field Position)	Field G. P. List		X=	ϕ 37 48' 27.609"	851.2m (998.6m)
			Y=	λ 122 23' 59.327"	1451.3m (16.4m)
SOUTHERN PACIFIC CUPOLA, 1919	3712214		X= 1,452,814.99	ϕ 37 47' 38.250"	1179.3m (670.5m)
			Y= 476,669.12	λ 122 23' 37.676"	921.8m (546.2m)
TI A 2, 1947	3712214		X= 1,459,437.86	ϕ 37 49' 02.443"	75.3m (1774.5m)
			Y= 485,053.13	λ 122 22' 17.269"	442.4m (1045.1m)
TI A 9, 1947	3712214		X= 1,458,453.31	ϕ 37 49' 21.466"	661.8m (1188.0m)
			Y= 486,997.29	λ 122 22' 30.022"	734.2m (733.2m)
TI C 2, 1947	3712214		X= 1,460,189.18	ϕ 37 49' 06.351"	195.8m (1654.0m)
			Y= 485,433.47	λ 122 22' 08.002"	195.7m (1271.8m)
TI C 9, 1947	3712214	625100	X= 1,459,205.85	ϕ 37 49' 25.160"	775.7m (1074.1m)
			Y= 487,355.92	λ 122 22' 20.734"	507.1m (960.2m)
TI H 2, 1947	3712214		X= 1,461,247.01	ϕ 37' 49' 11.852"	365.4m (1484.4m)
			Y= 485,968.86	λ 122 21' 54.954"	1344.1m (123.3m)
COMPUTED BY	G. A. Morris	DATE	COMPUTATION CHECKED BY	J. R. Minton	DATE
LISTED BY		02/06/80	LISTING CHECKED BY		02/06/80
HAND PLOTTING BY	G. A. Morris	DATE	HAND PLOTTING CHECKED BY	J. R. Minton	DATE
	G. A. Morris	02/06/80		J. R. Minton	02/06/80

SUPERSEDES NOAA FORM 76-41, 2-71 EDITION WHICH IS OBSOLETE.

DESCRIPTIVE REPORT CONTROL RECORD

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

MAP NO. TP-00529	JOB NO. CM-7704	GEODETTIC DATUM North American 1927		AEROTRI- ANGULATION POINT NUMBER	SOURCE OF INFORMATION (Index)	STATION NAME	GEOGRAPHIC POSITION		ORIGINATING ACTIVITY PMC Photogrammetric Branch	REMARKS
		COORDINATES IN FEET STATE California ZONE 3	φ LATITUDE λ LONGITUDE							
TI H 9, 1947	3712214	248					φ 37 49' 31.219"		962.5m (887.3m)	
							λ 122 22' 07.955"		194.5m (1272.8m)	
TI N 2, 1947	3712214						φ 37 49' 15.477"		477.2m (1372.7m)	
							λ 122 21' 45.455"		1111.7m (355.7m)	
TI N 3, 1947	3712214						φ 37 49' 21.433"		660.8m (1189.0m)	
							λ 122 21' 43.117"		1054.5m (412.9m)	
TI N 8, 1947	3712214						φ 37 49' 34.186"		1054.0m (795.9m)	
							λ 122 21' 51.675"		1263.8m (203.5m)	
TREASURE ISLAND BUILDING ONE CUPOLA, 1978 (Unadjusted Field Position)	Field G. E. List						φ 37 49' 02.408"		74.2m (1775.6m)	
							λ 122 22' 10.977"		268.5m (1199.0m)	
TREASURE ISLAND NORTH END LIGHT 6, 1977 (Unadjusted Field Position)	Field G. E. List	610					φ 37 49' 59.877"		1846.1m (3.8m)	
							λ 122 22' 17.071"		417.5m (1049.7m)	
TREASURE ISLAND RED AND WHITE RADIO TOWER, 1978 (Unadjusted Field Position)	Field G.P. List						φ 37 49' 09.408"		290.1m (1559.7m)	
							λ 122 22' 13.188"		322.6m (1144.9m)	
USCG VESSEL TRAFFIC SYSTEM RADAR YBI, 1976 (Unadjusted Field Position)	Field G.P. List						φ 37 48' 34.964"		1078.0m (771.9m)	
							λ 122 21' 51.400"		1257.3m (210.4m)	
YERBA BUENA ISLAND LOOKOUT TOWER, 1947	3712214	242					φ 37 48' 35.558"		1096.3m (753.6m)	
							λ 122 21' 53.868"		1317.7m (150.0m)	
YERBA BUENA ISLAND WHARF LIGHT, 1978 (Unadjusted Field Position)	Field G.P. List						φ 37 48' 29.426"		907.2m (942.6m)	
							λ 122 21' 35.862"		877.3m (590.4m)	
COMPUTED BY G. A. Morris		DATE 02/06/80	COMPUTATION CHECKED BY J. R. Minton	DATE 02/06/80						
LISTED BY G. A. Morris		DATE 02/06/80	LISTING CHECKED BY J. R. Minton	DATE 02/06/80						
HAND PLOTTING BY G. A. Morris		DATE 02/06/80	HAND PLOTTING CHECKED BY J. R. Minton	DATE 02/06/80						

SUPERSEDES NOAA FORM 76-41, 2-71 EDITION WHICH IS OBSOLETE.

DESCRIPTIVE REPORT CONTROL RECORD

MAP NO. TP-00529	JOB NO. CM-7704	GEODETTIC DATUM North American 1927		ORIGINATING ACTIVITY PMC Photogrammetric Branch			
		STATION NAME	SOURCE OF INFORMATION (Index)	AEROTRI- ANGULATION POINT NUMBER	COORDINATES IN FEET STATE <u>California</u> ZONE <u>3</u>	GEOGRAPHIC POSITION ϕ LATITUDE λ LONGITUDE	Departures REMARKS Front (Back)
		YERBA BUENA LIGHTHOUSE, 1919	3712214	602	X= 1,462,341.15 Y= 481,355.27	ϕ 37 48' 26.462" λ 122 21' 40.177"	815.8m (1034.0m) 982.8m ((484.9m)
					X=	ϕ	
					Y=	λ	
					X=	ϕ	
					Y=	λ	
					X=	ϕ	
					Y=	λ	
					X=	ϕ	
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					Y=	λ	
					X=	ϕ	
					Y=	λ	
COMPUTED BY	G. A. Morris	COMPUTATION CHECKED BY		J. R. Minton		DATE 02/06/80	
LISTED BY	G.A. Morris	LISTING CHECKED BY		J. R. Minton		DATE 02/06/80	
HAND PLOTTING BY	G. A. Morris	HAND PLOTTING CHECKED BY		J. R. Minton		DATE 02/06/80	

COMPILATION REPORT

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31. DELINEATION

Delineation was by instrument methods using the Wild B-8 stereoplotter. Compilation photography was adequate. The mean high water and the mean lower low water lines were compiled graphically from the tide coordinated infrared ratio photos indicated on form 76-36B1.

32. CONTROL

Horizontal control was adequate. See the attached Photogrammetric Plot Report, dated: July 22, 1977.

33. SUPPLEMENTAL DATA

None

34. CONTOURS AND DRAINAGE

Contours are not applicable to the project. Drainage was delineated by the Wild B-8 stereoplotter and by office interpretation of the photographs.

35. SHORELINE AND ALONGSHORE DETAILS

Alongshore details were delineated by the Wild B-8 stereoplotter and by office interpretation of the photographs.

See form 76-36B, items 2 and 3 for delineation of the mean high water and mean lower low water lines.

36. OFFSHORE DETAILS

A position for the shoreline ends of the charted submerged cables and pipelines could not be determined. Location of these features will be directed to the field editor.

37. LANDMARKS AND AIDS

Preliminary 76-40 forms consisting of 5 pages of Navigational Aids and 2 pages of Landmarks for charts were prepared for field edit.

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38. CONTROL FOR FUTURE SURVEYS

None

39. JUNCTIONS

See the attached form 76-36B, item 5 of the Descriptive Report concerning junctions.

40. HORIZONTAL AND VERTICAL ACCURACY

See item #32.

46. COMPARISON WITH EXISTING MAPS

A comparison was made with the following U.S. Geological Survey Quadrangles: San Francisco North, Calif., scale 1:24,000, dated 1956, photorevised 1968 and 1973 and Oakland West, Calif., scale 1:24,000, dated 1956, photorevised 1968 and 1973.

47. COMPARISON WITH NAUTICAL CHARTS

A comparison was made with the following National Ocean Survey charts:

No. 18650, scale 1:20,000, 32nd ed. July 3, 1976
No. 18649, scale 1:40,000, 44th ed. Jan. 11, 1977
No. 18652, scale 1:40,000/1:80,000 16th ed., March 1977

ITEMS TO BE APPLIED TO NAUTICAL CHARTS IMMEDIATELY

None

ITEMS TO BE CARRIED FORWARD

None

Submitted by:

Fay Mauldin

Fay Mauldin

Cartographer

Date: October 23, 1978

Approved:

Billy H. Bame

for Albert C. Rauck, Jr.

Chief, Coastal Mapping Section

ADDENDUM TO THE COMPILATION REPORT
Field Edit

TP-00529

The field edit was applied by the Pacific Marine Center Photogrammetric Branch rather than the original compilation activity. The edit was applied from the data listed on form 76-36C, Field Edit, part II, included within this report. The rock heights were determined from hydro correcter listings based on approved hourly heights and datums provided by the Rockville Datums and Information Branch. Aids to navigation were compared with both the 1978 and 1980 Coast Guard Light List.

The Light List descriptions for San Francisco Oakland Bay Bridge West Crossing Piers A, B, D and E disagree. The 1978 list describes these signals as sirens and the 1980 list describes them as horns. Since the field editor confirmed sirens, sirens are compiled on the manuscript and listed on the final forms 76-40. I suspect the sirens have been converted to horns since the 1978 field edit.

The field sketch of San Francisco Oakland Bay Bridge East Crossing Pier H fog signal shows the siren on the northeast corner of the pier but both the '78 and '80 Light Lists describe the signal as being on the southwest corner. Reexamination of the sketch leads me to question whether the arrow indicating west is oriented correctly. Consequently, the siren is compiled on the southwest corner of the pier as the Light lists indicate.

Treasure Island Red and White Radio Tower, 1978 was previously charted as a map feature, not a landmark. However, it was listed on the original 76-40s and consequently located to third order specifications by the field party. Since the effort was expended in the field, the edit compiler has carried the tower forward as a new landmark.

During the processing of the hydrographic data by PMC Verification Branch, it became apparent that the field editor had not specifically addressed the location of BARTD Obstruction Lights, number 629 in the light list. The original compilation office had questioned the location of the lights on the field edit ozalid, but had incorrectly approximated the area in which the lights should have been found. The field editor failed to find anything in the area and consequently deleted the two control stations which compilation had indicated might be the obstruction lights. The editor then determined third order positions and submitted Oakland Outer Harbor Entrance Channel Exposed Cable Barrier North and

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South Lights as new aids to be charted. Their positions coincide reasonably with positions listed for the BARTD Obstruction Lights on the aids list provided by Marine Charts Div.. As a result, the edit compiler has listed the third order positions determined in 1978 as improved positions for BARTD Obstruction Lights. The manuscript positions are labeled with both the light list and control names as prescribed in photo instruction 78.

Submitted by,

James L. Hinton

for James R. Minton
Cartographic Technician

PHOTOGRAMMETRIC OFFICE PRE-HYDRO AND FIELD EDIT REVIEW

TP- 00529

PROJECTION AND GRIDS F. M.	TITLE F. M.	HORIZONTAL CONTROL F. M.	PHOTOGRAMMETRIC PLOT REPORT, F. M.
DETAIL POINTS AND PASS POINTS F. M.	PROCESSED RATIOS F. M.	AIDS TO NAVIGATION F. M.	LANDMARKS F. M.
MEAN HIGH WATER LINE F. M.	LOW-WATER LINE F. M.	ROCKS, SHOALS, ETC. F. M.	ALONG SHORE AND OTHER PHYSICAL FEATURES F. M.
WATER FEATURES F. M.	ALONG SHORE AND OTHER CULTURAL FEATURES F. M.	BRIDGES F. M.	ROADS F. M.
BUILDINGS F. M.	RAILROADS F. M.	CONTOURS AND SPOT ELEVATIONS NA	GEOGRAPHIC NAMES F. M.
JUNCTIONS F. M.	LEGIBILITY OF THE MANUSCRIPT F. M.	COMPILATION REPORT F. M.	FIELD EDIT OZALID F. M.
COMPARISON WITH NAUTICAL CHARTS F. M.	COMPARISON WITH PRIOR SURVEYS NA	COMPARISON WITH EXISTING MAPS F. M.	FIELD PRINTS AND OTHER COPIES F. M.
REVIEWER Frank Margiotta	DATE October 1978	SUPERVISOR A. C. Rauck, Jr.	DATE October 1978

REMARKS

PHOTOGRAMMETRIC OFFICE POST-HYDRO AND FIELD EDIT REVIEW

MANUSCRIPT NUMBERS J. JR. M., J. L. H.	FORMAT STICK-UP J. L. H.	MANUSCRIPT SIZE J. L. H.	HORIZONTAL CONTROL J. L. H.
PHOTO HYDRO STATIONS J. R. M.	PLOTTING OF SEXTANT FIXES J. R. M., J. L. H.	AIDS TO NAVIGATION J. R. M., J. L. H.	LANDMARKS J. R. M., J. L. H.
MEAN HIGH WATER LINE J. R. M., J. L. H.	LOW-WATER LINE J. L. H.	ROCKS, SHOALS, ETC. J. R. M., J. L. H.	ALONG SHORE AND OTHER PHYSICAL FEATURES J. R. M., J. L. H.
WATER FEATURES J. R. M.	ALONG SHORE AND OTHER CULTURAL FEATURES J. R. M., J. L. H.	PIPELINES, CABLES, ETC. J. R. M., J. L. H.	BRIDGES J. L. H.
ROADS J. L. H.	BUILDINGS J. L. H.	RAILROADS J. L. H.	CONTOURS AND SPOT ELEVATIONS NA
GEOGRAPHIC NAMES J. L. H.	JUNCTIONS J. L. H.	FIELD EDIT PHOTOGRAPHS J. R. M., J. L. H.	FIELD EDIT OZALID J. R. M., J. L. H.
GEOGRAPHIC FIX POSITIONS J. R. M., J. L. H.	FIELD FORMS J. R. M., J. L. H.	FIELD EDIT REPORT J. R. M., J. L. H.	APPROVED TIDES J. R. M., J. L. H.
CHART MAINTENANCE PRINT AND OTHER COPIES J. R. M., J. L. H.	PREPARATION FOR FINAL REVIEW J. R. M., J. L. H.	COMPILER G. A. Morris	DATE June 1980
REVIEWER J. R. Minton	DATE July 1980	SUPERVISOR J. W. Massey	DATE July 1980

REMARKS

A complete office review after the application of field edit was not performed prior to advancing the manuscript to a Class I-map. Consequently, an extensive and thorough office review was accomplished during the final review.

J. L. Hancock
Final Reviewer
December 1981

NOAA FORM 75-74 (2-74)		U.S. DEPARTMENT OF COMMERCE NOAA NATIONAL OCEAN SURVEY	
PHOTOGRAMMETRIC OFFICE REVIEW TP-00529			
1. PROJECTION AND GRIDS E*O*N. FPM	2. TITLE E*O*N. FPM	3. MANUSCRIPT NUMBERS E*O*N. FPM	4. MANUSCRIPT SIZE E*O*N. FPM
CONTROL STATIONS			
5. HORIZONTAL CONTROL STATIONS OF THIRD-ORDER OR HIGHER ACCURACY E*O*N. FPM	6. RECOVERABLE HORIZONTAL STATIONS OF LESS THAN THIRD-ORDER ACCURACY (Topographic stations) E*O*N. FPM		7. PHOTO HYDRO STATIONS Not Applicable
8. BENCH MARKS Not Applicable	9. PLOTTING OF SEXTANT FIXES Not Applicable	10. PHOTOGRAMMETRIC PLOT REPORT E*O*N. FPM	11. DETAIL POINTS E*O*N. FPM
ALONGSHORE AREAS (Nautical Chart Data)			
12. SHORELINE E*O*N. FPM	13. LOW-WATER LINE E*O*N. FPM	14. ROCKS, SHOALS, ETC. E*O*N. FPM	15. BRIDGES E*O*N. FPM
16. AIDS TO NAVIGATION E*O*N. FPM	17. LANDMARKS E*O*N. FPM	18. OTHER ALONGSHORE PHYSICAL FEATURES E*O*N. FPM	19. OTHER ALONGSHORE CULTURAL FEATURES E*O*N. FPM
PHYSICAL FEATURES			
20. WATER FEATURES E*O*N. FPM	21. NATURAL GROUND COVER Not Applicable		22. PLANETABLE CONTOURS Not Applicable
23. STEREOSCOPIC INSTRUMENT CONTOURS Not Applicable	24. CONTOURS IN GENERAL Not Applicable	25. SPOT ELEVATIONS Not Applicable	26. OTHER PHYSICAL FEATURES E*O*N. FPM
CULTURAL FEATURES			
27. ROADS E*O*N. FPM	28. BUILDINGS E*O*N. FPM	29. RAILROADS E*O*N. FPM	30. OTHER CULTURAL FEATURES E*O*N. FPM
BOUNDARIES			
31. BOUNDARY LINES Not Applicable		32. PUBLIC LAND LINES Not Applicable	
MISCELLANEOUS			
33. GEOGRAPHIC NAMES E*O*N. FPM	34. JUNCTIONS E*O*N. FPM		35. LEGIBILITY OF THE MANUSCRIPT E*O*N. FPM
36. DISCREPANCY OVERLAY E*O*N. FPM	37. DESCRIPTIVE REPORT E*O*N. FPM	38. FIELD INSPECTION PHOTOGRAPHS None	39. FORMS E*O*N. FPM
40. REVIEWER Frank P. Marigiotta Lowell O. Neterer, Jr.		SUPERVISOR, REVIEW SECTION OR UNIT Albert C. Rauck, Jr.	
41. REMARKS (See attached sheet)			
FIELD COMPLETION ADDITIONS AND CORRECTIONS TO THE MANUSCRIPT			
42. Additions and corrections furnished by the field completion survey have been applied to the manuscript. The manuscript is now complete except as noted under item 43.			
COMPILER George A. Morris 07/08/80	SUPERVISOR James W. Massey		
Reviewer James R. Minton 07/08/80			
43. REMARKS			
All field edit sources are listed on form 76-36C, Field Edit, included elsewhere within this report.			

FIELD EDIT REPORT
TP-0052951 METHODS

Field edit of TP-00529 was accomplished in conformance with Chapter 11 of the MANUAL OF COASTAL MAPPING FIELD PROCEDURES between November 14 and November 18, 1978. A light truck, passenger car, and a 16' "Boston Whaler" were used for transportation during field edit. Topographic detail was edited and noted on photos 18MAR77B 3495, 18MAR77B 3513, and the Master Field Edit Ozalid. Notes were color coded as follows:

Violet - verification
Red - addition or revision
Green - deletion

Shoreline areas were inspected at low or negative tides. Rock heights were estimated and noted with GMT on the photographs or Master Field Edit Ozalid.

Compiled features were verified and uncompiled features located by visual inspection of the photographs, sextant resection, and standard ground survey methods. Positions were computed using the following equipment and programs:

PDP8/e COMPUTER - PROGRAM RK 300
WANG 700 CALCULATOR - GEODETIC PROGRAMS
HP-97 CALCULATOR - GEODETIC PROGRAMS

Objects listed as landmarks were inspected from seaward and verified or deleted on form 76-40. New landmarks were located and added to form 76-40. All navigational lights without office photogrammetric or geodetic positions were located to third order, class I standards. (see HORIZONTAL CONTROL REPORT OPR L123-RA-78) and updated on the 76-40's.

Recovery notes were submitted (DATA PACKAGE) for all triangulation on the sheet. Descriptions are included (DATA PACKAGE) for control stations established in the course of the survey. New control stations were plotted on the Master Field Edit Ozalid with a red triangle symbol.

52 ADEQUACY OF COMPILATION

Additions and deletions of detail necessary to render TP-00529 complete and adequate are noted on photos 18MAR77B 3495, 18MAR77B 3513, and the Master Field Edit Ozalid. Most notes are self explanatory. Items requiring further explanation are as follows:

LIGHTS WITHOUT GEODETIC OR PHOTOGRAMMETRIC POSITION - Lights noted on the manuscript as "CHARTED OBJECT NOT VISIBLE - NO GEODETIC POSITION" were located geodetically to third order, class I standards. Lights located were:

BERKELEY BREAKWATER LIGHT 2
 EMERYVILLE MARINA LIGHT 1
 EMERYVILLE MARINE LIGHT 2
 SAN FRANCISCO OAKLAND BAY BRIDGE PIER "G" AERO BEACON
 SAN FRANCISCO OAKLAND BAY BRIDGE PIER "H" AERO BEACON
 SAN FRANCISCO WATERFRONT PIER 1 NORTH LIGHT
 SAN FRANCISCO WATERFRONT PIER 1 SOUTH LIGHT
 SAN FRANCISCO WATERFRONT PIER 17 LIGHT
 SAN FRANCISCO WATERFRONT PIER 27-29 EAST LIGHT
 SAN FRANCISCO WATERFRONT PIER 27-29 WEST LIGHT
 YERBA BUENA ISLAND WHARF LIGHT

For positions see form 76-40 and "FIELD GEOGRAPHIC POSITIONS" (Separates to the Text). Aero beacons on Oakland Bay Bridge piers A, B, and E were noted as "NOT VISIBLE - NO GEODETIC POSITION" but in fact were established geodetic stations. Form 76-40 was amended to show the stations names and positions.

CHARTED OBJECTS WITH DISCREPANCIES BETWEEN PHOTO AND GEODETIC POSITION - Lights and landmarks with the notation, "CHARTED OBJECT VISIBLE - BOTH GEODETIC AND PHOTOGRAMMETRIC POSITION PLOTTED," were resolved as follows and corrected on form 76-40:

SAN FRANCISCO UNION OIL BLDG. TWR, 1951 - station was relocated as "SAN FRANCISCO UNION OIL COMPANY BUILDING TOWER, 1978."

OAKLAND OUTER HARBOR WEST SIDE REAR RANGE BEACON 339, 1948 - station was relocated as "OAKLAND OUTER HARBOR RANGE A REAR LIGHT, 1978."

OAKLAND INNER HARBOR LIGHT, (OAKLAND LIGHTHOUSE, 1919) - the original Lighthouse has been removed and the light rebuilt at a slightly different position. A recovery note was submitted showing the station destroyed and the photo position (new light) was verified on form 76-40.

EXPOSED CABLE BARRIER LIGHTS, OAKLAND HARBOR - The platform (Lat. 37/48/41, Long. 122/20/14) shown in Oakland Harbor on TP-00529 is the site of two new navigational lights located as stations "OAKLAND OUTER HARBOR ENTRANCE CHANNEL EXPOSED CABLE BARRIER NORTH LIGHT, 1978." and "OAKLAND OUTER HARBOR ENTRANCE CHANNEL EXPOSED CABLE BARRIER SOUTH LIGHT, 1978." These lights were added to form 76-40.

OAKLAND BAY BRIDGE FOG SIGNALS - Fog horns and bells on the concrete piers of the Oakland Bay Bridge were located by tape, measuring distances from the signals to the piers (the piers are compiled on TP-00529). Drawings showing the piers, signals, and taped dimensions are included with this report (DATA PACKAGE).

NEW LANDMARKS - Two uncharted objects of landmark value, a 40' octagonal wooden tower (Lat. 37/48/15, Long. 122/20/20) and a wooden tank (Lat. 37/47/05, Long. 122/19/35), were identified on photo #3513 and added to form 76-40.

OAKLAND INNER HARBOR MEASURED MILE RANGE MARKERS - The range markers on the south side of the entrance channel were found in good condition and located by sextant resection. On the north side of the channel station "OAKLAND ESTUARY, WEST FRONT RANGE, 1953" was found to be destroyed.

MODIFICATIONS TO SAN FRANCISCO FERRY TERMINAL - New loading ramps and mooring structures built at the San Francisco ferry terminal since the 1977 photography are delineated in drawing #1 (DATA PACKAGE).

REMOVAL OF PIERS, SAN FRANCISCO WATERFRONT - Four piers shown along the San Francisco waterfront on TP-00529 have been removed. Piers 14, 18, 20, and 22 have been removed and pilings cleared outside of the ruins limit shown along shore on the Master Field Edit Ozalid.

★ DIVE INVESTIGATION OF SUBMERGED RUINS CHARTED NEAR OAKLAND - This diver investigation was performed to verify or disprove the existence of submerged ruins shown on NOS Chart 18649, 45th Edition, in the vicinity of 37/49.0 N, 122/20.5 W. A weighted buoy was dropped in the general area of the charted ruins and was positioned by a manual sextant fix. A sweep search was then conducted by divers to a radius of 30 meters from the buoy anchor. Numerous cylindrical concrete ruins of about 1 meter in diameter were found in the area; these ruins lay in 15 to 20 feet of water (at the tidal stage occurring during the investigation) and projected 2 to 3 feet above the bottom. A manual sextant fix and lead line depth were taken on the most prominent ruin; a depth of 12.0 feet was recorded on this ruin at 1925Z, Julian Day 326.

Since these ruins are plotted over a large area on NOS Chart 18649, RAINIER personnel recommend that the general area be wire dragged during future hydrographic operations to determine more positively the least depth(s) and position(s) of the shoalest ruin(s) in the area. Fix data and the dive investigation log are included in "Separates to the Text."

★ DIVE INVESTIGATION
TP-00529
(Attached with Field Edit Report.)

37

BOATSHEET: RA-10-3-78
REGISTRY NO. H-9794
PROJECT NO. OPR-L123-

RA-78

DATE: 11/22/78 J.D. 326
DIVERS: BRUCE HILLARD (BPH)
STEVE MILLER

DIVERS INFORMATION ONLY:

TIME: DOWN 1050
UP 1105
TOTAL MINUTES _____

(1900)
AIR: DOWN 2000 lbs
UP 500 lbs
(1200)

DEPTH: MAX 20'
AVE 15'

METHOD OF INVESTIGATION:

(diagrams and additional information on reverse side)

BUOY DROP DATA

DATA COLLECTED:	
L <u>342</u>	L ₂ <u>31/00</u> (visual)
C <u>332</u>	R ₂ <u>37/52</u>
R <u>344</u>	V ₂ <u>32/53</u>
LR <u>343</u> (circle one)	
Electronic Stations (electronic)	
I _____	RANGE _____
II _____	RANGE _____
V ₂ _____	signal _____ to _____
DATA COMPUTED:	
FIX LAT: <u>37/49/01.59</u>	FIX LAT: <u>37/49/01.244</u>
LON: <u>122/20/30.369</u>	LON: _____
INVERSE DISTANCE: <u>9 m</u>	<u>122/20/30.103</u>

FIX DATA ON OBSTRUCTION

DATA COLLECTED:	
L <u>342</u>	L ₂ <u>30/51</u> (visual)
C <u>332</u>	R ₂ <u>37/42</u>
R <u>344</u>	V ₂ <u>32/55</u>
LR <u>343</u> (circle one)	
Electronic Stations (electronic)	
I _____	RANGE _____
II _____	RANGE _____
V ₂ _____	signal _____ to _____
DATA COMPUTED:	
FIX LAT: <u>37/49/01.535</u>	FIX LAT: <u>37/49/01.456</u>
LON: <u>122/20/29.935</u>	LON: _____
INVERSE DISTANCE: <u>8 m</u>	<u>122/20/30.179</u>

-SEARCH RADIUS WAS 100 ft. around buoy site.

RESULTS OF SEARCH: 2-3 SMM

Ruins were 5-6 ft. off the bottom, scattered and numerous. Leadline was on most prominent. Shape was cylindrical and material was combination of concrete of iron, steel.

OBSTRUCTION DATA

FIX POS NO. _____
LEAST DEPTH 12.0 ft. TIME 1125 L
1925 Z.
JD 326
METHOD Leadline or
fathometer (circle one)

RUINS AND SUBMERGED PILES OFF THE BERKELEY PIER - The ruins and submerged piles off Berkeley Pier questioned on TP-00529 were investigated and resolved in Hydrographic Survey H-9794.

SUBMERGED CABLES AND PIPELINES - Cable crossing and pipeline crossing signs were located and plotted on the Master Field Edit Ozalid. Additional information concerning the location of submerged cables and pipelines is being obtained from the utility companies in the San Francisco area. Information will be forwarded when received by RAINIER.

53 MAP ACCURACY

The horizontal accuracy of the manuscript was verified throughout the survey area when work incidental to field edit and hydrography required geodetic location of photo compiled objects such as lights. Photogrammetrically located features which were also located by ground survey are listed with field positions on the following page. The accuracy of the MHWL was verified by tape measurements from photo identifiable points. Compilation in general was found to be accurate.

54 RECOMMENDATIONS

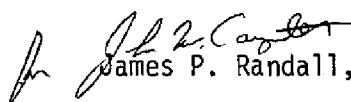
It is recommended that TP-00529 be revised in accordance with the information presented in this report.

It is recommended that the submerged ruins (Lat. 37/49.0 N, Long. 122/20.5 W) and submerged piles (Lat. 37/48.7 N, Long. 122/20.3 W) near Oakland Harbor be considered as pre-survey review items for further investigation when hydrographic operations begin in the area.

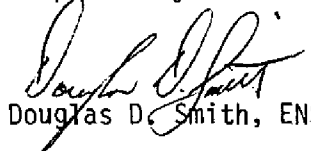
55 MISCELLANEOUS

None

Approved by


James P. Randall, CAPT, NOAA

Respectfully submitted


Douglas D. Smith, ENS, NOAA

REVIEW REPORT TP-00529

SHORELINE

61. GENERAL STATEMENT: An extensive final review was performed for this final shoreline map. No major discrepancies were encountered; however, minor revisions were made during final review which will affect previously forwarded Class III and Class I information. For a more complete analysis of the office and field operations, refer to the Summary included in this Descriptive Report.
62. COMPARISON WITH REGISTERED TOPOGRAPHIC SURVEYS: Not applicable.
63. COMPARISON WITH MAPS OF OTHER AGENCIES: A comparison was made with the following 1:24,000 scale U.S.G.S. quadrangles:
San Francisco North, Calif., 1956, photorevised 1968 and 1973
Oakland West, Calif., 1959, photorevised 1968 and 1973

No significant differences were noted.

64. COMPARISON WITH CONTEMPORARY HYDROGRAPHIC SURVEYS: Portions of three 1:10,000 scale contemporary hydrographic surveys, H-9794, H-9810 and H-9844, are common to this final shoreline map. Class I maps were forwarded to the Hydrographic Verification Branch at the Pacific Marine Center for shoreline application.

Survey H-9810 (1979) is presently in the final processing stage at PMC. Processing of survey H-9844 has been temporarily postponed pending receipt of the contemporary final reviewed maps. Due to the present stage of these two surveys, no comparison was made with the shoreline map during final review.

A comparison was made with a portion of verified survey H-9794, dated May 14, 1981. The corresponding area common to this map is primarily Treasure Island and segments of the San Francisco-Oakland Bay Bridge. Presently, this survey is receiving quality evaluation at the Hydrographic Surveys Division and information concerning the status of the shoreline map has been relayed.

As a result of final review, minor revisions made to the previous Class I map will affect the three contemporary hydrographic surveys. Consequently, a copy of this final map indicating all revisions will be forwarded to the Hydrographic Surveys Division.

65. COMPARISON WITH NAUTICAL CHARTS: A comparison was made with the following National Ocean Survey charts:

TP-00529

No. 18650, 36th edition, 1:20,000 scale, dated June 7, 1980
No. 18649, 48th edition, 1:40,000 scale, dated February 14, 1981

There are numerous nonfloating aids to navigation delineated on this final shoreline map that were field determined by 3rd order ground survey methods during the combined hydrographic survey/field edit operation. Prior to final review the original field records were forwarded to NGS for network evaluation; subsequently, only the preliminary positions are listed on the 76-40 forms attached with this report.

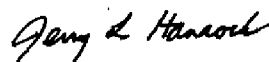
No distinction between "horn" and "siren" was made during the field edit for the fog signals along the San Francisco-Oakland Bay Bridge. Although the current chart and light list does indicate a character difference, these fog signals were compiled as sirens.

A Chart Maintenance Print was not submitted to the Marine Charts Division at the Class I stage; consequently, only revisions to the former Class III map will be indicated on the Final Chart Maintenance Print.

66. ADEQUACY OF RESULTS AND FUTURE SURVEYS: This Final Map and accompanying Descriptive Report represents revised data as a result of final review and should be used in lieu of the previous Class I product.

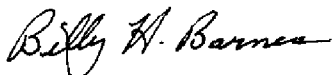
This map complies with the Project Instructions, and meets the requirements for National Standards of Map Accuracy.

Submitted by:



Jerry L. Hancock
Final Reviewer

Approved for forwarding:



Billy H. Barnes
Chief, Photogrammetric Branch, AMC

Approved:



George M. Ball
Chief, Photogrammetric Branch, Rockville



Walter S. Simmons
Chief, Photogrammetry Division

October 14, 1981

GEOGRAPHIC NAMES

FINAL NAME SHEET

CM-7704 (San Francisco and San Pablo Bays, California)

TP-00529

Alameda Naval Air Station

San Francisco-Oakland Bay Bridge

Oakland Inner Harbor

Southern Pacific (RR)

Oakland Middle Harbor

State Belt (RR)

Oakland Outer Harbor

Treasure Island

Rincon Point

Western Pacific (RR)

San Francisco

Yerba Buena Island

San Francisco Bay

Seventh Street Marine Terminal *ASH*

Approved by:

Charles E. Harrington

Charles E. Harrington
Chief Geographer, OA/C3x5

NOAA FORM 76-40 (8-74) Replaces C&GS Form 567.				U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION				FOR CHARTS				ORIGINATING ACTIVITY			
REPORTING UNIT (Field Party, Ship or Office)		STATE		LOCALITY		DATE		☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ PHOTO FIELD PARTY ☒ COMPILATION ACTIVITY ☐ FINAL REVIEWER ☐ QUALITY CONTROL & REVIEW GRP. ☐ COAST PILOT BRANCH (See reverse for responsible personnel)							
TO BE CHARTED ☒ TO BE REVISED ☐ TO BE DELETED		Photogrammetric Branch PMC, Seattle, Wa.		California		San Francisco, and San Pablo Bays		07/08/80							
The following objects HAVE ☒ HAVE NOT ☐ been inspected from seaward to determine their value as landmarks.		JOB NUMBER CM-7704		SURVEY NUMBER TP-00529		DATUM North American 1927		METHOD AND DATE OF LOCATION (See instructions on reverse side)		CHARTS AFFECTED					
CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses.)	LATITUDE		LONGITUDE		OFFICE		FIELD							
		° / ' "	D.M. Meters	° / ' "	D.P. Meters										
BELL	Pier 32 Fog Signal	37 47	09.50 293	122 23	00.57 14			P-5, 11-78 77B(P)3495				18650			
LIGHT (HORN)	Yerba Buena Island Light (Yerba Buena Lighthouse, 1919)	37 48	26.462 815.8	122 21	40.177 982.8			77B(P)2542 4 Mar., 1977	Triang. Rec. 11-78			18650			
LIGHT	(Yerba Buena Island Wharf Light, 1978 (Field Position))	37 48	29.426 907.2	122 21	35.862 877.3				F-3-6-L, 11-78			18650			
	Oakland Outer Harbor														
LIGHT	Oakland Outer Harbor Range B Front Light	37 48	57.60 1776	122 19	25.23 617			77B(P)2543 4 Mar., 1977	V-Vis. 11-78			18650			
LIGHT	Oakland Outer Harbor Range B Rear Light (Oakland Outer Harbor East Side Beacon 337, 1948)	37 49	03.163 97.5	122 19	15.067 368.5			77B(P)2542 4 Mar., 1977	Triang. Rec. 1976			18650			
LIGHT	Oakland Outer Harbor Range A Front Light	37 48	56.53 1743	122 19	37.98 929			77B(P)2542 4 Mar., 1977	V-Vis. 11-78			18650			
LIGHT	(Oakland Outer Harbor Range A Rear Light, 1978 (Field Position))	37 49	02.134 65.8	122 19	27.094 662.7			77B(P)2542 4 Mar., 1977	F-3-6-L, 11-78			18650			
LIGHT	(Oakland Outer Harbor Entrance Channel Exposed Cable Barrier North Light, 1978 (Field Position)) BARTD Obstruction Light	37 48	41.458 1278.2	122 20	14.070 344.2				F-3-6-L, 11-78			18650			
LIGHT	(Oakland Outer Harbor Entrance Channel Exposed Cable Barrier South Light, 1978 (Field Position)) BARTD Obstruction Light	37 48	40.968 1263.1	122 20	14.122 345.4				F-3-6-L, 11-78			18650			

TYPE OF ACTION		RESPONSIBLE PERSONNEL		ORIGINATOR	
		NAME			
OBJECTS INSPECTED FROM SEAWARD		D. D. Smith, Lt(jg), NOAA		☒ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER (Specify)	
POSITIONS DETERMINED AND/OR VERIFIED		D. D. Smith, Lt(jg), NOAA		FIELD ACTIVITY REPRESENTATIVE	
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		G. A. Morris, (J. Hancock, Dec. 1981)		☐ OFFICE ACTIVITY REPRESENTATIVE ☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE	
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'					
(Consult Photogrammetric Instructions No. 64.)					
OFFICE I. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75			FIELD (Cont'd) B. Photogrammetric field positions* require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982		
FIELD I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection 5 - Field identified 6 - Theodolite 7 - Planetable 8 - Sextant P - Photogrammetric Vis - Visually A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75			II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75 III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75		
*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.					
**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.					

Replaces C&GS Form 567.

NONFLOATING AIDS

FOR CHARTS

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

ORIGINATING ACTIVITY

- ☐ HYDROGRAPHIC PARTY
☐ GEODETIC PARTY
☐ PHOTO FIELD PARTY
☒ COMPILATION ACTIVITY
☐ FINAL REVIEWER
☐ QUALITY CONTROL & REVIEW GRP.
☐ COAST PILOT BRANCH
(See reverse for responsible personnel)

REPORTING UNIT
(Field Party, Ship or Office)
Photogrammetric Branch
PMC, Seattle, WA
STATE
California
LOCALITY
San Francisco and San
Pablo Bays
DATE
7/08/80

The following objects HAVE ☒ BEEN INSPECTED FROM SEAWARD TO DETERMINE THEIR VALUE AS LANDMARKS.

OPR PROJECT NO.

JOB NUMBER

SURVEY NUMBER

DATUM

CM-7704

TP-00529

North American 1927

METHOD AND DATE OF LOCATION
(See instructions on reverse side)

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	LATITUDE		LONGITUDE		OFFICE	FIELD	CHARTS AFFECTED
		° /	D.M. Meters	° /	D.P. Meters			
	San Francisco - Oakland Bay Bridge West Crossing							
SIREN	* Pier A Fog Signal; Currently charted as HORN, Dec. 1981	37 47	27.05	122 23	04.66		F-L-Sketch 11/78	18650
SIREN	* Pier B Fog Signal; Currently charted as HORN, Dec. 1981	37 47	43.76	122 22	45.86		F-L-Sketch 11/78	18650
BELL	* Pier C East Side Fog Signal	37 47	54.33	122 22	35.52		F-L-Sketch 11/78	18650
BELL	* Pier C West Side Fog Signal	37 47	53.00	122 22	37.08		F-L-Sketch 11/78	18650
SIREN	* Pier D Fog Signal; Currently charted as HORN, Dec. 1981	37 48	03.67	122 22	26.57		F-L-Sketch 11/78	18650
SIREN	* Pier E Fog Signal; Currently charted as HORN, Dec. 1981	37 48	19.92	122 22	07.24		F-L-Sketch 11/78	18650
	* San Francisco - Oakland Bay Bridge East Crossing							
SIREN	* Pier G Fog Signal	37 48	51.99	122 21	27.11		F-L-Sketch 11/78	18650
SIREN	* Pier H Fog Signal	37 48	56.50	122 21	10.88		F-L-Sketch 11/78	18650

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	D. D. Smith, Lt. (jg), NOAA
POSITIONS DETERMINED AND/OR VERIFIED	D. D. Smith, Lt. (jg), NOAA
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	G. A. Morris, (J. Hancock, Dec. 1981)
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'	
(Consult Photogrammetric Instructions No. 64.)	
OFFICE I. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75	FIELD (Cont'd) B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982
FIELD I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field P - Photogrammetric L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection 5 - Field identified 6 - Theodolite 7 - Planetable 8 - Sextant A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75	II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75 III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75 **PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.
*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.	

NOAA FORM 76-40 (8-74) Replaces C&GS Form 567.				U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION				ORIGINATING ACTIVITY			
NONFLOATING AIDS				FOR CHARTS				☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ PHOTO FIELD PARTY ☒ COMPILATION ACTIVITY ☐ FINAL REVIEWER ☐ QUALITY CONTROL & REVIEW GRP. ☐ COAST PILOT BRANCH (See reverse for responsible personnel)			
REPORTING UNIT (Field Party, Ship or Office)		STATE		LOCALITY		DATE					
Photogrammetric Branch		California		San Francisco and San Pablo Bays		07/08/80					
PMC, Seattle, Wa.											
The following objects HAVE ☒ BEEN INSPECTED FROM SEAWARD TO DETERMINE THEIR VALUE AS LANDMARKS.		SURVEY NUMBER		DATUM							
JOB NUMBER		TP-00529		North American 1927							
CM-7704											
CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses.)	LATITUDE		LONGITUDE		POSITION		METHOD AND DATE OF LOCATION (See instructions on reverse side)		CHARTS AFFECTED	
		° / ' " D.M. Meters	° / ' " D.P. Meters	° / ' " D.M. Meters	° / ' " D.P. Meters	OFFICE	FIELD				
BELL * Pier I Fog Signal		37 48	58.68	122 21	05.15				F-4-6-L, 11-78	18650	
			1809		126						
BELL * Pier J Fog Signal		37 49	00.65	122 20	59.16				F-4-6-L, 11-78	18650	
			20		1447						
BELL * Pier K Fog Signal		37 49	02.59	122 20	53.23				F-4-6-L, 11-78	18650	
			80		1302						
	San Francisco Waterfront										
LIGHT	(San Francisco Waterfront Pier 27 - 29 West Light, 1978 (Field Position))	37 48	27.609	122 23	59.327				F-4-6-L, 11-78	18650	
			851.2		1451.3						
LIGHT	(San Francisco Waterfront Pier 27 - 29 East Light, 1978 (Field Position))	37 48	26.394	122 23	57.687				F-4-6-L, 11-78	18650	
			813.8		1411.1						
LIGHT	(San Francisco Waterfront Pier 17 Light, 1978 (Field Position))	37 48	10.914	122 23	45.624				F-4-6-L, 11-78	18650	
			336.5		1116.1						
LIGHT	(San Francisco Waterfront Pier 1 North Light, 1978 (Field Position))	37 47	53.648	122 23	31.437				F-4-6-L, 11-78	18650	
			1654.0		769.1						
LIGHT	(San Francisco Waterfront Pier 1 South Light, 1978 (Field Position))	37 47	52.928	122 23	30.766				F-4-6-L, 11-78	18650	
			1631.8		752.7						
BELL	Pier 26 Fog Signal	37 47	22.51	122 23	02.90				P-5-L, 11-78, 77B(P) 3495	18650	
			694		71						

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	D. D. Smith, Lt(jg), NOAA
POSITIONS DETERMINED AND/OR VERIFIED	D. D. Smith, Lt(jg), NOAA
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	G. A. Morris, (J. Hancock, Dec. 1981)
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'	
(Consult Photogrammetric Instructions No. 64.)	
OFFICE I. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75	FIELD (Cont'd) B. Photogrammetric field positions** -require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982
FIELD I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection P - Photogrammetric Vis - Visually 5 - Field identified 6 - Theodolite 7 - Planetable 8 - Sextant A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75	III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75 **PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.
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NOAA FORM 76-40 (8-74) Replaces C&GS Form 567.				U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION				ORIGINATING ACTIVITY			
NONFLOATING AIDS				FOR CHARTS				☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ PHOTO FIELD PARTY ☒ COMPILATION ACTIVITY ☐ FINAL REVIEWER ☐ QUALITY CONTROL & REVIEW GRP. ☐ COAST PILOT BRANCH (See reverse for responsible personnel)			
REPORTING UNIT (Field Party, Ship or Office)		STATE		LOCALITY		DATE		METHOD AND DATE OF LOCATION (See instructions on reverse side)		CHARTS AFFECTED	
TO BE CHARTED ☒ TO BE REVISED ☐ TO BE DELETED		Photogrammetric Branch PMC, Seattle, WA		California		San Francisco and San Pablo Bays		7/08/80			
The following objects HAVE ☒ BEEN INSPECTED FROM SEAWARD TO DETERMINE THEIR VALUE AS LANDMARKS.		SURVEY NUMBER		DATUM		POSITION					
OPR PROJECT NO.		JOB NUMBER		LATITUDE		LONGITUDE		OFFICE		FIELD	
		CM-7704		North American 1927							
DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)		LATITUDE		LONGITUDE							
		° /		° /		D.M. Meters		D.P. Meters			
	Oakland Inner Harbor										
LIGHT	Oakland Inner Harbor Light 2	37 47	51.86	122 19	53.46			77B(P) 3513			
			1599		1308			Mar. 18, 1977	V-Vis., 11/78		18650
	Emeryville Marina										
LIGHT	(Emeryville Marina Light 1, 1978 (Field Position))	37 50	25.292	122 19	10.490				F-3-6-L, 11/78		18650
			779.8		256.5						
LIGHT	(Emeryville Marina Light 2, 1978 (Field Position))	37 50	24.242	122 19	09.246				F-3-6-L, 11/78		18650
			747.4		226.1						
	San Francisco Bay										
LIGHT	(Treasure Island North End Light 6, 1977 (Field Position))	37 49	59.877	122 22	17.071			77B(P) 3545			
			1846.1		417.5			Mar. 18, 1977	F-3-6-L, 03/77		18650
LIGHT	Treasure Island North End Light 8	37 49	51.25	122 21	55.61			77B(P) 3545			
			1580		1360			Mar. 18, 1977	V-Vis 11/78		18650
LIGHT	*Berkeley Marina Channel Light 2 (BER- KELEY BREAKWATER LIGHT 2, 1978 (field position))	37 50	52.109	122 21	34.089			77B(P) 3445			
			1606.6		833.4			Mar. 18, 1977	F-3-6-L 11/78		18650
	*Light List #708; Do Not confuse this light with Light List #712 (TP-00527)										

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	D. D. Smith, Lt. (jg), NOAA
POSITIONS DETERMINED AND/OR VERIFIED	D. D. Smith, Lt. (jg), NOAA
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	G. A. Morris, (J. Hancock, Dec. 1981)
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'	
(Consult Photogrammetric Instructions No. 64.)	
OFFICE I. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75	FIELD (Cont'd) B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982
FIELD I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection P - Photogrammetric Vis - Visually 5 - Field identified 6 - Theodolite 7 - Planetable 8 - Sextant A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75	II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75 III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75 **PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.
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NOAA FORM 76-40 (8-74) Replaces C&GS Form 567.				U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION				ORIGINATING ACTIVITY			
NONFLOATING AIDS				FOR CHARTS				☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ PHOTO FIELD PARTY ☒ COMPILATION ACTIVITY ☐ FINAL REVIEWER ☐ QUALITY CONTROL & REVIEW GRP. ☐ COAST PILOT BRANCH (See reverse for responsible personnel)			
REPORTING UNIT (Field Party, Ship or Office)		STATE		LOCALITY		DATE					
Photogrammetric Branch		California		San Francisco and San Pablo Bays		7/08/80					
PMC, Seattle, WA											
The following objects HAVE ☒ BEEN INSPECTED FROM SEAWARD TO DETERMINE THEIR VALUE AS LANDMARKS.		SURVEY NUMBER		DATUM							
OPR PROJECT NO.		JOB NUMBER		TP-00529							
CM-7704											
CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	LATITUDE		LONGITUDE		POSITION		METHOD AND DATE OF LOCATION (See instructions on reverse side)		CHARTS AFFECTED	
		°	'	°	'	D.M. Meters	D.P. Meters	OFFICE	FIELD		
AEROBEACON	(San Francisco Oakland Bay Bridge Pier No. 4, 1954)	37	47	122	23	26.921	04.994		Triang. Rec. 11/78	18650	
AEROBEACON	(San Francisco Oakland Bay Bridge Pier No. 3, 1954)	37	47	122	22	44.337	122.2		Triang. Rec. 11/78	18650	
AEROBEACON	(San Francisco Oakland Bay Bridge Pier No. 1, 1954)	37	48	122	22	1367.0	1133.7		Triang. Rec. 11/78	18650	
AEROBEACON	(San Francisco Oakland Bay Bridge Pier G Aerobeacon, 1978 (Field Position))	37	48	122	21	20.492	07.603		F-3-6-L 11/78	18650	
AEROBEACON	(San Francisco Oakland Bay Bridge Pier H Aerobeacon, 1978 (Field Position))	37	48	122	21	631.8	186.0		F-3-6-L 11/78	18650	
						51.721	26.906				
						1594.6	658.1				
						56.950	10.683				
						1755.8	261.3				

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	D. D. Smith, Lt. (jg), NOAA
POSITIONS DETERMINED AND/OR VERIFIED	D. D. Smith, Lt. (jg), NOAA
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	G. A. Morris, (J. Hancock, Dec. 1981)
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'	
(Consult Photogrammetric Instructions No. 64.)	
OFFICE 1. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75	FIELD (Cont'd) B. Photogrammetric field positions* require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982
FIELD I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection P - Photogrammetric Vis - Visually 5 - Field identified 6 - Theodolite 7 - Planetable 8 - Sextant A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75	II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75 III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75 **PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.
*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.	

[illegible]

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	D. D. Smith, Lt(jg), NOAA
POSITIONS DETERMINED AND/OR VERIFIED	D. D. Smith, Lt(jg), NOAA
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	G. A. Morris, (J. Hancock, Dec. 1981)
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'	
(Consult Photogrammetric Instructions No. 64.)	
OFFICE 1. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75	ORIGINATOR ☒ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER (Specify) FIELD ACTIVITY REPRESENTATIVE OFFICE ACTIVITY REPRESENTATIVE ☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE
FIELD I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection P - Photogrammetric Vis - Visually 5 - Field identified 6 - Theodolite 7 - Planetable 8 - Sextant A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75 *FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.	FIELD (Cont'd) B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982 II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75 III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75 **PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

NOAA FORM 76-40 (6-74)										U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION									
Replaces C&GS Form 567.										LANDMARKS FOR CHARTS									
TO BE CHARTED		REPORTING UNIT (Field Party, Ship or Office)		STATE		LOCALITY		DATE		ORIGINATING ACTIVITY									
TO BE REVISED		Photogrammetric Branch		California		San Francisco and San Pablo Bays		07/08/80		☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ PHOTO FIELD PARTY ☒ COMPILATION ACTIVITY ☐ FINAL REVIEWER ☐ QUALITY CONTROL & REVIEW GRP. ☐ COAST PILOT BRANCH (See reverse for responsible personnel)									
TO BE DELETED		PMC, Seattle, Wa.		California		San Francisco and San Pablo Bays		07/08/80											
The following objects HAVE [X] HAVE NOT [] been inspected from seaward to determine their value as landmarks.		JOB NUMBER		SURVEY NUMBER		DATUM													
OPR PROJECT NO.		CM-7704		TP-00529		North American 1927													
CHARTING NAME		DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses.)		LATITUDE		LONGITUDE		POSITION		METHOD AND DATE OF LOCATION (See instructions on reverse side)		CHARTS AFFECTED							
				° / ' " D.M. Meters		° / ' " D.P. Meters				OFFICE		FIELD							
RADIO TOWER	Center of three, KDIA	37 49'	122 19'	09.81'	09.81'	09.81'	09.81'	09.81'	09.81'	77B(P)3514	V-Vis.	18650							
		837	240							18 Mar. 1977	11-78								
RADIO TOWER	(Treasure Island Red and White Radio Tower, 1978 (Field Position))	37 49'	122 22'	13.188	322.6	13.188	322.6	13.188	322.6	77B(P)3546	F-3-6-L 11-78	18650							
CUPOLA	(Treasure Island Building One Cupola, 1978 (Field Position))	37 49'	122 22'	10.977	268.5	10.977	268.5	10.977	268.5	77B(P)3514	F-3-6-L 11-78	18650							
RADAR TOWER	(USCG Vessel Traffic System Radar YBI, 1976 (Field Position))	37 48'	122 21'	51.400	1257.3	51.400	1257.3	51.400	1257.3	77B(P)3514	F-3-6-L 76	18650							
TANK	(Oakland Navy Supply Depot Checkered Tank, 1947)	37 48'	122 19'	11.606	283.9	11.606	283.9	11.606	283.9	77B(P)2599	Triang. Rec. 11-78	18650							
TOWER	Octagonal wooden tower, 40 ft; recommended as new landmark	37 48'	122 20'	22.69	555	22.69	555	22.69	555		P-5, 11-78 77B(P)3513	18650							
TANK	Wooden Tank; recommended as new landmark	37 48'	122 19'	39.53	967	39.53	967	39.53	967		P-5, 11-78 77B(P)3513	18650							
MARKER	(Oakland Estuary West Rear Range, 1953)	37 47'	122 19'	38.909	951.9	38.909	951.9	38.909	951.9		Triang. Rec. 11-78	18650							
MARKER	Measured Nautical Mile Marker, Oakland Middle Channel South Side Front Range	37 47'	122 19'	41.42	1013	41.42	1013	41.42	1013		F-4-8-L 11-78	18650							

RESPONSIBLE PERSONNEL		ORIGINATOR	
TYPE OF ACTION	NAME		
OBJECTS INSPECTED FROM SEAWARD	D. D. Smith, Lt(jg), NOAA	☒ PHOTO FIELD PARTY	
		☐ HYDROGRAPHIC PARTY	
		☐ GEODETIC PARTY	
		☐ OTHER (Specify)	
POSITIONS DETERMINED AND/OR VERIFIED	D. D. Smith, Lt(jg), NOAA	FIELD ACTIVITY REPRESENTATIVE	
	G. A. Morris, (J. Hancock, Dec, 1981)	OFFICE ACTIVITY REPRESENTATIVE	
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER	
		☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE	
INSTRUCTIONS FOR ENTRIES UNDER METHOD AND DATE OF LOCATION (Consult Photogrammetric Instructions No. 64.)			
OFFICE		FIELD (Cont'd)	
I. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75		B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982	
FIELD I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection P - Photogrammetric Vis - Visually 5 - Field identified 6 - Theodolite 7 - Planetable 8 - Sextant A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75		III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75 **PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.	
*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.			

[illegible]

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	D. D. Smith, Lt(jg.), NOAA
POSITIONS DETERMINED AND/OR VERIFIED	D. D. Smith, Lt(jg.), NOAA
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	G. A. Morris, (J. Hancock, Dec. 1981)
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'	
(Consult Photogrammetric Instructions No. 64,	
OFFICE I. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75	FIELD (Cont'd) B. Photogrammetric field positions* require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982
FIELD I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection P - Photogrammetric Vis - Visually 5 - Field identified 6 - Theodolite 7 - Planetable 8 - Sextant A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75	III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75 **PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.
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